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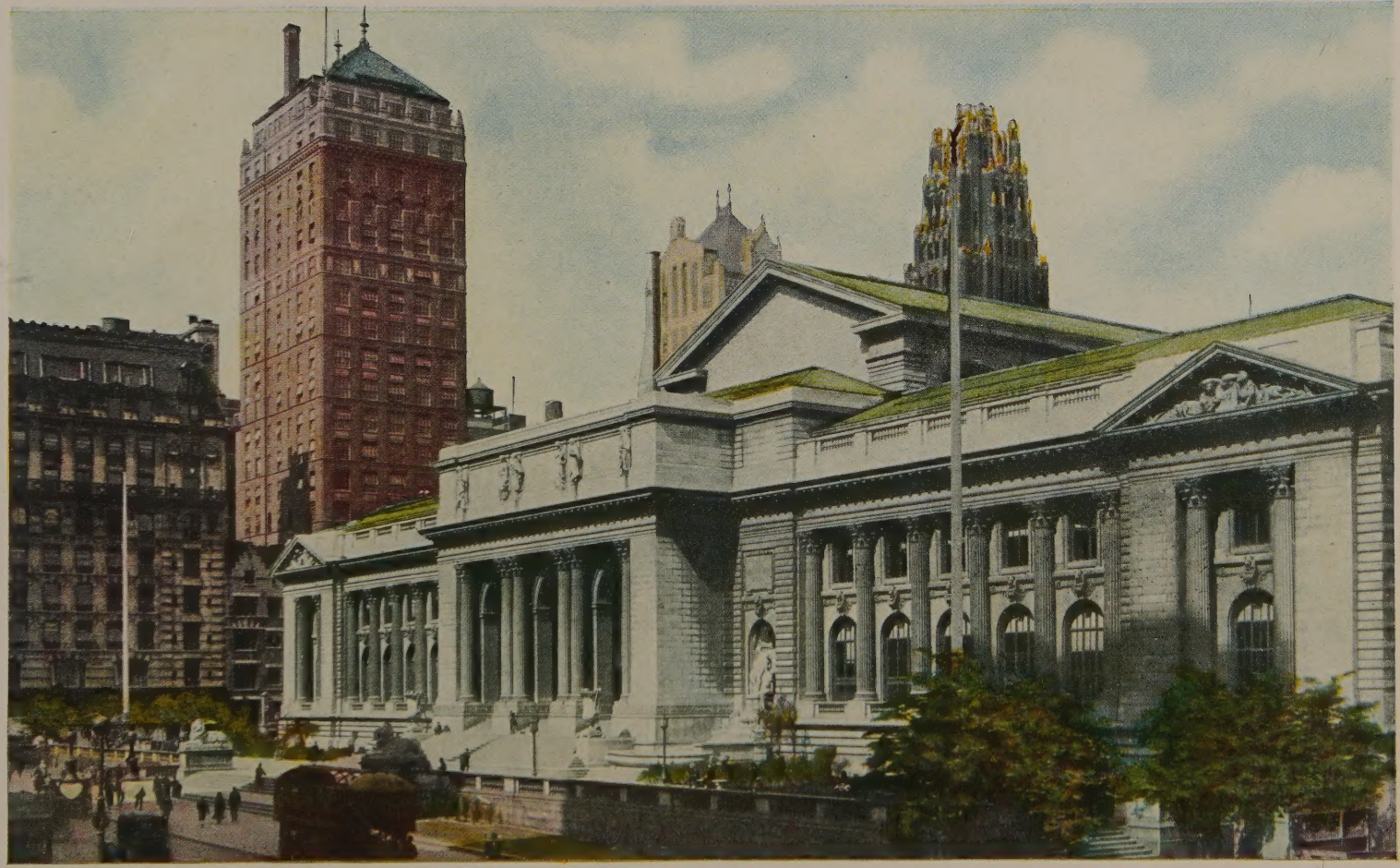

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The NEW CENTURY BOOK of FACTS

A HANDBOOK OF READY REFERENCE

Embracing

LANGUAGE - GRAMMAR - HISTORY - MATHEMATICS - GEOGRAPHY
ATLAS - KINDERGARTEN - PHYSIOLOGY - LITERATURE - SCIENCE
GOVERNMENT - LAW - ECONOMICS - BIOGRAPHY - FINE ARTS

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HENRY ADELBERT WHITE, Ph.D.

AUTHENTIC *COMPREHENSIVE*
UP-TO-DATE

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PREFACE.

ORIGIN. The publication of the *New Century Book of Facts* has been brought about by the constant demand of the American people for a reliable book of reference. Such a reference work requires constant revision to hold place with inventions, discoveries, events and political changes, and in keeping up with this progress lies its great usefulness. Without question the *Century Book of Facts* published in 1900 supplied a definite need, and was the most popular single-volume facts book of its time. The 1908 revision of the *Century Book of Facts* was so complete that it practically changed the identity of the book. Continual demand on the part of the public, which is witnessed by the thousands of letters desiring a later revision of the *New Century Book of Facts,* has resulted in the latest edition, which is without question the most practical single-volume reference book being sold at the present time, having behind it the prestige of a quarter of a century. The present edition will be found greatly enlarged, more adapted to practical reference and more fully illustrated than any of the previous editions of the *Century* or *New Century Book of Facts.*

PURPOSE. Consequently, as the publishers have foreseen, the decided change in the school curriculum has made it necessary to make an entirely new book, in the preparation of which there has been one supreme object; namely, the production of the best single-volume reference work in the English Language, surpassing all others in scope, quality, and adaptation to present day needs in the same degree that a modern locomotive excels the first models.

PREPARATION. Even though three years were spent in the selection, condensing and arrangement of the last revision of the *New Century Book of Facts,* again, two years have been spent in bringing it up to date and adding to it those particular subjects which experience has shown are demanded and most used by the book referring public. This has been largely accomplished by those actively engaged in the teaching profession, also, by hundreds of solicitors in the field, who are in position from daily contact to know exactly the particular kind of reference material needed in the individual home.

EDITORSHIP. This vast array of facts was brought into order, verified, and made available for instant use under the direction of Hon. Carroll D. Wright, late president of Clark College, recognized throughout the world as a statistician and economist of the first order, and eminently qualified to shape a facts book along the lines of highest usefulness. In order to maintain a uniformly high standard throughout the several departments, he personally selected a board of sixteen associate editors, composed of specialists of the foremost rank, for the most part connected with our leading universities and colleges, and representing an average of editorial competency and scholarship, not only higher than that of any other single-volume reference work, but also exceeding that of our largest encyclopedias.

In making the present edition, the publishers have kept in mind, the excellency and high standard of the previous editions of the *New Century Book of Facts.* Therefore, in the making of a new department or the revision and expansion of a department, only those qualified by experience in teaching or practicing have been employed. Consequently, the work will be found free from padding and of the utmost practical value to the user.

ARRANGEMENT. The entire work has been divided into fifteen departments, and these again are arranged in the order which experience has shown will enable the work to be of the greatest use not only to children and students but also for general reference. Each of the fifteen departments consists of one and only one general subject. By this method the great educational advantage of proper correlation of matter is gained and the unnecessary and disorderly miscellany so generally confusing in works of reference is avoided. The classification of the matter has proceeded on the basis of the Dewey decimal system for libraries, except that the large general division of sociology was divided into Government, Law and Economics. The topical arrangement of the subject matter was chosen with full realization that it imposed upon the editorial staff the necessity of a fuller and better balanced treatment of each department than would either the alphabetical arrangement or the grouping of several departments into one.

SPECIAL FEATURES. Among the special features we mention the appearance and style of type page throughout the entire volume; outstanding facts have been been placed in heavy type or italics, enabling the user to grasp important facts instantly. We mention the World's History in Graphic Outline, World War, Pictorial History and Presidents' Administrations, Pictorial Geography and facts concerning the states, line drawings illustrating the practical application of Everyday Physics, Physical Terms and Laws and a Dictionary of Chemical Terms and Elements. Parents will find in the beginning of the department of Grammar a most helpful treatise, assisting them to lay the foundation of Good English in the Home. Technical Grammar is most thoroughly covered and will be of inestimable help to the student taking Latin, Greek or the Modern Languages. The Anatomy and Physiology of the Human Body is not only covered in detail but also helpfully illustrated. The volume includes more than fifty special dictionaries, each arranged alphabetically, enabling the user to get the greatest amount of information in the shortest possible time. The Synopsis of the World's best classics in the department of Literature will be found interesting and helpful to all students. Among other special features we mention, the department of Mathematics. This includes Primary Number Work, Formal Arithmetic, Algebra and Geometry, with special emphasis upon Commercial Arithmetic, Practical Measurements and the Correlation of Arithmetic and Algebra.

TO USERS OF THE CENTURY BOOK OF FACTS. Nearly a million homes possess the *Century Book of Facts*, the forerunner of this work. This is incontrovertible proof of the popularity of the single volume facts book. The rapid growth of such organizations as The Parent-Teacher Association makes it vitally necessary that not only the students but the parents have at their disposal a volume such as this for quick reference. The true foundation of an education is acquired in the home and can only be properly fostered when parents teach and show their children how to use reference books.

INTERMEDIATE BETWEEN ENCYCLOPEDIA AND DICTIONARY. While in wealth of pertinent facts this volume fulfills the office of an encyclopedia, nevertheless, by virtue of topical arrangement, special tabulations and pictorial work, it avoids cumbrous but necessary repetition of encyclopedias, and gives relief from grouping totally unrelated subjects in alphabetical order. On the other hand, it is not merely a collection of definitions, but presents related facts in a systematic way, giving the essentials of numerous text-books or treatises on its varied subjects, and in range of available information exceeds the resources of all except the largest libraries.

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since 1896; and Dean of Wharton School of Transportation and Commerce, 1919–1933. Economic expert on various national commissions; on Isthmian Canal Commission, 1899–1904. Author of various books, including *Railway Traffic and Rates, Panama Canal and Tolls, History of Domestic and Foreign Commerce of U. S., Government Regulation of Transportation,* and *Through the Years, an Autobiography.* Editor *Annals of the American Academy,* 1901–1914.

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Assistant Professor and, after 1936, Professor of Politics at Princeton University. Member of editorial staff of *American Political Science Review;* on board of experts to study administration of New Jersey, 1932. Author of *Organized Labor and the Law, Brandeis: Lawyer and Judge in the Modern State, Bureaucracy Convicts Itself, The Ballinger-Pinchot Controversy.*

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HOW TO USE

THE NEW CENTURY BOOK OF FACTS.

Benjamin Franklin says: "Empty your purse into your head and no one can take it from you." A little town in Massachusetts once wrote him asking for a contribution toward a church bell. Franklin characteristically replied that he was sending a contribution, but not to be used in purchasing a church bell, rather he desired it to be used in purchasing books for the town library, since he would prefer filling their heads with *sense* than *sound*. In later years a poor boy studied those books. They revolutionized his life. That boy was Horace Mann, the founder of our free school system.

Statistics show that only six per cent. of a child's life on the average, is spent in the school room. Ninety-four per cent. is, therefore, spent outside of the school-room influence, and more or less under the direct supervision of the parent. Ordinary judgment should convince any parent that the greater responsibility for the child's proper training and education is dependent upon the home influence. Proper education today must be fostered, created and developed in the home.

Imitation is a most important factor in the developing of every child's life, and should the youth seldom see the parent use a reference book, look up facts, it must follow that the old adage, "Like begets Like" will hold true. The natural tendency of the child is to ask questions, and when he is repeatedly side-tracked or refused by the parent, it is but natural, that he should develop other tendencies and capacities, in many instances harmful. On the other hand let the thoughtful parent surround the child with the proper literary environment (Food for mind as well as body), and he will find that child eventually obtaining an education, regardless of the obstacles that confront him. "A man can not leave a better legacy to the world, than a well-educated family."—Scott.

First, we call attention, to the manner in which the book has been titled throughout. On the top of each page is found the page title, showing the most important subjects treated on that page. When several subjects appear on a page, the page titles will enable you to know the first and last topics treated on that page.

Secondly, the divisional leaves, enable you instantly to realize that you have passed from one department to another. On the back of each divisional leaf can be found the most important topics treated in that department. Should more definite information be desired, as to any division of the topic, it will be found in the running titles, at the beginning of each department.

Third, Each department is alphabetically arranged. Again each department includes one or more specific dictionaries which in turn are alphabetically arranged.

Fourth, Each subject is treated individually. For example, every subject pertaining to Language is treated, in that department. Suppose the question arose, as to the proper use of the comma. Turning to the index under "C," one finds "Comma," on page twenty-five. On the other hand, suppose your first thought would be the word "Punctuation." Turn to "P" in the index and you find the word "Punctuation" on page twenty-five. This is a special feature termed "Cross-Index," and enables the user to find information under more than one heading.

The *New Century Book of Facts* is built to be used. Keep it on the reading table or on the desk. Only by using it can its value be appreciated. No finer tribute can be paid any good book than for it to be scarred and worn through constant use. Learn to use the table of contents. Become familiar with the splendid index. Johnson says—"Books that you may carry to the fire side, and hold readily in your hand, are the most useful after all."

While the index to the *New Century Book of Facts*, is indeed most exhausting and thorough, it is to be remembered that every single word and minor sub-topic cannot be indexed, else the index would be a book unto itself. We call attention as an example to the word synonyms, not only is it found in the index on page forty-three, under the word synonyms, but it is also found in the index under the term Dictionaries, as on page forty-three. More particularly, we wish to emphasize that the Dictionary of Synonyms is in itself alphabetically arranged. To render the Dictionary of Synonyms of the most possible value to the user, there is immediately following it an—Index to Synonymous terms, making the list of more than double value to the user.

The Word "Use" means act of using, the application of anything to a particular purpose and it is the hope of the authors of the *New Century Book of Facts* that this volume will be used daily by the thousands with whom it will come in contact, as the means of developing that breadth of education, that will give the user the ability to converse intelligently with folks in all walks of life and make him more appreciative of the worth while things of life. It will assist him to increase his earning power and thus enable him to compete successfully in more than one limited line of endeavor in earning his daily livelihood.

LANGUAGE OF THE NATIONS
AMERICANISMS
COMPOSITION
PUNCTUATION
CORRESPONDENCE
MISUSE OF WORDS
SYNONYMS
ANTONYMS
PREFIXES AND SUFFIXES
LIST OF LATIN WORDS
CORRECT SPELLING
PRONUNCIATION
DICTIONARY OF ABBREVIATIONS
COMMON WORDS AND PHRASES
PEDAGOGICAL AND PSYCHOLOGICAL TERMS

Photos 1, 2 and 4 from Brown Bros.: 3 by Underwood & Underwood; 5 by Burton Holmes from Ewing Galloway; 6 and 7 from Keystone View Co.

AMERICAN COLLEGES AND UNIVERSITIES

1 Hiram Smith Hall, first building erected in America for dairy education, Univ. of Wisconsin. 2 Bryn Mawr (Penn.). 3 Daisy Chain, Vassar College (N. Y.). 4 Univ. of California. 5 Univ. of Chicago. 6 Georgia School of Technology. 7 Vanderbilt University (Tenn.).

BOOK I.

LANGUAGE.

MANUSCRIPT BOOK.

PRINTED BOOK.

Mural Paintings in the Congressional Library, Washington.
By J. W. ALEXANDER.

LANGUAGES OF ALL NATIONS. ENGLISH LANGUAGE. AMERICA'S CONTRIBUTION TO THE ENGLISH LANGUAGE. AIDS TO SPELLING. HOW TO PUNCTUATE SENTENCES. WHEN TO USE CAPITAL LETTERS. WORDS FREQUENTLY MISPRONOUNCED. WRONG FORMS OF SPEECH AND WRITING. EXACT USE OF SYNONYMOUS WORDS; THEIR SHADES OF MEANING DISTINGUISHED AND ILLUSTRATED. FORMS OF LITERARY EXPRESSION, STRUCTURE OF SENTENCES, AND PARAGRAPHS. LETTER WRITING. ABBREVIATIONS AND CONTRACTIONS. WORDS, PHRASES, AND QUOTATIONS FROM CLASSICAL AND FOREIGN LANGUAGES.

LANGUAGES OF THE NATIONS.

The several languages and dialects spoken in the world number about 2,800. These are classified according to their grammatical construction into (1) the monosyllabic or isolating languages, (2) the agglutinative or affixal languages, and (3) the inflectional languages.

The monosyllabic or isolating languages are those in which the words, all of one syllable, are each an integral sign and used to express the root idea. The best example of this class is the Chinese language.

Agglutinative or affixal languages are those in which the roots of the words do not change, but modifications of the meanings of these words are indicated by inflection or change of the terminations or affixes.

Inflectional languages are those which, as in the Latin, consist largely of stems which change the termination or suffixes to indicate case, tense, number, etc.

Historical Classification of Languages.—Languages are classified according to their origin, history, or nationality into eight large groups and one unclassified group as follows:—

A. Indo-European Languages, spoken by about 900 million people, first recorded in the Sanskrit, and used by the nations of Europe and their descendants in other parts of the world, as well as by the people of India, Persia, Afghanistan, the Kurds, Nepaulese, Caucasians, and others. These languages are subdivided into:—

1. **The Teutonic Languages**, spoken by about 300 millions.

(*a*) **English**, spoken by 185 millions all over the world.

(*b*) **German**, spoken by 90 millions in Germany (except on the northern borders), the Alpine countries of Austria, parts of Bohemia, Moravia, Silesia, Hungary, Transylvania, Bukowina, north of Switzerland, some of the Baltic provinces of Russia, in Luxemburg, United States of America, Brazil, Australia, and German colonies.

(*c*) **Swedish**, spoken by over 5½ millions in Sweden and in towns of Finland.

(*d*) **Danish**, spoken by nearly 5 millions in Denmark and Iceland.

(*e*) **Norwegian**, spoken in Norway.

(*f*) **Dutch**, spoken by 15 millions in Holland and the Dutch colonies.

(*g*) **Frisian**, in North Holland and on the islands in the North Sea, spoken by 1 million.

(*h*) **Flemish**, spoken by 3¾ millions in Belgium (Brabant and Flanders) and on the Netherland borders.

2. **Romanic-Greek** or **Romance Languages**, spoken by 177 millions.

(*a*) **French** or **the Langue d'oïl**, spoken by 75 millions in France, the west of Switzerland, Belgium, Canada, Algiers, and the French colonies.

(*b*) **Provençal** or **the Langue d'oc**, spoken by 12 millions in the south of France.

(*c*) **Walloon**, spoken by 2½ millions in the south Netherlands, Belgium, Luxemburg, and the north of France.

(*d*) **Spanish**, spoken by 60 millions in Spain, Central and South America (excepting Brazil), the West Indies, and other Spanish colonies.

(*e*) **Portuguese**, spoken by 25 millions in Portugal, Brazil, and Portuguese colonies.

(*f*) **Italian**, spoken by 45 millions in **Italy**, Corsica, south Tyrol, Görz, and the coasts of Istria and Dalmatia.

(*g*) **Rhaeto-Romanic** and **Ladin**, spoken by 100,000 in Grisons, the Engadine, and south Tyrol.

(*h*) **Furlanish**, spoken by 400,000 in Friuli (north and east Italy).

(*i*) **Roumanian**, spoken by 10 millions in Roumania, Bessarabia, east Servia, Bukowina, southeast Hungary, Transylvania, and (a dialect) in Greece.

(*j*) **New Greek**, spoken by 5 millions in Greece, European Turkey, Crete, Cyprus, adjacent islands, and on the coast of Asia Minor.

3. **Slavonic Languages**, spoken by 134 millions, of which the North Slavs number nearly 117 millions.

(*a*) **Russian**, spoken by 90 millions in Russia.

(*b*) **Ruthenian**, spoken by about 4 millions in east Galicia and north Hungary.

(*c*) **Polish, Mazurish**, and **Kassubish**, spoken by 17 millions in Poland, Galicia, and the borders of Posen, Silesia, Pomerania, and of East and West Prussia.

(*d*) **Czechish** or **Tcheckish, Moravian**, and **Slovak**, spoken by 10 millions in Bohemia, Moravia, Silesia, and north Hungary.

(*e*) **Wendish**, spoken by 100,000 in Saxony and Lusatia.

(*f*) **Servo-Croatian**, spoken in Servia, Bosnia, south Hungary, Istria, Montenegro, and Dalmatia, by 7¼ millions.

(*g*) **Slovene**, in south Styria, Carinthia, Carniola, Istria, and parts of Görz and Gradiska.

(*h*) **Bulgarian**, in Bulgaria and Turkey.

(*i*) **Albanian**, spoken by 1½ millions in Albania (north of Greece).

(*j*) **Lithuanian** and **Lettish**, spoken by 4 millions in Lithuania and East Prussia.

4. **Keltic Languages**, spoken by 3¼ millions, including: (1) Irish, (2) Gaelic in the Highlands of Scotland, (3) Welsh, (4) Manx, (5) Bas-Breton or Armorican, and (6) Cornish, which died out about the beginning of last century.

5. **Iranian Languages**, spoken by about 22 millions in southwestern Asia and the Caucasus, including New Persian, Afghan, Lesghian, Grusian, Kurdish, Pushtu, Ossetian, and others.

6. **Armenian**, spoken by about 3 millions in Armenia and in parts of Turkey, Hungary, Russia, and Persia.

7. **Indian Languages**, spoken by about 255 millions in all of the East Indies except parts of the Dekkan, Burma, and the Malay Peninsula.

The chief dialects are the Hindi, Hindustani or Urdu, Punjabi, Bengali, Mahrati, Sindhi, Gujarati, Uriya, Assamese, Nepauli, Kashmiri, Kafir, and others.

B. Ural-Altaic Languages.

1. Languages of the Finns, Esthonians, Livonians, Permians, Mordvidians, Samoyeds, Voguls, and Lapps of northern Europe, spoken by over 7 millions.

2. **Magyar** of Hungary and the language of the Szeklers in Transylvania, spoken by 8¾ millions.

3. **Turko-Tataric Languages** of the Osmanlis or Turks, Nogays, Kalmuks, Turcomans, or Turkmen, Kirghiz, Uzbeks, Yakuts, and others of Turkey and northern Asia, spoken by 23¼ millions.

4. **Languages of the Mongols**, Manchus, Samoyeds, Buryats, Tunguses, and others in northern Asia, spoken by 18 millions.

C. Caucasian Languages, spoken by the Georgians, Mingrelians, Lazisians, Circassians, Tchetchentses, Avars, and others, to the number of about 8 millions.

D. Malay-Polynesian Languages, spoken by about 35 millions.

1. **Malay** proper, spoken by the Sundanese, Tagalians, Dyaks, Alfurus, Kawis, Battaks, and others of the Malay Peninsula, the Sunda Islands, and the eastern part of Madagascar.

2. **Melanesian** and **Polynesian** or **Maori** of New Zealand and adjacent islands.

E. The Monosyllabic or **Isolated Languages**, spoken by about 450 millions of Chinese, Anamese, Tonkinese, Siamese, Cambodians, Shans, Tibetans, Talaings, Burmese, and others of southeastern Asia.

F. The Japanese-Korean Languages, spoken by about 48 millions of Japanese and 10 millions of Koreans.

G. The Hamitic-Semitic Languages, spoken by over 50 millions.

1. **Hamitic**, spoken by over 20 millions in north Africa, including the Berbers, Kabyles, Tuaregs, Copts, Gallas, Somalis, Sahos, Bejas, and others.

2. **Semitic**, spoken by 30 millions. It includes the Arabic, Ethiopic or Geez with its dialects Tigré and Tigriña, the Amharic, Harari, in Arabia, northern Africa, and some parts of Abyssinia; and the Hebrew, spoken all over the world. The descendants (around Palestine and in parts of Asia Minor) of the ancient Chaldeans, Syrians, Phœnicians, Babylonians, and Assyrians speak both Hebrew and Aramaic.

H. Bantu Languages, spoken by 27 millions in central and south Africa, including the Kaffirs, Zulus, Swahilis, Hereros, Bechuanas, Marutses, Bundas, Congos, Basutos, Matongas, and others.

I. Languages of the Interior of Africa.

1. Several **Negro** tongues, spoken by over 70 millions of Wolofs, Hausas, Bornus, Baghirmis, Nube, Fulbe, and others.

2. **The Clicking Languages** of the Hottentots and other south African races.

J. Dravidian Languages, spoken by over 60 millions in the Dekkan, southern India, and the west of Ceylon, including the Tamil, Telugu, Kanarese, and Malayālam.

K. American Indian Languages, spoken by about 10 millions.

1. **In North America** the languages of the Apaches, Iroquois, Pawnees, Sioux, Delawares, Crees, Dakotas, and others.

2. **In Central America** the Maya language, Otomi, Aztec, Zapotec, and others.

3. **In South America** the Quichua, Yunca, and other languages of the Peruvian group; the languages of the Araucanians, Obohuds, and others.

L. Unclassified Languages.

1. **The Basque**, spoken by 600,000 in the Pyrenees and around the shores of the Bay of Biscay.

2. The languages of such inhabitants of northern Asia and America as the Kamtchadales, Aleutians, Yakuts, Ostyaks, and Eskimos.

ENGLISH LANGUAGE.

Historically, English belongs to the western branch of the Teutonic languages, is in the Low German subdivision of that branch, and is most closely allied to the Frisian. Its growth is divided into three leading periods:—

1. The Anglo-Saxon Period (449-1100).
2. The Middle English Period (*c.* 1100-1500).
3. The Modern English Period (1500-the present time).

The English language was introduced into Britain (as the country was then called) in 449 by the Teutonic invaders, who came under the leadership of Hengist and Horsa to help the Britons or Celts to drive out the Picts and Scots who had descended from the north upon the lowlands. Very few words were borrowed by these Teutons from the Celts or Britons whom they drove into Wales and other parts of the island. Skeat gives only ten nouns (in his *Principles of English Etymology*) as being derived from this source. Among them are *bannock, mattock, down,* and *cart.* A few Latin words which the Celts had borrowed from their Roman conquerors came in in the same way: *street, mount, lake, castra* (as seen in *caster, cester,* and *chester*) a camp. But when Christianity was introduced by St. Augustine in 597, many ecclesiastical and general terms came in from the Latin; in all about 140 words, according to Skeat's estimate. Among them are *altar, mass, priest, psalm, temple.* Many words of Scandinavian origin were contributed by the Danish invaders of England. For example, *earl, husband, knife, take,* and *window.*

Middle English Period (1100-1500).—The early part of this period is known as Semi-Saxon. It is marked by a period of transition or breaking up of the language, to which process the Norman conquerors greatly contributed. The most noticeable change was the gradual dropping of inflections or changes in the terminations of words. Nouns and adjectives, that in the old Saxon had a distinct termination to indicate several cases and numbers, gradually but surely lost these, partly by the unwillingness of the Norman-French conqueror to observe or even to learn the inflections of the conquered Saxon, upon whom the Norman thought he conferred a sufficient favor by learning the root of the word. The introduction of an immense number of Latin words that had come through the French was another marked feature of this period. French became the language of the court, the camp, and the chase. We observe the French influence in the poems of Chaucer and Gower. The Renaissance added many Latin words.

Modern Period (1500-the present day).—The most distinctive feature of this last period of English is the remarkable enriching of the vocabulary by the introduction of words from nearly every language in the world. In the development of the mercantile and colonial policies of the empire, the language levied tribute upon all of the peoples with whom the sailors and merchants came in contact. We accordingly find in the language traces of the English contact with the Dutch in the carrying trade of the world; of the conquest of India; of contact with the Maoris of Australasia; with the Indians in Canada; with the Boers in South Africa; and of commercial relations with China, Spain, Portugal, and other nations. The ease and rapidity with which words of foreign origin are assimilated and incorporated into the English language are remarkable. The advances of science and its application to the useful arts have greatly increased the vocabulary by the introduction of scientific names and technical terms.

Richness of the Language.—Our dictionaries contain from 450,000 to 700,000 words, it is not to be supposed that all of these are by any means in common or frequent use. While Milton used but about 7,000 words in his poetical and prose writings, Shakespeare used over 25,000 words. In our daily intercourse it is possible that the vocabulary of the average educated person seldom exceeds 2,500 words; and that of the uneducated person contains less than 800 different words. Yet the extent of one's vocabulary may be regarded as a fair measure of one's education.

GERMAN LANGUAGE.

The German language ranks third among the great languages of Europe,—English first, Russian second, and French fourth. It is spoken by about 90 millions. The area in which the German language is spoken is not at all identical with the area of Germany, where there are about 63,000,000 people. Of these 6,000,000 are returned in the census as speaking foreign languages (mostly Polish). Outside of the empire German is the common language of nearly all of Luxemburg, the greater part of Switzerland, and parts of Austria-Hungary and Russia. Outside of Europe the greatest number of German-speaking people is to be found in the United States, whose population of German parentage exceeds 3,000,000, of which New York City returns 786,435, while the number of Pennsylvania Germans or "Pennsylvania Dutch" has never been accurately determined.

From the seventh century, the German language followed along two main divisions: the High German or Hoch-Deutsch and Low German or Platt-Deutsch. High German is the language of upper or southern Germany. In its development there may be traced three main periods:—

1. Old High German, from 700 to about 1100.
2. Middle High German, from about 1100 to about 1500.
3. Modern German, from about 1500 to the present time.

Low German or Platt-Deutsch is the language of lower or northern Germany and the Netherlands. It included, besides Platt-Deutsch, the Friesic; Anglo-Saxon or Saxon; Old Saxon; Dutch or Low Dutch with Flemish.

Modern or New High German.—The chief influence in determining the form of modern literary German was the translation of the Bible by Luther between the years 1522 and 1534. He chose the language of the Saxon Chancery for his translation. The diction prescribed by the several administrative chanceries or chancelleries determined the form of the language within the several jurisdictions. In the reign of Emperor Louis the Bavarian (1314-1347), the Imperial Chancery ordered its official documents to be written in German instead of Latin. While, therefore, the Midland German became a

literary language very early in the sixteenth century, it was not until after 1750 that the present form of the literary language became a national language.

SWEDISH LANGUAGE.

This language belongs to the northern branch of the Germanic family. It developed from the old Danish, which was spoken throughout the whole of Scandinavia up to the year 900. Then began a movement which slowly divided the old Danish into an eastern division of Danish and Swedish and a western division of Norwegian and Icelandic. The language between the years 900 and 1500 is known as Old Swedish. Until somewhat later than the year 1200, Swedish was written in the old Scandinavian characters known as runes. In the thirteenth century the use of the Roman alphabet began. The great difficulty which Swedish presents to a foreigner who attempts to learn it lies in the fact that the printed language abounds in silent letters. Another difficulty is the peculiar musical modulation of the voice upon which not only correct pronunciation but the very meaning of the word depends.

DANISH LANGUAGE.

The development of modern Danish dates from the year 1000, when wide dialectic differences in the common language of Scandinavia caused the formation of several languages. The Danes used Latin so extensively that their language was much affected by it in both syntax and vocabulary. The great agency in fixing the Danish vocabulary was the first literal translation of the Bible into Danish in 1550 under Christian III. By the Union of Kalmar in 1397, by which Norwegian independence was lost, the Danish language was substituted in literature and in the transaction of public business, though Norwegian was spoken in the country districts. This accounts for the slight differences between the languages of the two countries. The Danish itself underwent many changes, and that spoken in Norway is often called Dano-Norwegian and has been described as Danish with a Swedish accent. In 1537 Danish became the official language of Norway. The standard of Danish literary form was erected by Holberg (1684-1754). From 1750 until 1800 German and Danish were used in common just as in earlier days Danish and Latin were used, and German had a marked influence upon the Danish syntax and vocabulary. But in the last few years, because of the war with Germany, the German element is being rapidly eradicated and a purer Danish style obtains. The Danish and Swedish languages have much in common. The fundamental principles of these languages are the same, but the essential differences are in pronunciation. Danish pronunciation calls for the use of a peculiar closing of the glottis in some sounds which suggests to the foreigner the sound of a hiccough. Danish also lacks that peculiar musical modulation which is so marked in the Swedish. The language of the Danes in the United States is different from that of the mother country, especially in the vocabulary and in some of the syntactical forms. These are caused by the American influence.

DUTCH LANGUAGE.

This language is classified in the Low Frankish division of the Low German. It is so closely related to the Flemish language that the printed form of these two languages is practically identical. It is the language of the Netherlands. The Boer language of South Africa is a dialect of it. The Dutch call their language Nederlandsch; the Germans call it Holländisch. In its history and development the Dutch language has passed through nearly the same changes as the English language has experienced. There are three main periods:—

1. Old Dutch (to about 1100).
2. Middle Dutch (1100-1550).
3. Modern Dutch (1550-the present day).

The standard of Dutch vocabulary and spelling was erected by the publication between the years 1619 and 1637 of the *Statenbibjel* or authorized version of the Scriptures. Its spread among the people did much to fix the form of the Dutch language in its written form. In inflection and grammar the language corresponds closely to the German; the use of capitals, however, is the same as in English, and the Roman alphabet is used.

FLEMISH LANGUAGE.

The name given to the Low German language and literature of Belgium (French being also largely used in that country). It is especially spoken by the people of Flanders, Brabant, and of the provinces bordering on the Netherlands. Like the Dutch, the Flemish language is a dialect of the Old Low Franconian division of the Low German. The Dutch and Flemish spoken languages were so closely related that there was a great effort made in the sixteenth century to unite the two in one common written form. But when, in 1581, the northern provinces threw off their allegiance to the crown of Spain, declared their independence, and formed the Dutch republic, this hope was fruitless. The southern provinces, after the taking of Antwerp in 1585 by the duke of Parma, were separated from Holland, held by Spain until 1714, when they were given to Austria. Then in 1794 they were taken by France and held by her until 1815, when Belgium was united with Holland. When, by the revolution of 1830, Belgium was separated from Holland and made an independent state, French was made the official language, and all possibility of making the Low German a literary language in Belgium was apparently ended. But the "Flemish movement," begun in 1830 by Jan Frans Willems, has been successful in restoring the Low German as both a literary and official language in Belgium, where, by the laws of 1873, 1878, 1883, and 1886, it holds an equal position with the French tongue. In 1886, the Koninklijke Vlaamsche Academie was founded, which has advanced the cause of the Flemish language. It is not surprising that the Flemish language of to-day contains very many more words of French origin than does the Dutch.

FRENCH LANGUAGE.

When, in the first century B. C., Julius Cæsar conquered Gaul, the Latin language was imposed upon the Gauls or Celts, who spoke a language

similar to that of Brittany and of Wales. During the four centuries of Roman rule in Gaul, the use of the Latin language became universal. When, in the fifth century, the Visigoths, Burgundians, and Franks conquered Gaul, and the Franks ultimately ruled all of the country, the conquerors adopted the language of the people. It is remarkable that the Franks contributed only about 400 words of German origin to the common speech. After a transitional period of six centuries the language spoken in Gaul differed sufficiently from that of Rome to be distinguished by the name Romanic.

A marked difference was noticeable between the speech of the people in the north of France and that of the people in the south. The dividing line between the two peoples may be drawn from La Rochelle through Limoges to Grenoble. The word for *yes* in the north was *oïl;* in the south *oc.* The form of speech used in the north was called the *langue d'oïl,* the parent of the French of to-day; and that in the south, *langue d'oc,* the parent of what is now called Provençal, spoken by 12,000,000 people in the south of France.

Attempts to fix the language began in the sixteenth century, after the reduction of endings and of inflections which had occurred during the Middle Ages. The influence of Catherine de' Medici caused the adoption of many Italian customs at the French court, and the war with Italy caused the adoption of many terms pertaining to warfare. These two influences brought over 500 words of Italian origin into the language. In the seventeenth century about 100 words of Spanish origin were incorporated. The Académie Française was founded in 1635, and in 1694 published a dictionary which had a marked influence in limiting the language. A number of new words came in as a direct result of the Revolution; and in the nineteenth century a very considerable number of English words were introduced and naturalized. In 1878 the Académie published an edition of the *Dictionnaire* in which 2,200 new words obtained from other languages were incorporated. This came about as a direct result of the cosmopolitan influence upon the language, which has always been regarded as the most refined among the languages of the world, though English is now the most practical. This disturbance of the purity of the language is deplored by many who have followed in the ways of Voltaire in the refinement of the French language.

SPANISH LANGUAGE.

Spanish is a Romanic language that has grown out of the Latin which was imposed by Roman conquerors upon the Iberian peninsula. There are now more Spanish-speaking people in the New World than there are in Spain. There are five leading dialects in Spanish: (1) Asturian, (2) Leonese, (3) Aragonese, (4) Andalusian, and (5) Castilian. The standard literary speech is the Castilian. Of the foreign elements in the language, the words of Arabic origin are most noticeable. They were infused into Spanish during the occupation of the country by the Arabs. The majority of such words have the characteristic Arabic article *al* before them.

PORTUGUESE LANGUAGE.

A Romanic tongue derived from the Latin of the Roman soldiers. It most closely resembles the Spanish language. The influence of both Spain and France is to be seen in the vocabulary and the grammar of the language.

ITALIAN LANGUAGE.

The Italian language is a Romanic language, one of the several descendants of the Latin. Its chief characteristic is that it does not depart so far from the original Latin as do the other languages of this group. Between the spoken languages or dialects of the Italian peninsula and the written language there is a wide difference. There are to be found several hundred patois and dialects spoken in Italy, and these are in some cases so widely different that one born in the south of Italy makes himself understood only with the greatest difficulty by those in the north. The Italian of culture and of literature is based upon the Tuscan dialect, for it was in this form that Dante, the founder of the literary language, wrote his works. The Tuscan dialect has become the fixed standard of literature used by most of the great writers since Dante's time. The Accademia della Crusca published a dictionary of Tuscan in 1612 as the standard of purity of the national language.

ROUMANIAN LANGUAGE.

A Romanic language founded upon the Latin, and now spoken in three dialects:—

1. **Daco-Roumanian** by 9,000,000 people in Roumania, Transylvania, Bessarabia, the Hungarian Banat, and Bukowina.
2. **Macedo-Roumanian** by several hundred thousand people in Macedonia, Albania, Thessaly, and Epirus.
3. **Istro-Roumanian** by 3,000 people in Istria.

Owing to the Slavonic influence, the language has acquired more words of Slavonic origin (about 3,800) than there are words from the original Latin (about 2,600). It is only within the last fifty years that the language has been freed from the use of the Slavonic alphabet.

NEW-GREEK LANGUAGE.

The language of ancient Greece comprised a number of dialects. After the conquest of the world by Alexander the Great (330 B. C.) and the spread of the language, a "common dialect" based upon the Attic was generally adopted as the Greek language. It is the Greek of the New Testament, of Aristotle, Plutarch, and Lucian. This "common dialect" gradually underwent changes as a spoken language, and from it the New-Greek now spoken has descended. The differences between ancient and modern Greek are not so great as are supposed by many. Naturally there have been great additions to the vocabulary in order to keep pace with inventions, improvements, and the onward march of civilization. The alphabet is the same. The rough breathing is still written but is never used. Accents are still written, but they are now indications of stress as in English. The dual number is no longer used. Only a few verbs have the middle voice. The dative case is nearly always replaced by the genitive or

accusative with a preposition. There is no optative mood, the subjunctive taking its place. There is a strong movement to purify the language and to strive for a stricter conformity to ancient usage.

RUSSIAN LANGUAGE.

This most important of the Slavonic languages is spoken by over 90,000,000 people in Russia and by nearly 4,000,000 Ruthenians in east Galicia and in north Hungary. The alphabet now used was introduced by Peter the Great, and the present form of the language was practically settled in the sixteenth century, though Russian, as a literary language, dates only from the middle of the eighteenth century.

The three dialects are:—

1. **Great Russian,** spoken by 60,000,000 people in the north, the center, and the east of Russia, but in its greatest purity around Moscow. It is the basis of literary Russian.
2. **Little Russian,** spoken by over 20,000,000 people in the south and the southwest of Russia, and by the Ruthenians in Austria-Hungary.
3. **White Russian,** spoken by about 5,000,000 people in the west of Russia, and around Lithuania.

POLISH LANGUAGE.

The second in importance among the Slavic languages, is spoken by about 16,000,000 people in the parts of Russia which at one time formed the kingdom of Poland, and by over 1,000,000 persons in the United States. The language, like the people, has suffered many vicissitudes. When Christianity was introduced, about 965, Latin predominated. The large number of German settlers in Poland brought many of their common words into the language. The literary classes added many French words, and Russian technical and other terms have been freely incorporated. But all of this has recently been strongly and successfully opposed by the Romanticists and a greater purity in the literary standard has resulted. There are many dialects, of which the most important are: **Great Polish,** in Posen; **Little Polish,** an extremely euphonious dialect spoken in Galicia; **Mazurish** or **Masurian,** spoken in the northeast around Warsaw; **Lithuanian Polish,** used by Mickiewicz and other writers; **Prussian** and **Silesian Polish.** The alphabet is Latin, slightly modified.

CZECH OR BOHEMIAN LANGUAGE.

The Czech (chěk) or Tcheck language belongs to the Slavic group. Of the 6,000,000 who speak the Czech language, 3,650,000 are found in Bohemia; 1,500,000 in Moravia; 130,000 in Austrian Silesia; 300,000 in other parts of Austria-Hungary; 100,000 in Germany; and 250,000 in the United States. At first the Slavic alphabets were employed by the Czechs, but when Roman Catholicism replaced the Greek Church the Latin alphabet was used. As this could not express all of the sounds of the language, *c*, *s*, and *z* were made additional letters by adding diacritical marks to them, and they then took the sounds of *ch*, *sh*, and *zh* respectively.

SLOVAKIAN LANGUAGE.

This is spoken by 2,500,000 in northwest Hungary and the United States. It is very closely related to the Czech language in form, vocabulary, and syntax.

SERVO-CROATIAN LANGUAGE.

One of the Southern Slavic languages. The Servo-Croatian language is spoken by about 8,000,000 persons in Servia, Montenegro, Bosnia, the Herzegovina, Old Servia, Croatia, Slavonia, southern Hungary, Istria, and Dalmatia. Among the Croatian Catholics the Roman alphabet is used; the greater part of the Servians, who belong to the Greek Orthodox Church, use the Kirillitsa or Cyrillic alphabet, a form of the Russian introduced by Cyril. The language differs in minor phonetic peculiarities from the Northern Slavonic, and is one of the most musical and expressive among the Slavonic group.

BULGARIAN LANGUAGE.

One of the Southern Slavonic languages and spoken by about 5,000,000 persons. It has fewer inflections of words than have the other languages of the group. Its vocabulary has drawn from the Turkish, Albanian, Serbian, and Roumanian languages. Among the dialects are the South Thracian, Rhodopian, and West Macedonian. "Old Bulgarian" is the ancient church language, which was the written language. Middle Bulgarian dates from the twelfth century, but Turkish influence interfered with its development until well into the nineteenth century. The Danubian dialect now prevails as a literary language. The Cyrillic alphabet is most generally used. From the tenth to the middle of the eighteenth century, Old Bulgarian was the literary language of Russia.

NEW PERSIAN LANGUAGE.

The Iranian language now spoken in Persia. It dates from the ninth century. The Middle Persian is called Pahlavi, from which the New Persian differs but slightly. The invasions by the Mohammedans enriched the Persian vocabulary by a great number of words which have not only gained a permanent place in the language but whose use marks elegance of style. The dialects are divided into three groups: Pamir, Caspian, and Central.

ARMENIAN LANGUAGE.

The Armenian language was for a long time regarded as one of the Iranian languages; and this belief was supported by the great number of Iranian words which the language had borrowed. But, mainly through the investigations of Heinrich Hübschmann, it has been made clear that the Armenian is an independent language and is one of the great members of the Indo-European group. The language is divided into the Old or Classical Armenian, which is remarkably pure; and the Modern Armenian, of which there are many dialects. The alphabet consists of thirty-six original letters, to which two more were added in the twelfth century. The alphabet was devised and introduced by Mesrob, a bishop of the Armenian Church, in the fifth century, and it is probable that he made free use

of the Greek sources. The spoken language is marked by harsh-sounding consonantal combinations and its general effect upon a stranger's ears is guttural.

HINDUSTANI LANGUAGE.

The name given to the language of northern India. It is a dialectic form of the ancient Sanskrit much changed through the Prakrit of the middle periods. It is divided into about sixty subdialects; the standard of correct speech is the dialect spoken in Delhi, Agra, and Mathura. The language has borrowed freely from the Turkish, Arabic, Persian, and Dravidian languages. This corrupt form is the "Urdu"; the purer form is called "Hindi." The latter is written in the Devanagari alphabet, like Sanskrit and Mahrati; "Urdu" is written in Perso-Arabic script. It is estimated that the Hindustani in some form is spoken by about 100,000,000 persons within an area of 248,000 square miles.

PUNJABI LANGUAGE.

The modern language of the Punjab. It has been regarded as an archaic form of the Hindi, corrupted by many words of Arabic and Persian. It does not contain so large a proportion of Sanskrit words as do the Bengali and Uriya languages. Punjabi contains many dialects, the chief of which are the Multani in the south, Jathki in the center, and Chibhali-Dogri in the north. The official alphabet of the government is the Arabic, while there are several alphabets in popular use.

BENGALI LANGUAGE.

This modern Indian dialect is closely related to the Hindustani and to the Uriya. It is spoken by about 42,000,000 persons. Among the many dialects the Calcutta is the standard. There are more words of Sanskrit origin in the Bengali than in any other modern Indian language. The Bengali alphabet is a beautiful form of writing derived from the Sanskrit or Devanagari.

MAHRATI LANGUAGE

The language of western India, spoken by nearly 20,000,000 people. Of the many dialects, the Dakhani and the Konkani are the chief. The standard of correct speech is the Deshi, spoken near Poona, in the Dekkan. Around Goa there is to be found a large incorporation of Portuguese words. The Mahrati in form very closely adheres to the ancient Sanskrit. The alphabet is the Devanagari in which Sanskrit is written.

SINDHI LANGUAGE.

The language of Sindh is noted for the large number of Prakrit elements which it contains. It was the first of the languages of India to come under Mohammedan influence and contains a great many Persian and Arabic words. It also contains probably the fewest number of Sanskrit words. It has many dialects, of which the Sirai, near Haidarabad, is the standard. The two alphabets in use are the Arabic and the Devanagari.

GUJARATI LANGUAGE.

The language of Gujarat, in western India, is spoken by about 11,000,000 persons. It is of Prakrit origin and contains many words of Sanskrit, Arabic, and Persian origin. The alphabet is derived from the Devanagari or Sanskrit script but the bar above the letters is omitted.

FINNISH LANGUAGE.

The Finnish language, or Suomi, as the natives call themselves, is spoken by the Finns at home in Finland, in Lapland, the Baltic provinces, on the banks of the Volga, and in West Siberia. It and the Magyar, the language of Hungary, are the most highly developed of the Finno-Ugric branch of the Great Ural-Altaic family. Over 2,000,000 people speak Finnish. There are three important dialects:—

1. East Finnish or Karelian,
2. South Finnish,
3. West Finnish.

The East Finnish or Karelian is the oldest and most imperfectly developed; the South Finnish is the chief medium of the mass of Finnish literature. Though there is no article used with nouns, and gender is not indicated, yet there are fifteen cases whereby the noun expresses relations which in English are expressed by prepositions; only the present and past tenses of verbs are found, the future tense being expressed in a roundabout way. Despite the limitations which have been noted, the language is capable of expressing the finest shades of meaning.

HUNGARIAN LANGUAGE.

This language is called by the people who use it, Magyar. It is one of the Ural-Altaic languages and is one of the few European languages which do not belong to the Indo-European group. For a long time, Hungarian was thought to be related to the Turkish language, but it is now clearly decided that it belongs to the Finno-Ugric group. The roots are monosyllabic and affixes are added to the unchanged roots, though the affixes are changed to conform to very decided laws of euphony. This process of upbuilding of words may be carried to an almost incredible degree, and, though the roots are of one syllable, some of the words made from them are of very many syllables. The verb is the chief word in the sentence and is capable of being made to express the finest shades of meaning. All of which is most surprising when it is considered that there is no grammatical gender and no verb "to have" in the language.

TURKISH LANGUAGE.

The Turkish is the most important of the Finnish-Ugrian group of languages. In ancient times the Turks had alphabets of their own, but since their conversion to Mohammedanism they have used the Arabic alphabet. They have increased the 28 letters of the Arabic alphabet to 33 by adding dots to five of the characters. The root of every word is unchangeable, but prefixes and suffixes are lavishly used. Each Turkish verb is capable of over 25,000 changes to indicate all of the moods, tenses, numbers, and persons; and all of this seemingly appalling complexity is brought about by memorizing some forty-four syllables or enclitics with which singly and in combination the building is done.

The vicissitudes to which the Turks have been subjected have brought about a great number of dialects among the people who speak Turkish, so much so that while any Turk might be able to satisfy his simplest needs in any part of the empire, an inhabitant of Bokhara, beyond the Caspian Sea, would require the services of an interpreter in Constantinople.

MONGOLIAN LANGUAGE.

The language of the Mongols is one of the Ural-Altaic group, very similar to both the Manchu and the Korean. It is remarkably free from dialectic variations. The alphabet was introduced in the time of Genghis Khan, having been borrowed from the Uighur Turks who had, in their turn, derived it from the Syriac. It consists of seventeen consonants, seven vowels, and five diphthongs. The book language differs from the spoken language.

GEORGIAN, IBERIAN, OR GRUSINIAN LANGUAGE.

This is the chief of the Caucasian group of languages. The chief characteristics of the entire group are the few vowels and the difficult combinations of consonant sounds, gutturals, and sibilants. The language as written is a modified form of the Armenian alphabet, a translation of the Bible dating back to the eighth century.

CHINESE LANGUAGE.

One of few very rudimentary forms of speech that have maintained a lengthy endurance is the language of the Chinese. It is a monosyllabic language. Each word is uttered by a single effort of the organs of speech and conveys a complete idea. It has no inflections and no parts of speech. Case, gender, number, and person are indicated not by any change in the word but by the addition of another word to the sentence. Shades and changes of meaning in the one word are made by a change of tone, and some words have as many as seven separate tones. It is one of the most difficult languages in the world to learn for that reason and also because one must learn the two or three different forms of the book language and the spoken languages in their many dialects. There is a vocabulary of 24,235 separate words, and the addition of rare and obsolete forms brings the total in Kang-hi's dictionary up to 44,449. The vocabulary of daily life, however, does not exceed 3,000 words. To learn the written language the first step is to learn the 214 signs. There are only 400 sounds in the language, but these are increased to the desired number by using different tones and by the aspirates or breathings in the case of vowels. The word forms employed in the written language are not in any way an alphabet of the language for there is none; they form rather a dictionary. Two forms of writing are in general use,—the "pattern" and the "running" hands.

JAPANESE LANGUAGE.

The Japanese is not at all related to the Chinese language or the Aino language of the aboriginal inhabitants of the Japanese Archipelago. It is most nearly related to the Korean language in structure, but less in etymology. The languages of the people of Loo-choo and other islands around Japan are its nearest neighbors and closest relatives. The spoken and the written forms of the language differ so much that two sets of grammars and dictionaries are needed. Since the ninth century the learned people have spoken Chinese, just as in some other countries Latin was the language of the learned. But the Chinese spoken in Japan is based upon an obscure and rather traditionary dialect, so that it is unintelligible to both the common people of Japan and even to the Chinese themselves. Previous to the introduction of Chinese into Japan there was no writing. The Japanese use the Chinese characters in writing, but as these are representations of monosyllabic words in Chinese, their use by the Japanese in representing the polysyllabic words which their language contains only adds to the already too great confusion of both speech and writing. Among the many grammatical peculiarities which the language presents may be noted that nouns do not distinguish gender, number, or case; there are no personal or relative pronouns, or article; prepositions are placed after and not before the words with which they are connected by sense; the verb has only three tenses, present, past, and future, but an almost endless number of moods; the verb has neither number nor person; adjectives have only the one form of the positive degree, other degrees of comparison being indicated by added words; the native Japanese numerals extend only to ten, the Chinese are used as well and for the higher numbers. Every Japanese word ends with a vowel sound.

KOREAN LANGUAGE.

The Korean language occupies a place midway between the Japanese and the Mongol-Tatar. Chinese is the literary and official language but not the language of the common people. The Korean and the Chinese languages are entirely distinct, though it is inevitable that many words of Chinese origin and form should be found in the Korean language. There are eleven vowels and fourteen consonants in the Korean alphabet, which goes by the name of Onmun or the "vulgar characters." There is no indication of gender; no plural terminations; no grammatical means of distinguishing animate or inanimate objects; but the variety of form and the expressiveness of the Korean verb are almost unequaled in any other language. Over one fifth of the words in the language are verbs and they take on a variety of forms. Words may end with either a vowel or a consonant.

ARABIC LANGUAGE.

Of the Semitic group, the Arabic and some Aramaic dialects spoken in Palestine, Mesopotamia, Kurdistan, and Armenia are the only languages which may in any sense be regarded as living languages. Arabic is divided into:—

1. Old Arabic,
2. Modern Arabic of
   - (*a*) Syria,
   - (*b*) Mesopotamia,
   - (*c*) Egypt,
   - (*d*) Tunis,
   - (*e*) Malta, and
   - (*f*) Oman and Zanzibar.

3. South Arabic.
   (*a*) The Minean and Sabæan inscriptions.
   (*b*) Some dialects of southern Arabia.

The alphabet consists of 28 characters, being distinguished by 11 diacritical marks. Writing is from right to left as in Hebrew and Aramaic and the opposite of our method. The language has an exceedingly extensive vocabulary and the verbal forms are very complicated. The Arabic is the common language to-day in Palestine, Syria, Mesopotamia, Arabia, Egypt, northern Africa, and Malta.

ARAMAIC LANGUAGE.

The Aramaic, the language which Jesus spoke in his daily life, is one of the divisions of the Semitic. It was spoken over the whole range of Semitic influence, except in southern Arabia and Abyssinia. Aramaic encroached upon the Hebrew in Jerusalem as early as the return of the Jews from the Babylonian captivity, and became the popular language; while Hebrew became more and more the sacred and literary language. There is to-day a great Christian literature in Aramaic dialects produced by missionaries in the Holy Land.

AFRICAN LANGUAGES.

1. **Semitic,** Arabic and Abyssinian.
2. **Hamitic,** Libyan.
3. **Hottentot,** Bushman.
4. **Bantu Languages,** embracing nearly all of Africa south of the equator. The type is the language of the Zulu Kaffirs.
5. The **Negro Languages,** spoken by the negroes between the equator and the Sahara, present a remarkable complication of linguistic difficulties which have not yet been solved.

The only one negro dialect which has risen to the development of a writing and an alphabet of its own is the Vei, on the west coast near Cape Mount. It was invented in 1834 by a native, Doalu Bukere, and several books have been written in it. Missionaries, however, decline to use it, and it is lapsing. Elsewhere throughout Africa writing is almost exclusively confined to the white race, who use the Semitic or European characters.

UNIVERSAL LANGUAGES.

Several attempts have been made to build up an artificial language which can be most readily acquired by persons of all nations, with a view to easy and rapid communication. In the several systems which have been presented, the avowed purpose has been to facilitate business, travel, and correspondence, rather than to obtain a medium for literary expression.

In political use the French language has approached universality. In commerce, trade, and in diplomatic use English has gained ground rapidly.

As far back as 1688, Bishop Wilkins published his *Essay toward a Real Character and a Philosophical Language,* in which, by a system of characters much resembling modern shorthand. he sought to provide a common medium of communication.

Volapuk.—Johann Martin Schleyer, a German priest, in 1879, published his "world-speech," Volapük. He chose elements which were common to several languages, reduced them to their simplest forms (which often rendered them unrecognizable), and adopted an alphabet of 27 letters, to which he gave their Latin, German, or French values. A system of upbuilding upon the roots required the frequent use of grammar and dictionary. The plan attracted world-wide attention. Societies to promote it sprang up everywhere, and the language spread widely for a time. But defects, limitations, and faults were recognized by its students. The board of directors opposed radical changes proposed, and amid dissensions the scheme nearly collapsed. Reorganization gave the plan new life. Changes were made, and under the directors, Woldemar Rosenberg (1893-1898) and Rev. M. A. F. Holmes (1898-1903), practically a new language was adopted,—*Lingu international* or *Idiom neutral,* "the neutral language."

Esperanto.—An artificial language invented by a Russian scholar, Dr. L. L. Zamenhof, of Warsaw, in 1887. The essential difference between it and Volapük lies in the fact that the elements of the words are common to all of the European languages. Upon this is based the hope that it will be most easily acquired by all. The pronunciation is invariably phonetic. There are only 2,500 root words, and yet the language is wonderfully rich in power of expression, a quality which is secured by numerous affixes and by facility of combination. There are no exceptions to grammatical rules. The system was practically unknown in the United States before 1905. Since then the study has been enthusiastically taken up by several societies, and its spread has been both marked and rapid.

The Esperanto movement in New York is supported by the Society for the study of Esperanto with 2,000 members, and 2,000 others belong to the *North American Review* Society. There are probably 6,000 other Esperantists throughout the United States.

But in the latter part of 1908 a strong reaction took place in the United States against Esperanto. It was stated by many of its former strong adherents that the language inadequately met the requirements of a universal speech. In consequence many fell away in their support. Then followed the criticism that the device in no way met the requirements of a literary language, that nicety of expression could not be conveyed by it, and that it did not fulfill the demands of the best vehicle for conveying thought.

Ido.—This system, sometimes called Esperanto Simplified, or Internacione Linguo, is spoken of as the quintessence of European languages. It has been adopted by the New York Society for the Study of Esperanto as a substitute for Esperanto. In Ido all arbitrary roots and words are thrown aside and the choice of roots is in every case decided by a resemblance to the greatest number of European roots. This resemblance is called the "maximum internationality." Simplicity and regularity are aimed at; and there are no exceptions and no unnecessary rules. Already much literature has appeared in Ido and the accomplishment of its purpose is confidently predicted by its enthusiastic supporters.

AMERICANISMS.

Americanisms are not barbarisms or vulgarisms. America has made important and valuable additions to the English language. In America the English language has grown, expanding in certain directions, contracting in others, and sharing in the great process of evolution which every language undergoes. The language in America to-day is by no means the same as that brought by our forefathers from England. At the same time it must be remembered that the language in England to-day is by no means the same as it was when our forefathers left England. In the minds of some the term "Americanisms" implies undesirable, inelegant, or even vulgar additions made to the English language by Americans. This is by no means true either in fact or in definition. By Americanisms are meant those different meanings and uses of the words common to both countries which prevail in America; and also the words new to the language which Americans have introduced. Among the classes of words which are regarded by students of the language as being more or less peculiar to America are:—

1. Archaisms, obsolete meanings in England.
2. Words used in a different sense in America from that in England.
3. Words which in America retain their old meaning but have taken on a new meaning in England.
4. English colloquial or provincial or dialectic words which have been incorporated into the language in America.
5. Words which the new conditions or new products in America have required to be newly coined.
6. Contributions from the French, Spanish, and Dutch languages, which America has received but England has not, chiefly because she has neither need nor use for them.
7. Words of American Indian origin.
8. Peculiarities of negro dialect and of African words used by negroes.

It is not at all strange that there are some differences between the language of the people of England and those of the United States. The most remarkable thing is that there are so few. In the narrow limits of England, dialects exist so different from each other that it is with difficulty that some of the people are understood by others. Three hundred years of separation from England, all of the time geographically and part of the time politically, is of itself enough to account for many of the changes. Among these is the retention by Americans of the older meanings of many English words, which have become obsolete or archaic in England. Americans continue to use many words as their forefathers learned them in England in the olden time. The large influx of foreigners into America is responsible for the introduction of many words which have become naturalized in this country but are unknown in England. The settlement of new regions, the introduction of new arts, and the new political and social conditions under which Americans live are also responsible for many changes.

Literary and commercial intercourse are large and powerful factors in preserving the similarity of language. Despite these, some radical changes in the language have been brought about in America.

A List of Words or Meanings Peculiar to America, with Their Sources.

ADOBE. Sun-dried brick used in Mexico and other countries having small rainfall. Introduced directly from the Spanish.

BACKWOODS. A newly coined word used freely in the United States and Canada to designate any thinly populated or remote districts away from cities.

BAGASSE. A plantation term to describe the refuse of sugar cane after crushing and extraction of the juice. Derived from the Spanish *bagazo* and the French *bagasse*. Contributed by the planters.

BARN. An American use of this word is a stable for horses. The English use the word stable in that sense, and restrict the use of barn to a place in which to store grain, hay, etc.

BAYOU. Used in the southern United States to denote the outlet of a lake, a member of a delta of a river, or a sluggish water course. Derived from the French *boyau*.

BEAD, TO DRAW A. A phrase of western American origin meaning to take deliberate aim. Draw in the West is a mining term indicating lifting or raising; the bead is the round or globular sight on the fore part or muzzle of the barrel of a rifle or revolver.

BED ROCK. A mining term used to describe solid rock underlying loose detrital masses such as sand and gravel.

BLAZE. A white spot made on a tree to show a boundary, trail, or path in the woods.

BLOODY SHIRT. A political contribution signifying to arouse indignation or resentment by referring in a demagogic manner to murders and outrages committed by political partisans, especially by members of the Kuklux Klan during the period of reconstruction in the South. The bloody shirt is the symbol of murder or outrage.

BOARDS. In America, boards are more than 4½ inches wide and less than 2 inches thick. The English use the word deals where we use boards.

BOGUS. A trade contribution originally used to describe counterfeit money; gradually extended to apply to anything based on sham or false pretense. Much conjecture has been indulged in tracing the origin of the word, some suggesting bagasse, others tantrabogus. It was used in 1827 in the Painesville (Ohio) *Telegraph* to describe a counterfeit money apparatus.

BONANZA. A mining term denoting a rich mass of ore; hence a profitable enterprise, good luck. Derived from the Spanish *bonanza*, meaning good weather at sea, prosperity, success. To strike a bonanza.

BOODLE. A political contribution referring to the fraudulent obtaining of money in public service. Derived from the Dutch *buidel*, property, estate, etc. Largely replaced by the modern word graft.

BOSS. A Dutch contribution from *bass*, signifying an overseer or superior.

BROOM CORN. The *Sorghum vulgare* grown extensively in the United States. From its panicles brooms and brushes are largely made. A plantation contribution.

BROTTUS. A word used by the negroes of Georgia to denote a small gift. It is also used to denote a quantity added or thrown in as a gratuity or "for good measure." Often spelled brotus. The word is of Anglo-Saxon origin.

BUCCRA, BUCKRA, or **BOCKRA.** A word, supposed to be of African origin, used by the negroes of the southern United States, the West Indies, and elsewhere to denote a white man.

BUGGY. In England, a one-horse, two-wheeled vehicle without a top. In America, a light, one-horse, four-wheeled vehicle, usually with one seat, either with or without a top or hood. The word is of Anglo-Indian origin.

BUMMER. A German contribution from *bummler*, a braggart or wanderer. The word is both colloquial and slang, especially in its contraction, bum, which signifies a drunken loafer.

BUNCOMBE. A political contribution signifying empty or meaningless talk; pointless speech-making. Wheeler's *History of North Carolina* says that a member for Buncombe in North Carolina tired out the members of Congress with an unentertaining speech which he admitted was only for Buncombe. Sometimes spelled bunkum.

BUTTE. A term used on the upper Missouri and west to the Pacific to denote a hill or mountain which is so conspicuous that it may be used as a landmark. The word is taken directly from the French, and its use is in a great measure a relic of the former occupancy of the Northwest by the French.

CACHE. A word introduced by the Canadian voyageurs around Hudson Bay. It means to conceal or a place of concealment, and relates to stores of provisions.

CALICO. In England, this is white or unprinted cotton; in the United States, it is printed or figured, never plain. First imported into England from Calicut, India, whence the name.

CANYON. The use of this word is peculiar to the United States; very rarely used in Mexico; and not at all in Spanish South America. A gorge or narrow valley with precipitous sides throughout the Cordilleras.

CARPETBAGGER. A political contribution describing those Northerners who, during the reconstruction in the South, sought for political office there and to influence the negro voters for unworthy purposes. An opprobrious epithet applied to any unpopular Northerner in the South.

CAUCUS. A political contribution describing the meeting of the members of a political party for conference. The word appears in the diary of John Adams under date of February, 1763. It originated in Boston, Mass., and some have conjectured that it is a corruption of *Calker's meeting*; others think this improbable.

CHINQUAPIN. A word of American Indian origin denoting a kind of dwarf chestnut (*Castanea pumila*) ranging from Pennsylvania to Texas; also the *Castanopsis chrysophylla* of the Sierra Nevada and Cascade mountains.

CHOWDER. A dish in which the chief ingredient is clams or other fish. Supposed to be derived from French *chaudière*, a caldron.

CLEARING. A word of American origin indicating a tract of land cleared for cultivation.

CLEVER. An American use of this word is in the sense of charitable, hospitable, or good-natured. In England it is now restricted to skillful or intelligent.

COLD SLAW (properly *Cole Slaw*, or *Cabbage Slaw*). A Dutch contribution from *kool slaa*.

CONDUCTOR. This official on an American railway train is not known in England. The officer who most nearly takes his place there is called the guard; but his duties and authority are not nearly so extensive.

COPPERHEAD. A political contribution descriptive of a Northern sympathizer with the South. Derived from the venomous serpent of that name.

CORN. In the United States the word is restricted to mean maize or Indian corn; in England it is generally applied to wheat, rye, oats, and barley; in Scotland, to oats; in Ireland, to barley.

CORN SONGS. Used by the negroes in Maryland for harvest songs.

CORRAL. A term contributed by Western ranch life in America. It is the pen or inclosure into which horses or cattle are driven. A colloquial use of the verb to corral is to express the idea of capturing, making a prisoner of. The word is of Spanish origin and is accented on the last syllable.

COWBOY. A term contributed by American ranch life, indicating a man employed to care for grazing cattle and generally doing his work on horseback.

CRACKER. Used in the United States to denote the lower class of white hill dwellers of Georgia, Florida, and other Southern States. It is supposed to signify that his diet is chiefly cracked corn.

CRACKER. In the United States this is a hard, thin, crisp biscuit. A purely American use of the word.

CRACKLING. In the United States this word is used to denote the crisp residue from hog's fat after the lard has been tried out.

CRACKLINGS. A word used by negroes in the Southern States to denote a sort of bread containing roasted pork rinds.

CREOLE. A native of Louisiana of French or Spanish descent. Derived from the Spanish *criollo*.

CROW, TO EAT. A political contribution signifying doing something distasteful or humiliating; swallowing one's words; to be particularly mortified.

CRULLER. A Dutch contribution from *kruller*, to twist. It is a twisted doughnut.

DARK HORSE. A political contribution derived from horse racing, where a horse whose former performances are not known and little information can be obtained concerning it is called a dark horse. A candidate unexpectedly brought forward at a political convention about whose past career little is known.

DEPOT. An American use of this word in connection with railways was recently general in speaking of the passenger depot and the freight depot. The word station, commonly used in England, in this connection, is becoming more general in America; and freight house is also growing in use.

DIGGINGS. A mining term originally descriptive of a place where mining is carried on; but, in a colloquial sense in the western United States and in Australia, used for region, place, or locality generally.

DOUGHFACE. A political contribution describing a Northern politician who was inclined to accede to the demands of the South just before the war.

DRESS. American use of dress is often restricted to the garment worn by women which the English call a gown or robe.

DRUMMER. A trade contribution applied to a traveling salesman or commercial traveler; one who drums up trade.

EDITORIALS. The opening articles of a newspaper are called in America editorials; in England they are leaders; and in France they are *chroniques*.

ELEVATOR. In England this passenger and freight hoisting apparatus is called a lift.

FALL. Used when the English would use autumn. An old English use. It is the English people that have changed the use of this word.

FAVORITE SONS. A political contribution describing possible presidential candidates from the several states.

FENCE-RIDING or **TO BE ON THE FENCE.** A political contribution indicating a state of indecision or of neutrality concerning parties, persons, or questions.

F. F. V'S. An abbreviation for "first families of Virginia." A humorous allusion to the highest social class in the South.

FILIBUSTER. A political contribution to denote a member of the minority who resorts to obstructive or irregular tactics to prevent the adoption of a measure favored by the majority.

FIRE-EATER. A political contribution denoting a violent, bitter, Southern partisan before the war.

FIRE, TO FIGHT. An American contribution alluding to the desperate efforts of frontier settlers to prevent the spread of forest or of prairie fires.

FLESHY. The old English sense of stout, no longer prevailing in England, is preserved in America.

FOREHANDED. An old English sense of being well circumstanced regarding property or money has survived in America. The English use is now limited to the sense of early, timely, or seasonable.

FRESHET. The English use flood. An old English word, which the English themselves have changed.

GARROTE. To put to death by the garrote. Taken directly from the Spanish.

GERRYMANDER. A political contribution denoting an arbitrary arrangement or rearrangement of the political divisions of a state without regard to natural or proper boundaries, for the purpose of changing the political aspect or vote of the district. So called from such redistricting of Massachusetts in 1811 when Elbridge Gerry was governor.

GONE COON. A slang expression current in the United States and indicating one in a very bad way or in a hopeless condition or situation. Coon is an abbreviation of raccoon.

GOOBER. A term in the southern United States for the peanut; supposed to be of African origin.

GREENBACKER. A political contribution denoting a member of the party which demanded the suppression of banks of issue (1874), the confinement of currency to greenbacks, and the total or partial payment of the national debt in that currency.

HACK. In America, applied to a coach, or hackney-coach; in England a hack is a hired horse.

HALF-BREED. A political contribution denoting a member of the Republican party in New York state that in 1881 and succeeding years opposed the "stalwarts" of the party, who controlled the organization. Such was considered only half a Republican.

HATCHET, TO BURY THE. An expression denoting a cessation of hostilities or the end of a quarrel; founded on the ceremony of burying the tomahawk by North American Indians as a signal of friendship.

HEFT. In America heft means to estimate the weight of an object by lifting in the hand; in England the old sense of lifting has been retained.

HESSIAN FLY. A destructive insect, injurious to wheat; supposed to have been introduced into the United States during the War of Independence by the Hessian troops. The *Cecidomyia destructor.*

HOG-WALLOW. An American contribution to describe a peculiar kind of irregular surface upon which the clayey soil is broken up into a succession of hillocks and hollows like "cups and saucers turned topsy-turvy."

HOMELY. In America, plain-featured, not handsome; in England, homelike or unadorned.

HOMINY. A word of American Indian origin denoting hulled and ground or broken maize.

HOOK. A Dutch contribution from *hoek*, a corner; it is applied to a point of land turned landward at its outer end. Common in proper names on the New York and other coasts early settled by the Dutch.

HORSE CAR. The English speak of this conveyance as a tram.

HUNKER. A political contribution denoting a conservative in the Democratic party of New York state in 1845 who opposed the Barnburners or radical section.

INDIAN MEAL. A plantation contribution describing the meal made from maize or Indian corn.

JAYHAWKER. A political contribution denoting one who carried on irregular war in eastern Kansas in the early days of the Civil War.

JERKED BEEF. Beef cut into long, thin strips and dried in the sun. Derived from the Chilian *charqui.*

JEW. In America, to haggle or dispute in selling; in England, to cheat. An American might speak of trying to jew one down in price; an Englishman might declare that one tried to jew him out of a thing.

KEY. A low island near the coast. Used especially in regions where Spanish is or was formerly spoken. Derived from the Spanish *cayo.*

KILL. A Dutch contribution; signifies a small stream.

KOTOW. A word of Chinese origin indicating obsequious politeness.

KUKLUX KLAN. A political contribution; the name of a secret oath-bound society in the Southern States after the close of the Civil War whose members sympathized with secession and perpetrated outrages upon negroes and Northern sympathizers. The name is derived from the Greek *ku'klos*, a circle.

LAGNIAPPE. A word commonly used by the negroes of the Southern States to denote a gift from tradesmen when buying; good measure; a brottus.

LAM. To beat or to thrash. Of old English origin. No longer used in England, except, perhaps, provincially.

LASSO. A rope of hide from 60 to 100 feet in length, with a sliding noose, used in catching cattle and wild horses. Derived from the Spanish *lazo*, a snare.

LEVEE. A term in use in southern and western United States to denote an embankment along a river to confine it in its channel and also a landing place for vessels. Derived directly from the French.

LIKELY. An American use of the English word promising. An American may speak of a likely-looking colt, where an Englishman would call it a promising colt.

LOCOFOCO. A political contribution denoting one of the equal rights section of the Democratic party in 1835.

LOGGING CAMP. An American contribution to indicate the headquarters for men and horses while carrying on lumbering.

LOG ROLLING. A political contribution denoting the exchange of services to secure the passage of schemes or measures by politicians. Neighbors joined in helping one another to roll their logs; so politicians who assisted one another in their respective interests were engaged in log rolling.

LUMBER. An American speaks of lumber where an Englishman calls it timber. The English use of lumber is in the sense of something which encumbers or is heaped together in disorder, as, to lumber up a room.

LYNCH LAW. The administration of penalties by unauthorized persons to anticipate legal delays. The kind of law exercised by Charles Lynch (1736-1796), a Virginia planter who, with his neighbors, Robert Adams and Thomas Calloway, outraged and maltreated lawless or disaffected persons in his neighborhood, especially Tories and those opposed to the Revolutionary party.

MAIL. In America a letter is mailed; while in England it is posted. In America a package comes by mail; while in England it is received by post.

MESA. Commonly used throughout the southwestern United States to denote a table-land, a broad and flat river terrace, or a level or gently-sloping region. Taken directly from the Spanish.

METIF. An Indian half-breed or the offspring of a white person and a quadroon. From the French *métif.*

MOCCASIN. A word of American Indian origin denoting their peculiar foot gear.

MOONACK. A name of the woodchuck in southern United States. The negroes also use the word to denote a mythical animal. Supposed to be of American Indian origin.

MUGWUMP. A political contribution denoting one of the independent members of the Republican party who refused to vote with the party in 1884, but voted Democrat, Prohibitionist, or abstained from voting.

MUSTANG. A wild horse of the pampas and prairies of America. Derived from the Spanish *mesteño.*

NOODLES. A Dutch contribution from *noodlejes*, an imitation of macaroni; made from wheat flour and used in soups, etc.

NOTIFY. In America notify means to give notice; in England, to make known. The word is also used in America, where inform would be preferred in England.

OFFAL. Literally that part which *falls off.* An English term for those parts of a slaughtered animal not fit for food; also used in America. In the vicinity of Chesapeake Bay, "offal" is the small fish taken in nets and used for fertilizer because they are unfit for food.

OMNIBUS BILL. A political contribution applied to a bill embracing several distinct objects; it was the popular name for the Compromise of 1850 in which Clay combined several different objects. The bill was broken up into several individual bills and passed separately.

OPOSSUM. The name of this well-known animal is of American Indian origin (*opassom*).

OVERSLAUGH. A Dutch contribution from *overslaag*, to skip or pretermit. The word is peculiar to the United States and denotes to pass over in favor of another; to hinder or obstruct; to oppress or keep down.

PAN OUT. A mining term originally used to describe the yield of gold panned in a locality, but extended to mean yield or afford in any sense; to turn out more or less satisfactorily.

PICKANINNY. A child of a member of any negroid race. Derived from the Spanish *pequeño niño.*

PINDER. A name given to the peanut among the negroes in Florida and other Southern States. Supposed to be of African origin. Also pindar and pindal.

PIPE-LAYING. A political contribution denoting the preparation of plans for promoting a political scheme or measure.

PLANK. A political contribution denoting one of the articles or paragraphs in the platform of a party. The use is purely a figurative one, where the word platform is taken in a double sense.

POND. In America, a natural or artificial pool of water; in England, only artificial pools are called ponds.

PORTAGE. A common use in the United States; denotes portions of interrupting land along river courses which necessitate carrying the goods, boats, etc., from water to water. Derived directly from the French.

POSTED. A trade contribution derived from the ledger; supplied with fullest information; possessed of needed intelligence; well-informed.

POWWOW. A word of American Indian origin from *powwan*, a prophet or conjurer. The word has a colloquial use denoting a meeting or conference at which there is more noise than deliberation.

PRAIRIE. This word is taken directly from the French. It was frequently used by Father Hennepin and other French writers in describing the areas adjacent to the Mississippi. Inhabitants of the prairies never speak of them as plains. The latter term is restricted by them to the arid, treeless wastes; but never applied to the richly fertile undulating prairies.

PRAIRIE SCHOONER. A term originating in western America and used to designate the white-covered wagon used by emigrants to convey themselves and goods across the prairies before the completion of railroads across the continent.

PRETZEL. A German contribution denoting a small, brittle biscuit fashioned in the form of a knot and salted on the outside.

PRIMARY. A political contribution denoting a meeting of voters belonging to the same political party who meet to choose candidates or delegates, etc.

PROSPECT. A mining term meaning to look for indications of gold or other mineral; gradually extended to describe a search or investigation for other things.

RACCOON. The name of this familiar animal is of American Indian origin.

RAFT. A colloquial use in America to indicate a miscellaneous or unassorted collection of articles as, a raft of papers, or a whole raft of things to attend to. The word is derived from the use of raft to indicate the collection of trees transported in rafts.

RECONSTRUCTION. A political contribution denoting the process by which, after the Civil War, the seceding states were restored to rights and privileges as members of the Union (1865-1870).

RELIABLE. An American uses reliable when an Englishman would use trustworthy.

ROUND-UP. A ranching term from western America and describing the herding or driving together of animals on a ranch for inspecting, counting, sorting, or branding. The word has acquired a meaning of the completing or finishing of some large task.

SACHEM. A word of American Indian origin; a sagamore or chief.

SALOON. In America this is applied to a place where intoxicating liquors are sold. An Englishman speaks of such as a tap-room, or grog-shop, or public-house. English use restricts saloon to a spacious, elegant apartment, or a hall for public amusements or entertainments.

SALT RIVER. A political contribution denoting the defeat of a candidate for political preferment. Such an one is said to go, row, or be sent up Salt River. It is said that the navigation of Salt River in Kentucky is extremely arduous and a hard task for the unfortunate rower.

SAMBO. The offspring of a black person and a mulatto. Derived from Spanish *zambo*.

SETTLE. A trade contribution from the accounting room; to liquidate; to pay; to balance.

SHINPLASTER. A political contribution denoting the small paper fractional currency issued by private and irresponsible parties during the suspension of specie payment. These were especially abundant in the panic of 1837 and during the war (1861-1865). Few of them were ever redeemed. When the government assumed the issuance, the term was applied to them also.

SHIVAREE. A mock serenade with horns, kettles, bells, either in annoyance or insult. Derived from the French *charivari*, and often so spelled.

SICK. The old English sense is retained in American use. The modern English use implies affected by nausea and a desire to vomit. In many cases where an American might use sick, an Englishman would say ill.

SKUNK. The name of this animal is of American Indian origin.

SLEEPER. This American designation of the wooden supports of car rails is a tie in England.

SMART. Several colloquial uses of smart are to be noticed in America. (1) Considerable or large; as, a right smart distance. (2) Extremely bright and clever; as, smart as a steel trap. (3) Keen in business; sharp and often of questionable honesty. In England the word is restricted to talented.

SMUDGE. In America, a smoke made to drive away mosquitoes, etc.; in England, any overpowering smoke.

SPELLBINDER. A political contribution denoting a political orator or party speaker. The term was first used during the presidential campaign of 1888.

SQUATTER. A term of American origin used to indicate one who settles upon land, usually public, without title to the same.

SQUATTER SOVEREIGNTY. A political contribution denoting the theory advocated by Democrats 1847-1861) and under Douglas that the people of a territory and not Congress had the right to decide whether slavery should exist within a territory. Called also popular sovereignty.

SQUAW MAN. An American contribution from the West to denote a white man who has married an Indian woman and has taken up the Indian mode of life either in part or in whole. Its use is generally contemptuous.

SQUELCH. To crush down; to put down. An old English word used by Samuel Butler in *Hudibras* and by others. No longer used in England.

STAKE A CLAIM. A mining term used to describe the marking out of a claim in gold regions. Later it meant the dividing off by means of marks or stakes.

STAMPEDE. A ranch term derived from the Spanish *estampido* and describing the panic-stricken rush of cattle in herds or droves.

STOOP. A Dutch contribution from *stoep*, and signifies the step or steps leading up to a house.

STORE. In America, applied to a shop. The English restrict the meaning to a place where goods are stored, and their use of the word corresponds to our idea of a warehouse or storehouse.

SUCCOTASH. Of American Indian origin, denoting a dish of maize and beans mixed.

TARRY. To delay. This is the old English form, common in the Bible and Book of Prayer. The English have discarded the word to a great extent.

TAVERN. Americans call a tavern what Englishmen call an inn, for in England there is never any lodging at a tavern. When lodging is supplied the place is an inn.

TEMPER. In America temper is the show or display of passion; in England it is the control of it.

TIMBER, THE. An American term to indicate the woods or the growing timber. The slang expression "taking to the tall timbers" means seeking a refuge from an embarrassing situation, and is a modification of "taking to the woods."

TOBOGGAN. A word of American Indian origin denoting a kind of sled without runners.

TOMAHAWK. A word of American Indian origin; the war ax of the Indians of North America. To bury the tomahawk was a signal of peace among the Indians.

TRACK. In America this means the rails upon which a train runs; in England it is always spoken of as the line.

TRAPPER. An American contribution indicating one who makes his living by trapping animals.

TRUCK-PATCH. A farm contribution descriptive of ground upon which vegetables, fruits, etc., are raised for market. The use of truck to describe the produce of a market garden is peculiar to the United States.

UGLY. In America ugly is often used where in England ill-natured would be used.

VENISON. In America venison means only deer's meat; while in England it means wild meat of any kind.

VEST. In England this article of a man's dress is always called a waistcoat.

VOYAGEUR. A French word in common use in America to denote the travelers in rivers and inland waters by boats or canoes. It has come directly into the language and has been widely disseminated by the very voyageurs themselves who early penetrated the remote parts of the country.

WIGWAM. A word of American Indian origin denoting a hut or house used by the Indians.

WILT. A colloquial use in America is that of becoming languid; of losing energy or strength. In America it is often used of plants when in England wither would be used.

WIRE-PULLER. A political contribution denoting a person in authority who manages the carrying through of a political enterprise or guides a political organization.

YAZOO FRAUD. A political contribution denoting the bill for the sale of a tract embracing what is now the state of Mississippi and one half of Alabama in 1795 by Georgia. The law was repealed in 1796 because it was fraudulently enacted. The U. S. Supreme Court in 1810 declared the repealing act void.

COMPOSITION.

Style is the man himself.—*Buffon.*
Style is the physiognomy of the mind, and a safer index to character than the face.—*Schopenhauer.*
Style is the personal impress which a writer inevitably sets upon his production.—*Arlo Bates.*

Style.—The above quotations imply not only the author's method of expressing his thought, but also his method of thinking. As style reflects the character and personality as well as the intellect of the writer, there arise many varieties of style. Hence, there is no one good style. To acquire a good style one must live with the best authors, read their works, and study their modes of expression and thinking. Disraeli says that mastery of one's subject is the true secret of style. To know what you would say and to say it with freedom and individuality is the great point.

Composition is the art by which ideas and mental impressions are conveyed in written language. To gain skill in composition it is necessary to examine its elementary principles. Considering it as a whole, there are three principles of structure which govern its mechanism: *Unity*, *Mass* or *Emphasis*, and *Coherence;* and three of quality which govern the intellectual character, *Clearness*, *Force*, and *Elegance*.

Unity requires that every composition shall center around one fundamental idea, since without it the value and effectiveness of the entire work will be destroyed; that every paragraph and sentence shall have one essential thought or purpose.

Mass concerns the external arrangement of what is written; it governs the placing of words and clauses in the sentence, of sentences in paragraphs, of paragraphs in longer compositions. Professor Barrett Wendell says, "The test of a well-massed sentence is very simple: Are the words that arrest the eye, the words on which the writer would arrest your attention?" He further says, "In an ideally massed sentence the most significant words come close to the periods, the less significant close to the lesser marks of punctuation, the least significant in those unbroken stretches of discourse where there is nothing but words to arrest the eye."

Coherence is the law of internal arrangement. It determines the relation of each part to the others, which relation must be clear and unmistakable. Words that are closely related in thought should be kept together. This is a good rule to follow in sentence construction. In paragraph making the placing of sentences to give the right proportion of strength to each one is more difficult.

It is not only necessary for the writer to follow closely the principles of *Unity*, *Mass*, and *Coherence*, but good style requires also a selection and right use of words. (See page 36.) This is called *Diction*, and it is based upon *Good Usage*, that usage which is present, national, and reputable. It is the general agreement regarding forms and standards by means of which ideas are conveyed. *Purity*, *Propriety*, and *Precision* are the most important qualities of good diction.

Purity relates to three things: viz., the forms of words, their construction in sentences, and the meaning of words and phrases. A violation of purity in the forms of words is a *barbarism;* in the grammatical constructions it is a *solecism;* in the meaning of words, an *impropriety*. Words should be chosen with reference to the desired effect, whether long or short, of English or foreign origin, general or specific, literal or figurative, although there are a few cautions to bear in mind. Avoid as far as possible the use of foreign words or idioms which have not become domesticated, words out of date, old-fashioned, or obsolete, unusual or unauthorized words, and slang or vulgar words and expressions. (See pages 36 to 43 for examples.)

Propriety requires that only such forms be used as are appropriate to the subject. It consists in choosing words that properly express the intended meaning. Avoid coarse expressions, poetic inversions, the use of figurative language in treating prosaic subjects, and mixed metaphors, but do use words according to their idioms. A free use of the dictionary and careful observance of the usage of the best writers and speakers are the wisest methods of securing propriety.

Precision is the quality by which a writer's style expresses "no more, no less, and no other than the thought he intended to express." It is the synonym of exactness, and in itself demands an accurate knowledge of synonyms with the ability to discriminate in their use. (See Dictionary of Synonyms, page 45.) To secure precision avoid ambiguous words or expressions (those which are capable of being understood in either of two senses); do not make overstatement or understatement of fact. (See pages 38 to 45.)

Good composition demands a large vocabulary. The best means of obtaining this is by careful reading, real study of the meaning and force of the terms used; a constant use of the dictionary, conversation of the highest order, and continued practice in writing, seeking always for the right words to express one's ideas.

The question of long or short sentences depends entirely upon the effect the writer wishes to produce. Long sentences give greater dignity and are more impressive if the subject demands dignity, while the short ones produce the effect of lightness. The question of effect should also decide whether loose or periodic sentences are better. (See page 35.) It is said that the best English contains more loose sentences than periodic because the latter have a tendency to make the composition stiff and formal. It is well to bear in mind that all good style contains a judicious union of both kinds.

Having considered the mechanical form of composition, as *Unity*, *Mass*, and *Coherence*, the principles of quality next demand attention. *Clearness* is closely associated with the principles of structure, but it goes a step farther and requires a complete understanding of the meaning of the sentences used, a full comprehension of their purpose. To insure this, one must avoid all vagueness of thought and expression, each sentence must have but one apparent meaning, and the language must be that of the persons addressed.

Force has been defined as the quality which appeals to the emotions, the quality which secures the reader's interest. It is the power of one mind over another, and includes both matter and manner. Perhaps the most necessary characteristic of force lies in what it suggests to the reader, its effect upon the mind. A good beginning and a good ending are equally necessary to forceful writing.

"*Elegance*," says Professor Wendell, "is that distinguishing quality of style that pleases the taste; the æsthetic quality of style. Beauty, some call it; charm, others; others still, grace,

ease, finish, mastery." It is the quality in which the imagination shows itself. It is the function of culture in its broadest sense, to be acquired only through the masterpieces of literature, and a persistent effort in writing.

Outline or Plan.—There are two essential steps in all composition. First, the collection of material; second, the expression of the thoughts derived from that material. By preparing an outline or plan at first in a general way and filling in the subheads as material is classified in the writer's mind, the second step will be easier and the result more satisfactory. There are three main parts to every outline, the Introduction, the Body, and the Conclusion. If the points necessary to the development of these parts are arranged logically, the work of written expression is greatly aided. The introduction and conclusion need few, if any, subheads; the former should invite attention and arouse interest, while the latter brings out a definite meaning, what the writer wishes to enforce, to emphasize, and to make effective. The body should contain only as many subtopics as are necessary to aid the writer in putting his thoughts into a smoothly connected, harmonious composition.

The divisions of prose composition are: Narration, Description, Exposition, and Argument.

Narration.—A record of events, real or imaginary. In a narration there are four elements, the plot, the characters, the situation as to time and space, and the purpose or motive for which the whole is told. All its details should work towards a climax. Narration includes historical works, biography, autobiography, memoirs, journals, letters, books of travel, news items, anecdotes, folk tales, and fiction.

History.—A systematic and accurate record of past events; especially the record of the events in which man has taken an active part. It is distinct from tradition, which is an oral account of past events.

Biography.—A life history of one person written by another. When written by an individual about himself it is an *autobiography.*

Memoirs.—A narrative of the events happening within the memory of the writer is called memoirs. It may comprise the greater part of his life or may cover an interesting period of history with which he was connected.

Journal or Diary.—Systematic records, day by day, of the events during a man's life. "Pepys's Diary" and "Evelyn's Diary" have thrown much light upon great national events and the daily social life in England.

Travel.—Books of travel seem to combine the autobiography, the memoir, the journal, and the letter, in which the added charm of adventure, of strange lands and people, and of a constantly shifting scene both interests and instructs.

News Items.—Writers of news items require special training in order to acquire that clear, direct, and vivid style which impels attention.

Fiction.—The great difference between history and fiction is that events recorded as history are true, while fiction deals with purely imaginary circumstances. Perhaps the most remarkable feature of the literature of modern times is the increase in works of fiction. Still, it is among the enduring works of such great writers as Dickens, Thackeray, Scott, George Eliot, Hugo, Dumas, and Irving that the masterpieces of fiction are to be sought. In the great scope which the novelist's work affords, studies of society, psychology, art, science, literature, and history are often treated with consummate skill. Fictitious narrative includes long and short stories, novels, romances, and dramas. The short story is a condensed novel. Much more skill and literary ability are required to excel in this than in the longer novel. A short story is not a sketch in that it is compact and deals with more characters, details, and events than are found in a sketch. Edgar Allan Poe was probably the greatest, as he was the earliest, of American short story writers. Bret Harte, George W. Cable, Ruth McEnery Stuart, Edward Everett Hale, and Thomas Nelson Page are also among the most famous in America.

A *novel* deals realistically with actual life, while *romance* deals with life in a false or fantastic manner. Scott, Dickens, and Thackeray were novelists; Hawthorne was a writer of romance. A *drama* is a narrative portraying life or character told by actions and usually dialogue, to be put upon the stage.

Description.—The endeavor to present a picture by means of language. A writer must first see clearly what he wishes to describe, feel keenly what he wishes to communicate, and then confine himself to a portrayal of what he sees and feels. Description is closely associated with narration, to which it lends a strong support in the development of plot.

Exposition.—A statement, an explanation, or a setting forth. Clearness, unity, and progression are the most valuable qualities in this sort of writing. The plan or outline is here of greatest value. It is the product of the reasoning faculty. It is one of the most common forms of composition. *Definition* is a species of exposition. The two general divisions are scientific and literary exposition. The former deals with scientific subjects; the latter has a wider range and includes formal and informal essays, editorials, notices of plays, concerts, and art subjects, criticisms, book reviews, character sketches, and discourse. The essays of Bacon, Macaulay, Emerson, and Carlyle are formal, those of Addison, Swift, Lamb, Irving, and Lowell are informal.

Editorial.—A leading article in a journal or periodical written by the editor or his associates and published as an official argument or expression of opinion.

Criticism.—A written estimate based upon comparison of work with certain well defined standards. The great point for the critic to know is what the author tried to do, and judge of his success. Sainte-Beuve, Leslie Stephen, Taine, and Lowell were noted literary critics.

Book Reviews.—These are critical expositions which give in small space the general scope and literary or practical value of recent publications. Book reviews are helpful when they give the busy man an idea of what is going on in the literary world; and when they guide one to a selection of good books. A good book review includes a statement of the location of the principal scene in time and place, a sketch of each of the principal characters, a brief outline of the plot, a criticism of the plot, the characters, and the author's style in addition to a statement of the object of the book and its attainment.

Discourse.—Sermons, lectures, orations, and other speeches. *Sermons.*—Discourses based on texts chosen from the Scriptures, and appealing to the religious feeling. *Lectures.*—These vary in

theme but much more liberty is allowed than in the more formal oration, sermon, or essay. The scope is very broad; all possible sorts of subjects find their way into consideration; the style is as varied as the subject or its treatment; yet there ought to be a very definite and logical outline upon which the structure is built.

Oration.—A discourse intended to be delivered in public. Its purpose is to entertain, inform, interest, arouse the emotions, or to move the will. It is usually delivered upon some formal occasion and is more elaborate than ordinary speeches.

Argument.—The endeavor to establish the truth or falsity of an idea or a proposition; to make others think or believe as we do. It is very closely allied to exposition. The main difference between them is that argument goes further. "In exposition the writer declares; in argument he defends." This sort of composition is found in a lawyer's plea, in newspaper editorials, the scientific essay, and in literary opinions or criticism.

Debate.—Set discussion of a subject between opponents according to formal rules. Arguments on both sides of a question are furnished by the debate, which is a form of expository composition. One essential of a debate is that the subject be so narrow in scope or so well defined in its limits that the opposing sides must discuss the same aspects or points of the question. It is a waste of time for one side to discuss one part or aspect of a subject, while the opposing side does not answer the arguments adduced, but deals with a wholly different aspect. A good debater not only states all that is to be said in favor of his side of the question, but must also be ready to refute or to disprove what is said by the opposing side.

Spelling.—The first point by which a literary composition is judged is the ability of the writer to spell correctly. Correct spelling is an indication of the extent of a person's education. Good spelling is more essential even than good penmanship. Always consult a dictionary when in doubt about the spelling of a word.

Rules to Aid in Spelling.—There are many helpful rules to assist one in spelling; but these rules seldom cover all cases. The exceptions are sometimes more numerous than the cases which the rules themselves will cover. This is a result of the irregularities of the language due to the many sources from which the words are derived and to the changes which these words have undergone.

Believe, receive, and such words perplex one, because of the changed position of the *i* and the *e*. This is covered in part by the aid:—

I before E,
Except after C.

Words of one syllable ending in *l* with a single vowel before it double the *l:* as *tell, sell, call.* But if the *l* is preceded by a double vowel or diphthong there is only one *l* at the close: as *fail, rail, feel.*

Derivatives of monosyllables ending in *ll* formed by adding one or more syllables generally retain both *l's*: as *skillful, skillfulness, willful, willfulness.* So also in *installment, thralldom* and similar words. But one *l* is dropped when adding the termination *ly,* to prevent the recurrence of three *l's*: as *ill, illy, dull, dully.* Words similarly formed by adding the termination *less* are written either with the three *l's* with a hyphen before the termination or with two *l's* with the hyphen omitted: as *skill-less* or *skilless, smell-less* or *smelless.*

Words ending with silent *e* generally drop the *e* before taking an additional syllable beginning with a vowel: as *have, having; bride, bridal; lie, liar; move, movable; force, forcible.*

But the *e* is retained in some words to distinguish them from others: as *dyeing,* meaning coloring, distinguished from *dying,* expiring; *singeing* (burning) from *singing.* The *e* is also retained in *hoeing* and *shoeing.*

Words ending in *ce* or *ge* retain the *e* before a suffix beginning with *a* or *o* in order to preserve the soft sound of *c* or *g:* as *trace, traceable; change, changeable; courage, courageous.* But legal usage favors *mortgagor.*

When adverbs are formed by adding *ly* and nouns by adding *ment* to words ending in *e,* the *e* is usually retained: as *sure, surely; confine, confinement.* But *judge* and *acknowledge* drop the *e* and form *judgment* and *acknowledgment.*

Words of one syllable ending in a consonant preceded by a single vowel double the consonant on adding a suffix beginning with a vowel: as *run, running; big, bigger.* But if the final consonant is preceded by a double vowel or diphthong the consonant remains single: as *sleep, sleeping; plead, pleading.*

Words of more than one syllable ending in a single consonant and accented on the last syllable double the final consonant when suffixes are added: as *remit, remitting; commit, committee.* But if accented on the first or other syllable than the last (as trav'el) the single consonant is retained: as *travel, traveler.*

Words ending in *y* preceded by a consonant change the *y* to *i* and add *es* to form the plural: as *lady, ladies; comedy, comedies.* But if the *y* is preceded by a vowel the *y* is retained and *s* is added: as *valley, valleys; money, moneys.* An exception is made of names of persons, which are usually formed by the addition of *s*: as *Henry, Henrys.*

Words ending in *er* generally retain the *e* before the *r* when suffixes are added: as *refer, reference;* but some, as *hindrance, monstrous, wondrous,* and *disastrous,* elide the *e.*

Words which formerly ended in *our* are nearly all spelled with *or* now in the United States, though the *our* is largely retained in England: as *labor, honor, valor.*

Words ending in *o* generally form the plural regularly, as *solos, folios,* through usage differs in regard to some of them. A few nouns ending in *o* preceded by a single consonant form the plural by adding *es:* as *echoes, heroes, potatoes, tomatoes.*

Simplified Spelling.—Benjamin Franklin and Noah Webster were strongly in favor of a spelling reform.

Isaac Pitman, the inventor of phonography, labored for many years in England to simplify the spelling.

In 1874, at the annual meeting of the American Philological Association at Hartford, the president called attention to the "monstrous spelling of the English language."

In 1875, Prof. William D. Whitney of Yale University, and the first president of the American Philological Association, was one of

a committee appointed to consider the whole subject of spelling reform. In 1876 this committee reported in favor of it and laid down the principles which should guide the reform. The committee has been continued from year to year since then.

In 1876 an international convention for the advancement of English orthography was held at Philadelphia and Prof. Samuel D. Holdeman of the University of Pennsylvania presided. The convention resolved itself, on August 17, into the Spelling Reform Association.

In July, 1877, the "Standard Phonetic Alphabet" was adopted by the Spelling Reform Association.

In 1883 rules for simplified spelling were adopted by the American Philological Association and by the British Philological Association.

In 1886 a list of amended spellings was adopted by the American Philological Association and published in their *Transactions*.

In 1898 the American National Education Association adopted twelve simplified spellings: program, tho, altho, thoro, thorofare, thru, thruout, catalog, prolog, decalog, demagog, and pedagog.

In 1906 a list of 300 words was recommended by President Roosevelt to be used by the Public Printer at Washington in all government publications. This order was withdrawn on December 14, 1906, because the committee of Congress on printing did not approve of their use.

On November 13, 1907, the Board of Trustees of Columbia University officially adopted a list of 180 words to be used in all University printing. This list is as follows:—

Abridgment	Dolor	Humor
Acknowledgment	Draft	Hypotenuse
Adz	Dram	Idolize
Anapest	Dulness	Instil
Antipyrin	Ecumenical	Jail
Antitoxin	Edile	Judgment
Arbor	Enamor	Labor
Ardor	Encyclopedia	Legalize
Armor	Endeavor	License
Assize	Envelop	Licorice
Ax	Eon	Liter
Bark (not barque)	Epaulet	Lodgment
	Eponym	Luster
Behavior	Era	Mama
Brazen	Esophagus	Maneuver
Brazier	Esthetic	Materialize
Bun	Esthetics	Meager
Bur	Estivate	Medieval
Caliber	Ether	Meter
Caliper	Etiology	Miter
Candor	Fagot	Mold
Catechize	Fantasy	Molder
Center	Favor	Molding
Check	Favorite	Moldy
Checker	Fervor	Molt
Chimera	Fiber	Naturalize
Civilize	Flavor	Neighbor
Clamor	Fulfil	Niter
Clangor	Fulness	Ocher
Clue	Gage	Offense
Coeval	Gazel	Omelet
Color	Gelatin	Orthopedic
Colter	Gild (not guild)	Paleography
Controller		Paleolithic
Coquet	Gipsy	Paleontology
Criticize	Gloze	Paleozoic
Cue	Glycerin	Paraffin
Cutlas	Good-by	Partizan
Cyclopedia	Gram	Patronize
Dactyl	Harbor	Pedobaptist
Defense	Harken	Phenix
Demeanor	Hematin	Phenomenon
Deposit	Hiccup	Plow
Develop	Hock (not hough)	Polyp
Dieresis	Homeopathy	Practise v. and n.
Dike	Homonym	
Distil	Honor	Prenomen
Pretense	Saltpeter	Synonym
Preterit	Savior	Tabor
Pretermit	Savor	Teazel
Primeval	Scepter	Tenor
Program	Septet	Theater
Quartet	Sepulcher	Tumor
Questor	Sextet	Valor
Quintet	Simiter	Vapor
Rancor	Skilful	Vigor
Raze	Smolder	Vizor
Recognize	Somber	Wagon
Reconnoiter	Specter	Whisky
Rime	Succor	Wilful
Saber	Sumac	Woolen

Many changes in the spelling of words have been advocated and authorized by the Simplified Spelling Board, which, through the liberal endowment of Mr. Andrew Carnegie, is conducting an active campaign in this work. The changes advocated are radical, and the work is designed to reform the spelling gradually and not to make sweeping changes.

Handwriting.—The first essential is that the matter be easily read, as that is the purpose of the writing. Too lavish use of flourishes detracts from the legibility. Use only black ink, and never use a lead pencil in correspondence or in such formal or business writing as is intended to be preserved. The "fine hand" is generally hard to read and does not hide deficiencies in grammar, spelling, or education; generally it exaggerates them. Crooked writing is to be guarded against. Care in forming the letters properly, and especially in making all figures in amounts and dates, will conduce to legibility and intelligible communication. The "copperplate" hand is neither demanded nor appreciated in business or social circles. Handwriting is said to indicate character, temperament, and habits. It should be one's aim, then, to let it markedly display care, accuracy, neatness, and thought, rather than those qualities which made Horace Greeley's illegible writing a subject for ridicule.

USE OF CAPITALS.

To be able to use capital letters correctly is a sure mark of education. Generally speaking, too many are used rather than too few. The tendency in all writing and printing is to restrict the use of capitals to a far greater degree than was customary in olden times. An old book fairly teems with capitals where one would now never think of using them. The Germans use many more than we do, for nearly every noun in that language begins with a capital. The French use, perhaps, fewer than we, for they do not capitalize the names of the days of the week, or of the months, or adjectives derived from proper names, as we do.

(1) The first word of every complete or entire sentence must always begin with a capital letter.

The lower Himalayas are at first extremely disappointing. The scenery is enormous but not grand, and at first seems hardly large.—*F. Marion Crawford.*

Shall I stay with you always? Yes, just as long as I live, you shall be my child.—*Maria S. Cummins.*

"Tarry thou, till I come!"—The words shot through me.—*George Croly.*

(2) Every line of poetry should begin with a capital.

Like as the waves make towards the pebbled shore,
So do our minutes hasten to their end;
Each changing place with that which goes before,
In sequent toil all forwards do contend.
—*Shakespeare.*

His state
Is kingly; thousands at his bidding speed
And post o'er land and ocean without rest;—
They also serve who only stand and wait.
—*Milton.*

(3) The first word of every direct quotation should begin with a capital, unless introduced by that, if, or some other conjunction.

The judge replied, "Honesty is the best policy."
The judge said that honesty is the best policy.
Sir Henry Wotton expresses the joy of manly independence in his poem which begins: "How happy is he born and taught that serveth not another's will."
Lepers sit by the sunny walls, and your soul cries, "Unclean! Unclean!" while you loosen your purse-strings.—*George William Curtis.*

(4) The several names and appellations of Deity must begin with a capital letter.

These include: God, Jehovah, the Almighty, the Supreme Being, the Lord, Providence, the Messiah, the Holy Spirit, Jesus, Christ, Father, Son, Infinite One, the First Cause, the Saviour, etc.

(5) The words Bible, Scriptures, and names of books and parts of the Bible should begin with capitals.

(6) The names of the months and of the days of the week are written with capital letters.

January. Monday the 15th of July. He came on Tuesday.

(7) The names of holidays, festivals, fast days, and feast days, whether civil or religious, are usually written with an initial capital.

Christmas, Labor Day, Easter, Yuletide, Whitsunday, Ash Wednesday, Good Friday.

The names of the seasons, unless personified as in poetry, are not capitalized.

(8) All proper nouns are written with an initial capital. These include:—

(*a*) Names of persons, real or fictitious:—

Thomas Jefferson, Oliver Cromwell, Adam Bede, William II., Joseph H. Choate.

(*b*) Names of places:—

Chicago, New Orleans, Liverpool.

(*c*) Names of streets:—

Broadway, State Street, Pennsylvania Avenue, The Strand, Rue de Madeleine.

(*d*) Names of mountains:—

Andes, Sierra Nevada, Rocky Mountains, the Alps, Himalayas.

(*e*) Names of bodies of water:—

Lake Erie, Salt Lake, Dead Sea, Caspian Sea.

(*f*) Names of rivers:—

Mississippi, Amazon, Seine, Tiber.

(*g*) Names of ships:—

Lusitania, Kaiser Wilhelm der Grosse, Great Eastern.

(9) All adjectives derived from proper names:—

American, English, French, German, Jeffersonian, Alpine, Amazonian.

(*a*) We write china silk, india ink, india rubber, turkey red, castile soap, majolica ware, prussian blue, canton flannel, with small letters though derived from names of places. This is because they have become thoroughly incorporated into our language as common rather than proper adjectives.

(10) Christianize, Hellenize, Anglicize, and some other verbs derived from proper nouns are written with capital letters. But there are many such which have been more closely and intimately incorporated into the language and by frequency of use and consequent familiarity have come to be written with small letters. Among such are: boycott, outherod, macadamize, japan (leather), galvanize (iron).

(11) Orient, Occident, Levant, are written with capitals when used as proper nouns to denote well defined geographical zones or districts. Otherwise they are written with small letters.

(12) In denoting parts of the country by the points of the compass, such terms are written with capital letters.

Out West. In the South. The Northwest. In the East.

(13) When a geographical, political, or physiographical conformation is used as a title, it is usually written with a capital.

Rocky Mountains, Mississippi River, Barbary States, Death Valley, Sioux City, Cook County.

But when this descriptive word is written before the distinctive word a small letter is usually employed.

The county of Westchester; the state of Texas; the kingdom of Italy.

(14) Names of religious denominations begin with capitals.

Methodists, Unitarians, Presbyterians, Roman Catholics, Episcopalians, Christian Scientists.

(15) The names of societies, associations, and corporate bodies are written with an initial capital for all important words in their titles.

Young People's Society of Christian Endeavor. Roman Catholic Hierarchy of the United States. International Order of the King's Daughters and Sons.

(16) The names of political parties are written with capital letters.

(17) Official and honorary titles begin with capitals when they occur before the name of the bearer.

President Roosevelt, Senator Brown, Secretary Hay.

If written after the bearer's name, they are preferably in small letters.

The late Grover Cleveland, ex-president of the United States.

When titles of honor are abbreviated and written after the bearer's name, these are capitalized. Such include degrees from universities.

William P. Thomas, M.D., D.C.L.; Hon. William H. Taft, D.C.L.; James Edwards, M.C.

(18) When a title is used alone without the bearer's surname, we write the title with a capital letter.

(19) In writing the title of a book it is customary to capitalize the important words in the title, such as the nouns, verbs, and adjectives, but not prepositions and conjunctions.

Roget's Thesaurus of English Words and Phrases. Sturgis's A Dictionary of Architecture and Building. Brown and Butterworth's The Story of the Hymns and Tunes.

In cataloguing books on library cards it is customary now to use no capitals in the title except the first initial letter and the initials of proper names which may occur.

Alford, Greek testament with revised text. Dodge, Bird's-eye view of our civil war.

(20) The pronoun I and the interjection O are always capitals.

Stay, O stay! nor thus forlorn
Leave me unblessèd, unpitied, here to mourn.
—*Gray.*

Oh is not capitalized excepting when it stands at the beginning of a sentence.

The other evening we went to the ball at the Tuileries, and oh! it was splendid.—*George William Curtis.*

(21) When a word is of very especial importance, whether an event, or transition, it may at the choice of the writer be rendered emphatic

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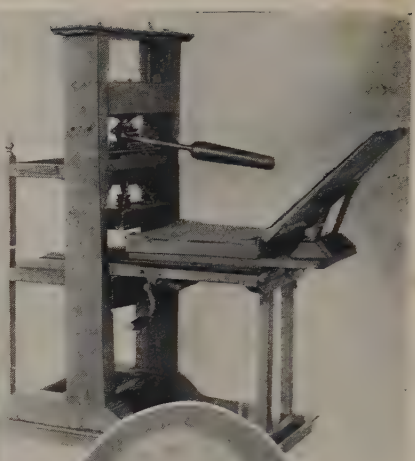
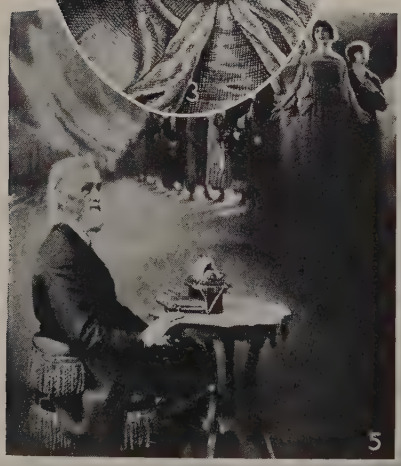
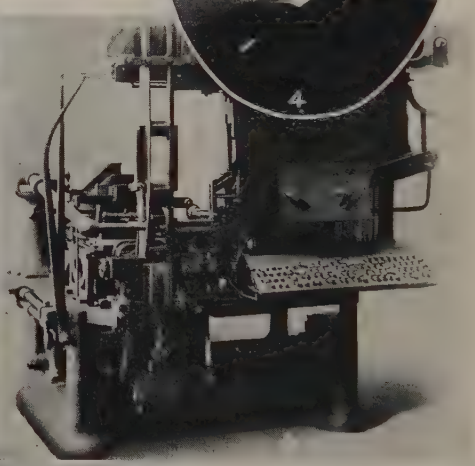
REPRESENTATIVE PUBLICATIONS

1 Gutenberg, inventor of printing, examining first printing from moveable types, Mainz, Germany. 2 Largest book in world, 400 years old, University of Rostock, Germany. 3 Bible in collection of Cambridge (Mass.) Municipal Library, printed in 1527 by Peter Quentels, Cologne, Germany. 4 Group of ancient books, 1000 years old, now in Jewish Theological Seminary, N. Y. City. 5 Old portrait of IBI-SIN, King of UR (in Chaldean bible history), on clay tablet of about 2300 B. C. 6 World's smallest book, one-half inch by three-quarters of an inch, and invoice (in Cuniform writing dated 2350 B. C.), found in central Babylonia. 7 Leaf of ancient Chinese Buddhist sacred book, printed 400 years before paper was made in Europe. 8 Egyptian writing, Hypostyle Hall, Karnak, Egypt.







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CONTRIBUTIONS TO EDUCATION THROUGH INVENTION

1 William Caxton examining first proof sheet from earliest printing press in A. D. 1471. 2 Early type of press used in U. S. A. 1600–1700. 3 William Caxton. 4 Richard Hoe, inventor of printing press for moveable types. 5 Christopher Latham Sholes, inventor of the typewriter. 6 Early model of linotype (Blower) machine invented by Ottmar Mergenthaler. 7 Modern Hoe Newspaper Press.

by writing with a capital. Thus we see such words as renaissance, revival of letters, reformation, middle ages, written both with and without capitals.

Often the principal subject of a composition is written with a capital letter whenever it occurs.

(22) A word, which when occurring only once or rarely upon a page would be written with a capital, is not so written if it is frequently repeated. A congressman addressing the chair as "Mr. Speaker" would be reported with a capital letter in Speaker, but addressing him as "sir," as is usually done, a small *s* would be written in "sir."

(23) Names of abstract ideas, if used like names of persons, are capitalized.

Can Honor's voice provoke the silent dust,
Or Flattery soothe the dull cold ear of Death?
—*Thomas Gray.*

(24) In all accounts or bills, the names of the separate items begin with capitals.

(25) In a formal resolution the first word after *Resolved* begins with a capital letter.

CORRECT PUNCTUATION.

Without punctuation marks all of our writing would be in simple sentences only, with a separate sentence for each statement. It would be impossible to show clearly the relative importance of each statement or to indicate that one sentence modified or restricted another. There could be no complex or compound sentences and both description and reasoning would be difficult. By the proper use of the several punctuation marks, we show clearly to the reader the full meaning of our statements.

Serious losses and much legal entanglement have resulted from the misplacing of even a comma. In legal documents great care is taken with punctuation, and many more marks are used in them than in ordinary writing and printing. All possibility of ambiguity or of misinterpretation is removed by what is known as close punctuation. Fifty years ago the pages of ordinary books were lavishly sprinkled with punctuation marks, in strange contrast to those of the present day.

Punctuation Marks:—

Comma	,	Quotation Marks	" "
Period	.	Apostrophe	'
Semicolon	;	Dash	—
Colon	:	Parentheses	( )
Interrogation	?	Brackets	[ ]
Exclamation	!	Hyphen	-
Ellipsis	* * * *		

Marks of Reference:

Asterisk	*	Paragraph	¶
Obelisk or Dagger	†	Index	☞
Double Dagger	‡	Brace	⌒
Section	§	Caret	∧
Parallels	‖		

The marks of reference are now seldom used in the best books, having given place to superior figures or small italic letters.

Comma.—(1) Two or more words connected in sense, but with the connecting word not expressed, are separated by commas.

Alfred was a brave, pious, patriotic prince.

(2) A relative clause which conveys an additional thought is separated from the rest of the sentence by commas.

The emperor, who had just arrived, immediately took command.

But when a relative clause restricts the meaning of the antecedent to a particular sense the commas should be omitted.

Happy are the people who have no history.

(3) The part of the sentence containing the noun absolute is separated from the rest of the sentence by commas.

Shame being lost, all hope of repentance is lost.

(4) The part of the sentence containing the nominative case independent is separated from the rest of the sentence by commas.

Brightest in dungeons, Liberty, thou art.

(5) Nay, so, however, hence, besides, perhaps, probably, finally, in short, at least, moreover, again, first, secondly, lastly, once more, on the contrary, and similar words and phrases are usually inclosed by commas.

(6) Nouns in apposition with or without explanatory words or phrases are usually separated by commas.

O Music! sphere-descended maid,
Friend of Pleasure, Wisdom's aid!
—*William Collins.*

But commas would not be used if the title is used as a part of the name.

Paul the Apostle of the Gentiles was eminent for his zeal and knowledge.

(7) Words of another writer introduced directly and not as a quotation are separated by a comma.

I pity the man who can travel from Dan to Beersheba and cry, 'T is all barren.

(8) Words and clauses expressing contrast are separated by commas.

Though deep, yet clear; though gentle, yet not dull;
Strong, without rage; without o'erflowing, full.
—*Sir John Denham.*

(9) When a word is omitted and its place is taken by a pause in reading or speaking, its place in writing is taken by a comma.

From law arises security; from security, inquiry; from inquiry, knowledge.

(10) Such expressions as, that is, as, namely, to wit, viz., take a comma after them.

He will be promoted; that is, if he prove worthy.

(11) When a subordinate clause in a complex sentence comes first, it is separated by a comma.

If thou art wise, thou knowest thine own ignorance. —*Luther.*

(12) Two short, complete, and independent statements in one sentence may be separated by a comma.

You may paint with a very big brush, and yet not be a great painter.—*Carlyle.*

(13) Two words differently modified in the same construction are separated by a comma to avoid confusion.

The sheriff wore a cocked hat, and a sword.

(14) When a whole clause is the subject of the principal verb, it is not usually separated by a comma unless the clause ends with a verb which might cause confusion.

That the voice of the common people is the voice of God is as full of falsehood as commonness.—*Warwick.* That that is, is.—*As You Like It.*

Semicolon.—(1) In a sentence composed of several members, each a distinct statement, and each dependent upon the other, the parts are separated by semicolons.

My way of life
Is fallen into the sere, the yellow leaf;
And that which should accompany old age,
As honor, love, obedience, troops of friends,
I must not look to have; but, in their stead,
Curses, not loud, but deep, mouth-honor, breath,
Which the poor heart would fain deny, and dare not.
—*Macbeth*, v. 3.

(2) A compound short sentence made up of two closely connected ideas has the parts separated by a comma; but when the ideas are not so closely connected use a semicolon.

My name is Norval; on the Grampian hills my father feeds his flock.—*Home.*

But

My mind to me a kingdom is,
Such perfect joy therein I find.—*Byrd.*

(3) When one or both of the members of a compound sentence contain commas, separate the members by a semicolon.

Mercy is above this sceptred sway,
It is enthroned in the hearts of kings,
It is an attribute to God himself;
And earthly power doth then show likest God's
When mercy seasons justice.
—*Merchant of Venice*, iv. 1.

(4) A sentence consisting of a direct statement followed by another introduced by for, but, and, or similar word is divided by a semicolon.

Many speak the truth when they say they despise riches and preferment; but they mean the riches and preferment possessed by other men.—*Colton.*

(5) When a series of ideas depends upon a statement made at either the beginning or end of a sentence, the members of the series are usually separated by semicolons.

Learn to be pleased with everything: with wealth so far as it makes us of benefit to others; with poverty, for not having much to care for; and with obscurity, for not being envied.—*Plutarch.*

This rule is often stated thus: A succession of clauses depending upon one principal expression should be separated by semicolons.

Colon.—(1) A colon is placed between the chief divisions of a sentence when they are but slightly connected and are themselves divided by other marks of punctuation.

Gather ye rosebuds while ye may,
Old Time is still a-flying:
And this same flower, that smiles to-day,
To-morrow will be dying.—*R. Herrick.*

(2) A colon is used after a sentence which announces a direct quotation.

(3) A colon is used after the word *following*, when a list of things is given.

(4) The colon is used after the "Dear Sir" or other address in letter writing. Sometimes the colon is followed by a dash, but this use is disappearing.

(5) A colon follows "Yes" or "No" when the rest of the sentence deals more fully with the affirmation or negation.

Yes: you will find people ready enough to do the good Samaritan, without the oil and twopence.—*S. Smith.*

No: creation, one would think, cannot be easy.—*Carlyle.*

Period.—(1) A period marks the close of every declarative and imperative sentence.

He buys very dear who begs.

(2) All abbreviations are followed by a period.

No. for number. Jas. for James. D.C.L. for Doctor of Civil Law. M.D. for medical doctor or Doctor of Medicine.

The Roman numerals are treated as abbreviations and are followed by a period.

Louis XIV., king of France. Henry I. was surnamed Beauclerc.

But when the possessive form is used the period is omitted.

William I's son Richard.

The period does not follow an abbreviation in which the ellipsis is marked by an apostrophe; nor in 1st, 2d, 3d, etc.

When a period follows an abbreviation it does not preclude the use of another punctuation mark immediately after the period if necessary.

The Norman kings of England were: William I., William II., Henry I., Stephen, Henry II., Richard I., and John.

Interrogation.—(1) Every direct question is followed by an interrogation point.

What is the use of health or life, if not to do some work therewith?—*Carlyle.*

(2) An interrogation point is often inserted in parentheses in any part of a sentence to express doubt.

One who said he was his friend (?) told me so.

When the entire question is a quotation the interrogation point should be placed before the last quote-marks.

"And who is he?" said Henry.

If only part of the question is quoted, the point should follow the last quote-marks.

Do you know who wrote "The Pioneers"?

Exclamation Point.—(1) The exclamation point is used to express any sudden emotion, as surprise, joy, grief, love, fear, hatred, anger, pity, or anxiety.

"Ah, that 's it! that 's it!" shouted the whole party delighted with the solution of the initial difficulty.—*Conscience.*

(2) The exclamation point follows the noun or pronoun after an interjection.

O blissful day! Ah me! how soon we pass!
O shame! where is thy blush?

The exclamation point usually follows Oh immediately if some other mark does not.

Oh, you have come at last!
Oh! I do not wish to deceive you.

The exclamation point is placed within the quote-marks, if the whole sentence is quoted; outside, if only a portion is quoted.

(3) One or several exclamation points may be inclosed in marks of parenthesis to denote surprise at, or ridicule of, a statement.

(4) An exclamation point follows a question to which no answer is expected.

What is more amiable than virtue!

Marks of Parenthesis.—These marks inclose parenthetical matter thrown into a sentence, which may be omitted without destroying the sense or the grammatical construction.

We have nothing to do with what is happening in space (or possibly may happen in time): we have only to attend to what is happening here and now.—*Ruskin.*

When the parenthesis is a question the interrogation point falls inside the last mark.

Brackets or Crotchets.—(1) Brackets are generally used to inclose corrections in a quoted statement, or to add words improperly omitted.

(2) When a parenthesis includes another parenthesis, brackets are employed on the outer parenthesis and marks of parenthesis on the inner.

Commas have taken the places of both parentheses and brackets in recent days. Speaking generally, the use of brackets or parentheses leads to an involved sentence which would read much better and more clearly if split up.

Hyphen.—(1) The hyphen is used to connect two words which are so used as properly to form a compound word, as sea-water, far-reaching.

(2) The hyphen is used to indicate the division of a word into syllables, as el-e-men-tal.

(3) The hyphen is used at the end of a line to connect the syllables of a divided word.

(4) In indicating the component parts of words, if a hyphen follows the part, a prefix is denoted as ad-, pro-, per-, and sub-. If the hyphen precedes it, a suffix or affix is denoted, as -tion, -ly, -ment, and -est.

Dash.—(1) The dash is used to indicate a sudden turn in a sentence or an abrupt termination, or interruption.

Where we made the mistake—but let us forget it.

(2) The dash is rapidly displacing the marks of parenthesis and brackets in parenthetical writing.

(3) The dash marks the omission of letters.

I saw General L——n there.

(4) A dash follows a question and precedes the answer when both are on the same line.

Q. Where do you live?—In San Francisco.

(5) A dash is often used before an expression which is repeated for especial emphasis.

(6) A dash precedes a partial quotation.

Ben Jonson speaks of
—"the vulgar sort
Of nut-crackers, who only come for sight."

(7) A dash also denotes hesitancy in speech.

I think it will be necessary to—to—to—

Quotation Marks.—(1) A word, phrase, or sentence transcribed from an author in his own words is placed between quotation marks.

And here I am reminded that it is Pope who says "The proper study of mankind is man."

If a passage is not quoted *verbatim*, but only in paraphrase, no quotation marks are used.

(2) When a quotation occurs within a quotation double quotation marks are used for the whole quotation, and single quotation marks for that within.

"He said very pleasantly, 'What is your name?' "

(3) When a passage quoted consists of more than one paragraph, quotation marks are used only at the beginning of each paragraph and at the close of the last.

(4) When especial attention is called to a long quotation, single quotation marks may be used at the first of each line quoted.

Apostrophe.—(1) The apostrophe is used to denote the possessive case, as "Milton's."

(2) The apostrophe denotes a contraction by the omission of one or several letters, as "'t is" for "it is," "is n't" for "is not," "lov'd" for "loved," "I 'll" for "I will."

(3) The plural of proper names is not written with an apostrophe, as "Smiths" not "Smith's," "Marys" not "Mary's."

(4) When the plural of numerals is written wholly in letters no apostrophe is used; but if the figures for the numerals are used, add an apostrophe with s, as *twos, threes,* and *fours;* or 2's, 3's, and 4's. The plural of letters is written thus: "Mind your P's and Q's."

Diaeresis.—(1) The diaeresis is placed over the latter of two vowels to show that they are to be pronounced in separate syllables, as coöperate, Laocoön, preëngagement.

Letter Writing.—The art of letter writing has been mourned by many as a lost art. It is said that the letters of the present day do not compare in interest, style, and attractiveness with those of fifty years ago. The ease of travel, frequency of mails, the general rush of life, and the common use of the telephone have, no doubt, all had their effect upon the intercourse between people.

The importance of using great care in the writing of letters has in no wise diminished. Errors in spelling, grammar, choice of words, as well as clumsily constructed sentences and bad taste in the choice of materials, give just as much offense, and decide as strongly against a man, as they ever did.

Materials.—Fine paper and thick envelopes are the first requisite. Cream-white paper that folds once to go into an oblong envelope is preferred for social use. Pure white paper of fine quality, folding once across and twice the other way to fit a No. 6 or commercial envelope, is the best for business use.

Jet-black ink is the only color sanctioned by the best usage. Nothing is so trying upon both patience and eyes as a pale or a brilliant colored ink, especially when a fine pen is used.

Under no circumstances write a letter with a lead pencil. Its use is properly regarded as a discourtesy.

Do not tear a sheet of paper in halves, no matter how short your letter. This does not show economy but meanness, and it may occur in cases where it would give a wrong impression.

Writing materials are so inexpensive that one should have a plentiful supply of good material always at hand. Blotting paper, pens, ink, and paper should always be at hand and easily accessible, especially in homes where letter writing is least frequent.

Language in Letters.—Written language is always more formal and more correct than spoken language. The many slang terms, contractions such as don't, won't, etc., and colloquial expressions are not to be used in letter writing. Grammatical accuracy and the correct use of words are, if possible, to be more positively insisted upon in a letter than they are usually regarded in speaking. The structure of sentences and of paragraphs, punctuation, and the use of capitals, are of extreme importance in letter writing, and conciseness and exactness of expression are absolutely necessary. Perhaps the first essential is to see that in all cases your meaning is absolutely plain. If this can be secured in few words, then the prime requisites of a good letter will be secured. Correctness in spelling, grammar, and all of the niceties of expression will go for nothing if you do not express yourself both clearly and fully.

Young persons should be encouraged to write letters to their friends. They should be supplied with every facility for so doing. Not only should materials always be at hand when needed, but parents should suggest topics or subjects, however trivial, upon which the young may write to others. It is by practice that skill in the use of words comes, and children should not rely upon formal school exercises, perfunctorily performed, for the development of this most essential and much neglected accomplishment.

Parts of a Letter.—The parts of a letter now generally recognized are:—

(1) The Heading.
(2) The Address.
(3) The Salutation.
(4) The Body of the Letter.
(5) The Complimentary Close.
(6) The Signature.

The Heading, including the date and location, is the first point to be considered. Always date a letter exactly. In a business letter the date comes at the top of the page. In a social letter it may be reserved until the last if the writer chooses. If a reply is expected, the heading includes the full address of the writer.

The Address in a business letter is full and includes practically all that will appear upon the envelope. This, like the date, may appear either at the beginning or at the close of the letter.

The Salutation depends upon the nature of the letter, the station of the person addressed, and the degree of intimacy existing between the persons concerned. In ordinary business "Dear Sir" and "Dear Madam" are the forms almost universally employed. "Sir" and "Madam" are very formal modes of address. A woman, whether married or single, may always be addressed as "Dear Madam." One may also write to a single woman with the address "Dear Miss Wilson" with equal propriety, but not as "Dear Miss." "My dear Sir" and "My dear Madam" are regarded as being more formal or more distant than "Dear Sir" or "Dear Madam." In England the reverse is the case. In addressing a firm, "Gentlemen" is preferred to "Dear Sirs" by most writers. This form is also used in addressing firms made up of men and women. The use of capital letters in the Salutation is largely a matter of taste and we may write either "My Dear Sir" or "My dear sir" with equal propriety. The Salutation may be followed by a colon as:—

My dear sir:

or by a comma, as:—

My dear sir,

whichever one prefers.

The Body of the Letter may begin upon the same line as the salutation or, as is more frequently done, on the next line below. There are some who invariably begin a letter with excuses for not having written before. If that is needed in a letter, defer it until later on. Do not begin with the pronoun "I" if it can be avoided; and do not let that letter occur too frequently; a little care in the structure of sentences will avoid this. Give each topic a separate paragraph. Finish each topic fully before leaving it.

The Complimentary Close, like the Salutation, depends upon the persons concerned, and the nature of the letter. The most generally used are "Yours truly" and "Respectfully yours." They are what might be termed safe expressions to use. Affection, regard, and esteem will suggest other forms, such as "Sincerely yours," "Faithfully yours," "Affectionately yours," "Very cordially yours," "With kindest wishes, I remain," and many others.

These are written on the line below the last one of the body of the letter. The first word of the Complimentary Close should always be capitalized. A comma follows the last word.

The Signature, except in informal letters between intimates, should always be the full name. Many business letters are not signed by the senders, and endless trouble results from this carelessness. There is need of the fullest information as to name and address when a reply is expected. If a woman wishes to indicate that she is married she may inclose "Mrs." before her name as: (Mrs.) Ellen T. Ferguson.

Similarly a single woman may sign (Miss) Jane F. Anston.

The Superscription or Address upon the envelope is always to be clear as to the identity of the person and the locality in which he lives. Care in this regard insures more speedy delivery and often prevents disappointment. It is not now considered necessary to punctuate each line of the superscription with a comma, though it is quite permissible to do so. If commas are used there, a period must appear at the end of the lowest line. It is customary to add titles to the names of persons for whom the letter is intended. In England and in Canada the use of "Esq." is very general, when a man has no title. Sometimes "Mr." is prefixed to the name. But only one such may be used at a time. It is wrong to address a person as "Mr. Clarence F. Thomas, Esq." Write either "Mr. Clarence F. Thomas," or "Clarence F. Thomas, Esq." Where a man has gained several degrees the highest is chosen. If a man has secured both D.D. and LL.D. use both and put LL.D. last, as: James L. Adams, D.D., LL.D.

Prefix "Rev." before a clergyman's name and add abbreviations for his degree. Write before a bishop's name "Rt. Rev." for "Right Reverend" and append titles. Prefix "Hon." before the names of the Vice-President, members of the Cabinet, members of Congress, mayors of cities, judges, consuls, and other officials, and follow with any title, but never with "Esq." Never address or speak of a doctor's wife as "Mrs. Dr. Edwards," but as "Mrs. A. H. Edwards."

Examples of Formal and Familiar Correspondence.—Formal invitations and communications passing between persons not acquainted are often written in the third person throughout. Upon occasions of great formality and for large gatherings the invitation is generally engraved and printed.

AN INVITATION TO A WEDDING AT CHURCH.

Mr. and Mrs. Thomas Carter
request the honor of your presence
at the marriage of their daughter
Muriel
to
Mr. Charles Payton Tyrrell
on Thursday evening, May tenth
One thousand nine hundred thirty-eight
at half-past seven o'clock
First Baptist Church
Reading, Pennsylvania

INVITATION TO AN AT HOME FOLLOWING THE WEDDING.

Mr. and Mrs. James Ross Eaton
At Home
Thursday afternoon, January third,
One thousand nine hundred thirty-nine
from four thirty until eight o'clock
Six hundred fifty-three Euclid Avenue
Cleveland, Ohio

INVITATION TO AN AT HOME AFTER THE HONEYMOON.

Mr. and Mrs.—(bridegroom's name)
At Home
Tuesday evenings in December
from eight until ten o'clock
Six hundred fifty-three Euclid Avenue

INVITATION TO A RECEPTION AT THE HOME OF THE BRIDE'S PARENTS AFTER THE HONEYMOON.

Mrs.—(bride's mother's name)
Mrs.—(bride's name)
At Home
Wednesday, December tenth
from four until ten o'clock
Six hundred fifty-three Euclid Avenue

INVITATION TO A WEDDING AT RESIDENCE.

Mr. and Mrs. Wilson Everett
request the honor of the presence of
Mr. and Mrs. George T. Wilson
at the marriage of their daughter
Beatrice
to
Mr. Albert Percy Edmunds
on Thursday afternoon, October sixteenth
at four o'clock
Six hundred fifty-nine Fifth Avenue

FORM OF MARRIAGE ANNOUNCEMENT.

Mr. and Mrs. Wilson Everett
announce the marriage of their daughter
Beatrice
to
Mr. Albert Percy Edmunds
Thursday, October sixteenth
Six hundred fifty-nine Fifth Avenue

GENERAL NOTE OF INVITATION.

Mr. and Mrs. Thomas Jones Wilson request the pleasure of Mr. and Mrs. James Clark's company next Friday evening at eight o'clock.
Eighteenth State Street
May sixteenth.

REPLY ACCEPTING THE INVITATION

Mr. and Mrs. James Clark accept with pleasure the kind invitation of Mr. and Mrs. Thomas Jones Wilson for Friday evening.
One hundred forty-six Clifford Street
May seventeenth.

REPLY DECLINING THE INVITATION.

Mr. and Mrs. James Clark deeply regret that they cannot accept the kind invitation of Mr. and Mrs. Thomas Jones Wilson for Friday evening.
One hundred forty-six Clifford Street
May seventeenth.

INFORMAL INVITATION TO DINNER.

My dear Mr. Simpson:
Governor Anderson will dine with us on Thursday next at seven o'clock. It will give us very great pleasure if you will favor us with your company on that occasion.
Very cordially yours,
James P. Clark.

To James R. Simpson.
May 17, 1938.

ANSWER TO PRECEDING.

My dear Mr. Clark:
It will give me great pleasure to dine with you Thursday evening and meet Governor Anderson.
Very truly yours,
James R. Simpson.

To James P. Clark.
May 18, 1938.

NOTE ACCOMPANYING A WEDDING GIFT.

Miss Eva Clinton sends her kindest love and best wishes to Miss Amelia Rowan and asks that she will accept the accompanying trifle as a token of her affection and desire for her future happiness.
January Fifth, 1938.

REPLY TO THE PRECEDING.

Miss Amelia Rowan presents her compliments and sincere thanks to Miss Eva Clinton for the exquisite token of her affection and good wishes
January Fifth, 1938.

LETTER OF CONDOLENCE.

to a friend on the death of her husband.

Rochester, New York,
November 7, 1938.

My dear Mrs. Van Arsdale:
Any word of mine will prove but poor comfort to one in such deep affliction as yours, yet I cannot refrain from offering to you my most sincere and heartfelt sympathy. My own grief at the loss of a beloved and highly valued friend teaches me how great must be your sorrow; but knowing your Christian fortitude under other circumstances, I trust that heavenly balm and consolation will be poured upon your heart. May God bless and sustain you, my dear friend.
If I can in any way be useful to you, or relieve you of any care, please call upon me.
With deepest friendship,
Yours sincerely,
Julian Suydam.

Mrs. Henry Van Arsdale.

LETTER ASKING A FAVOR.

Albany, New York,
October 19, 1938.

Dear Alma:
If you have finished reading Milton's "Paradise Lost," illustrated by Doré, will you kindly lend it to me for a few days? I wish to compare it with my new edition of the "Ancient Mariner," illustrated by the same artist.
Lovingly yours,
Sarah.

Miss Alma Bainbridge.

LETTER GRANTING A FAVOR.

Dear Sarah:
With pleasure I send the book, and hope that you will find it of value in your study of Doré.
Yours affectionately,
Alma.

October 20, 1938.
Miss Sarah Stanhope.

LETTER OF INTRODUCTION.

Boston, Massachusetts,
Dec. 11, 1938.

My dear Mr. Eliot:
Permit me to introduce the bearer, Mr. F. J. Howland, of Boston. Any attention shown him will be greatly appreciated.
Yours truly,
M. L. James.

To Mr. T. W. Elliot,
Chicago, Illinois.

REPLY TO AN ADVERTISEMENT.

864 Market Street
Galveston, Texas
January 23, 1938

Wright, Elliott and Company
1299 Monroe Street
Chicago, Illinois

Gentlemen:

Your advertisement in the Kansas City *Star* for yesterday has attracted my attention. If you are in need of a salesman to handle your brands of food products in the southern states, I think my qualifications may interest you.

Last summer, acting on the advice of my physician, I came south for a complete rest, made necessary by a railway accident. Since June I have traveled at leisure through Texas, Mississippi, Georgia, Alabama, and parts of other states, where I spent some time five years ago while on vacation. This seems a wonderful country to me, and I should like to consider locating here permanently. For this reason I seek employment such as your house seems to offer. You will find enclosed a statement of my age, health, and ideas of business, from which you may gain some information as to my fitness.

My old employers, Summers and Company, 469 Simrell Street, Kansas City, Missouri, will be glad to write you as to my success with them. Since a personal interview is much more satisfactory than mere correspondence, I suggest that you have one of your salesmen in this territory or the manager of your branch house in Austin arrange for a personal interview.

If you are interested in my qualifications, I should be glad to hear further from you, and to answer any questions you may wish to ask.

Very truly yours,
Edward Simpson, Jr.

LETTER ORDERING GOODS.

80 Grant Street
Elizabeth, New Jersey
February 10, 1938

Brokaw and Stanley
Broad Street
Philadelphia, Pennsylvania

Gentlemen:

For almost ten years, ending in June last, I was employed as a salesman by Davis and Company, large retail grocers of your city. Recently I invested my savings, and a small inheritance, in a good store in Elizabeth. Business has been so prosperous that I am now adding floor space, and wish to take advantage of buying in larger quantities from wholesale houses like yours.

Please let me know what terms you can make for both cash and credit for the bill of goods enclosed. I desire the shipment to be made by American Railway Express as soon as you are willing. As to my reliability, you may refer to my former employers and to the Second National Bank of Elizabeth, where I have an account.

Truly yours,
Stuart Newton

ACCEPTANCE OF ORDER.

159 Broad Street
Philadelphia, Pennsylvania
February 17, 1938

Stuart Newton
80 Grant Street
Elizabeth, New Jersey

Dear Mr. Newton:

We have corresponded with your references, mentioned in your letter of February 10, and find that your credit is excellent and your reputation high.

Our shipping department is, therefore, sending the goods to you requested, and we are billing them to you on our most liberal terms of 5% for cash, or three months without discount, at your option.

If you discover faults in any items of this shipment, let us have a chance to make an adjustment at once, since we value your order and we are pleased to open a new account.

Very truly yours,
Brokaw and Stanley.
By R. S. Stanley, Pres.

COMPLAINT TO AN EXPRESS COMPANY ABOUT LOSS OF GOODS.

New Haven, Conn.
December 2, 1938.

Adams Express Co.,
Hartford, Conn.

Dear Sirs: Word has been received that goods shipped by me to Hartford on the 10th ult. have not yet reached their destination. Kindly inquire into the matter, and let me know the result at your very earliest convenience.

Yours truly,
Brenton E. Hapgood.

LETTER WITH REMITTANCE.

Westfield, New Jersey
March 13, 1938

First National Bank
Somerville, New Jersey
Attention of Mr. H. J. Hixson

Gentlemen:

I am now enclosing my check for $25.65 to cover the semi-annual interest due on the note given by me to your bank last September. According to my understanding this note is to run for six months more. If I am wrong in this, or in figuring the amount of the interest now due, please inform me.

Gratefully yours,
Everett T. Huntley.

LETTER ACKNOWLEDGING REMITTANCE.

Syracuse, N. Y.,
November 28, 1938.

Mr. Everett T. Fuller.

Dear Sir: Your check for twenty-five dollars and sixty-five cents, ($25.65) in payment of interest on my note, received and credited.

Yours truly,
Oscar Blake.

LETTER REQUESTING PAYMENT.

Hope, Illinois
January 11, 1938

Mr. Samuel Poor
R. D. 3, Box 19
Hoopestown, Indiana

Dear Mr. Poor:

Last spring you appealed to us for credit on some farm implements which you said were absolutely needed that you might plant and harvest your crops this season. Though you did not comply with all the requirements usually met in cases of opening new accounts, we trusted to your sense of fairness.

Now we are obliged to make payments ourselves, and we find that your account is three months past due. Does it seem fair that you have written no explanation of your delay?

May we not hear from you at once?

Expectantly yours,
Lincoln Hardware Company.

LETTER REFUSING CREDIT.

Decatur, Illinois
January 11, 1938

Mr. Samuel Smith
Munhall, Indiana

Dear Mr. Smith:

You ask for credit on some farm machinery needed for the coming season.

We regret to say that our firm does business on a strictly cash basis, and our prices are made accordingly. In fairness to all our old customers, we feel that we must impartially hold to this plan of doing business.

Very truly yours,
Hall Hardware Company

LETTER REQUESTING RENEWAL OF NOTE.

Camden, N. J.,
November 4, 1938.

Gentlemen:

My note for two thousand dollars ($2,000) falls due on the 19th inst., and I find that it will be impossible for me to meet it. I would, therefore, ask you to renew it for ninety days, with interest, at the end of which time I shall undoubtedly be in receipt of more than sufficient funds to pay it.

Your compliance with this request I shall deeply appreciate.

Very respectfully yours,
Walter Provost.

Messrs. Adrian & Schuyler,
Philadelphia.

LETTER OF RECOMMENDATION.

Chapel Hill, North Carolina
June 29, 1938

Marsh, Treat, and Company
Raleigh, North Carolina

Gentlemen:

You request our opinion of Mr. Henry W. Fulton, who has been selling bonds for our house since April, 1926.

The best we can report of Mr. Fulton is that we should extremely regret to lose him. Yet, in justice to Mr. Fulton himself, we feel that he deserves more rapid advancement than we can offer at the present. He has always proved an alert, courteous, and effective employe.

Very truly yours,
Dow, Jones, and Coulter,
By R. S. Coulter, Secretary.

RSC-MJ

A TELEGRAM

The essential thing in writing a telegram is to make the message convey a clear, exact, and complete idea of what the sender means, in as few words as possible.

EXCUSE FOR ABSENCE FROM SCHOOL.

Dear Mr. Griffiths:

Please excuse Charles's absence from school, May sixth to ninth, on account of illness.

Very truly yours,
(Mrs.) Charles F. Brand.

GENERAL RECOMMENDATION.

Clarksburg, West Virginia,
March 16, 1938.

To Whom It May Concern:

This is to certify that the bearer of this note, Miss Gladys O'Neill, was graduated from Teachers' College, California, Pennsylvania, and has taught in the schools of this city for the past three years.

She has taught in Madison School and I have had the opportunity to observe her work closely. I can recommend her as capable of filling any position in a graded school.

Charles F. Rice,
Principal of Madison School.

TEACHER'S APPLICATION FOR POSITION.

Newtown, Pennsylvania,
January 21, 1938.

Mr. James C. Brown,
Superintendent of Schools,
Warren, Ohio.

Dear Sir:

I have been informed that there is a vacancy to be filled in the Garfield Junior High School of your city, and I should be glad to have you consider me as an applicant for the position.

In 1918 I was graduated from high school, and in 1922 completed the teachers' training course in the State Teachers' College of Indiana, Pennsylvania. The first three years after graduation I taught in the public schools of Newtown, which is my home town. The last four years I have been teaching in the East End Junior High School of Niles, Ohio.

I enclose copies of letters from the following:

Doctor T. J. Livermore of Indiana Normal School.

Doctor F. L. Mowrer, Superintendent of Schools, Newton, Pennsylvania.

Mr. O. K. Wilson, President of the Board of Education, Niles, Ohio.

I shall be pleased to come to Warren for a personal interview.

Respectfully yours,
(Miss) Irene Gordon.

Enc.

APPLICATION FOR COMMERCIAL POSITION.

622 Bancroft Street,
Zanesville, Ohio,
February 16, 1938

Messrs. F. Y. Young and Brother,
62 Liberty Street,
Pittsburgh, Pennsylvania.

Gentlemen:

I hereby apply for a position in your Sales Department which you mention in your advertisement in this morning's issue of the "Post Gazette".

I am twenty two years of age, a graduate of the Central High School of Zanesville in the class of 1926. I have also completed the regular stenographic course in the Warden Business School of your city. At present I am doing stenographic work for the H. J. Goodwin Company in this city.

My parents have moved to Pittsburgh. I am therefore anxious to secure a position in your city. I should be pleased to be granted a personal interview at your convenience.

Very truly yours,
(Miss) Irma C. Watson.

SALES LETTER

20 South LaSalle Street
Chicago, Illinois
August 13, 1938

John Purchas
Warren, Iowa

At last the ordinary business man is satisfied. No miracle has been performed. We have made no absolutely new type of breakfast food, or special brand of soap that will break your whiskers off without the use of some sort of razor, or even a typewriter that will always spell correctly.

Yet we have done something we feel you will appreciate. You may have thought it not quite possible. We have perfected and patented a new chair cushion for office and typewriter chairs that will stay put where you place it on the chair, will not become as hard as cement in an hour, and will outlast the desk chair itself.

If the enclosed circular describing the Easy Chair Pad interests you, let us have a chance to prove what we have been saying of it. Our slogan has always been,—"We refund without asking the customer to fill out a two-page blank explaining just what is wrong." You are the one to be pleased.

Yours expectantly,
Zero Manufacturing Company

MMJ:HT.
Enclosure

CONVERSATIONAL SALES LETTER.

Periodical Sales Company
Palo Alto, California
August 17, 1938

Mr. Lumber Merchant
Everywhere, U. S. A.

"What are you going to send your customers as a Christmas greeting this year? It won't be long now before Santa Claus will be coming around on his annual visit." In this manner our salesman opened a conversation in a large office recently.

"Blamed if I know," said the manager of the lumber company, "for we have tried calendars, ruling sticks, blotters, and everything else. They do no good."

"Are you certain of that?" asked our traveling man. "Why not try something different this time,—something that the office needs and will keep in sight every day of the year?"

"You are the boy to convince me that it can be done."

"Well, here is my chance right now. Have you seen the last copy of the *Retail Lumber Dealer?* Our house has arranged with the publishers to supply this monthly magazine to wholesale dealers who want to give their customers something handsome for Christmas."

"You don't mean to expect me to subscribe for this thing for a whole year for every customer? It would cost too much."

"Suppose you have been paying fifty or seventy-five cents for things which went out of sight or into the waste basket year after year. Why not pay a quarter more, get something that will please, and moreover something that will really advertise you every month of the year?"

As a result of this conversation, the salesman brought us 85 orders from one firm alone.

Let us send you further details. It will cost you nothing and may lead to greatly increased sales next year.

Very truly yours,
Periodical Sales Company
Herbert H. Halliday, Pres.

HHH-RSP
2 Enclosures

REQUEST FOR ADJUSTMENT OF LOSS

489 Chapel Street,
New Haven, Connecticut
March 1, 1938

Rapid Auto Express Company
Hartville, New York

Gentlemen:

Day before yesterday you brought several crates of furniture from New York to our warehouse in New Haven. As our workmen opened them yesterday afternoon, they found several pieces damaged or broken, and evidence of rough handling in transit. There seems to be some evidence of a collision or of some sudden jar which caused the injury.

As soon as we can estimate the exact damage, we shall send you a statement. In the meantime, if a representative of your firm wishes to examine the shipment, we shall be glad to have him come to our office.

Truly yours,
Tuttle Furniture Co.
By J. C. Eliot, Manager.

jce-ty

LETTERS OF FAMOUS PEOPLE

Abraham Lincoln's reply to a letter requesting information about the financial condition of one of his neighbors.

Springfield, Illinois,
My dear Sirs: September 17, 1858.

Yours of the 10th inst. received. I am well acquainted with Mr. X., and know his circumstances. First of all, he has a wife and baby; together they ought to be worth $50,000. Secondly, he has an office in which there are a table worth $1.50 and three chairs worth, say, $1. Last of all, there is in one corner a large rat-hole which will bear looking into.

Respectfully,
A. Lincoln.

March 3, 1863.

To Mr. James T. Fields:

I was ashamed this morning to send the expressman to your door in quest of an old umbrella, not unlike that which accompanied and consoled the exiled King of France in his flight to England. Nevertheless I did send, for it is a lineal descendant of King Cotton, and is of that particularly audacious kind that never says "Lost." In the hands of a modern sensuous poet the handle would become pearl (daughter, not mother of), and the rest would be of a "tissue from the looms of Samarcand." Finally, it is the one I keep to loan to lecturers at the Lowell Institute and the like; and, tho' very dissipated, is worth reclaiming.

Accept my apology and believe me or not,
Yours truly,
Henry W. Longfellow.

Thomas Bailey Aldrich to Professor Edward S. Morse.

My dear Morse:

It was very pleasant to receive a letter from you the other day. Perhaps I should have found it pleasanter if I had been able to decipher it. I don't think I mastered anything beyond the date, which I knew, and the signature, at which I guessed.

There is a singular and perpetual charm in a letter of yours—it never grows old, and it never loses its novelty. One can say every morning, as one looks at it, "Here's a letter of Morse's I haven't read yet. I think I shall take another shy at it to-day, and maybe I shall be able in the course of a few years to make out what he means by those t's that look like w's and those i's that haven't any eyebrows."

Other letters are read and thrown away and forgotten, but yours are kept forever—unread. One of them will last a reasonable man a lifetime.

Phillips Brooks to his niece.

233 Clarendon Street, Boston,
My dear Gertie: March 21, 1881.

This is a picture of you and Toody and the little boy that gave you the measles. Toody is the one with the umbrella, and you are the one with your finger in your mouth. I am glad you have got done the measles. What are you going to have next? I should think you might take half of poor Tood's measles and help her through. I thank you for writing me such a beautiful letter, and I hope you will come and see me the first time you go out.

Samuel Johnson's letter on friendship written to Mrs. Thrale.

Since you have written to me with the attention and tenderness of ancient times, your letters give me a great part of the pleasure which a life of solitude admits. You will never bestow any share of your good-will on one who deserves better. *Those who have loved longest love best.* A sudden blaze of affection may by a single blast of coldness be extinguished; but that fondness which length of time has connected with many circumstances and occasions, though it may for a while be depressed by disgust or resentment, with or without a cause, is hourly revived by accidental recollection. To those who have been much together, everything heard and everything seen recalls some pleasure communicated or some benefit conferred, some petty quarrel or some slight endearment. Esteem of great powers, or amiable qualities newly discovered, may embroider a day or a week, but a friendship of twenty years is interwoven with the texture of life. A friend may be often found and lost but an *old friend* never can be found, and nature has provided that he cannot *easily* be lost.

29 De Vere Gardens, W.,
My dear Tennyson: August 5, 1889.

To-morrow is your birthday—indeed a memorable one. Let me say I associate myself with the universal pride of our country in your glory, and in its hope that for many and many a year we may have your very self among us, secure that your poetry will be a wonder and delight to all those appointed to come after. And for my own part, let me further say, I have loved you dearly. May God bless you and yours!

At no moment from first to last of my acquaintance with your works, or friendship with yourself, have I had any other feeling, expressed or kept silent, than this which an opportunity allows me to utter—that I am and ever shall be, my dear Tennyson,

Admiringly and affectionately yours,
Robert Browning.

The Earl of Chesterfield to his son.

Dear Boy: London, August 10, 1749.

Let us resume our reflections upon men, their characters, their manners; in a word, our reflections upon the World.

They may help you to form yourself and to know others. A knowledge very useful at all ages, very rare at yours; it seems as if it were nobody's business to communicate it to young men. . . . . .

There is a certain dignity of manners absolutely necessary, to make even the most valuable character either respected or respectable. Whoever is admitted or sought for, in company, upon any other account than that of his merit and manners, is never respected there, but only made use of.

. . . . . .

Abject flattery and indiscriminate assentation degrade as much as indiscriminate contradiction and noisy debate disgust. But a modest assertion of one's own opinion and a complaisant acquiescence in other people's, preserve dignity. . . . . Adieu.

Figures of Speech.—When, instead of literal terms, we employ imagery we are said to use figurative language. The forms of expression so used are called figures of speech, tropes, or images. The use of figurative language clothes the sentences in beauty and dignity; pleases us by exciting our imagination; enables us to make a larger use of our vocabulary; and aids us by a clearer and more forcible manner of expressing our thoughts. Figures should be used sparingly. A too frequent use of them palls upon the reader and causes a lack of appreciation of them.

The figures of speech most frequently used are arranged in three groups:—

Figures based on resemblance.	Simile. Metaphor. Personification. Apostrophe. Allegory.
Figures based on contrast.	Antithesis. Epigram. Irony.
Figures based on other relations.	Metonymy. Hyperbole. Climax. Interrogation. Exclamation. Vision.

Simile.—This is the comparison of two things when *like*, *as*, or a similar word is employed. Not all comparisons, however, are similes. To say "The lion is as strong as the tiger" is not to use a simile, though there is comparison and *as* is used. It is important to note that a simile expresses a likeness of one point between things that are unlike in every other point. The following are good examples of simile:—

"A fatal habit settles upon one like a vampire and sucks his blood."

How far that little candle throws its beams!
So shines a good deed in a naughty world.
—*Shakespeare, Merchant of Venice.*

Her hair drooped round her pallid cheek,
Like seaweed on a clam. —*Holmes.*

Metaphor.—When we say that one thing is another by way of comparison we call the figure a metaphor. As in the case of the simile the contrasted things must not be too nearly alike.

"All the world 's a stage."
"Spare moments are the gold-dust of time."
"Thy liquid notes that close the eye of day."

When one object is compared to two or more in the same sentence there results a mixed metaphor, which is generally ludicrous or ridiculous in its effect. Care must also be taken that a metaphor be not combined with a literal statement in the same sentence. When we say "Her cheeks bloomed with roses and health" we combine the metaphor "roses" with the literal "health." But we might correctly say "roses of health."

Personification.—When inanimate objects are treated as though they were animate, and when the lower animals are endowed with human powers and attributes, they are personified.

"The morning stars sang together."
"The angry sea."
"The wind howled."
"All day the sea-waves sobbed with sorrow."

Apostrophe.—When we address an inanimate object, or an absent or dead person, the figure is called apostrophe.

"My country, 't is of thee."
"Thou, too, sail on, O ship of state."
"O Death, where is thy sting?"

Allegory.—In some respects an allegory is a continuous metaphor. It is essential, however, that the subject be kept in the background in an allegory and not given the prominence which is required in a metaphor. Among the most famous allegories are: Bunyan's "Pilgrim's Progress"; Spenser's "Faerie Queene"; Swift's "Tale of a Tub"; and Addison's "Vision of Mirza."

Allegorical representation is very common in painting and in sculpture. Many famous large mural decorations are of allegorical subjects; among the most celebrated are the many fine examples found on the walls of the Library of Congress and in the Boston Public Library.

Parable.—A short account of a happening, either real or imaginary, intended to enforce or to teach a moral principle, is a parable. This was Christ's favorite method of teaching.

Fable.—Useful lessons taught by stories in which animals and inanimate objects are introduced as persons are called fables. This was a favorite method with classical writers, such as Æsop; and with modern writers, such as Fenelon and Gay.

Antithesis.—A forcible statement of unlikeness in which the contrast is conveyed by balanced sentences is called antithesis. It is important that the same structure of sentence be maintained and that the same parts of speech be used in the contrasting parts of the sentence.

"Deeds show what we are; words, what we would be."
"Silence is as deep as Eternity; speech is as shallow as Time."
"Fools rush in where angels fear to tread."

Epigram.—This is a condensed, pointed saying which apparently contradicts in one part of the sentence or by one word what has been said in another.

"The child is father of the man."
"When you have nothing to say, say it."

Irony.—A statement made in such a way that its very absurdity will show that the opposite meaning is intended is the figure known as irony.

Metonymy.—When the name of an object is put for another in cases where the two objects are so closely related that the one name suggests the other it is called metonymy. This is a common figure in daily speech. We say "The kettle boils" when we mean that the water in the kettle boils. The use of "hands" for men; "head" for cattle; "gray hairs" for age; "rum" for intemperance, are all familiar cases of metonymy.

Hyperbole.—This is the figure of exaggeration, not for the purpose of deceiving, but, usually, to attain force or emphasis.

"The waves are mountains high."

The modern popular use of superlatives in daily intercourse illustrates the common use of hyperbole.

Climax.—The climax is a series of statements

of which each succeeding one surpasses or eclipses the preceding one. It is necessary that the rising order be strictly observed or an anti-climax will result. Never let a weaker or less important statement follow a stronger one.

Here I stand for impeachment or trial! I dare accusation! I defy the honorable gentleman! I defy the government! I defy their whole phalanx!

—*Grattan.*

The following is an example of anticlimax:—

"The arm of the Lord is as fixed as fate, as sure as eternity, as strong as the rock of Gibraltar."

Interrogation and Exclamation.—In these figures strength or force is derived by putting a statement in the form of a question to which no answer is expected or in the exclamatory form.

Am I my brother's keeper?
Is life so dear, or peace so sweet, as to be purchased at the price of chains and slavery?

—*Patrick Henry.*

Oh what a tangled web we weave
When first we practise to deceive!

—*Scott.*

But oh, for the touch of a vanished hand,
And the sound of a voice that is still!

—*Tennyson.*

Vision.—This figure represents a past scene or event as one now passing before the eyes of the audience or the reader.

I see before me the gladiator lie;
He leans upon his hand—his manly brow
Consents to death, but conquers agony,
And his drooped head sinks gradually low.

—*Byron.*

Synecdoche.—A figure in which a part is used to represent the whole, as when "fifty sail" is used for fifty ships; or the whole is used for the part, as "The whole world knows his worth"; or the species for the genus, as the use of "cut-throat" for assassin; or the genus for the species, as "being" for man; or using the word for the material from which a thing is made instead of the name of the thing itself, as "board" for table; or that which contains for the thing contained, as "bottle" for wine, etc.

Litotes.—A moderation, modification, or softening of a statement in order to avoid censure or to increase the effect.

"I am a citizen of no mean city."

In such cases a statement is made by denying the opposite.

Parallel.—A lengthy or continued comparison of two objects, whereby the likenesses and differences are noted. Sometimes it takes the form of an expanded or extended antithesis.

Allusion.—The use of a well-known fact or event in history for explanation, description, or illustration.

Onomatopoeia.—The use of words which cause the sound to correspond to the sense. Poe's poem, *The Bells,* and Southey's description of how the waters come down at Lodore are marked examples. Many words like *rattle, crackle, boom, rumble, roll, roar, swish,* and *hiss,* are onomatopoetic words.

Structure of Sentences.—Sentences from a grammatical standpoint are classified as simple, complex, or compound.

A simple sentence contains one predicate, either simple or compound.

A compound sentence is composed of two or more principal clauses.

A complex sentence contains one principal clause and one or more subordinate clauses.

A declarative sentence is a statement.

An interrogative sentence is a question.

An imperative sentence is a command or request.

An exclamatory sentence expresses strong feeling.

A periodic sentence or a period holds the attention until the close; or it is a sentence in which the full meaning of the speaker is not made clear until the last word is spoken.

A loose sentence may be brought to a close in one or several places, and in each case make complete sense.

A balanced sentence is composed of two members of similar form. It is much used in contrast, comparison, or antithesis.

A *phrase* is a group of closely connected words not containing a subject and predicate, but which may be used as a single part of speech. According to form, phrases are prepositional, participial, and infinitive; according to use, they are adjective, adverbial, and noun.

A *clause* is a part of a sentence containing a subject and predicate. From their rank in the sentence, clauses are named principal or independent, and subordinate or dependent. Co-ordinate clauses are those of equal rank in sentences, and are joined by "and," "but," "so," etc. From their use in sentences, subordinate clauses are called noun, adverbial, and adjective. A restrictive clause limits the word which it modifies so closely that it cannot be omitted without changing the meaning intended. *That* often introduces a restrictive clause. An unrestrictive clause may be omitted or changed to a principal clause.

Analysis is the separation of a sentence into its elements. *Synthesis* is the formation of a sentence from the parts.

Idiom.—A form of expression peculiar to a particular language. "At his fingers' ends."

Ambiguity.—A word or expression capable of being understood in either of two meanings.

Euphony.—The harmony of a sentence is often destroyed by the repetition of the same word or of the same sounds. This fault is known as a lack of euphony.

"The principal *ordered* the teachers to *order* the pupils to preserve good *order.*"

The same effect is produced by the repetition of the same syllabic sounds.

"The elephant was dra*wn in an e*normous car."

Tautology.—The needless repetition of the idea in other words is known as tautology. "To return back," "To still continue," "To rearrange again," are familiar instances.

Redundancy.—The addition of statements, descriptions, or words not essential to clear expression which overload the sentence.

"Collect *together* all of the books." The idea is repeated by the unnecessary use of *together.*

Pleonasm.—The use of more words than are necessary to express the idea. It is sometimes permissible. "I saw it *with my own eyes.*"

Verbosity.—The expression of the idea by many words, however grammatical or euphonious the choice may be, is the fault called verbosity.

"He regrets that the multiplicity of his engagements precludes the possibility of taking advantage of your polite invitation."

This fault is sometimes known as that of *prolixity, circumlocution,* or *periphrasis.*

Poetry.—Poetry has been defined by Edmund Clarence Stedman as follows:—

"Poetry is rhythmical, imaginative language expressing the invention, taste, thought, passion, and insight of the human soul."

The important classes of poetry are the epic, the lyric, and the dramatic.

Epic Poetry.—An epic poem deals with the past, is consequently dependent upon memory and imagination; is narrative in character; treats usually of the life and heroic adventures of some great person; is simple in construction and generally excites deep interest. The longer and more celebrated epics are Homer's "Iliad," Homer's "Odyssey"; Vergil's "Æneid"; the Anglo-Saxon "Beowulf"; and Milton's "Paradise Lost."

Lyric Poetry.—Lyric poetry has more to do with the emotions and feelings than with events. In lyric poetry the power and personality of the poet is of far greater importance than are the subjects of which he treats. In this class are included hymns, odes, patriotic songs, love songs, nature poems, and the sonnet. Burns is probably the greatest lyric master in the English language.

The sonnet is limited in length to 14 lines and in subject to only one thought. This form originated in Italy. It was first used in England by Wyatt and Surrey. A sonnet is divided into two parts—the first eight lines called the *octave*, in which the subject is introduced and elaborated; and the last six lines, called the *sestet*, in which the subject is summed up or the conclusion drawn. The rhyming of the lines in a sonnet is very variable and much freedom is allowed. The sonnets of Shakespeare, of Milton, and of Wordsworth are most celebrated and many of them are familiar.

Dramatic Poetry.—The forms through which the English drama passed in its development are: Passion plays and Saint plays; Miracle plays; Moralities; Interludes; Comedies, and Tragedies.

Passion plays originated in Europe in the second century and were paraphrases of Biblical events. These were presented in churches with the priests as actors. In the fifth century they were strengthened by the addition of tableaux, dialogue, and very simple scenery. Plays with such characters as Daniel, Lazarus, and St. Nicholas as heroes were common in England in the twelfth century.

Miracle plays were presented in the public squares and places of cities, in the fourteenth century. They consisted of cycles which often covered from 25 to 42 important events of Biblical history. Coventry, Chester, York, and others were noted for the miracle play cycles in those days. Oberammergau in Germany is still noted for its passion plays, which vividly portray the chief events in Christ's life, and these are given by a simple village people with inadequate equipment, yet in such manner as to attract the attention of the whole world.

Moralities were plays in which the several vices and virtues were personified and allegorical representations were used in an attempt to correct abuses which had gradually crept into the miracle plays to the great scandal of the church.

Interludes were short plays given between the acts of more important plays in order to engage the attention and interest of the audience during, otherwise, long waits for dressing and stage carpentry.

Comedy was first known in England in "Ralph Roister Doister" by Nicholas Udall in 1551.

Tragedy was first presented in "Gorboduc, or Ferrex and Porrex," by Norton and Sackville.

Mixed Forms.—It is possible for one poem to combine epic, lyric, and dramatic characteristics.

A legend is a more or less mythical elaboration of some story founded upon tradition or fact. Layamon's "Brut"; Chaucer's "Canterbury Tales"; Longfellow's "Golden Legend," "Hiawatha," "Evangeline," and "King Robert of Sicily" are noted examples of this form.

An allegory, such as Spenser's "Faerie Queene," and shorter forms, as Leigh Hunt's "Abou Ben Adhem," is not only metaphorical in treatment but didactic in purpose.

The Ballad or folk-song is in some respects a combination of both epic and lyric characteristics. Old English history is a prolific field and has given to us such vigorous, dashing, and charming examples as "Chevy Chase," "Robin Hood," and "Bonny Barbara Allan."

Versification.—A verse is not to be confounded with a stanza. A verse is a line of poetry, or a combination of feet, and we speak of blank verse and of rhymed verse. A stanza is a group of verses and consists usually of either four or eight lines.

Meter is the division of a verse or line into feet. The kinds of feet most commonly used in poetry are:—

Trochee, consisting of one accented and one unaccented syllable, as bright'est, and is marked thus: — ⏑

Iambus, consisting of one unaccented and one accented syllable, as distress', and is marked thus: ⏑ —

Anapest, consisting of two unaccented and one accented syllable, and is marked thus: ⏑ ⏑ —

Dactyl, consisting of one accented and two unaccented syllables, and is marked thus: — ⏑ ⏑

Spondee, consisting of two accented syllables, and is marked thus: — —

Scansion.—This is the measuring of lines, dividing them into feet, and marking any pauses in the lines. In it we tell the kind of feet and the number of feet to a line.

One foot to the line is monometer verse.
Two feet to the line is dimeter verse.
Three feet to the line is trimeter verse.
Four feet to the line is tetrameter verse.
Five feet to the line is pentameter verse.
Six feet to the line is hexameter verse.
Seven feet to the line is heptameter verse.

In scanning a line we proceed thus:—

⏑ — | ⏑ — | ⏑ — | ⏑ — | ⏑ —
The cur | few tolls | the knell | of part | ing day.

The unaccented and the accented syllables are marked and it is seen that the verse consists of five iambi. Therefore the verse is said to be iambic pentameter.

— ⏑ | — ⏑ | — ⏑ | — ⏑
Tell me | not in | mournful | numbers

is a trochaic tetrameter for it consists of four trochaic feet.

˘ ˘ ¯ ˘ ¯ ˘ ¯
The Assyr | ian came down | like a wolf | on
˘ ¯
the fold. |

This is anapestic tetrameter verse for it consists of four anapestic feet.

Lines which lack a syllable at the end, or which terminate in an incomplete or imperfect foot, form what is known as catalectic verse.

¯ ˘ ¯ ˘ ¯ ˘ ¯ ˘
It was | eve, at | anchor | riding,
¯ ˘ ¯ ˘ ¯ ˘ ¯
Stately | ships were | lulled to | rest.

The first line is trochaic tetrameter for it contains four trochees; the next line is trochaic tetrameter catalectic for it contains four trochees, the last of which is catalectic.

Caesura is a break or pause which occurs usually in the middle of a foot.

"This is the forest primeval. || The murmuring pines and the hemlocks."

There is a caesural pause after primeval. There are sometimes two such pauses in a long line.

Rhyme.—This correspondence between the sounds of words, in order to be perfect, must conform to the following rules:—

(1) The vowel sounds in the words must be the same.

Sing rhymes with ring, but not with pleasing.

(2) The consonants following the vowel must have the same sound.

(3) The consonants before the vowel should have different sounds.

(4) The accents should fall on corresponding syllables in the rhymed words.

Poetic license is a term given to a certain freedom and liberty accorded to poets in the use of meter and rhyme. In some cases a much better expression may be secured by slight variations in rhyme and meter, so perfection in these qualities is not always demanded.

Alliteration or head rhyme, as the Anglo-Saxons called the frequent recurrence of the same letter in line, was the mark of Old English rhyme. We now use the end rhyme. A moderate use of alliteration is permitted in verse. "Lightly down leaping he loosened his helmet" is a line from an Old English poem where the rhyme is secured by the oft-repeated letter "l." Among modern poets Swinburne is, perhaps, most noted for alliterative rhyming. Shelley speaks of "the beaded bubbles winking at the brim"; and Roberts of "the grackles bickering in the alder boughs."

Blank Verse.—Poetry in which the lines do not end in rhymes. It is most common in long and serious poems. The writer is not hampered in the expression of thought by a search for rhymes.

Distich or Couplet.—A verse of two lines making complete sense. Distich is also applied to an epigram of two verses.

Triplet.—Three verses or poetic lines rhyming together.

Quatrain.—A stanza of four lines rhyming alternately. The Omarian quatrain in which Fitzgerald wrote his Omar rhymes in the first, second, and fourth lines.

Rhyme-royal.—A stanza of seven ten-syllabled lines of which the first and third, the second, fourth, and fifth, and the sixth and seventh rhyme. The stanza was introduced by Chaucer.

Spenserian Stanza.—A stanza of eight iambic pentameter lines followed by an iambic hexameter. It was introduced by Edmund Spenser and has been much used by Byron and other modern poets.

Heroic Verse.—The verse in which epic or heroic poems are usually written; in English, Italian, and German it is the iambic pentameter; in French, the iambic hexameter. In Vergil's Æneid, and in Homer's works, it is the hexameter line.

Alexandrine.—A verse composed of twelve syllables; sometimes applied to the last line of a Spenserian stanza.

Vers de Société.—Sometimes called society verse. It is the lightest kind of lyrical poetry, designed for the entertainment of polite society.

Villanelle.—A form of French verse written in nineteen lines and two rhymes, arranged in five triplets and a concluding quatrain. The first and third lines of the first stanza are repeated alternately as the last line of the following triplets and also form a couplet at the close of the quatrain.

Ode.—A lyric poem suitable to be set to music; it possesses marked nobility of sentiment and dignity of style.

Strophe.—That part of a Greek chorus or dance when the chorus turns from the right to the left of the orchestra. In modern verse it is also sometimes applied to a stanza.

Antistrophe.—The return of the chorus after the strophe. When the chorus moved around the altar, the strophe was sung while moving from east to west; the antistrophe, from west to east; and the epode, or last part of the song, while all stood before the altar.

Epode.—An after song; that part of a lyric poem which follows the strophe and antistrophe. Archilocus invented a lyric poem in which a longer verse is followed by a shorter; such are the Epodes of Horace.

Meter.—The meter of hymns and psalms is sometimes designated by such terms as long meter (L. M.), short meter (S. M.).

The Long Meter, or **L. M.**, is formed of four-line stanzas of tetrameter verse.

Though long the weary way we tread,
And sorrow crown each lingering year,
No paths we shun, no darkness dread,
Our hearts still whispering, Thou art near.

The Common Meter, or **C. M.**, is formed of four-line stanzas, the first and third lines of tetrameter (four-syllabled) verse, and the second and fourth of trimeter (three-syllabled) verse.

No mortal can with him compare
Among the sons of men.

The Short Meter, or **S. M.**, is formed of four-line stanzas, the first, second, and fourth lines of trimeter (three-syllabled) verse, and the third line of tetrameter (four-syllabled) verse.

Stand up and bless the Lord,
Ye people of his choice.

The Hallelujah Meter, or **H. M.**, is formed of eight-line stanzas, of which the first four are of tetrameter (four-syllabled) verse, and the last four are of trimeter (three-syllabled) verse, though sometimes these last four are written as two lines of hexameter (six-syllabled) verse.

WORDS OFTEN INCORRECTLY USED.

A.—Do not fail to repeat the article before a word if the sense requires it: He bought a black and white horse (one horse). He bought a black and a white horse (two horses).

Use *a* before a word beginning with a consonant or an aspirated "h"; *an* before a word beginning with a vowel or a silent "h."

Above.—Good writers do not say "the *above* statement"; *foregoing* or *preceding* is preferred. *Above mentioned* and *above referred to* do not sound as well as the simpler *already* does.

Accept of.—The *of* is unnecessary; we do not accept *of* gifts; we simply accept them.

Accompany.—In speaking of things, remember that one thing is accompanied *with* another; of persons, one person is accompanied *by* another. "The rain is accompanied *with* wind." "The governor was accompanied *by* his secretary."

Accord.—Not to be used for grant or give. *Accord* is a formal word and it involves great condescension on the part of the one who bestows.

Ad.—Not a correct abbreviation for advertisement and not sanctioned by good authorities. In writing, *advt.* is the proper form. The reason why *ad.* is so commonly used is because it is so difficult to pronounce *advt.*

Adjective.—It surprises some to learn that the best usage sometimes permits the use of an adjective where an adverb might be expected: Drink *deep;* he looked *bad;* stand *erect;* that seems *strange; wide* open; *red* hot; *pale* blue.

Adopt.—Often wrongly used for decided upon. Congress *adopts* a set of rules or a resolution which some one has prepared beforehand. But when several courses of action are presented and fully discussed, it is better to say that such a measure or course was *decided upon.*

Administer.—Medicine, oaths, affairs, and governments are *administered;* blows are *dealt.*

Advent.—Not to be used instead of arrive or arrival. Reserve the use of *advent* for sacred, stately, or ceremonial occurrences.

Affect.—Means to influence in some way; *effect* means to bring about, to accomplish: "This will not *affect* me in any degree." "He failed to *effect* the reforms for which he labored so hard."

Agriculturist.—This form is to be preferred to *agriculturalist.*

Ain't.—Never use this incorrect form of I'm not. It is less an abbreviated form of have not, for which it is sometimes used. Say *am not, are not, is not,* and *have not.*

Alike.—This word does not need *both* and *just* which so often accompany it. "Both alike" or "both just alike" are not to be used; say "They were dressed alike."

All of.—The *of* is not necessary. "I have them *all*" is better than "I have *all of* them" and "Take it *all*" than "Take *all of* it."

All of them.—Instead of "All of them left at nine" say "They all left at nine."

All over.—Transpose these words to "over all" and the effect is better. "Fires are raging *over all* the country" is a much better form.

Allege.—*Say* is much to be preferred to *allege* in the sense in which it is so commonly misused. If there is no sense of criminality or freeing from blame in the statement, do not use *allege.*

Allow.—Commonly misused for admit, think, or to be of the opinion. "He *allowed* that the price was a reasonable one" should be "He *admitted* that," etc.

All the same.—This is not so good as *nevertheless,* or *still,* for which it is sometimes used.

Almost, nearly.—Use *almost* when a thing has been going on for some time and is nearing completion; use *nearly* in speaking of something that has not been begun or did not happen. A man who has been severely injured might be *almost* killed; while one who fled unharmed from the danger might have been *nearly* killed.

Alone.—Not to be used instead of only. To do something *alone* is to do it unaided; to be the *only* one to do signifies that there were none others who did it. "I did it *alone*" means that I had no help or was unaccompanied. "I was the only one who did it" means that others did not do it.

Alternative.—Do not use *alternative* when *course* is meant. It is absurd to speak of "the only possible *alternative,*" because alternative means that a choice between two courses is open to one.

Always.—Watch this word to see if its use is really necessary. "Whenever I go to New York, I *always* go to see him" is no stronger with, than without, the word.

Among one another.—Say "*with* one another" or "*among* themselves."

And.—Not to be used instead of *to.* "Try *and* come," should be "Try *to* come." "Go *and* see him" should be "Go *to* see him."

Not to be used for *or.* "A language like the Greek *and* Latin;" there is no Greek and Latin language.

And which.—*Which* in this case is unnecessary, the *and* alone will do all that is needed.

Anniversary.—This word is applied only to yearly celebrations, as birthdays or wedding anniversaries. We do not speak of centennial *anniversaries;* we call them centennial *celebrations.*

Antecedents.—Not to be used for past history or reputation. Avoid such an expression as "His *antecedents* are bad."

Anticipate.—Not to be used in the sense of hope, or expect.

Any.—Not to be used as in the sentence "I did not sleep *any* last night."

Anyhow, anyway.—Not to be used in place of "At any rate," "In any event," "Be that as it may."

Any place.—Avoid the use of such forms as: "He wants to go *some place,*" "He will not go *any place.*" Use *somewhere* and *anywhere* instead.

Anyway and anywhere.—Never spell these with the unnecessarily added "s."

Apparent.—Not to be used for evident, obvious, or plain. "The truth of that is *apparent*" should be "The truth of that is *obvious.*"

Apt, likely.—*Apt* means endowed with some special fitness or ability; *likely* means probably. "He is *apt* to come at any time" is wrong, for it requires no mental fitness to come. Say "He is *likely*" or, better, "It is *likely* that he may come at any time."

Around, round.—Use *around* when rest is signified; *round* when motion is expressed. "The grocer is just *around* the corner." "The

boy ran *round* the corner." "He sailed *round* the world." "The bandage was tied *around* his finger."

As—as, so—as.—Use *as—as* for positive or affirmative comparison; *so—as* for negative comparison: "John is *as* tall *as* James;" "George is not *so* tall *as* Mary."

As I take it.—Better say "As I understand it," "As I see it," or "As it seems to me."

Ascend.—Do not use *up* with this word. "He ascended *up* to the top" should be "He ascended to the top."

At.—Instead of "Where have you been *at*?" say simply "Where have you been?"

At all.—This expression is usually unnecessary as it does not add to the strength of a sentence. "It does not rain *at all*" is no better than "It does not rain."

At best.—Say "at *the* best."

At that.—Avoid the use of this expression.

Audience.—Do not use when you mean spectator. An *audience* listens; *spectators* see what occurs.

Awful, awfully.—That only is awful which inspires awe. Do not use these words in any other sense. They are among the words most frequently used in an incorrect way.

Back.—Often wrongly used for *ago*. Do not say "three weeks *back*" or "a week *back*." Say *ago*.

Bad.—Do not say *bad* accident for *serious* accident; or a *bad* pain for a *severe* pain.

Bad grammar.—Some claim that this expression is false syntax; that if it is grammar it cannot be bad. But the Standard Dictionary quotes it as an allowable expression.

Badly.—Not to be used for greatly, exceedingly, or very much. "That rug needs to be beaten *badly*" is an amusing blunder. "I wanted that *badly*" is an expression to be avoided.

Balance.—Do not say "the *balance* of the day was spent at golf"; say "the *remainder* of the day." Leave balance to the bookkeeper or to the accountant, who regards a sum necessary to balance an account as the *balance*.

Beastly.—This term, so commonly used as expressive of disappointment, disgust, or contempt, should not find a place in your vocabulary.

Beautiful.—Not to be used where *nice* is meant. "*Beautiful* bread" should be "*nice* bread."

Because why.—Do not join these words. Either alone may be made to do the work you require of it.

Been to.—Do not say "I have been *to* New York" for "I have been *at* (or *in*) New York." You cannot *be to* a place.

Beginners.—Never say "a new beginner," nor "a new beginning." The *new* is unnecessary.

Behind.—Often unnecessarily used with left. "I left him *behind* in St. Louis" should be "I left him in St. Louis."

Between.—This is a preposition and requires the objective case after it. Never say: "Between you and *I*," because *I* is the nominative. Say "Between you and *me*."

Blame on.—Say "blame *for*" or "lay the blame *upon*"; but do not "blame anything *on* any one."

Both alike.—Leave out *both*.

Both of them.—Instead of "Both of them are here" say "They are both here."

Bound.—A very common, incorrect form of speech, as "I am *bound* to go." One is bound only when some obligation or constraining or compelling force binds one. Say "*determined* to go" or "*resolved* to go."

Bran-new.—The word is *brand-new*.

Bred and born.—Transpose these and say "born and bred."

But.—Often incorrectly used for *than* after *other*. Instead of "It is none other *but*" say "It is none other *than*."

But what.—Do not use when you mean *but that*. "I do not know *but what* I shall" is better written "I think I may." "I know nothing *but what* you told me" is correct.

Calculate.—Be sure that some mathematical process is concerned when you use this word. Do not "*calculate* that it will rain" unless you have arrived at the conclusion by a meteorological calculation.

Call.—Not to be used for occasion. "He had no *call* to be angry with me" should be "He had no *occasion* to be angry with me."

Cherubim.—Remember that *cherubim* is the Hebrew plural form of cherub. Then you will never speak of "*a* cherubim."

Choose.—Do not say "Because I don't *choose* to." Say, rather, "Because I would rather not" or "Because I don't care to do so" (or whatever verb is required).

Clothes.—Do not say that your clothes have grown too small for you, when it is you who have grown too large for your clothes.

Combine.—Do not use together with this word. "Combine *together*" is unnecessary repetition.

Complected.—Better use *complexioned*.

Couple.—When you use this word be sure that the two objects are really united by some bond or tie. Do not use it when you mean two.

Credible.—This word, which means worthy of belief, is not to be confounded with *creditable*, which means redounding to one's credit.

Crush out.—The *out* is usually unnecessary in this expression, for crush means to force out of shape. We "*crush* a rebellion."

Dangerous.—Do not use *dangerous* for in danger or dangerously, as "He is ill, but not *dangerous*." His life may be in danger, but he is far from being *dangerous*.

Deceive.—One does not deceive another unless he actually produces a false impression. It is absurd to say "He is deceiving me," because if he is deceiving you, you do not know it; if you do know it, he is not deceiving you. "He is trying to deceive me," or "He thinks he is deceiving me," is what is meant.

Demean.—Often wrongly used for bemean. Demean is to behave one's self; bemean is to disgrace one's self.

Depreciate.—Instead of "The property has *depreciated in value*" say "The property has *depreciated*." Depreciate means to fall in value.

Die.—Put such expressions as "I thought I should *die*" and "I nearly *died* laughing at him" out of your vocabulary.

Different.—Followed by *from*, never by *than*.

Differ from and with.—One thing differs *from* another in appearance, size, etc.; one person differs *with* another in opinion.

Direct.—Do not use this word for address. You do not *direct* a letter; you *address* it when

you write an address upon the envelope. You do, however, *direct* a person how to reach a place.

Disappointed.—Never be "*agreeably disappointed,*" rather be "*agreeably surprised.*"

Discommode.—Often used for incommode. "I fear I shall *discommode* you" should be "I fear I shall *incommode* you."

Disremember.—Say *forget.*

Done.—See that there is some other verb such as have, had, is, or was, with *done* when you use it. "You *done* it" should be "You *did* it."

Don't.—This is a contraction for do not but not for does not. Use *does n't* in the latter case. Such forms are permissible in conversation, but in writing the full form should be used.

Don't think, don't believe.—Instead of "I don't think it will rain" say "I think it will not rain."

Doubt but that.—Leave *but* out and say "I do not doubt that such is the case."

Drunk.—Drunk is the past participle; drank is the past tense. "They *drank* his health," "His health was *drunk.*"

Dutch.—Do not say *Dutch* when you mean German. *Dutch* pertains to Holland.

Each.—Always takes a verb in the singular. "Each *comes* in *his* turn and *receives* the amount due for *his* work."

Each other.—See that only two are concerned when this expression is used. If more than two are concerned use *one another.*

Eat.—Do not use this form for eaten. Instead of "The candy is all *eat* up" say "The candy is all *eaten.*"

Either.—Not to be used when you mean each. "On *either* side of the street" should be "On *each* side of the street," when both sides are meant. "On *either* side" is right when only one side is meant and when it does not matter which side.

Elder, Older.—Use *elder* and *eldest* in speaking of persons and usually of members of the same family, as the "*elder* brother"; *older* and *oldest* are applied to both persons and things.

Elegant.—Not to be used in such expressions as "*elegant* time," "an *elegant* view."

Else.—Be sure to follow *else* with *than,* not with *but.* Say "It was no one *else than* John."

Else.—Not necessary in the sentence "Nobody *else* but me." Say "Nobody but me."

Else.—By custom when *else* joined to anybody, somebody, any one, or some one, forms a possessive the *'s* is added to else, as *somebody else's.* But there are many who prefer to write *somebody's else, some one's else.*

Endorse, indorse.—Do not say "*endorse* upon the back of" for *endorse* means to write upon the back of. *Indorse* is the spelling generally preferred in business.

Enjoy.—No one really *enjoys* poor health.

Enough.—Instead of "A large enough room" say "A room large enough."

Equally.—Not necessary in the expression, "It is *equally* of the same value." Say "It is of the same value" or "They are of equal value."

Equally as well.—The *as* is not necessary, so write "*equally well.*"

Equanimity.—Do not say "*equanimity* of mind." It is useless repetition.

Ever.—Not to be used with the phrase "As soon as"; this of itself is sufficient.

Every.—Be careful to see that a verb of the singular number follows. "*Every* passenger *was* injured."

Every confidence.—Better say "*implicit* confidence." *Every* refers to a number of things, which confidence is not.

Every now and then.—Better use "occasionally."

Except.—Not to be used for unless, as "*Except* I am delayed." Say "*Unless* I am delayed."

Excessively.—Use very or exceedingly rather than *excessively.* "It is *exceedingly* cold" is better than "It is *excessively* cold."

Executed.—Do not use *executed* for put to death. Sentences are *executed;* criminals are *put to death.*

Expect.—Do not say "I *expect* it is" or "I *expect* it was." Use suppose, or think, or believe, or suspect. *Expect* refers only to the future.

Experience.—It is better to say "I *feel* great pleasure," not "I *experience* great pleasure."

Farther, further. Farther is the comparative of far and measures distance, as "How much *farther* have we to go?" Further measures quantity or degree, as "You should say nothing *further* upon that subject."

Feel bad, feel badly.—One feels *bad* when one's health is not good; one feels *badly* when there is something wrong with one's sense of touch.

Few.—There is a difference between *few* and *a few.* "*Few* persons like him" means that he is generally disliked. "*A few* persons like him" means that there are some who do like him.

Few, little.—Few measures number; little measures quantity or size. "I have *fewer* (not *less*) books than you;" "We all have *less* money than we think we need."

Find.—Not to be used for provide or furnish. "I *find* him in clothes" should be "I *furnish* (or *provide*) him with clothes."

First.—Say "first two," "first five," instead of "two first," "five first." Only one can be first; the next is second.

First-rate.—Use this as an adjective; not as an adverb. "You did that *first-rate*" is not correct.

Fix.—Be sure that you intend to convey the idea of fastening firmly when you use *fix.* It is not the same as repair, remedy, arrange, or set up.

For.—This word is often added to a sentence when not needed. "He knows more than you think *for*" would read better without *for.*

For to.—Not to be used where *to* alone is sufficient. "I went *for to* see him" should be "I went *to* see him."

From.—Often used where of is required. "He died *from* consumption" should be "He died *of* consumption." It is, however, quite right to use "from the effects of."

-ful.—This termination often causes trouble in forming plurals. The plural of *teaspoonful* is *teaspoonfuls;* of *cupful, cupfuls.*

Froze.—Do not use *froze* for frozen. Instead of "The brook is all *froze* over" say "*frozen* over."

Funny.—Often used where strange, or queer, or unusual is meant. One should not say "That 's *funny*" when the element of fun is entirely lacking.

Gent.—This word should never be used. It is not tolerated in refined writing or speaking.

Going to, just going to.—Use *about to* instead. "I am *about to* go."

Got.—Strictly this word means having possession of a thing after an effort to secure it. It does not signify mere possession. Instead of "I have n't *got* a pencil" say "I have no pencil."

Gotten.—While many good writers employ this form, *got* is to be preferred. Instead of "When he had gotten over his illness" say "When he had recovered from his illness."

Graduate.—We can say either "He was graduated from the university" or "He graduated from the university." Formerly it was held that "was graduated" only was correct; now both forms are used.

Gratis.—Not necessary in such expressions as "Given away *gratis*." Gratis means without charge or cost; given away means that also.

Grow small.—One cannot grow and become small at the same time. Use decrease or diminish.

Guess.—Be careful that this word is not used for think. Do not say "I *guess* so" when you mean "I think so."

Had better, had rather.—These forms are used by some of our best writers, though *might* or *would better* and *would rather* are preferable.

Had have.—The form "had have" is incorrect, for there is no such form of the verb. In "If I *had have* known it, I should have gone," the *have* is unnecessary; leave it out. Sometimes in pronunciation the *have* sounds like of—"If I had of heard it," etc.

Had ought.—*Had*, or any other form of the verb to have, cannot correctly be used as an auxiliary with ought. Use should or ought not. "He should not have done it" or "He *ought* not to have done it."

Hain't.—There is no such contraction for "have not" or "has not." Its use is a vulgarism.

Handful.—The plural is *handfuls*, not *handsful*. We may, however, speak of one having "both hands full."

Hang.—This verb has two forms of the past participle, *hanged* and *hung*. *Hanged* is used in speaking of a person who has been put to death in that way. "He was *hanged* for it," not "He was *hung* for it."

Hard, Hardly.—*Hardly* means scarcely and is not to be used for the adverb *hard*. "He struck the drum *hard*" (not *hardly*).

Have.—This word often intrudes in an incorrect way. "I meant to *have* written to you" should be "I meant to write to you." "I intended to *have* gone" should be "I intended to go." "I should like to *have* gone" should be "I should have liked to go."

Hence, Thence, Whence.—As these words mean from here, from there, and from where, it is wrong to say *from hence, from thence*, or *from whence*.

How?—Not to be used for What? or for "What did you say?"

However.—The use of this form for *how* and *ever* combined is a common error, as "*However* did you manage it?" for "How did you possibly manage it?" Nor should the word be used in the sense of "at any rate," "under all circumstances." The word is properly an adverb.

I am thinking.—"I think" is preferable.

If I was him.—This should be "If I were he." The verb *to be* takes the same case after as before it, and the subjunctive form *were* is required because there is no possibility of your being he.

Immigrant and Emigrant.—These are often confounded in use. An immigrant is one who comes *into* a country; an emigrant goes *out* of a country. A German leaving Hamburg for New York is an emigrant from Germany and an immigrant to the United States when he reaches New York.

Imminent.—Do not say eminent when *imminent* is meant. "He is in *imminent* (not eminent) danger."

In.—Often used for into. Instead of "Put your knife *in* your pocket" say "Put your knife *into* your pocket."

In case.—It is better to say "If I go" rather than "In *case* I go."

In so far as.—The *in* is not necessary. "So far as I know" is the correct form.

In spite of.—It is better to use *despite* or *notwithstanding*.

In the street.—This form is preferred to *on the street*. "He lives *in* State Street" is better than "*on* State Street."

Index.—This word has two plural forms: *indexes* when parts of books are meant; *indices* with reference to exponents of numbers.

Is that so?—This and similar expressions of surprise imply some doubt or incredulity and are not complimentary to the person to whom they are addressed.

Kind of.—Do not use this phrase for "somewhat" or "rather." It is correctly used in "What kind of man is he?" but do not say "What kind of *a* man is he?" The term "kinder" for "kind of" is inelegant.

Lady.—This term is much abused. When distinguishing the sexes say "woman" and "man." The term "woman" is never uncomplimentary, as many persons think. The combination of "saleslady" is wrong for, clearly, the opposite of "salesman" is "saleswoman."

Last and Latter.—When comparing or referring to two use *latter* instead of *last*. Generally avoid the use of former and latter in writing if you can, for the eye or memory must go back to the terms previously referred to in order to see which one is meant. Say, also, "the last three," "the last four," and not "the three last."

Lay and Lie.—These verbs are frequently confounded. The confusion arises from the fact that lay is the present tense of the verb to lay, and is also the past tense of the verb to lie. Present, *lay*, to put down or to cause to lie down; imperfect, *laid;* past participle, *laid*. Present, *lie*, to rest; imperfect, *lay;* past participle, *lain*. *Lay* in the present tense requires an object after it. *Lay* in the past tense does not require an object after it. In the expression "Now I lay me down to sleep" we have a poetic form of "Now I lie down to sleep." Here the form of the verb is reflexive.

Least.—"Of two evils choose the *least*" is incorrect. Say instead, "Of two evils choose the *less*."

Leave.—This verb is often used where let is meant. "*Leave* me go," "*Leave* me alone," should be "*Let* me go" and "*Let* me alone."

Lengthways, Sideways, Endways.—Preferable forms are *lengthwise, sidewise,* and *endwise.*

Let you and I.—This should be "Let you and *me.*" Let requires the objective case after it.

Liable, Likely.—Liable means "having a tendency"; likely suggests "very probable." Do not, then, say "It is liable to storm" or "He is liable to come." Use "likely" in these sentences.

Lit.—Not to be used for lighted. Instead of "He *lit* the gas" say "He *lighted* the gas." Nor for alighted. Instead of "He *lit* on his feet" say "He *alighted* on his feet."

Little or nothing.—Instead of "They know *little or nothing* about it" say "They know *little, if anything,* about it."

Miss.—The plural is *Misses.* Instead of "the Miss Smiths" say "the Misses Smith."

Mistake.—Do not say "I took you for another person." Say "I mistook you for another person."

Mistaken.—The common form "If I am not mistaken" should be "If I mistake not." A person may be mistaken for another.

Mutually.—Not to be used with "each other." Instead of "They mutually hated each other" say "They hated each other."

Myself.—Only to be used when emphasis is required, as "I did it *myself,*" meaning that I was unaided or had no associates. Avoid its use in such sentences as "My son and *myself* were there."

Near.—Not to be used for nearly. "It was not *near* so hard as I expected" should be "It was not *nearly* so hard as I feared."

Never.—Do not use *never* for not. "I *never* did it" should be "I did not do it."

Nicely.—Not to be used for well or very well. "I am getting along *nicely* now" would be stronger if well or very well were used.

No.—Used wrongly for not in such sentences as "Whether I go or *no,*" "Whether he is there or *no.*" Use *not* in such cases.

Nothing like.—Instead of "It is *nothing like as* good as mine" say "It is *not nearly so* good as mine."

Noways.—Incorrectly used for nowise. Say "He was nowise to blame."

Numerous.—Avoid the expression "numerous friends" and say "many friends."

Of all.—Not necessary in such expressions as "the first of all," "the last of all." "The first" and "the last" are quite as expressive.

Off.—Often incorrectly used for from. Instead of "He jumped *off* the roof" say "He jumped *from* the roof." It is even worse when followed by of, as "He jumped *off of* the roof."

On.—Often incorrectly used for to. Instead of "The box fell *on* the floor" say "The box fell *to* the floor."

One.—When the pronoun "one" is used in a sentence, see that it is not changed to "he" or "they." Keep it all the way through. Do not say "One can do as he likes with his own," but "One can do as one likes with one's own."

One.—Not to be joined to "other" or "another." "The other one" and "another one" should be simply "the other" and "another."

One another.—Often used for "each other." "They loved *one another*" should be "They loved *each other.*" Though we hear "Little children, love one another."

Only.—Be careful to place this word as close as possible to the word which you intend it to modify. If you say "I only wrote to him a week ago," you mean that you wrote and did nothing else; but "I wrote to him only a week ago" means that it is only a week since you wrote to him. "I wrote only to him a week ago" means that you did not write to any one else.

Opposite.—Should be followed by to in such sentences as "I live opposite to the hotel."

Other.—This word is frequently omitted when the sense demands its use. It finds a place in the sentence "James is more studious than any *other* boy in his class," because James is one of the boys in the class and he is not more studious than himself.

Ought.—Not to be used for aught. Instead of "For *ought* I know," write "For *aught* I know."

Over.—Should not be used for across. "I am going *over* the bridge" should be "I am going *across* the bridge," unless one means that one is going over the side of the bridge into the water.

Own up.—Not so good as confess or acknowledge.

Pair.—"A pair of new shoes," not "A new pair of shoes," for the shoes are new.

Pants.—This word should find no place in the vocabulary of any person of refinement. Say trousers.

Partake.—You cannot *partake* of food by yourself; it must be a share of that which is enjoyed by several. Eat is a much better word to use.

Party.—Not to be used for person. Do not say "I met a party on the train" unless you mean that you met a party of several persons. "A certain party" is also wrong when you mean some person whose name you do not care to mention.

Pellmell.—Never to be applied to one person, but only to a confused crowd. "He ran pellmell down the street" should be "He ran excitedly down the street."

Per.—Be careful to use this only with Latin words. It is quite right to say "per cent.," "per diem," "per capita," or "per annum"; but never "per day," "per week," or "per year." Say "so much *a* day." In signing for another write "by" not "per."

Perfect.—Avoid such expressions as "A perfect lady," or "A perfect gentleman." Nor does perfect admit of degrees of comparison. Do not say "most perfect."

Pled.—Not to be used for pleaded. Say "He *pleaded* for mercy," "He *pleaded* for his life," "He *pleaded* in his behalf."

Post.—Not to be used for inform. Do not say "I am not very well *posted.*"

Prejudice.—Never to be used in a good or favorable sense. You are not *prejudiced* in a person's favor; you are *prepossessed* in his favor. You are invariably prejudiced against him.

Presume.—Not to be used for think or believe. "I *presume* that is correct" should be "I *think* (or *believe*) that is correct."

Pretend.—Not to be used for profess or claim. Instead of "I *pretend* to know something about law" say "I *profess* to know something about law."

Preventative.—Wrongly used for preventive. Do not speak of a "*preventative* treatment of disease."

Promise.—Do not say "to promise faithfully." One may promise to do something faithfully; but one cannot promise faithfully to do it.

Propose.—Often incorrectly used for purpose. Instead of "I *propose* to go home to-morrow" say "I *purpose* to go home to-morrow."

Providing.—Not to be used for provided. Instead of "We shall go, *providing* the day is fine" say "——*provided* the day is fine."

Pure and Unadulterated.—An unnecessary repetition. That which is pure is, of course, unadulterated.

Quantity.—Wrongly used for number. Do not say "a great *quantity* of people" for "a great *number* of people" or "a great *many* people."

Quite.—Not to be used before a noun. Do not say "He is *quite* an orator."

Raise.—Not to be used for rear or bring up. Cattle are reared, or raised; children are brought up, or reared; potatoes are grown, or raised; one's rent is increased, not raised.

Real.—Not to be used for very. Avoid such expressions as "real sorry," "real well," "real glad."

Restore.—Do not say "Restore it *back* to me." Restore means to give back, and the sentence is as though one said "Give it back back to me."

Reverend.—In speaking of a clergyman always say "*The* Reverend Thomas Brown," not "Reverend Thomas Brown."

Saw.—Do not say "I *never saw* anything like this before." The proper form is "I *have never seen* anything like this." It is correct, however, to say "I never saw anything like that when I was there."

Says I.—Say "I said."

Seldom or ever.—Omit "or ever." It is not necessary. "I seldom see him" is correct.

Set, Sit.—The farmer *sets* a hen; but the hen *sits*. So we should speak of a *sitting* hen. We *sit* up late at night. We *sit* down on chairs. We *set* figures down in our books. We are able to *sit* up after an illness.

Shall have.—Do not say "I shall have pleasure in accepting your kind proposal." Say "I have much pleasure."

Shall, Will.—These forms of the future tense are very frequently interchanged and wrongly used. There are two futures: (1) The simple future, which denotes only the futurity of an event. In it we use *shall* in the first person and *will* in the second and third. *Simple Future.*—Singular: First person, I shall go; second person, Thou wilt go or You will go; third person, He will go. Plural: First person, We shall go; second person, Ye or you will go; third person, They will go. (2) The determinate future, which denotes an expression of the will or a determination that an event must occur in the future. In it we use *will* in the first person and *shall* in the second and third. *Determinate Future.*—Singular: First person, I will go; second person, Thou shalt go or You shall go; third person, He shall go. Plural: First person, We will go; second person, Ye or you shall go; third person, They shall go. If one remembers that the form *will* means a willingness or the performance of one's own free will, it will be seen that since one can will only for one's self and not for another, *will* must be used only in the first person of the determinate future. "I will go" denotes although there are many obstacles to prevent me, yet I have determined to go. "You shall go" denotes that although you object to going, I am going to see to it that you do go. The same is true of "He (or they) shall go." In the simple future "I shall go" denotes that my going is a matter of no determination or of overcoming any objections or obstacles, but is a natural happening in the future. "You will go," "He will go," "They will go" denote a perfect willingness upon the part of the respective agents and the absence of any force or compulsion to be exercised by the speaker. *Shall* is the proper form to be used in the first person when questions are asked. "Shall I come to-morrow?" is the correct form. "Will I come to-morrow?" means "Am I willing to come to-morrow?" and no one knows that so well as the speaker. In the second and third persons use *will* in the interrogative form. "Will you come to-morrow?" "Will they come to-morrow?" In the form "Shall he come to-morrow?" the speaker asks "Is it your determination that he must come to-morrow?" and, of course, there are occasions when that form might be used correctly.

Should, Would.—The form often seen in letter writing "I should be very glad if you would send me the papers" would be better "I shall be very glad if you will send me the papers."

Sick, Ill.—In England *sick* is restricted to a form of illness attended by nausea or vomiting. This distinction is not rigidly observed in the United States.

Slow.—Often used for slowly. Instead of "The boat is traveling *slow*," say *slowly*.

Smell of.—The *of* is unnecessary in such sentences as "I saw the dog smell of his master's coat."

Some.—Not to be used before numerals. Instead of "I met him *some* six years ago" say "I met him *about* six years ago."

Some.—Not to be used for somewhat. Do not say "He is some better to-day" for "He is rather (or slightly or somewhat) better to-day."

Somewhere.—Use this word in place of *somewheres* or *some place*.

Splendid.—Not to be used to express mere excellence. Avoid such expressions as "perfectly splendid," "a splendid time," and "a splendid story."

Standpoint.—Frequently used where point of view would be much better.

Stationary, Stationery.—*Stationary* means remaining in one place or in one position. *Stationery* is writing material of all kinds.

Statu Quo.—Not to be used for *status quo*. *In statu quo* is correct.

Stop.—Wrongly used for stay. Instead of "I am *stopping* with a friend" say "I am *staying* with a friend."

Stricken, Struck.—While *stricken* is used in cases where misfortune is expressed, as "He was *stricken* with apoplexy," we also find more freedom in its use in the United States than in England. It is not unusual in this country to hear a motion in Congress "that all after the first paragraph be *stricken* out."

Such.—Not to be used for so, as "I had never felt *such* a severe pain," which should be "I had never felt *so* severe a pain."

Surplus.—Do not say "A surplus over and above," for a surplus is over and above.

Suspicioned.—Not to be used for suspected.

Than me.—Frequently used for *than I*. Instead of "He is stronger *than me*" say "He is stronger *than I*."

That.—Not to be used for so. Instead of "He was *that* independent that he refused my offer" say "He was *so* independent."

That, Who.—(1) "I saw the expressman, *who* brought my trunk," means "I saw the expressman, *and he* brought my trunk." (2) "I saw the expressman *that* brought my trunk" points out a particular expressman, viz., the one that brought my trunk.

That 's him.—Should be "That 's *he*."

Them.—Do not use *them* for *those*. Instead of "Give me some of *them* pears," say "Give me some of *those* pears."

Then.—Not to be used in such expressions as "The then secretary," "The then cabinet." Say "The secretary at that time," "The cabinet of that time."

Thence.—Remember not to use from with this word. *Thence* means from that place. "He departed *thence* at noon."

There.—Do not use this word with that. "That there house" should be "that house." "That there" and "this here" are common errors to be avoided.

There 's.—Do not use this form for there are. "*There 's* twenty" should be "There are twenty."

These kind, Those sort.—Remember that "kind" and "sort" are singular nouns and require "this" and "that," not "these" and "those."

Think.—Say "I think not" instead of "I don't think so." Say what you do think, rather than what you do not think.

Think for.—*For* is unnecessary. "He hears more than you *think for*" should be "He hears more than you think he does."

Thinks I.—Say "I thought."

Through.—Inelegant in such expressions as "getting through" with a speech or with a meal.

To.—Avoid the use of this word for *at* after the verb to be in such expressions as "He was *to* home when I called," "He is not *to* home," "He was *to* school." Also in "I saw him *to* meeting Sunday." Use *at* in all such cases.

To let.—The proper form is "To be let." A landlord wishes *to let* his house; but the house is *to be let*.

To-morrow.—There has been much argument over the expressions "To-morrow *is* Tuesday" and "To-morrow *will be* Tuesday." Both forms are regarded as correct.

Try.—Not to be used in speaking of an experiment. We do not *try* an experiment; we *make* it.

Try and.—Instead of "Try *and* come," say "Try *to* come."

Unbeknown.—Not to be used for *unknown*.

Unique.—While we may say a thing is quite unique, we cannot say that it is very unique. Unique means "the only one of its kind."

Universally.—Not to be used in the sense of "generally." Instead of the expression "universally regretted" or "universally beloved" say "generally regretted" or "generally beloved."

Unmistakable.—Be careful not to lose sight of the fact that *un* means not. You will not, then, say "He spoke in *no* unmistakable terms," for "no unmistakable" means "mistakable."

Up.—Not necessary after the verb *to rise*. Instead of "He rose up from his chair," say "He rose from his chair."

Use.—There are many incorrect and inelegant forms of this verb. Avoid such as "I use to" for "I used to"; "Did n't you use to?" "You use n't to," and other uncouth expressions.

Various.—Often used for several. Instead of "Illinois is the greatest of the various states mentioned," say "of the several states mentioned."

Very.—Need not be used with such superlatives as best and worst. "The very best" is no better than "the best."

Vest.—Waistcoat is the better term.

Veterans.—Do not say "old veterans." A veteran is one who has been long in service. It is correct to say "aged veterans."

Vicinity.—Not to be used when "neighborhood" is intended.

Wa'n't.—Not to be used as a contraction for was not or were not.

Want, Need.—*Want* expresses both the desire for a thing and also the idea that the thing is lacking; *need* expresses the necessity of having a thing. A rich man may want a position which he does not really need.

Want of.—Instead of saying "What does he *want of* a boat?" say "For what purpose does he *want* a boat?" or, still better, "Why does he *need* a boat?"

Ways.—Often incorrectly used for way. Instead of "His house is a long *ways* from here," say "His house is a long *way* from here."

Well.—Not needed in such forms as "Well, I don't know." It also marks indecision and gives a bad impression.

What for.—Do not say "What did you do it for?" better, "Why did you do it?"

Whatsomever.—Never use this form for *whatsoever*. *Whatever* is better than either.

Where.—Often incorrectly followed by to. "Where did he go to?" should be "Where did he go?"

Who.—Many persons never use *whom* but always *who*. Instead of "Who are you speaking to?" say "To whom are you speaking?" Instead of "Who did you give it to?" say "To whom did you give it?"

Whole.—"The whole of" is not so good as "all." Do not say "The whole of the guests were present," say "All the guests were present."

Worse.—Not to be used when *more* is intended. You do not dislike one thing *worse* than another; you dislike it *more* than another.

A DICTIONARY OF ENGLISH SYNONYMS.

Comprising words related in meaning, arranged in groups, with examples of their proper use and notes of their difference. A complete alphabetical index of these words is to be found at the end of the table.

A knowledge of synonyms brings out the finer and nicer shades of the meanings of words, makes our meaning clearer, and secures a good literary style. There are in English a great many pairs of words which have come into the language, one through the gateway of the Anglo-Saxon, the other through the French, and these are almost perfect synonyms. These are curiously repeated in the liturgy of the English church, and include "acknowledge" and "confess," "dissemble" and "cloke," and "will" and "testament." Yet in the growth of the language these words have had other distinguishing shades of meaning attached to them, until it may almost be positively stated that there are no two words in the English language that are perfectly synonymous. The word *synonyms* has come to mean pairs of words or groups of words which are similar in meaning. A table of synonyms is of great service to young writers, who are often at a loss to find the word which will exactly express the shade of meaning which is desired. Very often the required word may be found by turning to a word which expresses the idea, and looking through the list of synonyms under that head.

1. **ABANDON,** abdicate, abjure, cast off, cease, cede, depart from, desert, discontinue, forego, forsake, forswear, give up, leave, quit, recant, relinquish, renounce, repudiate, resign, retire from, retract, surrender, vacate, and withdraw from. A throne is abdicated; religion, opinion, or allegiance is abjured; territory is ceded; a wife deserts her husband; a cowardly crew deserts a ship, while the passengers abandon it; a pleasure is foregone; an office is resigned; a statement is retracted; religion is renounced; a claim is repudiated; premises are vacated.

2. **ABANDONED** (adjective), bad, corrupt, depraved, detestable, dissolute, forlorn, forsaken, incorrigible, irreclaimable, odious, profligate, reprobate, shameless, unprincipled, vicious, wicked. An abandoned person has given himself up wholly to unrestrained evil and does not care; the reprobate is beyond hope; the corrupt and vicious may regard public opinion; the dissolute and profligate may reform.

3. **ABASE,** bring low, cast down, debase, degrade, depress, disgrace, humble, humiliate, lower, reduce, sink. Abase is to lower in station or in reputation; debase is to lessen the character or quality; an insult humiliates; a sense of inferiority or of unworthiness humbles; punishment disgraces; an officer is degraded in rank or reduced; a vice is degrading; misfortune may abase, but cannot disgrace.

4. **ABASH,** bewilder, confound, confuse, daunt, discompose, disconcert, dishearten, embarrass, humble, humiliate, mortify, overawe, shame. A perplexity may confuse; a defeat may confound; an accident may discompose; a failure of memory may disconcert an actor; losing one's way may bewilder one; a rude child may mortify a parent; soldiers overawe a mob; an officer's weapon daunts a criminal, exposure shames him; a Christian humbles himself before God; a sense of shame humiliates.

5. **ABATE,** decline, decrease, diminish, ebb, lessen, lower, mitigate, moderate, reduce, subside. Pain, fever, or a storm abates; offenses or misfortunes are mitigated; stocks or prices decline; a flood subsides; a tide ebbs; interest is lowered; weather moderates; population decreases.

6. **ABBREVIATE,** abridge, compress, condense, contract, curtail, cut down, epitomize, prune, reduce, shorten. A word or a phrase is abbreviated or contracted; a book is abridged; air is compressed; water vapor or gas is condensed; expenses are curtailed; wages are cut down; a larger work is epitomized; bushes are pruned; hours are shortened.

7. **ABET,** advocate, aid, assist, countenance, embolden, encourage, incite, instigate, promote, sanction, support, uphold. A crime is abetted; a reform is advocated; the poor are aided; the weak are assisted; men are incited to a riot; a crime is instigated; civil authorities are upheld; a course may be sanctioned.

8. **ABHOR,** abominate, despise, detest, dislike, hate, loathe, nauseate, scorn, shun. Abhor implies a starting back in horror and is the strongest of the series; detest implies both indignation and contempt; loathe suggests disgust; a traitor is abhorred; a coward is despised; a liar is detested; tyranny is hated; a flatterer is loathed.

9. **ABILITY,** aptitude, capability, capacity, cleverness, competency, dexterity, efficiency, expertness, faculty, power, qualification, readiness, skill, talent. Ability includes power of every kind; capacity suggests the power to receive; efficiency the power to execute; faculty is the power of mind or body; talent is a special endowment; dexterity is power acquired by practice; competency meets the demand of the occasion; readiness is promptness in meeting the demand.

10. **ABOLISH,** abate, abrogate, annihilate, annul, destroy, end, eradicate, exterminate, extirpate, nullify, obliterate, overthrow, prohibit, remove, repeal, reverse, revoke, set aside, stamp out, subvert, supplant, suppress, terminate. Slavery is abolished, as are other widespread or long-existing conditions, customs, or institutions; nuisances are abated; laws and treaties are abrogated by other laws or treaties which supersede them; laws are annulled, nullified, or repealed; that which is annihilated is utterly destroyed (reduced to nothing); troubles are ended; faults are eradicated (taken out by the root); pests are exterminated (put an end to); an eye is extirpated in surgery (taken out root and branch); a postage stamp is obliterated; laws prohibit; appellate courts reverse decisions of inferior courts; treaties are revoked; liberties are subverted; rebellions are suppressed; court favorites are supplanted; controversies are terminated.

11. **ABRIDGMENT,** abstract, analysis, compend, compendium, digest, outline, summary, synopsis. An abridgment gives the most important parts of a work just as they stand in the larger work; a synopsis or outline gives a plan of the larger work; an analysis gives the chief thoughts or arguments in a condensed form; a summary condenses to the utmost the thought; an epitome, compend, or compendium is a compact presentation of a subject without regard to other publications. A dictionary is abridged, but an analysis, summary, digest, or epitome of it is impossible. We may have a compendium of English literature or an epitome of religion, but an abridgment of either is an absurdity.

12. **ABSOLUTE,** arbitrary, authoritative, autocratic, despotic, irresponsible, supreme, tyrannical, unconditional, unequivocal. Absolute power is neither limited nor controlled; authoritative is based upon the right to claim authority; autocratic power is limited only by the person who so rules; despotic is rather weaker than tyrannical; arbitrary power rests upon the will or judgment of the wielder; irresponsible persons have no limiting restraint; unequivocal has the sense of decided, most certain, undoubted.

13. **ABSOLVE,** acquit, clear, discharge, exculpate, exempt, exonerate, forgive, free, liberate, pardon, release, set free. To absolve from sins; to acquit of a charge; to clear of blame; to discharge a prisoner; to exculpate from fault; to exempt from taxes or military service; to exonerate from guilt; to forgive an offender; to free a prisoner; to liberate a captive; to pardon a criminal; to release from an obligation; to set free from a bond.

14. **ABSORB,** consume, drink in, drink up, engross, exhaust, imbibe, suck up, swallow, swallow up, take in, take up. Wood absorbs moisture; wood is consumed in the fire; we drink in knowledge; one engrosses the conversation; learning is imbibed; a credulous person swallows preposterous stories; lime takes up water.

15. **ABSTINENCE,** abstemiousness, continence, fasting, frugality, moderation, self-control, self-restraint, sobriety, temperance. Abstinence implies going without; abstemiousness, partaking sparingly; self-control, self-restraint, and self-denial imply refraining from what one desires; fasting has a religious or hygienic connection; one is temperate in eating and drinking; but one abstains from vice.

16. **ABSTRACT,** appropriate, detach, discriminate, distinguish, distract, divert, eliminate, purloin, remove, separate, steal, take away, withdraw. We abstract an element from all that attends it and we view it separately; the mind is abstracted from all other subjects and concentrated upon one; the mind is diverted from that to which it should attend; ideas may be separated; we discriminate between things by distinguishing their differences; we eliminate certain things from a consideration by ignoring them; purloin and steal imply appropriating unlawfully to one's own use.

17. **ABSTRACTED,** absent-minded, absorbed, heedless, inattentive, indifferent, listless, negligent, oblivious, preoccupied, thoughtless. Abstracted, absorbed, and preoccupied are used when considering the cause; absent-minded relates to the effect of the abstraction, absorption, or preoccupation; heedless is willfully thoughtless; inattentive to the subject in hand is absorption in another subject; listless may be a physical condition of inattention; negligent, when the abstraction causes indifference; one is oblivious when the thoughts are elsewhere.

18. **ABSURD,** anomalous, chimerical, erroneous, false, foolish, ill-advised, ill-considered, ill-judged, inconclusive, incorrect, infatuated, irrational, mistaken, monstrous, nonsensical, paradoxical, preposterous, ridiculous, senseless, stupid, unreasonable, wild. That which is contrary to the first principles of reasoning is absurd; that which deviates from a fixed rule, or law, is anomalous; enterprises which are fancifully impracticable are chimerical; views are erroneous through mistaken conceptions; reasoning may be false; that which is contrary to the dictates of good sense is foolish; irrational views are contrary to sound reasoning; a statement may be paradoxical (or apparently contradictory in its terms) and yet be true; that which is silly is petty and contemptible; monstrous and preposterous imply an overwhelming absurdity; verses may be nonsensical and yet entertaining.

19. **ABUSE,** damage, defame, defile, disparage, harm, ill-treat, ill-use, impose on, injure, malign, maltreat, misuse, molest, oppress, persecute, pervert, rail at, reproach, revile, ruin, slander, victimize, vilify, vituperate, wrong. Property is abused by willful defacement; a tenant may damage property and injure its sale; false reports may defame a man; contact with vice will defile him; we disparage by speaking lightly or by making little of; a man may be abused without being harmed; talents are often perverted; innocent persons are often victimized by swindlers; a wrongfully accused man is vilified; shockingly abusive language is vituperation; one is oppressed for pecuniary advantage, and persecuted for opinions.

20. **ABYSS,** chasm, deep, gorge, gulf, pit, profound. Abyss, chasm, and gorge generally apply to openings in the earth caused by upheavals; gulf, deep, and profound refer to the ocean; a pit is an excavation.

21. **ACCEDE,** acquiesce, agree, assent, coincide, comply, concur, consent, yield. Opinions which concur agree in general terms; those which coincide agree in every detail; decisions always concur, never coincide; causes concur, but views coincide; terms are accepted; wishes are acceded to or complied with; proposals are acceded to or consented to; consent expresses a more hearty acquiescence than does accede; one yields to another upon conviction.

22. **ACCELERATE,** advance, dispatch, drive, expedite, facilitate, further, hasten, hurry, promote, speed, urge. Motion is accelerated; enterprises are advanced; a thing is dispatched when finished; work is expedited when all hindering influences are removed; processes are facilitated when means of accomplishment are rightly adjusted; hurry implies attendant confusion; a cause is promoted by advancing influences.

23. **ACCESSORY,** abettor, accomplice, ally, assistant, associate, coadjutor, colleague, companion, confederate, follower, helper, henchman, participator, partner, retainer. Accessory, abettor, confederate, and accomplice are generally used in a bad sense. An ally is a national or military associate; an abettor of a crime is present at the time of its commission, an accessory never; one who watches outside while a crime is committed is an abettor, not an accessory, while an accomplice is usually one of the chiefs or principals; a retainer, or a henchman, or a follower, is one bound to a chief by reward, fee, or need; a partner is one whose association is now wholly limited to business interests; a colleague is always used in a good sense.

24. **ACCIDENT,** adventure, calamity, casualty, chance, contingency, disaster, fortuity, hap, happening, hazard, incident, misadventure, mishap, possibility. An accident is a happening without intention; an adventure is a happening either good or ill; a calamity involves serious sufferings; a casualty is usually a fatal accident; chance is a happening without known cause; a contingency is the possibility of happening; a disaster is an accident attended by suffering or loss; a fortuity is a chance occurrence; a mishap is a slight disturbing accident.

25. **ACCOMPLISH,** achieve, bring about, bring to pass, carry out, carry through, complete, consummate, discharge, do, effect, execute, finish, fulfill, perform, realize. We accomplish what we set out to do; we achieve some great or especially worthy undertaking; we bring about or bring to pass things in which we were sharing with others a leading part; carry out and carry through apply to long-sustained efforts; we complete that which has been begun before; we consummate that upon which thoughts and hopes have long been centered; we discharge what was assigned us to do; we effect a purpose by certain means; we execute the commands of another; finish applies frequently to the superficial and detailed careful execution of a work; we fulfill our obligations or agreement; we perform a feat in which there has been always a possibility of failure; we realize an ideal.

26. **ACQUAINTANCE,** association, companionship, experience, familiarity, fellowship, friendship, intimacy, knowledge. Acquaintance between persons implies that each knows the other. We can have no acquaintance with any one who does not know us. Association does not imply friendship or intimacy, for men may be associated for a long time in business with each other without knowing each other intimately; there may be friendship between two who have never met, but who know each other by correspondence and reputation; intimacy implies a thorough knowledge of each other's thoughts and feelings; fellowship is greater than friendship by the great quality of sympathy; acquaintance with a man's writings or with a subject is less deep than is familiarity.

27. **ACRIMONY,** acerbity, asperity, bitterness, causticity, harshness, malignity, moroseness, severity, sharpness, sourness, unkindness, virulence. Acerbity is sharpness with some bitterness caused by slight or momentary vexation; asperity denotes decided irritability; acrimony is caused by deep-rooted dislike; malignity denotes the greatest degree of intention to do harm; virulence of speech suggests the exudation of poison and accompanies unbridled hostility; severity of language is always calm and intentionally just, though always painful.

28. **ACTIVE,** agile, alert, brisk, bustling, busy, diligent, energetic, expeditious, industrious, lively, mobile, nimble, officious, prompt, quick, ready, restless, sprightly, spry, supple, vigorous, wide-awake. Active implies not only a quickness but a continuous or habitual action; busy means actually employed; a bustling person is noisily busy; an officious person is unpleasantly active in the affairs of others; a restless person is busy because he cannot keep quiet.

29. **ACTUAL,** authentic, certain, demonstrable, developed, genuine, positive, real, true, unquestionable, veritable. Actual applies to something which has been done or is accomplished; real to something which exists; an authentic story is one which has been fully proved or corroborated; demonstrable is capable of proof; developed has been evolved or brought about; genuine is opposed to false, dissembling, or fictitious; positive is fixed or established.

30. **ADD,** adjoin, affix, amplify, annex, append, attach, augment, cast up, enlarge, extend, increase, join on, make up, subjoin, sum up. In adding we increase by uniting; in multiplying we increase by repeating; we augment immaterial things by any means; we enlarge a house; extend the bounds of an empire; annex a building to another; affix a seal to a document or a signature to a letter; amplify a discourse; append a statement; make up an account.

31. **ADDICTED,** accustomed, attached, devoted, disposed, given, habituated, inclined, prone, wedded. One is addicted to habits which have gained a strong hold upon him; accustomed to hard work; attached to his family; devoted to his art; given to gluttony; wedded to science; prone to evil.

32. **ADDRESS,** accost, apostrophize, appeal, approach, court, greet, hail, salute, speak to, woo. We accost a stranger when we speak first; greet is a passing salutation and may be silent; hail is to greet in a loud-voiced and hearty manner; to apostrophize is to solemnly address; we appeal for aid; we may address a person either by speech or by writing.

33. **ADEQUATE,** able, adapted, capable, commensurate, competent, equal, fit, fitted, fitting, qualified, satisfactory, sufficient, suitable. An adequate remedy; an able man will do everything well; a capable man will do fairly well; means are commensurate when they are equal to the performance of the task in hand; competent, which takes account of both natural and acquired abilities, is higher than qualified, which considers only the acquired abilities.

34. **ADMIRE,** adore, applaud, approve, enjoy, esteem, extol, honor, love, respect, revere, venerate, wonder. We admire the beauty of nature; we enjoy a book; we approve excellence; applaud a good performance; esteem the good; honor and respect nobility of character; revere and venerate the aged; extol the goodness of God; adore his majesty and power.

35. **ALLUDE,** advert, hint, imply, indicate, insinuate, intimate, mention, point, refer, signify, suggest. Allude is to refer only slightly to a matter; we advert to it when we turn out of our way to consider it; we refer to it when we bring it prominently before the mind of our hearers; we mention it when we state it clearly or name it distinctly; a hint is a harmless suggestion; but an insinuation is always unfavorable; we imply without directly stating a fact.

36. **ALTERNATIVE,** choice, election, option, pick, preference. Alternative is strictly the choice of one of two things. It has, however, come to mean the one thing chosen from two; choice is a selection from among many things, or the act of choosing, or the right to choose; option is the privilege or right of choosing; pick and election are examples of a word of Anglo-Saxon origin and one derived from the French, which were at one time synonymous, and these are used when the objects are represented as displayed before one and a choice is made; alternative signifies that it is the only other thing one can do under the circumstances, while all the other words in the group imply freedom of action.

37. **AMBITION,** aspiration, competition, emulation, opposition, rivalry. Ambition was originally "a going around" among the Roman people asking for their votes for political office; it is the seeking for fame, honor, riches, and political preferment; aspiration is the simple desire to excel; competition is a striving with another; emulation is a friendly desire to equal or to surpass another; opposition suggests a struggle involving both competition and hindrance; rivalry is a competition for the nobler sorts of prizes.

38. **ANALOGY,** affinity, coincidence, comparison, likeness, parity, proportion, relation, resemblance, semblance, similarity, simile, similitude. Analogy is a resemblance and from the likeness noted other deductions are made; affinity is attraction without apparent likeness; coincidence is an exact agreement on one or more points, the commonest being that of time of occurrence; similitude is a setting forth of a comparison between things which resemble one another in one or more points; resemblance is only superficial and does not extend to the essence or entity of things; parity of reasoning is applied to an argument on things not really analogous.

39. **ANGER,** animosity, displeasure, exasperation, fretfulness, fury, impatience, indignation, irritation, offense, passion, peevishness, petulance, rage, resentment, temper, vexation, wrath. Anger is violent and is brief in proportion to its violence; animosity is active and lasting, though less so than enmity; displeasure is the mildest of these terms; exasperation, literally "a roughening," is a flash of anger that quickly subsides; fretfulness, peevishness, and petulance are slight displays of anger excited by petty causes; fury is intense and uncontrollable; indignation is a form of impersonal and unselfish displeasure; irritation is a slight expression excited by repeated occurrences of slight cause; rage excites to imprudent and indiscreet acts; temper is properly the general state of mind, though it is often colloquially used for anger.

40. **ANIMAL,** beast, brute, creature. Animal is the term used to denote a being capable of feeling, and is employed to distinguish from inanimate objects and from vegetable life; a beast is one in which the appetites are the strongest characteristics; a brute is the term applied to an animal incapable of experiencing the finer sensibilities; creature is a general term applied to all created things.

41. **ANNOUNCE,** advertise, circulate, communicate, declare, enunciate, herald, make known, notify, proclaim, promulgate, propound, publish, report, reveal, state, tell. We announce a fact in some formal way or public manner; business is advertised; plans are communicated; we enunciate views; notify an individual, but give notice to the public; declare our intentions or declare war; proclaim peace; propound a question; promulgate a platform of a party; herald an event; reveal a secret; report an interview; publish a book; announce our arrival.

42. **ANSWER,** rejoinder, repartee, reply, response, retort. An answer may be in words, or by a look or an action or sign; a reply unfolds thought and intelligence; a rejoinder is an answer to a reply; repartee is a witty, good-natured, and prompt answer; a retort may be bitter, sarcastic, or savage in its nature.

43. **ANTICIPATE,** apprehend, expect, forecast, foretaste, hope, look forward to. Anticipate goes before in fact or in thought; apprehend is applied to an event or condition which is both expected and feared; we expect that which we have good reason to think will happen; we forecast what we think or judge will occur; we foretaste what we look forward to with certainty and pleasure; we hope for that which we wish to happen; we look forward to a condition which possibly may come about.

44. **ANTIPATHY,** antagonism, aversion, detestation, disgust, dislike, distaste, hatred, hostility, repugnance, repulsion. Antipathy and repugnance are intuitive or instinctive and may have no actual or apparent cause; antipathy is a mental or physical recoil from association or connection with either persons or things; repugnance suggests a desire or impulse to fight against; aversion, or turning away from, is both deep and lasting in its effects; disgust and distaste are usually acquired; those of strong religious and moral senses abhor and detest.

45. **ANTIQUE,** ancient, antiquated, old-fashioned, quaint. Antique is old in style and is still prized; ancient is merely very old; antiquated is old and discarded; old-fashioned may or may not be prized and we may approve or contemn the thing so spoken of; quaint is old, odd, and pleasing.

46. **ANXIETY,** anguish, apprehension, care, concern, dread, fear, foreboding, fretting, misgiving, perplexity, solicitude, trouble, worry. Anxiety is suffering caused by what may happen, while anguish is the result of what has happened; in anxiety there is always the element of hope, while in apprehension, dread, fear, and foreboding there is only despair; care and anxiety over matters impel to the necessity of taking action to prevent or repair injury; concern is less grave than anxiety; worry is a less serious form of anxiety; fretting and worry imply an open communication or display to others of anxiety; one may be perplexed but not at all anxious; trouble is a general term for mental disturbance.

47. **APATHY,** calmness, composure, immobility, impassibility, indifference, insensibility, lethargy, phlegm, sluggishness, stoicism, unconcern, unfeelingness. Apathy is an entire absence of feeling or emotion; calmness is a state of mind resulting from courage, confidence, or strength; composure is calmness produced by the exercise of the will; immobility is usually applied to the countenance which does not betray its emotions or feelings; impassibility is the inability to suffer and is a divine attribute; indifference implies a lack of interest in a thing, insensibility, a lack of feeling; lethargy suggests a stupor or general inactivity; phlegm is a constitutional sluggishness; stoicism is intentional or willful indifference to trouble or suffering, sometimes spoken of as philosophical; unconcern disregards consequences.

48. **APOLOGY,** confession, defense, exculpation, excuse, justification, plea, vindication. By offering an apology one admits wrong and offers concessions; in old times apology meant a valiant defense; an excuse is a reason for the fault or offense; a confession is a full acknowledgment of a fault or offense and may or may not contain an apology or excuse; an exculpation is a defense clearing one's self of blame; a justification is a plea of right and justice in one's action; a plea may be a prayer for pardon or leniency, or it may be an attempt to clear one of all blame; a vindication is a reëstablishment of reputation.

49. **ASK,** beg, beseech, crave, demand, entreat, implore, petition, pray, request, require, solicit, supplicate. We ask what we have good reason to expect; we beg what we have no right to expect; we beseech with a humbled intensity; crave is a formal word; we demand what is rightfully ours; entreat is an earnest asking; implore is attended by weeping; petition is written request to those in authority; request is a formal asking; solicit is an effort to excite sympathy; supplicate implies an asking on bended knees.

50. **ASPECT,** view. Aspect is the way a thing appears to us; view is the application of our faculty of sight to a large or complex object. We may take a false view of things; things may present a false aspect to us; a view from one's window may be permanent, but may present varying aspects to us.

51. **ASSEMBLY,** assemblage, group, collection, gathering, company, meeting, convention. Assembly and assemblage are applied to persons, though a late use of the word assemble is applied in manufacturing to the putting together of the parts of machinery, such as bicycles or automobiles; an assembly of persons is a voluntary gathering of people usually under the authority of one person; a group is applicable to both animate and inanimate objects, and usually conveys an idea of artistic effect; a collection suggests a gathering together under some guiding force which may be with a definite purpose in view or mechanical and by chance; a meeting is less formal and more general than an assembly; a convention is a gathering together under authority, in which the members are assembled but the gathering is convened.

52. **ASSERT,** affirm, asseverate, aver, avouch, protest. Assert is used in opposition to suppose or imply, while affirm is the opposite of deny; we assert a truth; we affirm a proposition; to asseverate is to assert with earnestness and force; we aver what we are in a position to prove; protest originally meant a serious or public indication of truth and sincerity, but in doing so it often entailed disproving the opposite and it now often has the force of antagonism or opposition; and while we protest our innocence we also protest against another person or thing; protestations are often apparently the opposite of actions and indicate one motive while they seem to express another.

53. **AVENGE,** revenge. Avenge is to inflict pain or loss in retaliation for injury to one's self or another and may be an act of justice; revenge is the infliction of pain or loss to satisfy a vindictive desire; we avenge another's loss; we revenge ourselves.

54. **AVERAGE,** mean, medium. Average is a medial sum or quantity made out of several unequal sums or quantities; mean is a point intermediate between two extremes; medium, in addition to a sense of mean, has the idea of an agent or instrument.

55. **BAD,** evil, naughty, wicked. Bad denotes the absence of good qualities and is the general term; evil is employed only in a moral sense; a wicked man is immoral and sinful, offending both divine and human laws; naughty expresses the faults of children, though at one time it was applied to anything which was not what it ought to be.

56. **BAFFLE,** defeat, frustrate. Baffling involves repeated counteractions from several standpoints, as a baffling wind heads a sailor off in every direction; when used of persons it implies skill and scheming; a disease may baffle the best efforts of the most skilled physician; defeat is final, while one may overcome baffling forces; a man may be baffled but not defeated; plans and purposes are frustrated when they are made or caused to miss their ends

57. **BANISH,** exile, expel. Banish signifies to put under a ban, and implies the removal from a place or the prohibition from privileges; exile signifies removal from home; expulsion is simply coercive, and may be the act of an individual or a society beyond whose jurisdiction the act does not extend. The Tarquins were banished from Rome never to return; a man may be exiled for a time; a person is expelled from a society.

58. **BARE,** naked, uncovered. Bare implies the absence of some particular covering; naked the absence of all covering; that is uncovered from which the covering has been removed.

59. **BASE,** vile, mean. The intensity of meaning of these words rank as written, base stronger than vile, and vile than mean. We abhor the base; are disgusted with the vile; and have contempt for the mean. The higher in social rank the greater his baseness; the lower in rank the greater his vileness; the richer the person the greater his meanness.

60. **BEAR,** carry, convey, transport. Bear is to take the weight of a burden upon one's self and to sustain it; carry is to remove the object to another place; convey expresses the manner in which goods or messages are carried; transport tells not only the manner in which they are carried but implies something of the distance.

61. **BEAR,** yield. Bear marks the power of bringing forth; yield is applied to the result. Trees bear fruit under nearly all conditions; they yield according to the degree of cultivation which they receive. A certain quantity of seed will yield so much, while each individual plant bears its share.

62. **BIAS,** prepossession, prejudice. Bias marks a leaning toward feelings or opinions; prepossession indicates an occupation of the mind by some idea which shuts out all others; prejudice is a condition of mind caused by judging or deciding without full information or data. Prejudice is always used in a bad sense; a man's mind may be honestly biased or prepossessed, but prejudice favors the cause of faleshood.

63. **BLAME,** censure, condemn, reprove, reproach, upbraid. Blame simply ascribes a fault to one; censure expresses disapproval of acts; condemn is more concerned with things than with persons; reprove is decidedly personal in its application; reproach denotes the expression of personal feelings in a matter; upbraid conveys an idea of contempt or wounded feelings.

64. **BLEMISH,** stain, spot, speck, flaw, defect. A blemish affects the nice appearance of a thing and may include all of the other terms; a stain is larger than a spot, while both are caused by something foreign to the object; a speck is smaller than a spot; a flaw is usually applied to hard substances and denotes a faulty surface; a defect denotes that some essential part is lacking.

65. **BLOT OUT,** expunge, rase, erase efface, cancel, obliterate. Blot out may cover with a blot; expunge shows that the parts are no longer to be considered; figures are erased that the space may be occupied by others; they are canceled by striking through them with a pen or by similar marks; they are obliterated by any or all of these means without indicating which; they are effaced by scraping off the surface as of a wall.

66. **BODY,** corpse, carcass. We speak of the dead body of man or of brutes; corpse is the term to use to convey that a human body is lifeless; carcass is often used contemptuously or restricted properly to a brute's dead body.

67. **BOLD,** fearless, intrepid, undaunted. Bold applies to the spirit; fearless to the mind. One may be fearless when there is no danger; but one is bold only in time of danger. Intrepid is a condition of fearlessness; undaunted is the highest condition of boldness, and is the state in which one faces almost awe-inspiring odds.

68. **BOOTY,** spoil, prey. Booty indicates a division among soldiers or sailors of things taken in battle and divided in shares; spoils are the property of the slain in battle which rightfully belong to the victor; prey is properly that which is taken to be consumed, though the term is often used figuratively in an extended sense.

69. **BORDER,** edge, rim, brim, brink, margin, verge. Border is a stripe; edge is a line; rim is the edge of any vessel; brim is the edge of a cup; brink is the edge of a precipice; margin is the border around a printed or written page; verge is the very outer border.

70. **BOUND,** limit, confine, circumscribe, restrict. A bound is a natural or political division between countries, such as a river or mountain; limit is an artificial boundary; to confine is to bring the limits close together; to circumscribe is to mark out the surrounding limits; to restrict is to keep within well defined limits.

71. **BOUNDARY,** frontier, confines, precinct. A boundary divides or limits the extent of a thing; the frontier lies on the front or at the entrance into a country; confines are the parts which touch other states or countries; a precinct, while properly the girdle or space surrounding something, is often applied to the entire space within certain bounds.

72. **BOUNDLESS,** unlimited, infinite. A thing is boundless while no limits or bounds exist or may be seen. We speak of the boundless ocean only while we cannot see the bounds. Unlimited indicates that no limits exist but that there might better be a restriction. Infinite indicates that no limits can exist.

73. **BRAVE,** defy, dare, challenge. To brave is to withstand or to resist an opposing force with bravery; to defy is to consider lightly an opposing force as one which can easily or safely be overcome; to dare is to provoke opposition; to challenge is a formal provocation to a contest.

74. **BRAVERY,** courage, valor. Bravery depends upon the physical temperament, is a sort of instinct, and is of service only in time of contest; courage is based upon reason or reflection, may be displayed by persons of weak physical powers, and is of service at all times; valor is the highest type and combines both bravery and courage.

75. BREAK, burst, crack, split. Break indicates separation into parts with more or less force and from any cause; burst is applied to hollow bodies which break under pressure from the inside; crack is an irregular breaking of hard or brittle objects; split is to break lengthwise and is generally applied to wood.

76. BREEZE, gale, blast, gust, storm, tempest, hurricane. A breeze is gentle; a gale is strong and steady; a blast is sudden, impetuous, and of short duration; a gust is sudden and vehement. These terms are applied to the wind. A storm includes other elements besides the wind; a tempest is a storm with thunder and lightning; a hurricane exceeds all storms in violence and intensity.

77. BRING, fetch, carry. Bring is to carry a thing with one from place to place; fetch is to go first to the place where the thing is and to bring it back with one; carry has the sense of taking something directly from one place to another.

78. BUILD, erect, construct. Build expresses the purpose; erect, the manner; and construct, the contrivance. Erect conveys an idea of height; construct, of ingenuity. We build houses, erect monuments, and construct machines.

79. BUSINESS, occupation, employment, engagement, avocation. Business takes all one's time, thoughts, power, and interest; occupation and employment, only one's time and strength; engagement is partial employment; avocation a special or particular employment. One who is busy has more to take his attention than one merely occupied.

80. BUSINESS, trade, profession, art. The employment of one's time, experience, and ability for profit is business; buying and selling are inseparable from trade; learning and particular skill are required in a profession; artistic ability is needed in an art.

81. BUSINESS, office, duty. Business is an engagement which a man proposes for himself; office, what he is required to do for another; duty is an obligation. Office being work performed for others is usually restricted to public affairs.

82. BUSTLE, tumult, uproar. Bustle is marked by hurry; tumult by confusion and disorder; uproar by the noise of many voices.

83. BUY, purchase, bargain, cheapen. Buy and purchase are synonymous terms, and may be interchanged, though purchase is considered a term of greater refinement by some. We buy necessities but purchase luxuries. Bargain and cheapen have to do with the price more than with the exchange. Poor people are obliged to cheapen, but a mean person may bargain.

84. CALAMITY, disaster, misfortune, mischance, mishap. Calamity is a great disaster or misfortune; misfortune is a great mischance or mishap. A calamity is attended by destruction; disaster by injury or defeat of one's plans; misfortune by the loss of property or of health; a mischance or mishap is comparatively trivial.

85. CALCULATE, reckon, compute, count. Reckon, compute, and count are all modes of calculating. We reckon when we count and set down in detail; we compute by estimates based upon a variety of information; we count one by one. Calculation is applied to the larger mathematical processes.

86. CALENDAR, almanac. A calendar registers events under every month, as a gardener's calendar which tells the horticultural events for each month; an almanac registers times or the divisions of the year.

87. CALL, cry, exclaim. Call summons or attracts another on ordinary occasions; cry is to call loudly upon some particular occasion; exclaim is to give voice to one's feelings by a loud cry or call on some particular occasion.

88. CALL, invite, bid, summon. We call by the use of any sounds; invite by a direct or formal act or word or by a look, manner, or motion; we bid in words and with some authority; we summon by a more or less imperative request.

89. CALM, composed, collected. Calm expresses the state of the feelings; composed, of feelings and thoughts; collected, more particularly of the thoughts.

90. CALM, placid, serene. Calm refers only to the winds; serene, to the air and sky; placid, only to the mind.

91. CAN, may. Can denotes possibility or power, or ability; may, liberty, permission, or probability.

92. CANDID, open, sincere. Candid implies conscious purity of intention; openness implies unguardedness and a freedom in speaking one's thoughts; sincerity permits one to speak only what one thinks and causes one to frequently refrain from speaking.

93. CARE, charge, management. Care comprehends personal labor in attending to something; charge conveys an idea of responsibility; management involves the direction of others or of regulating or ordering affairs.

94. CAREFUL, cautious, provident. Carefulness may be shown by either doing or in not doing; caution is care in guarding against danger; provident conveys an idea of seeing beforehand and of taking steps to guard against possible danger in the future.

95. CARESS, fondle. One caresses by words and actions; fondles, by actions alone.

96. CARNAGE, slaughter, massacre, butchery. Carnage takes into account the number of the dead resulting; slaughter, both the act and the manner of the killing; massacre denotes a secrecy and treachery of action; butchery is the killing of the helpless.

97. CARRIAGE, gait, walk. Carriage indicates the way one carries the whole body; gait, the limbs and body in walking; walk is rather indefinite and indicates the manner of walking.

98. CAUSE, reason, motive. Cause is concerned with the order in which connected events happen; reason denotes the movements and operations of the mind; motive the impulses or ideas which move one to act.

99. CAUSE, occasion, create. To cause is to bring about naturally; to occasion is to bring about incidentally, though often necessarily; create is to bring into existence arbitrarily.

100. CAUTIOUS, wary, circumspect. One is cautious on all occasions when danger is present; but wary when the danger is great. These terms vary only in degree and are used of practical acts; circumspect denotes a watchful care in matters of theory and contemplation.

101. CEASE, leave off, discontinue. Cease indicates the passive act of stopping particular actions or habits, and is the simple cessation; leave off and discontinue are active. We cease writing or crying; a laborer leaves off his work at any hour, generally with a view of taking it up again; we discontinue visits when we observe that they are not agreeable to others.

102. CELEBRATE, commemorate. We may celebrate either a present or past event; we commemorate only past events; celebration is usually festive and social; commemoration is marked by solemnity or seriousness.

103. CELESTIAL, heavenly. Celestial is opposed to terrestrial and is a general term applied to the heaven of the heathens; heavenly is used as relating to the abode of the God of the Hebrews and the Christians.

104. CERTAIN, sure, secure. We are certain and sure as to our convictions; secure regarding our interests or condition; certainty is based upon positive knowledge or experience; sure may be a condition resulting from reliance upon the word of others; security is a sense of freedom from danger and literally means without care.

105. CESSATION, stop, rest, intermission. Cessation indicates that something is no longer going on; stop, that something has intervened to prevent motion or a continuance of the act; whatever does not move or exert itself is at rest; intermission is an alternation of motion and rest at regular or irregular intervals.

106. CHAIN, fetter, band, shackle. Chain is the general and indefinite term; fetters are larger than chains and may consist of several chains; bands are any restraints upon the limbs or body; shackles are fetters which confine or hamper the limbs.

107. CHANCE, fortune, fate. Chance is the name given to the uncertain and variable events which happen without order, form, or design; fortune applies to persons, and is represented as being blind in the bestowal of its awards; fate forms fixed plans with decisive results.

108. CHANCE, probability. A chance is a possibility however slight; many chances make a probability.

109. CHANCE, hazard. Hazard is a species of chance and is always unfavorable; there is a chance of gaining, but a hazard of losing.

110. CHANGE, alter, vary. One changes a thing by putting another in its place; one alters a thing by making it different from what it formerly was; one varies it by altering it in several ways and at different times.

111. **CHANGE,** exchange, barter, substitute. We change by putting one thing in the place of another; we exchange by giving one thing for another, being guided generally by a preference only; we barter when we give in exchange for a thing another commodity of equal value; we substitute when we put one thing in the place of another for better effect.

112. **CHANGE,** variation, vicissitude. Change is a ceasing to be the same; variation consists in being different at different times; vicissitude in being alternately different and the same at different times. We change our mode of life; experience variations, and suffer the vicissitudes of daily life.

113. **CHARACTER,** letter. Character is a letter of a foreign alphabet which differs in form from those of our own; the constituents of our own alphabet are letters; the units in shorthand are characters and not letters.

114. **CHARACTER,** reputation. Character is the moral equipment as it really is; reputation is what others think a man to be. A man of doubtful character may have a good reputation.

115. **CHARM,** enchant, fascinate, enrapture, captivate. Charm is to affect as by a charm or magical verse; to enchant is stronger than to charm and was originally to affect as by an incantation; to fascinate is still stronger and affects through the eye and operates by words and motions; to enrapture is a mental effect which is brought about directly without the implied secrecy of the previous terms; to captivate has a moral application only and is often used with fascinate in a bad sense.

116. **CHEAT,** defraud, trick. To cheat is to deceive by direct or gross falsehood or tricking; to defraud by a fixed plan or contrivance; to trick by an impromptu invention.

117. **CHECK,** curb, control. Check is derived from the game of chess where the term denotes that the king is prevented from moving, hence it implies that the body to be checked is in motion; curb is derived from the curb of a horse's bridle and like control may be applied to bodies at rest or in motion; control or counter-roll is the keeping of one roll against another and has a moral application.

118. **CHECK,** chide, reprimand, reprove, rebuke. One is checked that he may be stopped in what he is then doing; one is chidden that he may be prevented from repeating an act; one is reprimanded for omissions or mistakes; reproved for irregularities of conduct; rebuked for improprieties of behavior.

119. **CHECK,** stop. Check is to cause to move more slowly; stop is to prevent all motion. The course of a river is checked by rocks or sand banks, but is stopped by a dam; a man who is checked in his career continues upon it but more slowly; one stopped in his career adopts another course.

120. **CHEER,** encourage, comfort. One cheers the spirits of the sad, encourages the resolution of the timid, and comforts the afflicted in their distress. Cheering and encouraging act upon the mind; comforting may affect the body as well.

121. **CHEERFUL,** merry, sprightly, gay. One is cheerful when the flow of happiness is even and moderate; merry when there is more noise and tumult; sprightly when the happiness is buoyant and demonstrative; gay when the pleasure is fitful and may be followed by sullenness and discontent.

122. **CHIEF,** principal, main. Chief has to do with order or rank, as a chief clerk; principal, with importance and respectability, as the principal people or street in a city; main with the degree or quantity, as a main water pipe, or a main line, or the main object.

123. **CHIEF,** chieftain, head, leader. Chief is the first in civil matters; leader is the first in bold or difficult enterprises; a chieftain is a sort of leader who usually combines executive ability and undisputed power over his followers; heads are endowed with talents for directing large enterprises.

124. **CHOOSE,** prefer. To choose is to take one thing from among others; to prefer is to take one thing before or rather than another. Necessity often directs a choice and may prevent from taking what one prefers; the dictates of reason often direct one to choose one course as the wisest, when it is not at all what one prefers.

125. **CHOOSE,** pick, select. One picks with greater care than one chooses, and selects with still greater discrimination than one picks. One may choose or pick one or several from among many, but one generally selects a number.

126. **CHOOSE,** elect. One man or many may choose a person for an office or position; election is always the act of many; a person chosen is generally bound to accept the office; one who is elected has the right of refusal.

127. **CITE,** quote. One may cite either persons or things; one quotes things only. An author is cited; his works are quoted; authorities are cited by lawyers and historians to strengthen the evidence and to inspire confidence; passages from authors are quoted for purposes of illustration, confutation, or support of an argument.

128. **CITE,** summon. These words convey the idea of authoritatively calling upon a person to appear. Cite is used in a legal sense; summon is both legal and ordinary in its use. One is cited to appear before a court; one is summoned for the same purpose, but may be summoned as a doctor or friend to a sick bed.

129. **CIVIL,** polite. Polite expresses more than civil; it is really polished or refined. One may be civil without being polite; an inferior is civil to his superior; one is polite to an equal or to an inferior; civility is the absence of rudeness; politeness goes out of its way to please.

130. **CLANDESTINE,** secret. Clandestine implies that the thing done in secret is illegal or forbidden; that done in secret may be perfectly right but is done only without the knowledge of others. A secret marriage is conducted without the knowledge of some others; a clandestine marriage, without the knowledge, and, often, contrary to the wishes of others.

131. **CLASS,** order, rank, degree. Class distinguishes from without; order, rank, and degree, from within. We speak of the laboring class, the merchant class, etc. Order is a more particular division; the word means literally a row. One conceives persons or things arranged in rows according to some standard of equality. Rank distinguishes one individual from another; and there are degrees among those of the same rank.

132. **CLEARLY,** distinctly. That is seen clearly when the view is unobstructed; distinctly, when one may distinguish it from all other objects. One may see a thing clearly, but by reason of its distance or through a defect of sight it may not be seen distinctly.

133. **CLEARNESS,** perspicuity. Clearness applied to our ideas denotes the manner in which we understand or perceive; perspicuity denotes how distinctly and plainly we express our ideas. One may understand a question very clearly; but may fail utterly in expressing it perspicuously. A study of subjects which develop the reasoning powers will enable one to see clearly; grammar, and the cultivation of a good style, enable one to express himself with perspicuity.

134. **CLEMENCY,** lenity, mercy. Clemency is a mildness which prevents one from exercising power for fear of causing pain or suffering; it often defeats the ends of justice. Lenity deals lightly in dispensing punishment and implies an exercise of discretion where withholding a severe punishment may often have a greater effect. Mercy is shown by those in authority to one who is in trouble, distress, or suffering either by his own fault or through other circumstances.

135. **CLERGYMAN,** parson, priest, minister. In countries which have a national or state church it is customary to restrict the use of the term clergyman to those only who hold the holy office in that church. In polite society the word is often preferred when speaking of any of the clergy of any denomination; parson is really the highest of the three orders of the inferior clergy: parson, vicar, and curate; but the term has passed almost into a nickname; priest is one who is ordained to actually officiate at the altar in distinction to the deacon, who only assists; a minister actually or habitually officiates.

136. **CLOAK,** mask, blind, veil. These figurative words, derived mainly from articles of clothing, all express the idea of means employed to keep one's acts or motives concealed from others; blind and veil only partly conceal; mask and cloak conceal the whole object; a veil deceives one's self; the cloak, mask, and blind deceive others; we speak of a hypocrite making a cloak of religion; of false friends wearing a mask; of cheating tradesmen using a blind; of prejudice acting as a veil upon one's judgment.

137. **CLOG,** load, encumber. A clog impedes motion as of a wheel or machine which may be clogged with dirt; loaded is used in the sense of overloaded, as a picture loaded with color, or a tree with fruit; encumbered objects move or act but with difficulty.

138. CLOISTER, convent, monastery. A cloister conveys an idea of seclusion or retirement; a convent of a community or gathering; a monastery of solitude. One shuts himself up in a cloister, gives himself up to God, and surrenders his personal liberty; renounces his worldly habits in a convent; shuns all human intercourse in a monastery.

139. CLOSE, compact. Compactness is produced by a perfect adhesion of parts, while closeness consists in mere proximity or nearness.

140. CLOSE, near, nigh. There is little or no difference between near and nigh; the former is most frequently heard. Houses are close when they nearly touch; near when within sight. Persons are close when they touch; near when within speaking distance.

141. CLOSE, shut. Close is to put close together and is a partial shutting; shut is to close so as to prevent admittance or entrance; we close a door or window when we partly shut it; we shut our eyes by closing the lids; we shut our mouths by closing the lips.

142. CLOSE, conclude, finish. Close brings near to the end; conclude brings actually to an end; finish is to follow to a conclusion according to a certain well-defined plan; we may close by stopping abruptly at any point even though we have not concluded or finished; we may conclude before we have wholly finished.

143. COADJUTOR, assistant. A coadjutor is a fellow laborer who takes higher rank than an assistant or subordinate helper.

144. COARSE, rough, rude. Coarse refers frequently to the materials of which a thing is composed; rough to the surface; and rude to the fashion, make, or finish of things. We speak of coarse food, clothing, feelings, or manners; rough wood, skin, or language; and rude implements, utensils, language, or manners.

145. COAX, cajole, fawn, wheedle. Coax is to plead as with a child or simpleton, using entreaty or supplication in place of reason or argument; cajole is to employ trickery and stratagem coupled with soft words and insinuating manners; fawn is to hang upon in a servile or flattering way; wheedle is to employ knavish artifices as by greedy or covetous persons upon those of easy temper and generous impulses.

146. COERCE, restrain. Coercion implies the use of force or pressure to compel in a certain course; restrain, the keeping within certain bounds. We coerce when we prevent one from doing certain things and compel him to do others; we restrain when we only prevent him from doing some things. So we restrain while we coerce; but do not coerce when we restrain.

147. COEVAL, contemporary. Coeval means of the same age; contemporary, of the same time. As an age is a very long period, these words differ in degree. Things are coeval which extend over long periods; contemporary when existing at the same and, comparatively, short time.

148. COLLEAGUE, partner. Colleague implies the sharing of a common office; partner, of a common interest. Members of Congress and judges have colleagues; business men have partners.

149. COLOR, dye, tinge, stain. A thing is colored when color is put on it, or a description is colored by strong figures, facts, or vivid description; that is dyed when substances are used to change the color, usually said of textiles and fabrics; tinged when lightly touched with color, usually poetical; and stained when an unnatural color is added. In a moral sense that is stained which has lost its purity.

150. COLOR, hue, tint. A hue is a faint or blended color; a tint a shade of color.

151. COMBAT, oppose. Combat, to fight together, is used in speculative and moral matters; opposed is used in private and personal concerns; one's position is combated; one's interests or plans are opposed.

152. COMFORT, pleasure. Comfort is the most lasting form of enjoyment; pleasure is followed or accompanied by suffering; comfort is less than pleasure in detail, but it is more than pleasure in the aggregate.

153. COMMAND, order, injunction, precept. A command is given by one in authority, is imperative and must be obeyed; an order instructs, directs, and must be carried out; an injunction is an explicit impressing upon the mind; a precept points out a clear duty or a wise course.

154. COMMISSION, authorize, empower. We commission another to perform an act for us by expressing our wishes in the matter; we authorize when our personal authority is necessary to empower another to act; we empower another by formally transferring to him the legal right to act.

155. COMMODIOUS, convenient. Commodious contributes to the bodily ease and comfort; convenient well suits the business, the interests, or the plans; a porch, a house, a room, or a chair is commodious; an arrival, a time, a season, or an opportunity is convenient.

156. COMMODITY, goods, merchandise, wares. A commodity is some article which is of the first necessity; goods are those things of value sold by retail traders; merchandise is the belongings of merchants; wares are manufactured articles and are either goods or merchandise.

157. COMMON, vulgar, ordinary, mean. Things may become common, vulgar, or ordinary by frequent use; that which is mean is so of itself and by its nature. What everybody may obtain, use, and enjoy is common and hence of little value; vulgar is opposed to polite and cultivated; ordinary is the opposite of distinguished; mean is that which is inferior or does not rise above the moderate.

158. COMMONLY, generally, frequently, usually. What all do is commonly done; what the greater part do is generally done; what many do or what a few do very often is frequently done; what one or many are used to do regularly is usually done.

159. COMMOTION, disturbance. A public commotion is attended by unusual bustle and excitement; a disturbance interrupts the peace and quiet of a community. A commotion in nature is violent motion of several objects or of the individual parts of an object; a disturbance puts the object out of its natural condition or state.

160. COMMUNICATE, impart. That is communicated which is made of common knowledge or of common enjoyment; what is imparted is given to or shared with another and is usually of interest or importance to both parties.

161. COMPARISON, contrast. Generally we compare things to show their likeness and to learn their true relations; we contrast things to show their differences; we compare two shades of the same color; we contrast two different colors. Comparison brings out like qualities; contrast displays opposite qualities.

162. COMPATIBLE, consistent. Whatever does not interfere with carrying out a plan is compatible with it; whatever conforms to one's ideals or with one's station in life is consistent.

163. COMPENSATION, amends, satisfaction, recompense, remuneration, requital, reward. Compensation is a return, equal in value, for a loss or damage sustained; amends is a return for something faulty; satisfaction is a satisfying return made to another for injuries or damage; a recompense is a voluntary return for some service voluntarily performed; remuneration is a reward based more upon the dignity, fame, or standing of the person than upon the value of the services performed; requital is a grateful return for a kindness done; a reward is that which comes to a man in return for his conduct.

164. COMPETENT, fitted, qualified. One is competent who is qualified by mental endowments and experience; the disposition and character have much to do with one's fitness; one is qualified by acquaintance with the business to be done and by expertness in doing it.

165. COMPETITION, emulation, rivalry. Competition is more the act of striving for the same object as another; emulation is the spirit in which the contest is conducted; rivalry has usually a selfish object in view and marks an unworthy spirit as well as unscrupulousness in the choice of means of attaining the end.

166. COMPLAIN, lament, regret. Complaint is caused by dissatisfaction; lamentation by grief; and regret by pain.

167. COMPLAIN, murmur, repine. Complaint is not so loud as murmuring, but louder than repining. Complaint and murmuring are demonstrated by audible means; repining is generally in secret.

168. COMPLAINT, accusation. A complaint is generally made for the purpose of obtaining redress; an accusation, to bring the guilty to punishment.

169. COMPLETE, perfect, finished. When there is no deficiency, nothing wanting, a thing is complete; when it possesses marked excellence, it is perfect; when there is no omission in it, it is finished. Nothing that man does is, in the proper sense, perfect, but the term is used relatively to indicate a high degree of excellence.

170. COMPLETE, finish, terminate. When we complete a work, we make it what it ought to be; we

finish it when we do all to it that was originally intended; we terminate it by bringing it to an end.

171. **COMPOUND,** complex. A compound is made up of several wholes; a complex, of many parts. A compound may consist of two constituents; a complex consists of many parts.

172. **COMPREHENSIVE,** extensive. Comprehensive is concerned with quantity; extensive, with space. What comprehends much is comprehensive, what extends far is extensive. A comprehensive view of a subject takes in all of the branches of it; an extensive view takes up all of the minute details.

173. **CONCEAL,** dissemble, disguise. We conceal by simply abstaining from making known what we wish kept secret; we dissemble by both art and falsehood in an effort to prevent others from learning what we desire to keep secret; we disguise by cunning, artifice, and labor what we desire to pass unnoticed.

174. **CONCEAL,** hide, secrete. We conceal by keeping something out of sight; we hide it by putting it under cover; we secrete it by putting it in cunningly devised, unfrequented, or least thought of places.

175. **CONCEIVE,** understand, comprehend. To conceive is the simplest of these mental operations as we may conceive only one idea. We may conceive that something is possible without understanding or comprehending how or why; understanding applies to the more familiar subjects of business and daily life; comprehending relates to principles, lessons, and speculative knowledge.

176. **CONCEPTION,** notion. Conceptions are the result of one's own understanding and imagination; they are the product of one's own unaided mental operations upon one's own ideas; notions are the result of information and experience.

177. **CONCILIATE,** reconcile. We conciliate a person when we gain his affection and esteem for ourselves; we reconcile two persons when we unite their esteem and good will to each other.

178. **CONCLUSION,** inference, deduction. A conclusion gathers up all of the arguments and reasoning into full and complete proof; an inference is only partial, indecisive, and special; a deduction is drawn from a number of facts, inferences, and assertions and is final.

179. **CONCLUSIVE,** decisive, convincing. That which is conclusive puts an end to all argument and determines what the judgment shall be; decisive puts an end to all doubt or wavering and determines the will; convincing applies only to argumentative matters and is more particular and special than conclusive. A chain of reasoning is conclusive; a command is decisive; an argument is convincing.

180. **CONCORD,** harmony. Concord is the union of the wills and affections and may exist between persons living apart from one another; harmony is an accord of the minds of persons and is used of those whose daily lives are closely united. In music concord is used in speaking of two or more single sounds; harmony of any number or aggregate of sounds.

181. **CONDITION,** station. Condition in life relates to one's circumstances, education, or birth; station to one's rank, occupation, or mode of life.

182. **CONDUCE,** contribute. Conduce is used of all that brings about a condition or serves the full purpose; contribute serves a secondary purpose and only helps in a lesser degree to bring about a condition.

183. **CONDUCT,** manage, direct. Wisdom and knowledge are required to conduct; action to manage; and authority to direct.

184. **CONFER,** bestow. Conferring is an act of authority and is properly the act of those in power; bestowing is more an act of generosity or charity and is the act of private individuals.

185. **CONFIDENT,** dogmatical, positive. A confident man has faith in himself, is always ready to act, and is sure of success; a dogmatical man is used to making unqualified assertions, is always ready to speak, and feels sure of being heard; a positive man is fixed to one point, is confident that he has made no mistake, trusts more to his own memory and powers than he ought, and is consequently most often deceived.

186. **CONFIRM,** corroborate. What confirms removes all doubt; what corroborates adds more strength to. A story is confirmed when it is proved beyond all doubt; evidence is corroborated when something is added which strengthens it in some particular.

187. **CONFIRM,** establish. These words differ essentially only in degree,—confirm is not so strong as establish. While stories, reports, rumors, and opinions are confirmed, reputations, principles, faiths, and hopes are established.

188. **CONFOUND,** confuse. A person confounds one thing with another; he is confused or confuses himself. One name is confounded with another; a child often has confused ideas on a subject. When one takes two different accounts to be the same, one confounds them; when one mingles items from one account with another one confuses them.

189. **CONFRONT,** face. Two or more persons confront each other, as witnesses are confronted; one person faces danger, conditions, or the enemy.

190. **CONFUSION,** disorder. Confusion marks the absence of all order; disorder marks the disarrangement of things where order previously existed.

191. **CONFUTE,** refute, disprove. Confute is applied to argumentative matters, an argument is confuted by proving its fallacy; a charge is refuted by proving the innocence of the party; an assertion is disproved by showing that it is not correct.

192. **CONJECTURE,** supposition, surmise. A conjecture is an idea in the mind based upon some trivial suggestion; a supposition is based upon some reasons; a surmise has less foundation than either. We make conjectures regarding events, their causes, consequences, and circumstances; suppositions on speculative points; and surmises regarding the motives or intentions of people.

193. **CONNECT,** combine, unite. Only things of the same kind can be united and in the union all individuality is lost; unlike things are combined or connected and in the combination or connection each remains distinct. Combine indicates a closer union than connect. Houses are connected by a common passage; the armies of two nations are combined; two armies of the same nation are united.

194. **CONNECTION,** relation. Connection indicates the tie that binds two or expresses the condition of being so bound; relation does not define what the association is. There is a relation between one who gives a present and one who receives it; they stand in the relation of giver and receiver. There is a dependence upon one another for one could not be giver unless the other received the gift. But there need be no connection between them.

195. **CONSCIENTIOUS,** scrupulous. A conscientious person is guided by his conscience in all of his acts; a scrupulous person is so in minor or trifling points. Scruple is derived from a Latin word meaning a little hard stone which hurts one when stepped on. A man may be conscientious in the discharge of all of his duty; and an otherwise inefficient servant may be scrupulously clean.

196. **CONSEQUENCE,** effect, result, issue, event. Consequences may follow naturally from the actions of men or from things in which there was no design, plan, or intention; results follow directly from a plan, design, or purpose; an effect is produced by connection with some cause or thing which has effected or brought it about; issue and event mark the final outcome and are used of larger or more vital operations as of negotiations and battles.

197. **CONSIDER,** reflect. One considers common objects; reflects upon speculative and moral matters. We consider before we take action; we reflect when we look back upon what has been done with a view to future guidance.

198. **CONSIDER,** regard. We consider things when we look upon them as they really are, and study them with thoughtful caution; we regard them when we look into them with personal interest. We are accustomed to consider the details of means and matter and to regard the end or object at large.

199. **CONSIGN,** commit, intrust. To consign is to transfer to another for a specific purpose as in consigning goods to another to sell for one's advantage; commit is to put into the hands of another to manage for one, as a merchant commits the management of his business to his clerk; intrust is to place in trust and marks the confidence and trust of the one party, and the responsibility of the other.

200. **CONSTRAINT,** restraint. Constraint applies to the movements of the body; restraint to the mind as well. One is constrained by tight clothing or one's manner is constrained as though bound; one is restrained by motives or fear of consequences.

201. **CONSULT,** deliberate. Consult requires the discussion or consideration by, at least, two persons; one may deliberate alone. We speak and listen when we consult; we hesitate and take time to deliberate. Those who coöperate frequently consult; those who have large measures to decide deliberate.

202. **CONSUMMATION,** completion. A thing is complete when it answers its purpose; consummate when it has attained the highest possible degree. Wishes are consummated; plans are completed. The completion of one's plans may not be the consummation of one's hopes.

203. **CONTAIN,** hold. Hold is employed only for the matter for which hollow bodies have a capacity. In general use contain is regarded as being preferable to hold, and is applied to spiritual or moral content.

204. **CONTAMINATE,** defile, pollute, taint, corrupt. Corrupt destroys the purity; the other terms denote injury to the purity. Taint is the weakest of the words; corrupt and defile are the strongest. The impure contaminates; the gross and vile defile or pollute; the contagious or infectious corrupts; what is corrupted may taint.

205. **CONTEMN,** despise, scorn, disdain. We contemn that which is contemptible in superiors, such as mean acts; we despise or look down upon degraded or inferior persons; one who is scorned is shorn or stripped of honors and derided; in disdaining we consider a person or thing as altogether unworthy. A little, vain mind scorns others, though the noblest minds scorn to do mean or dishonest acts. A haughty or perverted mind treats others with disdain.

206. **CONTEMPLATE,** meditate, muse. We contemplate what is before us, or the present; we meditate upon the absent, or the past; though we may both contemplate and meditate for the future. We muse on circumstances or events which are just happening. There is more of serious thought in meditating or contemplating than in musing.

207. **CONTEMPTIBLE,** contemptuous. A thing, an act, or a person may be contemptible; the manner in which one shows his contempt is contemptuous.

208. **CONTEMPTIBLE,** despicable, pitiful. One is contemptible for vanity or weakness, despicable for baseness and vileness, pitiful for lack of spirit or manliness.

209. **CONTENTMENT,** satisfaction. A contented person wishes for no more; one is satisfied when one has obtained all that was wished for. A contented feeling is permanent; one is satisfied only for the time. Contentment is the absence of pain; satisfaction is a feeling of pleasure.

210. **CONTINUAL,** perpetual, constant. That which is continual is never interrupted; that which is perpetual has no end; that which is constant suffers no change.

211. **CONTINUE,** remain, stay. Continue suggests a state of action; remain, of rest. One continues working; one remains quiet. To remain is involuntary; to stay is voluntary. One remains in prison; one stays with a friend.

212. **CONTINUE,** persevere, persist, pursue, prosecute. Continue contains the general idea of not setting the work or act aside; persevere is to continue with no wish to desist; persist, with a determination not to cease; a plan, a measure or a line of conduct is pursued according to some definite design; an undertaking is prosecuted to carry it out in conformity to some desire or to follow it up to a definite result. One may persist in trifles, but one perseveres in important works.

213. **CONTRADICT,** deny, oppose. One may contradict unintentionally by setting up one statement against another as a lying witness contradicts himself; one denies by purposely asserting the falsehood of another's statement; one opposes by any mode of action or statement.

214. **CONTRIVE,** invent, devise. Devising is more difficult than contriving. A contrivance is simple and easily understood; a device has greater difficulties to overcome and is more complex. Invention is of greater importance and suggests something hitherto unthought of. Thought and combination will contrive and devise, but ingenuity is required to invent.

215. **CONTROVERT,** dispute. We controvert speculative matters; we dispute statements of fact.

216. **CONVERSANT,** familiar. To be familiar with things or subjects expresses a more thorough and intimate knowledge of them than to be conversant with them does. One is conversant with things that have come to his notice frequently; one is familiar with those things which come up in the daily routine of his business. A layman may be conversant with ordinary phases of law, but by no means familiar with all cases or aspects bearing upon them.

217. **CORRECT,** accurate. What is done according to a fixed rule is correct; what is done by an effort of the mind and attention is accurate. An engineer makes an accurate survey, a scientist accurate observations, a pupil solves a mathematical problem accurately. Another pupil may solve a problem and be correct in the use of the rule yet his work may not be accurate.

218. **COST,** expense, price, charge. Cost is the amount laid out on a thing; expense is what the person actually lays out; price is what the thing will fetch or be worth; charge is whatever is to be demanded of the person or thing. In manufacturing the cost of production, a share of expense, and all other legitimate charges, with profit added determine the price.

219. **COVER,** hide. We hide by covering, though we cover without any idea of hiding. Hide always conveys the idea of concealing.

220. **CURE,** heal, remedy. We cure what is out of order, heal what is broken, and remedy by applying remedies.

221. **CURIOUS,** inquisitive, prying. One is curious who carefully examines things for himself; inquisitive when he closely questions others; and prying when curious or inquisitive regarding other people's affairs.

222. **CURSORY,** hasty, slight, desultory, perfunctory. Cursory implies a running over a subject in both a hasty and slight way. A cursory view of a subject may be taken because it is unimportant; a hasty view may lead to error; a slight view to shallowness. A desultory action is a leaping action, not continuous but with intervals; a perfunctory act is one done from duty but without much, if any, interest in the subject.

223. **CUSTOM,** habit. Custom is the frequent performance or repetition of an act; habit results from this frequent performance. A custom is the result of the action of the will; habits are performed involuntarily. We follow a custom and acquire a habit.

224. **CUSTOM,** fashion, manners, practice. The customs of a country are the regulations for the conduct of men in the important concerns of life and are authoritative; fashions are arbitrary, fickle, and subject to frequent change; manners are the expressions of moral feelings and are an index of the culture and refinement of the people; a practice differs from a custom in that it may be frequent or infrequent, regular or irregular.

225. **DEADLY,** mortal, fatal. Deadly is productive of death; mortal terminates in or is liable to death; fatal relates to death and to things which work great mischief. Mortal is past all cure; fatal cannot be retrieved; deadly may be counteracted.

226. **DEATH,** decease, demise. Death is the general term; it denotes extinction of life and may be applied to both men and all animals; decease is a technical term in law and in a popular use denotes a falling off in the number of living; demise is appropriately used of those who, in dying, put off or resign earthly honors or high station.

227. **DEBILITY,** infirmity, imbecility. Debility is a physical weakness and may be constitutional or otherwise; infirmity is accidental weakness and is either physical or mental; imbecility is mental weakness. Debility may be general or local; infirmity is local; imbecility is general.

228. **DEBT,** due. Debt is usually applied to that which is owing from a person; due to that which is owing to a person. One pays one's debts and receives one's dues.

229. **DECEIVER,** impostor. A deceiver practises any form of deception; an impostor deceives by putting on a false appearance. The deceiver plays upon individuals or the public; the impostor usually upon the public at large.

230. **DECISION,** judgment, sentence. A decision is given; it puts an end to all doubt and enables a person to act. A judgment is formed; it respects innocence or guilt, moral excellence or defects of persons or things, and preferable courses of action; it enables a person to think. A sentence follows upon a judgment, is pronounced or passed, and determines the sentiments of those in judgment.

231. **DECLARE,** publish, proclaim. Declare is simply to make known to others, to make clear to them; one may declare privately or publicly, by word of mouth or by writing. We publish in the manner which will make the thing most widely known and cause it to become public property. Proclaiming is always an official act, as when the President issues a proclamation on public affairs. In olden times proclamations were uttered to the public by heralds who shouted out the royal wishes or commands.

232. **DECREE,** edict, proclamation. A decree is a solemn and deliberative act, the decision of one or many, and regulates both private and public matters. An edict is more authoritative than a decree, speaks the will of an individual, usually despotic, and includes such commands as the ukase of Russia. A proclamation contains the command to the people from a constitutional ruler.

233. **DEDICATE,** devote, consecrate. One who dedicates himself to God, promises solemnly to give himself entirely up by shutting out all other considerations; one who devotes himself to the ministry, pursues it as the first object of his thoughts but not to the exclusion of all else. We also devote our time to some work or thing. Consecrate is to set apart for a special object or purpose with religious form or ceremony.

234. **DEDUCT,** subtract. Deduct is a taking away from in a general sense as when one deducts an amount paid from the whole bill of charges; subtract is a technical term of arithmetical calculations, as when a bookkeeper subtracts small amounts from the gross sum.

235. **DEFACE,** disfigure, deform. Deface denotes the actual destruction of what has previously existed; disfigure is to destroy or to so execute as to take away the figure; deform is to change the form of what has existed. A painting or writing is defaced by tearing, smearing, or similar cause; a statue is defaced when the outward surface is damaged, disfigured by the loss of a limb; deformed when made so as to appear monstrous or even unlike the original. The human form is disfigured by loss of a limb or serious burn; deformed, when misshapen.

236. **DEFECTIVE,** deficient. Defective denotes that something is wanting to complete; deficient relates more to the part or thing that is wanting. A book is defective because some leaves are missing; the leaves are deficient.

237. **DEFEND,** protect, vindicate. Defend has the sense of keeping or warding off in a general way. Defense may be made regardless of the station or rank of the defender. A weak man may defend a stronger. Protect has the sense of a defense or shelter by a superior and involves an additional idea of covering, supplying with necessities, and furnishing comforts. Vindicate has a moral sense where a man not only defends himself against charges, but proves his innocence, and restores his good name.

238. **DEFENSIBLE,** defensive. A place or a line of conduct is defensible when it is possible to defend it; the means taken to defend it are the defensive measures.

239. **DEFINITE,** positive. Definite is bounded by a line or limit; positive is placed or firmly fixed. A man's views upon a question are definite when clear and sharply marked so as not to be confounded with others; they are positive when they admit of no doubt.

240. **DEFINITION,** explanation. A definition is correct or precise and marks off the boundaries and limitations; an explanation is ample or general and spreads out a full view of the matter. We both define and illustrate when we explain. We define a word when we show its exact meaning; we explain its use by illustration and contrast with other words.

241. **DEJECTION,** depression, melancholy. Dejection, a casting or hurling down, is stronger than depression, a pressing down. Both of these feelings or states of mind are temporary and passing. Melancholy is constitutional and is a disease. Its effects are permanent.

242. **DELAY,** defer, postpone, procrastinate, prolong, protract, retard. Delay denotes not to commence action; defer to put off action until another time; postpone is a discretionary act of putting off until a more favorable time; procrastinate is a delay arising from the fault of the person and is a culpable or negligent delaying; prolong is to lengthen to a wearisome extent; protract is to draw or drag along with no activity; retard is to cause a thing to go slowly or to prevent its advance.

243. **DELEGATE,** depute. An office or duty is delegated; the person to whom the task is delegated is deputed to perform it.

244. **DELIGHTFUL,** charming. Delightful is applied to both material and spiritual objects; charming is restricted generally to objects of sense. Music is rather charming than delightful.

245. **DELIVER,** rescue, save. Deliver is to set free; rescue to recover from danger; save to make safe. Deliver and rescue take out of the way of danger or suffering; save is to keep out of the way of evil. We deliver from slight danger; we rescue from great or immediate harm.

246. **DEMAND,** require. We demand by a formal asking for that which is justly our due and about which there can be no question; we require what we wish or expect to be done, but our requisition may be met by questioning or refusal.

247. **DEMUR,** hesitate, pause. We demur or keep back from doubt or difficulty; we hesitate from indecision; we pause from caution or the force of circumstances. We demur and hesitate by an action of the mind; we pause in speaking or in action.

248. **DENOTE,** signify. Denote is to cause to know; signify is to make some sign as a guide to the understanding. Letters or characters may be used to denote grades of excellence or the quality of things; nods, signs, glances, or looks signify wishes or feelings.

249. **DESIGN,** purpose, intend, mean. Design and purpose denote works of greater importance than intend and mean, which are familiar. A design includes many objects or topics; a purpose but one; there is something more methodical and studied about a design; a purpose is proposed or set before the mind seriously; we intend only vaguely; mean is applied to matters requiring but little thought and implies simply to have in mind.

250. **DESIGN,** plan, scheme, project. A design is arranged, studied out, and systematically prepared; a plan is the means by which a thing is to be brought about; a scheme and a project are intricate solutions of rare or extraordinary conditions; a project is intended to cover matters of great moment involving large interests. Design and plan are more practical and less speculative than scheme or project.

251. **DESIRE,** wish, long for, hanker after, covet. A desire demands gratification; wish is a strong inclination for; longing is impatient and continued; hankering is a desire for something placed out of reach; coveting is the desire for something which belongs to another. Hankering suggests a wish for something which has been previously enjoyed but of which we are now deprived.

252. **DESPERATE,** hopeless. Desperate, applied to things, is stronger than hopeless; it expresses the absence of hope to remove evil; hopeless expresses the absence of hope to attain good. One makes a desperate effort; one undertakes a hopeless task.

253. **DESTINY,** fate, lot, doom. Destiny is considered as marking one's station and walk in life; fate regards what one suffers; lot denotes what one gets or possesses; doom is the final and unhappy destiny of life.

254. **DESTROY,** consume, waste. Destroy is putting an end to that which one desires should be preserved; consume is to use up; waste is to consume by using wrongly.

255. **DESTRUCTION,** ruin. Destruction is immediate; ruin is gradual. What is destroyed may be rebuilt; what is ruined is past recovery or restoration. Destruction may be partial; ruin is total.

256. **DESTRUCTIVE,** ruinous, pernicious. An instrument or means is destructive or pernicious; its effects are ruinous. Pernicious agents or influences work in a more limited way than do the destructive.

257. **DETECT,** discover. One detects what another wishes to conceal; one discovers that which is concealed without wicked intent.

258. **DETER,** discourage, dishearten. Deter is to frighten away from a thing and one is deterred from beginning a thing; one is discouraged or disheartened from continuing a work. An impatient man is easily discouraged; one who lacks courage or perseverance is disheartened.

259. **DETERMINE,** resolve. Determine is an act of the judgment and follows examination and choice; resolve is an act of the will and follows determination. We determine what is best to be done and resolve to do it.

260. **DEVIATE,** wander, swerve, stray. Deviate is to turn out of the way or direct path; wander is to travel aimlessly without regard to paths or directions; swerve is to turn abruptly and suddenly from a course; stray is used in a bad sense either measured by morality or by consequences.

261. **DEVISE,** bequeath. Devise is to give lands or real estate by a properly attested and witnessed will; bequeath is to give personal property after one's death in a less formal but no less legal way.

262. **DICTATE,** prescribe. Dictate denotes greater authority than prescribe. Dictate is more than command; there is no sense of command in prescribe

though a rule of action or conduct is laid down for the prescribed to follow. One may dictate a line of action without giving any reasons therefor; prescription has the sanction of reason.

263. **DICTION,** style, phrase, phraseology. Diction is concerned with a proper observation of grammatical rules, proper use of words, and a clearness of writing such as may be attained by any student; style deals with niceties and elegances of expression, such as characterize the writings of the masters of the language; phrase has to do with the use of single words; phraseology with a succession of phrases.

264. **DIE,** expire. Die denotes the extinction of life; expire the last act of life. Trees and plants die, but do not expire; animals which breathe air, and some objects which depend upon air, such as lamps, expire.

265. **DIFFER,** vary, disagree, dissent. Differ is the most general and indefinite term. We differ from any cause or in any degree; we vary in only small matters. It takes two or more to differ; one may vary; we disagree in matters of personal interest and in practical affairs; there is always more or less ill-humor and feeling in a disagreement; there is also hard feeling among those who dissent in matters of speculation or opinion.

266. **DIFFERENCE,** variety, diversity. A difference may exist between two objects; variety requires several; diversity exists in the taste or opinion.

267. **DIFFERENCE,** distinction. The difference lies in the things themselves; the distinction is the act of the person who notes the difference. The distinction between two objects lies in the difference between them.

268. **DIFFERENCE,** dispute, altercation, quarrel. A difference is a less serious and personal matter; a dispute suggests many angry words and much ill-feeling; an altercation is a wordy dispute, with wide difference of opinion, and much abusive language; a quarrel is the most serious and involves all forms of violence.

269. **DIFFERENT,** distinct, separate. Difference is opposed to likeness; no objects which are alike can be different. Distinct is opposed to identity; two objects exactly alike may appear to be distinct when seen clearly. Separate is opposed to unity; two bodies which are united are not separate.

270. **DIFFERENT,** several, various, divers, sundry. Different describes the quality of things rather than the number and may be used of two; several denotes split up into many; various expresses a great number and a great diversity; divers denotes many different objects; sundry denotes many things widely separated.

271. **DIFFERENT,** unlike. Things which are different have some points of resemblance and may be compared; things which are unlike are wholly so and do not admit of comparison.

272. **DISPEL,** disperse. To dispel is to drive away a thing, so that it does not return; to banish permanently, to eliminate completely. Knowledge dispels ignorance; and light, gloom. More force is implied by dispelling than in dispersing. Both are used figuratively. The thing itself may be destroyed if dispelled; while to disperse may mean merely to destroy the cohesion of its parts. To disperse does away with the completeness as a whole; to distribute elsewhere, or scatter, but not to remove; yet to disperse is a voluntary action; while the act of scattering may be involuntary and without method or plan.

273. **DISPENSE,** distribute. To dispense is to confer upon, in the sense of giving out in different directions. But it has no special reference to the one who does the bestowing. One may say Nature dispenses her bounty to all. To distribute is a definite action toward individual points, as something which comes directly from giver to recipient. To dispense is also to do without a thing,—as "we can readily dispense with that."

274. **DISPLEASE,** offend, vex. Displease is the opposite of please, and more nearly respects the inward state of mind; while the act of offending is outwardly to give occasion to provoke the feeling. Simply not to please is a negative quality; while to offend is to cause a sense of displeasure in a distinct and definite way. Vex has the same signification as offend with the additional sense of repeated actions tending to aggravate not only one's displeasure but the actual offense.

275. **DISPLEASURE,** anger, disapprobation. Displeasure is a state of irritation of mind or feeling caused by the conduct of others. It is always produced by an adequate cause, real or supposed. Anger may result from continued displeasure, and is a state of mind aggravated by a continuance, perhaps, of offensiveness. Displeasure is mild, while anger is harsh. Disapprobation is an opposite opinion from approval. Displeasure is always felt at what has passed; disapprobation may be felt also with regard to things about to take place.

276. **DISPOSE,** arrange, digest. To dispose is to assign a place to each of several things; to arrange implies a more thoughtful action. Disposal is a personal act. Troops may be disposed but ideas may be arranged. Things not wanted are disposed of; books are arranged with regard to subjects or size. To digest is the act of assimilation, the gathering together of things with a fixed design in so doing. To digest information implies an intellectual process; while disposal may be simply to set aside or put apart.

277. **DISPOSITION,** temper. Both terms refer to the mind and its bias. Disposition is the natural or prevailing tendency of the mind as a whole, and is a permanent state. Temper relates only to the bias or tone of the feelings, and is transitory. A disposition inclining to right living makes a man a useful member of society; a good temper may make one acceptable and agreeable but not necessarily useful. A good disposition will go far toward correcting the errors of temper; a bad one will leave no chance for amending the temper.

278. **DISPOSITION,** inclination. Disposition is used here in application to the particular frame of mind, rather than the general, as in the previous instance. A disposition may be indulged in; while an inclination may be yielded to. A disposition to do something applies to the state of the whole mind at that time; an inclination may be a particular part of one's general disposition. One may be disposed to be unfriendly; but have an inclination to be studious.

279. **DISREGARD,** neglect, slight. To disregard is the act of not heeding, while neglect is the act of not choosing. To disregard means a settled mental purpose to diverge from a stated plan. To neglect is to omit to do an act, as from forgetfulness or postponement. What is disregarded is purposely passed over after being seen; what is neglected is often not seen or thought of at the time. To slight is to pass over lightly, easily, casually.

280. **DISSENSION,** contention, discord. Dissension is a state produced by a collision of opinions, peculiar to bodies of men; while contention is a collision of interests, but related to individual action. Selfishness is the main cause of contention; a disposition to be opinionated causes dissension. Discord is mainly caused by ungovernable temper. Inharmonious collision between two unrelated or unsuited chords in music makes discord. Contention implies greater action than the state of being discordant or in dissension.

281. **DISTANT,** remote, far. Distant implies standing apart from, used in reference to great space; far is used relatively, and only of space which is ordinary. Distant applies to bodies at rest, while far may be attributed to bodies which are or are not stationary. Remote is an implication of superlative distance, something so far that it is out of sight and inaccessible. A place may be quite definitely distant; a bird flies indefinitely far.

282. **DISTINGUISH,** discriminate. Distinguish is to regard things as to their entirety or their divisibility. One distinguishes as to quality by the senses; while one discriminates with the understanding only. The latter is a definite action; while ability to distinguish is indefinite.

283. **DISTINGUISHED,** conspicuous, noted, eminent, illustrious. A thing is distinguished for a certain quality when that thing acquires distinction or bears the mark of it, though only by comparison. Anything is conspicuous with regard to its being seen; it is distinguished only as it is separate and distinct from others. A person is noted for some certain quality, without being necessarily either distinguished or conspicuous. One may be either one or all these three for attributes which are good, bad, or indifferent; but the terms eminent and illustrious apply only to good qualities and praiseworthy actions. A person may be eminent for virtue or attainments; and these things make his name illustrious.

284. **DISTRESS,** anxiety, anguish, agony. Distress is the state one may find himself in when there seems no chance for escape. Distress is produced by a present evil, from an outward cause, with either old or young; anxiety or anguish can only belong to riper years. Anxiety is often imaginative; anguish and agony are forms of the more severe degrees of distress. Anguish usually follows reflection upon an evil which is past; while agony is felt by a person witnessing what comes directly under his observation.

285. **DISTRESS,** perplex, harass. Distress is that which brings to straits, or binds so as to hamper action. To distress is to cause to be thrown into discomfort by a condition; while to perplex is to puzzle

or bewilder or entangle. To harass is to cause a distressed condition repeatedly or continuously. One may be perplexed in understanding, but he is harassed intellectually by baffling and recurrent causes, which may throw him into a state of distress.

286. **DISTRIBUTE**, allot, assign, apportion. To distribute is a term applied to the portioning out of a thing in more than one direction, while to allot is to dispose for a specific reason, as for the sake of usefulness or order or beauty. To assign is definitely to readjust as to merit; to apportion is to divide by some fixed rule that is meant to be uniform and fair.

287. **DISTRICT**, region, tract, quarter. District is a definite tract or space specifically set apart. A region is a more indefinite place, of larger dimensions. The former may apply to a small part of a region, while the term tract is applied to a smaller portion still. A quarter is used merely to designate a direction, and is the most vague term of all. A region is usually spoken of in connection with weather or climatic conditions. All are terms relating to area.

288. **DISTRUST**, suspicion, diffidence. Distrust is the opposite of a state of trustfulness, and may be a negative feeling, while suspicion is an active and positive conviction of the evil in a matter. When a person feels a lack of trust in his own powers or qualities, the term used is diffidence, while distrust may be felt either of ourselves or of others. The condition of distrustfulness is a particular state; that of suspicion is a matter of habit.

289. **DISTURB**, interrupt. Disturb is to cause to be disordered and thrown into a state of commotion, either internally or externally. When such confusion comes positively and outwardly, it is an interruption. Disturbance depends upon the character or temperament of the individual; interruption, or breaking in upon a thing so as to stop progress, would affect any one of an indefinite number. To disturb is to cause the state of rest to exist no longer; to interrupt is to destroy the evenness or regularity of a course.

290. **DIVIDE**, part, separate. Divide is to put into parts or asunder, though the separation of the parts of a thing may still leave them connected; as a stream may divide a state, by running through it, while a mountain merely separates the parts of a country. To divide applies to things only; to part or to separate applies to persons as well. People may part without coming to a separation; and the moment of parting is often more painful than the separation to follow.

291. **DIVIDE**, share, distribute. To divide has the sense of a division into parts, not extending beyond the thing divided; distribution or sharing extends as well to the purpose of the action. To share is simply to give or receive an apportionment; to distribute applies to giving only, as to a definite number of persons.

292. **DOCILE**, tractable, ductile. To submit one's judgment or inclinations to the influence or power of another is a docile condition, and is applied to the will, mainly. To be tractable is one form of docility,—that of making the conduct conform to judgment. To be ductile is another form of being docile,—that pertaining to matters of character. Docility and tractability are applicable either to mankind or brutes; ductility as applied to the mind or its powers may be used only of persons.

293. **DOCTRINE**, precept, principle. Doctrine relates to a thing taught, while precept is a thing laid down. Doctrine presupposes a teacher; precept a superior with authority. A principle is the starting point of a theory or school of mental effort; while the doctrine is composed of several principles. The principle lies in the thing itself; the doctrine is framed by some one, and the precept also implies individual and preliminary action.

294. **DOCTRINE**, dogma, tenet. A thing which originates with a teacher is a doctrine; a dogma is the thing thought, or admitted to be the truth, and may lie with a number of individuals. A tenet is a thought, or series of them, held or maintained by one or more. Doctrines rest on authority of the originator; dogma upon authority of the church or body holding such principles; while a tenet rests upon its own merit for support.

295. **DOUBT**, question. Doubt respects what is believed about that of which one has two opinions; question relates to a deviation from such a belief. Doubt is mental, and denotes a withheld decision; to question implies an inquiry into a matter, with a demand for proof which will assist in a decision.

296. **DOUBT**, suspense. To be in doubt is to lack the necessary evidence for belief in a matter; to be in suspense is to fail to possess certainty regarding something maintained. Doubt interrupts progress towards a desired truth; suspense puts an impediment in the way of progress.

297. **DOUBTFUL**, dubious, uncertain, precarious. The state of being doubtful admits of doubting only; while being dubious relates to events and things speaking for themselves, and causes suspense. The meaning is very similar, both having distinct relation to the person holding an opinion on a matter. Uncertain and precarious are applied to qualities of the things themselves, as a rule. Precariousness usually depends upon the will or humor of another, and is actually the highest form of uncertainty. It is applied to that which is dependent to an extent upon future casualties. Uncertainty is a more negative quality of variance in a state of doubt.

298. **DRAW**, drag, haul, pull, pluck, tug. To lay hold of a body and put it in motion toward one's self is to draw it; to drag it is to draw it with violent effort. To haul is, commonly, to drag it with still greater violence. To pull is a maintained effort to draw without effect or motion; to pluck is, literally, to pick out of, or twitch apart from. To tug is to pull with violent effort; as, after a long pull for the shore, the oarsmen may still tug at the oars.

299. **DREAM**, reverie. To dream is to pass through subconscious experience, commonly in sleep, a mental process occurring when the imagination is in a sound state. A reverie may come while a person is awake, with the imagination in more or less of a disturbed condition.

300. **DREGS**, sediment, dross, scum. Dregs are the worthless part which may separate from a liquid. Sediment is the matter, not necessarily worthless or dirty, which may settle at the bottom. Dross is a variation of the term dregs, more often applied to metal-working. Scum is the same as froth, or that which rises to the surface. Dregs and sediment settle of themselves; but scum and dross signify some preliminary process of evolution.

301. **DULL**, gloomy, dismal, sad. The removal of brightness or spiritedness of a thing constitutes its dullness; and implies literally a lack of light. The state of being gloomy denotes not only the lack of perfection in dullness, but actual tarnishing. A place as gloomy as possible may be said to be actually dismal, simply extending and emphasizing dullness which has passed the gloomy stage. Sad is more an attribute of moral states than of physical; and may indicate a heart-wound or pained feeling.

302. **DURABLE**, lasting, permanent. Durable is said of things intended to remain a shorter time than lasting, and always of things material. Lasting is used of things spiritual. That which perishes quickly is not durable; that which ceases quickly is not lasting. Permanent is, literally, remaining to the end.

303. **DURABLE**, constant. Durable is the attribute of things, while constancy pertains to either persons or things. What is durable is inherently so; what is constant is so from temperament. The durable lasts long, it may be; but the constant is possessed of uninterrupted durability.

304. **DURATION**, time. Duration is commonly the portion of time during which a thing exists; continuance in time, but has reference to the beginning and ending of the existence of a thing. Time is infinite duration or its measure.

305. **DUTIFUL**, obedient, respectful. Dutiful means a fullness of duty, and is independent of all circumstances. Obedience and respect are relative terms, and merely modes of being dutiful. Respectful is a term of greater latitude than either of the others.

306. **DUTY**, obligation. Duty is that which is due from one being to another. Obligation denotes the bond or necessity entailed in the discharge of the duty. A duty is not necessarily lasting. An obligation is compulsory. Love may be the impelling power in the carrying out of a duty; necessity, or a sense of honor, is more likely to be the force behind an obligation.

307. **EAGER**, earnest, serious. Eager implies to be ardent in the pursuit or accomplishment of a thing. Eagerness is largely based upon impulsive or thoughtless action. Earnestness applies more to a settled purpose, a state of mind, to do a thing, as a characteristic of the temper of mind. Seriousness does not go to the extreme of solemnity, but is literally without laughter. Earnestness indicates a state of being ardent in the pursuit of an object; seriousness expresses a fixed intention in the same direction, but with less warmth.

308. **EARNEST**, pledge. An earnest is a token or assurance of what may be expected. A pledge, as of one's good faith in a matter, is the bond or guaranty that the duty or labor will be performed; but earnest

applies more to the confidence inspired than to the tie by which it is either affirmed or brought to pass.

309. **EASE,** quiet, rest, repose. Ease respects a motionless state of exemption from pain, noise, or other disturbance, and implies negative and apathetic pleasure and agreeable calmness;—the stationary state of being easy following a period of unrest. Quietness is an attribute of this state, with particular reference to the absence of noise or outside violence. Quiet denotes a lying-down state or condition; while rest simply applies to cessation from motion. Repose is the degree of rest enjoyed after its interruption.

310. **EASE,** easiness, facility, lightness. Ease and easiness relate to the abstract state or condition of ease in thing or person. Facility relates to that which is done; as one may say, a person's facility is determined by comparison of his ability with that of others who are less skillful. We judge of the easiness of a thing by comparison of it with others more difficult. Lightness and ease are both said of what is to be borne. That which presses in any form is not easy; that which presses in a sense of weight does not possess lightness. To ease is to relieve a person of pain or labor. To facilitate is to make a course or progress more certain; and to lighten is to remove a burden in the sense of weight.

311. **EASY,** ready. Easy implies a sense of freedom and absence of obstruction looking towards action in ourselves; to be ready indicates a preparedness, a willingness and a disposition to go forward immediately and to do. The first relates only to the thing or manner; the latter to the person who does the thing.

312. **EBULLITION,** effervescence, fermentation, ferment. Ebullition denotes literally a boiling forth, and is drawn from a physical application of the process resultant from the effect of heat upon a liquid. Fermentation is a process more gradual than effervescence, which is ebullition in moderation. A ferment implies that a process has resulted tending to make a new state or a thing distinct from a former one.

313. **ECCLESIASTIC,** divine, theologian. An ecclesiastic is a person connected with or occupying a definite station in a religious order, though not in person performing any particular office in that station. A divine actually performs the office of teacher or preacher. A theologian is simply a student in theology.

314. **ECLIPSE,** obscure. Eclipse is a state of the shutting off of light from a thing, and implies a body completely out of view from that cause. Obscure is only a relative term and may apply to a partial eclipsing of light or power, as regarded in a general sense. To obscure a thing is to render less distinct by intervention of shadow; to eclipse is to hide wholly.

315. **ECONOMICAL,** saving, sparing, thrifty, penurious, niggardly. Economical is the attribute of not expending unwisely or unnecessarily; saving is keeping resources in an undisturbed state for future use, a laying by or setting apart with care of a reserve fund or quantity. Sparing is holding back that which ought naturally to be expended. Thrift is the prominence of that quality which arises from the habit of saving; to possess it makes a person thrifty or thriving. To be niggardly is to be close, to narrowly fall short of withholding altogether. To be penurious is to incline to niggardliness as regards one's self,—to actually suffer from the penury caused by not spending enough of one's own money or resources.

316. **ECONOMY,** frugality, parsimony. Economy implies management in expending, and a regulated manner of putting forth resources. Frugality denotes a prudent or temperate management of resources. Parsimony is a more negative term, relating to a simple forbearance in spending. One who is parsimonious has only the object of saving in his attitude. One who is frugal may spare expense upon himself and be liberal with others to the point of extravagance.

317. **ECSTASY,** rapture, transport. Ecstasy indicates a passive state of being beside one's self or out of one's mind, temporarily; a mental tension, and unusual elevation of spirits. Rapture is a state which does not, like the former, paralyze the faculties, but may call the faculties into action or expression. Ecstasy and rapture are always pleasurable and arise from pleasurable causes. Transport is a state of extreme mental activity which may relate either to joy or anger, pleasure or pain.

318. **EDIFICE,** structure, fabric. Edifice is a term relating to a house already made and finished, and is always architecturally applied. The word structure is used when the act of raising the edifice is considered. Fabric is a term applying to the simple framing, designing, or contriving of a thing to be erected or created.

319. **EDUCATION,** instruction, breeding. Education comprehends not only instruction (the communication of ideas) and breeding (the outward conduct or manners), but the formation of the mind and the establishment of principles. Instruction makes one more completely educated; breeding makes one more agreeable; while education makes one better in every direction. Travel and other things may add to education as neither simple instruction nor breeding can. The lack of breeding merely unfits a person for the society of the cultivated. Instruction withheld is more or less inconvenient though not fatal to worldly advancement; but a total lack of education, considered broadly, may be detrimental in every way.

320. **EFFECT,** produce, perform. What is effected is both performed and produced. To produce is to bring something into being, and performing is to carry a thing through to the end; while to effect is to produce by performing something. That which is effected is done according to a definite design. That which is produced may follow only incidentally.

321. **EFFECTIVE,** efficient, effectual, efficacious. Effective denotes being capable of effecting something. Whatever is efficient is that which is capable of effecting something. That which is efficacious or effectual signifies having the power to effect, or to bring about the effect. When an end or outcome is effectual, the means to that end must be termed efficacious; and it is unnecessary to adopt further measures when methods are proved to be effectual.

322. **ELDERLY,** aged, old. Elderly signifies approaching a state of age. Aged denotes a still greater degree of elderliness; and old implies still more age than either.

323. **ELOCUTION,** eloquence, oration, rhetoric. Elocution relates to the manner of delivering speech. Eloquence denotes the matter delivered, and lies in the person who does the speaking. Oratory deals with the mode or style of expression. Rhetoric is an amplification of oratory, dealing with the theory of the art of which oratory is but the practice. Elocution is therefore requisite for an actor, and eloquence more for a speaker, though of course oratory is most desirable for both.

324. **EMBARRASS,** perplex, entangle. Embarrass is to hamper or place impediments upon manners or circumstances affecting one's self, want of prudence or presence of mind being most common causes. One is perplexed when diverse interests or conditions cause confusion. Perplexities may arise from one's personal actions or from outside causes. Entanglements arise solely from outside sources. Pecuniary troubles embarrass; for example, perplexities may come from counter advices or counsels; while lawsuits entangle.

325. **EMISSARY,** spy. Emissary is literally one who is sent forth, or sent out. A spy is one who takes a station from which he sees things and takes cognizance of events or objects for future use. An emissary is sent out to mix with people or to associate with whoever may serve his purpose best to sow seeds of dissension or policy. A spy keeps at a distance and maintains secrecy as to his movements.

326. **EMPIRE,** reign, dominion. Empire is a term comprehending the idea of an exercise of sovereignty, allied to the idea of a definite reign by a ruling power. Empire is applied to people or nations, but a reign applies to the individuals who are in power. Dominion applies to the personal act, whether of a ruler or private individual. Force of law gives a potentate the reign over a people.

327. **EMPLOY,** use. To employ is to apply to some particular use or purpose; to use is to derive a benefit from such employment. One always employs when he uses; but does not always use what is employed. Persons as well as things may be employed; use is applied to things only.

328. **EMPTY,** vacant, void, devoid. Empty implies lacking or wanting, and is quite similar in meaning to the term vacant. Either a house or a seat is said to be empty or vacant when it lacks an inhabitant or an occupant. Void is slightly at variance with these terms, always used as a qualifying word but never prefixed as an adjective. A mind which is vacant of ideas may be termed void of reason; and a stare absolutely devoid of expression is said to be a vacant one.

329. **ENCOMIUM,** eulogy, panegyric. Encomium is a form of praise, in the usual sense, applied to an object at the time unconscious of such sentiments. A eulogy may be praise bestowed upon a hero of another age or country, or the characters or actions of men in general. Great achievements may be accorded encomiums; great men are given eulogies. A panegyric is,

literally, a solemn, formal oration, spoken before a stated assembly about the person or character of an individual.

330. **ENCOURAGE,** animate, incite, impel, urge, stimulate, instigate. To encourage is to inspire with courage or animate with stout-heartedness. To animate is to put spirit into a matter. To incite is to put into action or motion toward an object. To impel is to cause a thing to be advanced toward an end. To urge is to cause to be set into work or action. To stimulate is closely allied to the term "to inspire," relating rather to the putting forth of a goad, or incentive which encourages action. To instigate is to cause to be put forward and literally to spur onward. All are applied to the process of calling into action and bringing things to a specific end.

331. **ENCOURAGE,** advance, promote, prefer, forward. To encourage in another sense is the same as to promote,—to put forth as an impelling force. To advance is to bring near to a point or end. All three words are applicable either to persons or things. To prefer is to differentiate in favor of a certain person above others, and applies usually to the advancement of a person through outside efforts. To promote is to move forward or upward in degree, and is applied either to projects or persons. To forward a thing is to put it ahead one or more steps farther than its previous position. All these terms may be employed in certain phases in the consideration of either persons or things, and few other groups of allied words are more interchangeable in modern writings.

332. **ENCROACH,** intrench, intrude, invade, infringe. To encroach is to creep upon or into a situation unobserved, denoting an unauthorized procedure and, often, an imperceptible or insensible action. To intrench is to dig beyond one's own environment into that belonging to another. Intrude and invade are words denoting an unauthorized or unwarrantable entry into another's territory,—the former in a manner suggesting "thrust in upon" and the latter a "marching against" a position. To infringe is to break in upon, as, for example, an infringement of law or of rights. Intrusion implies an unexpected advance upon good manners, and invasion means an equally violent assumption of position beyond that just occupied.

333. **END,** terminate, close. To end is to bring a thing to its termination. To close is to end gradually. To terminate is to end finally. All are expressive of the conveyance of a thing to its last point.

334. **ENDEAVOR,** aim, strive, struggle. To make attempts to any end, or to set about doing a thing, is to endeavor to do it. To aim to do something is to have an objective beyond the immediate action. To strive is to qualify the act of endeavor, in the sense of earnestly doing it. To struggle is to find difficulties in the way of doing, to strive earnestly in contending with such difficulties. As, we endeavor to correct faults, aiming at perfection, by striving to conquer bad habits and struggling to overcome temptation.

335. **ENDEAVOR,** effort, exertion. An endeavor is, literally, a trying to do a thing, from a sense of duty. Effort is applied to the actual bringing out of the power to do, while exertion applies to the putting forth of that power. The latter is used as applied to nations as well as individuals; but endeavor is commonly an effort applied to individuals only.

336. **ENERGY,** force, vigor. Energy signifies the power of producing positive effects from inward force. Force is similar to the verb compel, as one may say he is forced to the conclusion through circumstances. Activity is connected with the idea of energy, and capability with that of force. Vigor is a term given to power exercised in a flourishing manner, usually applied to youthful energies.

337. **ENLARGE,** increase, extend. To enlarge is to make wider and increase in extent or dimension. To increase is to grow to a thing, signifying a greater size by reason of the junction of something else. To extend is to increase the length or the space of a thing. The bounds of a property are said to be enlarged; or the strength of an army increased; while views or prospects are seen to be extended.

338. **ENORMOUS,** huge, immense, vast. Enormous means extensive beyond the rules of law, order, or what is usual. Huge is, properly speaking, that quality indicating uncommon height; and these two are applicable to magnitude. Immense relates to excessive quantity and number, expressing more than vast. Immensity expresses extent exceeding all calculation; whereas vastness denotes simply a large or an unusual excess.

339. **ENORMOUS,** prodigious, monstrous. Enormous, signifying an excess of bounds, is to be contradictory of all rules and standards of judgment: while that which is monstrous contradicts nature and does violence to our senses and understanding. What is prodigious raises the mind beyond the ordinary course of thought, and excites astonishment and wonder.

340. **ENOUGH,** sufficient. Enough is literally a satisfying quantity of a thing. What is sufficient is that which is made or suited to the purpose. Enough may be applied to desires which have been well satisfied; sufficient to the ample supplying of one's wants. Enough is said only of the physical objects of desire; sufficient is said of that which serves its object.

341. **ENROLL,** enlist, register, record. To enroll is to place in a condition of enrollment, as in a manuscript or book form. To register is the act of placing in a written or listed form. To record is, literally, to bring back to mental consciousness, or to the memory, a fact or series of them by means of memoranda. To list, or enlist, is to set down more than one item in the form of a list. Both enroll and enlist imply a setting down of several things in an orderly manner in written or printed form.

342. **ENTERPRISING,** adventurous. Enterprising signifies to engage in that which is extraordinary or out of the common, and relates to the understanding. Adventurous means that enterprise which is hazardous or involves risk, venture, or trial. The enterprising conceive great attainments and enter upon the pursuit of difficult projects. The adventurous seek to do that which is new and dangerous.

343. **ENTHUSIAST,** fanatic, visionary. An enthusiast is one who is affected inwardly with extraordinary fervor, while a fanatic or a visionary expresses the same fervor in outward marks or singularities of conduct. Fanatic is a term often applied to those who, under stress of religious frenzy, are possessed of an intemperate zeal to insist upon others following their leadership. Visionaries are those who from any cause see or pretend to see visions as an inspiration. The influence of an enthusiast may proceed from earnestness of heart-purpose; but fanatical or visionary folk are governed by the fancy.

344. **EPITHET,** adjective. The rhetorician speaks of an epithet; the grammarian calls it an adjective. Epithet considers the meaning and force of the word; adjective is a class-name under which to place the word grammatically. So we would speak of a gentle, harsh, or ennobling epithet; but not of a gentle, harsh, or ennobling adjective. In the expression "Father Abraham," father is an epithet, but not an adjective.

345. **EQUAL,** even, equable, like, alike, uniform. Equal signifies like in degree, quantity, number, dimensions, or other qualities, and opposed to difference of any kind. Evenness is applied to the surface or the position of bodies, or may be used in a figurative sense, as to say one has marked evenness of temper. Equable means simply being susceptible of equality. Like or alike are terms used in connection with accidental qualities; and the term uniform signifies one form, and is applied to conduct, habits, or character.

346. **ERADICATE,** extirpate, exterminate. Eradicate is to get out by the root, to remove materially. Extirpate is to destroy thoroughly by removing the stalk. Exterminate is to cancel wholly and put a thing completely out of existence, and is used with regard to whatever has life, and denotes a violent and sudden action. Pestilence may extirpate, while the sword exterminates.

347. **ERROR,** mistake, blunder. Error is a term signifying the act of wandering from a fixed course, or going astray. A mistake is taking amiss or wrong, or going blindly into a path that is not the right one. Error is strictly opposed to truth, and is applied mainly to moral wrongs. Blunder is an error of action, while a mistake is an error of choice. A mistake is a thing that should be rectified. An error is something that may be forgiven. A blunder may or may not have to be set right.

348. **ERROR,** fault. While the error lies in the domain of judgment or conduct, a fault lies with the will or intent. Faults are things to be corrected, and errors are things to be treated. Error is a departure, however slight or infrequent, from a right line. Fault applies to that which is habitual.

349. **ERUPTION,** explosion. Eruption signifies a breaking forth or coming into view by a sudden bursting out. Explosion is the bursting of a thing with a noise; hence of flames there may be an eruption of a flaming substance, but an explosion of the gases or of gunpowder, and volcanoes have eruptions which are often attended by explosions as well.

350. **ESCAPE,** elude, evade. To escape is to get out of, or away from, without implying what means were

used. To elude is to avoid personally, in the sense of avoiding something which is impending. To evade is to slip away cleverly for the purpose of avoiding something. These are commonly terms applied to avoidance of disagreeable things. One is said to elude a punishment, but to evade a law.

351. **ESPECIALLY**, particularly, principally, chiefly. Especially refers to something which, out of many things, is superior to all. This meaning, in an exclusive or superlative sense, is peculiar, also, to the term particularly. Principally and chiefly refer in general to the superiority of some things over others, the former being less general than the latter. Especially is of stronger import than particularly.

352. **ESSAY**, treatise, tract, dissertation. Essay denotes an attempt or trial to set forth the outline or arguments supporting a subject, more commonly applied to small and detached pieces affording room for later amplifications. A treatise is a more systematic treatment of a subject, conveying the idea of something labored or exhaustive, and follows a more methodical form. Tracts are "occasion pieces," usually brief, and seldom surviving the occasion which gave rise to them. Dissertations are arguments advanced to support disputed points, or subjects about which there is considerable speculation.

353. **ESTEEM**, respect, regard. Esteem is to set a specific value upon an object, and is produced by intrinsic worth. Respect is the feeling engendered by some particular mark of distinction, as superiority of talent or attainments. Regard is affection blended with esteem, and flows directly from the heart. Like respect it is limited to a favored few. All these embrace a favorable attitude of mind towards the object.

354. **ESTIMATE**, compute, rate. To estimate is to get at the sum of a thing either by figurative or literal calculation,—a variation of esteem. To compute is personally to put together and think out by the specific process of assembling items in related form. To rate is to make a mental estimate of a thing by comparison, deduction, or natural sequence. All are applied to the mental operation by which sum, amount, or relative values are determined.

355. **ETERNAL**, endless, everlasting. Eternal is that which pertains to a state of which it can be said it has never begun and will never end, as set above time. Endless lies within appreciable time because it applies to something which began but which has no ending. Everlasting presupposes something which could have neither cessation nor interruption, and is more powerful than the term endless.

356. **EVADE**, equivocate, prevaricate. To evade is to avoid by a going around,—to escape by shrewdness or an artful mode, as by turning the subject or shifting, perhaps argumentatively. To equivocate is to employ a baser means of avoidance, and to make use of expressions tending towards a misleading. To prevaricate is to make use of actually and purposely contrived untruths, or vague statements conveying a wrong impression; or to employ loose and indefinite expressions, as in the case of criminals who want to shift responsibility for wrongdoing.

357. **EVASION**, shift, subterfuge. Evasion is used only in a sense other than good, with shifting and subterfuge as gradations of it. To shift is to put off a burden or responsibility upon some one else. Subterfuge is literally to fly away from in an underneath or concealed manner, suggesting recourse to screen or shelter. No truly courageous person will try to shift or to make use of subterfuge, and no candid one will consider making an evasion; all these being resorted to for low or paltry purposes.

358. **EVEN**, smooth, level, plain. Even is used of a surface or substance which is free from great or marked roughnesses or irregularities. Smooth signifies something which is wholly free from anything rough or irregular. Level, applied to a piece of land, means flat, or a surface free from protuberances or depressions. Plain is a term possessing the last mentioned qualities, and, in addition, is uninterrupted or untraversed, within the reach of vision, by water, woodland, or other deviation from an absolutely level-appearing state.

359. **EVENT**, incident, accident, adventure, occurrence. Event is that which falls out, "turns up," or transpires. Incident is something occurring in the course of events, as a collateral part of a natural or expected system. Adventure is that which happens to a person, or befalls in an unexpected or surprising manner. Occurrence is something running or coming naturally in the way, yet is a little out of the placid course of things. Accident is the thing which happens or transpires, always spoken of that which has been, an event occurring without rule or intention, and something which could not have been prevented.

360. **EVIL**, ill, misfortune, harm, mischief. Evil is comprehensive of those qualities which are not good, and ill is a contraction of or modified form of evil. Misfortune is a minor evil and depends upon circumstances. Harm and mischief are species of lesser evils; the latter an evil from some definite disturbance and the former from circumstances which may not be known, or from an indeterminate locality. Harm properly lies in the thing itself; mischief lies in that which is a consequence of a form of evil.

361. **EXACT**, extort. To exact is to drive out, as by simple force. To extort is to wring or to rend out, and implies the action of special or severe force. Exact is commonly an act of injustice; while extortion is an act of violence as in an act of tyranny; one may exact what is considered justly due or willingly accorded, as deference or obedience; one extorts what is not easily secured, or yielded only after much persuasion, as one may extort a confession or discovery.

362. **EXACT**, nice, particular, punctual. Exact is the quality of accuracy, the absence of defect of any sort. Nice is a term applied to a discriminating taste and quick perceptiveness, as in the judgment. Particular is a gradation of nicety, bringing discrimination to a specified point. Punctual is the quality of keeping to a definite point, like a person's punctuality as to time or season in doing a thing.

363. **EXAMINATION**, search, inquiry, research, investigation, scrutiny. Examination is the balance in which mentality holds itself when an inquiry into the condition of a subject is in order. A search is a combination of seeking and seeing, in the sense that one might physically place himself in the attitude of looking intently after a thing. Inquiry is an intellectual effort of searching or seeking after; and research is searching with energy or special intentness. Investigation is the act of seeking out information or general facts by means of waymarks, signs, or tracks. Scrutiny is to examine strictly or turn over obstacles to find something sought for. A research is inquiry into that which is remote; an investigation is minute and detailed inquiry. Scrutiny implies the most careful examination or inquiry along a given line.

364. **EXAMINE**, search, explore. In the sense of looking upon places or objects with a view of securing a closer acquaintance, to examine expresses less than either to seek or to search. To search is to seek for things which are more or less remote and hard to find. We explore regions that are either highly inaccessible, hitherto unknown, or far removed. Examination implies that the object looked at is near; as a botanist examines a plant, but a discoverer explores a distant region. Exploration signifies more than either of the others an issuing forth or a quest, the result of which is wholly problematical.

365. **EXAMPLE**, pattern, sample. Example is a thing framed or shaped in accordance with a likeness or similarity; while a pattern is a literal copy. A sample denotes something done according to an example. A sample is usually an attainable goal; but an example or copy is ever something one strives to reach, being indefinitely held forth or in advance as a pattern.

366. **EXAMPLE**, precedent. Example has a particular use which implies that something which has preceded or taken place is by special distinction entitled to notice. A precedent much more distinctly implies this. Both signify something worthy of being followed or used as a rule or guide of action. The example may derive its authority from an individual, but the precedent from time and from common consent. One is more commonly led on a course by a copy or example; one is, more strictly speaking, guided or governed by a precedent.

367. **EXAMPLE**, instance. Example, as here used, denotes the thing to be followed or copied; instance, that which stands or serves for a starting or resting point. Examples are useful for instruction or illustration; instances are usually adduced by way of proof.

368. **EXCEED**, excel, surpass, transcend, outdo. To exceed is to go beyond or farther, or to pass out of. To excel is to lift or move over a thing. To surpass is, literally, to over-pass; as one nation surpasses another in a particular show of power. To transcend is to climb beyond a premise or boundary; and to outdo signifies doing what is beyond the ordinary course. To excel is confined to that which denotes good actions only, and can only be secured by effort. No particular effort is necessarily implied in surpassing a thing,

which may really be a passive and altogether involuntary condition.

369. **EXCELLENCE,** superiority. Excellence is the quality of excelling, which makes it an absolute term. Superiority is only a relative term, implying a degree or status of advance from an inferior position, literal or figurative. Superiority is often applied to a particular virtue or quality; but excellence, in the main, signifies general and sustained worthiness.

370. **EXCESS,** superfluity, redundancy. Excess is that which exceeds or goes beyond any measure. Superfluity signifies more than a sufficiency of a thing, a fullness to overflowing in reference to a definite supply. Redundancy denotes not only enough of a superfluity to overflow but enough to stream back, and even cause an inconvenient inundation of excess.

371. **EXCESSIVE,** immoderate, intemperate. Excessive denotes superlative excess, or what is beyond measure. Immoderate is merely beyond moderation or without measure; while intemperate signifies something which is without bounds in general. Excessiveness applies to what is over and above in general; both immoderate and intemperate imply the things which are excessive in a moral sense only. Excessive admits of degrees; while immoderate and intemperate indicate a great or surprising amount of going beyond,—immoderate being, in fact, the highest conceivable degree of excess.

372. **EXCHANGE,** barter, truck. To exchange is to put one thing in the place of another, or to take one for another. One of the several modifications of exchanging is the term barter, implying an exchange of one article of trade from one person to another. To truck is, literally, to wheel or carry about the thing to be traded for, sold, or exchanged. In all these there is the suggestion of private property changing ownership by an agreement involving conditions of sale or exchange.

373. **EXCITE,** incite, provoke. To excite is to make alive, to cause to be in an awakened condition, applied to purely physical influence. To incite is to rouse up and at the same time inspire with a feeling of hope or courage. To provoke is to call forth the feelings in such a way as to aggravate, and may be applied either to an inward or outward action. Excitement is usually applied to the inward feelings, as one may excite a smile but provoke laughter. To incite is always applied to moral action.

374. **EXCURSION,** ramble, tour, trip, jaunt. Excursion is a departure from one's course or path. A ramble is applied to a course taken without any particular objective. A tour is a circuitous course. A trip is an excursion on foot, or one which is so short that it might easily be taken on foot. A jaunt is very similar to trip, but implies a distance that might be more easily compassed by wheeling or other means of locomotion. A tour is most often applied to a sober scheme of enjoyment by travel; but those who have little time for such pleasure take trips or jaunts.

375. **EXCUSE,** pardon. To excuse is to exempt a person or thing from blame. To pardon is to give up or not insist upon the punishment of another for a fault. One excuses that which personally affects one's self, like a small offense, or pardons a much greater wrong, or one which offends against morals in general. Generosity and mercy are exercised in pardoning; while simple good nature may excuse.

376. **EXECUTE,** fulfill, perform. To execute is to bring about or cause to come to pass a certain ending, and involves active measures. To fulfill is to carry out an obligation, moral or otherwise. To perform is to do or carry forward a simple action or labor. One executes according to a fixed intention, personal or otherwise, but previously determined; one fulfills according to the wishes or expectations of others; one performs that which is a fixed program of action.

377. **EXERCISE,** practise. To exercise is to drive or force out action or power, as to carry forward repeated exertion of some sort. To practise is an amplification of the idea of continuous or habitual action. One may exercise a virtue, implying a peculiar mental effort; while the practice of a profession, for example, is to put forward efforts tending towards desired ends, daily and ordinarily, in the natural course of duty.

378. **EXERT,** exercise. Exert signifies an action which is either internal or external. The exercise of functions implies, as in the previous instance, something particular and definite which is being carried forward.

379. **EXHORT,** persuade. To exhort is to speak in a manner to excite or impel one in the direction of an advisable line or course. To persuade is to speak so as to produce more of the drawing or compelling and involuntary action on the part of the listener, as may be done by a friend or an equal. A superior exhorts, and presumably on matters of duty or necessity; but one who persuades may exert an influence over another resultant in any sort of action.

380. **EXIGENCY,** emergency. Exigency is what a case demands, while emergency signifies the coming out or rising above a case. The latter is imperative when it comes, the former more casual. A traveler carries enough with him to cover exigencies, but not always sufficient to cover emergencies.

381. **EXIST,** live. To exist is to place or to stand a thing by itself or of itself, and existence is the property of all things in the universe. To live is more, for it signifies action by the heart, as well as the quality of merely carrying life forward. A patient may exist but faintly; but when he is said to live, the implication is of vitality and energy, which the other term does not convey.

382. **EXONERATE,** exculpate. To exonerate is to take off or remove a burden, and to exculpate is to throw off the blame. The first is the act of another; the second is one's personal act.

383. **EXPEDIENT,** resource. An expedient is an artificial means to an end. A resource is a natural means. It requires cunning to set up and successfully resort to expedients; and we say a naturally clever man is one who has abundant resources,—not here used in the sense of wealth.

384. **EXPEDIENT,** fit. Expedient is a condition of readiness for a stated occasion, and fit, or fitness, signifies an agreement with or suitability to circumstances. Fitness is determined by moral rule, while the adoption of an expedient is an action dependent upon any outward circumstance. It is imprudent not to do that which seems to be expedient; but it is more or less of a disgrace to do a thing which is unfit.

385. **EXPERIENCE,** experiment, trial, proof, test. Experience is an action which denotes the act of bringing out or of lighting up a thing. The trial of a thing denotes the actual trying of it by examination or search. The proof of a thing is the act of making good along a certain line. The test is that which serves to prove the reality or do away with the uncertainty surrounding a thing. All these together, with the word experiment especially, imply endeavors to arrive at a certainty respecting some unknown particular or the truth of something which is largely speculative.

386. **EXPLAIN,** expound, interpret. To explain is to make plainer by either implied or actual speech. To expound is to set forth more especially in detail. To interpret is literally to get the sense out of something which needs explanation or elucidation. To expound and to interpret are both methods or species of explaining.

387. **EXPLAIN,** illustrate, elucidate. To explain is to render more intelligible by words. To illustrate means, literally, to make bright, that is, to cause a thing to be more easily examined. To elucidate signifies, literally, to bring forth into the light. Both illustrate and elucidate are to give additional clearness, implying that a partial explanation has preceded. We illustrate by means of examples, similes, and allegories; we elucidate by means of commentaries or explanatory notes.

388. **EXPLANATORY,** explicit, express. Explanatory signifies belonging or pertaining to an explanation. The explicit is that which is laid out for inspection, or unfolded to view. To express is to deliver an opinion or judgment in specific terms. The explicit demands a free use of words. The express requires words in which there is no ambiguity.

389. **EXPOSTULATE,** remonstrate. To expostulate is to demand a reason for a thing. To remonstrate is to show reason against something, and usually rests upon the force of peaceable representation. He who expostulates passes censure, and makes claim to be heard, often with a premeditation of violence. He who remonstrates presents his case and merely requests to be heard.

390. **EXPRESS,** declare, signify, testify, utter. To express is, literally, to press out what passes in the mind. A man may express all the affections; he declares his opinion for or against a matter, more or less publicly, and in more positive terms than he would use in an expression of his views. Words, looks, movements, gestures, may also express the feelings of a man. Signify and testify are words employed to describe any general act of communication other than by word; but express is stronger than either of them. By the latter the deepest feelings of the soul are made known,

while simple intentions are signified or testified to. To utter is to bring out by utterance an idea; while to express respects the thing which is to be communicated. Expressions come from the heart; but utterance is from the lips alone, and may easily consist of words without meaning.

391. **EXTENUATE,** palliate. To extenuate is to thin out or to make small in the sense of lessening the degree of an impropriety. To palliate is to throw a cloak, as of charitable consideration, over a wrong so that it may not be apparent. To extenuate is the effect of circumstances; to palliate is the effort of an individual.

392. **EXTRANEOUS, foreign,** extrinsic. Extraneous signifies, literally, out of the land or domain, and not belonging to it, as well as forming no necessary or natural part of a thing. The extrinsic is that which may be said to form a part of a thing but has only an indirect connection with it. Both these terms have only an abstract sense; but foreign is a much stronger term, and signifies not only apart from family or tribe, but from the nation also, and, in the widest sense, at large. Intrinsic merit lies in the contents of a thing, and is the opposite of extrinsic.

393. **EXTRAORDINARY,** remarkable. Extraordinary is, like remarkable, an epithet opposed to what is ordinary. The extraordinary is a thing which is out of the ordinary course, but may not be sufficiently so to cause general remark; hence it is not necessarily remarkable. There are few of the former, compared with the number of the latter. Extraordinary is a much stronger expression than remarkable, the latter being sometimes what is looked for, and the former what is often unexpected.

394. **EXTRAVAGANT,** prodigal, lavish, profuse. Extravagant means a general wandering and divergence from the line. Prodigal means a launching or sending forth, and that in unexpectedly great quantity. We speak of lavishness when we imply a dealing out of something so largely that it is of little use or of no avail. Profuseness is a term applied to a free and lavish pouring out of supplies in quantities. An individual is said to be extravagant with his own means, and profuse in what he bestows on another. One can only be prodigal with large sums, but extravagance may be associated with small sums in excess of one's own means.

395. **EXUBERANT,** luxuriant. Exuberant denotes that which is very fruitful and superabundant. Luxuriant signifies expanding with unrestrained freedom. Both are applied to vegetation in a thriving state; exuberance expressing the excess, and luxuriance the perfection of a state of growth.

396. **FABLE,** tale, novel, romance. Fable is something spoken or told. Tale is also a telling, or a species of narration. Novel is a tale which is extended. Romance is a tale that has for a basis the wonderful, or, to be literal again, the romantic. Fables are allegorical, and are supposed to be written for instruction; the action being perhaps natural enough but the agents imaginary. Tales are fictitious, as a rule, but unimaginative. The novel is a tale in complex form, introducing any number and variety of characters and incidents. But it remains for the romance to hold the attention and engross the interest to the exclusion, temporarily, of all other intellectual processes.

397. **FACTIOUS,** seditious. Factious signifies busy or intermeddling. Seditious means prone to sedition or insurrection. Factious applies to the tempers of men individually; seditious applies to bodies of men, in characterization of their conduct. The factious man wishes himself to take an aggressive part in affairs; the seditious man would compel others to do his bidding.

398. **FAIL,** fall short, deficient. To fail is not to succeed, and implies an action that was abortive. To fall short is to miss, by an appreciable difference, a reaching over to a desired aim or expectation. To be deficient is to fall short only in certain directions or in a specific manner. Falling short either designates the results of actions or the state of things in general. A person is deficient in politeness, education, or in some other definite and particular thing.

399. **FAIR,** honest, equitable, reasonable. Fair is synonymous with beautiful, and may be said of either persons or things. It also applies to fair-mindedness, and always springs from appreciation of the right. Honest is applied to a man's honor or principle, and characterizes conduct as being in line with truth and sincerity. Equitable is according to absolute equity, and reasonable is in conformity with reason. What is fair or equitable is so with reference to all its circumstances; what is reasonable is so of itself.

400. **FAITH,** creed. Faith denotes either the principle of trusting or of the thing trusted. Creed signifies the thing believed. The latter only represents the thing which is the object of faith, which is far the more comprehensive term. Faith is a more general and often more indefinite term; creed applies to a particular and definite code. Every established form of religion has its peculiar creed, while many may be grouped in accord with the same faith.

401. **FAITHFUL,** trusty. Faithful is filled full of faith or fidelity, respecting altogether the principle. Trusty signifies not only the principle but qualifications in general, and applies to those in whom trust is to be placed. Faithful is applied to persons, while trusty may be applied either to persons or things.

402. **FAITHLESS,** perfidious, treacherous. Faithless is a general term which denotes merely a breach of faith. Perfidious implies not only a breach of faith but added treachery and injury. A perfidious person generally works under the mask or semblance of sincerity and deceives those who trust him. A treacherous person betrays another, and we speak of the act as being treacherous also. A perfidious person has the will to do injury; he is treacherous as soon as he does the injury.

403. **FALL,** downfall, ruin. A thing falls from an upright or erect position. Its downfall is from an elevated position and the term is not applied to trifling objects or to slight falls. Ruin is the strongest word of the series and marks the fall, the downfall, and the resulting destruction.

404. **FALL,** drop, droop, sink, tumble. Fall is the general term; the others are particular words expressive of some form or act of falling. Drop conveys the idea of a sudden fall usually in the form of drops. Droop is a partial falling or dropping, as in the case of a flower or an awning or tent drooping. Sink is a gradual falling with a gentle motion. Tumble is to fall ungracefully, disorderly, or awkwardly.

405. **FALLACIOUS,** deceitful, fraudulent. Fallacious is deceitful or false without design or intention of so being. One may hold fallacious opinions or make fallacious statements from errors of judgment. Things are deceitful in appearance when they are not what they seem to be. Distances measured on the water are deceitful because they are greater than they appear to be. Fraudulent denotes willful, and often impudent, attempts to deceive.

406. **FALLACY,** delusion, illusion. A fallacy is that which tends to deceive. We try to detect fallacies in propositions or in reasonings. Delusion is something which deceives or misleads. Illusion is something which plays upon the mind, or it is the state of being so played upon or deceived.

407. **FAME,** reputation, renown. Fame is loud, noisy, uncertain, and more or less changing. Reputation is the lasting, solid, enduring opinion of a man and is generally based upon close observation or long intimacy. Renown is rather a combination of fame and reputation, being as loud as the one and as enduring as the other.

408. **FAME,** report, rumor, hearsay. Fame is that which spreads abroad without regard to the agent, is good or bad, and establishes the popular opinion or judgment of a person or thing. Report is a communication regarding events and occurrences; it depends upon the character and veracity of the one who communicates it. Hearsay regards the one who hears the thing and communicates his information not from any positive knowledge but from what he has been told.

409. **FAMILY,** house, lineage, race. Family regards the number, relationship, and intercourse of its members. A house regards the inmates and the occurrences within the walls. In an extended sense house is applied to the political, civil, official, and distinctive powers of a family and group, as the House of Brunswick, or the House of Lords. Lineage regards only blood relationship and includes present members, their ancestors and posterity. Race is broad, comprehensive, and includes all mankind or separate national or ethnical groups.

410. **FAMOUS,** celebrated, renowned, illustrious. Famous denotes that which is entitled to fame or which is the cause of it. Celebrated is that which is regarded with either solemnity or seriousness such as might mark a celebration or memorial ceremony. One who is celebrated commands great respect. A person is renowned because of the possession of very rare or extraordinary qualities or talents, or these in a high degree. Illustrious pertains to that which confers dignity or upon whom dignity is conferred.

411. **FANCY,** imagination. Fancy brings a thing into the mind and pictures it there either vaguely or

well-definedly. Imagination dwells upon the fancied subject, and invests it with much greater value and important accessories than fancy does. We fancy (not imagine) that we see or hear things.

412. **FASTIDIOUS**, squeamish. One is fastidious who is not easily pleased and whose niceness is caused by pride. One is squeamish who is easily disgusted from humor and caprice rather than from any well-founded sense of discrimination or good taste.

413. **FAVORABLE**, propitious. That which is well disposed towards us and acts kindly towards us is favorable. Whatever promotes our interests, furthers our plans, and confers benefits upon us by seconding our efforts and fulfilling our hopes is propitious. Winds, persons, friends, are favorable; the gods and circumstances are propitious.

414. **FEARFUL**, dreadful, frightful, horrible, horrid, tremendous, terrible, terrific. Fearful causes fear; dreadful causes dread. As fear and dread affect the mind only these in no way affect the senses. The derivation of the words makes plain the uses. Frightful causes fright; tremendous, literally, causes trembling or shaking; terrible and terrific cause terror; horrible and horrid, horror.

415. **FEAST**, banquet, carousal, entertainment, treat. Feast conveys the idea of enjoyment of a social meal. Banquet implies pomp, state, ceremony, and splendor. Carousal is a drunken feast. Entertainment and treat convey the idea of hospitality and generosity.

416. **FEAST**, festival, holiday. A feast is always sacred; a festival is either sacred or, at the least, serious; a holiday is a day upon which business is suspended.

417. **FEEL**, be sensible, conscious. Feel is capable of very wide uses, we feel with the whole body and with all our faculties; to be sensible is said only of the senses. We feel pleasure and pain; we are sensible of sounds. We are conscious of what passes inwardly. We feel the force of a remark; are sensible of the evil effects of wrongdoing; and are conscious of our own shortcomings.

418. **FEELING**, sense, sensation. Feeling is one of the five modes of sense; sense is the abstract power of feeling through the senses; sensation is feeling expressed in the serious, scientific, or medical sense of the word.

419. **FEELING**, sensibility, susceptibility. Feeling expresses a strong property of the mind, either particular or habitual; sensibility is taken in the sense of habit; susceptibility expresses a readiness to be affected by external objects. Keen sensibilities are undesirable since while they give much pleasure they also are the source of much pain.

420. **FEIGN**, pretend. These words both convey the idea of either doing or saying what is not true. Feign may be used in either a bad or an indifferent sense; pretend is always bad. Feign has in view a future purpose; pretend has a present purpose. Feign often follows a line of conduct; pretend depends upon words.

421. **FELICITATE**, congratulate. Felicitate has to do only with ourselves; congratulate, with others. We felicitate ourselves on an escape from evil; we congratulate others on their good fortune.

422. **FEROCIOUS**, fierce, savage. Ferocious conveys an idea of cruelty and wildness; fierce, of pride and anger; savageness, a less violent but more permanent state of cruelty or anger. Ferocious and fierce are usually applied to animals; savage, to man.

423. **FERTILE**, fruitful, prolific. Fertile expresses the power to send forth that which is unlike or not of its own nature. We speak of the soil being fertile when it sends forth an abundance of vegetation. Fruitful is the power of sending forth much which is of the same nature, as when trees, plants, and vegetables send forth fruit. Prolific is applied to animals.

424. **FERVOR**, ardor. We are fervent in feeling; ardent in acting. The affections are fervent; the passions are ardent.

425. **FESTIVITY**, mirth. Festivity rather produces mirth, and it includes eating, drinking, dancing, and other pleasures; mirth is that lightness of heart which usually attends such occasions.

426. **FICTION**, fabrication, falsehood. Fiction is the opposite of what is real; fabrication and falsehood, of what is true. The object of fiction is to instruct and to entertain; of fabrication and falsehood, to deceive and mislead. Fiction and fabrication require some invention; falsehood merely contradicts.

427. **FIGURE**, metaphor, allegory, emblem, symbol, type. Figure is that which is painted by the imagination and may be expressed in wood, marble, paint, and with a variety of tangible media; metaphor and allegory are figures of the imagination recorded only in words; an emblem is a representation of moral precepts and qualities by material objects; symbol is an emblem which all men recognize as standing for a definite thing; a type is an emblem by which one object is meant to represent another in a mystical way.

428. **FINAL**, conclusive. Final implies simply being the last; conclusive involves the processes by which one reaches the last. Final is arbitrary and the will can decide what shall be final; conclusive depends upon all the circumstances. An answer may be final, yet be far from being conclusive.

429. **FIND**, find out, discover, espy, descry. Find expresses a general idea of coming in sight of a thing. We may find a thing by accident, but we find out as a result of effort. We discover what is always remote and unknown. We espy what is very secluded and retired. We descry what is distant or rather hidden by a number of objects.

430. **FIND**, find out, discover, invent. In this sense we find modes or ways or means of performing or effecting purposes; we invent by applying in new ways materials which exist separately. We find out mechanical and operative processes; we discover by removing the obstacles and difficulties which ordinarily prevent a thing from being known or understood.

431. **FIND FAULT WITH**, blame, object to. All of these words denote expressing our dissatisfaction in words. We find fault with by pointing out the fault and we use the term in regard to both objects and persons. We blame persons only for the result of their faults. We object to things which have been done or are to be done.

432. **FINE**, delicate, nice. Fine is opposed to coarse, and we speak of a fine thread. In the moral sense fine conveys the idea of refined, as when we speak of a fine sense of honor or fine feeling. Delicate conveys an idea not only of fineness but also of something agreeable to the taste, as when we speak of delicate coloring, delicate shading, or of a delicate flower. In matters of appetite, delicate appeals to the refined and cultivated, while nice applies to the pleasures of the young, the ignorant, or the sensual. Nice has also a sense of discriminating, as when we speak of a nice taste in music. Niceness in such matters conforms to some established rule or standard.

433. **FINITE**, limited. Finite relates to the natural boundaries, while limited regards artificial bounds. We cannot extend the finite; but human power may change the limited.

434. **FIRM**, fixed, solid, stable. Firm is not easily shaken; fixed is attached or fastened to something and is not easily torn away; solid is capable of supporting or bearing up a load; stable will endure or last.

435. **FIT**, apt, meet. Fit is a property or quality which may be either natural or acquired; aptness is always a natural endowment; meet implies a sense of having been measured so as fully to come up to the requirements.

436. **FIT**, suit, adapt, accommodate, adjust. Fit makes a thing becoming or fit for one's use; suit is to make a thing suitable or agreeable; adapt is to change or to make something conform to present conditions, and involves the use of the judgment; accommodate is an act of the will and suggests that some sacrifice is involved; adjust conveys an idea of putting things in right order but not, necessarily, of keeping them in order.

437. **FIX**, determine, limit, settle. Fix has a general idea of making something keep its place and has a broad use; determine is a result of thought. In fixing one point is involved; in determining, one or more than one. We fix upon a point of beginning; we determine upon the beginning, the ending, the length, the breadth, and direction. We determine by removing doubt; a thing is limited by something tangible, or by law. We determine the details that we may settle the whole question.

438. **FLAG**, droop, languish, pine. Flag is to hang down as a flag and is only applied to those objects which may be blown out as a flag, though figuratively we say that the spirits flag. That droops whose head droops or flags. Languish is applied to persons and is used in describing conditions under sickness, prison, or other distress. Pine describes a mental condition of wearing pain.

439. **FLAT**, level. Flat is the opposite of round, and suggests the absence of elevation. Level has to do with other things by which its evenness is made clear.

440. FLATTERER, sycophant, parasite. A flatterer uses flattering words; the sycophant in addition to flattering words uses every artifice by which he can gain favor; and the parasite submits to every indignity and degradation to which he may be subjected.

441. FLEXIBLE, pliable, pliant, supple. Flexible is that quality which permits ease in bending; pliable, of folding. Pliant refers not to the quality but the act or the condition of folding backward and forward with marked readiness; supple suggests ease of movement.

442. FLOURISH, thrive, prosper. Flourish, a word drawn from the flower kingdom, denotes being in a state or condition which is agreeable; thrive denotes the process of reaching that state; while prosper is to pass through the several stages of seeing one's hopes consummated.

443. FLOW, stream, gush. Flow is the general term; the others are different modes of flowing. Water streams through small channels or from little spouts; fluids gush with violence. When we speak of blood flowing from a wound we merely express the idea that blood issues from the wound—we do not say how; it streams from it when it flows out as through a channel; but it gushes out when it issues forcibly and in as large quantities as the opening will permit.

444. FLUCTUATE, waver. He is said to fluctuate who forms many opinions in rapid succession; he wavers who cannot form an opinion or come to a conclusion. The spirits and opinions fluctuate; the will wavers.

445. FLUID, liquid. Fluid is anything that flows; a liquid is properly anything that has been melted. Water and air are fluids because both will flow; water is also a liquid because it is what ice becomes when it melts. Boiling lead is a liquid because it is melted.

446. FOLLOW, succeed, ensue. Follow, said of both persons and things, means to go or to be in the same place after another; succeed adds the idea of immediately after another. Ensue is used of things only and implies a necessary connection between the things spoken of.

447. FOLLOW, pursue. One follows another with a friendly or, at the least, an indifferent intent; one pursues with a hostile intent. When used of plans or purposes, one follows another's plans, but pursues his own.

448. FOLLOW, imitate. We imitate only that which is external, by copying or mimicking it; we follow, not only what is external, but what is internal, as the dictates of conscience.

449. FOLLOWER, adherent, partisan. A follower follows another person, his interests, or his principles; an adherent adheres to the cause or interests of another; a partisan adheres to a party. A follower has many motives; an adherent, a personal motive; and a partisan, a partial motive.

450. FOOL, idiot, buffoon. Fool is a class name and describes either a natural or artificial fool; an idiot is a natural fool; and a buffoon, an artificial fool. A fool goes contrary to common sense; an idiot cannot help doing so; while a buffoon does so intentionally.

451. FOOLHARDY, adventurous, rash. A foolhardy man has the hardihood of a fool and has no regard for consequences; an adventurous person is always ready to venture from the very love of it; a rash man acts swiftly without taking thought.

452. FORBID, prohibit, interdict. Forbidding is a direct, personal act; prohibit is a judicial act such as is exercised by the legal authorities; interdict is a moral term applied to the more serious concerns of life.

453. FORCE, violence. The use of force is justified by reason and fairness; the use of violence is illegal and, generally, unjustifiable.

454. FORESIGHT, forethought, forecast, premeditation. Foresight is seeing before; forethought is thinking before; forecast is reasonable prophecy of what will happen; premeditation is the act of taking thought beforehand with regard to what shall be said or done.

455. FORETELL, predict, prophesy, prognosticate. Foretell is a general and familiar word signifying to tell beforehand; predict is a foretelling by reason of some supernatural power, real or imagined; prophesy is to foretell by inspiration; prognosticate is to understand thoroughly so as to foretell results.

456. FORGIVE, pardon, absolve, remit. Forgive, of Anglo-Saxon origin, is the common term; pardon, from the French, is used of more serious offenses; absolve relates to the connection between man and God; remit relates more to the freeing from punishment than from blame or sin.

457. FORM, figure, conformation. Form is the result of either nature or art; figure, the result of design; and conformation is the arrangement or adaptation of parts to accomplish certain purposes or functions.

458. FORM, fashion, mold, shape. Form is to arrange in a form; fashion is to arrange in a definite or exact form; mold is to arrange in a set or precise form; shape is to arrange with regard to the external aspect.

459. FORM, ceremony, rite, observance. Form regards the prescribed standards of speech and conduct as determined by conventionality; ceremony regards those forms which express respect and deference; rites regard the tenets of religion; and observances refer to both religious and national ceremonies.

460. FORMAL, ceremonious, ceremonial. Formal describes conduct or speech in accordance with prescribed forms; ceremonious denotes an observance of ceremony, respect, or deference; ceremonial denotes an observance of proper ceremonies.

461. FORMERLY, in times past, in old times, in days of yore, in ancient times. Formerly denotes a more recent time than do the other terms; in fact, the difference in meaning or use of all of these terms is simply one of greater or less remoteness.

462. FORMIDABLE, dreadful, terrible, shocking. Formidable is applied to something which looms up so as to excite a weighty and serious fear; dreadful to what excites dread; terrible to what excites terror, acting both upon the senses and the imagination; shocking to what agitates violently. The terrible and the shocking both act in a sudden and unexpected manner, whereas that which is dreadful may grow gradually to be so, its forebodings being vague and intangible.

463. FORSAKEN, forlorn, destitute. To be forsaken is to be deprived of the companionship and assistance of others; to be forlorn is to be left alone in the midst of distress or difficulties, in a certain sense lost, to be without any guide in an unknown road; to be destitute is to be without any of the primary necessities and first essentials of life. To be forsaken is a partial condition only. To be destitute or forlorn is a more permanent condition.

464. FORTUNATE, lucky, fortuitous, prosperous, successful. Fortunate signifies being possessed of fortune in the circumstantial phases of a thing; and, with being lucky, is applied to that which occurs outside the plane of man's control. Lucky signifies having the luck or ability to make a success of something, and is always more sudden, unaccountable, or singular than to be fortunate. Fortuitous signifies to have by chance the quality of fortune. To be prosperous is to reach a condition in which hope has played a part, an extension of a state of advance along the line of one's fixed desires. To be successful is to meet with success, and is that degree of prosperity which immediately attends our own endeavor.

465. FOSTER, cherish, harbor, indulge. To foster is to give to a thing paternal care. To cherish is to feed with affection, to hold dear or set a value upon. To harbor is to provide shelter as well as protection. To indulge is to extend a certain liberty which is agreeable, often to give the whole mind to it, and make it the chief source of pleasure.

466. FOUND, ground, rest, build. To found is to exercise art or contrivance in making a support. To ground denotes the laying of the foundation of a thing so deep and so securely that it may never tremble or approach instability. To rest is more related to a state of settlement dependent upon the will of the individual. To build has especial reference not only to the basis taken but to the superstructure reared upon that foundation.

467. FRANK, candid, ingenuous, free, open, plain. Frankness is a condition of being wholly at ease, and may be associated with unpolished manners and impoliteness. Candor implies nothing to conceal and accompanies uprightness and refinement. Both may be either habitual or occasional and may be assumed. Ingenuousness is a permanent and inherent characteristic, implies a state of being absolutely without disguise, and denotes a habit of acknowledging the faults of one's self. Free is frank to the point of impertinence. Open signifies frank to the point of indiscretion, and to every one, while frankness is a habit of expression confined to particular individuals. Plain may be tactless, but is free from odiousness.

468. FREAK, whim. Freak applies more to the vagaries of childishness; whim refers rather to the eccentricities of responsible minds. Freak may be used in a figurative and material sense, *i. e.*, "Freak of

Fortune," "A freakish action." Whim is entirely a bias of the mind.

469. **FREE**, liberal. Free respects action or sentiment exerted under direction of the will. To be liberal is to act more largely according to the dictates of an enlightened mind or generous-hearted impulse. But liberality denotes impulsive, generous-hearted action, in which the will was the necessary first cause, or where without a definite will, despite the highest degree of liberality, action would never have resulted.

470. **FREE**, set free, deliver, liberate. Free is to free one's self. Set free means to make others free. Deliver is to rescue from evils due to circumstance, or those of oppression. Liberate is to rescue or set free from durance or captivity.

471. **FREE**, exempt. To be free is a state of freedom either by accident or design from any thing or condition undesirable. To be exempt is to be free by intention from any burden which ordinarily all others share.

472. **FREEDOM**, liberty. Freedom is a condition of untrammeled self-expression and action, used always in a good sense. Liberty is used often in a bad sense, and implies positive release from restraint.

473. **FREQUENT**, resort to, haunt. Frequent usually means the action of an individual; resort and haunt refer to numbers of individuals. Frequent and resort are used in an indifferent sense, haunt invariably in a bad sense.

474. **FRIGHTEN**, intimidate. Immediate danger which is seen frightens; threatened danger intimidates. Animals may be frightened but never intimidated.

475. **FROLIC**, gambol, prank. Frolic is any gay, joyous amusement. Gambol implies physical action, hence dancing or leaping for pleasure. Prank is a freakish trick or mischievous diversion. Gambol and prank may be applied to animals.

476. **FULFILL**, accomplish, realize. Wishes carried out are fulfilled. Any work perfectly done is accomplished. One's hopes, plans, or prospects are realized.

477. **FUNERAL**, obsequies. Funeral is an ordinary service however simple accompanying the interment of the dead. Obsequies may occur at any subsequent time. Also obsequies implies formal pomp and ceremony.

478. **GAIN**, profit, emolument, lucre. Gain is a general term meaning all increase of income. Profit means the gain from an estate or business. Emolument is reward or salary for labor or services. Lucre is used in a bad sense, signifying immoderate gain or usurious profit, or gain acquired in any dishonest way.

479. **GAPE**, stare, gaze. Ignorance and bewildered astonishment expresses itself by gaping; impertinence or stupefaction by staring. Gaze is used in a good sense and means to look steadily from any laudable motive. To gaze may express pleasure, interest, surprise, or curiosity.

480. **GATHER**, collect. Gather means to bring together. Collect implies the additional meaning of completing a whole by bringing together.

481. **GENDER**, sex. Gender, properly speaking, a kind, applies to distinctions in words. Sex implies nature or habit and applies to animals. There are three genders, masculine, feminine, and neuter; two sexes, male and female.

482. **GENERAL**, universal. The general rule may have exceptions; the universal has none. General is used in opposition to particular; universal is opposed to individual. General means the greater part; universal signifies every part.

483. **GENTEEL**, polite. Genteel refers to rank in life, to high birth, not necessarily to good breeding. Polite applies to manners, speech, and appearance.

484. **GENTILE**, heathen, pagan. Gentile signifies one who, while not positively believing in divine revelation, stands ready to be convinced. The heathen adopts a false form of worship. The pagan insists upon a mode of worship made out of his own imaginings. All pagans are heathens. All heathens are gentiles, but all gentiles are not either pagans or heathens.

485. **GENTLE**, tame. Gentle indicates sweetness and mildness in natural disposition; tame implies familiarity with human society due to training and association. All tame animals are not gentle, nor are all gentle animals tame. Tame is opposed to wild, gentle to rough or fierce.

486. **GET**, gain, obtain, procure. Get is a general term and includes the other three. What one gets may not be desirable or in accord with his efforts. To get something which is in any way advantageous or desired is to gain. Obtain implies rather the getting by one's own efforts and exertions. Procure is to obtain by either labor or strategy.

487. **GIFT**, present, donation. To make a gift is a generous act and confers benefit. Making a present is more an act of courtesy and confers pleasure. Gifts and presents are private and personal. Donations are public, viz., gifts to hospitals, churches, and other general institutions.

488. **GIFT**, endowment, talent. A gift is never obtained by one's own labors or exertions, and the word always suggests a giver. Endowments refer more to the receiver, and may be cultivated and acquired. Talents suggest only their own intrinsic merit independent of source, and may be either inherent or acquired.

489. **GIVE**, grant, bestow. The inclusive and general word is give. To grant is to give anything tangible or intangible in response to a request. Superiors grant or bestow. Any one may give to another. Bestow implies a condition of necessity on the part of the recipient.

490. **GIVE**, afford. Give is the general term. Afford implies giving in proportion to one's income or circumstances. Give denotes an entirely unconditional action.

491. **GIVE**, present, offer, exhibit. In order to give there must be acceptance. To present signifies giving with more or less formality. One offers when he makes the attempt to give. An offer may be refused. To exhibit is to place conspicuously in view.

492. **GIVE UP**, deliver, surrender, yield, cede, concede. We give up what is ours. We deliver that which is another's. We surrender with reluctance that which we wish to retain. To yield implies resistance, or giving up under compulsion and through helplessness or weakness. To cede is to surrender peaceably or by treaty, and implies willingness. Concede denotes yielding through courtesy or discretion.

493. **GIVE UP**, abandon, resign, forego. One can give up anything small or great. One abandons projects of importance, and that by his own decision. One resigns what he desires and what he already has. He foregoes that which he might have. We can forego a pleasure by deciding not to take it. We resign an office which we already hold.

494. **GLAD**, pleased, joyful, cheerful. These meanings increase in intensity in this order—pleased, cheerful, glad, joyful. Pleased may indicate only a fleeting emotion. Cheerful suggests a more permanent condition of mind independent of external conditions. Gladness may have its source in physical causes, but joy springs from mental impressions. Both gladness and joy are induced by outward circumstances.

495. **GLANCE AT**, allude to. Glance at in writing or speech signifies a cursory allusion to a fact or subject. To allude to implies an indirect but not concealed action, hence a reference to a subject without stating the fact.

496. **GLARING**, barefaced. Glaring denotes the quality of the thing; literally, in a powerful light. Barefaced describes the person; literally, entirely undisguised. Barefaced lie suggests the boldness of the liar. A glaring lie is an unmistakably obvious falsehood.

497. **GLIMPSE**, glance. A glimpse is what one sees in a fleeting moment. A glance is the act of looking quickly or surreptitiously. A glance at an object gives us a glimpse of it.

498. **GLOBE**, ball. Strictly speaking, a globe is a body not perfectly circular in every circumference line; that is, it may be irregularly round. A ball is symmetrically round. Globe applies rather to astronomical and chemical bodies.

499. **GLOOMY**, sullen, morose, spleeny. Gloomy is a matter of inherent disposition, a misfortune. Sullen is a matter of uncontrolled temper, a fault. Sullen also implies rebellion against authority. Morose is a pessimistic frame of mind in those of mature age and in authority, hence does not include rebelliousness. Spleen is perpetual bitterness and is a defect of the nature. Moroseness is a defect of the temper. Spleen is often consciously malicious. Moroseness signifies rather a warped judgment.

500. **GLORY**, honor. Glory induces extraordinary achievement. Honor leads to discharge of one's duty. Glory is more splendid and may be attained by only a few. Honor is more substantial and is within reach of

all. Glory may be regarded with indifference, but honor must be most highly prized and striven for by all.

501. **GLORY,** boast, vaunt. To glory is rather an act of the mind. To boast and to vaunt refer to an expression of that sentiment. One glories in matters of importance; he boasts of more trivial things. Vaunt is a word less commonly used in ordinary speech, and is confined more to classical literature.

502. **GODLIKE,** divine, heavenly. Godlike defines itself. Divine is opposed to human. Heavenly is opposed to earthly. Anything that appertains to a superior being is divine. That which belongs to heaven is heavenly.

503. **GOLD,** golden. Gold means made of gold. Golden is the quality of being or appearing like gold.

504. **GOOD,** benefit, advantage. Good comprehends everything that is suitable for a purpose, and desirable for happiness. Anything that may be used to promote our welfare is an advantage even though it be turned against us, thus becoming an evil rather than a good. A benefit is some specific good as applied to a particular individual, and is always in relation to circumstances.

505. **GOOD NATURE,** good humor. Both terms refer to an inherent disposition leaning towards pleasing others. Good nature is a permanent quality and habit. Good humor is a mood of the hour, and may be largely on the surface, while good nature applies to the state of the mind.

506. **GOODS,** furniture, chattels, movables, effects. One's goods include all personal possessions which are of value to him. Furniture belongs to the things of the household. Chattels has a wider significance, things separated from one's person and house, cattle, slaves, lands, etc., in fact all salable property. Movables are only those articles which can be taken from place to place. Effects contains almost as wide a meaning as goods, but relates especially to goods which can be converted into money. Goods not under the owner's control for disposal become effects.

507. **GOODS,** possessions, property. Goods must be considered as to whether they are real or imaginary, possessions as to whether lasting or temporary, property as to whether it is legal or illegal. "Some abound in the goods of this world." "Be not anxious for earthly possessions." "The most secure title to property is held by inheritance."

508. **GOVERN,** rule, regulate. To govern is to exercise authority tempered by judgment and knowledge. To rule is to arbitrarily control the actions of others. To regulate is to manage affairs purely by the exercise of judgment.

509. **GOVERNMENT,** administration. Government is a more comprehensive term than administration. Administration implies putting into execution the laws or will of another. A government may be administered. Administration may change while the government does not.

510. **GOVERNMENT,** constitution. Government signifies the general act of exercising authority in any form. A constitution is some fixed form of government.

511. **GRACE,** favor. Properly, grace is used only in regard to persons who have erred, and includes, in a sense, forgiveness. Favor is simply a kindness voluntarily shown, deserved or undeserved.

512. **GRACE,** charm. Grace is physical and qualifies the action of the body. Charm is an attractiveness of the mind and soul as well as of the body.

513. **GRATIFY,** indulge, humor. Gratify is to produce an intense pleasure, to please greatly, and suggests also an element of satisfaction. Indulge signifies to allow much gratification, perhaps to excess, but not necessarily so. To humor implies indulgence exercised toward fancies or caprices.

514. **GRAVE,** serious, solemn. Grave, weighty, applies to deportment and movements of the body as well as the state of mind; heaviness of action. Seriousness is caused only by an operation of the mind and bespeaks a steadiness of purpose and demeanor. Seriousness allows one to be quick and alert, which gravity does not, but is never jocular. Solemn is used to denote an extraordinary seriousness, and applies rather to things of a religious nature, or of great moment.

515. **GREAT,** large, big. Great defines intangible things and suggests an element of intangibility even in material things. Big applies to material things and expresses less in degree. Large describes things which can be measured. Great may be used to designate things infinite in quality. "God is great." We may say, "a great mind," "a big brain." Large suggests not only limitation, but is relative in its meaning. Thus, "The tiniest insect is comparatively large," never "comparatively big."

516. **GREAT,** grand, sublime. Great denotes extent. Grand embraces also the idea of superior excellence. Sublime applies only to the works of nature, and includes height, hence, figuratively, an elevating quality. Great may apply also to works of art, and suggests immensity.

517. **GRIEVE,** mourn, lament. Grieve is a general term, and denotes an inward act. To mourn is an outward act. Thus, to mourn is a manifestation of grief. Grieve and mourn are permanent sentiments. Lament is a passing feeling. To mourn may be a silent expression. Lament signifies mourning in cries or words.

518. **GROAN,** moan. Groan is involuntary, a noise made by hard breathing. Moan is a voluntary expression of pain, made simply by the voice. Both express pain of either body or mind.

519. **GROSS,** coarse. The moral significance of both words is synonymous. Gross suggests rather material bulk, hence is applicable more exclusively to habits of the body. Coarse suggests texture, so can be used to describe manners, and trend of the mind.

520. **GUARANTEE,** be security for, be responsible for, warrant. We guarantee by our word. To be security for includes also some binding act or contract, and is used more often in a legal sense. Guarantee is used more in a commercial sense, and implies the power to make good. Being responsible for applies to morals and conduct and is used always in reference to the behavior of people more or less under our charge and protection. To warrant binds one to make restitution; used morally, it indicates a justification of a certain line of action.

521. **GUARD,** defend, watch. Guard comprehends the meaning of both defend and watch. Defend is used only in case of actual attack. Guard signifies also to prevent the attack by watchfulness. One defends only in active fighting. One guards in times of peace and security. Watch denotes simply continuous observation for any purpose.

522. **GUARD,** guardian. A guard may guard either persons or things; a guardian applies to persons only. A guard may be only temporary, and protects from external evils. A guardian takes entire charge of the person and welfare of another.

523. **GUARD AGAINST,** take heed of. Guard against implies the exercise of special care against active external evils or influences. Take heed of applies to internal evils or undesirable mental tendencies, and passive dangers. "Take heed lest ye stumble." "Guard against slander."

524. **GUESS,** conjecture, divine. We guess at what is occurring or has occurred; we conjecture that which may be in the future. Properly, divine implies supernatural knowledge; commonly, however, it signifies to guess or conjecture correctly.

525. **GUILTLESS,** innocent, harmless. Innocent applies to acts; guiltless also to intentions. Guiltless properly characterizes only the condition of man; innocent may be used to indicate the quality of things. Innocent and harmless both represent a negative quality; innocent, a quality of the mind; harmless, an inability to cause physical injury.

526. **HAPPEN,** chance. Whatever occurs happens. That which happens by accident, or outside the ordinary course of expectation, is said to chance.

527. **HAPPINESS,** felicity, bliss, blessedness, beatitude. Happiness is induced by desirable conditions both of the body and soul. Felicity denotes an inward state due rather to ideal conditions of the soul, and independent of outward circumstances. Bliss indicates a higher degree of joy, and joy of a superior nature, than either happiness or felicity. Bliss relates to the spiritual nature. Blessedness implies special Divine favor. Beatitude denotes the most exalted degree of heavenly bliss.

528. **HAPPY,** fortunate. Happy relates to the state of mind; fortunate to external circumstances. Happiness depends upon one's nature; fortune upon one's efforts and abilities and chance. A fortunate man may be unhappy and *vice versa.*

529. **HARBOR,** haven, port. Harbor suggests a shelter, and is temporary; haven suggests a secure shelter, and a permanent resting place. A haven is a natural harbor; a port is an artificial or improved harbor, and is used rather in a commercial sense.

530. **HARBOR,** shelter, lodge. To harbor is used more often in a bad sense. It means to afford a

habitual stopping place. "One harbors resentment," or "one harbors thieves." One shelters those creatures which are helpless or weaker than one's self. One harbors permanently, though perhaps intermittently. One lodges that which wants a resting place. To lodge is temporary.

531. **HARD**, firm, solid. Hard denotes close adherence of the parts of any body. Firm is used to designate the close adherence of two separate bodies. Pieces of ice floating in a river may be hard but they are not firm. Solid is opposed to fluid and is not necessarily hard. Jelly is solid and stone is hard. Firm also implies a certain immovability.

532. **HARD**, callous, hardened, obdurate. As above, hard signifies the ability to resist external pressure. Hard is an intrinsic quality. Callous is a state of hardness brought about by circumstances and external conditions, or long-continued custom; a tender nature may become calloused. Hardened applies to both the heart and the mind. Obdurate refers especially to the will. One may become hardened by time and circumstance. Hardened is a permanent condition; calloused may be temporary.

533. **HARD**, difficult, arduous. Difficult is negative, and means simply not easy. Hard is a stronger term. Literally, arduous signifies high out of reach; hence, while hard tasks are possible of accomplishment by persons of only average ability, arduous work requires almost superhuman effort, and is beyond the reach of ordinary intellects.

534. **HARD-HEARTED**, cruel, unmerciful, merciless. Hard-hearted characterizes a settled habit of thought and action. Cruel may be only a passing disposition or an action of the moment. Cruelty is measured by the action rather than the person; a tender-hearted person may be cruel through ignorance. Both unmerciful and merciless denote lack of mercy, but merciless is the stronger term. A man may be unmerciful through an unwillingness to extend mercy in a particular case; a man is merciless when he is incapable of feeling mercy.

535. **HARDLY**, scarcely. In many senses these words are synonymous,, but when the idea of difficulty only is implied, hardly is the proper word. "I can hardly walk." When the idea of infrequency only is conveyed, scarcely is preferable. "He scarcely ever walks."

536. **HARSH**, rough, severe, rigorous. Harsh and rough have a physical significance, but harsh is much the stronger term. In their figurative use, rough applies to manner and mode of speech. Harsh refers to the mental attitude and includes that even when used to describe deportment. Severe and rigorous describe the action rather than the person. One may be severe in dealing with innocent persons under his control, but rigorous in punishing criminals. Rigorous is an extreme severity.

537. **HASTEN**, accelerate, speed, expedite, dispatch. Hasten denotes little besides active, rapid motion. Accelerate signifies to increase one's speed, or quicken an operation. Speed conveys the idea of forward movement. Whereas hasten may be aimless hurry, speed is effectual movement. Expedite expresses the idea of making easy of accomplishment; meaning, literally, to remove obstacles, hence to bring about a quick accomplishment. Dispatch designates the act of completing a task with expedition, of speedily finishing a piece of business.

538. **HASTEN**, hurry. We may hasten in good order and according to design. We always hurry in confusion, and without forethought.

539. **HATE**, detest. We hate from a personal feeling; we detest from a moral sense. We hate those who mistreat us; we detest those who mistreat others, or who are undeserving of respect. Therefore, to detest is commendable; to hate is blameworthy. We may hate those who are good, we cannot detest them.

540. **HATEFUL**, odious. Originally synonymous, these two words have now a slight deviation of meaning. Hateful is what we hate. Odious describes any quality or action that would make us hateful to others, or others hateful to us.

541. **HATRED**, enmity, ill will. Hatred expresses more than enmity, while ill will expresses less. Hatred wishes ill to others, and is happy only in their misery, but does not necessarily take an active part in causing that misery. Enmity, although consisting of action as well as feeling, is a more honorable sentiment in that it has always a real or fancied reason for its existence. Ill will lies only in the mind and may exist in only a slight degree.

542. **HAUGHTINESS**, disdain, arrogance. Haughtiness is based upon a high opinion of ourselves; disdain upon a low opinion of others. Hence disdain is sometimes justifiable. Haughtiness and disdain are sentiments of the mind. Arrogance is an expression of those sentiments, either by words or manner.

543. **HEALTHY**, wholesome, salubrious, salutary. In modern use healthy applies more exclusively to a condition of the body not to things that induce that condition. A man is healthy. Food, exercise, pure water, and good air are wholesome. Wholesome qualifies things and circumstances. Salubrity is the quality of an environment which improves the health. Salutary conveys the idea of positively curing disease.

544. **HEAP**, pile, accumulate, amass. Heap may be large or small, orderly or disorderly. A pile is always considerable in amount and is made according to some design, however simple. Hence a building may be called a pile. Accumulate suggests heaping and implies a collection of separate units which may be dissimilar in character. We amass that which coalesces into a whole. In neither amass nor accumulate is the action of a conscious agent necessary. A glacier accumulates stones. Ice amasses in rivers.

545. **HEAR**, hearken, overhear. To hear is solely the physical act of the ear. To hearken is also an act of the understanding. To overhear is to hear that which is not intended for us to hear.

546. **HEARTY**, warm, sincere, cordial. Sincere is a habit of one's nature Hearty, warm, and cordial express feelings induced only by certain circumstances, at certain times. Warm implies an affectionate regard; hearty a deep interest that comes from the heart, but not necessarily exercised toward an object of affection. Cordial indicates an extreme and sincere interest, and applies with special aptitude to the act of welcoming.

547. **HEAVY**, burdensome, weighty, ponderous. Heavy is an intrinsic quality of weight. A heavy thing becomes burdensome only when it is lifted or carried. Weighty is always positively heavy. Heavy has a relative meaning. A grain of corn is not weighty, but it is too heavy to be carried by an ant. Ponderous includes both size and weight, usually an excess of weight.

548. **HEED**, care, attention. Heed includes the idea of thinking upon the possible consequences of a mode of action. We heed the warning or counsels of others. We give attention to whatever is necessary for us to perform. We have a care for things of smaller consequence which require no forethought.

549. **HEIGHTEN**, raise, aggravate. To heighten is to make higher in the sense of taller. To raise represents the idea of lifting to a higher plane or situation. To aggravate is to make heavy, hence to increase. Applies to things disagreeable. A fever, a man's guilt or fear, may be aggravated or heightened.

550. **HEINOUS**, flagrant, flagitious, atrocious. Heinous signifies seriously violating laws either human or divine. A flagrant offense is one that defies custom and established opinion. A flagitious act is one that grossly violates the laws of good morals and decent conduct, especially if attended by profligacy. Atrocious is a crime committed under extremely aggravated conditions. "Than such atrocity can one no further go."

551. **HELP**, assist, aid, succor, relieve. Help is the general term and in almost every case could be used instead of any one of the others. Assist is used only of individuals. Aid is used in speaking of nations or bodies. Unlike the first three words, succor and relieve indicate exclusively the removal of an existing evil, while help, assist, and aid may mean also production of positive good. Succor must be personal aid, and refers to a definite and immediate action. Relieve is applied more commonly to pain and sickness.

552. **HIGH**, tall, lofty. High is the term in most common use. Tall and lofty mean extraordinary height. Tall always implies slenderness, that is, extension in a perpendicular direction only. Lofty also allows bulk or space in a lateral direction, as a tall steeple, a lofty room, or a lofty mountain. High is the general term of substitution for either of the others.

553. **HINDER**, prevent, impede, obstruct. Hinder expresses little else than delaying one's achievement of a purpose. Prevent means to hinder to the extent of rendering accomplishment impracticable. Impede implies hindering by means of confusing the action of a person or greatly increasing his labor. Obstruct suggests the presence of obstacles.

554. **HINT**, suggest, intimate, insinuate. We suggest and intimate openly. We intimate a fact because we prefer not to speak broadly. We suggest a line of conduct from a feeling of modesty or delicacy. We hint

surreptitiously at that of which we fear to speak directly. Insinuate is invariably used in a bad sense. To imply anything against the character or attainments of another is to insinuate.

555. **HOLD**, keep, detain, retain. To hold implies physical action, and may be only for a moment; is always temporary. To keep is rather the simple act of possessing, of permanently having within reach. To detain is holding back what is another's, hence is used to express delay of action caused by anything foreign to that action. To retain is the keeping indefinitely, but not necessarily permanently. Retain also indicates keeping through some change or changes of circumstances.

556. **HOLD**, occupy, possess. We hold temporarily or permanently for any purpose whatever. We occupy that which we hold for use whether it is ours or another's. We possess only that which is our own. Occupy contains also the idea of dwelling upon or within. Possess applies to anything we own.

557. **HOLD**, support, maintain. We hold by active exertion, in any direction. We support more passively. Even inanimate objects may support. Support is to hold up, or to help any one else to hold up; implies the idea of a prop. We hold our own opinions. We support another's opinions. We maintain opinions when we express them. We maintain by assertion. We support by argument. Maintain includes also the idea of money support.

558. **HOLY**, pious, devout, religious. Holy, a characteristic of the genuine Christian, heavenly minded. Pious is a less comprehensive term, consequently is applicable to a larger number. It applies to all believers in a Supreme Being whether Christian or of another belief. Pious signifies the homage of the mind and heart to a Supreme Being. Devout denotes an outward act of prayer or worship. Religious applies to those who conform to the dictates of conscience in all matters that relate to good morals and good citizenship.

559. **HUMBLE**, humiliate, degrade. To humble implies a previous eminence; literally to bring down. Degrade is used always in a bad sense morally; all vices degrade. It affects the character. Humble and humiliate apply rather to position, circumstance, and the mind or outward person, not to moral character. Humiliate is a stronger term than humble.

560. **HUMOR**, temper, mood. Temper is a permanent characteristic. Humor, a temper of the moment. Mood applies only to the temper of the mind and is a passing condition. Humor conveys an additional sense of physical cause.

561. **HURTFUL**, pernicious, noxious, noisome. Hurtful means simply full of hurt, injurious. Pernicious is positively destructive. Noxious and noisome are used only in a physical sense. Noxious is a direct bodily injury. Noisome an indirect and more subtle harm. Mosquitoes are noxious insects. Malarial fog is noisome.

562. **IDEA**, thought, imagination. An idea is a picture in the mind. We have ideas of all material things. We have thoughts upon abstract subjects. Imaginations are thoughts founded upon unrealities. Lower animals may have ideas. Insane people may have imaginations, but only rational beings can have thoughts.

563. **IDLE**, lazy, indolent. Idle is a state of being unoccupied with work. Lazy represents an aversion to labor, particularly labor requiring bodily exertion. A lazy man may work, and an idle man may want to work. Indolent indicates an inactivity of the mind due to lack of purpose or incentive. Lazy is opposed to industrious. Indolent is opposed to active.

564. **IGNORANT**, illiterate, unlearned, unlettered. Ignorant signifies not knowing. Illiterate is a form of ignorance due to an entire lack of education. A well-educated man may be ignorant of certain subjects or circumstances. Unlearned implies the lack of a higher education. Unlettered suggests an unfamiliarity with the classics of literature. Unlearned, unlettered, and ignorant may be used interchangeably in many cases.

565. **IMITATE**, copy, counterfeit. Imitate is to make a general likeness. Copy is to make an exact duplicate. Counterfeit is to copy with intent to defraud.

566. **IMITATE**, mimic, ape, mock. To imitate is a general term. To mimic is an exact imitation of manner or speech for the amusement of others. To ape is an absurdly exaggerated imitation of manner or dress, assumed for the purpose of making it appear to be one's natural expression. Mock signifies in its broader sense any form of taunting ridicule; is also used in the sense of mimic.

567. **IMMINENT**, impending, threatening. All three terms indicate approaching danger. Imminent may be sudden and only for a moment. Impending implies duration and gradual approach. Threatening is said of something impending, only when the danger is one which gives warning of its nearness.

568. **IMPERFECTION**, defect, fault, vice. An imperfection is a lack of perfection, and is rather a negative term. A defect is a positive imperfection or inability. Defective is a stronger term than imperfect. A fault is a defect for which a person may be held blameworthy. A vice is an actual stain upon the character.

569. **IMPERTINENT**, rude, saucy, impudent, insolent. Saucy, impudent, and insolent relate to the conduct of inferiors toward those above them in station or authority. Rude signifies rough, unpolished, and is often the result of ignorance or forgetfulness. Impertinent is a general term and must be always intentional. Impudent is a brazen impertinence. Insolent is the extreme of outrageous impertinence.

570. **IMPLACABLE**, unrelenting, relentless, inexorable. Implacable denotes absolutely unchangeable hatred or animosity. Relentlessness indicates the same fixity of purpose, but may be caused by adherence to principle rather than personal reasons. Inexorable may apply also to inanimate things, as death or justice. It signifies a quality of not yielding to prayers and entreaties. Unrelenting and relentless are almost identical unless, perhaps, the latter term is the stronger.

571. **IMPLANT**, ingraft, inculcate, instill, infuse. The first two words are their own definition. To implant, to set roots into the ground. To ingraft, to graft on to a plant already growing. A parent implants principles, a teacher ingrafts them. To inculcate, to teach by words, or to impress by continued repetitions of the teachings. Instill, literally drop by drop, is the gradual process of education. Permanent sentiments are instilled into the mind. Temporary excitements or feelings are infused.

572. **IMPLICATE**, involve. One is implicated who is only slightly or indirectly concerned in an affair. Involve conveys the idea of being completely entangled. Implicate, to be folded into. Involve, to be rolled up in.

573. **IMPORTANCE**, consequence, weight, moment. Things are important from the value, real or imaginary, which is placed upon them. Anything of importance because of the consequence which follows is said to be of consequence. "It is of no consequence" signifies that the result would be the same in any case. Intrinsic importance gives an action weight. Weight also implies an affair which requires deliberation. Moment bespeaks a great degree of importance.

574. **IMPUGN**, attack. Impugn relates only to doctrines and opinions. Attack includes the idea of violence, and applies also to material things. We impugn with arguments; we attack with ridicule.

575. **INACTIVE**, inert, lazy, slothful, sluggish. Inactive is the unqualified and general term. Inert signifies absolutely without motion. Lazy is the dislike of physical action. Slothful is always to move slowly. Sluggish means moving as in a stupor, heavily, drowsily.

576. **INCAPABLE**, insufficient, incompetent, inadequate. Incapable, without capacity, is a permanent and inherent characteristic of the mind. Insufficient, not enough, implies limitations that may be due to youth or inexperience. Incompetent is applicable to certain things and conditions; a thoroughly capable person in certain directions may be incompetent for other kinds of work. Inadequate, not equal to, has a relative significance, and is very nearly synonymous with insufficient.

577. **INCLINATION**, tendency, propensity, proneness. Inclination refers to our first leaning towards a thing. Tendency is an habitual inclination. Propensity is a strong tendency. Proneness indicates a still stronger tendency.

578. **INCREASE**, grow. That which becomes larger by any means whatever is said to increase. To grow is to increase by means of the life principle. Figuratively, grow is a gradual increase.

579. **INCREASE**, addition, accession, augmentation. Increase is again the unqualified term. Addition is to increase by means of putting two or more things together. Accession is an accidental mode of addition. A man makes additions to his wealth, but receives an accession to his property by inheritance. Augmentation is a more formal expression, synonymous with increase.

580. **INDEBTED**, obliged. Indebted is unlimited in its application. It designates the state of owing any-

thing. Obliged is restricted in its use to the owing of favors and courtesies.

581. **INDIFFERENCE,** insensibility, apathy. Indifference is a negative term denoting entire lack of preference for one thing more than another. Insensibility is a lack of feeling. Apathy is an incapacity for feeling. Apathy is an inherent, permanent characteristic of one's constitution. Indifference and insensibility may be acquired or temporary. One may be indifferent and not insensible, or insensible and not apathetic.

582. **INDISTINCT,** confused. Indistinct is simply not positively well marked, faint in outlines. Confused implies a mixing or blending of outlines of two or more objects or ideas. Anything that is confused is also indistinct, but not *vice versa.*

583. **INFAMY,** ignominy, opprobrium. Infamy is opposed to good fame. It implies public disgrace, and refers to the act rather than the person. Ignominy and opprobrium apply rather to the person. Opprobrium is an extreme degree of ignominy. Either ignominy or opprobrium may not be far reaching, but may extend throughout a comparatively narrow circle of acquaintances.

584. **INFORM,** instruct, teach. Inform is a widely extensive term. It applies to all facts of any character, and any one however ignorant may inform others of anything that he knows. Instruct refers to the serious, valuable knowledge of life. Instruct and teach are the acts of those superior in attainments or position. Teach relates more especially to the imparting of facts and various useful knowledge, rather than the act of training the mind and implanting principles, which is preferably the office of the instructor.

585. **INFORMATION,** intelligence, notice, advice. Information refers to the knowledge one has acquired. Intelligence is the ability to understand. Information is knowledge imparted of facts that have occurred; intelligence, knowledge imparted of recent facts and suggests the idea that they are not generally known. Notice is knowledge imparted of what is about to occur. Advice in this sense is detailed information.

586. **INJURY,** damage, hurt, harm, mischief. Injury is the making of anything otherwise than perfect. Damage is an injury which subtracts from the value of a thing, and applies only to physical things. Injury and hurt both apply to persons, but hurt may be only a pain and momentary, while injury is more serious. Hurt qualifies only bodily injury. Harm and mischief may apply to either persons or intangible things, and are almost identical in meaning. Mischief, however, seems to include the idea of a malicious agent, while harm may be caused by things inanimate.

587. **INJUSTICE,** injury, wrong. Injury, again, is the general term. Injustice is an undeserved injury; also it is not necessarily an injury. An unfair opinion of any one does him an injustice, but not an injury. A wrong includes both injustice and injury.

588. **INSIDE,** interior. Inside applies to bodies both small and large. Interior is used in speaking only of large bodies. Inside means rather the side that is inward. Interior refers to the space inclosed.

589. **INSIST,** persist. Insist signifies to maintain a position. Persist conveys the impression of pressing forward. To continue to do anything is to persist. To refuse to yield a point is to insist.

590. **INSTANT,** moment. An instant is the present moment. A moment may be of the past or future. Both terms are a point of time, hence have no duration.

591. **INTERCEDE,** interpose, mediate, interfere, intermeddle. One intercedes to a superior for an inferior. One interposes between equals. One intercedes to plead a request. One interposes to stop a quarrel. One mediates to settle a quarrel, to make peace. To interfere does not necessarily imply a good motive, though it may benefit. One intermeddles only from a bad motive.

592. **INTERCOURSE,** communication, connection, commerce. Intercourse is the more general term and relates to every form of interchange between persons, not between persons and things. Communication refers especially to exchange of thoughts or messages, verbal or written. Connection, literally, linked together, implies relationship, or some form of permanent intercourse. Commerce relates especially to trade and mercantile intercourse. Connection applies also to things.

593. **INTEREST,** concern. Interest is the more comprehensive term, literally, to have a share. It applies to all that touches or comes near to us. Concern applies more particularly to things of an undesirable nature and suggests anxiety. Interest is prompted by desire and pleasure or the affections. Concern is prompted by fear.

594. **JOURNEY,** travel, voyage. Journey, any trip or passage, long or short, from one place to another. Travel implies a journey involving exertion and fatigue; travel is also used in a less specific sense. Voyage relates to travel by sea.

595. **JUDGE,** umpire, arbiter, arbitrator. The judge makes decision according to prescribed law. He holds a more formal and permanent office. The other three decide according to their own judgment and are chosen for one particular case. The umpire decides contests, the arbiter and arbitrator matters of litigation. Arbitrator implies the meaning peacemaker. Arbiter is used also in the sense of controller or arranger, as, "He is the arbiter of my fate."

596. **JUDGMENT,** discretion, prudence. Judgment is the quality of being able to decide between right and wrong in general. Discretion requires an intuitive and fine discernment and includes the exercise of tact. It relates especially to our capacity for management in dealing with others. Prudence includes caution and applies exclusively to the control of our own conduct.

597. **JUSTICE,** equity. Equity contains a higher moral significance than justice. Equity is the application of the golden rule. Justice relates to the adjustment of legal rights, and denotes fairness and equality.

598. **KEEP,** preserve, save. Keep is used generally to characterize the retention of possession, to have about one indefinitely. To preserve is to keep intact or in a state of perfection. To save suggests also an act of rescue. We save from destruction. We preserve through all sorts of adverse circumstances.

599. **KILL,** murder, assassinate, slay, slaughter. Kill is the general term, meaning simply to take life. Murder is to kill unjustly or with violence, and applies only to human beings. Slay is to kill in battle or in a duel. Slaughter properly applies only to animals, but is used in reference to human beings when they are killed after the manner of brutes.

600. **KIND,** species, sort. Kind, originally of the same family, has a less definite meaning than species. Species is, in its most accurate sense, a scientific term of classification, according to well defined attributes. Kind is a more general term of discrimination. Sort does not imply necessarily any similarity, but merely the assemblage. It denotes arrangement rather than classification, and may be used either as kind or species.

601. **KNOWLEDGE,** science, learning, erudition. Knowledge implies the things known, however learned; learning, knowledge one has acquired through schools or study. Erudition is the highest term and denotes great reading and research. Science is learning which is classified, and is the exact knowledge of an orderly mind, concerning facts in nature. Erudition implies rather a knowledge of literature, philosophy, and history, though it may include all learning.

602. **LARGE,** wide, broad. Large is the general expression for dimension in every or any direction; that is, large includes length, breadth, height, and depth. Wide and broad are almost synonymous, wide being opposed to close, and broad to narrow, hence wide is used more properly in speaking of apertures, as a wide mouth, a wide door.

603. **LAST,** latest, final, ultimate. That which is last or ultimate is succeeded by nothing else. Latest implies that which is succeeded by only a short interval of time. Final suggests the completion of a task or plan. Last is opposed to first, latest to earliest, final to the beginning. Ultimate suggests completion. A man's last words are not necessarily his ultimate verdict.

604. **LAUGH AT,** ridicule. Laugh at is a natural expression of mirth excited by the actions or traits of another. Ridicule conveys a greater degree of contempt and shows itself in words or writings or actions. Laugh at may be involuntary. Ridicule is a positive action directed by the will.

605. **LAUGHABLE,** ludicrous, ridiculous, comical, droll. Anything that excites laughter is laughable. Ludicrous and ridiculous suggest a laughable situation of a person, ridiculous, however, being much the stronger term and relating to actions or mental attitude, while ludicrous refers more to one's outward appearance or position. Comical and droll properly designate things or the antics of animals rather than persons.

606. **LAWFUL,** legal, legitimate. Lawful pertains to law in general. Legal is a more definite term and relates to civil law. Legitimate is of broader significance and applies to unwritten law or generally accepted

rules. Thus one says legitimate art, legal documents, lawful acts.

607. **LEAD,** conduct, guide. One leads by the hand, conducts by the mind, guides by the eye. Hence conduct includes the idea of planning and managing. Lead implies helping one weaker than one's self. Guide is simply to point out the way. One could lead a child who knew the road, or guide a strong man who did not know the road.

608. **LEAN,** incline, bend. That which leans rests on one side. Lean suggests the need of a support. Incline implies simply to deviate from the perpendicular or horizontal, be it ever so slightly. Bend suggests curvature. Trees bend with the wind. A hill inclines. An old man leans on his cane.

609. **LEAVE,** quit, relinquish. One leaves that to which he may return. To quit is final. To relinquish is to quit unwillingly.

610. **LEAVE,** take leave, bid adieu, bid farewell. Leave designates simply the act of separating one's self from anything. Take leave is an expressed ceremony of parting between persons. Bid adieu and bid farewell are a solemn leave-taking, and indicate a permanent or at least a long and uncertain separation.

611. **LEAVE,** liberty, permission, license. The word leave is used in small matters. Liberty, as here used, suggests infringement on the rights of another. License is legal permission. Permission is a more general term, and may be either public or private. Leave is always private.

612. **LET,** leave, suffer. Let implies simply the passive part of not placing hindrance on the actions of another. Leave signifies rather an active removal of constraint, or a positive decision not to interfere. Suffer is the strongest term, and refers to one's attitude towards those over whose actions he has the right to exercise control.

613. **LIE,** lay. Lie is an intransitive verb, and lay a transitive verb. A creature lies down, but he lays himself down. I lie on the couch. I lay the book on the table.

614. **LIFT,** raise, erect, elevate, exalt. We lift that which we take off the ground. We raise and erect by placing in a higher position while it remains on the ground. Erect signifies raising to an upright position and contains also the idea of construction. Elevate implies raising from a lower point to a higher, and is used more often in a figurative sense. Exalt applies always in a moral sense. One's soul may be exalted.

615. **LIKENESS,** resemblance, similarity, similitude. Likeness is a general term and refers to either external or internal circumstances. Resemblance applies only to outward appearance; and similarity only to the invisible qualities. There may be a resemblance of face, but a similarity of disposition. Either is a likeness. Similitude is a more poetic term than similarity; has also a higher significance.

616. **LINGER,** tarry, loiter, lag, saunter. We linger from reluctance to go on and usually against our ideas of what we should do. We tarry deliberately. Hence linger suggests the thought of continually intending or starting to move, while tarry implies complete suspension of motion. To loiter is to move slowly and with reluctance. To lag is to go slower than others. Thus we can loiter when we are alone, but we lag only when we are in company with others. To saunter is to loiter aimlessly or without any destination in view.

617. **LIST,** roll, catalogue, register. List is the most simple, and implies merely names or words written one under the other. Roll is used only for names of persons. Thus we may have a list of names, a list of the trees in a certain locality, a list of verbs, but a roll of honor. A catalogue contains more details and specifications than a list, while a register is a complete record of the names on the list.

618. **LITTLE,** small, diminutive. Little is the most general term, and refers to both size and quantity. Small has reference only to size. One may say a little water or a little dog, but one may not substitute small in the first example. Diminutive is small contrary to the natural course. All babies are small, but not all are diminutive.

619. **LOOK,** see, behold, view, eye. See is the mechanical action of the eye. Look is a voluntary effort to see. We may see without looking and *vice versa*. A blind person may look towards an object. Behold includes the idea of an impressive mental sensation. To view is to look at in all directions, comprehensively. To eye is to look at shrewdly or earnestly.

620. **LOOK,** appear. To appear is simply to come into sight. One's look implies the impression one's appearance makes. Also one's appearance refers to one's manner and deportment and the characteristics thus indicated, while looks refers to the external face or figure. She looked beautiful. She appeared charming. And, in the first sense, he appeared suddenly and looked hideous.

621. **LOOSE,** vague, lax, dissolute, licentious. Loose is the general term, and applies to anything that lacks proper connection or adherence of its parts. Whatever is remotely scattered is vague. Vague applies only to the intellect. Dissolute and licentious refer only to the morals. Lax may designate either. Lax suggests the quality of being unbound. Dissolute is the extreme of loose; licentious is the extreme of lax. In modern use licentious applies exclusively to sexual immorality, while the other words include looseness of all moral principles.

622. **LOSS,** damage, detriment. Whatever has gone from us that we want to keep is a loss. Any object that is injured to the extent of decreasing its value is damaged. A detriment is a lack, whether by loss or damage or through never having possessed.

623. **LOW,** mean, abject. Low is below the ordinary level. Mean is at the ordinary level. Abject holds also the idea of submission, and is not an inherent quality. Low and abject may be involuntary. A man is voluntarily mean. A servant is low in station, but he is not necessarily abject. A slave is abject in his condition but not necessarily so in his nature; while a king may be abject through cowardice or fear. Abject is, literally, cast down.

624. **MAKE,** form, produce, create. Make is an unqualified term, and signifies the bringing into being of anything. To form is to give a shape to, to make according to a pattern. To produce is to bring into existence, usually by changing the qualities of its parts. Fire is produced by friction; corn is produced from the earth: a vase is formed from clay. Also a thing may be formed without the means of a conscious agent,—rocks are formed. In the literal sense only the Supreme Being can create. All the words are used figuratively.

625. **MALEDICTION,** curse, imprecation, execration, anathema. A malediction is a spoken evil wish. An imprecation is a prayer for evil. A curse is a solemn or ratified malediction, and also represents varying degrees of evil, and may be an act either of God or man. An execration is an informal expression of the most violent personal anger. An anathema is an execration pronounced by an authoritative body or person according to canon law. Only man pronounces a malediction, an imprecation, an execration, or an anathema.

626. **MALEVOLENT,** malicious, malignant. Malevolent characterizes an inherent quality of one's nature and is therefore constantly active. Malicious represents a quality that may be temporarily roused. A malicious person takes pleasure in causing pain to others, while a malevolent person works evil as a matter of course. One might say that to a malevolent person his malevolence is a necessity; but malice to a malicious person is a luxury. Malignant is properly applied to the evil itself rather than to the person.

627. **MALICE,** rancor, spite, grudge, pique. Malice takes delight and pleasure in working evil. Rancor is unremitting anger and may have been justly or unjustly provoked. Petty malice, malice in trivial things, is spite. A grudge includes the idea of revenge for some particular injury and may be of long standing. A grudge may be satisfied by a single revengeful act, and then cease to exist. A pique is short lived, and not deep seated. It is caused by any trifling affront.

628. **MARITIME,** marine, naval, nautical. Maritime signifies belonging to the sea. It can be applied to countries which have great intercourse by sea, or to commerce by sea, and is a broader term than marine, which signifies directly pertaining to the sea, and is used entirely in a technical sense. Naval refers to the government navy maintained on the sea, or it may designate commercial arrangements, but is more frequently used in the former sense. Nautical pertains to the science of sailing, or navigation, or the mechanical ship.

629. **MARK,** print, impression, stamp. Mark has a universal application, and signifies anything which in any way alters the external face of anything. Stamp is made by direct pressure, and by an artificial instrument. Print is either an artificial or natural impression, made either by design or accident. A print has always a definite form and represents an object or a sign. An impression is properly a sinking in of the mark. Impression and stamp are both used figuratively. Otherwise print and impression are almost always exactly synonymous.

630. **MARK,** trace, vestige, footstep, track. As above, mark is the term of general significance. A faint

mark or one broken in outline is a trace. Vestige applies only to those definite traces left by mankind, as the marks remaining of an earlier race of people. Footstep is the impression made by the foot of a creature. A track is any kind of mark by which we can trace the path taken by anything, but applies more strictly to the impression left by feet, or wheels, or whatever comes in contact with the ground.

631. **MARRIAGE,** wedding, nuptials. Marriage is simply the act of marrying. Wedding is the ceremony and attendant festivities of marriage. Hence one may have an elaborate wedding or a simple wedding, but the marriage is the same. Nuptials includes the idea of both marriage and wedding.

632. **MARRIAGE,** matrimony, wedlock. Marriage refers rather to the act of marrying. Matrimony is the state of being married. Thus one can say marriage is the necessary step toward matrimony. Wedlock is used instead of matrimony in modern speech when it has a legal significance.

633. **MAXIM,** precept, rule, law. A maxim is a self-evident moral truth. A rule is an inflexible guiding principle, and may have reference only to the conduct of affairs, without involving any moral phase. A precept is both a maxim and a rule. Precept applies to those principles which form character. A law is from a higher authority than rule. The government rules are laws. We may speak of the laws of God, the rules of good breeding, the precepts of Jesus. Precepts are taught. Rules are to be obeyed.

634. **MELODY,** harmony, accordance. Melody is a succession of single musical tones. Harmony is a succession of chords. Accordance is the necessary quality of harmony, but it is the technical word meaning merely agreement of sound. Harmony has a wider significance. Harmony becomes the science of musical composition in its technical sense. All three terms are used figuratively.

635. **MEMORY,** remembrance, recollection, reminiscence. Memory is simply the act of the mind in recalling images, whether voluntary or involuntary. Remembrance is the conscious exercise of memory. Recollection is remembrance in a greater degree. Animals may have remembrance, but only man has recollections. Recollection suggests the recalling to one's memory incidents and visions of the distant past. Remembrance is the more ordinary exercise. We remember our lessons. We remember to put on overshoes. We recollect our childhood's home. Reminiscence is the remembrance of things purely intellectual.

636. **MULTITUDE,** crowd, throng, swarm. Multitude applies to great numbers of anything; crowd, throng, and swarm to animate objects; crowd and throng to human beings. A multitude is always large. Crowd signifies rather pressing close together. So a few people in too small a space form a crowd. One can say, a small crowd. A crowd in motion is a throng. Swarm suggests more rapid motion, and applies literally only to insects, as a swarm of locusts. It is used figuratively in reference to other creatures.

637. **MUTILATE,** maim, mangle. To mutilate is to remove any part. Maim originally applied only to wounds in the hand, but is generally understood in the present day to mean a wound in any of the limbs, or any infirmity which deprives a man of the use of a limb or an extremity. Mangle refers to irregular wounds or gashes in any part of the body.

638. **NAME,** call. To name is to say the name. To call is the use of any sound. Also to name describes a person's name. To call describes a nickname or a characteristic. The emperor was named Nero; he was called a monster. He was named William; he was called William the Conqueror.

639. **NECESSARY,** expedient, essential, requisite. Necessary is the indefinite term. Expedient suggests the exercise of discretion. A course of action which is expedient may or may not be followed; while it is necessary to the best results, it is not inevitable that it occur. Requisite is a stronger degree of necessity. Essential implies a vital necessity. Essential, the essence, is the strongest possible degree of necessity.

640. **NECESSITIES,** necessaries. The necessary is that which is absolutely necessary, regardless of circumstance. Water is a necessary of life. Necessities are the things which are necessary through circumstances; they may be artificially created. To those who live for fashion alone luxuries become necessities.

641. **NECESSITY,** need. Necessity refers to the thing wanted; need, to the person wanting. Need may apply to a temporary lack; necessity more properly to habitual lacks. We may need greatly that which is not a necessity.

642. **NEGLECT,** omit. To neglect is a culpable act. To omit may be permissible. We omit or not at our discretion. We have no right to neglect.

643. **NEGLIGENT,** remiss, careless, thoughtless, heedless, inattentive. The first two words refer to the act, the others to the state of the mind. Negligent is a stronger term than remiss. Remissness may be due to forgetfulness. Negligence applies to those things constantly in view. One is careless in trivial matters; one is thoughtless in matters of greater moment, matters that have to do with conduct. Heedless denotes a lack of caution; thoughtless, a lack of reflection; inattentive, a lack of attention. Careless includes the idea of lack of desire: one is careless when he does not care. There are times when heedlessness and inattention are not culpable. It shows a nobility of soul to be heedless of unavoidable discomforts, or inattentive to small slights.

644. **NEIGHBORHOOD,** vicinity. Vicinity has the wider meaning; it refers to the country round about. Neighborhood applies to one's immediate vicinity; it also includes the people living near. Vicinity is used to designate only the place in general.

645. **NEW,** novel, modern, fresh, recent. New is the general term, meaning anything that is not old. Novel contains the idea of something out of the ordinary. A new baby is certainly not a novelty. Modern is used in contrast to that which is old fashioned or out of date. Fresh includes the idea of condition. New vegetables are not necessarily fresh. An old man may have a fresh color. Recent is used to designate that which has just occurred; it relates to happenings and applies properly to news.

646. **NOTED,** notorious. Noted signifies well known. Notorious is used only in a bad sense, and applies only to those who are noted for evil deeds and vices.

647. **NOTICE,** remark, observe. We may notice casually. To remark implies a return of the mind to the subject. To observe one must examine closely. We notice and remark involuntarily. When we observe, we make a special effort.

648. **OBJECT,** oppose. We object to that of which we disapprove. We express objections by words. We oppose by actively placing obstacles in the way. We express opposition by acts and positive effort to thwart.

649. **OBSERVATION,** observance. Observation is the act of examining an object with the eyes. Observance is the act of keeping with care or holding it sacred. By a close observation of affairs, one cultivates a shrewd judgment. The observance of July fourth serves to keep the patriotism of our forefathers fresh in the minds of our children.

650. **OBSERVE,** watch. To observe is to look at consciously. To watch is to observe keenly with suspicion, or at least from some particular reason for strictness. We may observe listlessly or idly. We watch alertly.

651. **OBSTINATE,** contumacious, stubborn, headstrong. Obstinacy is not necessarily a fault. It is the rather negative quality of adherence to one's own line of action, or set of opinions. Stubborn is a stronger term and implies force. Headstrong implies lack of judgment. Stubborn is perversion of will, headstrong a perversion of judgment. Contumacious signifies violent opposition to those in authority and is always a crime against lawful restraint.

652. **OCCASION,** opportunity. Occasion leaves us no choice of action. We must do as occasion requires. Opportunity tempts us to action, but we may or may not respond. The opportunity offers, or we seek it. The occasion demands of us, and comes of itself.

653. **ODD,** uneven. Odd is to be without a mate. Uneven is to be unequal. Thus odd comes to mean a person who has peculiarities like no one else. Both words are opposed to even.

654. **OFFENDER,** delinquent. Offender is one who positively offends, or goes against the law. A delinquent is one who fails by omission to do what is required, hence delinquent is sometimes used in a legal sense to denote a lawbreaker.

655. **OFFER,** bid, tender, propose. Offer is the general term, and is employed for that which is literally transferable. To offer is a voluntary and discretionary act and may be accepted or rejected. Bid implies a commercial transaction, as to offer a price for the purchase of a house. To tender is to offer in words or to present for acceptance, as a sum of money by way of payment, or to fulfill an obligation; one may also tender his services. Terms of settlement and arrangements or plans with specifications are proposed, also a certain line of action may be proposed.

656. **OFTEN,** frequently. Often signifies a repetition of action. Frequently has relation to a plurality

of objects. A man often errs. People frequently make mistakes. We frequently meet the same persons in the route which we often take.

657. **OLD,** ancient, antique, antiquated, old fashioned, obsolete. Old includes all the other terms. Anything very old is ancient. Anything long ancient is antique. Anything no longer in the fashion is old fashioned. Whatever is extremely old fashioned is antiquated. Obsolete implies gone out of use. It more often refers to customs and words.

658. **OPENING,** aperture, cavity. Opening is the general term, meaning any place that is open. There may be an opening in the woods. Aperture is a small opening into some specific inclosure. The cavity is the inclosure. The aperture is the opening leading to the cavity.

659. **OPTION,** choice. Option is the power of choosing. Choice is the act of choosing. Option implies an uncontrolled act of the mind. Choice is simply an act of the will.

660. **ORIGIN,** beginning, rise, source. Origin refers to the cause of existence; beginning to the period of existence. The origin must be before the beginning. The rise includes also the gradual progress of the early stages of existence. The origin exists but once. The source is permanent. Thus, if the source of a river is destroyed, the river ceases to exist.

661. **OUTLIVE,** survive. To outlive means simply living longer than another. Strictly speaking survive—live after—is used more to designate life continued after hardships. Few men can survive the bitter cold of the arctic regions. Only seventeen persons survived the devastating plague. But the two words are used interchangeably in many instances.

662. **OVERFLOW,** inundate, deluge. To overflow, flow over; inundate, flow into; deluge, wash away. The wash tub or the river may overflow. A cellar may be inundated by an extra heavy rain. A deluge carries all before it.

663. **OVERTURN,** overthrow, subvert, invert, reverse. To overturn is to turn over gradually or otherwise. To overthrow is to overturn with violence. Either of these two actions may place a thing on its side. To subvert is to turn that under which should be upward. To invert is to place on its head that which should be on its feet. All these terms have to do with the perpendicular. Reverse is to place that before which should be behind. Subvert is used only of things of great importance. One inverts a plate, he reverses the action of a locomotive engine.

664. **OVERWHELM,** crush. To overwhelm is to cover with a heavy body so that one sinks under it. To crush is to destroy the shape or consistency by violent pressure. An avalanche overwhelms an entire settlement and many houses and people are crushed beneath it. A wagon may crush a man by rolling over him but he is not overwhelmed.

665. **PACE,** step. Pace is the manner of moving the body in passing. Step relates to the manner of moving the feet. The pace is a walk or a run. It is fast or slow. The step is long or short, light or heavy. In measurement, the pace is a long step, the step is the length of the ordinary step made without effort.

666. **PAINT,** depict. Paint, to represent scenes or figures on paper or canvas. Paint is also used figuratively, as to paint scenes to others by means of words. Depict is used only in the figurative sense.

667. **PALE,** pallid, wan. A lack of color where color might be expected is pale. Pallid is an excess of paleness. Wan is pallid to the point of sickliness. It also suggests the state of having a wasted look.

668. **PARABLE,** allegory. Both terms denote a story told in illustration of a truth. A parable is a story presented in a simplified form to illustrate a moral truth. But everything is represented in its proper nature. In an allegory, mental and moral attributes and personal characteristics are personified; or the characters are represented by something else. "I am the vine, ye are the branches," is a spoken allegory.

669. **PART,** division, portion, share. Part is the general and indefinite term. Portion is always the result of dividing. Division is used as portion, also to designate the act of dividing. Share signifies the portion to which one is entitled. A part is not necessarily a division. A part may be complete in itself, as the parts of an engine. The parts of a book are the leaves and the binding; the divisions would be certain sections of the reading matter.

670. **PARTAKE,** participate, share. To partake is to take a part to one's self. To participate is to enter into. We partake of a meal with a friend. We participate in his happiness. To share is to take that to which we are entitled. It is also used in the opposite sense,—to share with another, *i. e.*, to give part to another.

671. **PARTICULAR,** singular, odd, eccentric, strange. That which is particular belongs to some special part or place. What is singular is single, or the only one of its kind. Anything odd has no mate. Eccentric signifies out of the center, and is used to designate singularity to the point of lack of mental balance. Strange indicates that which does not belong to this part or place, alien.

672. **PATIENCE,** endurance, resignation. Endurance relates to the act. Patience relates to the state of mind.

> There was never yet philosopher
> That could endure the toothache patiently.
> —*Shakespeare.*

If we endure without complaint and with a serene mind, we have patience. Endurance is simply strength to bear. Resignation comprehends also the idea of conformity of will. We can be patient under injustice, but, in order to be resigned, we must be in a state of mind that sees no injustice.

673. **PATIENT,** passive, submissive. To be patient is a virtue. Passive is the state of enduring weakly or indifferently. Patient implies an act of the will. Submissive is the state of yielding to superior authority or force. Submissive is opposed to contumacious.

674. **PEACE,** quiet, calm, tranquillity. Peace is a necessary quality of all the other terms. Peace denotes a state of no hostility. Quiet implies freedom from noise. Calm refers rather to the state of the mind. Tranquillity is a condition of extreme calm. Both calm and tranquillity express absence of motion as well as absence of noise.

675. **PEEL,** pare. To peel is to remove the skin. To pare is to trim or make smooth. A potato is peeled after it is boiled. It is pared before it is boiled. We pare our nails, we peel an orange.

676. **PENETRATE,** pierce, perforate, bore. To penetrate is to go into a substance. Rust penetrates iron. Fog penetrates the air. Pierce commonly suggests penetrating by means of a sharp point. Ordinarily, perforate indicates numbers of piercings. A perforated surface is full of comparatively small openings. Bore is to make a hole by means of a rotary instrument. A dagger pierces, a gimlet bores.

677. **PEOPLE,** populace, mob. People is the general term denoting simply human beings in the aggregate. Populace is a vast assemblage of people. Mob is used to designate what is low, hence a turbulent crowd of people.

678. **PEOPLE,** persons, folks. As above, people comprehends persons in the mass. Persons has an individual sense. One may say one person, five or six persons; but such people. Folks is almost synonymous with people, but is generally used in a more familiar sense; derivatively, the common people.

679. **PERCEIVE,** discern, distinguish. We perceive that which is obvious. We discern that which is more or less hidden. We distinguish in order to know one thing from another. We perceive colors, shapes, or the truth. We discern motives, characters, consequences. We distinguish shades of the same color. The owl cannot distinguish objects by daylight.

680. **PERCEPTION,** idea, conception, notion. We have a perception of that which is before us. When the object is removed we have an idea of it. We have a conception of what we have never seen. A notion is what we think the thing is, judging by its appearance.

681. **PERISH,** die, decay. To die is simply to cease to live. To perish is to have its substance dissolved or disintegrated. Thus wood may perish but it does not die. Decay expresses the process of gradual destruction or disintegration of substance. A thing may perish suddenly. Decay takes time.

682. **PERPETRATE,** commit. Perpetrate is much the stronger term. One perpetrates a crime; he commits an error or an offense.

683. **PERSUADE,** entice, prevail upon. Persuade implies causing the will to yield. That is not necessary in the use of prevail upon. One may be prevailed upon by force or authority. Persuade is to coax until one voluntarily consents. One persuades by words. One entices by words or actions. Entice is commonly used in a bad sense.

684. **PILLAR,** column. Modern use recognizes little difference of meaning in these two terms. Derivatively, a column is a pillar which is also a prop or support, but the best modern authorities recognize no such distinction.

685. **PITEOUS,** doleful, woeful, rueful. Piteous describes the expression of suffering; the child wept piteously. Doleful relates to those expressions or sounds which suggest pain or melancholy; the doleful cry of the sea birds. Woeful has a wider application, referring rather to one's circumstances; hungry, cold, and friendless, he was certainly in a woeful plight. Rueful expresses regret rather than actual pain, and applies to the expression of one's face; one looks rueful when he loses his train, or spoils his best hat.

686. **PITIABLE,** piteous, pitiful. Pitiable is deserving of pity, and is consequently always used in a good sense. Piteous implies helplessness. Pitiful implies worthlessness. One whose situation is pitiable is unfortunate. One whose circumstances are piteous is incapable. One who makes pitiful shifts to get along is small and mean.

687. **PITY,** compassion. Pity indicates an inferior object. We pity a man of weak intellect. We feel compassion for those who are unfortunate. We pity our inferiors. We compassionate our equals. Pity is allied to contempt.

688. **PITY,** mercy. We pity those who are innocent and those who are guilty. Pity may be unexpressed by action. Mercy is action prompted by a sentiment. We have mercy only for the culpable.

689. **PLACE,** station, situation, position, post. Place is the general and indefinite term, denoting any space that may be occupied. A station is a definite place, a stated place. Situation and position include the place and the thing that occupies it. Situation comprehends the site, and is used to denote the way an object stands in relation to its surroundings; the house is in a fine situation. Position indicates the way an object stands in relation to itself; as, "That man has an awkward position." A post is a place in which one has a specific duty to perform.

690. **PLACE,** dispose, order. To place is to put in a place, any place. To dispose is to place according to a rule, or some special plan. To order is to place after some carefully arranged plan. Things carefully ordered may not be disposed to the best advantage.

691. **PLACE,** spot, site. A place is indefinite. A spot is a particular place. A site is a place considered as a situation and is generally used in connection with buildings; as, a fine site for a church. A spot is comparatively small.

692. **PLAY,** game, sport. Anything done for recreation and amusement is play. Game is systematic play according to rules. Sport is any recreative employment that demands bodily exercise. Chess, croquet, and cards are games. Riding, rowing, shooting, and skating are sports. Golf is both a sport and a game.

693. **PLEASURE,** joy, delight, charm. Pleasure is the general term comprehending all the others. Anything that pleases gives pleasure. Pleasure varies in degree. Joy and delight are always extreme degrees of pleasure. Joy is produced by the exercise of the affections; delight, through either the affections or the intellect. Delight is more intense than joy and depends upon the temper of the person. We feel the charm of things which attract us toward them. Thus we take delight in her society, but we are charmed by her personality.

694. **PLENTEOUS,** plentiful, abundant, copious, ample. Plenteous and plentiful are exactly synonymous in meaning full or filled. Plenteous is used in the grave or poetic sense. Plentiful is the familiar word. Abundant, to overflow, means more than plentiful. Copious is used to designate what is collected in one point, hence is used more often to describe that which may flow, or be poured, as a fluid. Ample signifies that which is capable of expansion, what may be increased or diminished at will. We say, a plentiful harvest, plenteous mercy, copious flood.

Kindly pours its copious treasures forth.
—*Thomson.*

695. **PLUNGE,** dive. To plunge is to suddenly submerge one's self in the water. To dive is to go to or toward the bottom of the water. One may plunge without diving, or *vice versa.* Used figuratively, plunge is an act of recklessness; dive is a preconsidered action.

696. **POISE,** balance. Poise is an equilibrium maintained in relation to itself. Balance is an equilibrium maintained in relation to other things. One poises one's self. One balances one's self opposite another, or one balances other things. One loses his balance when other things change or shift their corresponding weight and he falls. He loses his poise when he falls without any external, active cause.

697. **POISON,** venom. Poison is anything which destroys the system. Venom is a virulent poison. Poison must be administered internally. Venom may be applied externally. The air we breathe may be poisonous, but it cannot be venomous.

698. **POLITE,** polished, refined. Polite indicates a behavior which is always agreeable to others. Politeness which is acquired by art is polish. A man is polite according to the rules of good society. He is polished by force of circumstances. Polite and polish apply only to the exterior. Refined extends to the mind and nature of a person.

699. **POSSESSOR,** proprietor, owner, master. Proprietor is synonymous with owner except that owner is used for trivial things. Proprietor and owner denote the legal right of control. Possessor indicates the actual having about one. Thus one may say, "I am the owner of that book, but Mr. Blank possesses it at present." Master signifies absolute control and ownership. An insane person may be the proprietor of an estate, but he is not allowed to be master of it.

700. **POSSIBLE,** practicable, practical. Anything that can be done, however difficult, is possible. That which can be practised is practicable; that is, what may be brought into habitual use. Practical is that which is practised. Practical is opposed to theoretical.

701. **POVERTY,** want, penury, indigence, need. Poverty is the general term, and means opposed to wealth. Indigence is a nearer approach to extreme destitution than poverty. Penury is the last extremity of poverty. Need and want apply to a temporary condition which may be relieved by a single act. Want is a stronger term than need. One is in want who lacks the necessaries of life. He who is in need may lack only the comforts. Need and want are used also to indicate a lack of anything by a person not necessarily in poverty.

702. **PRESSING,** urgent, importunate. One's affairs may be pressing or urgent. Pressing is the stronger term, implying compulsion. Urgent appeals to our feelings and implies persuasion. Importunate is used only of persons. Beggars may be importunate. Importunate is urgent to the point of irresistibleness.

703. **PRESUMPTIVE,** presumptuous, presuming. Presumptive is used in a good sense. The presumptive heir; that is, one who is expected to be heir. Presuming and presumptuous both indicate an unauthorized taking upon one's self of authority or position. Presumptuous is the stronger term. Also, presuming applies to one's nature. Presumptuous has reference to special acts. He is a most presuming person. His conduct was presumptuous.

704. **PRETENSE,** pretension, pretext, excuse. Pretense is a concealment of what is bad. Pretension is display of what is good. Pretext is a pretense used as an excuse to accomplish or conceal actions really culpable or criminal. A pretense may conceal only a mild fault. Pretext holds always the idea of a means to an end. Excuse may be a perfectly legitimate reason or explanation of any act which is a breach of etiquette, or a violation of generally accepted rules.

705. **PREVENT,** obviate, preclude. That which one prevents does not happen. That which one obviates is rendered unnecessary or removed. In ordinary modern use, preclude is to make impossible in the nature of things. A boy is prevented from running a foot race by any obstacle, by the prohibition of his father, by lack of racing shoes, etc. He is precluded by a broken leg.

706. **PREVIOUS,** preliminary, preparatory, introductory. Anything that happens before is previous. Preliminary is used in speaking of contracts; preliminary articles, preliminary condition. Preparatory implies making ready for what is to follow. Introductory relates to making plainer that which is to follow, hence is used in matters of discussion and literature; introductory remarks.

707. **PRIDE,** vanity, conceit. Pride applies to anything; vain, to one's appearance; conceit, to one's talents or mental attributes. Pride may be an entirely proper sentiment. One has pride in work well done, a superiority of position, family, literary or scientific attainments, or wealth. It is only an excess of pride that is culpable. One is vain of his clothes. One is proud of that which he has. He is vain or conceited of that which he only thinks he has.

708. **PRIVACY,** retirement, seclusion. Privacy is opposed to public, and indicates the state of attracting no notice. Retirement indicates a privacy positively sought, a withdrawal from the society of others. Seclusion is the extreme of retirement. Nobody has access to one who lives in seclusion.

709. **PROGRESS,** progression, advance, advancement. Progress applies to a continual going forward. Advance signifies going forward toward a definite goal

that may be reached. We make progress in learning, to which there is no end. A man intending to be president of the United States may be said to have made advance when he becomes governor of his own state. Progression and advancement imply also the act of moving forward. He made great progress last year. The progression or advancement from one point to another was necessarily slow.

710. **PROMINENT,** conspicuous. Whatever projects beyond the level or line of other things is prominent. That which is easy to be seen by many is conspicuous. The nose is the most prominent feature, but it is never conspicuous unless it is misshapen, highly colored, or in some way abnormal.

711. **PROMISCUOUS,** indiscriminate. Promiscuous signifies mixing of different things. Indiscriminate applies to the action in which one does not discriminate between different things. One is promiscuous in his company when he associates equally with everybody. He is indiscriminate when he exercises no choice between desirable and undesirable persons.

712. **PROOF,** evidence, testimony. Proof is incontrovertible. Evidence furnishes or tends to furnish proof. Proof is exact, hence is used scientifically. Testimony is evidence by means of spoken or written words. Evidence is offered by anything. Only a person can give testimony.

713. **PROROGUE, adjourn.** Prorogue is to defer indefinitely. Adjourn is to adjourn for a day or a short period of time. Prorogue relates to national assemblies. Adjourn applies to any meeting. Congress or other governing body is adjourned every day. It is prorogued when a ruler or executive terminates its session for the season.

714. **PROVE,** demonstrate, evince, manifest. Prove is the general term. We demonstrate when we prove by intellectual effort. Only persons can demonstrate. We evince to produce conviction. We manifest to make a thing known. We evince by our daily habit of action. We may manifest by a momentary act. We demonstrate and prove facts in science or nature. We evince or manifest a disposition. Things may prove, evince, and manifest.

715. **PROVIDE,** procure, furnish, supply. Provide and procure are the acts of persons only. Furnish and supply may be the acts of unconscious agents. We provide for the future. We procure when by the exercise of labor or management we get anything, whether needed or not. Furnish implies a care in selection. Supply is to furnish that which is lacking.

716. **PUBLISH,** promulgate, divulge, disclose, reveal. To publish is to make public. Promulgate is to make known to the world, or to as many as possible. Modern use gives to promulgate also the suggestion of teaching and imparting. He who promulgates doctrines does more than publish them; he also tries to gain converts. We divulge that which should be kept secret. We disclose an affair from beginning to end. To disclose is to lay bare a whole transaction. We reveal that which has been concealed. It is not culpable to reveal. We divulge secrets. We reveal mysteries.

717. **PURPOSE,** propose. We purpose trivial things. We propose important things. Purpose is to intend. Propose is to express our intention by setting it forth definitely either to others or in our own minds.

718. **QUESTION,** query. Questions may be asked out of curiosity. Queries are put to gain information. A question may be frivolous; a query is rational and serious.

719. **RARE,** scarce, singular. Derivatively, rare means thin. Scarce means cut short. Hence rare is used in speaking of atmosphere when it is lighter in weight than normal. Scarce used in that connection would mean limited in quantity. Rare is applied to luxuries. Scarce to articles of ordinary use or necessity. Jewels are rare but not scarce. Scarce always suggests a deficient supply. In times of famine bread is scarce. Scarce applies only to material things. Singular is merely peculiar or different from others of its kind. Rare always suggests high value. What is singular may be highly undesirable.

720. **READY,** apt, prompt. Ready is applied to that which is prepared for any set purpose. Apt is a kind of readiness which implies one's equipment; literally, fit. Prompt denotes that readiness which consists of quickness. Thus, one who has a ready wit is apt in conversation. One who is prompt is not late, is habitually on time, hence always ready for his appointments. We make ourselves ready for a journey. Apt and prompt refer only to persons. Ready is a general term, and applies to anything.

721. **RECKON,** count, account, number. Reckon is to reach an accurate result by summing up the factors, hence is used figuratively, "Reckoning themselves absolved by," etc. Count is the simple act of determining how many. Number implies the additional act of tabulating or labeling. Account signifies the necessary arithmetical calculations attendant upon keeping one's books. All the terms have a figurative application.

722. **REDEEM,** ransom. Redeem is the general term. Ransom applies only to persons. We ransom with money. We redeem with any equivalent of money. Ransom is used most frequently in connection with prisoners of war.

723. **REDRESS,** relief. Redress signifies literally to bring back to the former point. Relief is to help. Hence redress applies to matters of law and justice; relief, to matters of kindness and compassion. People are entitled to redress for their wrongs. They are dependent upon their own exertions or the generosity of others for relief from their sufferings.

724. **REDUCE,** lower. Reduce, to change the condition of anything by making it less in size, quality, quantity, or rank. Reduce to powder. The fever was much reduced. He was reduced from colonel to captain. To lower is to change the position of anything by making it less high. We lower a bucket into a well; we lower a wall. In their figurative sense the same idea is conveyed. Reduce is the stronger term. One is reduced to his last extremity. He is lowered in the estimation of his friends.

725. **REFUSE,** decline, reject, repel, rebuff. Refuse is the common and general term. Decline is to refuse gently and with courtesy. Reject is a more positive and decided refusal. We decline an invitation to drive. We reject a dishonorable proposal. Repel is to refuse violently. Repel indicates an active antagonism. To rebuff is to refuse with rudeness and scorn or contempt.

726. **RELATE,** recount, describe. We may relate anything. We recount that in which we have borne a part or in which we have a deep interest. We recount that which is remotely in the past. We may relate in writing; we recount only by speech. We relate and recount that which passes. We describe that which exists. We relate the story of our journey. We describe the country we passed through or the car which carried us. We recount our adventures. We describe the places where they occurred.

727. **REMAINS,** relics. That which remains unused or unconsumed is the remains. That which is left after a long lapse of time is relics. Relics always have a value derived from their original state or owner. Remains may or may not be of value. There are remains of buildings after a fire. The uneaten food still on the table is the remains of the feast. Old monasteries contain precious relics of the saints.

728. **REPEAT,** recite, rehearse, recapitulate. Repeat, to go over again, is the more common term. Recite is to repeat from memory. Rehearse is to repeat or recite in order to prepare or learn a part. Recapitulate is to repeat in an exhaustive manner, to go into the minute particulars. Recapitulate is not to repeat word for word, as recite; but rather to repeat statements or specifications.

729. **REPENTANCE,** penitence, contrition, compunction, remorse. Repentance is the general term. We repent a sin, a mistake, or an error of judgment. We feel penitence only for sins. Contrition is a continuous penitence and denotes an habitual state of mind. Compunction is momentary and occasional. Remorse is an excessive contrition and causes anguish. Compunction causes a sharp, temporary sorrow. Contrition causes sadness.

730. **REPRIEVE,** respite. Reprieve, to take off that which has been laid upon, is permanent. Respite is a temporary cessation. A condemned man who is granted a new trial gains a respite. If his sentence is commuted he has a reprieve.

731. **REST,** remainder, remnant, residue. Rest comprehends the meaning of all the other terms. Remainder applies only to things. The remainder is that which is left after part has been taken away. The remainder may be more than half. A scanty remainder is a remnant. Remnant applies specially to the small ends of cloth or tapestry goods which are left unsold. Residue is the settlings. Residue is used in chemistry. All three terms have figurative use.

732. **RESTORATION,** restitution, reparation, amends. To give back that which is taken away is common to all these terms. Restoration and restitution apply only to property. Any one can restore. Only the one who wrongfully took away can make restitution. Restitution is always a restoration of that which has

been unjustly taken. He who has stolen money can make restitution. Reparation applies to intangible things also. He who has robbed another of his good name makes reparation. Amends is used in trivial matters. One makes amends for the loss of a day's pleasure. He makes amends for some small slight or negligence.

733. **RESTORE,** return, repay. To restore is to make good. Hence restore signifies the act of bringing back to its former condition that which has been injured, or replacing by something else that which has been lost or destroyed. To return is to give back what has been taken away. We return the same thing that was taken. To repay is to return equal value in service, favors, or money.

734. **RETARD,** hinder. To retard is to make slow. To hinder applies to the person. Retard has reference to the actions. We retard the accomplishment of anything by hindering the person who is trying to accomplish. But if the person is able to overcome hindrances, we hinder without retarding.

735. **RETORT,** repartee. Retort is always a reply to a censure. It may be, and frequently is, ill natured. Repartee is commonly a witty reply to good-natured badinage or wit.

736. **RETROSPECT,** review, survey. Review is to see again that which we have seen before. We may review the past or review the present. Retrospect is to review the past. Survey is to take a comprehensive view of a thing in order to examine all sides of it. A survey is not necessarily a review. We may take a survey of what we see for the first time.

737. **REVIVE,** refresh, renovate, renew. Revive is to make alive again. Refresh is to make fresh again. Renovate and renew signify to make new again. Revive applies to things and conditions of much importance. Refresh is used in connection with trivial things and conditions. A dying or unconscious man is revived by a powerful remedy. A dusty traveler is refreshed by a bath. An old, shabby costume can be renovated. Renew signifies imparting fresh vigor, or beginning again. They renewed their clamor. A lease may be renewed.

738. **RICHES,** wealth, opulence, affluence. Riches is the general term, and is comparative,—"And his best riches, ignorance of wealth." Wealth is great riches. Wealth applies also to intangible things, as a wealth of good nature. Opulence suggests a flourishing prosperity, an exuberant wealth. Affluence denotes an increasing wealth, and always holds the idea of riches flowing in to a person.

739. **RIDICULE,** satire, irony, sarcasm. Ridicule is simply to excite laughter at the expense of any one, for any cause. Satire is more formal. One writes a satire, or makes an address which is a satire. Irony is to condemn with seeming praise, to say the opposite of what one really means. Sarcasm is personal satire. Sarcasm expresses personal resentment, and is seldom justifiable.

740. **RIGHT,** just, fit, proper. Right is determined by the unwritten laws of God. Just is what is fixed by the written laws of man. The fit and proper are defined by the established rules and customs of society. Right is absolute. There are degrees of just, fit, and proper. Right is applicable to everything. Just refers to matters of important interest. Proper relates to the minor concerns of life. Fit is a more exact term than proper. Several courses of action might be proper under certain circumstances. Only one would be the fit thing to do.

741. **RIPE,** mature. Ripe denotes merely a completion of growth. Maturity is a state of perfection in development. Ripe is a condition of a brief time only. Mature designates a state of more or less continuance. There is an opportune moment when a thing is ripe; beyond that is the stage of decay. Hence the figurative use of the word. The people were ripe for revolt. The project is ripe for execution.

742. **ROUTE,** road, course. The route is any way or road chosen for any particular occasion. Route is used to designate the entire plan of the course taken in an extended journey. Course indicates any place where one runs or walks. Figuratively, course is a plan of action. Road is the beaten track, the regular way.

743. **SAFE,** secure. To be exempt from harm is to be safe. To be exempt from all danger of harm is to be secure. Security is absolute and final. Safety may be comparative and temporary.

744. **SECRET,** hidden, latent, occult, mysterious. What is secret is known to some one. That which is hidden may be known to no one. Latent is that which is secret and ought not to be secret. Occult is that which is concealed from all but the few because of the difficulty of finding it out. Mysterious is that which is hidden from all because of the impossibility of finding it out.

745. **SEEK,** search. We seek that which is not at hand. We search for that which is hidden. Also we invariably seek the thing we want to find; we search the place where it is likely to be found.

746. **SIGN,** signal. A sign makes it possible for us to recognize an object and may be natural. A signal is always the work of a conscious agent. A signal always implies attracting the attention of those at a distance. We converse with the deaf by signs. Ships signal each other at sea.

747. **SILENT,** mute, dumb, speechless. Silent is the indefinite term. Silent means the absence of all noise. Dumb is the state of being physically incapable of speech. Speechless is to be temporarily dumb. He who is mute is in a state where he will not speak. A man is mute from fear because he dares not speak, or mute because he does not wish to speak.

748. **SIMULATION,** dissimulation. Simulation is putting on an appearance of what one is not, as a simulation of virtue. Dissimulation is a concealment of what one is. Good writers make this nice distinction.

749. **SIZE,** magnitude, greatness, bulk. Size is an indefinite general term. A thing may be of small size. Magnitude and greatness always indicate a large size. Magnitude is a scientific term. Greatness is the more usual term for things in general. Bulk is a considerable degree of size. It applies to masses of matter, hence used in any other sense implies shapelessness.

750. **SLACK,** loose. Slack refers to things which are tied, or that with which they are tied. Slack is opposed to taut. Loose is a more general term, and is opposed to tight. A knot may be loose so that the rope soon becomes slack. A garment may be loose, but not slack.

751. **SLEEP,** slumber, doze, drowse, nap. Sleep is the general and indefinite expression. To slumber is to sleep lightly. To doze is to incline to sleep, to nap fitfully. To drowse is to be half asleep. To nap is to sleep briefly. A nap, though short, may be a sound and deep sleep. An invalid may drowse all day, and yet be conscious of all that transpires.

752. **SLIP,** slide, glide. To slip is an involuntary motion. To slide is voluntary. Slip and slide indicate merely a movement forward, backward, or sidewise. Glide is a mode of progression without apparent motion. A ship glides. To glide is to walk so smoothly that the feet seem not to move at all.

753. **SLOW,** dilatory, tardy. Slow applies generally to all bodily and mental activity. Dilatory refers to the habit of mind. Tardy indicates the quality of being late. A man is tardy at his place of business in the morning. He may be dilatory about getting at his work after his arrival.

754. **SMELL,** scent, odor, perfume, fragrance. Smell and scent apply equally to that which gives and that which receives the odor. Odor, perfume, and fragrance are said only of that which gives the smell. Smell refers to all creatures. Scent is an extremely keen sense of smell and applies particularly to animals. Everything that can be perceived by the olfactory sense has a smell. Odor is an artificial smell. Perfume is an agreeable smell. Fragrance is the sweetest and strongest of perfumes. In this sense scent is synonymous with smell.

755. **SOFT,** mild, gentle, meek. Any substance which yields easily to pressure is soft. That which acts weakly upon the senses is mild. Soft is opposed to hard. Mild is opposed to sharp, or strong, or severe. Gentle is opposed to violent. Meek denotes submissiveness and lack of courage. The first three terms have both a physical and a moral application, the last only a moral application.

756. **SOLITARY,** sole, only, single. Solitary refers to material things. Sole refers to intangible things. Both signify one left by itself. A solitary tree. The sole cause of the delay. Only implies a lack. One might prefer a solitary tree in his grounds, but only one tree suggests a need for more. Single indicates simply a state of being detached. Ten single dollars would be said in contradistinction from a ten dollar bill, but the dollars are not solitary. Solitary includes the idea of desertion. Only contains no such meaning.

757. **SOME,** any. Some refers to a particular part in distinction from the rest. Any is applicable universally without distinction. Some do this, others do that. Anybody who lacks patience may acquire it.

758. SOON, early, betimes. Soon has reference to a relatively short period of time after the present moment. Early is before the time appointed. Betimes is before it is necessary. Soon may mean in a few minutes or in a few weeks.

759. SPACE, room. Space is the general term referring to any portion of the universe unoccupied by a solid body. Room is limited in its meaning; it is bounded space, an artificially formed portion of space, or a limited space.

760. SPEAK, say, tell. Speak is an intransitive verb, say a transitive verb. Also say is a somewhat more comprehensive word, generally including the idea of expressing a thought, which speak does not necessarily do. To tell refers to the communication of some definite fact.

761. SPREAD, scatter, disperse. Spread applies chiefly to indivisible bodies. Water spreads. We spread honey on bread. A bird spreads its wings. Scatter refers exclusively to divisible bodies. One scatters seeds. The wind scatters leaves. Disperse is to separate individual bodies which are collected. Disperse the crowd.

762. STRAIGHT, right, direct. Straight denotes that which has no turning or curvature: mechanically, the shortest line between two points. Direct means simply clear, plain, uninvolved. A direct road is one which, though it may turn if desirable, is yet easy to follow and turns no more than is necessary. Right is that which is as it ought to be.

763. STRICT, severe. Severe is the stronger term and includes the idea of positive harshness. Strict means absolute inflexibility in the enforcement of discipline. Strictness is not incompatible with kindness.

764. SYSTEM, method. System expresses more than method. System refers to complex concerns. Method may be applied to any task, however simple, which is to be done. System relates to the arrangement of many different affairs which must be made to work together smoothly.

765. THICK, dense. Thick and dense are almost synonymous. Dense applies rather to the consistency of bodies exclusively, while thick is used also to designate the actual measurement of the third dimension. Thus one says a thick slice of bread, or thick cream; but either thick or dense woods, thick or dense smoke.

766. THREAT, menace. Threat and menace are practically interchangeable, though threat is rather the familiar term, and menace is used more often in reference to great dangers only.

767. TURN, bend, twist, distort, wring, wrest, wrench. Turn is the general term, meaning to put a thing out of its position or direction. To bend is to turn out of its direction. To twist is to turn spirally, to convolve, to wind. Distort is to twist grotesquely out of its proper shape. Wring is to twist and compress with force. Wrench is a sudden, short, and violent twist. To wrest is to wrench away from.

768. UNDER, below, beneath. Under signifies the situation of being low, also concealed or hidden by something else which is directly on top. Below is lower than something else which is higher but not necessarily directly overhead. Beneath is a stronger term than under. Beneath suggests the state of being under the surface. Beneath the river bed. Under water, under the table. Below sea level.

769. UNHAPPY, miserable, wretched. Unhappy is merely the state of being positively not happy. Miserable is the extreme of unhappy. Wretched is the extreme of miserable. Wretched may also include outward circumstances, while unhappy and miserable refer rather to the state of mind.

770. UNLESS, except. Unless is used in relation to actions; except in relation to things or individuals. I shall not go unless he does. No one is happy unless he wills to be. All may go except those who are incapacitated. All are happy except those who will not be happy. All plums are sweet except our plums.

771. UNTRUTH, falsehood, falsity, lie. An untruth, what is not true, may be unintentional. Falsehood and lie are intentional untruths. Lie is a stronger term than falsehood. Falsity is the characteristic of what is false. One cannot speak a falsity, but he may make a statement the falsity of which is apparent.

772. UNWORTHY, worthless. Unworthy has reference to some particular thing or circumstance. A man may be unworthy of another's kindness or hospitality; or unworthy of high honors. Worthless is an abstract condition, meaning unworthy of anything, entirely without worth.

773. UTTER, speak, articulate, pronounce. Utter is the general term, meaning to make a vocal sound. Speak is to utter something intelligible. Articulate is a mechanical act. One articulates sounds. Pronounce is a method of speech through the action of the intelligence. One pronounces words. One articulates distinctly. One pronounces correctly.

774. VALUABLE, precious, costly. That which has intrinsic value is valuable. That which brings a high price is costly. That which is precious is valuable to certain persons exclusively, or only under peculiar conditions. In times of famine bread is precious, and on a desert water is precious. A souvenir which cost nothing and is not valuable may be precious to an individual.

775. VALUE, worth, rate, price. Value is relative. Worth is absolute. There may be artificial value; there can be no artificial worth. Whatever we give in exchange for a thing is a rate. Rate may be indefinite. Price is a fixed rate.

776. VALUE, prize, esteem. We value a thing according to its market price. We prize it according to its worth to us. Esteem refers to things not salable. We esteem our friends; we esteem qualities in men.

777. VIEW, prospect, landscape. A view is that which is seen. A prospect is what may be seen. A prospect, therefore, exists all the time whether looked at or not. But a view may be intercepted. A prospect is a wide, comprehensive view. A view may be of a single object, a house, or a town. A prospect is as far as one can see. Landscape, formerly landshape, is a portion of country which may form a view or prospect.

778. VIOLENT, furious, boisterous, vehement, impetuous. Violent is the general term, all the others representing some form of violence. Furious is excessively violent. Boisterous is noisy and rough; violence in action. Vehement refers rather to the emotions. Impetuous signifies sudden and extreme violence in action or speech. That which is impetuous cannot be withstood. That which is vehement is not under control.

779. WAIT, wait for, look for, expect. Wait, wait for, and look for indicate a certain preparation for a future event, also a calculation for it. Expect applies only to the latter sense. Expect is to believe an event is to occur. Wait and wait for imply a readiness for it. Look for is literally waiting and watching. Figuratively it is a momentary expectation.

780. WANT, need, lack. One wants when he is without that which is necessary for his comfort. He needs when he is without that which is necessary to his existence or purposes. Want includes the idea of desire. We may want luxuries. One may want what another has no use for. But all need essentially the same things. To lack is to be deficient, commonly to be deficient in one thing. Lack applies also to inanimate things. The door lacks a hinge.

781. WAY, manner, method, mode, course, means. Way is a general expression denoting the process by which anything is done. Manner is a way chosen for a particular occasion. Method is a way thought out by one's self. Method may be the result of experience, or be built upon a theory. Method is applied to matters requiring thought and contrivance. Mode refers to mechanical matters. One may have a good method of singing, but an awkward mode of handling his music, and an unattractive manner of carrying himself on the stage. Course is the measures collectively which we adopt in order to achieve a result. Means is the actual thing or things we do or use in order to succeed. Means might be regarded as tools.

782. WEAKEN, enfeeble, debilitate, enervate, invalidate. Anything that depletes strength is said to weaken. Enfeeble is to undermine vital power permanently. Debilitate may refer to the weakening temporarily or otherwise of force in one particular only. Enervate applies to the weakening of nervous force. Invalidate has reference merely to things. One's claim to an estate may be invalidated. One is enfeebled by the progress of a fatal illness, or old age. One's memory may become debilitated by excessive demands upon it.

783. WEARISOME, tiresome, tedious. Anything which requires expenditure of strength may become wearisome. Tiresome holds more the idea of a tax upon physical strength. Tedious refers rather to that which is mentally tiresome. Also, tedious suggests what is tiresome through inaction, or waiting and suspense.

784. WEARY, tire, jade, harass. Long continued effort and exertion weary. A slight exercise may tire. Tire is a more superficial effect. Exertion beyond one's strength jades. Jade contains the idea of weariness

approaching exhaustion. Exertion under conditions most annoying and unpleasant harasses. Harass includes mental irritation, and may refer only to excessive exasperation.

785. WEIGHT, burden, load. Anything that is heavy has weight. Load signifies a weight which is carried. Weight and load may be more or less heavy. A burden is that which is carried by animate bodies. A ship or a wagon may carry a load, but only a person or an animal can carry a burden. A burden is commonly a heavy load, though not necessarily so.

786. WEIGHT, heaviness, gravity. Weight is the quality of being heavy and is the effect of the force of gravity; it is also the quantity of heaviness. We may speak of the weight of even very light bodies; but we speak of the heaviness of only those of great weight. Gravity is the attractive force which the mass of the earth exerts upon all bodies, and is the cause of weight. In a figurative use we speak of the gravity of an offense or crime.

787. WELL-BEING, welfare, prosperity, happiness. Well-being is the state or condition of being well and may be regarded as a more or less normal condition; welfare is the state or condition of both well-doing and well-being; prosperity indicates an advance, gain, or successful progress towards the attainment of that which is desired; happiness is the state of mind which is brought about by prosperity, welfare, or well-being.

788. WHOLE, entire, complete, total, integral. What is whole has had nothing taken from it. That which is entire has not been divided. The complete is not in any way deficient. Thus, one eats a whole apple when he eats all of it, but he does not eat it entire because he eats it one piece at a time. However, the apple, if it were not grown to its full size, was not complete. Total implies the summing up of all the parts, and is used in speaking of intangible things. Integral is that which is both whole and entire.

789. WICKED, nefarious, iniquitous. Wicked, being the generic expression, may be used in a milder sense than the other two. Iniquitous is a species of wickedness which is extremely reprehensible. Nefarious is a still stronger term and denotes wickedness in the highest degree. That which is nefarious violates the most sacred trust and obligation.

790. WILL, wish. To wish is simply a desire toward an object. To will is to effect a wish by one's own active exertions.

791. WILLINGLY, voluntarily, spontaneously. What is done willingly is done without resistance of the will. What is done voluntarily is done of one's own accord without outside force or suggestion. Spontaneously refers to that species of the voluntary which requires no effort, hence is used also to describe inanimate action.

792. WISDOM, prudence. Wisdom is knowledge. Prudence is foresight in action. Prudence holds also the idea of caution.

793. WIT, humor, satire, irony, burlesque. Wit consists in a spontaneous perception of knowledge or truth. Wit expresses itself only in words. Humor, which is rather a capacity for perceiving the ludicrous, may express itself in both words and action. Satire is ill-natured wit. Irony is likewise more or less ill natured, but has the peculiar quality of expressing the opposite of what is meant. Burlesque is the lowest form of humor; it is grotesque and exaggerated representation and consists mostly of action rather than speech.

794. WONDER, surprise. What is unusual produces a feeling of wonder. That which is sudden and unexpected causes surprise.

795. WONDER, miracle, marvel, prodigy, monster. As above, the unusual is regarded as a wonder. A wonder is natural. A supernatural event is a miracle. What is excessively wonderful is a marvel. Marvels border on the fictitious. That which is a wonder because of premature development is a prodigy. Hence achievements disproportionately large to the means employed are called prodigious. A child who does anything as well as an adult could be expected to do it is a prodigy. A monster is a violation of the laws of nature.

796. WORD, term, expression. Any connected sounds which serve to communicate a thought are words. A word which has a specific meaning is a term. A word, or words, which convey a forcible meaning is an expression. A writer's purity of style depends upon his choice of words; his precision depends upon his choice of terms. His forcefulness depends upon the aptitude of his expressions. Usage determines words. Science fixes terms. Sentiment provides expressions.

797. WORK, labor, toil, drudgery, task. Anything that calls for exertion is work. Labor is hard work. Toil is the extreme of hard work. Drudgery is the most menial and unsatisfying work. Task is work imposed by others. Task comprehends also the idea of a particular piece of work.

798. WRITER, penman, scribe. Whoever writes is a writer. Whoever writes expertly is a penman. Who copies or transcribes is a scribe.

799. WRITER, author. Every one who writes is a writer, but only he who invents is an author; hence editors and compilers are writers, but not authors unless they also write original books.

800. YOUTHFUL, juvenile, puerile. Youthful is having the quality of youth. Juvenile is the state of being very young. Puerile, meaning childish, is more often used in a bad sense, as describing acts of men which mark the absence of manhood. Youthfulness in an older person is a beautiful attribute.

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SELECTED LISTS OF ANTONYMS AND HOMONYMS.

ANTONYMS.

Antonyms are words of opposite; synonyms words of like meaning. Below is given a list of some common words with their antonyms. Only the ordinary equivalents are selected, but it is to be understood that a word may have several antonyms, not all of which express the exact opposite meaning, for some show a distinction relatively intermediate.

abandon—cherish
abate—aggravate, enlarge
abhor—crave
abide—depart
abolish—renew
abound—lack
absolve—convict
absorb—exude
abuse—conserve
accident—preparation
active—inert
adapt—disturb
add—subtract
adequate—worthless
adhesive—separable
admire—despise
adorn—deface
afraid—fearless
agree—contradict
alert—sluggish
alike—different
allow—forbid
also—in spite of
amend—debase
amid—far from
amplify—reduce
anger—love
animal—spiritual
apparent—doubtful
append—detach
ask—deny
attach—separate
auxiliary—opponent
awful—humble
awkward—dexterous
barbarous—urbane
barrier—passage
beautiful—ugly
because—although, however, yet
beginning—ending
bind—loose
bitter—sweet
body—mind
brave—cowardly
bright—dark, dull
call—listen
candid—foxy, crafty
catch—release
cease—begin
change—retain
check—accelerate
chief—underling
choose—reject
clear—vague, foggy
clever—dull
comfortable—wretched
company—solitude
condemn—justify
confess—secrete
confirm—cancel
conquer—surrender
convey—retain
criterion—guess
dark—radiant
defer—hasten
delicious—nauseous
delightful—hateful
despair—confidence
difficult—easy
discover—conceal
docile—wilful
doubt—trust
eager—apathetic
end—start
endure—yield
enmity—harmony
entertain—bore
esteem—contempt
evident—obscure
excess—dearth
exercise—rest
extemporaneous—memorized
faith—doubt
fallacy—fact, logic
fanciful—literal
fancy—fact
fickle—steady
fiction—history, reality
fine—coarse, huge
fix—detach, loosen
friendly—hostile
general—rare, singular
get—abandon
graceful—awkward
happy—melancholy
healthy—ill, delicate
help—oppose
hide—uncover
high—low
holy—wicked
honest—deceitful
horizontal—sloping, vertical
hypothesis—discovery
ideal—reality, act
idle—industrious
important—worthless
impromptu—prepared
infinite—measurable
inherent—external
insanitary—hygienic
justice—favoritism
large—microscopic
likely—dubious
make—destroy
meek—arrogant
mercy—cruelty
mind—matter
mix—divide
modesty—conceit
morose—genial
neat—slovenly
necessity—choice
new—old
normal—exceptional
obsolete—novel
order—license
pain—pleasure
pardon—sentence
particle—whole
perceive—overlook
perfect—worthless
permit—deny
persuade—deter
pertness—shyness
pity—brutality
pleasant—repulsive
plentiful—scanty
polite—rude
poverty—affluence
power—weakness
praise—censure
precarious—steady
prefer—hinder
prejudice—reasoning
previous—following
pride—modesty
primeval—recent
profit—loss, waste
promote—retard
proposal—refusal
prudence—folly
queer—usual
racy—flat, stale
radical—conservative
rare—common
reach—depart, leave
real—imaginary
religion—impiety
rend—mend
renounce—claim
revelation—mystery
revenge—forgive
riddle—axiom
rise—descend
royal—servile
rustic—urbane
sample—whole
scholar—ignoramus
send—bring
sensibility—numbness
severe—lenient
skeptic—believer
skilful—bungling
speech—silence
state—refute
steep—flat
subjective—objective
subvert—conserve
supernatural—ordinary
suppose—know
synonym—antonym
system—chaos
taciturn—garrulous
temerity—hesitation
terse—prolix
transient—eternal
tire—rest
utility—futility
vacant—crammed
venal—honest
venial—mortal
wit—stupidity
work—rest
youthful—decrepit
zealous—slothful

HOMONYMS.

Homonyms are sets of words that are sounded alike, but have no other connection, either in spelling or meaning. English is rich in these combinations, but it is necessary to print only those common ones most often confused in spelling. Careless writers frequently spell by sound alone, and so confuse these homonyms.

ail, to be ill.
ale, a beverage.

air, the atmosphere.
ere, before in time.
e'er, contraction of ever.
heir, one who inherits.

aisle, open space between rows of seats.
isle, short form of island.
I'll, contraction of I will.

altar, part of a church.
alter, to change or modify.

ante, before in time, or order.
anti, against.

ascent, upward path or act of going up.
assent, to agree to; agreement.

bare, stripped, naked.
bear, to carry; a kind of animal.

beach, a shore.
beech, a species of tree.

beat, to strike or punish.
beet, a kind of vegetable.

borough, a kind of town.
burrow, hole made by an animal.
burro, a small donkey.

bread, baked flour.
bred, reared or raised.

canon, law, church rule.
cannon, a large gun.

canvas, a kind of coarse cloth.
canvass, to solicit; to seek orders.

cede, to give up or grant.
seed, that from which anything grows or springs.

cere, to wrap as in cloth.
seer, a prophetic person.
sere, dry, withered.

cite, to quote; to summon.
sight, ability to see, view; look.
site, position, place, or station.

climb, to mount; to go up.
clime, region; poetic for climate.

currant, a small seedless raisin; a species of the gooseberry.
current, moving water or air; figurative for time, etc.

faint, fatigued; a swoon.
feint, a sham or pretense.

fair, pleasant, clear; a kind of market.
fare, money paid for a ride or trip; food in general.

dying, expiring.
dyeing, coloring.

gait, manner of walking or moving.
gate, entrance to enclosure.

hail, frozen rain; to greet.
hale, in good health, robust.

hoard, to lay up miserly; a pile.
horde, moving crowd, tribe; group of animals.

hied, past of hie, to hasten.
hide, skin or covering.

leased, hired on terms or contract.
least, smallest in size or amount.

lead, a metal; verb, meaning to conduct.
led, past tense of verb lead.

loan, something temporarily granted by another, as money, articles; use always as a noun.
lone, solitary, single.

maize, corn of the American Indians.
maze, a labyrinth, thick growth of something.

OTHER WORDS OFTEN CONFUSED.

Because of their similarity, homonyms are often mistaken for each other in writing and speaking. Another considerable class of words, on account of likeness in sound or spelling, are frequently confused. Some of these fall into a class called heteronyms, which are two or more words spelled alike, but pronounced differently, and having no connection whatever in meaning. Thus heteronyms have nothing in common, beyond the accident of being spelled alike; they even come from totally different roots. While this class is not large in English, a few common members give no little trouble. A few of these to illustrate are given below.

might, power, strength.
mite, small bit; a tiny animal.

miner, a worker in mines.
minor, one under age.

ode, a certain kind of poem, usually divided into formal parts.
owed, past tense of owe; indebted to.

pair, two joined; a couple.
pare, to cut or shave off a part.
pear, a certain pome fruit and tree.

plain, flat, level country or land.
plane, uniform, flat surface, as in certain geometric figures; a kind of tree.

pore, to gaze intently upon or over; to study; minute openings in leaf, skin, etc.
pour, to discharge, or escape freely.

principal, adj., meaning chief; as adj. used as noun, it means head as of a school; or chief sum as in the term principal and interest.
principle, noun, means some fundamental rule or truth; is never used as adj.

rain, water from the clouds.
rein, to curb; a part of a harness to curb or direct a domestic animal.
reign, time of rule, or act of ruling, as of a monarch.

raise, to exalt, lift up, or grow.
rays, shafts of light.
raze, to destroy wholly, or level with the ground.

right, just, correct, honorable.
rite, ceremony or formal custom.
write, to communicate by letters or characters.
wright, a maker or workman, as wheelwright, playwright.

soar, to mount, or fly upward.
sore, tender, painful, infected.

stationary, fixed, firm, remaining in one spot.
stationery, writing paper, supplies for business offices.

straight, direct.
strait, a narrow place; restricted.

tare, a weed; allowance for weight of container.
tear, to rend, or divide into parts.

their, possessive case of they.
there, adverb, meaning in that place.

to, preposition.
too, adverb, meaning in addition to; too much.
two, one and one; a pair.

vain, proud.
vein, a bloodvessel.
vane, an indicator, as of the direction of the wind; web of a leaf.

vice, a moral fault; as prefix, one who acts for another.
vise, or vice; a grip.

waive, to concede, or give up a right or point.
wave, a ridge of water in motion, to undulate, to flourish.

SOME COMMON HETERONYMS.

bass (base), lowest notes in the musical scale; one who sings the low or bass part.
bass, a species of fish.

bow (bou), the forward part of a ship; a nod.
bow (bo), an instrument to shoot arrows; something bent or bowed, as a rainbow, a violin bow.

lead (led), the metal.
lead (leed), a verb meaning to conduct or guide.

row (ro), rank, file; to move a boat by means of oars.
row (rou), contest, loud commotion, quarrel.

sow (so), to plant seeds by casting.
sow (sou), female of the pig species.

wind (wind), air in motion.
wind (wind), to turn, twist, or coil.

CONFUSIONS OF SOUND AND MEANING.

accept, to receive or take something offered.
except, to rule out, refuse to admit to a class.

affect, verb only, to change or modify.
effect, as verb, to put into operation or carry out; as noun, the result of some specified cause.

all ready, completely prepared or furnished.
already, an adverb, meaning previously, or before the present time.

allude, to refer to casually or indefinitely.
elude, to escape or avoid by craft or stealth.

allusion, a general or casual reference.
illusion, an unreal or fancied image presented to the sight.

angel, a celestial messenger.
angle, space between non-parallel lines.

arraignment, legal term, meaning to call to answer an indictment.
arrangement, act or manner of disposing or ordering.

born, to come into this world; used as a passive verb.
borne, carried, brought.

breath, a single respiration; breeze, etc.
breathe, the act of breathing; to respire.

cavalry, a body of mounted horsemen in an army.
Calvary, place where Christ was crucified.

capital, a capital city, etc.
capitol, a legislative statehouse, as the U. S. Capitol at Washington.

cemetery, place of interment for the dead.
seminary, a seat of learning; a place of nurture or development.

choose, to select.
chose, past of same verb; selected or adopted.

coarse, not fine; large grained.
course, a certain space of ground covered; part of a meal; a study or group of studies.

complement, that which is used to complete, as predicate complement.
compliment, commendation with show of courtesy or flattery.

costume, apparel or ornamental dress.
custom, habit of action, usage; practice.

desert, a waste place.
dessert, part of a meal.

epithet, an adjective expressing appropriate quality; an expression.
epitaph, an inscription on a tomb, or one written for such.

formally, in a set or formal manner.
formerly, in some past time; previous to now.

forth, straightway; forward in time or space.
fourth, next after third; one of four parts.
fortieth, one of four times ten parts.

later, after something else happened.
latter, last of two things or events.

lead, present tense.
led, past of verb lead.
lead, a metal.

lessen, to diminish.
lesson, to teach or discipline.

lightning, electricity in the air.
lightening, becoming or growing light; relieving from a load.

loose, not tight; to release.
lose, to part with, fail to keep, mislay, or squander.

partition, that which separates or divides, or parcels out.
petition, a request; supplication.

phrase, a group of words; a pithy expression.
phase, one of the different appearances of an object.

pitcher, a container for liquids; one who throws something, like a ball, hay, quoits.
picture, a likeness or representation of a person, object, or group.

presence, act of being in a certain place.
presents, gifts.

quiet, still.
quite, entirely, wholly.
quit, to leave, or cease doing something.

respectfully, in a deferential manner.
respectively, in a reciprocal relationship.

statue, a sculptured or modeled likeness.
stature, height.
statute, law or other enactment.

their, possessive pronoun, third person plural.
there, adverb, in a certain place.
they're, short form for they are.

which, pronoun.
witch, an ugly woman supposed to have uncanny powers; crone.

whose, possessive pronoun.
who's, shortened form of who is.

your, possessive pronoun, your or yours.
you're, shortened for of you are.

DOUBLETS.

Many pairs or sets of words in English, though apparently different in form, are nevertheless from the same original root, with certain changes in spelling, or certain additions. Those listed below are quite typical of the class.

abbreviate, abridge
adamant, diamond
amiable, amicable
an, one
arc, arch
army, armada
balm, balsam
blame, blaspheme
brother, friar
caitiff, captive
camera, chamber
cavalry, chivalry
champaign, campaign
chieftain, captain
church, kirk
confound, confuse
crimson, carmine
dainty, dignity
dell, dale
disport, sport
entire, integer
etiquette, ticket
faculty, facility
fiddle, viol
flour, flower
gage, wage, wed
gig, jig
guard, ward
guise, wise
hale, whole
history, story
hospital, hostel, hotel, spital
human, humane
influence, influenza
iota, jot
jealous, zealous
locust, lobster
minster, monastery
naive, native
onion, union
outer, utter
paralysis, palsy
parson, person
piety, pity
plateau, platter
poke, pouch
posy, poesy
regal, royal
round, rotund
scabby, shabby
scandal, slander
separate, sever
shirt, skirt
soprano, sovereign
species, spice
supersede, surcease
tamper, temper
tradition, treason
unity, unit
vast, waste
verb, word
wain, wagon
wrack, wreck

COMPLEXITY OF THE ENGLISH LANGUAGE.

English has borrowed words from the four quarters of the earth and even from the small islands of the seas. Some terms go through very curious transformations, and some even reverse

their original meaning. Some words grow more stately and dignified; others degenerate in a shocking degree. By looking up the words listed below, one can see how interesting a book the dictionary really becomes.

abominable
algebra
alkali
academy
affidavit
ambition
ammonia
auctioneer
biscuit
blackguard
candy
cemetery
church
criticism
demagogue
diamond
electricity
geranium
handkerchief
hussy
incandescent
infant
ink
knave
mausoleum
mob
monk
nice
presently
school
secure
shrewd
silly
sincere
sinecure
solecism
squash
subpoena
taboo
treacle
vassal
villain

SOME OF THE COMMON PREFIXES.

a, in, on, by, toward; abed, aground.
a, not: anarchy, adamant, avocation.
a, ab, abs, from: avert, absent, abscond.
ac, af, ag, al, an, etc., to: accept, adopt, affix, allude, annex.
ana, up, back: anagram, analysis.
ante, before: antecedent, anterior, antedate.
anti, against: antidote, antagonist, anthem.
apo, away from: apostate, aphelion.
auto, self: automatic, automobile, autocrat.
be, make, cause: besmear, bemoan, belittle.
bi, bis, to halve: bisect, binomial, bipartisan.
circum, around: circumscribe, circumference, circuit.
co, com, con, etc., with: composition, collect, compute.
contra, counter: contravene, controvert, contradict.
de, down: descend, deform, debase.
de, from, apart: defame, deviate, defray.
demi, hemi, half: demitasse, demigod; hemisphere.
dia, through: diatonic, diameter; (as *de*), devil.
dis, di, dif, apart, not: disagree, diverge, difficulty.
duo, du, double: duet, duplicity, double.
ex, ef, e: effete, exodus, elope.
em, en, in, in, into: embody, enter, entrail, involve.
epi, upon, on: epitaph, epigram, ephemeral.
equi, equal: equidistant, equinox, equinimity.
eu, well: eulogy, eugenics, (as *ev*) evangelist.
ex, ec, el, out, from: except, eccentric, ellipse.
extra, beyond: external, extraordinary.
fore, previous, before: foretaste, foreordain.
gain, against: gainsay.
hetero, other: heterodox, heteronym, heterogeneous.
homo, like, similar: homonyms, homologous, hom(o)eopathy.
hyper, above: hypercritical, hyperbole, hyperbaton.
hypo, under: hyphen, hypocrisy, hypodermic.
in, il, im, etc., in, into: innate, illustrate, immure.
in, il, im, etc., not: infirm, illogical, immortal.
inter, intra, intro, within, between: internal, intramural, introduce.
male, bad, ill: malediction, maltreat, malaria.
meta, met, after, for (change): metaphor, meteor, method.
mis, wrongly: mistake, misapply, amiss.
mis, ill, badly: mischief, misnomer, misprize. (Has no connection with one just before.)
mono, alone, single: monograph, monotype, monolog.
multi, many: multigraph, multitude.
ne, neg, not: negation, neglect, neuter.
non, not: nonsense, nonchalant, (as *um*) umpire (for numpire).
ob, of, op, etc., near, against, etc.: obscure, obviate, offend, oppose.
on, upon, on: onrush, onslaught, (as *a*), afoot, asleep.
out, out, away, surpass: outlaw, outdo, outbrag.
pan, all: panacea, pantheon, pantaloon.
para, par, beside: parallel, paradigm, parody.
per, through: person (parson), perception, pardon.
peri, around: periscope, period, periphery.
poly, many: polygon, polyglot, polygamy.
post, after: postpone, postmortem, postscript.
pre, before: precede, preach, prison, prefer, provost.
pro, forward, ahead: proceed, prologue, (as *pur*) purchase, (as *por*) portray.
re, again: repeat, remind, renew, renovate.
retro, behind, backwards: retrograde, retrospect.
se, sed, apart, away from: secede, select, segregate.
sub, suf, under: submarine, suffuse, submit, suffrage.
super, over, above: supervene, superintend, superficial.
tranc, across: transit, transfix, transparent.
ultra, beyond: ultimate, ulterior.
un, uni, one: unique, unanimous, univocal.
vice, vis, instead of: viceregent, vice president, viscount.

SOME OF THE COMMON SUFFIXES.

acle, object, place: miracle, tabernacle, barnacle.
age, act, group of: foliage, courage, lineage.
an, ain, associated with: artisan, chieftain, partisan.
ance, ancy, ence, ency, etc., state of, quality of: abundance, agency, alliance.
ant, ent, one who: assistant, litigant, student.
ar, ary, relating to: solar, solitary, dictionary.
ard, art, characterized as: braggart, coward, laggard.
ate, one who: advocate, duplicate, magistrate.
ate, having qualities of: roseate, laminate, friate.
ate, to do something: placate, tabulate, stabulate.
ble, that which may be as root indicates: flexible, legible, movable, soluble.
eous, ious, etc.: gracious, herbaceous, ingenious, rapacious.
craft, skill or trade: woodcraft.
cule, cle, diminutive: animalcule, particle, reticule.
cy, condition, state: curacy, captaincy, regency.
dom, judgment, office: freedom, kingdom, wisdom.
ed, adj. suffix denoting quality or trait: cultivated, gifted, clear-headed.
ee, er, ier, or, yer, one who: engineer, financier, doer, actor, sawyer.
en, n, made of: golden, oaken, wooden.
en, diminutive: kitten, mitten, maiden.
en, to cause: lighten, soften, whiten.
er, more: larger, older, richer, whiter.
esce, to become: acquiesce, effervesce.
ese, native of, belonging to: Chinese, Japanese.
ess, feminine ending: abbess, lioness, tigress.
et, ette, diminutive: casket, epaulette, rosette.
fast, firm, placed: bedfast, stedfast.
ferous, producing: auriferous, pestiferous.
fice, something fashioned or done: artifice, office, orifice.
ful, full of, producing: artful, graceful, hateful.
fy, to cause: fortify, glorify, ratify.
hood, head, state, condition of: manhood, statehood, godhead.
ic, ical, one who: critic, heretic, heroical.
ic, ics, art of, science of: arithmetic, mathematics, physics.
ice, state, quality of: malice, service.
ician, one who: electrician, musician, politician.
id, made, or having traits of: frigid, vapid, viscid.
ing, act of: going: thinking, running.
ise, ize, make, become: advertise, plagiarize, criticize.
ish, to make or become: astonish, cherish.
ish, adj., somewhat: mannish, whitish.
itis, affliction of: appendicitis, tonsillitis, colitis.
ity, ty, ety, quality, state, ability: acidity, cruelty, timidity.
ium, um, ending of names of metals: aluminum, radium, sodium.
ive, quality, character of: attractive, preventive, sedative.
ix, feminine: executrix, testatrix.
kin, diminutive: lambkin, napkin.
less, without, free from: fearless, hopeless, shameless.
let, diminutive: hamlet, rivulet.
logy, science or study of: biology, geology, sociology.
ly, like, resembling, like: childlike, manlike, manly. (Also adverbial ending.)
ment, quality of: judgment, punishment.
ness, quality of: firmness, gladness, richness.
ock, diminutive: burdock, hillock.
ple, ply, many times, folded: multiple, four-ply, triple.
ry, ery, collection of, art of, etc.: cavalry, cannonry, artistry, basketry.
sion, tion, act of, state of being: action, affliction, partition, tension.
some, like, acting like: frolicsome, lightsome, lonesome.
st, agent: harpist, zoologist.
ster, agent: spinster, huckster, webster, (weaver).
ulent, abounding in: corpulent, virulent, opulent.
ulous, given to: credulous, bibulous.
ward, in direction of: backward, forward, outward.
y, having quality of: crafty, hilly, jolly, windy.

BRIEF LIST OF LATIN WORDS

Four or five hundred Latin words enter into thousands of compounds in English. Below are many that have given us a large number of words in common use. Since the roots of the Latin originals are often disguised even in the Latin itself, it seems best to give the whole word in each case, rather than the primary roots. Long vowels are not marked in the Latin words, except wherein absolutely needed. In the main the list here used follows the work of Professor W. W. Skeat in his *Etymological Dictionary*.

ac, sharp: acerbity, acrid, acumen, acute, ague, eager.
aequ-us, equal: adequate, equal, equanimity, equation, equinox, equity, equivalent, iniquity.
ag-ere, to drive: act, agent, agile, agriculture, coagulate, cogent, essay, exact, exigent, pilgrim.
al-ius, other: alias, alien, alibi, alter, alteration.
ang-ere, to choke: angina, anguish, anxious, anger.
anim-a, breath: animal, animate, equanimity, unanimous.
ann-us, year: annual, biennial, superannuate.
aqu-a, water: aquatic, aquarius, aqueduct, sewer.
arm-a, arms: alarm, armada, armament, armadillo.
art-em, accusative case, skill: art, artificial, inert.
audi-re, to hear: audible, audience, audit, obedient.
aur-um, gold: aureate, dory, oriel, oriole, orpine.
bass-us, low: abase, basement, bass, debase.
bat-ere, to beat: abate, battalion, battery, battle.
bib-ere, to drink: beverage, bib, imbibe, imbrue.
breu-is, short: abbreviate, breve, brevet, brief. (Latin *u* also includes English *v*.)
caball-us, a horse: cavalier, cavalry, chivalry.
cad-ere, to fall: accident, cadence, cascade, case.
caed-ere, to cut: concise, decide, precise, suicide.
cal-are, to summon: calends, council, calendar.
camer-a, a chamber: camera, chamber, comrade.
camp-us, a plain: campus, camp, campaign, champagne.
cand-ere, to shine: candid, candle, chandler, incandescent, incendiary, incense.
cant-are, to sing: accent, canorous, cant, canticle, canto, chant, incantation, recant.
cap-ere, to seize, lay hold of, contain: accept, anticipate, cable, capsule, casement, cash, catch, conceit, conceive, encase, except, occupy, precept, receptacle, recipe, sash.
cap-ut, the head: achieve, cabbage, cadet, capital, captain, cattle, chapter, chattel, chief, precipice.
ced-ere, to come, yield: accede, ancestor, antecedent, cease, cede, cessation, decease, precede, recess, succeed.
cent-um, hundred: cent, centenary, centuple, quintal.
cing-ere, to gird: cincture, precinct, shingles, succinct.
circ-us, a ring, circle: circus, search, research.
clam-are, to call out: acclaim, claim, declaim, proclaim.
clar-us, clear: claret, clarify, clarion, glair.
cohort-em (acc.), an enclosure: cohort, cortege, court, courteous, courtesy, curtesy.
coqu-ere, to cook: biscuit, cook, kitchen, precocious.
cord, (cor), heart: accord, cordial, courage, record.
coron-a, crown: corolla, coronal, coroner, crown.
corp-us, body: corps, corpse, corpulent, incorporate.
cred-ere, to believe: credible, credit, credulous, creed.
cresc-ere, to grow: accretion, accrue, concrete, crescent, crew, decrease, excrescence, increment, recruit.
cruc-em, a cross: crucial, cruise, crusade, excruciate.
cur-a, care: accurate, curate, curious, proctor, scour, secure, sinecure, sure.
curr-ere, (curs), to run: coarse, concur, corridor, corsair, courier, course, current, cursive, succour.
damn-um, loss: condemn, damage, damn, indemnify.
da-re, to give: condone, dado, donation, dower, pardon.
dent-em (acc.), tooth: dandelion, dental, dentifrice, dentist, indenture.
deus, god: adieu, deify, deist.
dic-ere, to say (and *dic-are,* to tell): abdicate, addict, condition, dedicate, dictate, diction, dight, ditto, ditty, edict, index, indict, preach, predicament, benediction.
die-s, day: dial, diary, dismal, sojourn.
domin-us, a lord: dame, damsel, danger, demesne, domain.
duc-ere, to lead: adduce, deduct, doge, douche, ducal, duchess, duchy, ductile, duke, produce, redoubt.
duo, two: deuce, double, doublet, doubt, dozen, dubious, duet, duodenum, duplicate, indubitable.
em-ere, to take: assume, ensample, exemplar, impromptu, premium, prompt, ransom, sumptuous.
es-se, to exist, be: absent, entity, essence, present, quintessence.
fac-ere, to do: affair, affect, counterfeit, deficient, difficulty, efficient, fictitious, faculty, fashion, fetish, feat, feature, fiat, forfeit, infect, profit.
fa-ri, to speak: affable, confabulate, defame, fable, fairy, ineffable, infamy, infant, preface, profess.
fer-re, to bear: circumference, confer, differ, fertile.
fid-em, (acc.), faith: affiance, affidavit, confide, defy, diffident, faith, fealty, infidel, perfidious.
fil-um, a thread: enfilade, filiment, file, fillet.
fin-is, end: affinity, final, finance, fine, finical.
flor-em, (acc.), flower: fleur-de-lis, floral, flour, flourish, flower, inflorescence.
flu-ere, to flow: affluence, defluction, floss, fluctuate, flux, influence, influenza.
fort-em (acc.), comfort, deforce, force, fortress.
frang-ere (frag), to break: fraction, frail, refrain.
front-em (acc.), forehead: affront, effrontery, frontier.
fund-ere, to pour: confound, diffuse, fuse, refund, refuse.
gen-us, kin: congenial, engine, gender, generic, gentle, gentry, genuine, genteel, gentile, genus, gin.
grat-us, pleasing: agree, grace, gratify, gratuity, ingrate.
hab-ere, to have: able, binacle, debenture, debt, devoir, due, endeavor, habit, habitat, prebend.
i-re, to go: arrant, circuit, commence, count, exit, initial, issue, itinerent, obit, sedition, transit.
iung-ere (iug), join: adjoin, jugular, junction, junta.
iur-are (ius), to swear: abjure, juridical, just, jury.
labor-em (acc.), labor: elaborate, laboratory, labor.
leg-are, to appoint: allege, colleague, college, legacy.
linqu-ere, to leave: relict, relinquish, ellipse.
litera, letter: alliteration, literature, obliterate.
long-us, elongate: longitude, lunge, oblong, purloin.
loqu-i, to speak: colloquy, elocution, obloquy.
luc-ere, to shine: lucent, illustrate, lunatic, translucent, sublunar.
mag-n-us, great: magnate, magnify, magnitude, main, major, master, maxim, mayor, mister.
mal-us, bad: malady, malaria, malice, malison, maltreat.
man-ere, to remain: manor, manse, mansion, menial.
man-us, maintain: manage, manner, manual, manuscript.
medi-us, middle: immediate, medieval, mediocre, mizen.
memor, recall: memoir, memory, remember.
ment-em (acc.) mind (*mon-ere,* to advise): comment, memento, mental, admonish, monetary, muster, summons.
migru-ere, to wander: emigrate, transmigrate, immigrate.
minu-ere, to diminish: administer, diminish, minim, minor.
mitt-ere, (miss), to send: admit, commit, compromise, demise, emit, missal, missive, omit, promise, surmise.
mod-us, manner: commodious, mode, modest, modern, modify, mood, mould.
mont-em, (acc.), hill: mount, amount, paramount, tantamount.
mou-ere, (mot), to move: emotion, mob, moment, motor, mutiny, promote, remove.
nasci, to be born (natus, gnatus), born: cognate, innate, naive, nascent, nation, nature, supernatural.
nomen, a name: ignominy, nominal, noun, renown.
noscere (gnoscere), to come to know: cognition, ignoble, incognito, noble, notice, notion, notorious.
numer-us, a number: number, numeration, numerous.
ocul-us, eye: inoculate, ocular, binocular.
opt-are, to wish: adopt, optative, option.
ord-o, order: extraordinary, ordain, ordinary, ordnance.
pac-ere, pas-isti (pact), to agree, ***pang-ere,*** to fasten: appease, compact, impact, impinge, pacify, page, pale.
par-are, to prepare: apparatus, emperor, imperative, parade, rampart, separate.
part-em, (acc.), apart: parcel, parse, partake, particle.
pasc-ere (pa, past), to feed: pabulum, pastel, patristic.
pater (patr-i), father: expatriate, paternal, patron, pattern, repair.
ped-em (acc.), foot: biped, impede, pawn, pedal, pedestal, pediment, pioneer.
pend-ere (pens), to weigh: append, compensate, expend, pensy, pendant, pendulum, pension, pentroof, poise, ponder, prepense, propensity, spencer, suspend.
plan-us, flat: explain, plain, plan, plane, planisphere.
ple-nus, full, (complere): accomplish, complement, complete, depletion, expletive, plenary, replete.
plic-are, to fold, ***plect-ere,*** to plait: apply, complex, deploy, explicit, imply, pliant, suppliant.
pon-ere, to place: apposite, composite, compost, compound, deposit, depot, exposition, opponent, ponent, positive, postpone, preposition, propound, provost, purpose.
port-ere, to carry: import, port, portfolio, portly.
prehend-ere, to seize: apprise, comprise, impregnable, prehensile, prentice.
prim-us, first: premier, prim, prime, primeval, primitive, primrose, prince, principle.
pung-ere (punct), to prick: appoint, expunge, point, punctuate, pungent.
pur-us, pure: pure, purify, puritan, spurge.
quaer-ere, (quaest), to seek: acquire, conquest, enquire, query, question.
quiet-em, (acc.), acquit, coy, quiet, quite, requiem.

reg-ere, to rule: alert, direct, erect, escort, rectangle, regal, regimen, regnant, reign, rule.
rot-a, a wheel: control, roll, rondeau, round, rowel.
sal-ire, to leap, spring: assail, assault, desultory, exult, salient, sally, salver.
scand-ere, to climb: ascend, escalade, scan, transcend.
scrib-ere, to write: ascribe, conscript, descry, rescript, scribble, script, scrivener, transcribe.
sed-ere, to sit: assess, hostage, possess, residue, sedentary, sediment, session, sizar, subsidy, surcease.
sent-ire, (sens), to feel: assent, dissent, resent, scent, sense, sentence, sentiment.
sequ-i, to follow: associate, consecutive, ensue, intrinsic, persecute, pursue, sect, sequel, society.
seru-us, a slave: conserve, dessert, observe, reservoir, serf, sergeant, servile, subserve.
sign-um, a sign: ancient, assign, design, ensign, signet.
simil-is, similar, *simul,* together: assemble, resemble, similar, simile, similitude, simulate.
spec-ere, to look: aspect, despise, espy, special, species, specimen, spectacle, spectre, spice, spy.
sta-re, to stand: arrest, assist, cost, desist, estate, obstacle, persist, restive, stage, stamina, statist, stature, subsist, superstition.
string-ere (strict), to draw tight: astringent, constrain, distress, distract, strain, strait, stringent.
tang-ere, (tag, tact), to touch: attain, attaint, contact, contiguous, entire, integer, tact, tangent.
tend-ere, to extend: attend, extend, intent, ostentation.
ten-ere, to hold: abstain, attempt, content, continuous, detain, pertain, tenet, tentacle.
ting-ere, to dye: distain, stain, taint, tincture, tinge.
toll-ere, to lift: ablative, collation, delay, dilate, extol, oblate, relate, translate.
trah-ere, (tract), to draw: abstract, entreat, extract, portrait, portray, subtract, trace, trail.
trud-ere, to trust: abstruse, detrude, obtrude.
und-a, a wave: abound, inundation, surround.
un-us, one: annul, null, onion, unicorn, uniform, union, unique, unity.
ual-ere, to be strong: avail, convalesce, prevail, valentine, valiant, value.
ueh-ere (uect), to carry: convex, inveigh, vehement, vex.
uen-ire, (uent), to come: advent, avenue, convene, convent, covenant, event, revenue, souvenir.
uert-ere, to turn: adverse, avert, divers, divorce, invert, prose, traverse, verse, version, vertebra.
uer-us, true: aver, veracious, verify, verisimilitude.
uest-is, clothing: invest, travesty, vestment, vestry.
uia, way: convey, deviate, envoy, invoice, obvious, viaduct, voyage.
uid-ere, (uis), to see: advice, envy, evident, invidious, proviso, prudent, purvey, review, supervise, survey, videlicet, view, visage, vista, visual.
uiu-ere, (uict), to live: revive, viands, vital, vivacity, vivify, vivisection.
uol-o, I wish; *uel-le,* to wish: volition, voluntary.
uolu-ere, (uolut), to roll: convolve, evolve, revolt, revolve, vault, volume, volute.
uox, to call: voice, *uoc-ere,* to call: advocate, advowson, avouch, avoke, vocable, vocation, voice, vouch, vowel.

SOME GREEK WORDS.

Greek has contributed far less than Latin, but the list of words is rather notable. A few of the principal ones follow, with their English equivalents and derivatives. English letters are used in the spelling of these terms.

ag-ein, to drive: agony, antagonist, axiom, epact.
ak, a point; *akros,* pointed: acacia, acme, aconite, acrobat, acropolis.
all-os, other: allopathy, parallax, parallel.
arch-e, beginning: anarchy, archaic, architect, archives, monarch, patriarch.
ball-ein, to throw: diabolic, emblem, hyperbole, palaver, parable, parley, parlor, problem, symbol.
bio-s, life: biography, biology, amphibious.
bomb-os, a humming: bomb, bound, bumper.
burs-e, a hide: bursar, purse, reimburse.
gam-os, marriage: bigamy, polygamy, cryptogamia.
gen, race: endogen, genealogy, genesis.
ge, earth: geography, geometry, perigee.
gloss-a, tongue: epiglottis, glossary, gloze.
gno-nai, to know: diagnosis, gnome, gnostic.
graph-ein, to write: autograph, digraph, paragraph, biography, graphic, graft, anagram, diagram, grammar.
edra, seat: cathedral, chair, chaise.
erg-on, work: erg, energy, organ, exergue.
the-ma, a theme: anathema, antithesis, epithet, synthesis, thesis, thesaurus, treasure.
iste-mi, I stand: apostasy, ecstasy, statics.
kai-ein, to burn: caustic, cauterize, encaustic, ink.
keimai, I lie down: cemetery, coma.
kli-nein, to lean: climax, climate, clime, clinical.
kri-nein, to judge: crisis, criterion, hypocrisy.
krupt-ein, to hide: cryptic, apocrypha, grot, grotesque.
lamban-ein, to seize: catalepsy, syllable, dilemma.
log-os, saying: analogy, apologue, apology, catalogue, dialect, eclectic, eclogue, eulogy, lexicon, logic.
metr-on, measure: diameter, metre, symmetry.
mon-os, single: minster, monad, monarch, monastery, monk, monopoly, mono- in compounds.
nem-ein, to assign: nemesis, nomad, numismatic, economy.
od-os, a way: episode, method, period, synod.
onoma, name: anonymous, homonymous, metonomy, pseudonym, synonym.
optik-os, visual: dioptic, optic, ophthalmia, synopsis.
path-os, suffering: antipathy, apathy, pathos.
paus-is, a pause: compose, expose, impose, oppose, pose, propose, purpose, suppose, transpose.
poin-e, a penalty: impunity, pain, penal, penance, penitent, pine, repine, subpœna.
skepto-mai, I consider: skeptic, bishop, scope.
steil-ein, to send: apostle, epistle, stole.
tom-os, section: anatomy, atom, epitome, tome.
ton-os, tone: attune, diatonic, intone, oxytone, tonic.
trop-os, a turn: trope, trophy, tropic.
(h)yd-or, water: dropsy, hydra, hydrangia, hydraulic.
od-e, a song: epode, monody, ode, parody, prosody.
phain-ein, to show: epiphany, fancy, fantasy.
phon-e, sound: anthem, euphony, phonetic, symphony, telephone.
chron-os, time: anacronism, chronicle, synchronism.

WORDS ADOPTED FROM OTHER LANGUAGES.

Where do all the words in the English language come from? Most have been adopted from older tongues, including the parent English or Anglo-Saxon, as it has been called. Latin has furnished a great number of words, the native about as many, and a third group comes from many different sources. To show the great number of languages that have furnished us with words, a few of the more prominent are taken here to illustrate.

From the Scandinavian, directly or through some other language, come the words geyser, dahlia, slag, gauntlet, sloyd, floe, jib, barb, bet, bondage, brandish, cromlech, flummery, maggot, gallop, gawky, strive, waif, pocket, wicket, and knout.

From the Welsh, Gaelic, and allied dialects: braggart, crowd, flannel, clan, claymore, coronach, inch, loch, reel, slogan, whisky, colleen, skain, Tory, shillelagh, bound, vassal, charge, carpenter, dolman, garter, chariot, and barge.

From the Spanish and Portuguese and through them originally from the Latin: alligator, armada, cork, corral, desperado, matador, olio, negro, renegade, duenna, grandee, sierra, sombrero, sherry, salver, tornado, vanilla, casque, comrade, creole, grenade, molasses, pimento, punt, quadrille, tank, and parasol.

From the Dutch: aloof, avast, boom, bruin, clamp, dapper, deal, drawl, gas, deck, jerkin, knickerbocker, skipper, sled, slim, sloven, sniffle, trigger, uproar, wagon, yacht, and spook.

From the Russian, Polish, Bohemian, and allied tongues: cravat, sable, trump, trombone, polka, howitzer, slave, vampire, ukase, samovar, and steppe.

From the Hebrew: alleluia, bedlam, cherub, homer, gopher, jug, log, shibboleth, satan, teraphim, alphabet, delta, sabbath, damson, abbey, jockey, lazar, cabal, camel, cider, elephant, ebony, leviathan, mammon, and jesuit.

From various Asiatic languages: bandanna, bangle, thug, shampoo, calico, tomtom, bamboo, teak, collie, peacock, caddy, gong, junk, muck, tea, bantam, mammoth, turkey, boomerang, taboo, tattoo, atoll, mogul, and camphor.

From some of the African languages: behemoth, sack, satchel, oasis, ammonia, gypsy, lion, fustian, morocco, canary, and guinea.

From North American Indian: hickory, hominy, moose, moccasin, racoon, squash, toboggan, tomahawk, wigwam, and skunk.

From other North American languages and dialects: coyote, jalap, copal, tomato, mahogany, potato, hammock, buccaneer, hurricane, tapioca, quinine, and tobacco.

WORDS OFTEN WRONGLY SPELLED.

Regardless of your own position in life, the habit of correct spelling is most essential. Modern improvements in communication and transportation have welded firmly together our entire social fabric, so that business can no longer be transacted without good methods of writing. Spelling is prerequisite to a common understanding and to achievement in any field of business or social life. Good spelling, then, becomes increasingly important.

Correct spelling, however, is more a matter of habit than the average person realizes. Many learn to spell with little apparent effort; others seem continually to misspell the same words, making no apparent advance from time to time. Every parent should realize how essential it is to train children in correct habits of spelling in the first grades of school. Little folks must be constantly encouraged to observe words carefully, to read print clearly, and to spell consistently.

Spelling in the common schools is no longer taught in a haphazard fashion. If the object of a spelling book were to provide all the words in English for classroom study, a whole lifetime itself would be consumed in doing little else but studying orthography. Since only a small portion of the common words,—to say nothing of the intricate and unusual ones,—may be given room in any spelling book, a careful selection may be made for practical purposes. It is hardly necessary to teach *parallelogram, cochineal, hydroptic,* and such uncommon terms in the schools. On the other hand, teachers must make sure that they include all the every-day words that one needs in business, in social correspondence, and in other writing common to all persons. First, then, principles and a few simple rules may be taught. Second, a list of words commonly misspelled may be prepared for any book or any classroom. Third, each person should keep his own list of words that have given him trouble.

If one could learn only two new words each day, in three or four years, he would have the foundation vocabulary of business or social life. Indeed the mastery of a list of a thousand or more words, like that given in this book, would decrease the average person's misspellings by not less than fifty per cent. What is more important—it would get one into the habit of observing and remembering how common words are correctly spelled. Half the familiar words that many persons always misspell are found daily in our conversations and in almost every chapter of all our books.

Parents may greatly assist the schools in fostering care, observation, attention, and good memory in spelling. A good ear to distinguish between sounds, a good eye to see the correctly written or printed word, and careful habit in pronouncing and writing are the main essentials to success in spelling. Of many possible suggestions to improve our spelling, the few given below have been chosen as practical and stimulating.

1. **The first step is to develop a spelling consciousness.** Children must soon learn to make good writing and spelling a matter of habit, almost a matter of conscience. Carelessness, hurry, poor observation always stand in the way. The more the pupil guesses, the more confused he becomes; the more he relies on mere memory of certain words, without mastering classes and types, the more he will retard his own progress. Much poor spelling is the result of impulsiveness. It has often been remarked by educators that poor spellers are likely to be imperfect observers. Some have indeed placed careful scrutiny of words above everything else as an aid to learning. Either good or bad spelling may be said to be a habit of mind. One results from training, persistence, and habits of seeing things rightly; the other, from a blundering, uncertain, inconsistent, and erratic haste.

2. Spelling involves the chief senses. We hear, see, speak, and write words. Thus we use the ear, the eye, the tongue, and the arm and hand eventually. The process is incomplete until all the elements are mastered. For instance, to pronounce and to write correctly are compensating elements, as are those of hearing and seeing. Many words are often misspelled because they are mispronounced. Many are missed because they are not observed closely, or because they are written in a slipshod manner. Unless a person always habitually spells a word as it should be written, he has no good right to claim that he can spell it. Some, on the contrary, spell a word all right when it is pronounced in a spelling lesson, and they habitually get it wrong when they transcribe it to a sheet of letter paper. This certainly is not good spelling; for the test is practical, every-day use.

3. The natural order of learning to spell is recognized now in most schools. First, the word is pronounced by the teacher, and then defined, and used in a sentence. Second, it is written on the board, so that all pupils may observe it accurately, while any uncertain or peculiar parts are pointed out. Hard letters or those often confused may be printed in large hand or in colored crayon. Third, the class pronounces it carefully, and then individuals in the class. A word like *perhaps* or *irrelevant,* in which some of the letters may be transposed, should be sounded by several members of the class. Fourth, the class may now write the word or spell it orally. Fifth, eternal vigilance and many reviews fix the word forever. By the end of the second grade in school, a pupil should know the values of sounds and how to recognize them.

4. **Pronunciation** must be careful and distinct, but no letter or syllable should be over-emphasized or distorted. In a spelling test, the words should be pronounced as they should ordinarily be sounded. First, one must recognize all the letters of the word; second, he must remember them in their right order, without transpositions or shifts; third, he must always recall any peculiarities, like exceptions to rules, silent letters, and the like; fourth, he must be sure that the accent is correctly placed. Teachers and parents should point out the pit-falls in words before they have their charges study the spelling lesson. Otherwise, habits of carelessness may persist, and the student fails to notice the important parts or letters. Always be on guard against confusions like *to* and *too, lose* and *loose, lead* and *led.* When such words are confused, be sure to stress the use and meaning of the word in connection with the way it should be written.

5. Good spellers recognize that a word is right by the way it looks. If it looks too short, it may be wrong. If it looks too long, some letters may have crept in without belonging there. Thus, any observing person should recognize that *candidate,* without the first *d,* does not "look right." Vizualizing helps to fix words in memory. Look at the word you often misspell, notice every single letter, notice just how they are arranged, and how they look when written or printed. In other words, photograph the word on the sensitive plate of your brain. Now erase the word, or shut your eyes. Can you see it precisely as printed or written? Can you see groups of words thus clearly? Many students have found the method of fixation of vision truly wonderful. All poor spellers should try it again and again for greater and greater results.

6. Always point out to pupils just where they make their characteristic mistakes. One person sees the words wrongly; another does not hear them as they are pronounced; a third, even though seeing and hearing rightly, may not speak the words as others do; and a fourth may make blunders like leaving out letters, writing, i. e. *ind* for *ing.* Whatever method is used in teaching spelling, the incorrect forms should not be written on the board by the teacher. If one feels he must write an incorrect spelling, for purpose of illustration, the correct one should be placed more prominently beside it, and should be left there long after the wrong form is erased.

7. Few definite rules for spelling are needed. Some have already been given in this book on pages 22 and 23. Pupils should constantly be asked to explain the spelling of words. For instance, why is there no *e* in

writing; why is it *disappoint,* with only one *s;* why is it *perspire,* with the first *e* before the *r;* why is there no extra *e* after the *h* in *athletics?* In the grammar school and afterward, the component parts of words, prefixes, suffixes, stems, and other elements of words should be stressed.

8. Danger signals need to be erected over certain classes of words. First, transpositions of letters may thus be marked, in words like *tragedy,* in which poor spellers often exchange the *d* and the *g;* or the *i* and the *s* in *business,* getting the order mixed. Second, from certain words like *sophomore, hygiene, Niagara, arctic,* and a score of other common ones, it should be noted, a letter often drops. Third, into many words a letter intrudes. Fourth, special signals should be set against common confusions of words like *accept* and *except; lose* and *loose; their* and *there; to* and *too.*

Several excellent treatises have been written on the subject of learning to spell. Some of these, unfortunately, are not often available to the general reader. A few are mentioned here: Pryor and Pittman's *Guide to the Teaching of Spelling;* F. N. Freeman's *The Psychology of Spelling;* the investigations of Prof. W. F. Jones, who compiled a list of "one hundred demons" and other works on spelling; Leonard P. Ayres, whose *Spelling Scale* of a thousand common words is published by the Russell Sage Foundation of New York, with B. R. Buckingham's additions, as published by the University of Illinois; and other discussions by E. J. Ashbaugh, S. A. Courtis, Daniel Starch, Henry Suzzalo, W. F. Tidyman, and J. E. W. Wallin.

During the last two decades various investigations have proved that it is possible to compile a simple list of words most often misspelled. Different classifications are proposed. Merely for the sake of convenience, the divisions used in this book have been chosen, and the words have been listed in several classes. First of all, a junior list shows those words that every child in school should master. Professor W. F. Jones, after elaborate investigations, collected one hundred words that have been termed the principal "demons" in elementary spelling. About sixty of these hundred demons from Prof. Jones' classification have been included in the list given below. Others have been added to make a relatively complete list of words that children misspell in the grades.

A JUNIOR WORD LIST

across	cries	lemon	safety
again	debt	liable	said
all right	decide	library	says
almost	despair	living	scene
already	develop	lose	seen
always	different	lying	seems
among	dining	making	separate
amount	divide	many	similar
animal	doctor	meant	since
answer	dodge	minute	speech
any	don't	much	straight
arctic	dropped	niece	sugar
arouse	dying	oblige	sure
awful	early	occur	their
beggar	easy	often	there
beginning	eighth	omit	therefore
believe	every	once	till
benefit	explain	one's	too (adverb)
born	February	opinion	together
brief	field	opposite	toward
built	figure	paid	truly
burglar	finally	permit	Tuesday
buried	forty	planned	until
business	friend	pleasant	very
busy	ghost	possibly	visible
can't	goddess	priest	weather
caught	grammar	prove	Wednesday
certain	guess	pursue	where
choice	having	quantity	whether
climb	heroine	quiet	which
clothes	hoarse	quite	wholly
collar	hungry	raise	women
college	illness	ready	won't
coming	imagine	really	writing
commit	instead	receive	yacht
conquer	its (pronoun)	refer	yield
course	laid	reference	
cousin	led (past of verb)	referred	

Adult lists might include those terms that are most often misspelled, those used in connection with study and criticism, those used in business and the arts, those often confused, and a special list of proper names that cause most difficulty. In the next list that follows below are included all words that are not technical or are not otherwise classified.

COMMON WORDS OFTEN MISSPELLED BY ADULTS

abbreviation	amusement	awkward	career
abundance	ancestor	balance	carriage
accept	annihilate	bargain	carrying
accidentally	apartment	battalion	cemetery
accommodate	apology	befitting	ceremony
accompanied	apparently	believe	chagrined
accuracy	appearance	beneficial	character
accustomed	appetite	benefit	chasm
acknowledge	arise	benefited	chauffeur
acquaint	arrangement	bicycle	chautauqua
address	arrival	boundary	chieftain
admittance	artificial	bouquet	choice
advice (noun)	ascend	breath	chord
advise (verb)	ascertain	breathe	chose (past of choose)
aggravate	assent	burglar	circuit
agreeable	assistance	burial	circuitous
all right	athlete	busy	cistern
almost	attached	busied	citizen
already	attacked	business	civilization
altogether	attendance	calendar	coincidence
amateur	attraction	campaign	collar
ambiguous	audience	capable	collision
ambitious	authentic	captain	comfortable

commemorate
commission
committed
committee
comparatively
comparison
compelled
complaint
concede
conceive
concession
condition
confer
conferring
conqueror
conscientious
considerable
conspicuous
constancy
continually
continuous
convenience
conveyance
countenance
counterfeit
courage
courageous
courtesy
cruelty
customary
damaging
deceased
deceive
decision
decrease
delicacy
delivered
dependence
describe
description
despair
desperate
destroyed
deterred
development
difference
different
difficult
diligence
dining
disappearance
disapprove
discernible
discipline
discourse
discreet
discussing
disguise
dissipate
dissolve
disturbance
doctrine
don't
dragging
drowsiness
drudgery
duchess
dyeing (coloring)
dying (expiring)
earnest
easily
efficient
eligible
embarrass
emigrant
emphatic
endurance
enthusiasm
especially
eventually
exaggerate
excellence
existence
explanation
exquisitely
extraordinary

extravagant
evidently
extremely
familiar
fascinate
February
feminine
fiery
football
forbearance
forcible
forefinger
forehead
formerly
forty-four
frolicked
garrison
genius
ghastly
gorgeous
government
grandeur
guardian
happily
hastily
heavily
height
hereafter
heroine
hindrance
humorous (funny)
hungry
hurriedly
hurrying
hypocrisy
identity
ignorance
illegible
illegitimate
illuminate
imitate
immediately
immense
immigrant
impartial
impatience
imperative
imperceptible
impossible
incidentally
inconvenience
incredible
independent
infinite
influence
inhabit
innocence
insatiable
insensibility
insistent
inspiration
intellectual
intelligence
interrupt
irksome
irrelevant
irresistible
irritate
its (pronoun)
itself
it's (it is)
journeyed
knapsack
knowledge
laughter
lazily
led (past tense of lead)
legendary
leisure
lightning
lily
listening
living
lose
luscious
luxuriance

machine
magazine
maintain
maintenance
manage
manageable
masquerade
meanness
medicine
messenger
miscellaneous
mischief
mischievous
moisten
mortally
murmur
mysterious
naturally
necessary
neighborhood
nevertheless
noticeable
nowadays
obedience
occasion
occasionally
occur
occurred
occurrence
offered
omission
omitted
one's
opponent
ordinarily
originally
outrageous
palace
paradise
parliament
particularly
patience
peaceable
peculiarity
pecuniary
pennant
perceive
permission
permitted
persecute
physical
physician
piteous
pleasant
portable
portrayed
practical
precede
preferred
preferable
prejudice
preparation
privately
privilege
procedure
proceed
profession
profited
prophecy (noun)
prophesy (verb)
prosecute
purpose
pursuit
quantity
quarantine
quarter
rapidly
realized
reappearance
receive
recollect
recommend
reconcile
recurrence
reference
referred

region
reliability
relief
relieve
religious
repeatedly
repentance
repetition
resistance
responsible
ridiculous
sacrifice
safety
salary
satisfy
scarcely
secede
secrecy
seize
sensitive
separate
sergeant
serviceable
shepherd
siege
similar
sincerely
sovereign
specimen
spirit
steady
stepped
stretch
studying
subordinate
subterranean
successful
sufficient
summary
supersede
surface
surprise
suspicious
syllable
sympathize
systematic
talkative
tariff
tedious
temperament
temperance
temporary
tendency
terrible
territory
together
too (adverb)
torture
transferred
treasure
trespass
triumphant
tyrannical
umbrella
unanimous
undoubtedly
unsuccessfully
usually
valuable
variety
vegetable
vengeance
vigorous
village
villain
visible
weightier
whether
wholesome
wholly
whose
wield
writer
writhe
yield
zealous

A SPECIAL LIST FOR STUDENTS.

Below are printed some words that are frequently found in connection with school studies, written papers in English classes, or criticism of literary works.

accelerate
acid
address
adverbially

aeronaut
aeroplane or airplane
alliteration
allusion

aluminum
ambiguous
ammonia
analogous

analysis
anecdote
anonymous
apparatus

apostrophe
archaic
assignment
audience
auxiliary
bibliography
biography
canyon
catastrophe
chemistry
chivalry
chronological
circuitous
circumference
civilization
coefficient
coherence
colloquial
combatant
comma
comparative
complement (that which completes)
consonant
copyright
corroborate
crater
criticism
criticize
curriculum
cyclone
cylinder
cylindrical
dandelion
decimal
definition
definitely
demonstrative
denominator
description
develop
diagonal
dialogue (-log)
diameter
dictionary
diphthong
doctrine
dynasty
effervesce
efficiency
elegy
elision
emphasis
encyclopedia
enumeration
equation
equilibrium
eulogy
explanation
extemporaneous
filament
foreign
gasoline
gazetteer
gencalogy
genitive
geology
grammar
gymnastics
hemisphere
hexagonal
homologous
homogeneous
horizontal
hygiene
hypothesis
iambic
idiom
illusion
imaginative
impromptu
infinitive
interrogative
island
isosceles
isthmus
kodak
label
laboratory
language
latitude
legendary
linguistic
liquefaction
literary
longitude
machinist
mathematics
metaphor
metonymy
microscope
mineralogy
mirage
modifiers
monosyllable
multiplication
municipal
mystery
mythological
naphtha
narrative
neuter
nickel
nominative
numerator
o'clock
onomatopoetic
oscillate
ostracize
oxygen
pageant
paragraph
parallel
parenthesis
peninsula
perpendicular
phenomenon
philosophy
plateau
playwright
politics
polysyllable
possessive
prairie
precedence
predicate
principal (adj.)
principle (noun)
professor
pronunciation
proportion
psychology
quantitative
quarantine
quatrain
reciprocity
rectangle
rhetoric
rime, rhyme
rhythm
sarcastic
satirical
schedule
science
secession
semicolon
soliloquy
studying
subjunctive
substantive
surgeon
suzerainty
synonym
synthesis
technical
temperament
temperature
tournament
tragedy
turpentine
university
vacuum
velocity
zoology

ONE HUNDRED HOUSEHOLD WORDS.

almond
antique
appetite
apron
artificial
atomizer
banana
biscuit
bronchitis
bungalow
bureau
calendar
cantaloupe
caromel
chiffonier
cinnamon
clothes
cloths
cologne
culinary
dairy
deodorize
desiccate
dessert
diagnosis
diamond
digestible
dining room
discipline
disease
dishabille
doily
dye (color)
dyeing (coloring)
embroidery
epidemic
etiquette (-et)
faucet
fricassee
glycerine
inflammation
influenza
jewelry
kerosene
kimono
leisure
liniment
luscious
macaroni
mackerel
mahogany
marshmallow
mattress
measles
medicine
meningitis
meringue
molasses
mopping
mosquito
mucilage
neighbor
neuralgia
paraffine
parasol
parboil
perspire
picnic
piccalilli
picnicking
pneumonia
poached
portrait
pumpkin
quinine
raisin
raspberry
receipt
recipe
relish
restaurant
salmon
sarsaparilla
sassafras
settee
shrubbery
sieve
singeing
sirloin
spaghetti
syringe
taffeta
tenant
umbrella
utensils
vanilla
ventilate
vinegar
woolen
worsted

COMMERCIAL WORDS.

acceptance
accommodation
accompt
accountant
acknowledge
actuary
adjustment
advertise
affidavit
agency
agreement
alignment
annuity
apartment
application
assignment
attorney
auction
auditor
bankruptcy
bookkeeper
bulletin
business
calculation
campaign
cashier
certificate
check, cheque
collateral
collectable
commodity
competition
comptroller
confidential
consignment
consistency
conveyance
copyright
corporation
counterfeit
counsellor
creditor
curiosity
customer
debenture
debit
debtor
deficit
demonstration
department
difference
discount
dividends
economy
electrotypes
employee (-ye)
examination
expenditure
finance
financial
financier
fiscal
foreclosure
forfeit
forgery
franchise
fraudulent
guarantee
guaranty
heading
hundred
illustrations
insolvency
interest
inventory
judgment

lease
ledger
legacy
liability
license
lithographs
luxury
machinery
magazines
manufacture
manufacturer
maturity
medium
mercantile
merchandise
millionaire
mimeograph
mortgage
municipal
necessity
negotiable
notary public
payee
permission
preferred
preliminary
produce
promissory
psychology
quantity
questionnaire or questionary
receipt
recommendation
referee
remittance
repetition
requisite
respectfully
respectively
responsible
routing
salary
schedule
securities
signature
slogan
speculate
stationery (office supplies)
statistics
stenographer
stereotype
substantial
suggestion
syndicate
tariff
testimony
typewriter
warehouse
weight

SOME PROPER NAMES OFTEN MISSPELLED.

Aaron
Addison
Aeneid
Britain, Great
British
Briton (person)
Burke, Edmund
Carlyle, Thomas
Chaucer
Chesapeake
Cincinnati
Coleridge
Colosseum
Connecticut
Delaware
Disraeli
Eliot, George and Chas. W.
February
Gettysburg
Grecian
Hawaii
Huguenots
Iliad
Isaiah
Johnson, Samuel
Jonson, Ben
Lafayette
Macaulay
Macbeth
Macduff
Manila
Marner, Silas
McKinley, William
Mediterranean
Michigan
Niagara
Odyssey
Olympic
Philip
Philippines
Pompeii
Poughkeepsie
Roosevelt
Shelley
Stevenson, R. L.
Swedish
Thackeray
Tuesday
Ulysses
Wednesday
Welsh (people)
Worcester
Wordsworth
Yosemite

RECENT WORDS AND PHRASES.

The English language is constantly receiving phrases or words in new uses. Many of these have grown up since the airplane, radio, and other modern inventions have become popular. Not a few came to us from the Great War.

ace, a French aviator who brought down at least five enemy planes; hence, any great aviator.
aerial sickness, a malady somewhat resembling mountain and seasickness, caused by the pitching and motion of aircraft.
aerostat, a passive balloon.
aileron, stabilizing device or plane attached to aircraft.
Anzacs, soldiers from Australia and New Zealand, the name being formed from the first letters of Australian and New Zealand Army Corps.
Archibald, German mobile anti-aircraft gun.
aviette, heavier than air machine propelled by aviator himself.
barrage, a curtain of projectile fire, at first used to repel an attack but later also used to cover an advance of troops on the field.
bertha or big bertha, a large German gun so nicknamed from the name of Frau Bertha Krupp, head of the Krupp interests.
Binet test, a series of graded questions and tasks to indicate the intelligence of children; later extended to test adults as well.
black Maria, a shell imperfectly exploded so as to throw off dense clouds of smoke used as a screen to cover naval or military movements.
blimp, small balloon equipped to carry passengers and to produce its own internal power.
Boche, French slang for *caboche*, meaning thick head, as applied to a German.
Bolsheviki, party of the majority in Russia, according to meaning of the word; party given to extreme political measures.
bromide, a person or term that follows custom or convention.
camouflage, any device to disguise a camp, ship, army, or depot for supplies; originally, a painted device used to deceive; and figuratively any process of deception or fraud.
corona, the fringe of light around an object; as the corona of the sun, the irregular mass of light beyond the round ball that we usually see.
cubists, a school of modern painters who rely on geometrical forms and straight lines for effects in pictures, rather than on curves.
dactylogram, a finger print, as a means of identification.
decathlon, a meet consisting of the 400 meter run, broad jump, shot put, running high jump, 100 meter run, throwing the discus, pole vault, javelin throw, 1500 meter run, and running hurdle race.
decode, to translate any message from a code into ordinary language.
direct primary, nomination of candidates directly, not by party caucus.
endocrine, an organ secreting internally a substance used in some part of the body, as the thyroid gland.
fuselage, the long body of an airplane, now usually enclosed.
hormone, substance secreted in one gland of benefit to some other part of the body.
hyphenate, a citizen in one land who still holds allegiance to another country; used in disparaging sense.
imagist, in poetry, is one who relies little on rime and rhythm, but on beauty through clear and striking images.
lettergram, a message longer than an ordinary telegram, sent at the convenience of the telegraph company at a reduced rate.
Mensheviki, party of the left or minority in Russia.
moron, a person over twelve who has the mentality of a child about eight years old.
Octobrist, a moderate liberal in Russia.
Olympiad, celebration of Olympic games every four years.
pacifist, a zealous advocate of principles opposed to war of any sort.
participating policy, in insurance, a contract that allows the insured person a share of the profits of the business.
pilot balloon, a small balloon sent up to detect the direction of the wind, or air currents.
plumcot, a cross of the plum and apricot.
preferential voting, a scheme by which the voter marks both his first and second choices for an office; in case of any failure to obtain a majority, the person wins who has greatest number of first and second choices.
questionary, a set of inquiries or questions sent to a number of persons by one making special study or investigation of a subject; a questionnaire.
Soviet, meaning a council, is a local unit of democratic government in Russia under the Bolsheviki; the entire government consists of a federation of these large and small units.
strafe, to punish, a word from the German phrase *Gott strafe England*, a popular slogan during the Great War in Germany.
surtax, in the United States, a certain amount of extra tax on incomes of $5000 net or more.
syndicalism, principles of "direct action," or the desire to secure changes in social orders by general strikes or sudden popular movements.
Triple Entente, agreements between France and Russia, England and France, and England and Russia, by which a concerted action against the Central Powers in the Great War was produced.
twilight sleep, a form of partial unconsciousness induced through the use of scopolamine and morphine, or some form of it, to deaden the pains of childbearing.
volplane, to glide to earth in a flying machine.
war bride, a person married to a soldier about to leave for the war, or on temporary leave from the front; as slang, a corporation that derived great profits from the war industries.

WORDS OFTEN WRONGLY PRONOUNCED.

1. DIVISION OF COMMON WORDS.

KEY TO MARKED LETTERS.

1. Native or English Sounds.

ä = *a* in arm.
å = *a* in ask.
ă = *a* in at.
â = *a* in air.
ā = *a* in ale.
b = *b* in be.
ch = *ch* in chew.
d = *d* in do.
ĕ = *e* in ebb.
ē = *e* in eel.
ē = *e* in ermine.
f = *f* in foe.
g = *g* in get.
h = *h* in he.
ĭ = *i* in it.
j = *j* in jet.
k = *k* in key.
l = *l* in lave.
m = *m* in me.
n = *n* in no.
ng = *ng* in ring.
ŏ = *o* in odd.
o = *o* in orange
ō = *o* in or.
ȯ = *o* in only.
ō = *o* in old.
o͝o = *oo* in look.
o͞o = *oo* in ooze.
p = *p* in pay.
r = *r* in rave.
s = *s* in see.
sh = *sh* in she.
t = *t* in to.
t͟h = *th* in thy.
th = *th* in thigh.
û = *u* in urge.
ŭ = *u* in up.
v = *v* in van.
w = *w* in we.
y = *y* in ye.
z = *z* in zebra.
zh = *z* in azure.

2. Foreign Sounds.

ȯ = *ö* in Göthe.
ü = *ü* in Müller.
äN = *en* in encore.
ăN = *in* in vin.
ȯN = *on* in bonbon.
ŭN = *un* in un.
K = *ch* in Richter.
G = *g* in Leipzig.

3. Diphthongal Sounds.

ī = *i* in ice.
oi = *oi* in oil.
ow = *ow* in now.
u = *u* in duke.

abdomen, ăb-dō′mĕn, *not* ăb′dō-mĕn.
aborigines, ăb-ō-rĭj′ĭn-ēz.
abstemious, ăb-stē′mī-ŭs, *not* ăb-stĕm′ī-ŭs.
abstractly, ăb′străkt-lĭ.
abstruse, ăb-stru͞s′, *not* ăb-stro͞os′.
access, ăk-sĕs′ *or* ăk′sĕs; ăk′sĕs (Imp.).
acclimate, ăk-klī′māt, *not* ăk′klĭm-āt.
accompaniment, ăk-kŭm′păn-ĭ-mĕnt, *not* ăk-kŭmp′nĭm-ĕnt.
accouchement, ȧk-ko͞osh-mäN′.
accouter, ăk-ko͞o′tẽr, *not* ăk-kow′tẽr.
accrue, ăk-kru͞′, *not* ăk-kro͞o′
accurate, ăk′ku-rāt, *not* ăk′kẽr-ĭt.
acetic, ȧ-sēt′ĭk *or* ȧ-sē-tĭk.
acetylene, ȧ-sĕt′ĭl-ēn; ăs′ĕt-ĭl-ēn.
acorn, ā′kûrn; ā′kẽrn (Wor.).
acoustic, ȧ-kow′stĭk, or ȧ-ko͞o′stĭk.
across, ȧ-kros′, *not* ȧ-krost′.
acts, ăkts, *not* ăks.
acumen, ȧ-ku͞′mĕn, *not* ăk′yu͞-mĕn.
adagio, ȧ-dä′jō.
adamantine, ăd-ȧ-măn′tĭn, *not* ăd-ȧ-măn′tēn.
address (n.), ăd-drĕs′.
address (vb.), ăd-drĕs′.
adept, ăd-ĕpt′, *not* ăd′ĕpt.
adieu, ȧ-du͞′; Fr. pron. ăd-yö′.
ad infinitum, ăd ĭn-fĭn-ī′tu͞m, *not* ăd ĭn-fĭn′-ĭt-ŭm.
adjectively, ăd′jĕk-tĭv-lĭ.
admirative, ăd-mī′rȧ-tĭv.
adobe, ȧ-dō′bā.
adult, ȧ-dŭlt′, *not* ăd′ŭlt.
ad valorem, ăd vȧ-lō′rĕm, *not* ăd văl′ō-rĕm.
adventure, ăd-vĕnt′yu͞r.
adverse, ăd′vẽrs.
advertise, ăd-vẽr-tīz′.
advertisement, ăd-vẽr′tĭz-mĕnt *or* ăd-vẽr-tīz′-mĕnt.
æon, ē′ŏn.
aerate, ā-ẽr-āt, *not* ā-rē-āt.
aerial, ā-ē′rĭ-ăl.
ærie, ē′rĭ.
aerometer, ā-ẽr-ŏm′ē-tẽr.
aeronaut, ā′ẽr-ō-nôt; ā′rō-nôt (Smart).
ætiology, ē-tĭ-ŏl′ō-jĭ.
a fortiori, ā fôr-shĭ-ō′rī.
aggrandize, ăg′grăn-dīz.
agile, ăj′ĭl, *not* ăj′īl.
aid-de-camp, ād′dē-käN.
aiguille, ā-gwēl′; Fr. pron. ā-gwē′yŭ.
ailment, āl′mĕnt, *not* āl′mŭnt.
aisle, īl.
algæ, ăl′jē.
algebra, ăl′jē-brȧ, *not* ăl′jē-brā.
algebraist, ăl′jē-brā-ĭst.
alias, ā′lĭ-ăs, *not* ăl′ĭ-ăs.
alien, āl′yĕn, *not* ā′lĭ-ĕn.
allopathist, ăl-lŏp′ăth-ĭst, *not* ăl′lō-păth-ĭst.
allusion, ăl-lu͞′zhŭn, *not* ăl-lo͞o′zhŭn.
ally (n.), ăl-lī′.
alma mater, ăl′mȧ mā′tẽr, *not* äl′mä mä′tẽr.
almond, ä′mŭnd.
alpaca, ăl-păk′ȧ, *not* ăl-ȧ-păk′ȧ.
alternately, ăl-tẽr′nāt-lĭ, *not* ăl′tẽr-nāt-lĭ.
alto-rilievo, ăl′tō rē-lyā′vō.
alveolar, ăl-vē′ō-lẽr *or* ăl′vē-ō-lẽr.
amateur, ăm-ȧ-tu͞r′; Fr. pron. ä-mä-tör′.
ameliorate, ȧ-mēl′yō-rāt, *not* ā-mē′lĭ-ō-rāt.
amenable, ȧ-mē′nȧ-bl, *not* ā-mĕn′ā-bl.
amende honorable, ä-mänd′ ō-nō-rä′bl.
ament, ăm′ĕnt.
amœba, ȧ-mē′bȧ.
anæmic, ȧ-nĕm′ĭk, *not* ȧ-nē′mĭk.
anchor, ăng′kẽr.
ancien régime, äNs-yäN′ rā-zhēm′.
andante, ăn-dăn′tē; It. pron. än-dän′tä.
angiosperm, ăn′jĭ-ō-spẽrm.
aniline, ăn′ĭl-ĭn *or* ăn′ĭl-ēn.
animalcule, ăn-ĭm-ăl′ku͞l, *not* ăn-ĭm-ăl′kŭ-lē.
antarctic, ănt-ärk′tĭk, *not* ănt-är′tĭk.
anxiety, ăng-zī′ē-tĭ, *not* ăngk-sī′ē-tĭ.
anxious, ăngk′shŭs, *not* ăng′shŭs.
aperient, ȧ-pē′rĭ-ĕnt.
aperture, ăp′ẽr-tu͞r.
apices (plural of apex), ăp′ĭs-ēz.
apostle, ȧ-pos′l, *not* ȧpŏs′l *nor* ȧ-pôs′tl.
apotheosis, ăp-ō-thē′ō-sĭs, *not* ăp-ō-thē-ō′sĭs
apotheosize, ăp-ō-thē′ō-sīz.
appellate, ăp-pĕl′lāt.
appendicitis, ăp-pĕn-dĭs-ī′tĭs.
appetitive, ăp′pē-tī-tĭv.
appoggiatura, ăp-pŏj-ȧ-to͞o′rä.
apricot, ā′prĭ-kŏt, *not* ăp′rĭ-kŏt.
apropos, ăp′rō-pō, *not* ăp-rō-pō′.
aqua, ā′kwȧ.
aquarium, ȧ-kwā′rĭ-ŭm, *not* ä-kwä′rĭ-ŭm.
aqueduct, ăk′wē-dŭkt, *not* ăk′wē-dŭk.
archangel, ärk-ān′jĕl, *not* ärch-ān′jĕl.
archbishop, ärch-bĭsh′ŏp, *not* ärch′bĭsh-ŏp.
archduke, ärch-du͞k′, *not* ärch′du͞k.

archfiend, ärch′fēnd, *not* ärch-fēnd′.
archipelago, är-kĭ-pĕl′å-gō, *not* är-chĭ-pĕl′å-gō.
architect, är′kĭ-tĕkt, *not* är′chĭ-tĕkt.
archives, är′kīvz, *not* är′chīvz.
arctic, ärk′tĭk, *not* är′tĭk.
aria, ä′rĭ-å *or* ā′rĭ-å.
arid, ăr′ĭd, *not* ā′rĭd.
aristocrat, å-rĭs′tō-krăt *or* ăr′ĭs-tō-krăt.
artificer, är-tĭf′ĭs-ēr, *not* är′tĭf-ĭs-ēr.
artiste, är-tēst′.
ascetic, ås-sĕt′ĭk.
ask, åsk, *not* ăsk.
askance, ås-kåns′, *not* ăs-kăns′.
asphalt, ăs-fălt′, *not* ås′fålt.
astrakhan, ăs-trå-kăn′, *not* ăs′trå-kăn.
atheneum, ăth-ē-nē′ŭm, *not* ā-thē′nē-ŭm.
attaché, ăt-tå-shā′.
attacked, ăt-tăkt′, *not* ăt-tăk′tĕd.
attorney, ăt-tûr′nĭ.
auberge, ō-bârzh′.
au courant, ō kōō-răN′.
au fait, ō fā′.
aunt, ănt, *not* ånt, *nor* ânt.
au revoir, ō rŭv-wär′.
aurist, ô′rĭst.
aurora borealis, ô-rō′rå bō-rē-ā′lĭs.
automobile, ô-tō-mō′bĭl; *Fr. pron.*, ō-tō-mō-bēl′.
automobilist, ô-tō-mō′bĭl-ĭst.
avoirdupois, ăv-ēr-dŭ-poiz′ *not* ăv-ēr-dŭ-poi′.
backslide, băk-slīd′, *not* băk′slīd.
backslider, băk-slī′dēr, *not* băk′slī-dēr.
bade, băd, *not* bād.
banana, bă-nā′nå, *not* băn-ăn′å.
bandoline, băn′dō-lĭn, *not* băn-dō-lēn′.
bargain, bär′gĕn, *not* bär′gŭn.
barrel, băr′rĕl, *not* bär′rŭl.
bas-bleu, bä-blē′; Fr. pron. bä-blō′.
basin, bā′sn, *not* bā′sĭn.
basket, bås′kĕt, *not* băs′kĕt.
bas-relief, bä-rē-lēf′.
basso-rilievo, bäs′so rē-lē-ā′vō.
bass-relief, băs′rē-lēf.
bath, båth, *not* băth.
bdellium, dĕl′yŭm.
beau ideal, bō ī-dē′ăl.
beau monde, bō-mŏnd′ *or* bō-mōnd′; Fr. pron. bō-mônd′.
beaux-esprits, bō-zĕs-prē′.
bedstead, bĕd′stĕd, *not* bĕd′stĭd.
belles-lettres, bĕl-lĕt′tĕr.
bellows, bĕl′ŭs.
beloved (adj), bē-lŭv′ĕd.
beloved (part.), bē-lŭvd′.
belvedere, bĕl-vē-dēr′ *or* bĕl′vē-dēr.
benignant, bē-nĭg′nănt, *not* bē-nī′nănt.
bestial, bĕst′yăl.
bête-noire, bāt-nwär′.
betrothal, bē-troth′ăl, *not* bē-trō′thăl.
bicycle, bī′sĭk-l, *not* bĭ′sī-kl.
biennial, bī-ĕn′ĭ-ăl.
bijou, bē-zhōō′.
billet-doux, bĭl′ā-dōō.
bindery, bīnd′ĕr-ĭ, *not* bīnd′rĭ.
biographer, bī-ŏg′rå-fĕr.
biography, bī-ŏg′rå-fĭ.
bizarre, bē-zär′.
blasé, blå-zā′.
blatant, blā′tănt, *not* blăt′ănt.
bon-ton, bôN-tôN′.
bon-vivant, bôN-vē-văN′.
burlesque, bûr-lĕsk′, *not* bûr′lĕsk.
business, bĭz′nĕs, *not* bĭz′ĭ-nĕs.

butcher, bŏŏch′ĕr, *not* bōō′chĕr.
cacao, kå-kā′ō *or* kā′kō.
cachet, kåsh′ā.
cachou, kå-shōō′.
cacique, kå-sēk′.
cadaver, kå-dā′vĕr, *not* kå-dăv′ĕr.
cæsura, sē-zʊ′rå *or* sē-sʊ′rå; sē-zhōō′rå (Hal.).
café, kăf′ā; Fr. pron. kä-fā′.
caisson, kā′sŏn.
calf, kăf, *more properly* kåf.
caliph, kā′lĭf.
calk, kôk.
calm, käm, *not* kăm.
caloric, kå-lŏr′ĭk, *not* kå-lō′rĭk.
calve, kåv, *not* kåf.
calyx, kā′lĭks, *not* kăl′ĭks.
camelopard, kå-mĕl′ō-pärd *or* kăm′ĕl-ō-pärd.
campagna, käm-pän′yå.
campanile, kåm-på-nē′lā.
canaille, kå-nāl′; kăn-ăl′ (Stor.); Fr. pron kä-nä′yŭ.
cancel, kăn′sĕl, *not* kăn′sl.
candelabra, kăn-dē-lā′brå, *not* kăn-dē-lä′brå.
canine, kå-nīn′.
cañon, kăn′yŭn *or* kăn-yōn′.
cantalever, kăn′tå-lĕv-ēr.
cantatrice, kån-tå-trē′chē.
canyon, kăn′yŭn.
caoutchouc, kōō′chōōk.
capitulate, kā-pĭt′yʊ-lāt, *not* kā-pĭch′ōō-lāt.
capuchin, kăp-yʊ-shēn′, *not* kăp′yʊ-chĭn.
caret, kā′rĕt *or* kăr′ĕt.
caricature, kăr′ĭk-å-tʊr.
Carolinian, kăr-ō-lĭn′ĭ-ăn, *not* kăr-ō-lī′nĭ-ăn.
carte blanche, kärt-blänsh′.
cartridge, kär′trĭj, *not* kät′rĭj.
caseine, kā′sē-ĭn, *not* kā′sē-ēn.
cashmere, kăsh′mēr.
casino, kå-sē′nō.
castanet, kăs′tå-nĕt.
catalogue, kăt′å-lôg, *not* kăt′å-lôg.
catalpa, kå-tăl′på, *not* kå-tôl′på.
catch, kăch.
catchup, kăch′ŭp, *not* kĕch′ŭp.
catechism, kăt′ē-kĭzm, *not* kăt′ē-kĭz-ŭm.
catsup, kăt′sŭp.
caveat, kā′vē-ăt, *not* kăv′ē-ăt.
cayenne, kā-ĕn′ *or* kī-ĕn′.
cello, chĕl′lō.
cement (n.), sē-mĕnt′ *or* sĕm′ĕnt.
cemetery, sĕm′ē-tĕr-ĭ, *not* sĕm′ē-trĭ.
centennial, sĕn-tĕn′nĭ-ăl, *not* sĕn-tĕn′yăl.
cephalic, sē-făl′ĭk, *not* sĕf′ăl-ĭk.
ceramic, sē-răm′ĭk, *not* kē-răm′ĭk.
cerebrum, sĕr′ē-brŭm, *not* sē-rē′brŭm.
cerement, sēr′mĕnt, *not* sĕr′ē-mĕnt.
challis, shăl′lĭ.
chalybeate, kå-lĭb′ē-ăt, *not* chå-lĭb′ē-ăt.
chamois, shăm′ĭ *or* shå-moi′.
champagne, shăm-pān′.
chaos, kā′ŏs.
chaperon, shăp′ĕr-ōn.
chargé d'affaires, shär-zhā′ dăf-fâr′.
charlotte russe, shär′lŏt rōōs.
chasm, kăzm, *not* kăz′ŭm.
chasten, chā′sn, *not* chās′n, *nor* chās′tn.
chastise, chăs-tīz′, *not* chăs′tīz.
chastisement, chăs′tĭz-mĕnt, *not* chăs-tīz′mĕnt.
chauffeur, shō-fŏr′.
chef, shĕf.
chef-d'œuvre, shā-dĕvr′.
chemise, shē-mēz′.

chenille, shē-nēl′.
cherubim, chĕr′ʊ-bĭm, *not* chĕr′ŭb-ĭm.
chestnut, chĕs′nŭt, *not* chĕst′nŭt.
cheviot (cloth), chĕv′ē-ŭt.
chiaro-oscuro, kē-ä′rō ŏs-kōō′rō.
chicken, chĭk′ĕn, *not* chĭk′n.
chiffonier, shĭf-ŏn-ēr′.
children, chĭl′drĕn, *not* chĭl′dĕrn.
chimera, kĭm-ē′rȧ, *not* kī-mē′rȧ.
chiropodist, kī-rŏp′ō-dĭst.
chisel, chĭz′ĕl, *not* chĭz′l.
chock-full, chŏk′fo͝ol, *not* chŭk′fo͝ol.
chorister, kŏr′ĭs-tẽr, *not* kō′rĭst-ẽr.
chyle, kīl.
chyme, kīm.
cinchona, sĭn-kō′nȧ, *not* sĭn-chō′nȧ.
circuit, sẽr′kĭt, *not* sẽr′kŭt.
civil, sĭv′ĭl, *not* sĭv′l.
clairvoyant, klâr-voi′ănt.
clandestine, klăn-dĕs′tĭn.
clapboard, klăb′ôrd, *not* klăp′bôrd.
clarinet, klăr′ĭn-ĕt.
cleanly (adj.), klĕn′lĭ.
cleanly (adv.), klēn′lĭ.
clematis, klĕm′ȧ-tĭs, *not* klē-mā′tĭs.
clique, klēk, *not* klĭk.
coadjutor, kō-ăd′jʊ-tẽr, *not* kō-ăd′jʊ-tẽr.
cocaine, kō′kȧ-ĭn.
codeine, kō-dē′ĭn.
cognomen, kŏɢ-nō′mĕn, *not* kŏɢ′nō-mĕn.
coiffure, kwä-für′.
colander, kŭl′ăn-dẽr, *not* kŏl′ăn-dẽr.
cold-chisel, kōld′-chĭz-ĕl.
colosseum, kŏl-ŏs-sē′ŭm.
column, kŏl′ŭm, *not* kōl′yŭm.
comeliness, kŭm′lĭ-nĕs, *not* kōm′lĭ-nĕs.
comely, kŭm′lĭ, *not* kōm′lĭ.
comme il faut, kŭm-ēl-fō′.
commiserate, kŏm-mĭz′ẽr-āt, *not* kŏm-mĭs′ẽr-āt.
commodious, kŏm-mō′dĭ-ŭs, *not* kŏm-mō′jŭs.
commune (n.), kŏm′mʊn.
comparable, kŏm′pȧ-rȧ-bl, *not* kŏm-pâr′ȧ-bl.
complex, kŏm′plĕks, *not* kŏm-plĕks′.
comptroller, kŏn-trō′lẽr.
con amore, kŏn ȧ-mō′rē.
concrete (n. and adj.), kŏn′krēt.
concrete (vb.), kŏn-krēt′.
condolence, kŏn-dō′lĕns, *not* kŏn′dō-lĕns.
conduit, kŏn′dĭt *or* kŭn′dĭt.
confidant, kŏn-fĭd-ănt′, *not* kŏn′fĭd-ănt.
congenial, kŏn-jēn′yȧl.
congregate, kŏng′ɢrē-ɢāt.
connoisseur, kon-nā-sör′.
conquest, kŏng′kwĕst, *not* kŏn′kwĕst.
conscientious, kŏn-shĭ-ĕn′shŭs, *not* kŏn-sĭ-ĕn′-shŭs.
conservatoire, kôɴ-sĕr-vä-twär′.
considerable, kŏn-sĭd′ẽr-ȧ-bl, *not* kŏn-sĭd′rā-bl.
consignee, kŏn-sīn-ē′.
constable, kŭn′stȧ-bl, *not* kŏn′stȧ-bl.
consul, kŏn′sŭl, *not* kown′sŭl.
contemplative, kŏn-tĕm′plā-tĭv, *not* kŏn′tĕm-plā-tĭv.
contiguous, kŏn-tĭɢ′yʊ-ŭs.
contretemps, kôɴ-trŭ-täɴ′.
conversant, kŏn′vẽr-sănt, *not* kŏn-vẽr′sănt.
coquet, kō-kĕt′.
coral, kŏr′ăl, *not* kō′răl.
cordial, kôr′jăl *or* kôrd′yăl.
cornet, kôr′nĕt, *not* kôr-nĕt′.
corolla, kō-rŏl′ȧ.
corps (military), kōr; pl. kōrz.
cortége, kôr-tăzh′.
cosmetic, kŏz-mĕt′ĭk, *not* kŏs-mĕt′ĭk.
cote (n.), kōt, *not* kŏt.
cotillion, kō-tĭl′yŭn.
coupé, kōō-pā′.
coupon, kōō′pŏn.
courteous, kûrt′ē-ŭs.
cousin, kŭz′n, *not* kŭz′ĭn.
covetous, kŭv′ĕt-ŭs, *not* kŭv′ē-chŭs.
cowardice, kow′ärd-ĭs, *not* kow′ärd-ĭs.
craunch, kränch, *not* krônch.
crèche, krāsh.
credence, krē′dĕns, *not* krĕd′ĕns.
credulous, krĕd′ʊlŭs, *not* krĕj′ōō-lŭs.
creek, krēk, *not* krĭk.
crematory, krĕm′ȧ-tō-rĭ.
crouch, krowch, *not* krōōch.
cuirass, kwē-răs′ *or* kwē′răs.
cuisine, kwē-zēn′.
culinary, kʊ′lĭn-ā-rĭ, *not* kŭl′ĭn-ā-rĭ.
cupboard, kŭb′bẽrd.
cupola, kʊ′pō-lȧ, *not* kʊ′pȧ-lō.
curator, kʊ-rā′tẽr.
cycle, sī′kl, *not* sĭk′l.
czarowitz, zär′ō-wĭts *or* tsär′ō-vēch.
daguerreotype, dȧ-ɢĕr′ō-tīp, *not* dȧ-ɢĕr′ē-ō-tīp.
dais, dā′ĭs.
damagé, dăm′āj, *not* dăm′ĭj.
daub, dôb, *not* dŏb.
débris, dā-brē′.
débutante, dā-bʊ-tŏnt′.
decade, dĕk′ād, *not* dē-kād′.
décolleté, dā-kōl-tā′, *not* dā-kŏl′tā.
decorous, dē-kō′rŭs *or* dĕk′ō-rŭs.
deficit, dĕf′ĭs-ĭt, *not* dē-fĭs′ĭt.
deign, dān.
delirious, dē-lĭr′ĭ-ŭs, *not* dē-lē′rĭ-ŭs.
demesne, dē-mēn′; dē-mān′.
depths, dĕpths, *not* dĕps.
de rigueur, dŭ rē-ɢör′.
deshabille, dāz-ȧ-bēl′; dĕs-hȧ-bĭl′ *or* dĕz′ȧ-bēl.
desideratum, dē-sĭd-ēr-ā′tŭm, *not* dē-sĭd-ēr-ä′tŭm.
despicable, dĕs′pĭk-ȧ-bl, *not* dē-spĭk′ȧ-bl.
destine, dĕs′tĭn.
de trop, dŭ trō′.
different, dĭf′fẽr-ĕnt, *not* dĭf′rĕnt.
digitalis, dĭj-ĭ-tā′lĭs, *not* dĭj-ĭ-tā′lĭs.
dilettante, dĭl-ĕt-ăn′tā *or* dē-lā-tȧn′tā.
diploma, dĭ-plō′mȧ, *not* dī-plō′mȧ.
direct, dĭ-rĕkt′, *not* dī-rĕkt′.
discourse, dĭs-kōrs′, *not* dĭs′kōrs.
disease, dĭz-ēz′, *not* dĭs-ēz′.
disputant, dĭs′pʊ-tănt, *not* dĭs-pʊ′tănt.
distich, dĭs′tĭk, *not* dĭs′tĭch.
district, dĭs′trĭkt, *not* dē-strĭkt.
diverge, dĭv-ẽrj′, *not* dī-vẽrj′.
dolce far niente, dōl′chā fär-nē-ān′tā.
domain, dō-mān′, *not* dō′mān.
donkey, dŏng′kĭ, *not* dŭng′kĭ.
douche, dōōsh.
drawers, drô′ẽrz, *not* drôrz.
drought, drowt.
drowned, drownd.
ductile, dŭk′tĭl, *not* dŭk′tēl.
eau de cologne, ō dŭ kō-lōn′.
eczema, ĕk′zē-mȧ, *not* ĕk-zē′mȧ.
elegiac, ē-lē′jĭ-ăk *or* ĕl-ē-jī′ăk.
eleven, ē-lĕv′n, *not* lĕv′n.
élite, ā-lēt′.
elongate, ē-lŏng′ɢāt, *not* ĕ-lŏn′ɢāt.
enchant, ĕn-chănt′, *not* ĕn-chănt′.

encore, äng-kōr′.
engine, ĕn′jĭn, *not* ĕn′jīn.
ennui, än-wē′; Fr. pron. äN-nwē′.
enquiry, ĕn-kwī′rĭ, *not* ĕn′kwĭr-ĭ.
entente cordiale, äN-täNt′ kôr-dyäl′.
erasure, ē-rā′zhur, *not* ē-rā′shur.
erysipelas, ĕr-ĭ-sĭp′ē-lăs, *not* ĭr-ĭ-sĭp′ē-lăs.
esoteric, ĕs-ō-tĕr′ĭk.
espionage, ĕs′pē-ōn-āj *or* ĕs′pē-ŏn-äzh.
esprit de corps, ĕs-prē′ dŭ kōr.
etiquette, ĕt′ĭ-kĕt.
étude, ā-tōōd′.
exaggeration, ĕgz-ăj-ĕr-ā′shŭn.
examine, ĕgz-ăm′ĭn, *not* ĕks-ăm′ĭn.
example, ĕgz-ăm′pl.
exist, ĕgz-ĭst′, *not* ĕks′ĭst.
exit, ĕks′ĭt, *not* ĕgz′ĭt.
exogenous, ĕks-ŏj′ē-nŭs.
expedient, ĕks-pē′dĭ-ĕnt, *not* ĕks-pē′jĕnt.
expiratory, ĕks-pīr′ā-tō-rĭ.
exponent, ĕks-pō′nĕnt, *not* ĕks′pō-nĕnt.
exquisite, ĕks′kwĭz-ĭt, *not* ĕks-kwĭz′ĭt.
extant, ĕks′tănt, *not* ĕks-tănt′.
ex-tempore, ĕks-tĕm′pō-rē, *not* ĕks-tĕm′pōr, a gross error.
extraordinary, ĕks-trôr′dĭn-ā-rĭ *or* ĕks-trā-ôr′-dĭn-ā-rĭ.
façade, fā-säd′ *or* fā-säd′.
falcon, fô′kn.
faucet, fô′sĕt, *not* făs′ĕt.
faux pas, fō-pä′, *not* fōō′pō.
favorite, fā′vĕr-ĭt, *not* fā′vēr-ĭt.
fecund, fē′kŭnd, *not* fē′kŭnd.
fellow, fĕl′lō, *not* fĕl′lŭ.
feminine, fĕm′ĭn-ĭn, *not* fē′mĭn-ĭn.
fête, fāt.
fiancé, fē-äN-sā′.
fiancée, fē-äN-sā′.
fibril, fī′brĭl, *not* fĭb′rĭl.
figure, fĭg′yur.
finale, fē-nä′lā, *not* fī-năl′ē.
finance, fĭn-ănz′, *not* fī′năns.
financier, fĭn-ăn-sēr′, *not* fī′năn-sēr.
florid, flŏr′ĭd, *not* flō′rĭd.
forbade, fôr-băd′, *not* fôr-bād′.
forest, fŏr′ĕst, *not* fôr′ŭst.
fragile, frăj′ĭl, *not* frăj′ĭl.
franchisement, frăn′chĭz-mĕnt.
fräulein, froi′līn.
friendship, frĕnd′shĭp, *not* frĕn′shĭp.
frontier, frŏn′tēr, *not* frŭn′tēr.
fungi, fŭn′jī, *not* fŭng′gī.
furniture, fûr′nĭt-yur.

gallery, găl′ĕr-ĭ, *not* găl′rĭ.
garage, găr′äj; Fr. pron., gär-äzh′.
garçon, gär-sôN′.
garrulous, găr′rōō-lŭs.
gaucherie, gōsh-rē′.
generally, jĕn′ĕr-ăl-ĭ, *not* jĕn′răl-ĭ.
generic, jē-nĕr′ĭk, *not* jĕn′ĕr-ĭk.
genre, zhäNr.
genuine, jĕn′yu-ĭn, *not* jĕn′yu-īn.
gerund, jĕr′ŭnd, *not* jē′rŭnd.
get, gĕt, *never* gĭt.
ghastly, gäst′lĭ, *not* găst′lĭ.
giaour, jowr.
gist, jĭst, *not* gĭst.
gives (fetters), jĭvz, *not* gĭvz.
gladiolus, glä-dī′ō-lŭs.
glottis, glŏt′ĭs, *not* glō′tĭs.
glycerine, glĭs′ĕr-ĭn, *not* glis′ĕr-ēn.
gneiss, nīs.
gondola, gŏn′dō-lä, *not* gŏn-dō′lä.
gone, gon.
government, gŭv′ĕrn-mĕnt, *not* gŭv′ĕr-mĕnt.
granddaughter, grănd′dô-tĕr, *not* grăn′dô-tĕr.
grandson, grănd′sŭn, *not* grăn′sŭn.
grasp, gräsp, *not* grăsp.
gratis, grā′tĭs, *not* grăt′ĭs.
grimace, grĭm-ās′, *not* grĭm′ās.

habitué, â-bē-tü-ā′ *not* hăb-ĭt-yu-ē′.
handbook, hănd′bo͝ok, *not* hăn′bo͝ok.
harass, hăr′ăs.
hautboy, hō′boi.
hearth, härth, *not* hĕrth.
height, hīt, *not* hītth.
heinous, hā′nŭs, *not* hē′nŭs.
herring, hĕr′ĭng, *not* hĕr′ĭn.
highwayman, hī′wā-măn, *not* hī-wā′măn.
history, hĭs′tō-rĭ, *not* hĭs′trĭ.
homestead, hōm′stĕd, *not* hōm′stĭd.
honest, ŏn′ĕst, *not* ōn′ŭst.
honorable, ŏn′ŏr-ă-bl, *not* ŏn′rà-bl.
hoof, hōōf, *not* hŏŏf.
horizon, hō-rī′zŏn.
horrid, hŏr′rĭd, *not* hôr′rĭd.
hors d'œuvre, ôr döv′r.
hovel, hŏv′ĕl, *not* hŭv′ĕl.
hundred, hŭn′drĕd, *not* hŭn′dĕrd.
hydraulics, hī-drô′lĭks, *not* hī-drŏl′ĭks.
hypocrisy, hĭp-ŏk′rĭs-ĭ.

ice-cream, īs′krēm, *not* īs-krēm′.
idiosyncrasy, ĭd-ĭ-ō-sĭng′krà-sĭ.
ignoramus, ĭg-nō-rā′mŭs, *not* ĭg-nō-rā′mŭs.
illustrate, ĭl-lŭs′trāt, *not* ĭl′lŭs-trāt.
impious, ĭm′pĭ-ŭs, *not* ĭm-pī′ŭs.
importune, ĭm-pôr-tun′.
impotent, ĭm′pō-tĕnt, *not* ĭm-pō′tĕnt.
inaugurate, ĭn-ô′gu-rāt, *not* ĭn-ô′gŭr-āt.
incomparable, ĭn-kŏm′pà-rà-bl, *not* ĭn-kŏm-pâr′-ā-bl.
indisputable, ĭn-dĭs′pu-tà-bl, *not* ĭn-dĭs-pu′tà-bl.
inexplicable, ĭn-ĕks′plĭk-à-bl.
infamous, ĭn′fà-mŭs.
innocent, ĭn′nō-sĕnt, *not* ĭn′nō-sŭnt.
inquiry, ĭn-kwī′rĭ, *not* ĭn′kwĭr-ĭ.
insatiable, ĭn-sā′shà-bl *or* ĭn-sā′shĭ-à-bl.
instead, ĭn-stĕd′, *not* ĭn-stĭd′.
interesting, ĭn′tĕr-ĕst-ĭng, *not* ĭn-tĕr-ĕst′ĭng.
international, ĭn-tĕr-năsh′ŭn-ăl, *not* ĭn-tĕr-nā′-shŭn-ăl.
inundate, ĭn-ŭn′dāt, *not* ĭn′ŭn-dāt.
iron, ī′ŭrn.
isinglass, ī′zĭng-glàs, *not* ī′zĭn-glàs.
italic, ĭ-tăl′ĭk, *not* ī-tăl′ĭk.
ivory, ī′vō-rĭ, *not* ī′vrĭ.

joist, joist, *not* jois.
jonquil, jŏn′kwĭl.
jostling, jŏs′lĭng, *not* jŏst′lĭng.
jowl, jōl, *not* jowl.
judgment, jŭj′mĕnt, *not* jŭj′mŭnt.
jugular, ju′gu-lĕr, *not* jŭg′yu-lĕr.
just (adv.), jŭst, *never* jĕst.

kaleidoscope, kà-lī′dō-skōp.
kept, kĕpt, *not* kĕp.
kettle, kĕt′l, *not* kĭt′l.
kiln, kĭl, *not* kĭln.
kinetograph, kĭ-nē′tō-grâf.
knout, nowt or nōōt.

laboratory, lăb′ō-rà-tō-rĭ, *not* lăb′rà-tō-rĭ.
lamentable, lăm′ĕnt-à-bl, *not* lā-mĕnt′à-bl.
language, lăng′gwăj, *not* lăng′gwĭj.
languor, lăng′gwĕr.
laryngitis, lăr-ĭn-jī′tĭs, *not* lăr-ĭn-jē′tĭs.

laugh, läf.
laundress, län′drĕs.
lava, lä′vȧ *or* lā′vȧ, *not* lăv′ȧ.
legate, lĕg′āt, *not* lē′gāt.
length, lĕngth, *not* lĕnth.
library, lī′brā-rĭ, *not* lĭ′brĭ.
licorice, lĭk′ō-rĭs, *not* lĭk′ō-rĭsh.
literature, lĭt′ĕr-ȧ-tur.
lithographer, lĭth-ŏg′rȧ-fĕr, *not* lĭth′ō-grăf-ĕr.
long-lived, lŏng′līvd, *not* lŏng′lĭvd.
mackerel, măk′ĕr-ĕl, *not* măk′rĕl.
maestro, mä-ās′trō, *not* mā′strō.
magna charta, măg′nȧ kär′tȧ.
magnolia, măg-nō′lĭ-ȧ, *not* măg-nōl′yȧ.
malpractice, măl-prăk′tĭs, *not* măl′prăk-tĭs.
mange, mānj, *not* mănj.
mania, mā′nĭ-ȧ, *not* mān′yȧ.
maniacal, mȧ-nī′ăk-ăl, *not* mā′nĭ-ăk-ăl.
manœuvre, mȧ-nōō′vr.
maritime, măr′ĭt-ĭm.
marquis, mär′kwĭs; Fr. pron. măr-kē′.
masculine, măs′kŭ-lĭn, *not* măs′kū-lĭn.
massacre, măs′sȧ-kĕr.
mattress, măt′rĕs.
mausoleum, mô-sō-lē′ŭm.
mauve, mōv.
mayonnaise, mȧ-yō-nāz′.
megrim, mē′grĭm.
meningitis, mĕn-ĭn-jī′tĭs.
menu, mē-nōō′; Fr. pron., mē-nü′.
meringue, mē-răng′.
mesne, mēn.
metric, mĕt′rĭk, *not* mē′trĭk.
migraine, mī-grān′.
minuet, mĭn′yu-ĕt, *not* mĭn-yu-ĕt′
mirage, mē-räzh′; mē-räzh′.
miserere, mĭz-ē-rē′rē.
mischievous, mĭs′chē-vŭs, *not* mĭs-chē′vŭs.
misconstrue, mĭs-kŏn′stru, *not* mĭs-kŏn-stru′.
mistletoe, mĭz′l-tō, *not* mĭs′l-tō.
mobile, mō′bĭl; mō-bēl′ *or* mōb′ĭl (Wor.).
modiste, mō-dēst′.
moire antique, mwär ăn-tēk′, *not* mō′rē ăn-tēk′.
musicale, mu-zē-kȧl′.
nature, nāt′yur.
nausea, nô′shē-ȧ *or* nô′shȧ, *not* nô′sē-ȧ.
necessarily, nĕs′ĕs-sĕr-ĭl-ĭ, *not* nĕs-ĕs-ser′ĭl-ĭ.
née, nā.
négligé, nā-glē-zhā′.
nephritis, nē-frī′tĭs.
nervine, nĕr′vĭn, *not* nĕr′vēn.
neuralgia, nu-răl′jĭ-ȧ, *not* nu-răl′jȧ.
nicety, nī′sē-tĭ, *not* nīs′tĭ.
nom de plume, nôN dŭ plüm.
nominative, nŏm′ĭn-ȧ-tĭv, *not* nŏm′nȧ-tĭv.
nonchalant, nôN-shȧ-läN′.
nonpareil, nŏn-pȧ-rĕl′, *not* nŏn-pȧ-rēl′.
nouveau-riche, nōō-vō-rēsh′.
noxious, nŏk′shŭs, *not* nŏk′shĭ-ŭs.
nuptial, nŭp′shăl, *not* nŭp′chăl.
oaths, ōthz, *not* ōths.
obeisance, ō-bē′sȧns *or* ō-bā′sȧns.
obesity, ō-bĕs′ĭt-ĭ, *not* ō-bēs′ĭt-ĭ.
obligato, ŏb-lē-gä′tō.
obligatory, ŏb′lĭ-gā-tō-rĭ.
oboe, ō′boi *or* ō′bō-ā.
ocelot, ō′sē-lŏt.
often, of′n, *not* of′tĕn.
olden, ōld′n, *not* ōld′ĕn.
on dit, ôN-dē′.
ordeal, ôr′dē-ăl, *not* ôr-dē′ăl.
oust, owst, *not* ōōst.
overalls, ō′vĕr-ôlz, *not* ō′vĕr-hôlz.
oxide, ŏks′īd *or* ŏks′īd.
pæony, pē′ō-nĭ.
pajama, pȧ-jȧ′mȧ.
palmistry, päl′mĭs-trĭ, *not* pä′mĭs-trĭ.
papa, pȧ-pä′ *or* pä′pȧ.
papier-mâché, pap-yā′ mä-shā′.
papyrus, pȧ-pī′rŭs, *not* păp′ĭr-ŭs.
pariah, pä′rĭ-ȧ *or* pā′rĭ-ȧ.
participle, pär′tĭ-sĭp-l, *not* pärt′sĭp-l.
partridge, pär′trĭj, *not* pät′rĭj.
passé, pä-sā′.
pâté de foie gras, pä-tā′ dŭ fwä grä.
patriot, pā′trĭ-ŏt.
patron, pā′trŭn, *not* păt′rŭn.
penchant, päN-shäN′.
perhaps, pĕr-hăps′, *not* prăps.
peritonitis, pĕr-ĭ-tō-nī′tĭs, *not* pĕr-ĭ-tō-nē′tĭs.
persist, pĕr-sĭst′, *not* pĕr-zĭst′.
petite, pē-tēt′.
pharyngitis, făr-ĭn-jī′tĭs.
phial, fī′ăl.
photographer, fō-tŏg′rȧ-fĕr.
photogravure, fō-tō-grä-vūr′.
physicist, fĭz′ĭs-ĭst.
piano, pē-ä′nō.
plait, plāt.
pneumatics, nu-măt′ĭks.
poem, pō′ĕm, *not* pō′ŭm.
poignant, poin′ănt, *not* poin′yant.
polygamy, pō-lĭg′ȧ-mĭ, *not* pōl′ĭg-ā-mĭ.
portemonnaie, pōrt′mŭn-nā.
potato, pō-tā′tō, *not* pō-tā′tŭ.
portière, pôr-tĭ-âr′; Fr. pron., pôrt-yâr′.
precedence, prē-sē′dĕns, *not* prĕs′ē-dĕns.
preferable, prĕf′ĕr-ȧ-bl, *not* prē-fĕr′ȧ-bl.
prelate, prĕl′āt, *not* prē′lāt.
pretense, prē-tĕns′, *not* prē′tĕns.
prettily, prĭt′ĭl-ĭ, *not* prĕt′ĭl-ĭ.
prima donna, prē′mȧ dŏn′nȧ.
program, prō′grăm, *not* prō′grŭm.
propinquity, prō-pĭng′kwĭt-ĭ.
protégé, prō-tā-zhā′.
pseudonym, su′dō-nĭm.
psychic, sī′kĭk.
publicist, pŭb′lĭs-ĭst.
puisne, pu′nĭ.
puissant, pu′ĭs-ănt *or* pu-ĭs′ănt, *not* pwē′sănt.
pumpkin, pŭmp′kĭn, *not* pŭng′kĭn.
pursuivant, pûr′swē-vănt.
pyrites, pĭr-ī′tēz.
quash, kwŏsh, *not* kwăsh.
queue, kyu.
qui vive, kē-vēv′, *not* kwē-vēv′.
quoit, kwoit *or* koit.
quorum, kwō′rŭm, *not* kwôr′ŭm.
raceme, rȧ-sēm′.
radish, răd′ĭsh, *not* rĕd′ĭsh.
raison d'être, rāzôN′ dātr.
rancor, răng′kĕr, *not* răn′kĕr.
ransack, răn′săk, *not* răm′săk.
réchauffé, rā-shō-fā′.
recherché, rŭ-shâr-shā′.
recipe, rĕs′ĭp-ē.
reconnoiter, rĕk-ŏn-oi′tĕr, *not* rē-kŏn-oi′tĕr.
referable, rĕf′ĕr-ȧ-bl, *not* rē-fĕr′ȧ-bl.
regalia, rē-gā′lĭ-ȧ.
régime, rā-zhēm′.
renaissance, rē-nā′sȧns; Fr. pron., rŭ-nā-sȧNs′.
rendezvous, rĕn′dē-vōō; Fr. pron., răN′dā-vōō.
reparable, rĕp′ȧ-rȧ-bl, *not* rē-pār′ȧ-bl.
répertoire, rĕp′ĕr-twär; Fr. pron., rā-pâr-twär′.

replica, rĕp′lĭk-ȧ.
repoussé, rŭ-pōō-sā′.
reputable, rĕp′yu-tȧ-bl.
requiem, rē′kwĭ-ĕm.
research, rē-sĕrch′, *not* rē′sĕrch.
resource, rē-sōrs′, *not* rē′sōrs.
restaurant, rĕs′tō-rȧnt *or* rēs′tō-răng.
résumé, rā-zōō-mā′; Fr. pron., rā-zŭ-mā′.
reveillé, rĕ-văl′yā.
reverend, rĕv′ĕr-ĕnd, *not* rĕv′ēr-ĕnt.
revocable, rĕv′ō-kȧ-bl, *not* rē-vō′kȧ-bl.
rheumatism, ru′mȧ-tĭzm, *not* rōōm′ȧ-tĭzm.
rinse, rĭns, *not* rĕns.
robust, rō-bŭst′, *not* rō′bŭst.
roil, roil, *not* rīl.
roof, rōōf, *not* rŏŏf.
root, rōōt, *not* rŏŏt.
rostrum, rŏs′trŭm, *not* rō′strŭm.
roué, rōō-ā′.
route, rōōt; rowt is perhaps the more common pronunciation in the United States.
rutabaga, ru-tȧ-bā′gȧ.
sachem, sā′chĕm, *not* săch′ĕm.
sacrament, săk′rȧ-mĕnt, *not* sā′krȧ-mĕnt.
sacrilegious, săk-rĭl-ē′jŭs, *not* săk-rĭl-ĭj′ŭs.
saengerfest, sâng′ĕr-fĕst.
sagacious, sȧ-gā′shŭs, *not* sȧ-găsh′ŭs.
said, sĕd.
salmon, săm′ŭn.
salve (ointment), säv.
satin, săt′ĭn, *not* sāt′n.
savage, săv′āj, *not* săv′ĭj.
says, sĕz, *not* sāz.
scalene, skȧ-lēn′, *not* skā′lēn.
scared, skârd, *not* skârt.
scherzo, skĕrt′sō.
séance, sē′ăns; Fr. pron., sā-äns′.
seckel (pear), sĕk′l, *not* sĭk′l.
secretary, sĕk′rē-tā-rĭ, *not* sĕk′ē-tā-rĭ.
separable, sĕp′ȧ-rȧ-bl.
sequin, sē′kwĭn, *not* sĕk′wĭn.
sesame, sĕs′ȧ-mē.
several, sĕv′ĕr-ăl, *not* sĕv-răl.
shriek, shrēk, *not* srēk.
signora, sēn-yō′rȧ.
sleek, slēk, *not* slĭk.
slept, slĕpt, *not* slĕp.
slough (cast-off skin), slŭf.
slough (ditch), slow.
snout, snowt, *not* snŏŏt.
solace, sŏl′ăs, *not* sō′lăs.
solecism, sŏl′ē-sĭzm, *not* sō′lē-sĭzm.
sonata, sō-nä′tȧ.
soprano, sō-prä′nō, *not* sō-prăn′ō.
sough, sŭf.
souvenir, sōō-vŭ-nēr′, *not* sōōv′nēr.
spoon, spōōn, *not* spŏŏn.
squalor, skwā′lôr (Web. and Wor.); skwŏl′ĕr or skwā′lĕr (Stor.).
steady, stĕd′ĭ, *not* stĭd′ĭ.
stoicism, stō′ĭs-ĭzm, *not* stō′ĭk-ĭzm.
stomach, stŭm′ak, *not* stŭm′ĭck.
suede, swād.
suite, swēt, *not* su-t.
supple, sŭp′l, *not* sōō′pl.
surprise, sûr-prīz′, *not* sŭp-prīz′.
surveillance, sûr-vā′lȧns *or* vā′lăns.
syringe, sĭr′ĭnj, *not* sĭr-ĭnj′.
syrup, sĭr′ŭp.

table-d'hôte, tă′bl-dōt.
tapis, tăp′ĭs, tā′pĭs, or tȧ-pē′.
technique, tĕk-nēk′.
telegraphy, tē-lĕg′rȧ-fĭ.
tenet, tĕn′ĕt, *not* tē′nĕt.
tepid, tĕp′ĭd, *not* tē′pĭd.
tête à tête, tāt-ȧ-tāt′.
theater, thē′ȧ-tēr, *not* thē-ā′tēr.
three-legged, thrē′lĕgd, *not* thrē′lĕg-ĕd.
tic-douloureux, tĭk dōō-lōō-rōō′.
tonsilitis, tŏn-sĭl-ī′tĭs, *not* tŏn-sĭl-ē′tĭs.
tortious, tôr′shŭs.
tour, tōōr.
tout-ensemble, tōōt ăn-săn′bl.
trichina, trĭk-ī′nȧ.
tricycle, trī′sĭk-l, *not* trī′sī-kl.
trilobite, trī′lō-bīt, *not* trĭl′ō-bīt.
trousseau, trōō′sō′.
turnip, tûr′nĭp, *not* tûr′nŭp.
ultimatum, ŭl-tĭm-ā′tŭm, *not* ŭl-tĭm-ä′tŭm.
umbrella, ŭm-brĕl′ȧ, *not* ŭm-bĕr-ĕl′ȧ.
uncivil, ŭn-sĭv′ĭl, *not* ŭn-sĭv′ŭl.
unctuous, ŭngkt′yu-ŭs.
undersigned, ŭn-dĕr-sīnd′, *not* ŭn-dĕr-zīnd′.
uninterested, ŭn-ĭn′tĕr-ĕst-ĕd.
unlearned (adj.), ŭn-lĕr′nĕd, *not* ŭn-lĕrnd′.
unlearned (part.), ŭn-lĕrnd′, *not* ŭn-lĕr′nĕd.
unprecedented, ŭn-prĕs′ē-dĕnt-ĕd.
untoward, ŭn-tō′ĕrd, *not* ŭn-tō-wôrd′.
used, uzd, *not* us-t.
usually, yu′zhu-ăl-ĭ, *not* yu′zhăl-ĭ.
usurp, yu-zûrp′, *not* yu-sûrp′.
vagary, vȧ-gā′rĭ, *not* vā′gȧ-rĭ.
vagrant, vā′grănt, *not* văg′rănt.
vanquish, văng′kwĭsh, *not* văn′kwĭsh.
vase, vās *or* väz.
vaudeville, vōd′vĭl; Fr. pron., vōd-vēl′.
vehement, vē′hē-mĕnt.
veinous, vā′nŭs, *not* vē′nŭs.
venous, vē′nŭs, *not* yā′nŭs.
verbatim, vĕr-bā′tĭm, *not* vĕr-bă′tĭm.
version, vĕr′shŭn, *not* vĕr′zhŭn.
vessel, vĕs′sĕl, *not* vĕs′l.
veterinary, vĕt′ĕr-ĭn-ā-rĭ, *not* vĕt′rĭn-ā-rĭ.
vice versa, vī′sē vĕr′sȧ, *not* vīs′vĕr-sȧ.
victim, vĭk′tĭm, *not* vĭk′tŭm.
vis-a-vis, vēz-ȧ-vē′.
vitriol, vĭt′rĭ-ŭl, *not* vĭt′rŭl.
volatile, vŏl′ȧ-tĭl, *not* vŏl′ȧ-tēl, nor vŏl′ȧ-tīl.
volume, vŏl′yum.
voluntarily, vŏl′ŭn-tā-rĭl-ĭ, *not* vŏl-ŭn-tā′rĭl-ĭ.
was, wŏz, *not* wŭz.
water, wô′tĕr, *not* wŏt′ĕr.
which, hwĭch, *not* wĭch.
whisk, hwĭsk, *not* wĭsk.
whole, hol, *not* hōl.
whooping (cough), hōōp′ĭng, *not* hŏŏp′ĭng.
widow, wĭd′ō, *not* wĭd′ŭ.
window, wĭn′dō, *not* wĭn′dŭ.
wistaria, wĭs-tā′rĭ-ȧ, *not* wĭs-tē′rĭ-ȧ.
women, wĭm′ĕn, *not* wĭm′ĭn.
wondering, wŭn′dĕr-ĭng, *not* wŭn′drĭng.
wrath, răth, *not* răth.
wrestler, rĕs′lĕr, *not* rĕst′lĕr.
yacht, yŏt.
yellow, yĕl′lō, *not* yĕl′lŭ.
yew, yu.
yolk, yōlk *or* yōk.
zodiacal, zō-dī′ăk-ăl, *not* zō′dĭ-ăk-ŭl.

2. DIVISION OF PROPER NAMES.

Aachen, ä′kĕn.
Abbassides, ăb-băs′sĭdz.
Abélard, ăb′ē-lärd; Fr. pron., ä-bā-lär′.
Abomey, ăb-ō-mā′.
Aboukir, ä-bōō-kēr′.
About (Edmond), ĕd-môn′ ä-bōō′.
Abraham, ā′brȧ-hăm, *not* ā′brăm, unless spelled *Abram*.
Acapulco, ä-kä-pōōl′kō.
Achaia, ā-kā′yȧ *or* ä-kī′yä.
Acheron, ăk′ē-rŏn, *not* ăch′ē-rŏn.
Achitophel, ȧ-kĭt′ō-fĕl.
Aconcagua, ä-kŏn-kä′gwä.
Adige, ăd′ĭj-ē; It. pron., ä′dē-jā.
Adonais, ăd-ō-nā′ĭs.
Adonijah, ăd-ō-nī′jȧ.
Adoniram, ăd-ō-nī′răm.
Ægean, ē-jē′ăn.
Æolus, ē′ō-lŭs, *not* ē-ō′lŭs.
Afghanistan, ăf-găn-ĭs-tän′, *not* ăf-găn-ĭs′tăn; ăf-gän-ĭs-tän′ (Gaz.).
Agape, ăg′ȧ-pē.
Agassiz, ăg′ȧs-ē *or* ăg-ăs′ĭz; Fr. pron., ä-gä-sē′.
Agincourt, ăzh-ăn-kōōr′.
Aguilar (Grace), ä-gē-lär′.
Agulhas, ä-gōōl′yäs.
Ahasuerus (King), ȧ-hăs-ū-ē′rŭs.
Ahasuerus (The Wandering Jew), ȧ-hăzh-ōō-ē′-rŭs.
Aïda, ä-ē′dä.
Aix-la-Chapelle, āks-lä-shä-pĕl′, *not* ā-lä-shä-pĕl′.
Akron (Ohio), ăk′rŏn, *not* ā′krŏn.
Alcæus, ăl-sē′ŭs.
Alcantara, ăl-kän′tä-rä.
Alcibiades, ăl-sĭ-bī′ȧ-dēz.
Alcides, ăl-sī′dēz.
Alcuin, ăl′kwĭn.
Alcyone, ăl-sī′ō-nē.
Aldebaran, ăl-dĕb′ȧ-răn.
Aleutian (Islands), ȧ-lū′shĭ-ăn, *not* ā-lū′-shăn.
Alexander, ăl-ĕgz-ăn′dēr, *not* ăl-ĕks-ăn′dēr.
Alfieri, äl-fē-ā′rē.
Algonquin, ăl-gŏn′kwĭn.
Alighieri, ä-lē-gē-ā′rē.
Alleghany, ăl-lē-gā′nĭ.
Alleyn, ăl′ĕn.
Alma-Tadema, äl′mä tä′dä-mä, *not* ăl′mȧ tȧ-dā′-mȧ.
Almagest, ăl′mȧ-jĕst.
Alnwick, ăn′nĭk.
Amiens, ăm′ē-ĕnz; Fr. pron., ä-mĭ-ăN′.
Amoskeag, ăm-ŏs-kĕg′.
Ampere, äN-pâr′.
Amphion, ăm-fī′ŏn, *not* ăm′fĭ-ŏn.
Amphitrite, ăm-fĭ-trī′-tē, *not* ăm′fĭ-trīt.
Amphitryon, ăm-fĭt′rĭ-ŏn.
Amurath, ä-mōō-rät′.
Anaximenes, ăn-ăks-ĭm′ē-nēz.
Anchises, ăn-kī′sēz.
Andalusia, ăn-dȧ-lōō-shĭ′ȧ; ăn-dȧ-lū′shĭ-ȧ (Gaz.).
Andorra, ăn-dō′rä.
Androcles, ăn′drō-klēz.
Andromache, ăn-drŏm′ȧ-kē.
Andromeda, ăn-drŏm′ē-dȧ.
Andronicus, ăn-drō-nī′kŭs.
Angostura, ăn-gŏs-tōō′rä.
Angoulême d', dăN-gōō-lām′.
Antietam, ăn-tē′tăm.
Antigone, ăn-tĭg′ō-nē.
Antinous, ăn-tĭn′ō-ŭs, *not* ăn-tĭn′ōōs.
Antiochus, ăn-tī′ō-kŭs, *not* ăn-tī-ŏk′ŭs.
Antiope, ăn-tī′ō-pē.
Apache, ä-pä′chā.
Apelles, ȧ-pĕl′ēz.
Aphrodite, ăf-rō-dī′tē, *not* ăf′rō-dīt.
Apollyon, ȧ-pŏl′ĭ-ŏn *or* ȧ-pŏl′yŭn.
Appalachian, ăp-pȧ-lā′chĭ-ăn, *not* ăp-pā-lā′chĭ-ăn.
Appomattox, ăp-pō-măt′ŏks.
Aquinas (Thomas), ȧ-kwī′năs.
Arab, ăr′ăb; Wor., ā′răb as secondary pron.
Aram (Eugene), ā′răm, *not* ăr′ăm.
Arapahoe, ăr-ăp′ȧ-hō.
Arbela (Assyria), är-bē′lä.
Arbela (Sicily), är′bē-lä.
Archias, är′kĭ-ăs, *not* är′chĭ-ăs.
Archimedes, är-kĭm-ē′dēz, *not* är-kĭm′ē-dēz.
Archytas, är-kī′tăs.
Arcite, är′sīt or är-sīt′.
Arequipa, ä-rā-kē′pä.
Aries, ā′rĭ-ēz.
Arion, ā-rī′ŏn.
Aristides, ăr-ĭs-tī′dēz.
Aristobulus, ā-rĭs-tō-bū′lŭs *or* ăr-ĭs-tō-bū′lŭs.
Arkansas, är′kăn-sô.
Arles, ärlz; Fr. pron., ärl.
Aroostook, ȧ-rōō′stŏŏk.
Artaxerxes, är-tăks-ĕrk′sēz; Bib. är-tăg-zĕrk′zēz.
Artemis, är′tē-mĭs.
Artemisia, är-tē-mĭsh′ĭ-ȧ.
Artois, är-twä′.
Arundelian, ăr-ŭn-dēl′yăn; ăr-ŭn-dē′lĭ-ăn (Wor.).
Aryan (Indo-European), ăr′yăn *or* ăr′ĭ-ăn; ā′rĭ-an *or* ăr′ĭ-ăn (Stor.).
Ascham (Roger), ăs′kăm.
Asiatic, ā-shĭ-ăt′ĭk, *not* ā-zhĭ-ăt′ĭk.
Asmodeus, ăz-mō-dē′ŭs.
Asturias, äs-tōō′rē-äs.
Astyanax, ăs-tī′ăn-ăks.
Atahualpa, ä-tä-hwäl′pä.
Ate (goddess of revenge), ā′tē, *not* āt.
Athos (Mount), ăth′ŏs, *not* ā′thŏs.
Atilla, ȧ-tĭl′ȧ.
Auber, ō-bâr′, *not* ô′bĕr.
Aubert, ō-bâr′.
Aubigné d', dō-bēn-yā′.
Audubon, ô′dū-bŏn; Fr. pron., ō-dü-bôN′.
Auerstadt, ow′ĕr-stĕt.
Augean, ô-jē′ăn, *not* ô′jē-ăn.
Augereau, ōzh-rō′.
Aurungzebe, ō-rŭng-zāb′.
Ausable, ô-sä′bl.
Austerlitz, ôs′tĕr-lĭts; Ger. pron., ows′tĕr-lĭts.
Auvergne, ō-vărn′yŭ.
Auxerre, ō-sār′.
Averroës, ä-vĕr′ō-ēz.
Avignon, ä-vēn-yôN′.
Avon, ā′vŏn, *not* ăv′ŏn.
Aytoun, ā′tōōn.
Badajos, bä-dä-hōs′.
Bagehot, băj′ŏt.
Bahia, bä-ē′ä.
Baireuth, bī′rŭth; Ger. pron., bī′roit.
Bajazet, băj-ȧ-zĕt′, *not* bā-jăz′ĕt.
Balboa de, dā bäl-bō′ä.
Balearic (Islands), băl-ē-ăr′ĭk, *not* băl-ē′rĭk.
Balthaser, băl′tä-zär.
Balzac de (Honoré), ō-nō-rā′ dŭ bäl-zäk′; anglicized, băl′zăk.
Banquo, băng′kwō; băn′kwō (Biog.).
Barberini (palace), bär-bā-rē′nē.
Barras de, dŭ bä-räs′ *or* dŭ bä-rä′.

Barthélemy, bär-tāl-mē′.
Bartholdi, bär-tōl-dē′, *not* bär-thōl′dā
Baruch, bā′rŭk.
Bathsheba, băth-shĕ′bå *or* băth′shē-bå.
Baton Rouge, băt′ŭn rōōzh; Fr. pron., bă-tôN′ rōōzh.
Bayard de, dŭ bā′ärd; Fr. pron., dŭ bä-yär′.
Bayard (Thomas F.), bī′ärd, *not* bā′ärd.
Bayreuth, bī′rŭth; Ger. pron., bī′roit.
Beatrice Cenci, bā-ä-trē′chā chĕn′chē.
Beauchamp (Fr.), bō-shäN′.
Beauchamp (Eng.), bē′chăm.
Beauharnais de, dŭ bō-är-nā′.
Beethoven van, vän bā′tō-vĕn.
Bellerophon, bĕl-ĕr′ō-fŏn.
Bellini, bĕl-lē′nē.
Ben-Cruachan, bĕn-krōō′ĸän.
Benguela, bĕn-gā′lä.
Bentivoglio, bĕn-tē-vōl′yō.
Béranger de, dŭ bā-rän-zhā′.
Berenice, bĕr-ē-nī′sē.
Bering (strait), bē′rĭng; Danish pron., bā′rĭng.
Bermoothes, bĕr-mōō′thēz.
Bernice, bĕr-nī′sē.
Bertuccio, bär-tōō′chō.
Besançon, bŭz-äN′sôN.
Betelguese, bĕt′ĕl-gēz.
Beust von, fōn boist.
Bewick, bū′ĭk, *not* bē′wĭk.
Beyroot, bā′rōōt, *not* bā-rōōt′; Turkish pron., bī′rōōt.
Bierstadt, bēr′stät, *not* bēr′stăd.
Biot, bē-ō′ *or* byō; bē-ō′ *or* bē-ōt′ (Biog.).
Bizet, bē-zā′.
Björnson (Björnstjerne), bē-örn-stē-ĕr′nĕ bē-yörn′son.
Blenheim, blĕn′ĭm, *not* blĕn′hīm.
Blois, blwä.
Blücher von, fōn blōō′kĕr; Ger. pron., fōn blü′kĕr.
Boadicea (Queen), bō-ăd-ĭs-ē′å.
Boanerges, bō-ăn-ēr′jēz.
Bode, bō′dĕ, *not* bōd.
Boerhaave, bōr′hāv; Dutch pron., bōōr′hä-vĕ.
Boethius, bō-ē′thĭ-ŭs.
Boïeldieu, bō-yĕl-dē-ö′; bwäl-dyö′ (Biog.).
Boileau, bwä-lō′.
Bokhara, bŏk-ä′rä.
Boleyn (Anne), bōōl′ĭn.
Bologna, bō-lōn′yä, *not* bō-lō′nä.
Bonheur (Rosa), bō-nör′, *not* bŏn′ŭr.
Bonnivard de, dŭ bō-nē-vär′.
Boötes, bō-ō′tēz.
Borghese, bōr-gā′zā.
Borromean (islands), bŏr-rō-mē′ăn.
Borromeo, bŏr-rō-mā′ō, *not* bŏr-rō′mē-ō.
Bossuet, bō-sü-ā′, *almost* bō-swā′.
Boucher de Perthes, bōō-shā′ dŭ pārt.
Boucicault, bōō-sē-kō′, *not* bōō′sē-kôlt.
Bouguereau, bōō-gĕr-ō′, *not* bōō-zhĕr-ō′.
Bouillon de (Godfrey), dŭ bōō-yôN′.
Bowditch, bŏw′dĭch, *not* bō′dĭch.
Bowdoin (college), bō′dn.
Bozzaris, bŏt′săr-ĭs.
Brahe (Tycho), tī′kō brā *or* brä; Danish pron., brä′ĕ.
Bremer (Fredrika), frĕd-rē′kå brē′mĕr; Swedish pron., brĭm′ĕr.
Breton (Jules), zhül brâ-tôn′.
Briareus, brī-ā′rē-ŭs or brī′ā-rŭs, *not* brī-ā-rē′ŭs.
Brockhaus, brŏk′hows.
Broglie de, dŭ brō′ĭ; dŭ brōg-lē′ (Biog.).
Brougham, brōō′ăm *or* brōōm.
Brown-Séquard (Dr.), brown-sā-kär′.
Brüges, brŭ′jĕz; Fr. pron., brüzh.
Brugsch Bei, brōōsh bā.
Brunehilde, brōō-nē-hĭl′dĕ.
Brunelleschi, brōō-nĕl-lĕs′kē.
Buccleugh, bŭk-klŭ′.
Bucharest, bŭ-kā-rĕst′.
Buda Pesth, bŭ′då-pĕst; Hungarian pron., bōō′-dŏ-pesht.
Buddha, bŏŏd′å.
Buddhism, bŏŏd′ĭzm;
Buddhist, bŏŏd′ĭst;
Buena Vista, bwā′nä vēs-tä *or* bō′nå vĭs-tå.
Buenos Aires, bō′nŭs ā′rĭz *or* ârz; Sp. pron., bwā′nōs ī′rĕs.
Buffon de, dŭ bŭf′ŭn; Fr. pron., dŭ bü-fôN′.
Bülow von, fōn bü′lō.
Buonaparte, bōō-ō-nä-pär′tā.
Buonarroti, bōō-ō-när-rŏt′ē.
Burgoyne, bûr-ɢoin′.
Bysshe, bĭsh.
Byzantine, bī-zăn′tĭn *or* bĭz′ăn-tīn.
Byzantium, bĭz-ăn′shĭ-ŭm, *not* bĭz-ăn′tĭ-ŭm.
Caceres, kä′thā-rĕs.
Caedmon, kĕd′mŏn *or* kăd′mŏn.
Caesarea, sĕs-ā-rē′å, *not* sĕz-ā-rē′å.
Caiaphas, kā′yā-făs; kī′ăf-ăs (Stor.).
Caius (college at Cambridge), kēs *or* kē.
Calais, kä-lā′.
Calaveras, kä-lä-vā′räs.
Callao, käl-lä′ō *or* käl-yä′ō.
Callimachus, kăl-lĭm′å-kŭs.
Callisthenes, kăl-lĭs′thē-nēz.
Cambacérès de, dŭ kăN-bä-sā-rĕs′.
Cambyses, kăm-bī′sēz.
Canandaigua, kăn-ăn-dā′gwå, *not* kăn-ăn-dā′-ɢu-å.
Candace, kăn′då-sē.
Canes Venatici, kā′nēz vē-năt′ĭs-ī.
Cannes, kän.
Canute, kā-nut′.
Capella, kå-pĕl′lå.
Capitoline, kăp′ĭt-ŏl-īn, *not* kăp′ĭt-ŏl-ēn.
Capri, kä′prē.
Caracci, kä-rä′chē.
Cardan, kär′dăn; Fr. pron., kär-dăN′.
Caribbean (Sea), kăr-ĭb-ē′ăn, *not* kăr-ĭb′ē-ăn.
Carnot, kär-nō′.
Carolinian, kăr-ō-lĭn′ĭ-ăn, *not* kăr-ō-lī′nĭ-ăn.
Carracci, kär-rä′chē.
Cartagena, kär-tå-jē′nå; Sp. pron., kär-tä-hā′nä.
Carthaginian, kär-thå-jĭn′ĭ-ăn, *not* kär-thå-jē′-nĭ-ăn.
Cartier (Jacques), zhăk kärt-yā′.
Casaubon, kå-sō′bŏn; Fr. pron., kä-zō-bôN′.
Cassiopeia, kăs-sĭ-ō-pē′yå.
Castiglione, käs-tēl-yō′nä.
Castlereagh, käs-l-rā′.
Castruccio, käs-trōō′chō.
Cattaraugus, kăt-å-rô′gŭs.
Caucasus, kô′kå-sŭs, *not* kô-kā′sŭs.
Cavour di, dē kä-vōōr′.
Cayenne, kā-ĕn′ *or* kī-ĕn′.
Cayuga, kā-yōō′ɢå.
Cecrops, sē′krŏps.
Cedric, sĕd′rĭk *or* kĕd′rĭk.
Cedron, sē′drŏn.
Cellini (Benvenuto), bĕn-vā-nōō′tō chĕl-lē′nē.
Cerberus, sĕr′bē-rŭs.
Ceres, sē′rēz.
Cesnola di, dē chĕs-nō′lä.
Cévennes, sā-vĕn′.

Chaeronea, kĕr-ō-nē′å.
Chagres, chä′grēs, *not* shä′grēs.
Cham, kăm.
Chamonix, shä-mō-nē′.
Chamouni, shä-mōō-nē′.
Champollion, shăm-pōl′ē-ŏn; Fr. pron., shäN-pōl-yôN′.
Champs-Elysées, shäN-zā-lē-zā′.
Chapultepec, chä-pōōl-tā-pĕk′.
Charon, kā′rŏn, *not* chā′rŏn.
Charybdis, kå-rĭb′dĭs.
Châteaubriand de, dŭ shä-tō-brē-äN′.
Chaudière (Falls), shō-dē-âr′.
Chautauqua, shå-tô′kwä, *not* chå-tô′kwä.
Chedorlaomer, kĕd-ôr-lā′ō-mēr *or* ō′mēr.
Cheops, kē′ŏps, *not* chē′ŏps.
Cherbuliez, shĕr-bü-lē-ā′.
Chersonesus, kĕr-sō-nē′sŭs.
Cherubini, kā-rōō-bē′nē.
Cheyenne, shī-ĕn′; shē-ĕn′ (Gaz.).
Chihuahua, chē-wä′wä.
Chillicothe, chĭl-ĭ-kŏth′ē, *not* chĭl-ĭ-kō′thē.
Chimborazo, chĭm-bō-rä′zō; Sp. pron., chēm-bō-rä′thō.
Cholmondeley, chŭm′lĭ.
Chryseis, krĭ-sē′ĭs.
Chuquisaca, chōō-kē-sä′kä.
Cimabue, chē-mä-bōō′ā.
Cimon, sī′mŏn.
Cincinnati, sĭn-sĭn-nä′tĭ, *not* sĭn-sĭn-năt′ŭ.
Cinque-ports, sĭngk′pōrts.
Circe, sĕr′sē.
Cirencester, sĭs′ĕt-ĕr *or* sĭs′ĭs-ĕr.
Civita Vecchia, chē′vē-tä vĕk′kē-ä.
Cleobulus, klē-ō-bu′lŭs, not klē-ŏb′yu-lŭs.
Cleomenes, klē-ŏm′ē-nēz.
Clough (Arthur Hugh), klŭf.
Cnidus, nī′dŭs.
Cockburn (Lord), kō′bûrn, *not* kŏk′bŭrn.
Codrus, kō′drŭs.
Cohoes, kō-hōz′, *not* kō-hōōz′.
Colbert, kōl-bâr′.
Coligny de, dŭ kō-lēn-yē′ *or* dŭ kō-lēn′yē.
Colman, kōl′măn, *not* kŏl′măn.
Cologne, kō-lōn′; Fr. pron., ko-lon′yŭ.
Colquhoun, kō-hōōn′.
Comanche, kō-măn′chē; kō-măn′chā (Gaz.).
Combe, kōōm *or* kōm.
Comte, kôNt.
Condé de, dŭ kôn-dā′.
Condillac de, dŭ kôn-dē-yăk′.
Condorcet de, dŭ kôn-dôr-sā′.
Cophetua, kō-fĕt′yu-å.
Coquelin, kok-lăN′.
Corot, kō-rō′.
Correggio da, dä kŏr-rā′jō.
Corydon, kŏr′ĭ-dŏn.
Cotopaxi, kō-tō-păk′sē; Sp. pron., kō-tō-pä′hē.
Courbet, kōōr-bā′.
Cousin, kōō-zăN′.
Coxsackie, kŏŏk-sô′kē.
Cracow, krā′kō.
Cruikshank, krŏŏk′shăngk.
Cumæan, ku-mē′ăn.
Cuvier, kü-vē-ā′.
Cuyahoga, kī-å-hō′gå.
Cuyp, koip.
Cuzco, kōōs′kō.
Cyaxares, sī-äks′å-rēz.
Cybele, sĭb′ē-lē *or* sĭb-ē′lē.
Cyprian, sĭp′rĭ-ăn, *not* sī′prĭ-ăn.
Czajkowski, chī-kŏvs′kē.
Czerny, chĕr′nē.
Daguerre, dä-gâr′.
Dahlgren, dăl′grĕn.
Damiens, dā′mĭ-ĕnz; Fr. pron., dä-mē-ăN′.
Damon, dā′mŏn.
Dandolo, dän′dō-lō.
Dannecker von, fŏn dän′ĕk-ĕr.
Darius, dā-rī′ŭs.
Daubigny, dō-bēn-yē′.
Daudet (Alphonse), äl-fôNs′ dō-dā′.
Davoust, dä-vōō′.
De Amicis, dā ä-mē′chēs, *not* dē ä-mē′sis.
Deborah, dĕb′ō-rå, *not* dē-bō′rå.
Delaroche, dŭ-lä-rosh′.
Delft, dĕlft.
Demetrius, dē-mē′trĭ-ŭs, *not* dē-mĕt′rĭ-ŭs.
Deneb, dē′nĕb.
Deptford, dĕt′fŭrd; dĕd′fŭrd (Gaz.).
Descartes, dā-kärt′.
Des Moines, dē moin′.
Desmoulins, dā-mōō-lăN′.
Détaille, dā-tä′yŭ.
Dhaulagiri, dow-lä-gē′rē.
Diderot, dē-drō′.
Didot, dē-dō′.
Dieppe, dē-ĕp′.
Dies Iræ, dī′ēz ī′rē.
Dijon, dē-zhôN′.
Dionysus, dī-ō-nī′sŭs.
Discobolus, dĭs-kŏb′ō-lŭs.
Disraeli, dĭz-rā′lē *or* dĭz-rē′lē; dĭz-rā′ĕl-ē (Biog.).
Dnieper, nē′pĕr; Russian pron., dnyĕp′ĕr.
Dniester, nēs′tĕr; Russian pron., dnyĕs′tĕr.
Dolce (Carlo), dōl′chā.
Dolci (Carlo), dōl′chē.
Domenichino, dō-mĕn-ē-kē′nō.
Doña, dōn′yå.
Donegal, dŏn-ē-gôl′, *not* dŏn′ē-găl.
Don Quixote, dŏn kwĭks′ōt; Sp. pron., dōn kē-hō′tā.
Dovrefield, dō-vrŭ-fī-ĕld′.
Drachenfels, drä′kĕn-fĕls.
Drogheda, drŏ′hĕd-å.
Du Chaillu, dü shä-yü′.
Duchesne, dü shān′.
Dudevant (Mme.), düd-väN′.
Dumas, dü-mä′ *or* dü-mäs′.
Duplessis, dü-plā-sē′.
Duquesne, dü-kān′.
Dürer (Albert), dü′rĕr.
Duyckinck, dī′kĭngk.
Ebers (Georg), gā-ôrk′ ā′bĕrs.
Ecbatana, ĕk-băt′å-nå.
Edam, ā-dăm′, *not* ē′dăm.
Eleanor, ĕl′ē-å-nôr.
Eleazar, ē-lē-ā′zär *or* ē-lē′ā-zär.
Elgin, ĕl′gĭn, not ĕl′jĭn.
Eliphalet, ē-lĭf′å-lĕt.
Elssler (Fanny), ĕls′lĕr, *not* ĕs′lĕr.
Emmaus, ĕm-mā′ŭs *or* ĕm′mā-ŭs.
Encke, ĕng′kē.
Enghien d', dän-gĂN′; dän-gē-ăN′.
Epaminondas, ē-păm-ĭn-ŏn′dăs.
Erasmus, ē-răz′mŭs, *not* ē-răs′mŭs.
Erato, ĕr′å-tō, *not* ē-rā′tō, *nor* ĕr-ä′tō.
Eratosthenes, ĕr-å-tŏs′thē-nēz.
Erectheum, ĕr-ĕk-thē′ŭm, *not* ē-rĕk′thē-ŭm.
Erigena, ē-rĭj′ē-nå *or* ĕr-ĭj-ē′nå.
Erostratus, ē-rŏs′trā-tŭs.
Escurial, ĕs-ku′rĭ-ăl; Sp. pron., ĕs-kōō-rē-äl′.
Estaing d', dĕs-tăN′.
Eugène, ö-zhăn′.

Eugénie de Montijo, ö-zhā-nē′ dŭ môn-tē-zhō′.
Euler, yōō′lĕr; Ger. pron., oi′lĕr.
Eunice, yu′nĭs; Bib. yu-nī′sē *or* yu′nĭs.
Euphrosyne, yu-frŏs′ĭn-ē.
Euripides, yu-rĭp′ĭd-ēz.
Eurydice, yu-rĭd′ĭs-ē.
Fahrenheit, fä′rĕn-hīt.
Faneuil (Hall), făn′ĭl, *commonly* fŭn′ĕl.
Farquhar, fär′kwär *or* fär′kĕr.
Fatima, făt′ē-mä.
Faust, fowst *or* fōst.
Fechter, fĕsh′tĕr.
Fénelon, fā-nē-lôN′ *or* făn-lôN′.
Fesole, fĕs′ō-lā.
Feuerbach, foi′ĕr-bäk.
Feuillet (Octave), ōk-täv′ fö-yā′.
Fichte, fĭk′tĕ.
Fiesole, fyĕs′ō-lā.
Figaro, fē-gä-rō′, *not* fē-gä′rō.
Flotow von, fōn flō′tō.
Fomalhaut, fō′măl-hôt.
Fontainebleau, fôN-tăn-blō′.
Fontenoy, fŏn-tē-noi′; Fr. pron., fôNt-nwä′.
Fortuny, fōr-tōō′nē.
Fouché, fōō-shā′.
Fourier, fōō′rē-ĕr; Fr. pron., fōō-rē-ā′.
Fra Diavolo, frä dē-ä′vō-lō.
Fraunhofer von, fōn frown′hō-fĕr.
Freischütz, Der, dĕr frī′shüts.
Frelinghuysen, frē′lĭng-hī-zĕn.
Fresnel, frā-nĕl′.
Freycinet de, dŭ frā-sē-nā′.
Friesic, frē′sĭk.
Froebel, frö′bĕl.
Froissart, frois′ärt; Fr. pron., frwä-sär′.
Froude, frōōd.
Galen, gā′lĕn.
Gallatin (Albert), găl′ä-tĭn; Fr. pron., gä-lä-tăN′.
Galle (Dr.), gä′lĕ.
Galvani, gäl-vä′nē.
Galway, gôl′wā, *not* găl′wā.
Garibaldi, găr-ĭb-äl′dĭ, *not* găr-ĭb-ôl′dē.
Gauss, Gows.
Gautier (Théophile), tā-ō-fēl′ gō-tē-ā′.
Gay-Lussac, gā-lü-säk′.
Geikie (James), gē′kē, *not* gī′kē.
Genghis Khan, jĕn′gĭs kän.
Genseric, jĕn′sĕr-ĭk.
Geoffrey, jĕf′rĭ.
Geoffroy, zhō-frwä′.
Geraldine, jĕr′ăl-dĭn.
Gérôme, zhā-rōm′.
Gesenius, gē-sē′nĭ-ŭs; Ger. pron., gā-zā′nē-ŏŏs.
Ghent, gĕnt, *not* jĕnt.
Ghiberti, gē-bĕr′tē.
Ghirlandajo, gĕr-län-dä′yō.
Gizeh, gē′zē.
Gila, hē′lä.
Gil Blas, zhēl bläs; Sp. pron., hēl bläs.
Gioja, jō′yä.
Giordano Bruno, jōr-dä′nō brōō′nō.
Giorgione, jōr-jō′nā.
Giotto, jŏt′tō.
Giovanni, jō-vän′nē.
Gironde, jē-rŏnd′; Fr. pron., zhē-rôNd′.
Giuseppe, jōō-sĕp′pā.
Gladstone, glăd′stŭn, *not* glăd-stōn.
Glück, glük.
Glyptothek, glĭp-tō-tāk′.
Gobelin, gŏb′ē-lĭn; Fr. pron., gō-blăN′.
Godavery, gō-dä′vĕr-ĭ.
Godiva (Lady), gō-dī′vȧ.
Goethe von, fōn gö′tĕ.
Golgotha, gŏl′gō-thȧ, *not* gŏl-gō′thȧ.
Gortschakoff, gôrt-chä-kŏf′.
Gotham, gō′thăm.
Gottschalk, gŏt′shälk, *not* gŏt′shôk.
Gough, gŏf.
Gounod, gōō-nō′.
Gower, gow′ĕr *or* gōr.
Granicus, grȧ-nī′kŭs.
Greenough, grē′nō.
Greuze, grŏz.
Grévy, grā-vē′.
Grosvenor, grōv′nĕr.
Grote, grōt.
Grotius, grō′shĭ-ŭs.
Grouchy de, dŭ grōō-shē′, *not* dŭ grōō′chē.
Gruyère, grü-yâr′.
Guelph, gwĕlf.
Guericke von, fōn gĕr′ĭk-ĕ *or* fōn gā′rĭk-ĕ.
Guido Reni, gwē′dō rā′nē *or* gōō-ē′dō rā′nē, *not* gē′dō rā′nē.
Guildhall, gĭld′hôl.
Guillotin, gē-yō-tăN′.
Guinevere, gwĭn′ē-vēr.
Guise de, dŭ gwēz; dŭ gwēz, dŭ gü-ēz′, *or* dŭ gēz (Biog.).
Guizot, gē-zō′ *or* gwē-zō.
Günther, gün′tĕr.
Gustavus, gŭs-tā′vŭs, *not* gŭs-tä′vŭs.
Gutenberg, gōō′tĕn-bĕrg, *not* gŭt′ĕn-bĕrg.
Guyot, gē-ō′.
Gwendolen, gwĕn′dō-lĕn.
Gyges, jī′jēz.
Habakkuk, hăb-ăk′ŭk *or* hăb′ăk-ŭk.
Haeckel, hĕk′l; Ger. pron., hâ′kĕl.
Haggai, hăg′ā-ī *or* hăg′ā.
Hague, hāg.
Halcyone, hăl-sī′ō-nē.
Halévy, ä-lā-vē′.
Halle, hä′lĕ.
Haller von, fōn häl′lĕr.
Hamilcar Barca, hȧ-mĭl′kär bär′kä.
Handel, hăn′dĕl; Ger. pron., hĕn′dĕl.
Hardicanute, här-dĭ-kă-nut′.
Harun-al-Raschid, hä-rōōn′äl-răsh′ĭd *or* hä-rōōn′-äl-rä-shēd′.
Havre de Grace, hä′vĕr *or* ä′vĕr dŭ grȧs.
Hawaii, hä-wī′ē.
Haydn, hā′dn; Ger. pron., hī′dn.
Hayti, hā′tĭ; Fr. pron., ä-ē-tē′.
Hazlitt, hăz′lĭt.
Heine (Heinrich), hīn′rĭk hī′nĕ.
Heligoland, hĕl′ĭ-gō-länd.
Héloïse, ā-lō-ēz′.
Helvétius, hĕl-vē′shĭ-ŭs; Fr. pron., ĕl-vā-sē-ŭs′.
Hemans (Mrs.), hĕm′ănz, *not* hē′mănz.
Hengist, hĕng′gĭst.
Hephæstion, hē-fĕs′tĭ-ŏn.
Heraclitus, hĕr-ȧ-klī′tŭs, *not* hē-răk′lĭt-ŭs.
Herat, hĕr-ät′.
Herculaneum, hēr-ku-lā′nē-ŭm.
Herodotus, hē-rŏd′ō-tŭs.
Hesiod, hē′sĭ-ŏd; hē′shĭ-ŏd (Biog.).
Hesse, hĕs, *not* hĕs′sē.
Heyne, hī′nĕ.
Himalaya, hĭm-ä′lā-yȧ; often pronounced hĭm-ā-lā′yä.
Hippocrates, hĭp-pŏk′rā-tēz.
Hoang-Ho, hō-äng-hō′.
Hobbes, hŏbz.
Hobokan, hō′bō-kĕn.
Hohenlohe, hō′ĕn-lō-ĕ.

Hohenzollern, hō′ĕn-tsŏl-ĕrn.
Holbein, hōl′bīn.
Holstein, hōl′stīn.
Holyhead, hŏl′ĭ-hĕd.
Holyoke (Mount), hōl′yōk, *not* hō′lĭ-ōk.
Hortense, ôr-tăns′.
Hôtel de Ville, o-tĕl′ dŭ vēl.
Houdon, ōō-dôn′.
Houston (Sam), hus′tŏn, *not* hows′tŏn.
Hudibras, hu′dĭ-brăs, *not* hu′dĭ-brä.
Hughes (Thomas), huz.
Huguenot, hu′gē-nŏt.
Huron (Lake), hu′rŏn.
Huygens, hī′gĕnz; Dutch pron., hoi′hĕnz.
Hyacinthe (Père), pâr ē-ä-săNt′.
Hyksos, hĭk′sŏs.
Hypatia, hī-pā′shĭ-ȧ.
Hyperion, hī-pē′rĭ-ŏn.
Iamblichus, ī-ăm′blĭk-ŭs.
Icarus, ĭk′ȧ-rŭs, *not* ī-kā′rŭs.
Ichabod, ĭk′ȧ-bŏd.
Ich dien, ĭk dēn.
Ictinus, ĭk-tī′nŭs.
Imogen, ĭm′ō-jĕn.
Ines, ē-nĕs′.
Ingelow (Jean), jēn ĭn′jē-lō.
Inkerman, ĭng-kĕr-măn′.
Invalides (Hôtel des), o-tĕl′ dāz ăN-văl-ēd′.
Iowa, ī′ō-wȧ, *not* ī-ō′wȧ.
Iphigenia, ĭf-ĭ-jē-nī′ȧ, *not* ĭf-ĭ-jē′nĭ-ȧ.
Irenaeus, ĭr-ē-nē′ŭs, *not* ī-rē′nē-ŭs.
Irene, ī-rē′nē.
Ischia, ĭs′kē-ä.
Isham, ī′shăm.
Isis, ī′sĭs.
Ismaïl, ĭs-mä-ēl′.
Isocrates, ī-sŏk′rā-tēz.
Isola, ē′sō-lä.
Isolde, ē-sōl′dā *or* ĭ-sōld′.
Israel, ĭz′rā-ĕl, *not* ĭs′rā-ĕl.
Isthmian, ĭs′mĭ-ăn *or* ĭst′mĭ-ăn.
Ithuriel, ĭ-thu′rĭ-ĕl.
Ivan, ē-vän′.
Ixion, ĭks-ī′ŏn, *not* ĭks′ĭ-ŏn.
Iztaccihuatl, ēs-täk-sē-hwät′l.
Jacobi, yä-kō′bē.
Jacquard, zhä-kär′.
Jacques, zhäk.
Jakutsk, yä-kōōtsk′.
Janauschek, yä′now-shĕk.
Japanese, jăp-ăn-ēz′ *or* ēs′.
Japheth, jā′fĕth, *not* jā′fĕt.
Java, jä′vȧ *or* jȧ′vȧ, *not* jăv′ȧ.
Jean Valjean, zhăN văl-zhăN′.
Jeanne d'Arc, zhăn därk′.
Jeddo, yĕd′dō.
Jena, jĕn′ȧ; Ger. pron., yä′nä.
Jephthah, jĕf′thȧ, *not* jĕp′thȧ.
Jerusalem, jē-ru′sā-lĕm.
Jesuit, jĕz′yu-ĭt, *not* jĕzh′yu-ĭt.
Jevons, jĕv′ŏnz, *not* jē′vŏnz.
Joachim, jō′ȧ-kĭm; Ger. pron., yō′ȧ-kĭm.
Joan of Arc, jōn′ ŏv ärk *or* jō-ăn′ŏv ärk.
Joinville de, dŭ join′vĭl; Fr. pron., dŭ zhwăN-vēl′.
Jordaens, yōr′dăns.
Joseffy, yō-sĕf′ĭ.
Joubert, zhōō-bâr′.
Jowett, jŏw′ĕt, *not* jō′ĕt.
Juarez, jōō-ä′rĕz; Sp. pron., hōō-ä′rĕth.
Jubilate, ju-bĭl-ā′tē *or* ā′tę.
Judaic, ju-dā′ĭk.
Juggernaut, jŭg′ĕr-nôt.
Juliet, ju′lĭ-ĕt.
Jungfrau, yŏŏng′frow.
Juniata, ju-nĭ-ăt′ȧ.
Junot, zhü-nō′.
Jussieu de, dŭ jŭs-su′; Fr. pron., dŭ zhü-sē-ö′.
Kansas, kăn′săs, *not* kän′zäs.
Kant, känt.
Katahdin (Mount), kä-tä′dĭn.
Kearney, kär′nĭ, *not* kē′rnĭ.
Kearsarge (Mount), kēr′särj.
Keble (John), kē′bl, *not* kĕb′l.
Kenelm, kĕn′ĕlm, *not* kĕn-ĕlm′.
Kennebec, kĕn-ē-bĕk′, *not* kĕn′ē-bĕk.
Keokuk, kē′ō-kŭk, *not* kē-ō′kŭk.
Khiva, kē′vä.
Kief, kē-ĕf′.
Kiel, kēl.
Kiev, kē-ĕf′.
Kilauea, kē-low-ā′ä.
Kléber, klē′bĕr *or* klā′bâr; Fr. pron., klā-bâr′.
Knollys, nōlz.
Köln, kölnː
Königsberg, kĕn′ĭgz-bĕrg; Ger. pron., kö′nĭgs-bĕrg.
Kosciusko, kŏs-sĭ-ŭs′kō.
Kossuth, kŏsh′ōōt.
Kotzebue von, fōn kŏt′sē-bōō.
Krause, krow′zĕ.
Krupp, krōōp.
Kurile (Islands), kōō′rĭl.
La Bruyère de, dŭ lä brü-ē-yâr′ *or* dŭ lä brü-yâr′.
Lachesis, lăk′ē-sĭs, *not* lăk-ē′sĭs.
Lachine (rapids), lä-shēn′.
Ladrones (Islands), lä-drōnz′; Sp. pron., lä-drō′nĕs.
Laertes, lā-ēr′tēz.
Laffitte, lä-fēt′.
Lafontaine de, dŭ lä-fŏn-tān′; Fr. pron., dŭ lä-fôN-tān′.
La Fourche, lä fōōrsh′.
La Guayra, lä gwī′rä.
Lalla Rookh, lä′lä-rōōk, *not* lä-lä-rōōk′.
Languedoc, läN′gŭ-dok.
Lannes, lăn or län.
Laocoön, lā-ŏk′ō-ŏn, *not* lā-ō-kōōn′.
Laplace de, dŭ lä-plăs′.
Laputa, lä-pu′tȧ.
Lares, lā′rēz.
La Rochefoucauld de, dŭ lä rösh-fōō-kō′.
Latin, lăt′ĭn.
Lausanne, lō-zăn′.
Lavoisier, lä-vwä-zē-ā′.
Layard, lā′ērd.
Lebrun, lŭ-brŭN′.
Le Clerc, lŭ klâr′, *not* lŭ klârk′.
Ledru-Rollin, lŭ-drü′-rō-lăN′.
Legaré, lŭ-grē′.
Leibnitz von, fōn līp′nĭts.
Leicester, lĕs′tēr.
Leigh (Aurora), lē, *not* lā.
Leila, lē′lȧ, *not* lī′lȧ.
Leipsic, līp′sĭk.
Leipzig, līp′tsĭg.
Lely (Sir Peter), lē′lĭ.
Lenape, lĕn′ä-pē.
L'Enclos de (Ninon), nē-nôN′ dŭ läN-klō′.
Leominster, lĕm′ĭn-stēr, *not* lē′ō-mĭn-stēr.
Le Sage, lŭ säzh′.
Lesseps de, dŭ lā-sĕps′; dŭ lā-sĕp′ (Biog.).
Le Sueur, lŭ sü-ör′.
Leutze, loit′sĕ.
Lever (Charles), lē′vēr, *not* lĕv′ēr.

Leverrier, lŭ-vĕr′ĭ-ēr; Fr. pron., lŭ-vā-rē-ā′.
Lewes (George Henry), lu′ĭs, *not* luz.
Leyden, lī′dĕn.
Lieber, lē′bĕr.
Liebig von, fŏn lē′bĭg.
Liége, lēj; Fr. pon., lē-ăzh′.
Lima (Peru), lē′mä.
Lima (U. S.), lī′mä.
Limoges, lē-mōzh′.
Lincoln, lĭng′kŭn, *not* lĭn′kŭn.
Linné von, fŏn lĭn′ā.
Liszt (Franz), fränts lĭst.
Lodi, lō′dē.
Lopé de Vega, lō′pā dā vā′gä.
Lopez, lō′pĕs; Sp. pron., lō′pĕth.
Los Angeles, lōs ăn′jĕl-ēz; Sp. pron., lōs äng′-hĕl-ĕs.
Lucrezia Borgia, lōō-krāt′sē-ä bōr′jä.
Luigi, lōō-ē′jē.
Luther, lu′thĕr; Gr. pron., lōō′tĕr.
Lycidas, lĭs′ĭ-dăs.
Lyell (Sir Charles), lī′ĕl.
Lyly (John), lĭl′ĭ.
Lyonnaise, lī-ŏn-āz′; Fr. pron., lē-on-āz′.
Macbeth, măk-bĕth′, *not* măk′bĕth.
Machiavelli de, dā mäk-ē-ä-vĕl′ē.
Mackay (Charles), măk-ī′ *or* măk-ā′.
Macleod, măk-lowd′.
Macready, măk-rē′dĭ, *not* măk-rā′dĭ.
Maggiore (Lake), mäd-jō′rā.
Magyar, măg′yär; Hung. pron., mŏd-yŏr′; mäd′-yär (Stor.).
Mahabharata mä-hä-bä′rä-tä.
Maintenon de, dŭ măn-tŭ-nôn′.
Mainz, mĭnts.
Malcolm, măl′kŭm.
Malebranche, mäl-brăNsh′.
Malesherbes de, dŭ mäl-zârb′.
Malibran, mä-lē-brăN′; anglicized, măl′ĭ-brăn.
Malpighi, mäl-pē′gē.
Malthus, măl′thŭs.
Manetho, măn′ē-thō.
Mansard, măN-sär′; anglicized măn′särd.
Maori, mä′ō-rē.
Maracaybo, mä-rä-kī′bō.
Marat, mä-rä′, *not* măr-ät′.
Mardigras, mär-dē-grä′.
Maria Theresa, mä-rī′å tē-rē′sä.
Marie Antoinette, mä-rē′ ăN-twä-nĕt′.
Marion, măr′ē-ŏn.
Marius, mā′rĭ-ŭs, *not* măr′ĭ-ŭs.
Marjoribanks, märch′bängks.
Marlborough (Duke) môl′brō; môl′bŭr-ŭ (Biog.).
Marochetti, mä-rō-kĕt′ē.
Marseillaise (hymn), mär-sā-yāz′.
Marseilles (Fr.), mär-sālz′.
Masaniello, mä-sä-nē-ĕl′lō.
Massasoit, măs′sā-soit.
Massillon, măs′ĭl-ŏn; Fr. pron., mä-sē-yôn′.
Mather (Cotton), măth′ĕr.
Mauch Chunk, môk chŭngk′.
Mauna Loa, mow′nä lō′ä.
Maupertius de, dŭ mō-pâr-twē′.
Maximilian (Emperor), măks-ĭ-mĭl′yăn.
Mayence, mä-yäNs′.
Mazarin, măz-ăr-ēn′; Fr. pron., mä-zä-răN′.
Mazzini, măt-sē′nē.
Medici de', dā mĕd′ē-chē *or* dā mā′dē-chē.
Mefistofele, mā-fēs-tō′fā-lā, *not* mĕf-ĭs-tŏf′ē-lē.
Mehemet Ali, mā′hĕm-ĕt ä′lē.
Méhul, mā-ül′.
Meissonier, mā-sō-nē-ā′.
Melanchthon, mē-lăngk′thŏn; Ger. pron., mē-länk′tōn.
Menai (Straits), mĕn′ī, *not* mē′nī.
Mencius, mĕn′shĭ-ŭs.
Mendelssohn Bartholdy, mĕn′dĕl-sōn bär-tōl′dē.
Metternich von, fŏn mĕt′ĕr-nĭk.
Meyerbeer, mī′ĕr-bār.
Miami, mī-ă′mĭ.
Michael, mī′kā-ĕl; coll., mī′kĕl.
Michael Angelo, mī′kā-ĕl ăn′jā-lō.
Michel-Ange (Fr.), mē-kĕl′-äNzh.
Michelangelo (It.), mē-kĕl-äṅ′jā-lō.
Millais, mĭl-lā′.
Millet, mē-yā′.
Mirabeau de, dŭ mē-rä-bō′; anglicized, mĭr′ă-bō.
Missouri, mĭs-sōō′rĭ, *not* mĭz-zōō′rĭ.
Mivart (St. George), mĭv′ärt.
Mnemosyne, nē-mŏs′ĭn-ē.
Mœris (Lake), mē′rĭs.
Mohammed, mō-hăm′ĕd.
Molière, mō-lē-âr′; Fr. pron., mol-yâr′.
Moltke von, fŏn mōlt′kĕ.
Montaigne de, dŭ mŏn-tān′; Fr. pron., dŭ môN-tân′yŭ.
Mont Blanc, môN-bläN′; often anglicized, mŏnt-blängk′.
Montcalm de, dŭ mŏnt-käm′; Fr. pron., dŭ môn-kälm′.
Mont Cenis, môN sŭ-nē′.
Montesquieu de, dŭ mŏn-tĕs-ku′; Fr. pron., dŭ môN-tĕs-kyö′.
Monticello (Italy), mŏn-tē-chĕl′lō.
Moore (Thomas), mōr *or* mōōr.
Moscheles, mŏsh′ĕl-ēs.
Moses, mō′zĕz.
Moultrie, mōō′trĭ *or* mōōl′trĭ.
Mozart, mō-zärt′; Ger. pron., mōt′särt.
Müller (Max), mül′ĕr.
Munchausen, mŭn-chō′sĕn.
München, mün′kĕn.
Münchhausen von, fŏn münk′how-zĕn.
Munkacsy de, dŭ mŏŏn′käch-ē.
Murat, mu-rät′; Fr. pron., mü-rä′.
Murillo, mu-rĭl′lō; Sp. pron., mōō-rēl′yō.
Musset de, dŭ mü-sā′.
Nantes, năntz; Fr. pron., năNt.
Napier, nā′pē-ĕr.
Natchitoches, năk-ē-tŏsh′ *or* năch-ĭ-tŏch′ĕs.
Nebuchadnezzar, nĕb-yu-kăd-nĕz′är.
Nepos (Cornelius), nē′pŏs.
Nesselrode von, fŏn nĕs′ĕl-rō-dĕ.
Neuchâtel, nö-shä-tĕl′.
Neumann, noi′măn, *not* nu′măn.
Nevada, nē-vä′dä.
Newfoundland, nu′fŭnd-lănd.
New Orleans, nu ôr′lē-ănz, *not* nu ôr-lēnz′.
Nibelungen-Lied, nē′bĕl-ŏŏng-ĕn-lēd.
Nice, nēs.
Niebuhr, nē′bōōr.
Nijni-Novgorod, nĭzh′nē-nŏv-go′rŏd; nizh′nē-nŏv-gō-rŏd′ (Gaz.).
Nismes, nēm.
Notre Dame, nō-tr dăm′.
Novalis, nō-vä′lĭs.
Ober Ammergau, ō′bĕr äm′mĕr-gow.
Odoacer, ō-dō-ā′sēr, *not* ō-dō′ā-sēr.
Odysseus, ō-dĭs′ē-ŭs *or* ō-dĭs′sus.
Oedipus Tyrannus, ĕd′ĭp-ŭs tĭr-ăn′ŭs.
Oehlenschläger, ö′lĕn-shlā-gĕr.
Oersted, ör′stĕd.
Ole Bull, ō′lē bŏŏl.
Opie, ō′pī.

Origen, ŏr′ĭ-jĕn.
Oude, owd, *not* ōōd.
Oudinot, ōō-dē-nō′.
Ouida, wē′dä.
Ovid, ŏv′ĭd, *not* ō′vĭd.
Paganini, pä-gä-nē′nē.
Paget, paj′ĕt.
Palfrey, pôl′frĭ.
Palgrave, pôl′grāv.
Palissy, păl′ĭs-ĭ; Fr. pron., pä-lē-sē′.
Pall-Mall (street in London), pĕl-mĕl′, *not* păl-măl′ *nor* pôl-môl′.
Palmerston, päm′ĕr-stŭn, *not* păl′mĕr-stŭn.
Paoli di, dē pä′ō-lē, *almost* pow′lē.
Parnell, pär′nĕl, *not* pär-nĕl′.
Parrhasius, păr-rā′shĭ-ŭs, *almost* păr-rā′shŭs.
Pascal, päs′kăl; Fr. pron., päs-kăl′.
Pasteur, päs-tör′.
Perugino, pā-rōō-jē′nō.
Pestalozzi, pĕs-tä-lŏt′sē.
Pesth, pĕst; Hungarian pron., pĕsht.
Petrograd, pyĕ′tro-grät.
Petruccio, pā-trōō′chō.
Phaedrus, fē′drŭs.
Philippi, fĭl-ĭp′ī, *not* fĭl′ĭp-ī.
Phocion, fō′shĭ-ŏn, *not* fō′shŏn.
Piccolomini, pĭk-ō-lō′mē-nē.
Pisa, pē′zä *or* pē′sä.
Pisistratus, pī-sĭs′trā-tŭs, *not* pĭs-ĭs-trā′tŭs.
Pizarro, pē-zär′ō; Sp. pron., pē-thär′ō.
Pleiades, plē′yà-dēz.
Pleiads, plē′yădz.
Pliny, plĭn′ĭ.
Plotinus, plō-tī′nŭs.
Pnyx, nĭks.
Poitiers, pwà-tĭ-ā′; sometimes anglicized poi-tērz′.
Pompeii, pŏm-pā′yē, *not* pŏm′pē-ī.
Ponce de Leon, pōn′thā dā lā-ōn′; anglicized pŏns dē lē′ŏn.
Pontius, pŏn′shĭ-ŭs, *not* pŏn′shŭs.
Popocatapetl, pō-pō′kăt-ā-pā-tl; pō-pō-kä-tä-pĕt′l.
Port au Prince, pōrt′ō-prĭns; Fr. pron., pōrt-ō-prăNs′.
Poughkeepsie, pō-kĭp′sĭ, *not* pō-kēp′sĭ.
Pouschkin, pŏŏsh′kĭn *or* pŏŏsh′kēn.
Powhatan, pow-hăt′ăn′, *not* pow-hăt′ăn.
Pozzuoli, pŏt′sōō-ō′lē.
Praxiteles, prăks-ĭt′ē-lēz.
Provençal, prō-vĕn′săl; Fr. pron., prō-văn-sàl′.
Psyche, sī′kē.
Ptolemy, tŏl′ē-mĭ.
Puebla, pwĕb′lä.
Pythagoras, pĭth-ăG′ō-răs, *not* pī-thăG′ō-răs.
Quatre Bras, kä′tr brä.
Rabelais, răb-lā′; rä-bĕl-ā′ *or* rä-blā′ (Biog.).
Rachel (actress), rä-shĕl′.
Racine, rä-sēn′.
Raleigh (Sir Walter), rô′lĭ.
Rameses, răm′ē-sēz; rä-mē′sēz (Stor.).
Ramillies, răm′ĭl-ēz; Fr. pron., rä-mēl-yē′ *or* rä-mē-yē′.
Raphael, răf′à-ĕl; rā′fà-ĕl *or* rä′fä-ĕl (Biog.).
Réaumur, de, dŭ rā-ō-mür′.
Récamier, rā-kä-mē-ā′.
Reichsrath, rīks′rät.
Reichstadt, rīks′stät.
Reichstag, rīk′stäg.
Rembrandt, rĕm′brănt; Dutch pron., rĕm′bränt.
Rémusat de, dŭ rā-mü-zä′.
Renan, rŭ-năN′; anglicized, rē′năn *or* rē-năn′.
Rensselaer, rĕn′sē-lēr.
Rheims, rēmz; Fr. pron., răNs.
Rhodes, rōdz.
Ricardo, rē-kär′dō.
Ricci, rē′chē.
Richelieu de, dŭ rĭsh-ĕl-ōō′; Fr. pron., dŭ rēsh-lē-ö′.
Richter, rĭk′tĕr.
Robespierre de, dŭ rō′bĕs-pēr; Fr. pron., dŭ rob-ĕs-pyâr′.
Rochambeau de, dŭ rō-shăN-bō′.
Roland, rō′lănd; Fr. pron., rō-lăN′.
Rollin, rŏl′ĭn; Fr. pron., rō-lăN′.
Rollo, rŏl′ō.
Romanof, rō-mä′nŏf.
Romola, rŏm′ō-lå.
Rossetti, rōs-sĕt′ē.
Rossini, rōs-sē′nē.
Ruy Blas, rōō′ē-bläs.
Ruysdael, rois′däl.
Ruyter de, dŭ rī′tĕr; Dutch pron., dŭ roi′tĕr.
Ryswick, rĭz′wĭk; Dutch pron., rĭs′vĭk.
St. Cloud, sānt klowd′; Fr. pron., săn klōō′.
St. Croix, sānt kroi′; Fr. pron., săn krwä′.
St. Cyr, săn sēr′.
St. Denis, sānt dĕn′ĭs; Fr. pron., săN dēn-ē′.
St. Simon de, dŭ sānt sī′mŏn; Fr. pron., dŭ săN sē-môN′.
Sainte-Beuve, săNt-bövˊ.
Sala (George Augustus), sā′lä, *not* sä-läˊ.
Saladin, săl′ăd-ĭn.
Salome, sà-lō′mē.
Samoa, sä-mō′ä.
San Joaquin, săn hō-ä-kēn′, *almost* wä-kēn′.
San José, săn hō-sā′.
San Juan, săn hōō-ănˊ.
San Luis Potosi, săn lōō-ēs′ pō-tō-sē′.
Sardanapalus, sär-dà-nà-pā′lŭs, *not* sär-dăn-ăp′-ā-lŭs.
Sault, sō *or* sōō.
Scheele, shēl; Swedish pron., shā′lā.
Scheherezade, shā-hā-rā-zä′dā.
Schelling von, fōn shĕl′lĭng.
Schenectady, skĕn-ĕk′tà-dĭ.
Schiedam, skē-dămˊ, *not* shē-dămˊ.
Schiller von, fōn shĭl′lēr.
Schleiermacher, shlī′ĕr-mäk-ĕr.
Schleswig-Holstein, shlēs′vĭG-hōl′stīn.
Schoharie, skō-hărˊī, *not* skō-hā′rĭ.
Schopenhauer, shō′pĕn-how-ĕr.
Schubert, shōō′bĕrt.
Schumann, shōō′män.
Schurz (Carl) shōŏrts.
Sebastopol, Sĕb′ăs-tŏ′pŏl *or* Sē-băs′tō-pŏl; Rus Sē-văs′tō-pŏl.
Sedan, sē-dănˊ; Fr. pron., sŭ-dăNˊ.
Semiramide, sā-mē-rä-mē′dā. *not* sĕm-ĭr-ăm′ĭd-ē.
Semiramis, sē-mĭrˊà-mĭs.
Sennacherib, sĕn-ăk′ĕr-ĭb *or* sĕn-à-kē′rĭb.
Sesostris, sē-sŏs′trĭs.
Severus, sē-vē′rŭs.
Sévigné de, dŭ sā-vēn-yāˊ.
Sèvres, sāvr; sĕvr *or* sâvr (Gaz.).
Seychelles, sā-shĕl′.
Sheboygan, shē-boi′găn.
Sheol, shē′ōl.
Sieyès, sē-yăs′; sē-ēs′ *or* sē-ā-yĕs′ (Biog.).
Sigismund (Emperor), sĭj′ĭs-mŭnd; Ger. pron., zē′gĭs-mŏ̈nt.
Sikhs, sēks.
Simplon, sĭm′plŏn; Fr. pron., săN-plôNˊ.
Sioux, sōō.
Skaneateles (Lake), skăn-ē-ăt′lĕz.
Sluys, slois.

Sontag, sŏn′tăg *or* zōn′täg.
Soult, sōōlt.
Southey, sow′thī *or* sŭth′ī.
Spinoza, spē-nō′zä.
Spurzheim, spōōrts′hīm.
Stabat Mater, stä′bät mä′tĕr.
Staël de, dŭ stäl′; Fr. pron., dŭ stä-ĕl′.
Steuben, stʊ′bĕn; Ger. pron., stoi′bĕn.
Strabo, strā′bō.
Strauss, strows.
Sully, sŭl′ī; Fr. pron., sü-lē′.
Swedenborg, swē′dĕn-bôrg; Swedish pron., svĭd′-ĕn-bōrg.
Sweyn, swān.
Taj Mahal, täzh mä-häl′.
Taliaferro, tŏl′ĭv-ĕr.
Talma, tăl′mȧ; Fr. pron., täl-mä′.
Taney, tô′nĭ.
Tannhäuser, tän′hoi-zĕr.
Tauchnitz, towk′nĭts.
Teniers (David), tĕn′yĕrz; tĕn′ē-ĕrz (Biog.); Fr. pron., tā-nē-âr′.
Teufelsdröckh (Herr), hĕr toi′fĕls-drök.
Thalberg, täl′bĕrg.
Thales, thā′lēz.
Thermopylae, thĕr-mŏp′ĭl-ē.
Thierry, tyā-rē′.
Thiers, tē-âr′.
Thisbe, thĭz′bē.
Thomas (Ambroise), äN-brwäz′ tō-mä′.
Thoreau, thō′rō.
Thorwaldsen, tôr′wôld-sĕn *or* tôr′väl-zĕn.
Tighe (Mary), tī.
Tintoretto Il, ēl tĭn-tō-rĕt′ō; ēl tēn-tō-rĕt′ō (Biog.).
Tischendorf von, fōn tĭsh′ĕn-dôrf.
Tissot, tē-sō′.
Titian, tĭsh′ăn; tĭsh′ē-ăn (Biog.).
Tivoli (New York), tĭv′ō-lī; tĭv-ō′lē (Gaz.).
Tocqueville de, dŭ tŏk′vĭl; Fr. pron., dŭ tok-vēl′.
Tolstoi, tŏl′stoi.
Torricelli, tŏr-rē-chĕl′lē.
Toussaint L'Ouverture, tōō-săN′ lōō-vĕr-tür′.
Tremont, trē-mŏnt′.
Trieste, trē-ĕst′; It. pron., trē-ĕs′tȧ.
Trondhjem, trŏnd′yĕm.
Trovatore Il, ēl trō-vä-tō′rā.
Truxillo, trōō-hēl′yō.
Tschaikowsky, chī-kŭvs′kĭ.
Tuesday, tʊz′dā, *not* tōōz′dĭ *nor* tyʊs′dĭ.
Tuileries, twēl-rē′, *not* twĭl′ĕr-ēz.
Turenne de, dŭ tʊ-rĕn′; Fr. pron., dŭ tü-rĕn′.
Turgeneff, tōōr-gĕn′ĕf.
Tyndale, tĭn′dăl, *not* tĭn′dāl.
Tyrol, tĭr′ōl; Ger. pron., tē-rōl′.
Tyrwhitt, tĕr′ĭt.
Uhland, ōō′länt.
Ulrici, ōōl-rēt′sē.
Utrecht, yʊ-trĕkt′; Dutch pron., ü′trĕʀt.
Valenciennes, vȧ-lĕn-sĭ-ĕnz′; Fr. pron., vȧ-läN-sē-ĕn′.
Valhalla, văl-hăl′ȧ.
Vandyck, văn-dīk′.
Van Eyck, văn īk′.
Vauban de, dŭ vō-bäN′.
Vaucluse, vō-klüz′.
Vaud (Pays de), pā-ē′ dŭ vō′.
Vaughan, vôn *or* vō′ăn.
Velasquez, vȧ-läs′kĕth.
Verboeckhoven, vĕr-bōōk′hō-vĕn.
Vercingetorix, vĕr-sĭn-jĕt′ō-rĭks.
Verdi, vâr′dē.
Verestchagin, vā-rēs-tchä′gĭn.
Vernet, vĕr-nā′.
Veronese (Paul), vā-rō-nā′zā.
Versailles, vĕr-sālz′; Fr. pron., vĕr-sä′yŭ.
Vespasian, vĕs-pā′zhĭ-ăn.
Vespucci (Amerigo), ä-mā-rē′gō vĕs-pōōt′chē.
Vibert, vē-bâr′.
Vichy, vē-shē′.
Vienna, vĭ-ĕn′ȧ, *not* vī-ĕn′ȧ.
Villiers, vĭl′yĕrz.
Vincennes, vĭn-sĕnz′; Fr. pron., văN-sĕn′.
Vinci da, dä vĭn′chē.
Viollet-le-Duc, vē-ō-lā′ lŭ-dük′.
Virchow, vĕr′chow; Ger. pron., fĭr′kō.
Vladimir, vlăd′ē-mĕr; Russian and Polish pron., vlä-dē′mĭr.
Volapük, vō-lä-pük′.
Vosges, vōzh.
Wagner, wăg′nĕr; Ger. pron., väg′nĕr.
Wagram, vä′gräm.
Walhalla, wŏl-hăl′ȧ.
Wallenstein von, fōn wŏl′ĕn-stīn; Ger. pron., fōn väl′ĕn-stīn.
Waller, wŏl′ĕr.
Warwick (Eng.), wôr′ĭk.
Waterloo, wô-tĕr-lōō′; Dutch pron., vä-tĕr-lō′.
Watervliet, wô-tĕr-vlēt′.
Watteau, vä-tō′; commonly wä-tō′.
Waukegan, wô-kē′găn.
Weber von, fōn vā′bĕr.
Wednesday, wĕnz′dā, *not* wĕd′nĕs-dā.
Wellesley (Islands), wĕls′lĭ.
Wellesley (College), wĕlz′lĭ.
Wemyss (Castle), wēms.
Werther, wĕr′tĕr; Ger. pron., vär′tär.
Wesley, wĕs′lĭ.
Whitefield, hwīt′fēld, *not* hwĭt′fēld.
Wieland, wē′länd; Ger. pron., vē′länt.
Wilhelm, vĭl′hĕlm.
Wilkesbarre, wĭlks′bär-ĭ.
Winnepesaukee (Lake), wĭn-ē-pē-sô′kē.
Wolf, wŏŏlf; Ger. pron., vŏlf.
Wolseley (Sir Garnet), wŏŏlz′lĭ, *not* wŏŏl′zĭ.
Wolsey (Cardinal), wŏŏl′zĭ, *not* wŏŏl′sĭ.
Woolwich, wŏŏl′ĭj.
Worcester, wŏŏs′tĕr.
Worcestershire, wŏŏs′tĕr-shĭr.
Wörth (Ger.), vört.
Württemberg, vür′tĕm-bĕrg.
Wyandotte, wī-ăn-dŏt′.
Wyckliffe, wĭk′lĭf.
Ximenes (Cardinal), zĭm-ē′nēz; Sp. pron., hē-mā′nĕs.
Yang-tse-kiang, yăng-tsē-kĭ-äng′.
Yenikale (Strait), yĕn-ē-kä′lä.
Yenesei, yĕn-ē-sā′ē.
Ygdrasyl, ĭg′drȧ-sĭl.
Yonge (Charlotte), yŭng.
Yosemite (Valley), yō-sĕm′ĭt-ē.
Youghiogheny, yŏ-hŏ-gā′nĭ.
Ypres, ē′pĕr.
Yvetot, ēv-tō′.
Zeus, zʊs, *not* zē′ŭs.
Zeuxis, zʊk′sĭs.
Zipporah, zĭp-ō′rȧ.
Zollverein, tsōl′fē-rīn; zŏl′fĕr-īn (Stor.).
Zoroaster, zō-rō-ăs′tĕr, *not* zō′rō-ăs-tĕr.
Zorrilla y Moral, thōr-ēl′yä ē mō-räl′.
Zutphen, zŭt′fĕn.
Zuyder Zee, zī′dĕr zē; Dutch pron., zoi′dĕr zā.
Zwingle, zwĭng′gl.
Zwingli, zwĭng′glē; Ger. pron., tsving′lē.

DICTIONARY OF ABBREVIATIONS.

A., *a.* Adjective.
A. Alto; Argon.
A., *ans.* Answer.
a., @ (Lat. *ad*), To; At.
a, aa. The like quantity of each.
A. A. Associate of Arts.
A. A. G. Assistant Adjutant General.
A. A. A. S. American Association for the Advancement of Science.
A. A. S. (Lat. *Academiae Americanae Socius*), Fellow of the American Academy.
A. A. S. S. (Lat. *Academiae Antiquarinae Societatis Socius*), Member of the American Antiquarian Society.
A. B. (Lat. *artium baccalaureus*), Bachelor of Arts.
Abbr., *Abbrev.* Abbreviated, Abbreviation.
Abl., *ablat.* Ablative.
Abp. Archbishop.
A. B. S. American Bible Society.
A. C. (Lat. *ante Christum*), Before Christ; Analytical Chemist.
Acad. Academy.
A. C. A. American Congregational Association.
Acc., *Accus.* Accusative.
Acc., *Acct.* Account.
A. D. (Lat. *anno Domini*), In the year of our Lord.
A. D. C. Aide-de-camp.
Ad., *advt.* Advertisement.
Adj. Adjective.
Adjt. Adjutant.
Adjt. Gen. Adjutant General.
Ad lib., *Ad libit.* (Lat. *ad libitum*), At pleasure.
Adm. Admiral.
Admr. Administrator.
Admx. Administratrix.
Adv. Adverb.
Ae., *Aet.* (Lat. *aetatis*), Of Age, Aged.
A. F. A. Associate of the Faculty of Actuaries.
A. G., *Adjt. Gen.* Adjutant General.
Ag. (Lat. *argentum*), Silver.
Agl. Dept. Agricultural Department.
Agr., *Agric.* Agriculture, Agricultural.
Agt. Agent.
A. H. (Lat. *anno Hegirae*), In the year of the Hegira, or flight of Mohammed.
A. H. S. (Lat. *anno humanae salutis*), In the year of human salvation.
A. I. A. Associate of the Institute of Actuaries; American Institute of Architecture.
A. I. C. E. Associate of the Institute of Civil Engineers.
A. L. of H. American Legion of Honor.
Ala. Alabama.
Alas. Alaska.
Ald. Alderman.
Alex. Alexander.
Alf. Alfred.
Alg. Algebra.
Al. Aluminium; aluminum.
A. M. (Lat. *anno mundi*), In the year of the world.
A. M. (Lat. *ante meridiem*), Before noon.
A. M. (Lat. *artium magister*), Master of Arts.
Am., *Amer.* America, American.
Amer. Phil. Soc. American Philosophical Society.
Amt. Amount.
A. N. Anglo-Norman.
an. (Lat. *anno*), In the year.
Anal. Analysis.
Anat. Anatomy, Anatomical.
Anc. Ancient.
Anon. Anonymous.
Ans. Answer.
A. N. S. S. Associate of the Normal School of Science.
Ant., *Antiq.* Antiquities, Antiquarian.
Anthrop. Anthropology, Anthropological.
A. O. U. American Ornithologists' Union.
A. O. U. W. Ancient Order of United Workmen.
Ap. Apostle.
Apoc. Apocalypse, Apocrypha.
Apog. Apogee.
App. Appendix; Apostles.
approx. Approximate, -ly.
Apr. April.
A. P. S. Associate of the Pharmaceutical Society.
Aq. (Lat. *aqua*), Water.
A. P. A. American Protestant Association; American Protective Association.
A. Q. M. Assistant Quartermaster.
A. Q. M. G. Assistant Quartermaster General.
A. R. (Lat. *anno regni*), In the year of the reign.
Ar., *Arab.* Arabic, Arabian.
Ar., *Arr.* Arrive, Arrives, Arrived, Arrival.
A. R. A. Associate of the Royal Academy.
Arab. Arabic, Arabian.
Aram. Aramaic.
Arch. Architecture.
Archaeol. Archaeology.
Archd. Archdeacon.
A. R. H. A. Associate of the Royal Hibernian Academy.
Arith. Arithmetic, Arithmetical.
Ariz. Arizona.
Ark. Arkansas.
Arm. Armenian; Armoric.
Arr. Arrive, Arrives, Arrived, Arrival.
A. R. R. (Lat. *anno regni regis* or *reginae*), In the year of the king's (or queen's) reign.
A. R. S. A. Associate of the Royal Scottish Academy.
A. R. S. L. Associate of the Royal Society of Literature.
A. R. S. M. Associate of the Royal School of Mines.
Art. Article.
A. S., *A.-S.* Anglo-Saxon.
As. Arsenic.
Asst. Assistant.
A. S. S. U. American Sunday School Union.
Assyr. Assyrian.
Astrol. Astrology.
Astron. Astronomy, Astronomical.
A. T. S. American Tract Society.
Atty. Attorney.
Atty. Gen. Attorney General.
Au. (Lat. *aurum*), Gold.
A. U. A. American Unitarian Association.
A. U. C. (Lat. *anno urbis conditae*), In the year from the building of the city—Rome.
Aug. Augmentative.
Aug. Augustus; August.
Auxil. Auxiliary.
A. V. Authorized Version.
A. V. Artillery Volunteers.
Avoir. Avoirdupois.
B. Bass (*Music*); Book; Boron.
B., *Brit.* British.
b. Born.
B. A. Bachelor of Arts. [*A. B.*]
Ba. Barium.
Bal. Balance.
Balt., *Balto.* Baltimore.
Bank. Banking.
Bap., *Bapt.* Baptist.
Bar. Barrel; Barometer.
Bart., *Bt.* Baronet.
Bat., *Batt.* Battalion.
bbl., *bbls.* Barrel, Barrels.
B. C. Before Christ.
B. Ch. (Lat. *baccalaureus chirurgiae*), Bachelor of Surgery.
B. C. L. (Lat. *baccalaureus civilis legis*), Bachelor of Civil Law.
B. D. (Lat. *baccalaureus divinitatis*), Bachelor of Divinity.
Bd. Bound.
Bdls. Bundles.
Bds. Bound in boards.
B. E. Bachelor of the Elements.
Beds. Bedfordshire.
Belg. Belgic, Belgian.
Ben., *Benj.* Benjamin.
Berks. Berkshire.
Bi. Bismuth.
Bib. Bible, Biblical.
Biog. Biography, Biographical.
Biol. Biology, Biological.
B. L., *B. LL.* (Lat. *baccalaureus legum*), Bachelor of Laws.
B. L. S. Bachelor of the Library of Science.
bls. Bales.
B. M. (Lat. *baccalaureus medicinae*), Bachelor of Medicine.
B. M., *B. Mus.* (Lat. *baccalaureus musicae*), Bachelor of Music.
B. O. Branch Office.
B. O. Bachelor of Oratory.
Bohem. Bohemian.
Bot. Botany, Botanical.
B. O. U. British Ornithologists' Union.
Bp. Bishop.
Br., *Bro.* Brother.
Bret. Bas-Breton, or Celtic of Brittany.
Brig. Brigade.
Brig. Gen. Brigadier General.
Brit. Britain, Britannia, British.
Bro. Bromine.
B. S. Bachelor of Surgery; Bachelor of Science.
B. Sc. (Lat. *baccalaureus scientiae*), Bachelor of Science.
B. S. L. Botanical Society, London.
Bt. Baronet.
bush. Bushel.
B. V. Blessed Virgin.
B. V. M. Blessed Virgin Mary.
bx., *bxs.* Box, Boxes.

C. Cent, Cents; Centigrade; Consul; Centime, Centimes; a hundred; Carbon.
C., *Cap.* (Lat. *caput*), Chapter.
Ca. Calcium.
C. A. Chartered Accountant.
Cal. California; Calendar.
Cam., *Camb.* Cambridge.
Cant. Canticle; Canterbury.
Cantab. (Lat. *Cantabrigiensis*), Of Cambridge.
Cantuar., *Cant.* (Mid. Lat. *Cantuaria*), Canterbury.
Cap. (Lat. *caput*), Capital; Chapter.
Caps. Capitals.
Capt. Captain.
Card. Cardinal.
Cath. Catholic.
Cb. Columbium (Niobium).
C. B. Companion of the Bath.
C. C. Catholic Clergyman, Catholic Curate.
c. c. Cubic centimeter.
Cd. Cadmium.
C. D. V. Carte-de-Visite.
Ce. Cerium.
C. E. Civil Engineer.
Cel. Celsius.
Celt. Celtic.
Cent. (*centum*), A hundred; Centigrade.
Cert., *Certif.* Certify; Certificate.
Cf. (Lat. *confer*), Compare.
C. ft. Cubic feet.
C. G. Coast Guard; Commissary General; Consul General.
C. G. S. Centimeter-Gramme-Second.
C. H. Court House.
Ch. Church; Chapter.
Chal. Chaldron.
Chal., *Chald.* Chaldee, Chaldean, Chaldaic.
Chan. Chancellor.
Chap. Chapter.

Chas. Charles.
Chem. Chemistry, Chemical.
Ch. Hist. Church History.
Chin. Chinese.
Chr. Christ; Christian; Christopher.
Chron. Chronology, Chronological.
C. I. [Order of the] Crown of India.
Cic. Cicero.
C. I. E. Companion of the Order of the Indian Empire.
Cin. Cincinnati.
Cit. Citation; Citizen.
Civ. Civil.
C. J. Chief Justice.
cl. Centiliter.
Cl. Clergyman; Chlorin.
Class. Classical.
Clk. Clerk.
cm. Centimeter; *cm.*2 Square centimeter; *cm.*3 Cubic centimeter.
c. m. Cubic meter.
C. M. Certificated Master; Common meter.
C. M. (Lat. *chirurgiae magister*), Master in Surgery.
C. M. G. Companion of the Order of St. Michael and St. George.
Cml. Commercial.
c. mm. Cubic millimeter.
C. M. Z. S. Corresponding Member of the Zoölogical Society.
Co. Company; County; Cobalt.
C. O. D. Cash on delivery; Collect (payment) on delivery.
Cogn. Cognate.
Col. Colonel; Colonial; Colossians; Column.
Coll. College; Collector; Collection.
Colloq. Colloquial, Colloquialism, Colloquially.
Colo. Colorado.
Com. Commander; Commerce; Commissioner; Committee; Commodore; Common.
Comm. Commentary; Commerce.
Comp. Compare; Comparative; Compound, Compounded.
Compar. Comparative.
Compos. Composition.
Com. ver. Common Version.
Con. (Lat. *contra*), Against.
Conch., Conchol. Conchology.
Con. Cr. Contra Credit.
Cong. Congregation, Congregational, Congregationalist; Congress.
Conj. Conjunction; Conjugation.
Conn. Connecticut.
Con. Sect. Conic Section.
Contr. Contracted, Contraction.
Cop., Copt. Coptic.
Cor. Corinthians.
Cor. Mem. Corresponding Member.
Corn. Cornwall; Cornish.
Corrup. Corruption, Corrupted.
Cor. Sec. Corresponding Secretary.
Cos. Cosine.
C. P. Clerk of the Peace; Common Pleas.
C. P. A. Certified Public Accountant.
C. P. C. Clerk of the Privy Council.
C. P. S. (Lat. *custos privati sigilli*), Keeper of the Privy Seal.
Cr. Credit, Creditor; Chromium.
C. R. (Lat. *Civis Romanus*), Roman Citizen.
C. R. (Lat. *custos rotulorum*), Keeper of the Rolls.
Cres. Crescendo.
Crim. con. Criminal conversation, or adultery.
Crystall., Crystallog. Crystallography.
Cs. Caesium.
C. S. A. Confederate States of America.
C. S. Court of Sessions; Clerk to the Signet; Civil Service.
C. S. I. Companion of the Star of India.
Csk. Cask.
Ct. (Lat. *centum*), A hundred.
Ct. Court.
Ct., Conn. Connecticut.
C. T. Certified Teacher.
C. T. A. U. Catholic Total Abstinence Union.
Cu. (Lat. *cuprum*), Copper.
Cub., Cu. ft. Cubic, Cubic foot.
cu. cm. Cubic centimeter.
cu. dm. Cubic decimeter.
cum d. (Lat. *cum dividendo*), With dividend.
Cur., Curt. Current—this month.
Cwt. A hundredweight; Hundredweights.
Cyc. Cyclopaedia.

D. Deputy.
d. (Lat. *denarius, denarii*), A penny, Pence.
d. Died.
Dan. Daniel; Danish.
Dat. Dative.
Dav. David.
D. C. (Ital. *da capo*), From the beginning.
D. C., Dist. Col. District of Columbia.
D. C. L. Doctor of Civil (or Canon) Law.
D. D. (Lat. *divinitatis doctor*), Doctor of Divinity.
D. D. D. (Lat. *dat, dicat, dedicat*), He gives, devotes, and consecrates; the formula by which gifts were consecrated to the gods of Rome. Also (Lat. *dono dedit dedicavit*), He gave and consecrated as a gift.
D. D. S. Doctor of Dental Surgery.
D. E. Dynamic Engineer.
D. Eng. Doctor of Engineering.
Dec. December.
decim. Decimeter.
Def. Definition.
Deft. Defendant.
Deg. Degree, Degrees.
Del. Delaware.
del. (Lat. *delineavit*), He (or she) drew.
Dep., Dept. Department.
Dep. Deputy.
Der. Derived, Derivation.
Deut. Deuteronomy.
D. F. Dean of the Faculty; Defender of the Faith.
dg. Decigram.
Dg. Dekagram.
D. G. (Lat. *Dei gratia*), By the grace of God.
Dict. Dictionary.
Dim., Dimin. Diminutive.
Dis., Disct. Discount.
Dist. District.
Dist. Atty. District Attorney.
Div. Divide; Dividend; Division; Divisor.
dl. Deciliter.
Dl. Dekaliter.
D. Lit., D. Litt. Doctor of Literature.
D. L. O. Dead Letter Office.
dm. Decimeter; *dm.*2 Square decimeter; *dm.*3 Cubic decimeter.
Dm. Dekameter; *Dm.*2 Square dekameter; *Dm.*3 Cubic dekameter.
D. M., D. Mus. Doctor of Music.
D. M. D. Doctor of Dental Medicine.
D. O. Doctor of Osteopathy.
Do. (Ital. *ditto*), The same.
Doc. Document.
Dols. Dollars.
Dom. Econ. Domestic Economy.
Doz. Dozen.
Dpt. Deponent.
Dr. Debtor; Doctor; Dram, Drams.
Dram. Dramatic, Dramatically.
D. S. (Ital. *dal segno*), From the sign.
D. Sc. Doctor of Science.
dst. Decister.
Dst. Dekaster.
D. T. (Lat. *doctor theologiae*), Doctor of Theology.
Du., Dut. Dutch.
Dub. Dublin.
Duo. 12*mo.* Duodecimo (twelve folds).
D. V. (Lat. *Deo volente*), God willing.
D. V. M. Doctor of Veterinary Medicine.
D. V. S. Doctor of Veterinary Surgery.
Dwt. (Lat. *denarius*, and English *weight*), Pennyweight, Pennyweights.
Dynam. Dynamics.

E. East, Eastern; English; Edinburgh; Erbium.
Ea. Each.
E. Aram. East Aramaean, generally called Chaldee.
Eben. Ebenezer.
E. C. Eastern Central; Established Church.
Eccl., Eccles. Ecclesiastical.
Eccles., Ecclesiol. Ecclesiology.
Econ. Economy.
Ed. Editor; Edition; Edinburgh.
Ed., Edm. Edmund.
Edin. Edinburgh.
E. D. S. English Dialect Society.
Edw. Edward.
E. E. Errors excepted.
E. E. Electrical Engineer.
e. g. (Lat. *exempli gratia*), For example.
E. I. East Indies, East Indian.
E. I. C., E. I. Co. East India Company.
E. I. C. S. East India Company's Service.
Elec., Elect. Electric, Electricity.
Eliz. Elizabeth, Elizabethan.
Emp. Emperor, Empress.
Ency., Encyclo. Encyclopaedia.
E. N. E. East-north-east.
Eng. England, English.
Eng., Engin. Engineer, Engineering.
Eng. Dept. Department of Engineers.
Ent., Entom. Entomology, Entomological.
Env. Ext. Envoy Extraordinary.
Eph. Ephesians; Ephraim.
Epiph. Epiphany.
Epis. Episcopal.
Epist. Epistle, Epistolary.
Eq. Equal, Equivalent.
Equiv. Equivalent.
Esd. Esdras.
E. S. E. East-south-east.
Esp., Espec. Especial, Especially.
Esq., Esqr. Esquire.
et al. (Lat. *et alibi*), And elsewhere.
et al. (Lat. *et alii, aliae*, or *alia*), And others.
etc., &c. (Lat. *et caeteri, caeterae*, or *caetera*), And others, and so forth.
Eth. Ethiopia, Ethiopian.
Ethnol. Ethnology, Ethnological.
et seq. (Lat. *et sequentes*, or *sequentia*), And the following.
Etym. Etymology.
Ex. Example; Examined; Exception; Exodus.
Exc. Excellency; Except, Excepted.
Exch. Exchange; Exchequer.
Exd. Examined.
Ex. Doc. Executive Document.
Exec. Executor.
Execx. Executrix.
Ex. Gr. (Lat. *exempli gratia*), For example.
Exod. Exodus.
Exon. (Lat. *Exonia*), Exeter.
Exr. Executor.
Ez. Ezra.
Ezek. Ezekiel.
E. & O. E. Errors and omissions excepted.

F. Fellow; Folio; Fahrenheit; Fluorin.
f. Farthing, Farthings.
f., fem. Feminine.
f. Franc, Francs.
ft. Foot, Feet.
Fahr. Fahrenheit.
F. A. S. Fellow of the Society of Arts.
F. & A. M. Free and Accepted Masons.

F. A. S. E. Fellow of the Antiquarian Society, Edinburgh.
F. B. S. E. Fellow of the Botanical Society of Edinburgh.
Fe. (Lat. *ferrum*), Iron.
F. C. Free Church [of Scotland].
Fcp. Foolscap.
F. C. P. S. Fellow of the Philosophical Society, Cambridge.
F. C. S. Fellow of the Chemical Society.
F. D., Fid. Def. (Lat. *Fidei Defensor*), Defender of the Faith.
Feb. February.
Fec. (Lat. *fecit*), He or she did it.
F. E. I. S. Fellow of the Educational Institute of Scotland.
Fem. Feminine.
F. E. S. Fellow of the Entomological Society; Fellow of the Ethnological Society.
Feud. Feudal.
F. F. V. First Families of Virginia.
F. G. S. Fellow of the Geological Society.
F. I. A. Fellow of the Institute of Actuaries.
F. I. C. Fellow of the Chemical Institute.
fi. fa. Fieri facias.
Fig. Figure, Figures, Figurative, Figuratively.
Finn. Finnish.
F. K. Q. C. P. I. Fellow of the King's and Queen's College of Physicians, Ireland.
Fl. Flemish; Florin, Florins; Flourished.
Fla. Florida.
Flem. Flemish.
F. L. S. Fellow of the Linnæan Society.
F. M. Field Marshal.
Fo., Fol. Folio.
F. O. Foreign Office; Field Officer.
F. O. B. Free on board.
For. Foreign.
Fort. Fortification.
F. P. Fire Plug.
F. P. S. Fellow of the Philological Society.
Fr. France; French; Francis; Francs.
fr. From.
F. R. A. S. Fellow of the Royal Astronomical Society.
F. R. C. P. Fellow of the Royal College of Physicians.
F. R. C. P. E. Fellow of the Royal College of Physicians, Edinburgh.
F. R. C. S. Fellow of the Royal College of Surgeons.
F. R. C. S. E. Fellow of the Royal College of Surgeons, Edinburgh.
F. R. C. S. I. Fellow of the Royal College of Surgeons, Ireland.
Fred. Frederick.
Freq. Frequentative.
F. R. G. S. Fellow of the Royal Geographical Society.
F. R. H. S. Fellow of the Royal Horticultural Society.
F. R. Hist. S. Fellow of the Royal Historical Society.
Fri. Friday.
Fries. Friesland.
Fris. Frisian.
F. R. Met. S. Fellow of the Royal Meteorological Society.
F. R. M. S. Fellow of the Royal Microscopical Society.
F. R. S. Fellow of the Royal Society.
F. R. S. E. Fellow of the Royal Society, Edinburgh.
F. R. S. L. Fellow of the Royal Society of Literature.
F. R. S. S. Fellow of the Royal Statistical Society.
F. S. A. Fellow of the Society of Arts, or of Antiquaries.
F. S. A. Scot. Fellow of the Society of Antiquaries of Scotland.
Ft. Foot, Feet; Fort.
Fth. Fathom.
Fur. Furlong.
Fut. Future.
F. Z. S. Fellow of the Zoölogical Society.

G. Genitive; Guinea, Guineas; Gulf.
g., gm. Gram.
Ga. Georgia; Gallium.
G. A. General Assembly.
Gad. Gadhelic.
Gael. Gaelic.
Gal. Galatians.
Gal., Gall. Gallon, Gallons.
Galv. Galvanism, Galvanic.
G. A. R. Grand Army of the Republic.
G. B. Great Britain.
G. B. & I. Great Britain and Ireland.
Gd. Gadolinum.
Ge. Germanium.
G. C. B. Grand Cross of the Bath.
G. C. H. Grand Cross of the Guelphs of Hanover.
G. C. L. H. Grand Cross of the Legion of Honor.
G. C. M. G. Grand Cross of St. Michael and St. George.
G. C. S. I. Grand Commander of the Star of India.
G. D. Grand Duke, Grand Duchess.
Gen. General; Genesis; Genitive.
Gend. Gender.
Genit. Genitive.
Gent., Gentn. Gentleman, Gentlemen.
Geo. George.
Geog. Geography, Geographical.
Geol. Geology, Geological.
Geom. Geometry, Geometrical.
Ger., Germ. German, Germany.
Gi. Gill, Gills.
G. L. Grand Lodge.
Gl. Glucinum (Beryllium).
Gm. Gram.
G. M. Grand Master.
Go., Goth. Gothic.
G. O. M. Grand old man (applied to Gladstone).
Gov. Governor.
Gov. Gen. Governor General.
Govt. Government.
G. P. O. General Post Office.
Gr. Grain, Grains; Great; Greek; Gram; Gross.
Gram. Grammar, Grammatical.
Gro. Gross.
G. T. Good Templars; Grand Tyler.
Gtt. (Lat. *gutta, guttae*), Drop, Drops.
Gun. Gunnery.

H. Hour, Hours; Hydrogen.
Ha. Hektar.
Hab. Habakkuk.
Hag. Haggai.
Hants. Hampshire.
H. B. C. Hudson Bay Company.
H. B. M. His (or Her) Britannic Majesty.
H. C. Heralds' College; House of Commons.
H. C. M. His (or Her) Catholic Majesty.
He. Helium.
h. e. (Lat. *hoc est, hic est*), This or that is, here is.
Heb., Hebr. Hebrew, Hebrews.
Her. Heraldry, Heraldic.
Hf.-bd. Half-bound.
H. G. Horse Guards.
Hg. (Lat. *hydrargyrum*), Mercury; Hektogram.
H. H. His (or Her) Highness; His Holiness (the Pope).
Hhd. Hogshead, Hogsheads.
H. I. H. His (or Her) Imperial Highness.
Hind. Hindu, Hindustan, Hindustani.
Hist. History, Historical.
H. J., H. J. S. (Lat. *hic jacet, hic jacet sepultus*), Here lies, Here lies buried.
Hl. Hektoliter.
Hm. Hektometer; *Hm.2* Square hektometer.
H. M. His (or Her) Majesty.
H. M. P. (Lat. *hoc monumentum posuit*), Erected this monument.
H. M. S. His (or Her) Majesty's Service, Ship, or Steamer.
Hon., Honble. Honorable.
Hond. Honored; Honduras.
Hor., Horol. Horology, Horological.
Hort., Hortic. Horticulture, Horticultural.
Hos. Hosea.
H. P. Half Pay; High Priest; Horse Power.
H. R. House of Representatives.
H. R. E. Holy Roman Empire, or Emperor.
H. R. H. His (or Her) Royal Highness.
H. R. I. P. (Lat. *hic requiescit in pace*), Here rests in peace.
H. S. (Lat. *hic situs*), Here lies.
H. S. H. His (or Her) Serene Highness.
H. T. Hawaii Territory.
Hum., Humb. Humble.
Hun., Hung. Hungary, Hungarian.
Hund. Hundred.
Hyd., Hydros. Hydrostatics.
Hydraul. Hydraulics.
Hydros. [HYD.]
Hypoth. Hypothesis, Hypothetical.

I. Island; Iodine.
Ia. Iowa.
Ib., Ibid. (Lat. *ibidem*), In the same place.
Icel. Iceland, Icelandic.
Ich., Ichthy. Ichthyology.
Id. (Lat. *idem*), The same.
Ida. Idaho.
I. e. (Lat. *id est*), That is.
I. H. S. (Lat. *Iesus* [*Jesus*] *Hominum Salvator*), Jesus, the Saviour of Men.
Ill. Illinois.
Imp. (Lat. *imperator*), Emperor; Imperial; Impersonal.
Imp., Impf. Imperfect.
Imper. Imperative.
In. Inch, Inches.
Incog. (Ital. *incognito, incognita*), Unknown.
Ind. India, Indian; Indiana; Indium.
Indic. Indicative.
Ind. Ter. Indian Territory.
Inf., Infin. Infinitive.
In lim. (Lat. *in limine*), At the outset.
In loc. (Lat. *in loco*), In its place.
I. N. R. I. (Lat. *Iesus* [*Jesus*] *Nazarenus Rex Iudaeorum*), Jesus of Nazareth, King of the Jews.
Ins. Insurance.
Ins. Gen. Inspector General.
Inst. Instant, the present month; Institute, Institution.
Int. Interest.
Int. Dept. Department of the Interior.
Intens. Intensive; Intensative.
Interj. Interjection.
Intrans. Intransitive.
In trans. (Lat. *in transitu*), On the passage.
Int. Rev. Internal Revenue.
Introd. Introduction.
Io. Iowa.
I. O. F. Independent Order of Foresters.
I. O. G. T. Independent Order of Good Templars.
I. O. O. F. Independent Order of Odd Fellows.
I. O. R. M. Improved Order of Red Men.
I. O. S. M. Independent Order of Sons of Malta.
I. O. U. I owe you.
i. q. (Lat. *idem quod*), The same as.
Ir. Ireland, Irish; Iridium.
Irreg. Irregular.
Is., Isa. Isaiah.
I. S. Irish Society.
Isl. Island.
I. S. M. Jesus Salvator Mundi.
It., Ital. Italy; Italic; Italian.
Itin. Itinerary.

J. Judge; Justice.
J. A. Judge Advocate.
Jac. Jacob, Jacobus (= James).
J. A. G. Judge Advocate General.
Jan. January.
Jap. Japan, Japanese.
Jas. James.
Jav. Javanese.
J. C. Jesus Christ.
J. C. D. (Lat. *juris civilis doctor*), Doctor of Civil Law.
J. D. (Lat. *jurum doctor*), Doctor of Laws.
Jer. Jeremiah.
J. G. W. Junior Grand Warden.
J. H. S. [*I. H. S.*].
Jno. John.
Jour. Journey.
Jon., Jona. Jonathan.
Jos. Joseph.
Josh. Joshua.
Jour. Journal.
J. P. Justice of the Peace.
Jr. Juror; Junior.
J. U. D. (Lat. *Juris utriusque doctor*), Doctor of both laws (*i. e.*, of civil and canon law).
Jud. Judith.
Judg. Judges.
Jul. July; Julius; Julian.
Jul. Per. Julian Period.
Jun. June.
Jun., Junr. Junior.
Juris. Jurisprudence.

K. King; Knight; (Lat. *kalium*), Potassium.
Kan., Kas., Ks. Kansas.
K. B. Knight of the Bath.
K. B. King's Bench.
K. C. King's Counsel.
K. C. B. Knight Commander of the Bath.
K. C. H. Knight Commander of the Order of Hanover.
K. C. M. G. Knight Commander of St. Michael and St. George.
K. C. S. I. Knight Commander of the Star of India.
K. E. Knight of the Eagle.
Ken., Ky. Kentucky.
Kg. Kilogram.
K. G. Knight of the Garter.
K. G. C. Knight of the Grand Cross.
K. G. C. B. Knight of the Grand Cross of the Bath.
K. G. E. Knight of the Golden Eagle.
K. G. F. Knight of the Golden Fleece.
K. G. H. Knight of the Guelphs of Hanover.
Ki. Kings.
Kilog. Kilogram.
Kilom., Kilo. Kilometer.
Kingd. Kingdom.
kl. Kiloliter.
K. L. B. Knight of Leopold of Belgium.
K. L. H. Knight of the Legion of Honor.
Km. Kilometer; *Km.*2 Square kilometer; *Km.*3 Cubic kilometer.
K. M. Knight of Malta.
Knick. Knickerbocker.
Knt. Knight.
K. of H. Knights of Honor.
K. of L. Knights of Labor.
K. of P. Knights of Pythias.
K. P. Knight of St. Patrick.
Kr. Krypton.
K. R. N. S. Knight of the Royal North Star (Sweden).
Ks. Kansas.
K. S. Knight of the Sword (Sweden).
Kt. Knight.
K. T. Knight of the Thistle; Knight Templar.
K. T. S. Knight of Tower and Sword (Portugal).
Ky. Kentucky.

L. Latin; Lake; Lord; Lady.
l. Liter.
L., l., £. (Lat. *libra*), Pound, Pounds (sterling).
L., lb., lb. (Lat. *libra*), Pound, Pounds (weight).
La. Louisiana; Lanthanum.
L. A. Law Agent; Literate in Arts.
Lam. Lamentations.
Lat. Latin; Latitude.
lb. Pound, Pounds (weight).
L. c. Lower case (in printing).
L. c., loc. cit. (Lat. *loco citato*), In the place cited.
L. C. Lord Chamberlain; Lord Chancellor.
L. C. J. Lord Chief Justice.
L. C. P. Licentiate of the College of Preceptors.
Ld. Lord.
Ldp. Lordship.
L. D. S. Licentiate of Dental Surgery.
Leg., Legis. Legislature, Legislative.
Leip. Leipzig.
Lev. Leviticus.
Lex. Lexicon.
Lexicog. Lexicography, Lexicographer, Lexicographical.
L. G. Life Guards.
L. Ger. Low German or Platt-Deutsch.
L. H. D. Doctor of Humanities.
Li. Lithium.
L. I. Light Infantry; Long Island.
Lib. (Lat. *liber*), Book.
Lib. Library, Librarian.
Lieut., Lt. Lieutenant.
Lieut. Col. Lieutenant Colonel.
Lieut. Gen. Lieutenant General.
Lieut. Gov. Lieutenant Governor.
lin. Lineal, or right-line measures; *e. g.*, lin. yd.; lin. ft., etc.
Linn. Linnaeus, Linné, Linnaean.
Liq. Liquor, Liquid.
Lit. Literally, Literature, Literary.
Lit. D., Litt. D. (Lat. *literarum doctor*), Doctor of Literature.
Lith. Lithography.
Liv. Livre.
LL. B. (Lat. *legum baccalaureus*), Bachelor of Laws.
LL. D. (Lat. *legum doctor*), Doctor of Laws.
LL. I. Lord Lieutenant of Ireland.
LL. M. Master of Laws.
L. M. Long Meter.
Lon., Lond. London.
Lon., Long. Longitude.
Loq. (Lat. *loquitur*), He (or she) speaks.
Lou. Louisiana.
Lp. Lordship.
L. P. Lord Provost.
L. S. (Lat. *locus sigilli*), Place of seal.
L. s. d. (Lat. *librae, solidi, denarii*), Pounds, shillings, pence.
Lt. Lieutenant.
Lt. Inf. Light Infantry.
Luth. Lutheran.

m. Meter; *m.*2 Square meter; *m.*3 Cubic meter.
m. Married; Masculine; Mile, Miles; Minute, Minutes.
M. Marquis; Middle; Monday; Morning; Monsieur.
M. (Lat. *mille*), Thousand.
M. (Lat. *meridies*), Meridian; Noon.
M. A. (Master of Arts.) [*A. M.*]
Mac., Macc. Maccabees.
Mach., Machin. Machine, Machinery.
Mad., Madm. Madam.
Mag. Magyar; Magazine.
Maj. Major.
Maj. Gen. Major General.
Mal. Malachi; Malay, Malayan.
Manuf. Manufactures, Manufacturing.
Mar. March; Maritime.
Marq. Marquis.
Mas., Masc. Masculine.
Mass. Massachusetts.
M. Ast. S. Member of the Astronomical Society.
Math. Mathematics, Mathematician, Mathematical.
Matt. Matthew.
M. B. (Lat. *medicinae baccalaureus*), Bachelor of Medicine.
M. B. (Lat. *musicae baccalaureus*), Bachelor of Music.
M. C. Member of Congress; Master of Ceremonies.
Mch. March.
M. C. P. Member of the College of Preceptors.
M. D. (Lat. *medicinae doctor*), Doctor of Medicine.
Md. Maryland.
Mdlle. (Fr. *mademoiselle*), Miss.
Mdse. Merchandise.
M. E. Most Excellent; Military Engineer; Mining Engineer; Mechanical Engineer.
M. E. Methodist Episcopal.
Me. Maine.
Meas. Measure.
Mech. Mechanics, Mechanical.
Med. Medicine, Medical; Mediaeval.
Med. Lat., Mediaev. Lat. Mediaeval Latin.
Mem. Memorandum, Memoranda.
Mess. & Docs. Messages and Documents.
Messrs. (Fr. *messieurs*), Gentlemen.
Met. Metaphysics, Metaphysical.
Metal. Metallurgy.
Metaph. Metaphysics; Metaphorically.
Meteor. Meteorology, Meteorological.
Meth. Methodist.
Meton. Metonymy.
Mex. Mexico.
Mfd., Mfs. Manufactured, Manufactures.
Mfg. Manufacturing.
M. F. H. Master of Foxhounds.
mg. Milligram.
Mg. Magnesium; Myriagram.
M. H. Most Honorable.
M. H. Ger. Middle High German.
Mic. Micah.
M. I. C. E. Member of the Institute of Civil Engineers.
Mich. Michigan; Michaelmas.
Mid. Middle; Midshipman.
Mid. Lat. Latin of the Middle Ages.
Mil., Milit. Military.
M. I. M. E. Member of the Institute of Mining Engineers.
Min. Mineralogy, Mineralogical; Minute, Minutes.
Minn. Minnesota.
Min. Plen. Minister Plenipotentiary.
Miss. Mississippi.
ml. Milliliter.
Ml. Myrialiter.
Mlle. (Fr. *mademoiselle*), Miss.
M. L. S. B. Member of the London School Board.
mm. Millimeter; *mm.*2 Square millimeter; *mm.*3 Cubic millimeter.
Mm. Myriameter.
MM. Their Majesties.
MM. (Fr. *messieurs*), Gentlemen.
Mme. (Fr. *madame*), Madam.
Mn. Manganese.
M. N. A. S. Member of the National Academy of Sciences.
M. N. S. Member of the Numismatical Society.
Mo. Missouri; Month; Molybdenum.
Mod. Modern.
Mod. (Ital. *moderato*), Moderately.
Mon. Monday.
Mons. (Fr. *monsieur*), Sir, Mister.
Mont. Montana.
M. P. Member of Parliament.
M. P. P. Member of Provincial Parliament.
M. P. S. Member of the Pharmaceutical Society; Member of the Philological Society.
Mr. Master, Mister.
M. R. A. S. Member of the Royal Asiatic Society.
M. R. C. P. Member of the Royal College of Physicians.
M. R. C. S. Member of the Royal College of Surgeons.
M. R. C. V. S. Member of the Royal College of Veterinary Surgeons.
M. R. G. S. Member of the Royal Geographical Society.

M. R. I. Member of the Royal Institution.
M. R. I. A. Member of the Royal Irish Academy.
Mrs. Mistress.
M. R. S. L. Member of the Royal Society of Literature.
M. S. Master of Surgery.
M. S. Master of Science.
M. S. (Lat. *memoriae sacrum*), Sacred to the memory of.
MS. Manuscript.
MSS. Manuscripts.
mo., mth. Month.
Mt., Mts. Mount, Mountains.
Mus. Museum; Music, Musical.
Mus. B. (Lat. *musicae baccalaureus*), Bachelor of Music.
Mus. D., Mus. Doc., Mus. Doct. (Lat. *musicae doctor*), Doctor of Music.
M. W. G. M. Most Worthy Grand Master.
Myth. Mythology, Mythological.

N. Noon; North; Noun; Number; New; Neuter; Nitrogen.
Na. (Lat. *natrium*), Sodium.
N. A. North America, North American.
Nah. Nahum.
Nap. Napoleon.
Nat. Natural; National.
Nat. Hist. Natural History.
Nat. Ord. Natural Order.
Nat. Phil. Natural Philosophy.
Naut. Nautical.
N. B. New Brunswick; North Britain (=Scotland).
N. B. (Lat. *nota bene*), Note well, take notice.
N. C. North Carolina.
Nd. Neodymium.
N. D., N. Dak. North Dakota.
Ne. Neon.
N. E. New England; Northeast.
Neb. Nebraska.
Neg. Negative, Negatively.
Neh. Nehemiah.
Nem. con. (Lat. *nemine contradicente*), No one contradicting; unanimously.
Nem. diss. (Lat. *nemine dissentiente*), No one dissenting; unanimously.
Neth. Netherlands.
Neut. Neuter.
Nev. Nevada.
New Test., N. T. New Testament.
N. F. Newfoundland.
N. H. New Hampshire.
N. H. Ger. New High German.
Ni. Nickel.
N. J. New Jersey.
N. L., N. Lat. North Latitude.
N. M. New Mexico.
N. N. E. North-north-east.
N. N. W. North-north-west.
N. O. New Orleans.
No. (Lat. *numero*), Number.
nol. pros. (Lat. *nolle prosequi*), Unwilling to prosecute.
Nom., Nomin. Nominative.
Non con. Non-content, dissentient. (The formula by which Members of the House of Lords vote negatively.)
Non obst. (Lat. *non obstante*), Notwithstanding.
Non pros. (Lat. *non prosequitur*), He does not prosecute.
Non seq. (Lat. *non sequitur*), It does not follow (as a consequence).
n. o. p. Not otherwise provided for.
Nor., Norm. Norman.
Nor. Fr., Norm. Fr. Norman French.
Norm. [NOR.].
Norw. Norway, Norwegian, Norse.
Nos. Numbers.
Nov. November.
N. P. Notary Public.
N. S. New style; Nova Scotia.
n. s. Not specified.
N. S. J. C. (Fr. *Notre Seigneur Jesus Christ*), Our Lord Jesus Christ.
N. T. [NEW TEST.]
Num., Numb. Numbers.
Numis. Numismatic, Numismatology.
N. V. M. Nativity of the Virgin Mary.
N. W. Northwest.
N. W. T. Northwest Territory.
N. Y. New York.
N. Z. New Zealand.

O. Ohio; Old; Oxygen.
ob. (Lat. *obiit*), He (or she) died.
Obad. Obadiah.
Obdt., Obt. Obedient.
Obj. Objective.
Obs. Obsolete.
Oct. October.
Oct., 8vo. Octavo.
O. F. Odd Fellows.
O. H. G. Old High German.
O. H. M. S. On Her Majesty's Service.
O. K. "All correct."
Okl. Oklahoma.
Old. Test., O. T. Old Testament.
Olym. Olympiad.
O. M. Old Measurement.
O. M. I. Oblate of Mary Immaculate.
Op. Opposite, Opposition.
Opt. Optative; Optics, Optical.
Or. Oregon; Oriental.
Ordn. Ordnance.
Orig. Original, Originally.
Ornith. Ornithology, Ornithological.
Os. Osmium.
O. S. Old Style; Old Saxon.
O. S. A. Order of St. Augustine.
O. S. B. Order of St. Benedict.
O. S. F. Order of St. Francis.
O. T. [OLD TEST.].
O. U. A. M. Order of United American Mechanics.
Oxf. Oxford.
Oxon. (Lat. *Oxonia, Oxoniensis*), Oxford; Of Oxford.
Oxonien. (Lat. *Oxoniensis*), Of Oxford.
Oz. Ounce. [The *z* in this contraction and in *viz.* represents an old symbol (ȝ), used to mark a terminal contraction.]

P. Page; Participle; Past; Pole; Port; Phosphorus.
Pa. Pennsylvania.
P. a. Participial adjective.
Paint. Painting.
Pal., Palaeont. Palaeontology, Palaeontological.
Palaeobo. Palaeobotany.
Pa. part. Past participle.
Par. Paragraph; Participle.
Parl. Parliament, Parliamentary.
Part. Participle.
Part. adj. Participial adjective.
Particip. Participial.
Pass. Passive.
Pat. Patrick.
Pathol. Pathological.
Payt. Payment.
Pb. (Lat. *plumbum*), Lead.
P. C. (Lat. *patres conscripti*), Conscript Fathers.
P. C. Police Constable; Privy Council; Privy Councilor.
P. C. S. Principal Clerk of Session.
Pd. Paid; Palladium.
Pd. D. Doctor of Pedagogy.
P. E. Protestant Episcopal.
P. E. I. Prince Edward Island.
Penn. Pennsylvania.
Pent. Pentecost.
Per., Pers. Persian; Person, Personal.
Per an. (Lat. *per annum*), Yearly.
Per cent., Per ct. (Lat. *per centum*), By the hundred.
Perf. Perfect.
Peri. Perigee.
Pers., Persp. Perspective.
Peruv. Peruvian.
Pet. Peter.
P. G. M. Past Grand Master.
Phar., Pharm. Pharmacy.
Ph. B. (Lat. *philosophiae baccalaureus*), Bachelor of Philosophy.
Ph. D. (Lat. *philosophiae doctor*), Doctor of Philosophy.
Phil. Philip; Philippians; Philosophy, Philosophical.
Phil., Phila. Philadelphia.
Philem. Philemon.
Philol. Philology, Philologist, Philological.
Philom. (*Philomathes*). Lover of learning.
Philomath. (*Philomathematicus*). Lover of mathematics.
Philos. Philosophy, Philosophical.
Phil. Soc., Ph. S. Philological Society.
Phil. Trans. Transactions of the Philosophical Society.
Ph. M. Master of Philosophy.
Phen., Phenic. Phenician.
Photog. Photography, Photographic, Photographer.
Phren., Phrenol. Phrenology, Phrenological.
Phys. Physics, Physical; Physiology, Physiological.
Physiol. Physiology, Physiological.
Pinx., Pxt. (Lat. *pinxit*), He (or she) painted it.
Pk. Peck.
Pl. Place; Plate; Plural.
P. L. Poet Laureate.
Plff., Pltff. Plaintiff.
Plu. Plural.
Plup. Pluperfect.
Plur. Plural.
P. M. (Lat. *post meridiem*), Afternoon.
P. M. Past Master; Peculiar Meter; Postmaster.
P. M. G. Postmaster General.
P. O. Post Office.
P. & O. Co. Peninsular and Oriental Steam Navigation Company.
Poet. Poetry, Poetical.
Pol. Polish.
Polit. Econ. Political Economy.
P. O. O. Post Office Order.
Pop. Population.
Port. Portugal, Portuguese.
Poss. Possessive.
Pp. Pages.
P. p. Past participle.
P. P. (Lat. *pater patriae*), Father of his country.
P. P. Parish Priest.
P. P. C. (Fr. *pour prendre congé*), To take leave. [T. T. L.]
Pph. Pamphlet.
P. pr. Present participle.
Pr. Present; Priest; Prince; Praseodymium.
P. R. (Lat. *Populus Romanus*), The Roman people.
P. R. Prize Ring.
P. R. A. President of the Royal Academy.
P. R. C. (Lat. *post Romam conditam*), After the building of Rome. [A. U. C.]
Preb. Prebend.
Pref. Prefix; Preface.
Prep. Preposition.
Pres. President; Present.
Pret. Preterite.
Prim. Primary.
Prin. Principal.
Print. Printing.
Priv. Privative.
Prob. Problem; Probable, Probably.
Prof. Professor.
Pron., Pro. Pronoun; Pronounced; Pronunciation.
Pron. a. Pronominal adjective.
Prop. Proposition.
Pros. Prosody.
Pro tem. (Lat. *pro tempore*), For the time being.
Prov. Proverbs, Proverbial, Proverbially; Provincial, Provincially; Provost.
Provinc. Provincial.
Prox. (Lat. *proximo*), Next; or of next month.
Prs. Pairs.
P. R. S. President of the Royal Society.

P. R. S. A. President of the Royal Scottish Academy.
Prus. Prussia, Prussian.
P. S. (Lat. *post scriptum*), Postscript.
P. S. Privy Seal.
Ps., Psa. Psalm, Psalms.
Psychol. Psychology.
Pt. Part; Payment; Point; Port; Platinum.
P. T. Post Town; Pupil Teacher.
Pub. Public; Published, Publisher.
Pub. Doc. Public Documents.
P. V. Post Village.
Pwt. Pennyweight.
Pxt. [PINX.]
Pyro., Pyrotech. Pyrotechnics.

Q., Qu. Query; Question.
Q. C. Queen's College.
Q. d. (Lat. *quasi dicat*), As if he should say.
Q. e. (Lat. *quod est*), Which is.
Q. E. D. (Lat. *quod erat demonstrandum*), Which was to be proved.
Q. E. F. (Lat. *quod erat faciendum*), Which was to be done.
Q. E. I. (Lat. *quod erat inveniendum*), Which was to be found out.
Q. l. (Lat. *quantum libet*), As much as you please.
Q. M. Quartermaster.
Q. M. G. Quartermaster General.
Qr. Quarterly; Quire.
Q. S. Quarter Sessions.
Q. s. (Lat. *quantum sufficit*), A sufficient quantity.
Qt. Quart.
Qu. Queen; Query; Question.
Quar., Quart. Quarterly.
Quar., 4to. Quarto.
Ques. Question.
Q. v. (Lat. *quod vide*), Which see.
Qy. Query.

R. Railway; Réaumur; River.
R. (Lat. *rex*), King; (Lat. *regina*), Queen.
R. (Lat. *recipe*), Take.
Ra. Radium.
R. A. Royal Academy, Royal Academician; Rear Admiral; Royal Arch; Royal Artillery.
Rabb. Rabbinical.
Rad. (Lat. *radix*), Root.
R. A. M. Royal Academy of Music.
R. A. S. Royal Agricultural Society.
Rb. Rubidium.
R. C. Roman Catholic.
R. D. Rural Dean.
R. E. Royal Engineers; Royal Exchange.
R. E. Reformed Episcopal.
Réaum. Réaumur.
Rec. Recipe.
Recd. Received.
Recpt. Receipt.
Ref. Reference.
Ref. Ch. Reformed Church.
Ref. Pres. Reformed Presbyterian.
Reg. Regular.
Reg., Regr. Registrar.
Reg., Regt. Regiment, Regimental.
Rel. Religion, Religious.
Rel. Pron. Relative Pronoun.
Rem. Remark, Remarks.
Rep. Report; Representative.
Rep., Repub. Republic, Republican.
Res. Resolution.
Retd. Returned.
Rev. Revelation; Revenues; Reverend; Review; Revise.
Revd. Reverend.
Revs. Reverends.
Rev. Stat. Revised Statutes.
Rh. Rhodium.
R. H. A. Royal Horse Artillery.
Rhet. Rhetoric, Rhetorical.
R. H. S. Royal Humane Society.
R. I. Rhode Island.
R. I. P. (Lat. *requiescat in pace*), May he (or she) rest in peace.
Riv. River.
R. M. Royal Mail; Royal Marines.
R. M. A. Royal Marine Artillery; Royal Military Asylum.
R. M. L. I. Royal Marine Light Infantry.
R. M. S. Royal Mail Steamer; Royal Mail Service.
R. N. Royal Navy.
R. N. R. Royal Naval Reserve.
R. O. Receiving Office.
Robt. Robert.
Rom. Roman, Romans.
Rom. Cath. Roman Catholic.
R. P. Regius Professor.
R. R. Right Reverend.
R. R. Railroad.
R. S. A. Royal Scottish Academy.
R. S. E. Royal Society of Edinburgh.
R. S. L. Royal Society of London.
R. S. P. C. A. Royal Society for the Prevention of Cruelty to Animals.
R. S. V. P. (Fr. *Répondez s'il vous plaît*), Please reply.
Rt. Right.
Rt. Hon. Right Honorable.
Rt. Rev. Right Reverend.
R. T. S. Religious Tract Society.
Rt. Wpful. Right Worshipful.
Ru. Ruthenium.
Russ. Russia, Russian.
R. V. Revised Version; Rifle Volunteers.
R. W. Right Worshipful; Right Worthy.
R. W. D. G. M. Right Worshipful Deputy Grand Master.
R. W. G. M. Right Worshipful Grand Master.
R. W. G. R. Right Worthy Grand Representative.
R. W. G. S. Right Worthy Grand Secretary.
R. W. G. T. Right Worthy Grand Treasurer; Right Worthy Grand Templar.
R. W. G. W. Right Worshipful Grand Warden.
R. W. J. G. W. Right Worshipful Junior Grand Warden.
R. W. S. G. W. Right Worshipful Senior Grand Warden.
Ry. Railway.

S. Saint; Saturday; Section; Shilling; Sign; Signor; Solo; Soprano; South; Sun; Sunday; Sabbath; Sulphur.
s. Second, Seconds; See; Singular; Son; Succeeded.
S. A. South Africa; South America.
s. a. (Lat. *secundem artem*), According to the rules of art; (Lat. *sine anno*), Without date.
Sab. Sabbath.
Sam., Saml. Samuel.
Sam., Samar. Samaritan.
Sans., Sansc., Sansk. Sanscrit, Sanskrit.
S. A. S. (Lat. *Societatis Antiquariorum Socius*), Fellow of the Society of Antiquaries.
Sat. Saturday.
Sax. Saxon, Saxony.
Sb. (Lat. *stibium*), Antimony.
S. B. South Britain (England and Wales). [N. B.]
S. C. South Carolina.
S. C. (Lat. *senatus consultum*), A decree of the senate.
Sc. [SCIL., SCULP.]; Scandium.
Scan. mag. (Lat. *scandalum magnatum*), Defamatory expressions to the injury of persons of high office or dignity.
S. caps. or *s. c.* Small capitals. (In printing.)
Sc. B. (Lat. *scientiae baccalaureus*), Bachelor of Science.
Sc. D. (Lat. *scientiae doctor*), Doctor of Science.
Sch. (Lat. *scholium*), A note; Schooner.
Sci. Science.
Sci. fa. *Scire facias.*
Scil. Sc. (Lat. *scilicet*), Namely; to wit.
S. C. L. Student in Civil Law.
Sclav. Sclavonic.
Scot. Scotland, Scotch, Scottish.
Scr. Scruple, Scruples.
Scrip., Script. Scripture, Scriptural.
Sculp. Sculpture.
Sculp., Sculpt., Sc. (Lat. *sculpsit*), He (or she) engraved it.
s. d. (*sine dividendo*). Without dividend.
S. D. Doctor of Science.
S. D., S. Dak. South Dakota.
S. D. U. K. Society for the Diffusion of Useful Knowledge.
Se. Selenium.
S. E. Southeast.
Sec. Second.
Sec., Sect. Section.
Sec., Secy. Secretary.
Sec. Leg. Secretary of Legation.
Sen. Senate, Senator.
Sen. Doc. Senate Document.
Sep., Sept. September.
Seq. (Lat. *sequentes, sequentia*), The following or the next.
Serg., Sergt. Sergeant.
Serg. Maj. Sergeant Major.
Serj., Serjt. Serjeant.
Serv. Servian.
Sess. Session.
S. G. Solicitor General.
s. g. [SP. GR.]
Sh. Shilling, Shillings.
Si. Silicon.
Sing. Singular.
S. J. Society of Jesus.
S. J. C. Supreme Judicial Court.
Skr. Sanskrit.
Slav. Slavonic.
Sld. Sailed.
Sm. Samarium.
S. M. Sergeant Major.
S. M. Lond. Soc. (Lat. *Societatis Medicae Londiniensis Socius*), Member of the London Medical Society.
Sn. (Lat. *stannum*), Tin.
S. N. (Lat. *secundum naturam*), According to nature, naturally.
Soc., Socy. Society.
S. of Sol. Song of Solomon.
S. O. S. Save our ship.
Sp. Spain, Spanish; Spirit.
s. p. (Lat. *sine prole*), Without issue.
S. P. C. A. Society for the Prevention of Cruelty to Animals.
S. P. C. C. Society for the Prevention of Cruelty to Children.
S. P. C. K. Society for the Promotion of Christian Knowledge.
Spec. Special, Specially.
S. P. G. Society for the Propagation of the Gospel.
sp. gr., s. g. Specific gravity.
S. P. Q. R. (Lat. *Senatus Populusque Romanus*), The Senate and the People of Rome.
s. p. s. (Lat. *sine prole superstite*), Without surviving issue.
sq., Square; *sq. ft.*, Square foot, feet; *sq. in.*, Square inch, inches; *sq. m.*, Square mile, miles; *sq. yd.*, Square yard; *sq. rd.*, Square rod; *sq. cm.*, Square centimeter; *sq. dm.*, Square decimeter; *sq. Dm.*, Square dekameter; *sq. Hm.*, Square hektometer; *sq. Km.*, Square kilometer.
Sr. Senior; Sir; Strontium.
S. R. I. (Lat. *Sacrum Romanum Imperium*), The Holy Roman Empire.
S. R. S. (Lat. *Societatis Regiae Socius*), Fellow of the Royal Society.
SS. Saints.
S. S. Sunday School.
S. S. C. Solicitor before the Supreme Court.
S. S. E. South-south-east.
S. S. W. South-south-west.
St. Saint; Stone; Strait; Street.
st. Ster (metric).
st. (Lat. *stet*), Let it stand (in printing).

Stat. Statute, Statutes; Statuary.
S. T. Sons of Temperance.
S. T. B. Bachelor of Sacred Theology.
S. T. D. (Lat. *sacrae theologiae doctor*), Doctor of Divinity.
ster., stg. Sterling.
St. L. St. Louis.
S. T. P. (Lat. *sacrae theologiae professor*), Professor of Theology.
Str. Steamer.
Subj. Subjunctive.
Subst. Substantive; Substitute.
Suff. Suffix.
Sun., Sund. Sunday.
Sup. Superior; Superlative; Supplement; Supine.
Supp. Supplement.
Supt. Superintendent.
Surg. Surgeon, Surgery.
Surg. Gen. Surgeon General.
Surv. Surveying, Surveyor.
Surv. Gen. Surveyor General.
S. v. (Lat. *sub verbo* or *voce*), Under the word or title.
S. W. Senior Warden; Southwest.
Sw. Sweden, Swedish.
Switz. Switzerland.
Syn. Synonym, Synonymous.
Synop. Synopsis.
Syr. Syria, Syriac; Syrup.

T. Tonneau or ton (metric).
T. Tenor; Ton; Tun; Tuesday.
Ta. Tantalum.
T. A. B. Total Abstinence Brotherhood.
Tab. Table; Tabular statement.
Tan. Tangent.
Tart. Tartaric.
Tb. Terbium.
Te. Tellurium.
Tech. Technical, Technically.
Tenn. Tennessee.
Ter. Territory.
Term. Termination.
Teut. Teutonic.
Tex. Texas.
Text. rec. (Lat. *textus receptus*), The received text.
Th. Thomas; Thursday; Thorium.
Theo. Theodore.
Theol. Theology.
Theor. Theorem.
Thess. Thessalonians.
Tho., Thos. Thomas.
Thu., Thur., Thurs. Thursday.
Ti. Titanium.
Tier. Tierce.
Tim. Timothy.
Tit. Title; Titus.
Tl. Thallium.
Tm. Thulium.
T. O. Turn Over.
Tob. Tobit.
Tom. Tome, volume.
Tonn. Tonnage.
Topog. Topography, Topographical.
Tp. Township.
Tr. Translation, Translator, Translated; Transpose; Treasurer; Trustee.
Trans. Transaction; Translation, Translator, Translated.
Trav. Travels.
Treas. Treasurer.
Trig., Trigon. Trigonometry, Trigonometrical.
Trin. Trinity.
T. T. L. To Take Leave. [P. P. C.]
Tu., Tues. Tuesday.
Turk. Turkey, Turkish.
Typ. Typographer.
Typog. Typography, Typographical.

U. Uranium.
U. C. (Lat. *urbis conditae*), From the building of the city—Rome [A. U. C.]; Upper Canada.
U. J. D. [J. U. D.]
U. K. United Kingdom.
U. K. A. Ulster King at Arms; United Kingdom Alliance.
Ult. (Lat. *ultimo*), Last, of the last month.
um. Unmarried.
Unit. Unitarian.
Univ. University.
Up. Upper.
U. P. United Presbyterian.
U. S. United States.
u. s. (Lat. *ut supra*), As above.
U. S. A. United States of America; United States Army.
U. S. L. United States Legation.
U. S. M. United States Mail; United States Marine.
U. S. M. A. United States Military Academy.
U. S. N. United States Navy.
U. S. N. A. United States Naval Academy.
U. S. S. United States Senate; United States Ship or Steamer.
U. S. S. Ct. United States Supreme Court.
Usu. Usual, Usually.
U. S. V. United States Volunteers.
Ut. Utah.

V. Verb; Verse; Victoria; Violin; Vanadium.
V. (Lat. *versus*), Against.
V. (Lat. *vide*), See.
V. A. Vicar Apostolic; Vice Admiral.
Va. Virginia.
Val. Valve; Value.
Var. Variety.
Vat. Vatican.
v. aux. Verb auxiliary.
V. C. Vice Chancellor; Victoria Cross.
v. def. Verb defective.
V. D. M. (Lat. *Verbum Dei Minister*), Minister of the Word of God.
Ven. Venerable.
V. G. Vicar General.
v. g. (Lat. *verbi gratia*), For example.
v. i. Verb intransitive.
Vice-pres. Vice-president.
vid. (Lat. *vide*), See.
v. imp. Verb impersonal.
v. irr. Verb irregular.
Vis., Visc. Viscount.
viz. (Lat. *videlicet*), Namely, to wit.
v. n. Verb neuter.
Voc. Vocative.
Vol. Volume.
Vols. Volumes.
V. P. Vice-president.
v. r. Verb reflexive.
V. Rev. Very Reverend.
vs. (Lat. *versus*), Against.
V. S. Veterinary Surgeon.
v. t. Verb transitive.
Vt. Vermont.
Vul., Vulg. Vulgate.
Vulg. Vulgar, Vulgarly.
vv. ll. (Lat. *variae lectiones*), Various readings.

W. Wednesday; Week; Welsh; West, Western; (Lat. *wolframium*), Tungsten.
Wall., Wallach. Wallachian.
Wash. Washington.
W. C. Western Central (Postal District, London).
W. C. A. Women's Christian Association.
W. C. T. U. Women's Christian Temperance Union.
Wed. Wednesday.
Wel. Welsh.
w. f. Wrong font (in printing).
Whf. Wharf.
W. I. West Indies; West Indian.
Wis., Wisc. Wisconsin.
Wk. Week.
W. Long. West Longitude.
Wm. William.
W. M. Worshipful Master.
W. N. W. West-north-west.
Wp. Worship.
Wpful. Worshipful.
W. S. Writer to the Signet; West Saxon.
W. S. W. West-south-west.
Wt. Weight.
W. Va. West Virginia.
Wyo. Wyoming.

X. Christ; Xavier.
Xe. Xenon.
Xm., Xmas. Christmas.
Xn. Christian.
Xnty. Christianity.
Xper., Xr. Christopher.
Xt. Christ.
Xtian. Christian.

Y. Year.
Yb. Ytterbium.
Yd. Yard.
Yds. Yards.
Ye. The; Thee.
Y. M. C. A. Young Men's Christian Association.
Y. M. Cath. A. Young Men's Catholic Association.
Y. M. H. A. Young Men's Hebrew Association.
Y. P. S. C. E. Young People's Society of Christian Endeavor.
Yr. Year; Younger; Your.
Ys. Years; Yours.
Yt. Yttrium.
Y. W. C. A. Young Women's Christian Association.

Zach. Zachary.
Zech. Zechariah.
Zeph. Zephaniah.
Z. G., Zoo. Zoölogical Gardens.
Zn. Zinc.
Zoochem. Zoöchemistry, Zoöchemical.
Zoogeog. Zoögeography, Zoögeographical.
Zool. Zoölogy, Zoölogical.
Zr. Zirconium.

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COMMON WORDS AND PHRASES.

FROM THE LATIN AND THE GREEK.

ab extra, From without.
ab hoc et ab hac, From this and from that; confusedly.
ab inconvenienti, From the inconvenience.
ab incunabulis, From the cradle.
ab initio, From the beginning.
ab intra, From within.
ab origine, From the origin or beginning.
ab ovo, From the egg.
ab ovo usque ad mala, From egg to apples, i. e., from the beginning to the end of the menu of a Roman banquet; hence, from first to last, from beginning to end.
absit invidia, Let there be no ill-will.
absque argento omnia vana, Without money all is vain.
absque hoc, Without this.
absque ulla conditione, Unconditionally.
absque ulla fraude, Without any fraud.
abundat dulcibus vitiis, He abounds with pleasant faults.
ab uno disce omnes (From one learn all), From a single example judge the whole.
ab urbe condita, From the building of the city, i. e., Rome. [A. U. C.]
abusus non tollit usum, Abuse is not an argument against proper use.
a capite ad calcem, From head to heel.
accepta, The receipts in accounts.
accessit, He came near; applied to a testimonial for one second in merit.
accusare nemo se debet, nisi coram Deo, No one is bound to accuse himself, except before God.
acerrima proximorum odia, The hatred of the nearest relatives is most intense.
acervatim, By heaps.
acribus initiis, incurioso fine, With eager beginnings, but negligent ending.
a cruce salus, Salvation by the cross.
acti labores jucundi, Finished labors are pleasant.
actum est de republica, It is all over with the commonwealth.
a cuspide corona, A crown from the spear; glory from military exploits.
ad absurdum, To show the absurdity.
ad arbitrium, At will, at pleasure.
a dato, From date or from this time.
ad Calendas Graecas, At the Greek calends, i. e., never, since the Greeks had no calends.
ad captandum, To attract or please.
ad captandum vulgus, To catch the rabble.
addendum; (pl.) *addenda*, A thing to be added; an appendix.
a Deo et rege, From God and the king.
ad eundem (sc. *gradum*), To the same degree.
ad extremum, To the extreme.
ad finem, To the end.
ad gustum, To taste.
ad hominem, Personal; to the individual.
adhuc sub judice lis est, The affair is not yet decided.
a die, From that day.
ad infinitum, To infinity.
ad inquirendum, For inquiry.
ad instar, After the manner of.
ad interim, In the meanwhile.
ad internecionem, To extermination.
ad libitum, At pleasure.
ad modum, In the manner of.
ad multos annos, For many years.
ad nauseam, So as to nauseate.
ad patres, Gathered to his fathers; dead.
ad quod damnum, To what damage.
ad referendum, To be further considered.
ad rem, To the purpose; to the point.
adscriptus glebae, Attached to the soil.
adsum, I am present; I am here.
ad summum, To the highest point or amount.
ad unguem, To a nicety.
ad unum omnes, To a man.
ad utrumque paratus, Prepared for either event.
ad valorem, According to the value.
adversus, Against.
ad vivum, To the life.
aegrescit medendo, It becomes worse from the remedies employed.
aequam servare mentem, To preserve an equable mind.
aequanimiter, With equanimity.
aequo animo, With an equable mind.
aere perennius, More lasting than brass; enduring forever.
aetatis suae, Of his or her age.
afflatus, Inspiration.
agenda, Things to be done.
Agnus Dei, The Lamb of God.
αἱ δ' ἐλπίδες εἰσὶν ἐγρηγορότων ἐνύπνια, Hopes are but the dreams of those who wake.
ἀκόλαστα πάντα γίγνεται δούλων τέκνα, Unbridled ever are the sons of slaves.
alere flammam, To feed the flame.
alias, Elsewhere; otherwise.
aliena optimum frui insania, It is well to profit by the madness of others.
alieni appetens, sui profusus, Lavish of his own property while coveting that of others.
alieni temporis flores, Flowers of past time.
alitur vitium vivitque tegendo, Vice thrives and lives by concealment.
aliud corde premunt, aliud ore promunt, One thing they keep back in the heart, they express another with the mouth.
ἄλλος ἐγώ, A second self. (Definition of a friend.)
alma mater, Fostering mother.
alter ego, Another self.
alter idem, Another precisely similar.
alter ipse amicus, A friend is another self.
alterum alterius auxilio eget, The one needs the assistance of the other.
alterum tantum, As much more.
amantium irae amoris integratio, Lovers' quarrels are a renewal of love.
a maximis ad minima, From the greatest to the least.
ambiguas in vulgum spargere voces, To spread doubtful reports among the people.
amicus humani generis, A friend of the human race.
amicus usque ad aras, A friend even to the altars (of sacrifice); to self-immolation.
amo, I love.
amor nummi, Love of money.
amor patriae, Love of country; patriotism.
ἂν ἔτι μίαν μάχην Ῥωμαίους νικήσωμεν, ἀπολούμεθα παντελῶς, One more such victory over the Romans, and we are utterly undone. (Hence the phrase, "A Pyrrhic Victory.")
anguis in herba, A snake in the grass; a false friend; a lurking danger.
animal disputans, A disputatious creature.
animal implume bipes, An animal without feathers and having two legs. Plato's definition of man.
animus furandi, The intention of stealing.
animus imponentis, The intention of the author or composer.
anno aetatis suae, In the year of his or her age.
anno Christi, In the year of Christ. [A. C.]
anno Domini, In the year of our Lord.
anno humanae salutis, In the year of man's redemption. [A. H. S.]
anno mundi, In the year of the world.
anno salutis, In the year of salvation. [A. S.]
anno urbis conditae, In the year since the city—i. e., Rome—was built.
annus mirabilis, A year of wonders. (A term often applied to 1666 in English History, in which the chief events were: War with the Dutch, the Great Plague, and the Great Fire of London. The title of a poem by Dryden.)
ante, Before.
ante bellum, Before the war.
ante lucem, Before daybreak.
ante meridiem, Before noon.
ante tubam trepidat, He trembles even before the trumpet sounds (for the charge).
ἄνθρωπον ζητῶ, I am seeking a man.
anti, Against.
antiqua homo virtute et fide, A man of old-time virtue and fidelity.
a parte ante, From the part gone before; past.
aperto vivere voto, To live with desires freely expressed.
ἁπλοῦς ἐπ' ἐχθροῖς μῦθος ὁπλίζειν χέρα, An armed right hand is our sole reply to foes.
a posse ad esse, From possibility to reality.
a posteriori, From the effect to cause.
apparatus belli, Materials for war.
apparent rari nantes in gurgite vasto, A few appear swimming here and there in the vast whirlpool.
a priori, From the cause to the effect.
aptat se pugnae, He prepares for the contest.
aqua vitae, Brandy; spirit; alcohol.
arbiter elegantiarum, An authority in matters of taste; master of ceremonies.
arcana caelestia, Celestial secrets.
arcana imperii, State secrets.
arcanum, A secret.

argumentum baculinum, The argument of the club; an appeal to force.
argumentum ad crumenam, An argument to the purse.
argumentum ad hominem, An argument to the man.
argumentum ad invidiam, An argument to envy; an appeal to low passions.
argumentum ad judicium, An argument to the judgment.
ἄριστον μέτρον, The golden mean.
ἀριστον μὲν ὕδωρ, Water is the chief element, *i. e.*, the origin of all things.
arrectis auribus, With attentive ears.
ars est celare artem, True art is to conceal art.
artium magister, Master of arts.
a teneris annis, From tender years.
at spes non fracta, Yet hope is not crushed.
audi alteram partem, Hear the other side.
audit vocatus Apollo, Apollo hears when invoked.
aurea mediocritas, The golden mean.
auri sacra fames, The accursed thirst for gold.
auspicium melioris aevi, An omen of better times.
auxilium ab alto, Help from on high.
Ave, Maria, Hail, Mary.
a verbis ad verbera, From words to blows.
a vinculo matrimonii, From the tie of marriage.

beatae memoriae, Of blessed memory.
bella! horrida bella! Wars! horrid wars!
bella matribus detestata, Wars, so detested by mothers.
βέλτιον γὰρ ὀψιμαθῆ καλεῖσθαι, ἢ ἀμαθῆ, It is better to be called late-learned than unlearned.
beneplacito, At pleasure.
benigno numine, By the favor of Providence.
biennium, A period of two years.
bis pueri senes, Old men are twice boys.
bona fide, In good faith.
bona fides, Good faith.
brevi manu, With a short hand, offhand, immediately, summarily.
brevis esse laboro obscurus fio, If I labor to be brief, I become obscure.
brutum fulmen, A harmless thunderbolt.

cacoethes carpendi, A mania for finding fault.
cacoethes loquendi, A rage for speaking.
cacoethes scribendi, A passion for scribbling.
cadit quaestio, The question drops; there is no further discussion.
caetera desunt, The rest is wanting.
caeteris paribus, Other things being equal.
candida Pax, White-robed Peace.
cantate Domino, Sing unto the Lord. (The opening words in the Latin of many Psalms.)
caput, Head; chapter.
caput mortuum, The worthless remains.
caret initio et fine, It wants beginning and end.
casus belli, A cause justifying war; a ground of war.
casus conscientiae, A case of conscience.
casus foederis, The end of the league.
casus fortuitus, A fortuitous occurrence.
causa sine qua non, An indispensable condition.
caveat actor, Let the doer beware.
caveat emptor, Let the buyer beware.
cave canem, Beware of the dog.
cedant arma togae, Let arms yield to the gown; let military authority give place to law.
cede Deo, Submit to Providence.
Christo et Ecclesiae, For Christ and the Church.
χρυσὸς δ' ἄνοιγει πάντας κλίδου πύλας, Gold opens every gate, even that of hell.
circuitus verborum, A circumlocution.
circulus in probando, A circle in the proof; the fallacy of using the conclusion as one of the premises.
cis, This side of.
cito, Quickly.
coena Domini, The Lord's Supper.
cogito, ergo sum, I think, therefore I am.
comitas inter gentes, Comity between nations.
commune bonum, A common good.
communia proprie dicere, To say common things appropriately.
communibus annis, On the annual average; one year with another.
communi consensu, By common consent.
compos mentis, Of a sound mind.
con commodo, At a convenient rate.
concordia discors, Discordant harmony.
conditio sine qua non, An indispensable condition.
conjunctis viribus, With united powers.
conquiescat in pace, May he rest in peace.
consensus facit legem, Consent makes the law.
consuetudo pro lege servatur, Custom is held as law.
contra bonos mores, Contrary to good manners.
copia verborum, An abundant supply of words; fluency of speech.
coram nobis, In our presence.
coram non judice, Before a person who is not a judge; not before the proper tribunal.
corpus Christi, Body of Christ.
corrigenda, Corrections to be made.
corruptio optimi pessima, The corruption of the best becomes the worst.
cor unum, via una, One heart, one way.
cos ingeniorum, A whetstone for the wits.
crescit eundo, It increases as it goes.
crux criticorum, The puzzle of critics.
crux mathematicorum, The puzzle of mathematicians.
crux medicorum, The puzzle of physicians.
cui bono? What is the good of it?
culpam poena premit comes, Punishment follows close on crime.
cum grano salis, With a grain of salt; with some allowance.
cum privilegio, With privilege.
currente calamo, With a running pen; offhand.
custos morum, The guardian of morality.
custos rotulorum, Keeper of the rolls.

dabit Deus his quoque finem, God will put an end to these also.
damnant quod nŏn intelligunt, They condemn what they do not understand.
damnum absque injuria, A loss without an injury.
data et accepta, Expenses and receipts.
datum, pl. data, A fact or principle granted.
deceptio visus, An optical illusion.
decies repetita placebit, Though ten times repeated it will please.
decrevi, I have decreed.
de die in diem, From day to day.
de gustibus non est disputandum, There is no disputing about tastes.
Dei gratia, By the grace of God.
de jure, By the law; by right.
dele, Blot out, erase.
delectando pariterque monendo, By pleasing while admonishing.
delenda est Carthago, Carthage must be destroyed. (The phrase by which Cato the Elder urged the Roman people to destroy Carthage, the hated rival of Rome, and by which he is said to have concluded every speech which he made in the Roman Senate, even when an irrelevant subject was under discussion.
Δελφικὴ μάχαιρα, A Delphic sword. (A two-edged sword, in reference to the ambiguities of the Delphic oracle.)
de minimis non curat lex, The law does not concern itself with trifles.
de mortuis nil nisi bonum, Let nothing be said of the dead but what is good.
de nihilo nihil, in nihilum nil posse reverti, From nothing nothing, into nothing nothing can return. (The doctrine of the indestructibility of matter.)
de novo, Anew.
Deo date, Give to God.
Deo gratias, Thanks be to God. [D. G.]
de omnibus rebus, et quibusdam aliis, Concerning all things, and certain other things beside. (Said of the literary work of an immature author treating of many subjects.)
Deo monente, God giving warning.
Deo, non fortuna, From God, not from chance.
Deo volente, God willing.
de profundis, Out of the depths. (The first words of the Latin version of Ps. cxxx.)
desideratum, A thing desired.
desuetudo, Disuse.
desunt caetera, The remainder is wanting.
Deus nobis haec otia fecit, God has given us this ease.
Deus vobiscum, God be with you.
dextro tempore, At a favorable time.
dictum, A saying; a decision.
dictum de dicto, Report upon hearsay.
dies faustus, A lucky day.
dies infaustus, An unlucky day.
dies irae, Day of wrath; the title of a celebrated Latin hymn.
dii majorum gentium, The gods of the superior houses; the twelve superior gods.
dii penates, Household gods.
disjecta membra, Scattered remains.
docendo discimus, We learn by teaching.
doli incapax, Incapable of mischief.
dominus, Lord.
Dominus vobiscum, The Lord be with you. (The words by which the priest blesses the people in the Roman Church.)
δός μοι ποῦ στῶ καὶ κινῶ τὴν γῆν, Give me a standpoint, and I can move the earth.
do ut des, I give that you may give; the principle of reciprocity.

dramatis personae, The characters of the play.
dulce et decorum est pro patria mori, It is sweet and glorious to die for one's country.
durante vita, During life.

ecce homo, Behold the man! (Applied specifically to a picture of Christ wearing a crown of thorns, when delivered to the people by Pilate.)
e contrario, On the contrary.
editio princeps, The first edition.
ἐγὼ γάρ εἰμι τῶν ἐμῶν ἐμὸς μόνος, Of all my kin I am my only friend.
eheu! fugaces labuntur anni, Alas! our fleeting years slip away.
emeritus, One retired from active official duties.
ἕνα . . . ἀλλὰ λέοντα, One, but a lion.
ἐν νύκτε βουλή, In the night there is counsel; sleep on it.
eo nomine, By that name.
equanimiter, With equanimity.
e regione, In a straight line; exactly opposite.
e re nata, According to the exigency.
errare est humanum, To err is human.
erratum (*pl. errata*), An error.
ἦσω γὰρ καὶ ἐγὼ, τὰ δέ κεν Διὶ πάντα μελήσει, I hurl the spear, but Jove directs the blow.
esse, To be; existence.
est modus in rebus, There is a middle course in all things.
esto perpetua, Let it endure forever.
et caetera, And the rest.
et cum spiritu tuo, And with thy spirit.
et sequentes, et sequentia, And those that follow; and what follows.
et tu, Brute! And thou also, Brutus. (The dying exclamation of Caesar, when he saw Brutus among his assassins.)
εὕρηκα, εὕρηκα, I have found it! I have found it!
e vestigio, Instantly.
ex abrupto, Abruptly; suddenly.
ex abundantia, Out of the abundance.
ex adverso, From the oppósite side.
ex aequo et bono, According to what is right and good.
ex capite, From the head, from memory.
ex cathedra, From the chair or pulpit; spoken with authority; by virtue of office.
exceptio probat regulam, The exception proves the rule.
exceptis excipiendis, Due exceptions (or allowances) having been made.
excerpta, Extracts.
excudit, He made it.
ex curia, Out of court.
ex delicto, From the crime.
ex dono, By the gift.
exegi monumentum aere perennius, I have reared a monument more lasting than bronze. (Said by Horace in regard to his poems.)
exempli gratia, By way of example. [e. g.]
exeunt, They go out.
exeunt omnes, All go out.
exit, He (or she) goes out.
exitus acta probat, The result justifies the deed.
ex more, According to custom.
ex necessitate rei, From the urgency of the case.
ex nihilo nihil fit, From nothing nothing comes.
ex officio, By virtue of office.
ex opere operato, By outward acts.
ex parte, On one part or side.
experto crede, Believe one who has tried it, or who speaks from experience.
ex post facto, After the deed is done; retrospective.
ex propriis, From one's own resources.
ex tempore, Off hand; without preparation.
extra muros, Outside the walls.
extra ordinem, Extraordinarily.
ex usu, From, or by, use.

facetiae, Jokes.
facile princeps, The acknowledged chief; one who stands undoubtedly first.
facsimile, An exact imitation.
factotum, A man of all work.
fare, fac, Say, do.
fata obstant, The Fates oppose.
fata viam invenient, The Fates will find out a way.
favete linguis, Be silent.
fax mentis incendium gloriae, The passion for glory is a torch to the mind.
fecit, He made it.
feliciter, Happily; successfully.
felo de se, Self-felony; a suicide.
ferae naturae, Of a wild nature; applied to wild beasts.
fiat, Let it be done.
fiat justitia ruat caelum, Let justice be done though the heavens should fall.
fiat lux, Let there be light.
fidei defensor, Defender of the faith.
fides Punica, Punic faith; treachery. (Among the Romans the bad faith of the Poeni or Carthaginians was notorious.)
fidus Achates, Faithful Achates, the companion of Aeneas; a trusty friend.
filius populi, A son of the people.
filius terrae, A son of the earth; one of low origin.
finis, The end.
flagrante delicto, In the commission of the crime; in the very act.
fruges consumere nati, Born to consume the fruits of the earth; born only to eat.
fugit hora, The hour flies.
fuit Ilium, Troy has been; Troy was, but is no more.
functus officio, Having discharged his duties; hence, out of office.
furor arma ministrat, Rage provides arms.
furor loquendi, A rage for speaking.
furor poeticus, Poetical fire.
furor scribendi, A rage for writing.

gallice, In French.
genius loci, The genius or presiding spirit of the place.
germanice, In German.
gloria in excelsis Deo, Glory to God in the highest.
gloria Patri, Glory be to the Father.
gradatim, Gradually; step by step.
Gradus ad Parnassum, Steps to Parnassus; aids to writing Greek and Latin verses. (The name of a book.)
gratis dictum, Mere assertion.
gregatim, Gregariously.

Hannibal ad portas, Hannibal at the gates; the enemy close at hand.
ἅπαξ λεγόμενον, Said or used but once (as a rare word).
haud longis intervallis, At frequent intervals.
helluo librorum, A devourer of books; a bookworm.
hic et ubique, Here and everywhere.
hic finis fandi, Here was an end to the discourse.
hic jacet, Here lies.
hic sepultus, Here is buried.
hinc illae lacrimae, Hence these tears; this is the cause of the trouble.
ἱστορία φιλοσοφία ἐστὶν ἐκ παραδειγμάτων, History is philosophy teaching by examples.
hoc anno, In this year.
hoc loco, In this place.
hoc saxum posuit, He placed this stone.
hoc tempore, At this time.
hominis est errare, To err is of man.
homo alieni juris, A man under the control of another.
homo factus ad unguem (usually thus quoted; but the correct form is *ad unguem factus homo*), A highly cultivated and polished man; literally, a man polished to the finger nail. (The expression is suggested by a practice of sculptors, who use the finger nail in putting the finishing touches to their models.)
homo homini lupus, Man is a wolf to his fellow man; one man preys on another.
homo multarum literarum, A man of many letters; a man of great learning.
homo sui juris, A man who is his own master.
honores mutant mores, Honors change manners.
honor est a Nilo, Honor is from the Nile. (Anagram for "Horatio Nelson.")
honos alit artes, Honor nourishes the arts.
honos habet onus, Honor is burdened with responsibility.
hora fugit, The hour flies.
horribile dictu, Horrible to tell.
hortus siccus, A dry garden; a collection of dried plants; an herbarium.

idem sonans, Sounding the same.
id est, That is.
id genus omne, All that class.
idoneus homo, A fit man.
Ἰησοῦς Χριστοῦ Θεοῦ Υἱος Σωτήρ, Jesus Christ, the Son of God, Saviour. The initials of these Greek words form the Greek word *ἰχθύς*, a fish, and this fact explains the common use of the fish as a weather vane on church steeples.
Iesus, Hominum Salvator, Jesus, Saviour of men.
imo pectore, From the bottom of one's heart.
impari Marte, With unequal military strength.
impedimenta, Luggage; the baggage of an army.
imperium in imperio, A government existing within a government. (Said of a power set up against constituted authority.)
in actu, In the very act; in reality.
in aequilibrio, In equilibrium.
in ambiguo, In doubt.
in armis, Under arms.

in articulo mortis, At the point of death.
in camera, In the chamber; in secret.
in capite, In chief.
in curia, In court.
inde irae, Hence this resentment.
index expurgatorius, A list of prohibited books.
in dubiis, In matters of doubt.
in esse, In being.
in extenso, At length.
in extremis, In very bad circumstances; at the point of death.
infinito, Perpetually.
in flagrante delicto, In the commission of the act.
infra dig., *infra dignitatem*, Beneath one's dignity.
in invitum, Against an unwilling party.
in loco, In the place; upon the spot; in the place of.
in loco parentis, In the place of a parent.
in medias res, In the very midst of the business.
in medio tutissimus ibis, Safety lies in a middle course.
in memoriam, In memory of.
in nomine, In the name of.
in ovo, In the egg.
in pace, In peace.
in perpetuum, Forever.
in pleno, In full.
in posse, In possible existence.
in praesenti, At the present time.
in propria persona, In one's own person.
in re, In the matter of.
in rem, Against the thing or property.
in rerum natura, In the nature of things.
in saecula saeculorum, Forever.
insculpserunt, They engraved it.
insculpsit, He engraved it.
in situ, In its proper position.
in statu quo, In its former state.
in stirpes, According to lineage.
in suspenso, In suspense.
in te, Domine, speravi (Ps. xxxi.), In thee, O Lord, have I put my trust.
inter alia, Among other things.
inter canem et lupum, Between the dog and the wolf; twilight.
inter nos, Between ourselves.
inter se, Amongst themselves.
in toto, In the whole; entirely.
in transitu, On the passage.
intra parietes, Within the walls; private.
in usu, In use.
in utroque fidelis, Faithful in both.
in utrumque paratus, Prepared for either event.
in vacuo, In a vacuum.
ipse dixit, He himself has said it; a mere assertion.
ipsissima verba, The identical words.
ipso facto, By the fact itself.
ipso jure, By the law itself.
ita est, It is so.
ita lex scripta est, Such is the written law.
italice, In Italian characters.
iterum, Again.

jacta alea est! The die is cast! (The exclamation of Julius Caesar when he crossed the Rubicon.
januis clausis, With closed doors; in secret.
joci causa, For the sake of a joke.
jubilate Deo (Ps. c. 1), O be joyful in the Lord.
judicium Dei, The judgment of God.
judicium parium aut leges terrae (Magna Charta), The judgment of our peers, or the laws of the land.
jure divino, By divine law.
jure humano, By human law.
jus canonicum, Canon law.
jus civile, The civil law.
jus divinum, The divine law.
jus et norma loquendi, The law and rule of speech.
jus gentium, The law of nations.
jus possessionis, The right of possession.
juxta, Near by.

καθ' ὕδατος γράφεις, You are writing in water.
κατ' ἐξοχήν, Preëminently.

labore et honore, By labor and honor.
laesa majestas, High treason.
lapis philosophorum, The philosopher's stone.
lapsus calami, A slip of the pen.
lapsus linguae, A slip of the tongue.
lapsus memoriae, A slip of the memory.
lares et penates, Household gods.
latine dictum, Spoken in Latin.
laus Deo, Praise to God.
lector benevole, Kind, or gentle, reader.
legatus a latere, A papal legate.
lege, Read.
lex loci, The law of the place.
lex non scripta, The unwritten law; the common law.
lex scripta, The written or statute law.
lex talionis, The law of retaliation.
λιμῷ γὰρ οὐδὲν ἐστιν ἀντειπεῖν ἔπος, There is no word with which to answer hunger.
lingua franca, The mixed language spoken by Europeans in the East.
lite pendente, During the trial.
loco citato, In the place quoted.
locum tenens, One occupying the place; a substitute.
locus criminis, Place of the crime.
locus in quo, The place in which.
locus sigilli, The place of the seal.
longo intervallo, By or with a long interval.
lucus a non lucendo, A witticism, which, assuming that *lucus*, a dark grove, is derived from the verb *lucere*, to shine, supposes it must be a *non lucendo*, from its not being light; an absurd name.
lusus naturae, A freak of nature; a deformed animal or plant.

magister ceremoniarum, A master of the ceremonies.
Magna Charta, The great charter; the charter of English liberties.
magna civitas, magna solitudo, A great city is a great solitude.
magnum bonum, A great good.
magnum opus, A great undertaking; the great work of a man's life.
mala fide, With bad faith; treacherously.
mali exempli, Of a bad example.
mali principii malus finis, The bad end of a bad beginning.
malis avibus, With unlucky birds, *i. e.*, with bad omens.
malo modo, In an evil manner.
malum in se, Bad in itself.
manibus pedibusque, With hands and feet; tooth and nail.
manu propria, With one's own hand.
mare clausum, A closed sea; a bay.
materfamilias, The mother of a family.
materia medica, Substances used in the healing art.
maximus in minimis, Very great in trifling things.
mea culpa, Through my fault.
me judice, I being the judge; in my opinion.
memorabilia, Things to be remembered.
memoria in aeterna, In eternal remembrance.
μὴ νῦν τὰ πόρσω τἀγγύθεν μεθεὶς, σκόπει, Gaze not on things afar, neglecting things at hand.
memoriter, By rote.
meo voto, At my own wish.
minutiae, Trifles.
mirabile dictu, Wonderful to relate.
mirabile visu, Wonderful to see.
mirabilia, Wonders.
mirum in modum, In a wonderful manner.
miserabile vulgus, A wretched crew.
modo et forma, In manner and form.
modus, Manner.
modus operandi, The manner of working.
μοῖρα δέ τις καὶ πόλεων ἐστὶν ὥσπερ καὶ ἀνδρῶν, Cities have their destinies as well as men.
monumentum aere perennius, A monument more durable than bronze.
more majorum, After the manner of our ancestors.
more suo, In his own way.
mors janua vitae, Death is the gate of life.
mors omnibus communis, Death is common to all.
mos pro lege, Custom has the force of law.
motu proprio, Of his own accord.
mutatis mutandis, The necessary changes being made.
mutuus consensus, Mutual consent.

nec scire fas est omnia, It is not allowed to know all things.
ne exeat, Let him not depart.
nemine contradicente, No one contradicting.
nemine dissentiente, No one dissenting.
nemo reclamat, nullus obsistit, No one protests, no one makes opposition.
νέος ἀπόλλυθ', ὄντινα φιλεῖ θεός, He whom the gods love dies young.
ne quid detrimenti respublica capiat, In order that the commonwealth suffer no injury. (The form of words by which the dictator of the Roman republic was invested with supreme authority.)
nihil ad rem, Nothing to the point.
nihil tetigit quod non ornavit, He touched nothing without embellishing it.
νικᾶ δ' ὁ μειὼν τὸν μέγαν, δίκαι' ἔχων, And armed with right, the less o'ercomes the great.
nil admirari, To be astonished at nothing.
nil dicit, He makes no answer.
nolens volens, Willing or unwilling.

noli me tangere, Touch me not.
nomen et omen, Name and omen; a name that is ominous.
non compos mentis, Not in sound mind.
non constat, It does not appear.
non datur tertium, There is no third choice.
non ens, Nonentity.
non est, It is not; wanting.
non est inventus, He is not found.
non libet, It does not please me.
non liquet, It is not clear.
non obstante, Notwithstanding.
non omne licitum honestum, Lawful acts are not all honorable.
non omnia possumus omnes, We cannot, all of us, do everything.
non sequitur, It does not follow; an illogical conclusion.
non sum qualis eram, I am not what I once was.
noscitur a sociis, A man is known by the company he keeps.
nostro periculo, At our own risk.
nota bene (N. B.), Mark well.
notatu dignum, Worthy of note.
νοῦς ἐστὶν ὁ διακοσμῶν τε καὶ πάντων αἴτιος, Mind is the disposer and cause of all.
nudis verbis, In plain words.
nuptiae, nuptials; wedding.

obiit, He (or she) died.
obiter dictum, A casual remark; an unauthoritative opinion.
observanda, Things to be observed.
odi profanum vulgus, et arceo, I hate the vulgar crowd, and drive them away.
odium theologium, The hatred of theologians.
officina gentium, The workshop of the world.
οἷα κεφαλὴ ἐγκέφαλον οὐκ ἔχει, What a splendid head, and yet no brain!
ὀλίγοι γὰρ ἐσθλοὶ κρείσσονες πολλῶν κακῶν, Better a few brave men than many cowards.
omne ignotum pro magnifico, Everything unknown is thought to be magnificent.
omne solum forti patria est, Every land is a brave man's country.
omnia mutantur, nos et mutamur in illis, All things are subject to change and we change with them.
omnia vincit amor, et nos cedamus amori, Love conquers all things, let us too yield to love.
οἱ πολλοί, The many; the common people.
ora pro nobis, Pray for us.
orate pro anima, Pray for the soul (of).
orator fit, poeta nascitur, The orator is made; the poet is born.
ore rotundo, With a full voice.
origo mali, Origin of evil.
o tempora, o mores, Alas for the times and the manners.
otium cum dignitate, Ease with dignity.
οὐ τοὺς Λακεδαιμονίους (ἔφη) ἐρωτᾶν πόσοι εἰσίν, ἀλλὰ ποῦ εἰσὶν οἱ πολέμιοι, The Lacedemonians do not ask "How many are the enemy?" but "Where are they?"
pace tua, By your leave.
pacta conventa, The conditions agreed on.
palmam qui meruit ferat, Let him bear the palm who has deserved it.
Πὰν ὁ μέγας τέθνηκε, Great Pan is dead.
pari passu, With equal pace; together.
paritur pax bello, Peace is produced by war.
par negotiis, neque supra, Equal to, but not above, his business.
pars adversa, The adverse party.
pars pro toto, The part for the whole.
particeps criminis, A partaker in the crime; an accessory.
parva componere magnis, To compare small things with great ones.
passim, Everywhere; throughout.
πάταξον μὲν ἄκουσον δέ, Strike, but hear me.
paterfamilias, The father of the family.
Pater noster, Our Father.
pater patriae, The father of his country. A title bestowed by the Roman Senate on Caesar Octavianus Augustus.
patres conscripti, The Conscript Fathers; the Roman Senate. (Applied humorously to the members of municipal and town councils.)
pax in bello, Peace in war.
pax orbis terrarum, The sovereignty of the world. (A legend frequently found upon Roman coins.)
pax Romana, The Roman Empire.
pax vobiscum, Peace be with you.
peccavi, I have sinned.
per, By, through, by means of.
per capita, By the head.
per centum, By the hundred.
per contra, Contrariwise.
per diem, By the day.
per fas et nefas, Through right and wrong.
per gradus, Gradually.
per interim, In the meantime.
per se, In itself; for its own sake.
petitio principii, A begging of the question.
per viam, By the way of.
φύσει σοφὸς μέν οὐδείς, No one is wise by nature.
pinxit, He (or she) painted it.
placet, It pleases. (Specifically, the mode of assent by a civil power to the promulgation of a papal bull or an ecclesiastical ordinance. A vote of assent, as of the governing body of a university, or of the members of an ecclesiastical council. The form of dissent is *non placet*.)
plebs, The common people.
poeta nascitur, non fit, The poet is born, not made.
ποιητὰ δὲ νόμιμα εἶναι, Whatever is, is right.
πολλοὶ στρατηγοὶ Καρίαν ἀπώλεσαν, Too many generals lost Caria.
pons asinorum, The bridge of asses.
posse videor, I seem to be able.
post bellum auxilium, Aid after the war.
post cineres gloria venit, Glory comes after death.
post mortem, After death.
post obitum, After death.
praecognita, Things previously known.
prescriptum, A thing prescribed.
primae viae, The first passages.
prima facie, At the first glance.
primo, In the first place.
primus inter pares, First among his peers.
principiis obsta, Resist the first advances.
probatum est, It is proved.
pro Deo et ecclesia, For God and the church.
pro et con (for *contra*), For and against.
profanum vulgus, The vulgar rabble.
pro forma, As a matter of form.
pro hac vice, For this turn or occasion.
pro memoria, As a memorial.
pro nunce, For the present.
propaganda fide, For extending the faith.
pro patria, For our country.
pro rata, In proportion.
pro rege, lege, et grege, For the king, the law, and the people.
pro re nata, For a special emergency.
pro tanto, For so much.
pro tempore, For the time being.
ψυχῇ μιᾷ ζῆν, οὐ δυοῖν, ὀφείλομεν, One life to live, not twain—this is our due.
pulvis et umbra sumus, We are dust and shadow.
punctum saliens, A salient or prominent part.
punica fides, Punic faith; treachery.

quaere, Query; inquiry.
quaeritur, The question arises.
qualis vita, finis ita, As life is, so will its end be.
quamdiu se bene gesserit, As long as he behaves himself; during good behavior.
quantum, The quantity or amount.
quantum libet, As much as you like.
quantum meruit, As much as he deserved.
quantum mutatus ab illo, How changed from what he was.
quantum sufficit, A sufficient quantity.
quantum vis, As much as you will.
quasi, As if; in a manner.
quem di diligunt adolescens moritur, Whom the gods love dies young.
qui capit, ille facit, He who takes it, makes it.
quid faciendum? What is to be done?
quid nunc? What now? what news?
qui docet, discit, He who teaches, learns.
quid pro quo, One thing for another; an equivalent.
quid rides? Why do you laugh?
quid times? What do you fear?
quoad hoc, To this extent.
quo animo? With what intention?
quocunque modo, In whatever manner.
quocunque nomine, Under whatever name.
quod avertat Deus! God forbid!
quod bene notandum, Which is to be especially noted.
quod erat demonstrandum, Which was to be proved. Abbreviated Q. E. D.
quod erat faciendum, Which was to be done. Abbreviated Q. E. F.
quod vide [q. v.], Which see.
quomodo? In what manner? how?
quondam, Former.

rara avis, A rare bird. (Sometimes used to express incredulity or doubt about a story or description.)
rata, Rate; one's own share.

ratione soli, According to the soil.
rectus in curia, Upright in court, with clean hands.
regium donum, A royal gift.
renovato nomine, By a revived name.
requiescat in pace, May he rest in peace.
rerum primordia, The first elements of things.
res gestae, Things done; exploits.
res judicata, A matter already settled.
respublica, The commonwealth.
resurgam, I shall rise again.
re vera, In truth.
Ῥώμη δέ γ' ἀμαθὴς πολλάκις τίκτει βλάβην, Strength uninstructed ofttimes causes harm.
ruat caelum, Let the heavens fall.
rus in urbe, The country in the city.

sal Atticum, Attic salt; wit.
salvo jure, The right being safe.
salvo sensu, The sense being preserved.
sanctum sanctorum, Holy of holies.
sartor resartus, The mender mended.
satis superque, Enough, and more than enough.
scilicet, That is to say; to wit.
scribimus indocti doctique, Learned and unlearned, we all write.
secundum artem, According to the rules of art.
secundum naturam, According to the course of nature.
secundum ordinem, In order.
semel et simul, Once and together.
semel pro semper, Once for all.
semper felix, Always fortunate.
senatus consultum, A decree of the senate.
sensu bono, In a good sense.
sensu malo, In a bad sense.
seriatim, In order; serially.
sero, sed serio, Late, but seriously.
servare modum, To keep within bounds.
sesquipedalia verba, Words a foot and a half long.
sic passim, So everywhere.
sic semper tyrannis, Ever thus to tyrants.
sic transit gloria mundi, So the glory of this world passes away.
sicut ante, As before.
sic vos non vobis, Thus do ye, but not for yourselves.
si diis placet, If it pleases the gods.
silentium altum, Deep silence.
silent leges inter arma, The laws are silent amidst arms.
si monumentum requiris, circumspice, If you seek his monument, look around. (An inscription in St. Paul's Cathedral, London, for Sir Christopher Wren, who was the architect of the building.)
sine cura, Without care or charge.
sine die, Without a day appointed.
sine dubio, Without doubt.
sine invidia, Without envy.
sine praejudicio, Without prejudice.
sine qua non, Without which, not; an indispensable condition.
siste, viator, Stop, traveler.
σκηνὴ πᾶς ὁ βίος, All the world 's a stage.
sit ut est, aut non sit, Let it be as it is, or not at all.
spes tutissima caelis, The safest hope is in heaven.
splendide mendax, Splendidly false; untrue for a noble cause.
spolia opima, The richest booty.
sponte sua, Of one's own accord.
stat magni nominis umbra, He stands the shadow of a mighty name.
status quo ante bellum, The state in which things were before the war.
status quo, status in quo, statu quo, The state in which.
sta, viator, heroem calcas, Stop, traveler, thou art treading upon a hero.
stet, Let it stand.
studium immane loquendi, An insatiable desire for talking.
sua cuique voluptas, Every man has his own pleasures.
suaviter in modo, fortiter in re, Gentle in manner, forcible in action.
sub colore juris, Under color of law.
sublata causa, tollitur effectus, The cause having been removed the effect ceases.
sub poena, Under a penalty.
sub rosa, Under the rose; secretly.
sub silentio, In silence.
sub specie, Under the appearance of.
sub voce, Under the word.
suggestio falsi, Suggestion of falsehood.
sui generis, Of its own kind; unique.
συμβούλευε μὴ τὰ ἡδιστα, ἄλλα τὰ κάλλιστα, Consider not what is most agreeable, but what is best.
summa summarum, Sum total.
summum bonum, The chief good.
summum jus, summa injuria est, The rigor of the law is the height of oppression.
sunt lacrimae rerum, There are tears for misery.
suo marte, By his own powers or skill.
suum cuique, Let each have his own.
suus cuique mos, Every one has his own particular habit.

tabula rasa, A blank tablet.
taedium vitae, Weariness of life.
tantaene animis caelestibus irae? Can such anger dwell in heavenly minds?
te judice, You being the judge.
tempora mutantur, et nos mutamur in illis, The times are changed, and we are changed with them.
tempus edax rerum, Time the devourer of all things.
tempus fugit, Time flies.
tempus ludendi, The time for play.
tentanda via est, A way must be tried.
terra firma, The firm land; the continent.
terra incognita, An unknown land.
tertium quid, A third something difficult of classification as to nature or substance; a nondescript.
teste, Witness; the concluding clause of a writ.
τίς οὖν ἄρξει τοῦ ἄρχοντος, Who then shall rule the ruler?
τίς τρίχας ἀντ' ἐρίων ἐποκίξατο, Who will shear hair when he can shear wool?
toga virilis, The gown of manhood.
τὸ καλόν, The beautiful.
τὸ κέρδος ἡδὺ κἂν ἀπὸ ψευδῶν ἴῃ, How sweet is gain, e'en though it comes from fraud.
τῶν εὐτυχούντων πάντες εἰσὶ συγγενεῖς, All men claim kinship with the fortunate.
τὸ πρέπον, What is becoming or decorous.
tot homines, quot sententiae, So many men, so many minds.
totidem verbis, In just so many words.
toties quoties, As often as.
toto caelo, By the whole heavens; diametrically opposite.
totum, The whole.
trahit sua quemque voluptas, Each one is drawn by his own taste.
tria juncta in uno, Three joined in one (the motto of the Order of the Bath).
truditur dies ille, Day is pushed forward by day.

ubi bene ibi patria, Where one is well off, there is his country.
ubi jus incertum, ibi jus nullum, Where the law is uncertain, there is no law.
ubi lapsus? Where have I fallen?
ubi libertas, ibi patria, Where liberty dwells, there is my country.
ubique, Everywhere.
ubi supra, Where above mentioned.
ultima ratio regum, The last argument of kings.
ultima Thule, The utmost boundary or limit.
ultimus Romanorum, The last of the Romans.
ultra licitum, Beyond what is allowable.
una voce, With one voice.
uno animo, With one mind, unanimously.
usque ad aras, To the very altars.
usque ad nauseam, To disgust.
usus loquendi, Usage in speaking.
ut apes geometriam, As bees practise geometry.
utcunque placuerit Deo, As it shall please God.
ut infra, As stated or cited below.
ut supra, As stated or cited above.

vade in pace, Go in peace.
vade mecum, Go with me; a constant companion.
vae victis, Woe to the conquered. (Said to have been the exclamation of Brennus, when he threatened to exterminate the Romans.)
vale, Farewell.
valete ac plaudite, Farewell and applaud.
variae lectiones, Various readings.
variorum notae, The notes of various authors.
vel prece, vel pretio, For either love or money.
venia necessitati datur, Pardon is granted to necessity; necessity has no law.
veni, vidi, vici, I came, I saw, I conquered.
verbatim et literatim, Word for word and letter for letter.
veritatis simplex oratio est, The language of truth is simple.
vestigia, Tracks, traces.
vexata quaestio, A disputed question.
via, By the way of.
via media, A middle course.
via trita, via tutissima, The beaten path is safest.
vice, In the place of.
vice versa, The terms being exchanged.
vide et crede, See and believe.
videlicet, To wit; namely. Abbreviated *viz.*
videtur, It appears.
vide ut supra, See what is stated above.

vi et armis, By force and arms.
vincet amor patriae, The love of country will prevail.
vinculum matrimonii, The bond of marriage.
vindex injuriae, An avenger of injury.
vir sapit qui pauca loquitur, He is wise who talks but little.
virtus semper viridis, Virtue ever green and flourishing.
virtute, non viris, From virtue, not from men.
virtute officii, By virtue of one's office.
vis comica, Comic power or talent.
vis conservatrix naturae, The preservative power of nature.
vis inertiae, The power of inertia; resistance.
vis medicatrix naturae, The healing tendency of nature.
vis preservatrix, A preserving power.
vis vitae, The vigor of life.
vitam impendere vero, To risk one's life for the truth.
vita sine litteris mors est, Life without literature is death.
vitiis nemo sine nascitur, No one is born without faults.
vivat regina, Long live the queen.
vivat respublica, Long live the republic.
vivat rex, Long live the king.
viva voce, By the living voice; by oral testimony.
vive, vale, Farewell and be happy.
volo, non valeo, I am willing, but unable.
vota vita mea, My life is devoted.
votum castitatis, A vow of chastity.
vox clamantis in deserto, The voice of one crying in the wilderness.
vox et praeterea nihil, A voice and nothing more; sound without meaning.
vox faucibus haesit, His voice stuck in his throat; he was speechless.
vulgo, Commonly.
vulnus immedicabile, An irreparable injury.

ξένους πένητας μὴ παραδράμῃς ἰδών, Seek not to flee from guest of low estate.
ζῶμεν ἀλογίστως, προσδοκῶντες μὴ θανεῖν, Thoughtless we live, expecting not to die.

zonam perdidit, He has lost his purse; he is in distressed circumstances.

MODERN LANGUAGES.

Phrases not designated are from the French; those from other languages are distinguished thus: (Ger.)—German; (It.)—Italian; and (Sp.)—Spanish.

a, At; according to; to.
a bas, Down.
a bon marche, Cheap.
abonnement, Subscription.
a bras ouverts, With open arms.
abrege, Abridgment.
absence d'esprit, Absence of mind.
a causa persa, parole assai (It.), When the cause is lost, there is enough of words.
accueil, Reception; greeting; welcome.
a charge, At expense.
a cheval, On horseback.
a compte, On account.
a coup sur, With certainty; surely.
a couvert, Under cover, protected, sheltered.
acqua Tofana (It.), A subtle poison.
a demi, By halves.
a dessein, Designedly.
a deux mains, For both hands; having two uses.
a discretion, At discretion, unrestrictedly.
a droite, To the right.
affaire d'amour, A love affair.
affaire d'honneur, An affair of honor, a duel.
affaire du coeur, An affair of the heart, a love affair.
a fin, To the end or object.
affreux, Frightful.
a fond, To the bottom, thoroughly.
a gauche, To the left.
a haute voix, Aloud.
aimable, Amiable.
a l'abandon, At random; disregarded; left uncared for.
a la belle etoile, In the open air.
a la bonne heure! Well-timed! In good time!
a la campagne, In the country.
a la faveur, By the favor of.
a la Française, In French fashion.
alguazil (Sp.), A Spanish constable.
a l'improviste, Unawares, on a sudden.
all' alba (It.), At daybreak.
alla Siciliana (It.), In the Sicilian manner; in shepherd's dress.
allegresse, Liveliness; geniality.
Alles hat seine Zeit (Ger.), All in good time.
allez-vous en, Away with you, be off.
allons, Come on.
allzuviel ist ungesund (Ger.), Too much of a good thing.
al occorrenza (It.), According to circumstances.
a l'ordinaire, In the ordinary manner.
al piu (It.), At most.
alto rilievo (It.), In high relief.
am Anfang (Ger.), At the beginning.
amende honorable, Fit reparation; a satisfactory apology.
a merveille, Marvelously.
ami de cour, A friend of the court; hence an uncertain friend.
ami du peuple, Friend of the people.
a moitie, By halves.
ancien regime, The ancient order of things.
a outrance, To the death.
a peindre, Worth painting.
a peu pres, Nearly.
a pezzi (It.), By the piece.
a piacere (It.), At pleasure.
a pied, On foot.
a plomb, Perpendicularly; firmly.
a point, Just in time; exactly; exactly right.
appui, Point of support; prop.
a prima vista (It.), At the first sight.
a propos, To the point.
a propos de rien, Apropos to nothing; not pertinently.
arc-en-ciel, Rainbow.
a rez de chaussee, Even with the ground.
argent comptant, Ready money.
arriere pensee, Mental reservation; unavowed purpose.
a toute outrance, To the utmost; mercilessly.
a tout hasard, At all hazards; at all events.
a tout prix, At any price.
au bon droit, To the just right.
au courant, Well acquainted with; well informed.
au desespoir, In despair.
au levant, To the east; eastward.
au pis aller, At the very worst.
auto da fe (Portuguese), An act of faith; the burning of Jews and heretics.
autre droit, Another's right.
autre fois, Another time.
aux armes, To arms.
avant propos, Preface; introductory matter.
avec permission, By consent.
a volonte, At pleasure.
a vostra salute (It.), To your health.
a votre sante, To your health.
a vuestra salud (Sp.), To your health.

beaux esprits, Men of wit, or genius.
beaux yeux, Handsome eyes; attractive looks.
bel esprit, A wit, a genius.
bel etage, The second story of a house.
ben trovato (It.), Well invented.
besoin, Need; want.
bete, A beast.
boite, A small box for work, carried by ladies.
bon gre, mal gre, With good or bad grace; willing or unwilling.
bonne et belle, Good and pretty.
bonne foi, Good faith.
bouleversement, Overturning.
brevet d'invention, A patent
brevete, Patented.

cabaretier, An innkeeper.
cachot, A dungeon.
cap-a-pie, From head to foot.
carbonari (It.), Members of a secret political society in Italy.
careme, Fast; lent.
c'en est fait de lui, It is all over with him.
c'est-a-dire, That is to say.
c'est une autre chose, That is quite another thing.
Champs Elysees, Elysian Fields; a public park in Paris.
chanson, A song.
chapeau, A hat.
chapeaux bas, Hats off.
chateaux en Espagne, Castles in Spain.
chef de bataillon, A major.
chemin couvert, A covered way or passage.
chemin de fer (lit., iron road), A railway.
che sara, sara (It.), What will be, will be.
ci git, Here lies. (A common inscription on tombstones.)
comment vous portez vous, How are you?
compte rendu, An account rendered, a report.
comptoir, Countingroom.
comte, Count.
comtesse, Countess.
con arco (It.), With the bow.
concours, Competition for, or as for a prize.
con dolore (It.), With grief; sadly.
conoscente (It.), A connoisseur.
conseil de famille, A family council or consultation.

conseil d'etat, A council of state, a privy council.
couleur de rose, Rose color.
coup, A stroke.
coup de grace, A finishing-stroke.
coup de main, A sudden attack, enterprise, or undertaking.
coup de maitre, A master-stroke.
coup d'essai, A first attempt.
coup d'oeil, A rapid glance.
coup de pied, A kick.
coup de plume, A literary attack.
coup de soleil, A sunstroke.
coup de theatre, A theatrical effect.
creve-coeur, Deep sorrow; grief.

d'accord, Agreed; in tune.
Das geht Sie Nichts an (Ger.), That does not concern you.
de haute lutte, By a violent struggle.
dehors, Without; out of; foreign; irrelevant.
de mal en pis, From bad to worse.
demeure, Dwelling; residence.
demi-jour, Faint light.
depeche, A dispatch; a message.
dernier ressort, The last resource.
desagrement, Something disagreeable or unpleasant.
desoriente, Confused.
detour, A circuitous march.
Dieu vous garde, God protect you.
di grado in grado (It.), Step by step; gradually.
di salto (It.), By leaps.
divertissement, Amusement; sport.
douceur, A bribe.
doux yeux, Soft glances.
drap d'argent, Silver lace.
drap d'or, Gold lace.
drole, A comical fellow; a queer subject; a clown.

ebauche, A rough drawing; a sketch.
ecole de droit, Law school.
ecole de medecine, Medical school.
ecole militaire, Military school.
ecole polytechnique, Polytechnic school.
egal, Equal.
egalite, Equality.
egarement, Bewilderment.
el corazon manda las carnes (Sp.), The heart bears up the body.
eleve, Pupil.
eloge, A funeral oration.
eloignement, Estrangement.
emigre, An emigrant.
employe, A person employed; a clerk.
empressement, Ardor; zeal; interest.
en ami, As a friend.
en arriere, In the rear, behind.
en attendant, In the meantime.
en badinant, In sport, jestingly.
en bagatelle, Triflingly; contemptuously.
en echelon, In steps; like stairs.
en effet, Substantially, really, in effect.
enfant gate, A spoiled child.
enfants perdus (lit., lost children), A forlorn hope.
en flute, Carrying guns on the upper deck only.
en foule, In a crowd.
en grand, Of full size.
en grande tenue, In full official, or evening, dress.
en haut, On high; above.
en plein jour, In open day.
en retraite, In retreat.
en revanche, In return; as a compensation for.
en tasse, In a cup.
entourage, Surroundings.
en tout, In all; wholly.
entre deux feux, Between two fires.
entre deux vins (lit., between two wines), Half-drunk.
entrepot, A warehouse or magazine.
entreprenant, Enterprising.
entre-sol, A half story or mezzanine, especially one next above the ground floor.
en verite, In truth, really.
en vigueur, In force.
envoye, An envoy or messenger.
Es fehlt mir Nichts (Ger.), Nothing is the matter with me.
Es freut mich sehr (Ger.), I am very glad.
Espagnol, Spanish; a Spaniard.
esprit de corps, The spirit of honor, loyalty, or enthusiasm in an individual working for the good of a common body, society, or association, as a college class, a military company, fraternal or other association.
esprit des lois, Spirit of the laws.
Es thut mir sehr leid (Ger.), I am very sorry.
Etats-Generaux, The States General.

Ewigkeit (Ger.), Eternity.
expose, An exposition; a recital.

façon de parler, Manner of speaking; phrase, locution.
fade, Flat; stale; insipid.
faineant, Idle.
faire sans dire, To act without saying.
faire son devoir, To do one's duty.
fait accompli, A thing accomplished.
fantoccini (It.), Dramatic representations with puppets.
fauteuil, An easy chair.
faux pas, A false step; an act of indiscretion.
femme couverte, A married woman.
femme de chambre, A chambermaid.
femme de charge, A housekeeper.
femme sole, An unmarried woman.
fete, A feast, festival; holiday.
fete Dieu, The Corpus Christi festival in the Roman Catholic Church.
feu de joie, A bonfire; a firing of guns in token of joy.
feuilleton, A small leaf; a part of a newspaper devoted to light, entertaining matter.
fille de chambre, A chambermaid.
fille d'honneur, A maid of honor.
fils, Son.
fin de siecle, The end of the century.
fleur-de-lis, The flower of the lily.
fleur de terre, Even with the surface of the ground.
fra (It.), Brother; friar.
frais, Cost; expense.
franco, (It.), Free from postage.

garde du corps, A body guard.
garde-feu, A fire guard; fender.
garde royale, Royal guard.
Gehen Sie Ihres Weges (Ger.), Go your way.
gens d'armes, Military police.
gens de condition, People of rank.
gens d'eglise, The clergy; clerics.
gens de guerre, Military men.
gens de lettres, Literary people.
gens de loi, Lawyers.
gentilhomme, A gentleman.
giovine Italia (It.), Young Italy.
gitano (Sp.), A gypsy.
goutte a goutte, Drop by drop.
grace a Dieu, Thanks be to God.
grande chere et beau feu, Good cheer and a good fire; comfortable quarters.
grand merci, Many thanks.
guerra al cuchillo (Sp.), War to the knife.
guerre a mort, War to the death.
guerre a outrance, War to the uttermost.

habile, Skillful; able.
hardiesse, Boldness.
haut gout, High flavor; elegant taste.
heureusement, Happily.
historiette, A short history; a tale.
homme d'affaires, A man of business.
homme de robe, a man in civil office.
homme des lettres, A literary man.
homme d'esprit, A man of intellect; a wit.
homme d'etat, A statesman.
hors de combat, Disabled, unfit to continue contest.
hors de saison, Out of season; unseasonable.
hotel des Invalides, The military hospital in Paris.
hotel de ville, A town hall.
hotel Dieu, A hospital.
hotel garni, Furnished lodgings.
hurtar para dar por Dios (Sp.), To steal in order to give to God.

i gran dolori sono muti (It.), Great griefs are mute.
il ennuie a qui attend, Waiting is tedious.
il faut de l'argent, Money is wanting.
illicite, Unlawful.
impoli, Unpolished; rude.
impolitesse, Coarseness; rudeness.
in bianco (It.), In blank; in white.
in petto (It.), Within the breast; in reserve.

jalousie, Jealousy; A Venetian window blind.
Jardin des Plantes, The botanical garden in Paris.
je ne sais quoi, I know not what.
je n'oublierai jamais, I will never forget.
je suis pret, I am ready.
jet d'eau, A fountain; a jet of water.
jeu de mots, A play upon words; a pun.
jeu de theatre, A stage trick; clap-trap.
joli, Pretty.

lache, Lax; relaxed.
la critique est aisee, l'art est difficile, Criticism is easy, art is difficult.

laguna (It.), A moor; a fen.
laissez-nous faire, Let us act for ourselves; let us alone.
la, la, So so; indifferently.
l'argent, Silver; money.
lasciate ogni speranza, voi ch' entrate (It.), All hope abandon, ye who enter here.
Lassen Sie mich gehen (Ger.), Let me alone.
l'avenir, The future.
legerete, Lightness; levity.
le grand monarque, The grand monarch. A title applied to Louis XIV.
le grand oeuvre, The great work; the philosopher's stone.
le mot d'enigme, The key of the mystery.
l'empire des lettres, The empire of letters.
le pas, Precedence.
le point de jour, Daybreak.
le roi et l'etat, The king and the state.
le roi le veut, The king wills it.
les bras croises, The arms crossed.
lese majeste, High treason.
les larmes aux yeux, Tears in one's eyes.
l'etoile du nord, The star of the north.
le tout ensemble, The whole taken together.
lettre de cachet (Fr. Hist.), A secret letter sealed by the royal seal, containing orders for arrest and imprisonment without trial.
lettre de change, Bill of exchange.
lettre de marque, A letter of marque or reprisal.
levee, A morning reception.
liaisons dangereuses, Dangerous alliances.
libraire, A bookseller.
l'inconnu, The unknown.
lo barato es caro (Sp.), A bargain is dear.

ma foi, Upon my faith; upon my word.
maison de campagne, A country house.
maison de ville, A town house.
maitresse, Mistress.
malade, Sick.
maladie du pays, Homesickness.
mal de dents, Toothache.
mal de tete, Headache.
malgre nous, In spite of us.
mardi gras, Shrove Tuesday.
marechal, Marshal.
mariage de conscience, A private marriage.
mauvaise honte, False modesty.
mauvais gout, Bad taste.
mauvais sujet, A worthless fellow.
mise-en-scene, The setting of a dramatic piece upon the stage.
mon ami, My friend.
mon cher, My dear (fellow).
mot du guet, A watchword.

naturel, Nature; disposition; temper.
ni l'un ni l'autre, Neither the one nor the other.
nom de guerre, A war-name; an assumed title; a pseudonym.
non mi ricordo (It.), I do not remember.
Noth kennt kein Gebot (Ger.), Necessity knows no law.
Notre Dame, Our Lady, the Virgin Mary.
n'oubliez pas, Do not forget.
nous verrons, We shall see.
nouvelles, News.

oeil de boeuf, A bull's eye.
olla podrida (It.), A heterogeneous mixture.
oui-dire, Hearsay.
ouvert, Open.
ouvrier, A workman, an artisan.

padrone (It.), Master; employer; landlord.
par accord, By agreement.
par avance, In advance.
par ci, par la, Here and there.
parole d'honneur, Word of honor.
partout, Everywhere.
pas a pas, Step by step.
passager, A passenger.
passe-partout, A master key.
pasticcio (It.), Patchwork.
pave, Pavement.
per contante (It.), For cash.
per contra (It.), On the contrary.
per mese (It.), By the month.
petit coup, A small mask.
petit maitre, A little master; a fop.
peu-a-peu, Little by little; by degrees.
peu de chose, A trifle.
pezzo (It.), Piece; piece of money; a coin.
piccolo (It.), Small.
pied a terre, A temporary lodging.
pis aller, The worst or last shift.
piu (It.), More.
poco a poco (It.), Little by little.
point d'appui, Prop; point of support.
porte-chaise, A sedan.
poste restante, To remain until called for; applied to letters in a post office.
pour passer le temps, To while away the time.
preux chevalier, A brave knight.
proces verbal, A detailed statement.
proprietaire, A proprietor.

quelque chose, Something; a trifle.
qu'il soit comme il est desire, Let it be as desired.

rabat, Reduction of price.
reçu, Received; receipt.
reprise, A reprisal.
revenons a nos moutons, Let us return to our sheep: let us come back to our subject.
rire entre cuir et chair, To laugh in one's sleeve.

sanan cuchilladas, mas no malas palabras (Sp.), Wounds from a knife will heal, but not those from an evil tongue.
sans-culottes, Without breeches; a term applied to the rabble of the French Revolution.
sans façon, Without form or trouble.
sans pareil, Without equal.
sans peine, Without difficulty.
savoir-vivre, Good breeding.
savon, Soap.
sdegno d'amante poco dura (It.), A lover's anger is short-lived.
selon les regles, According to rule.
Sie sehen gut aus (Ger.), You look well.
so viel ich weiss (Ger.), As far as I know.
Sturm und Drang (Ger.), Storm and stress.

taille, Form; stature; shape.
tapis, The carpet.
terra cotta (It.), Baked earth.
tour d'expression, An idiom.
tout au contraire, On the contrary.
tout-de-suite, Immediately.
tout frais fait, All expense defrayed.
traduttori, traditori (It.), Translators are traitors.
trottoir, Sidewalk.

un bienfait n'est jamais perdu, A kindness is never lost.
vaurien, A worthless fellow.
vignette, A name given to slight engravings ornamenting books, bank notes, etc.
vivat, A shout of long live.
vive la republique, Long live the republic.
vive la bagatelle, Success to trifles.
vive l'empereur, Long live the emperor.
vive le roi, Long live the king.
voila tout, That is all.
voila une autre chose, That is quite another thing.

Was fehlt Ihnen? (Ger.), What is the matter with you?
zeitgeist (Ger.), The spirit of the age.

MODERN LANGUAGES—SOCIAL.

a l'americaine, After the American fashion.
a l'anglaise, After the English fashion.
a la carte, By the card.
a la française, After the French fashion.
a la grecque, After the Greek fashion.
a la mode, According to the custom; in the fashion.
a la parisienne, After the Parisian fashion.
al fresco (It.), To the shade; to the open air.
a l'italienne, In the Italian mode.
allemande, A kind of German dance.
amour propre, Self-love; vanity.
a rivederci (It.), Adieu until we meet again.
au contraire, On the contrary.
au fait, Well instructed; expert.
au fond, At the bottom.
auf Wiedersehen (Ger.), Till we meet again.
au gratin, With cheese.
au jus, With the natural juice.
au naturel, Cooked and served in its natural state.
au reste, As for the rest.
au revoir, Adieu until we meet again.
autre fois, Another time.
au troisieme, On the third floor.

bas bleu, A blue-stocking; a woman who seeks a reputation for learning.
beau ideal, A model of perfection.
beau monde, The fashionable world.
bechamel, Fine white sauce thickened with cream.
bete noire, A bugbear.
bienvenue, Welcome.
billet doux, A love letter.
bisque, A soup of shellfish and game.
bizarre, Odd; fantastic.

blanc mange (a delicate dessert), White jelly.
blase, Surfeited.
bon ami, Good friend.
bonbon, A sweetmeat; confectionery.
bon jour, Good day; good morning.
bon mot, A witticism.
bonne, A nurse.
bonne bouche, A dainty.
bon ton, High fashion; first class society.
bon vivant, A good fellow; a free liver.
boudoir, A small private apartment.
bouillon, Soup.

canaille, The lowest class of people; the rabble.
caramel, A burnt sugar candy.
carte blanche, Full power.
carte de visite, A small photograph upon a card.
chanson, A song.
chateau, A castle.
chauffeur, Driver of an automobile.
chef, A chief man cook.
chere amie, Dear friend.
coiffeur, A hairdresser.
coiffure, A headdress.
comme il faut, Proper; as it should be.
compagnon de voyage, A traveling companion.
con amore (It.), With affection; very earnestly.
consomme, A kind of soup.
contretemps, An awkward mishap.
conversazione (It.), A meeting for conversation.
cotillon, A lively dance.
croquette, A ball of minced meat or of other ingredients, rolled in bread crumbs and fried.
crouton, A small piece of bread fried and used in soups.
cuisine, A kitchen; cookery.

debut, First appearance.
debutante, A young lady just entering society.
decollete, Leaving the neck and shoulders uncovered; low-necked.
dejeuner a la fourchette, A meat breakfast.
demi-tasse, A small cup.
denouement, The unraveling or discovery of a plot; issue; event.
de trop, Too much, or too many; not wanted.
devoir, Duty.
diner, Dinner.
dolce far niente (It.), Sweet idleness.
domino (It.), A mask robe.
double entente, Double meaning; a play on words.

eau de cologne, Cologne water.
eau de vie, Water of life; brandy.
eclat, Splendor; brilliancy.
elite, A select body of persons.
embonpoint, Plumpness; good condition.
empressement, Eagerness; ardor.
en deshabille, In undress.
en famille, In a domestic state.
en masse, In a body.
ennui, Weariness; listlessness.
en papillote, In curl papers.
en regle, Regular; in order; according to rule.
en route, On the way.
ensemble, The whole.
en suite, In company; in a set.
entourage, Surroundings.
entree, Entry; first course.
entremets, Small and dainty dishes set between the principal ones at table.
entre nous, Between us; in confidence.

farce, Forcemeat.
fete champetre, A rural festival.
finale (It.), The closing part in any performance.
fondant, Sugar boiled and beaten to a creamy paste.
fondue, A light preparation of melted cheese.
fricassee, Chickens cut in pieces, prepared in a white sauce with accessories.

garage, A place where automobiles are stored and kept in order.
garçon, A lad; a waiter.
gateau, Cake.
gaucherie, Awkwardness.
glace, Anything iced.
gouvernante, A governess.
grande parure, grande toilette, Full dress.
grisette, Dressed in gray. (Applied to French shop girls.)
gusto (It.), Great relish.

habitue, A frequenter.
haricot, A kind of ragout; kidney bean.
hasta la primera vista (Sp.), Until the first sight; until we see each other again.
hasta luego (Sp.), Until we meet soon again.
hasta mañana (Sp.), Good-by until to-morrow.
hasta otra vez (Sp.), Until another time; until we meet again.
hauteur, Haughtiness.
haut ton, Highest fashion.
Hollandaise sauce, A rich sauce something like hot mayonnaise.
hors d'oeuvres, A kind of very light entrée.

impromptu, A prompt remark without study.
insouciance, Indifference; carelessness.

jeu d'esprit, A witticism.

le beau monde, The world of fashion; society.
lingerie, Linen goods; women's fine underwear.
litterateur, A literary man.

macedoine of vegetables, A mixture of vegetables with a white sauce.
macedoine of fruit, A kind of jelly.
ma chere, My dear.
mademoiselle, A young unmarried lady.
maitre d'hotel, A house steward.
major-domo (It.), One who has the management of a household.
mal a propos, Ill-timed.
mal de mer, Seasickness.
mariage de convenance, A marriage of convenience.
matinee, A musical or dramatic entertainment held in the daytime.
mayonnaise, A kind of salad dressing.
menage, Household.
menu, Bill of fare.
meringue, Sugar and white of an egg beaten to a sauce.
mesalliance, Marriage with one of lower station.
monsieur, Sir; master; gentleman.
morceau, Morsel.

naive, Having unaffected simplicity.
naivete, Native simplicity.
nee, Born.
neglige, A morning dress.
nom de plume, An assumed or literary name.
nonchalance, Coolness; easy indifference.
nougat, A mixture of almonds and sugar.
nuance, Shade; gradation; tint.

on dit, They say.
outre, Eccentric.

par excellence, Preëminently.
par exemple, For example.
partie carree, A party of four, two men and two women.
parvenu, A newcomer; an upstart.
passe, Worn-out.
pas seul, A single step; a dance.
pate de foies gras, Goose-liver pie.
patisserie, Pastry.
penchant, Inclination; liking.
petit, Small.
pommes de terre, Potatoes.
potage au gras, Meat soup.
pot-pourri, A medley.
pour prendre conge, To take leave.
prima donna (It.), Leading lady singer in an opera.
protege, One protected by another.
puree, A thick soup.
puree aux croutons, A thick soup with cubes of toasted bread.

quien sabe? (Sp.), Who knows?
qui vive? Who goes there?—hence on the alert.

raconteur, A relater; a teller.
ragout, A rich mixture.
raison d'etre, The reason for a thing's existence.
rechauffe, Warmed over, as food; hence, stale, insipid.
rencontre, An encounter.
rendezvous, A place of meeting.
repondez s'il vous plait (R. S. V. P.), Reply if you please.
restaurateur, One who provides.
rissoles, Small pastry, either of savory or sweets fried.
robe de chambre, A dressing gown.
robe de nuit, A night gown.
role, A part in a performance.
roue, A debauchee.
rouge, Red coloring for the skin.

salle a manger, Dining room.
sang-froid, Coolness; self-possession.

sans souci, Without a care, free and easy.
saute, To cook quickly over a hot fire with just enough butter to prevent sticking.
seance, A sitting.
sobriquet, A nickname.
soi-disant, Self-styled; pretended.
soiree, An evening party.
soubrette, On the stage a servant girl who acts in comedies the part of an intrigante.
souffle, A very light, much whipped up, pudding or omelette.
souper, Supper.

tableau vivant, The representation of a picture by persons grouped together, silent and motionless.
table d'hote, A common table for guests.
tendresse, Passion; affection.
tete-a-tete, A conversation between two parties.
timbale, A pie raised in a mold.
toujours, Always.
tout-a-fait, Entirely; wholly.
tout-a-vous, Wholly yours.
tout ensemble, The whole taken together.
trousseau, A wedding outfit.

valet de chambre, An attendant.
veloute, The stock for white sauce.
virtu (It.), Taste; art; skill.
virtuoso (It.), One skilled in matters of taste or art.
vis a vis, Opposite; facing.
vol au vents, Patties of very light puff paste filled with meat or preserves.

CLASS MOTTOES

ad astra per aspera, To the stars through difficulties.
ad vindictam tardus, ad beneficentiam velox, Slow to vengeance, swift to kindness.
age quod agis, Do what you do (*i. e.*, Mind your own affairs).
αἰέν ἀριστεύειν, To excel always.
alta petens, Seeking higher things.
alteri sic tibi, Do to others as to yourself.
ἅμα ὀρεγόμενοι, Pulling together.
ars longa, vita brevis, Art is long, but life is short.
astra castra, numen lumen, The stars my camp, the Deity my light.
audaces fortuna juvat, Fortune favors the bold or brave.
aude aliquid dignum, Dare something worthy.
aude sapere, Dare to be wise.
aut inveniam viam, aut faciam, I will either find or make a way.

bis vivit qui bene, He lives twice who lives well.

carpe diem, Enjoy the present day; seize the opportunity.
certum pete finem, Aim at a sure end.
coelitus mihi veres, My strength is from heaven.
consilio et animis, By wisdom and courage.
consilio et prudentia, By wisdom and prudence.
crux mihi anchora, The cross my anchor.

dant animos vicis, Mutual help gives strength.
dat cura quietem, Vigilance ensures tranquillity.
Dei memor, gratus amicis, Mindful of God, grateful to friends.
delectare in Domino, To rejoice in the Lord.
Deo adjuvante, non timendum, God helping, nothing need be feared.
Deo date, Give to God.
Deo duce, God being my leader.
Deo ducente, nil nocet, God guiding, nothing harms.
Deo favente, With God's favor.
Deo juvante, With God's help.
Deus major columna, God the greatest support.
Deus mihi providebit, God will provide for me.
Deus nobiscum, quis contra? God with us, who against us?
ducit amor patriae, Love of country leads.
dum spiro, spero, While I breathe, I hope.
dum vivimus, vivamus, While we live, let us live.

e pluribus unum, One from many.
esse quam videre, To be rather than to seem.
esto quod esse videris, Be what you seem.
excelsior, Higher.

facta probant, Let deeds prove.
fide et fortitudine, With faith and fortitude.
fide non armis, By faith, not by arms.
fides et justitia, Fidelity and justice.
fides non timet, Faith knows no fear.
finis coronat opus, The end crowns the work.
forsan et haec olim meminisse juvabit, Perhaps it will be pleasant hereafter to remember these things.
forti et fideli nihil difficile, To the brave and faithful nothing is difficult.

gaudeamus igitur, Therefore let us rejoice.
γνῶθι σεαυτόν, Know thyself.

hodie non cras, To-day, not to-morrow.
honesta quam splendida, Things honest rather than things splendid.

in Deo spero, In God I trust.

καιρόν γνῶθι, Know your opportunity.

laborare est orare, To labor is to pray.
labor omnia vincit, Labor conquers all things.

magna est veritas et praevalebit, Truth is mighty and will prevail.
μηδὲν ἄγαν, Not too much of anything.
medio tutissimus ibis, In a medium course you will go most safely.
memento mori, Remember death.
mens sana in corpore sano, A sound mind in a sound body.
mens sibi conscia recti, A mind conscious of rectitude.
μέτρον ἄριστον, The middle course is best.
multum in parvo, Much in little.

nemo me impune lacessit, No one wounds me with impunity.
ne plus ultra, Nothing further.
ne quid nimis, Not anything too much or too far.
nil desperandum, Never despair.
nil nisi cruce, Naught but the cross.
nisi Dominus, frustra, Unless God be with you, all your toil is in vain.
non multa, sed multum, Not many things, but much.
non nobis solum, Not for ourselves alone.
non quis, sed quid, Not who, but what.
non quo, sed quomodo, Not by whom, but in what manner.
non sibi, sed omnibus, Not for self, but for all.
non sibi, sed patriae, Not for self, but for country.
non videri, sed esse, Not to seem, but to be.
nulla dies sine linea, No day without a line; *i. e.*, without something done.
nulli secundus, Second to none.
nunc aut nunquam, Now or never.

omnia ad Dei gloriam, All things to the glory of God.
omnia cum Deo, All things with God.

palma non sine pulvere, No excellence without great labor.
patior, potior, I endure, I obtain.
per crucem ad coronam, Through the cross to a crown.
per crucem ad palmam, Through the cross to victory.
πόνῳ πόνον φέρω, I bear toil by toil.
possunt quia posse videntur, They can because they think they can.
principia, non homines, Principles, not men.
pro bono publico, For the public good.

quae nocent, docent, Things which injure, instruct.
quanti est sapere! How desirable is knowledge!
qui non proficit deficit, He who does not advance goes backward.
quod facimus bene faciamus, What we do let us do well.
quo fas et gloria ducunt, Where right and glory lead.

recta sursum, Right upwards.
respice, aspice, prospice, Look back, look forward, and look around.
respice finem, Look to the end.
revocate animos, Call back your courage.
sapere aude, Dare to be wise.
semper fidelis, Always faithful.
semper paratus, Always ready.
semper vigilans, Always watchful.
servabo fidem, I will keep faith.
spectemur agendo, Let us be judged by our actions.
spes sibi quisque, Let every one hope in himself.
σπεύδε βραδέως, Make haste slowly.
suaviter in modo, fortiter in re, Gentle in manner, but resolute in deed.

tentanda via est, A way is to be attempted.
thure et jure, By religion and justice.

vi et arte, By strength and skill.
vincit qui patitur, He conquers who endures.
vincit qui se vincit, He conquers who conquers himself.

PEDAGOGICAL AND PSYCHOLOGICAL TERMS.

ABNORMAL. Deviating from a standard or type.

ABSOLUTE. That which is not relative.

ABSORPTION. Complete occupation of the attention.

ABSTRACT. A relative term implying that an aspect, quality, or relation of an object is considered as having a separate or independent existence apart from the body possessing it. Abstract is the opposite of concrete.

ABSTRACTION. That process by which single ideas are separated from others and the attention fixed upon them.

ACCIDENTAL. That which is not essential or substantial. A further meaning makes it uncaused or fortuitous.

ACQUIRED. That which is added during the individual's life, from experience, to the original equipment of the mind.

ACQUISITIVENESS. Relative ease of acquiring or learning; generally regarded as a natural fitness.

ACTION. A general term for deeds or acts, and the doing of them. Voluntary actions are those performed by an act of will; non-voluntary, reflex, or automatic are performed independent of the will; involuntary are those which are opposed by the will, and occur in spite of a will to the contrary.

ADOLESCENCE. The period in the life of an individual preceding the attainment of maturity.

ANALYSIS. The act of separating a whole into its component parts for the purpose of studying their relation.

ANIMISM. The hypothesis, original with Pythagoras and Plato, that the universal soul (*anima mundi*), no matter how conceived, is the cause or principle of life.

ANTHROPOLOGY. The science of man or the natural history of mankind.

ANTHROPOMETRY. The science which deals with the measurements, physical proportions, and characteristics of the human body.

APPERCEPTION. A process of attention involving interaction between (1) the presentation of the subject to which attention is being given, (2) the whole of the previous matter relating to the subject and held in the mind, and (3) all of the performed mental processes. In education the term is used to denote the consideration and interpretation of new knowledge in the light and by the aid of that previously acquired.

ASSIMILATION. The union of thought elements by conscious process; or the association between like elements and compounds.

ASSOCIATION. In education the intentional and designed comparison of newly presented facts with other related facts already known.

ATTENTION. The act of the mind at work or beginning to work on a subject.

Reflex attention is drawn without the subject's foreknowledge by unexpected stimulation. Voluntary attention follows a purpose or an object that is interesting.

Voluntary attention is under the control of the will to attend, while non-voluntary or spontaneous attention is given without effort or fixed purpose.

ATTITUDE. Readiness for attention, or action, of a definite sort.

AUTO-SUGGESTION. The process of bringing about in oneself hypnotic or suggestive states.

BACONIAN METHOD. The inductive method of reasoning developed by Francis Bacon. Reasoning from particulars to the general.

BASEDOW'S METHOD. "Everything according to nature."

BELIEF. A mental acceptance of something thought of as real. **DISBELIEF.** A state of belief in a contrary truth.

CALISTHENICS. The art, science, or practice of muscular exercise to promote health, strength, or grace of the body.

CAPACITY. The power of receiving ideas, or of acting upon them; physical power of any sort.

CATECHETICAL METHOD. Instruction by means of questions and answers, usually for the purpose of examination.

CAUSALITY. The necessary connection between events in point of time. It is opposed to the idea of logical necessity and to chance or freedom.

CLASSICAL COURSE. A course of study which includes the Greek and the Latin languages.

CLASSIFICATION. The simplest form of generalization.

CLEARNESS. That stage of method in which the mind apprehends facts with distinctness of understanding; according to Herbart, the first formal step in method.

CO-EDUCATION. The education together of persons of both sexes or of different races in the same institution of learning.

COGNITION. The state of being aware of an object.

COLOR-BLINDNESS. An abnormal condition of vision characterized by the absence of particular color tones.

COMPARATIVE PSYCHOLOGY. Comparison of the minds of different animal forms, including man.

COMPARISON. The act of discerning the likeness and difference between two or more objects.

CONATION. The active element of consciousness which displays itself in tendencies, impulses, desires, and acts of the will.

CONCENTRATION. The voluntary centering of thought upon a subject.

CONCEPT. Cognition of a single whole as distinguished from the particular elements of which it is composed. It is a distinction between a universal and a particular. The formation of concepts is the first step in thinking.

CONCEPTIONS. Perceptions registered or pictured in the mind so as to be recalled.

CONCEPTUALISM. A psychological doctrine that the mind can form general conceptions of individual objects; it is opposed to both realism and nominalism.

CONCRETE. Belonging to actual things or events.

CONSCIOUSNESS. The characteristic which distinguishes mental from all other life. It divides all that is mind from all that is not mind.

CONTENT. A term referring to what is in the mind; whatever forms part of a total consciousness; the qualities which a concept contains.

CONTROL. Voluntary command of mind and body.

CO-ORDINATION (of studies). A grouping of subjects mutually related in parts but essentially independent as branches of knowledge.

CORRELATION. The forming of explicit relationships among the parts of a mental whole. In studies it is the arrangement of studies and topics with regard to their reciprocal relations. Topics in the same subject may be correlated as well as those which are related to topics in other subjects, as classical, scientific, and economic subjects.

CULTURE. The result of mental and moral cultivation; a breadth of knowledge and refinement. Culture epochs in education involve the idea of a connection between the development of each child and the historical development of the race, and that in this is found the reason for the sequence of subjects in the instruction given.

CURRICULUM. A specified fixed course of study in an institution of learning.

DEDUCTION. A mental process or method in teaching in which reasoning proceeds from the general to the particular, as in geometry.

DIAGRAM. A simple drawing used to illustrate an oral explanation.

DIALECTICS. In education it is the art of teaching by means of discussion.

DIDACTICS. The science and art of teaching.

DISCIPLINE. Systematic training through education. The term thus applies to both mental and physical training. The mental discipline resulting from some studies is greater than their cultural value. It expands and regulates the powers.

DISCRIMINATION. A decision upon the difference between objects, each judged by the whole context of experience.

DISTRACTION. Inattention produced by stimulation of the attention to something else.

EDUCATION. The science and art of mental, moral, and physical development; the cultivation of the mind and manners, and the training of the body, through instruction and exercise.

EDUCATIONAL PSYCHOLOGY. That department of psychology which investigates the inner reaction that accompanies the manifold activities of man. The inner activities of man are educational.

EFFORT. The performance of work by force of will.

EGO. Individual consciousness of the object-self as contrasted with the same individual's thought of another, known as the *alter*. Ego is the self; non-ego, the not-self.

EMILE. A romance, named for the principal character, in which Jean Jacques Rousseau promulgated his views on education and natural religion.

EMOTIONAL TRANSMISSION. The communication of ideas or knowledge by arousing or appealing to the emotions.

EMOTIONS. Vivid feelings arising from the consideration of objects perceived, remembered, or imagined. An emotion is a tendency to feel. An instinct is a tendency to act in the presence of certain objects of environment.

EMPIRICAL. Relating to experience by being based upon, directed by, or derived from it. Opposed to rational.

EMULATION. Imitative rivalry; incentive to surpass or equal others. The Jesuits, in their teaching, called it "the whetstone of talent, the spur of industry."

END. That which satisfies a tendency, impulse, desire, or act of will.

ENVIRONMENT. All the external circumstances or conditions surrounding an object at any stage of its existence.

ESSENCE. The necessary and constant nature of a thing as contrasted with its accidents.

ESSENTIAL. Relating to the constant and necessary nature of a thing. Opposed to accidental.

ETHOLOGY. The science of the formation of human character whether by individuals or in groups.

EUGENICS. Sex-education.

EXERCISE. Learning or training through practice; also the task, duty, or work which produces it.

EXPERIENCE. A phase or mode of conscious change; the events of the mental life as a whole.

EXPERIMENT. A change in phenomena purposely brought about in order to study the phenomena and to obtain knowledge regarding them.

EXPERIMENTATION. The process of trying or testing, as a method of securing results.

EXTERNAL OBJECTS. One of the oldest psychological theories of our perception of an external object by Hobbes. He says that sensation and sense-perception are due to the resistance offered by the organism to change produced by an external impression.

FACULTY. Capability for a certain kind of mental process. It is a power of the mind to change and to impart.

FEELING. A mode of self-consciousness, or subjective consciousness. As a sensation it is a simple state of mind; as an emotion it is complex.

FELLOWSHIP. In England, a position of privilege and emolument in a college which entitles the holder to the enjoyment of certain revenues and privileges. In America, an amount of money or a scholarship which enables a student to pursue his studies at a certain institution or abroad.

FORMAL CULTURE. The doctrine that mental power, derived from any form of exercise or by any means, is applicable to any department of human activity.

FORMAL STEPS. The essential stages of a rational method. Herbart considers four: Clearness, Association, System, and Method. Others have more: Preparation, Presentation, Association, Generalization, and Application.

FROEBELIAN MOVEMENT. The movement advocating the Froebelian or kindergarten system of instruction. Its first principle is that the end and means of a child's education should be unrestricted, creative activity.

FUNCTION. Any conscious process which takes part in a larger group or system of processes.

GENERAL CONCEPT. It always includes two essential and distinct parts, an image, and the meaning of this image.

GENERAL IDEA. It emphasizes the presence of the image.

GENERAL NOTION. This emphasizes consciousness of meaning.

GENERALIZATION. The act of recognizing a likeness not before discovered, which involves formation of a new concept or extends an old one.

GENETIC. Pertaining to or dealing with original production. Genetic science deals with the problems of origin and development. Genetic forces are those which produce results. Genetic method is the explanation of things according to the manner of their origin. Genetic psychology is concerned with mental evolution, development, and growth.

GRAMMARIAN. (1) One who has a fine knowledge of grammar. (2) Among the Greeks and Romans, one who was especially versed in any particular branch of learning, but expecially one who excelled in the interpretation of poetical works.

GRAMMAR SCHOOL. In England, a school preparatory for college where Greek and Latin are taught. In America, the grades above the primary.

GROWTH. This shows the part played by special circumstances and experiences in the life of the individual.

GYMNASIUM. (1) In ancient Greece a place for instruction of the mind and for athletic exercise. (2) A school where the higher branches of science and literature are taught, especially in Germany. It is a classical rather than a technical school.

HABIT. A fixed tendency to think, feel, or act, in a particular way under special circumstances. Habits are acquired tendencies.

HALLUCINATION. A sensation without objective stimulus.

HERBARTIAN MOVEMENT. In pedagogy the followers of Herbart, laying emphasis upon his doctrine of apperception, put great stress upon the content of studies and the different processes of the mind.

HIGH SCHOOL. In the United States, the highest department in the free graded schools, coming between what is commonly known as the grammar school and a college or technical school; a free secondary school.

HUMANIST. One who in the time of the Renaissance, following the example of Petrarch, advocated by precept and example the study of classical, and especially Greek, literature.

HUMANITIES, THE. Learning and literature of a secular nature in opposition to the learning and literature of the nature of divinity. More particularly such subjects as the classics, poetry, philology, grammar, history, and archaeology were included under this head.

IDEA. A group of sensations or sensory elements reproduced more or less clearly by the image of an object not really present. A mental picture or image of an object that is not present.

ILLUSION. A mental object, or its construction, which is accepted as real, but is not so.

IMAGE. A mental picture. Its chief merit lies in its distinctness or clearness.

IMAGINATION. An idea of objects and events. The power or process of having mental pictures. There are two kinds: constructive, characterized by a definite purpose, and a persistent effort to accomplish that purpose; aesthetic, which is characterized by feeling or emotion and aims at immediate enjoyment.

IMPULSE. A sudden or transient mental motive or feeling. It is the basis of will.

INDUCTION. The method of teaching by reasoning from particulars to generals.

INFERENCE. The act of passing from one judgment to another.

INHIBITION. It is the restraint by which one mental process prevents the simultaneous occurrence of others.

INSTINCT. An impulse which leads to action without knowledge of a reason for the action.

INSTRUCTION. That mode of teaching whereby the pupil is informed and at the same time exercised for the attainment of knowledge and mental power.

INTELLECT. The faculty or capacity of knowing.

INTEREST. The doctrine, in education, that the means (studies) should awaken the pupil's interest; and, conversely, that interest in the ends for which a pupil studies should arouse interest in the means. It is the name of the feelings evoked by an idea, and which give that idea the power of arousing and holding the attention, and is of two kinds: *natural*, which is the interest that the presentation of the object has in itself; *acquired*, the interest which the presented object gains on account of its associations.

INTROSPECTION. The close and critical examination by an individual of his own mental states and processes for the purposes of study.

INTUITION. In education, the grasp of knowledge through the use and employment of the senses.

INVENTION. The mental power or faculty of making or creating, the power of imagining new relations of ideas.

JUDGMENT. The assertion of agreement or disagreement between two ideas. Judging is the mental act by which the mind compares. Judgments are either intuitions or inferences.

KINAESTHESIS. The perception attendant upon muscular movements; the muscular sense.

KNOWLEDGE. The mind's certainty of objects presented through the senses. Presentative knowledge is acquired through the senses. Representative knowledge is brought before the mind in the form of images or notions. Intuitive knowledge is the immediate perception of truth without reasoning.

LABORATORY. A work room devoted to investigations or experiments in any branch of natural science.

LATIN GRAMMAR SCHOOL. A secondary school in which the study of the Latin grammar inordinately preponderated. It was introduced into America from England by the early colonists and the first such school was opened in Boston in 1635. It was of the gymnasium type of Germany and has been largely modified or in most cases displaced by the tendencies of modern education in the United States.

LIBERAL EDUCATION. An education of wide, ample scope and extent so that the mind is master of its own powers, irrespective of one's occupation.

MANUAL TRAINING. In schools, the educating of the hands to do various kinds of work, which supplements the mental training received.

MEMORIZING. The act of committing to memory, or learning by heart.

MEMORY. The mental process which reproduces and recognizes prior experiences in their proper relative time order. The three mental functions, reproduction, recognition, and localization, are concerned in an act of memory.

MEMORY, DEFECTS OF. The chief classes are excess and defect. Amnesia is the name given to failure of retentiveness; paramnesia is a false memory or illusory memory; hypermnesia is an unusual exaltation of memory.

MENTAL DEVELOPMENT. The sum total of the processes through which the individual mind passes from birth to death.

MENTAL GROWTH. An increase in the stock of mental materials, which are supplied by sensation and perception. Sensation is the beginning of mental life, and is followed by perception, memory, conception, judgment, and reasoning in turn.

METHOD. A systematic process, aiming at definite ends, controlled by fixed principles. Compayre says: "Method is the order we involuntarily introduce into our thoughts, our acts, and our undertakings."

MILITARY SCHOOL. A school where, in connection with other instruction, the students are taught subjects pertaining to war, and expecially the drills.

MIND. It is that which knows, feels, and wills. Soul, spirit, ego, self, and subject are synonymous terms.

MNEMONICS. Devices or rules intended to improve and strengthen the memory.

MONITORIAL SYSTEM. Introduced into England by Dr. Andrew Bell in 1797, who with Joseph Lancaster developed it until it became a substitute for a national system. The older boys were used as instructors for the younger.

Its greatest result was in the development of education as a function of the state; it also introduced a better system of grading. Its main defects were too formal work, extremely superficial instruction, rigid and mechanical discipline and too much formal memory work. It was popular in the United States for about 20 years.

MORAL SENSE. The specific feeling attached to the distinction between right and wrong.

MUSCULAR SENSE. It consists of the sum of simple mental states which accompany the action of the muscles.

NATURALISTIC MOVEMENT. This was the overthrow of that conception, developed by the Renaissance, that education is a mastery of books and forms. Social reform was the great aim. Rousseau was the leader. His fundamental theories were this: "Education is a natural process, it is a development from within, it comes from workings of natural instincts and interests, and is an expansion of natural powers; it is life itself." It was the foundation of all educational development in the nineteenth century. Rousseau was the forerunner of the psychologists in education.

NOMINALISM. The doctrine that ideas or universals have no objective existence. It goes further and holds that universals are only names adopted for convenience and that reality consists in the individual concrete objects.

OBJECT. Whatever consciousness cognizes and, cognizing, feels an interest in.

OBJECTIVE. Whatever belongs to the object recognized, in distinction from the process of knowing, feeling, and willing.

OBSERVATION. In education, the acquisition of knowledge by direct sense-perception. It is regarded as one step in a rational method of teaching.

ORBIS PICTUS. The first illustrated text-book for children, written by Comenius. In *The World of Sensible Things Pictured* each chapter was headed by a somewhat complicated picture in which various objects were numbered with reference to particular lines in the text below. It deals with things, and by induction leads to a generalized knowledge.

ORGANON. A series of treatises on logic by Aristotle, in which the basis for scientific thought in any line of intellectual activity was first formulated.

PEDAGOGICS OR PEDAGOGY. The theory and practice of teaching as a profession; in it the sciences of the mind, of body, and of society are systematically applied to the work of education. It depends upon psychology for its methods, and upon civilization for its ends. Its problems pertain to the curriculum, the methods of teaching, and the development of character.

PEDANTRY. The overestimate of mere knowledge; the vulgar or uncalled for display of learning.

PERCEPT. The cognition which results from actual sensation and not from a mental picture.

PERCEPTION. The consciousness of particular material things present to the senses. The process of localizing sensations and referring them to definite objects. An act of the mind in becoming cognizant of the sensation. Its elements are sensation, reference, and grouping.

PESTALOZZI'S NINE LAWS. (1) Activity is the law of childhood. Accustom the child to do—educate the hand. (2) Cultivate the faculties in the natural order. First form the mind, and then furnish it. (3) Begin with the senses, and never tell a child what he can discover for himself. (4) Reduce the subject to its elements. One difficulty at a time is enough for a child. (5) Proceed step by step; be thorough. (6) Let every lesson have a point. (7) Develop the idea, then give the term. (8) Proceed from the known to the unknown. (9) Synthesis, then analysis; not the order of the subject, but the order of nature.

PHILOSOPHICAL SCHOOLS. They afforded a training in argument in private upon questions of metaphysics and ethics. Plato, Aristotle, Zeno, and Epicurus each founded a school, in which the work finally became formal and artificial. Many minor schools of this sort also were established.

PHYSIOLOGICAL PSYCHOLOGY. Investigates the vital processes which require the simultaneous application of the external and internal tests and methods of observation. It deals with the corporeal manifestations of mind.

PRIMARY SCHOOLS. In the system of public schools in America the department of one or more grades that come between the kindergarten and the grammar grades.

PSYCHIC AND PSYCHICAL. These pertain to the mind or soul.

PSYCHOLOGY. The scientific study of mental operations. The science which deals with actual psychical processes, and treats of their objects, and of the conditions of their occurrence. Kulpe defines it as "the science of the facts of the experience in their dependency upon experiencing individuals." The science originated with Aristotle, who did more for psychology than any other individual contributor. Practically but slight advance was made in the science between his time and that of the birth of the modern science. Descartes, Hobbes, and Spinoza are among the illustrious names during the earlier modern period. Incidentally Locke made important contributions to the science; among others he invented the expression "association of ideas." Hartley, Hume, and the two Mills, Herbart, Bain, Condillac, and Beneke are the chief workers in the field of the "new" psychology. Darwin, Spencer, Romanes, Morgan, Dahl, Wasmann, Bethe, Mills, and others contributed largely through the field of biology. Tarde, Baldwin, and Durkheim in the field of anthropology; Preyer, Baldwin, Miss Shinn, Sully, and many others in the field of child study; and Weber, Fechner, Helmholtz, and Wundt in the field of physiological psychology, have been prominent contributors to the science.

RATIONAL. Pertaining to the reason, being derived from, directed by, or based upon it. Opposed to empirical.

RATIONALISM. The theory that reason is an independent source of knowledge.

REALGYMNASIUM. A German secondary school in which no Greek is taught but much time is given to the sciences. It is between the Gymnasium and the Realschule.

REALISM. (1) As the direct opposite of nominalism, this doctrine states that universals, such as genera, have an existence independent of our conceptions and are real things or entities. (2) As the direct opposite of idealism, this doctrine holds that to our sense perception a direct, individual, external object at once presents to our cognition itself, instead of an object representative of its genera or type. The term is also applied to that type of education in which natural phenomena and social institutions rather than languages are the chief subjects of study.

REALSCHULE. A secondary scientific school in Germany teaching no classics, but affording manual training, besides various industrial courses, German, French, history, geography, geometry, mechanics, and drawing.

REASON. That faculty and process of mind which consists in the drawing of inferences.

REASONING. The process of inference or arrangement of ideas according to the laws of thought. It is the third aspect of thinking. In *implicit* reasoning the general principle is implied, not brought before the mind. In *explicit* reasoning, the general principle is evident. *Inductive* reasoning is passing from the particular to the general, or from a part to the whole; it begins with individual facts, puts percepts before concepts, and judgments before conclusions; *deductive* reasoning is passing from the general to the particular, from the whole to a part, from the greater to the less.

RECOGNITION. The consciousness accompanying any mental object when it is perceived, as having been understood before.

REFORMATION, THE. In education, its effect was to emphasize reason, the right of private judgment, and the necessity of familiarity with original literary material as the source of true ideas. To it we owe our idea of universal elementary education, and its realization.

RELATIVITY. Every aspect or phase of experience is influenced by every other aspect or phase of the experience at the same instant. This is called the law of relativity. There is a sense of relativity which conveys the idea that we can know about things only as they affect our minds, and not as the things themselves really are.

RENAISSANCE, THE. It was a movement primarily in individualism. In the earlier part of the movement, and in the south of Europe, culture as a means of personal development was emphasized; later, and in the north, knowledge as a means of reforming society was the chief interest. The first was the revival of the Greek education, and the latter was the narrow humanistic education. Erasmus was the greatest educator.

RETENTION. The action upon the mind of the material when apprehended. To apprehend an object is to fix it in memory; to retain an impression is to hold it in memory; to reproduce an impression is to bring it into memory.

RHETORICAL SCHOOLS. By the latter part of the fourth century B. C., the work of the wandering sophists had divided into two distinct types, the rhetorical and philosophical. The former prepared for the practical activities of life, through training in oratory and the new knowledge of the times. Isocrates was a leader in this movement.

RHETORS, SCHOOLS OF THE. These were schools in Rome similar to the rhetorical schools of Greece, and furnished a preparation for the life of affairs at Rome by a thorough training in oratory.

SCHOLASTICISM. (1) The name applied to the system of philosophy, taught in Roman Catholic institutions of learning, which is based upon the teachings of the early church fathers, as Augustine and Jerome, and teachings of Aristotle and of certain Arabian commentators. (2) The type of intellectual life which prevailed from the eleventh to the fifteenth century. It was responsible for the origin of universities, and its purpose was to develop power of disputation, systematize knowledge, and make the individual master of this knowledge. It reduced religious thought to logical form. *The Sententiae* of Peter the Lombard and the *Summa Theologiae* of Thomas Aquinas were the most noted works; Anselm was called the father of scholasticism.

SCHOOLMEN. The leaders in the scholastic movement.

SCIENCE. Knowledge reduced to principles, classified and systematized.

SECONDARY SCHOOLS. Schools including the high school and others which are preparatory for college.

SELF. A term used to denote the mind, soul, ego, or spirit.

SELF-ACTIVITY. A change produced within a being through determination and without destroying the identity of the being.

SELF-CONSCIOUSNESS. The mind's knowledge of itself. It is the foundation of all knowledge.

SENSATION. A simple mental state resulting from the stimulation or excitation of the outer extremity of an incarrying or sensory nerve. The first thing in the way of consciousness.

SENSE. The power of the mind to know a particular external impression.

SENSE-ORGAN. That part of the terminal apparatus of the nervous organism which furnishes impressions.

SENSE-PERCEPTION. A mode of consciousness produced by the present operation of an external stimulus upon the nervous system. It takes cognizance of all objects, independent and real.

SENSES, TRAINING OF. The regular and systematic exercise of the senses, to make the sense-percepts clear and distinct, and to develop the conceptual and reasoning powers. "There is nothing in the mind that was not first in the senses."

SENSIBILITY. The power of the mind to feel, which feeling includes all pleasurable and painful conditions of the mind.

SIMILARITY, LAW OF. A principle of the association of ideas, according to which resemblance between two mental objects of any kind is the reason of the recall of the one on the presence of the other.

SOCRATIC METHOD. (1) The process of arriving at fundamental generalizations by an inductive method of question and answer. (2) The form of instruction described in the Dialogues of Plato, often called the "dialogic method." It is made up of two parts: (*a*) The Socratic irony to clear the mind of false or absurd ideas, and (*b*) the attempt to cause the student to discover fundamental definitions by inductive reasoning instigated by question and answer.

SOPHISTS. Greek teachers who taught by formal discourse or lecture, rhetoric, philosophy, and conduct. They were disliked by thinking Greeks because of their claim to teach all things, and their demand for pay for their services. They were prominent in the last half of the fifth century B. C. A period of great enlightenment followed.

SUGGESTION. Any impression which is consciously received through any of the senses.

SUMMA THEOLOGIAE. The most extensive work of Thomas Aquinas, attempting to give in the form of the scholastic method of philosophizing a complete theological survey of the divine, human, and natural worlds. Its chief contents are derived from the famous *Book of Sentences* collected from the Christian Fathers by Peter the Lombard and classified after the manner of Abelard into affirmative and negative statements (*Sic et non*). This work of Aquinas is one of a hundred similar expositions that exist in manuscript, and many of them in print.

SYLLOGISM. Deductive reasoning.

SYNTHESIS. The method, process, and function of putting things together.

TEACHING. "Teaching is a process by which one mind, from a set purpose, produces a life-unfolding process in another."

TECHNICAL SCHOOLS. Schools where the instruction tends to fit the students for some art, science, or trade; most frequently the mechanical arts are specified.

THINKING. Forming ideas, concepts, the knowledge of ideas or relations. It discriminates, assimilates, and detects differences and agreements. It has three aspects, conception, judgment, reasoning, none of which could occur without the others.

THOUGHT. The act, process, or power of thinking.

TRADE SCHOOLS. Schools where the pupils receive instruction in some craft or business, as well as mental instruction.

UNCONSCIOUS. Not possessed of mind or consciousness.

UNDERSTANDING. The mental instrument of scientific knowledge as opposed to reason, the instrument of philosophic knowledge. To the understanding all things are relative; and the faculty deals with all things and events dependent upon environment. A knowledge of the relations of things. It is the mother of interest; interest is the mother of feeling; interest and feeling aid retention.

UNIVERSITY. An institution for the instruction of students in the higher branches of literature, arts, and sciences with the power to confer degrees recognized throughout the world as valid. It may or may not include a college, or may consist of many under one general administration.

UNIVERSITY EXTENSION. A plan, originating in England, for extending the influence and instruction of universities outside the site of the institution by means of classes and lectures at important centers.

VOLITION. The decision upon a psychic issue by an individual, or the faculty of will by which the powers are directed to the attainment of a chosen end.

WHOLE. Psychologically, whatever is thought of, attended to, or otherwise acted upon as a single object though capable of treatment as two or more objects (parts of the whole).

WILL. The term *will* includes all active operations of the mind.

DICTIONARY OF TERMS USED IN JOURNALISM.

BANK OR DECK. One part of a series of headlines, in a single line or several. Banks are printed in varying sized types. Also used for table on which type or plates are kept in the printery.

BEAT OR SCOOP. Important item of news secured and printed in a paper before competitors learn of it,—the ambition of all good newspaper writers. A reporter's territory, like a policeman's, is also called a beat or run.

BULLETIN. Later important news printed at top of an article usually in bold face type. This gives developments after the main article was written, or the latest words off the wire as the paper goes to press. Sometimes printed in colored ink by means of a fudge plate (q. v.).

CAPTION. Heading or title of an article or part; now often confined to picture headings and texts that accompany them.

DUMMY. Sheet or set of sheets bound together to show the form size, arrangement of pages, and sometimes the literary material of a news page, book or other printed work.

ELECTROTYPE. A copper-covered duplicate of type or cuts with or without the metal or wooden base used as backing when it is run through the press. Material cast solid from impression of composed types, columns, and pages.

FEATURE STORY. Any news account emphasizing elements other than the usual facts of time, place, and persons concerned. The human interest story is a variety in which pathos, mystery, heroism or some other quality or emotion is emphasized or "played up."

FLASH. Brief or tabloid bit of news received over the telegraph wire or by radio; an important preliminary report, or supplement to news of more than usual interest.

FOLLOW COPY. As written in the margin by an author or editor means that the material is to be set precisely as indicated; used in cases where some intermediary might think a mistake had been made. George Eliot, for instance, might be misspelled by the printer; to guard against this "Follow copy" might be written in the margin of the manuscript.

FONT. Assortment of large and small type with all other marks ordinarily used in composing for the press. These are of many different sizes and styles of type as made by the type founders.

FUDGE. Small printing cylinder that may be attached to a large rotary press to add base ball scores, flashes, stock news, or sensational news (often in colored ink) to a page. This saves casting a whole new plate for the press, since a part may be cut from the large one and the fudge plate inserted in its place.

GALLEY. Long, shallow tray for holding lines of type till they are used for making plates or for use in a press. Printers often speak of a certain number of galleys of material. A galley proof is one taken directly from the types by placing a sheet of paper over them and then running a roller over that. Galleys are about two feet long, but usually are not entirely filled with type.

HANGING INDENTATION. In this form the first line fills the whole column or other space, the rest, however, being indented from the left-hand side or sometimes at both sides. Headlines are often so arranged. To indent is to run to the right a certain number of spaces, the exact number depending on custom and purpose.

JUSTIFYING. Filling in space between words or letters to make composed matter even at both ends according to the size of space allowed.

LEAD (pronounce leed). Initial sentence or brief paragraph of a news article telling, who, what, when, where, and why of the article; a summary or condensation of all essential facts.

RELEASE. Permission is given to print or release a story at a certain time and not before. For example, the President's message is usually submitted several days before it is read to Congress and held by the papers for release not earlier than the afternoon of the reading in Washington.

REWRITE MAN. One who revises or makes over articles and news as written or reported by another. A valuable man on any newspaper.

RUNNING STORY. An account or news article that develops from time to time and is printed from day to day in parts, or one that comes into the news office bit by bit and is set and assembled as it arrives.

STORY. Any narrative article for the regular columns of a paper. Burglar story means story of a burglary, etc.

STREAMER OR BANNER. Large heading that runs across the whole or large part of a page.

STYLE BOOK. Book of directions for editors or reporters issued by a printing or news organization.

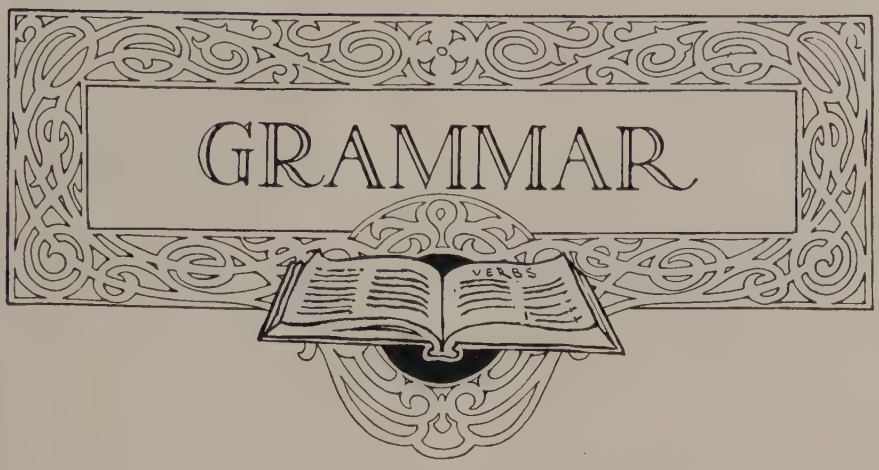
SYNDICATE. Commercial organization that sells any form of news, feature articles, or pictures for use in papers, books, or magazines.

THIRTY. Usually written in figures as the telegrapher's symbol that the end of a story has been reached. Other forms used by writers are three upright parallel lines and the symbol "#." If "More" is written at the end of a bit of copy, the compositor knows that the end is not reached. If "Hold" is written, the make-up force knows that the material is to be held for further additions, corrections, or changes.

U. P. UNITED PRESS, a commercial organization selling news to papers.

A. P., a cooperative organization of papers that exchange news among each other.

YELLOW JOURNALISM. A term used about the time of the Spanish American War to indicate news that plays up the base side of human nature. News that shows the yellow in humanity. Now the term is used for almost any sensational, exaggerated, or distorted method of writing news.



ENGLISH IN THE HOME
PREPARING THE CHILD FOR SCHOOL
LANGUAGE DEMONS
READING AN AID TO LANGUAGE
POETRY AND THE CHILD
RESULTS OF EARLY READING
GETTING THE CHILDREN INTERESTED
SENTENCE BUILDING
PHRASES
CLAUSES
PARTS OF SPEECH
ANALYSIS
DIAGRAMS

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FAMOUS AMERICAN EDUCATORS

Noah Webster
Dr. Lyman Abbott
Prof. John Grier Hibben
Dr. Isaac Funk

Horace Mann
William Wirt
Dr. Charles W. Eliot
Ella Flagg Young

BOOK II.

GRAMMAR.

Drawing by SELDEN IRWIN.

EVERYDAY LANGUAGE, FIFTY LANGUAGE DEMONS, VALUE OF READING, POETRY AND THE CHILD, SENTENCES, PHRASES AND CLAUSES, NOUNS, PRONOUNS, ADJECTIVES, VERBS, INFINITIVES AND PARTICIPLES, ADVERBS, PREPOSITIONS, INTERJECTIONS, CONJUNCTIONS, ANALYSIS, DIAGRAMS.

OUR EVERYDAY LANGUAGE

Good English in the home. Habit is important in the use of our mother tongue. We often fall into careless customs in speaking. Even highly educated persons now and then make mistakes in grammar. Many believe they can change their habits of speech whenever they choose. All habits soon become fixed and hard to modify, and bad speaking is no exception. The drop of water at last wears away the flagstone. Little by little the small slips in grammar almost inevitably wear down the language of any person. If we do not wish the stone at last to be spoiled, we should begin early to stop the dripping of the water. In the same manner, if we do not wish the speech of our children to become spoiled by errors in language and grammar, we must begin to train them early to avoid many common faults.

Schools and homes may cooperate in teaching good English. Every home should encourage the best modes of speech. Not more than six per cent of our entire lives is spent in the schools. Ninety-four per cent must, therefore, be accounted for. Our fine schools in America are gradually spreading their influence among all our people. Children of every land have come to our shores, and they desire to learn the best that our language has to offer them. Parents are learning to help themselves. Almost daily, associations are formed to assist the teachers of the public schools in their planning of good education. Good speech days and weeks are held in hundreds of communities every year. More and more, then, both schools and homes are learning to assist each other for the improvement of all our people.

How may the home prepare the child for school? First of all, by setting a good example of correct speech. Little people are like those small animals called chameleons, which take on the colors of their surroundings. If you place them on a red background, they will look red; on a brown cloth and they take on a brownish tinge, and so on. Habits of good or bad speech are absorbed by children much as the chameleons absorb colors near them.

Possibly some of the following suggestions may interest those who are responsible for the training of little folks.

1. If an adult happens to make a mistake in grammar, he should correct himself when he thinks of it, and call attention of children to the right forms. Emphasis always should be laid on correct English. Tell children what they should be saying,—and not merely what they should not say. Let the good drive out the bad expression.

2. Do not nag children for making little mistakes in language. It is much better in every way to encourage them gently but persistently. Remember that it takes years to perfect our training in good speech. If a bad language habit is once formed, it may take weeks or months of careful thought to break it. Ordinarily children have to be warned repeatedly not to use a given wrong expression. When all of us hear so much bad speaking in almost every corner of life, it is hardly reasonable to expect little boys and girls to remember from the first time we correct them.

3. Be certain to select only the best reading for children. Books that are carelessly written

should not be purchased. Beware of jokes, pictures with slang or vulgar comments, and some of the professional funny men whose stock in trade is distortion of good English. All such are for adults only. A great store of cheap, but worthy books, are now available for children.

4. Encourage children to tell little stories, or relate personal experiences, in the freedom of the home circle. They may seem awkward in school, and so unable to do their best before a class and teacher. At home they develop powers rapidly, and soon can tell elaborate stories, full of imagination, and correct in their language.

5. In the home, as well as in school, be careful not to write incorrect expressions where children see them. If you must write a wrong form on the board or tablet, be certain to place the right one beside it and leave the latter long after the other is erased or cancelled.

Of course, it is necessary to avoid many faults that are common in the speech of careless adults or of children who know no better. A long list of such mistakes might be compiled, but we shall offer fifty samples as fairly typical of all.

Fifty Language Demons. Borrowing a term used by Prof. W. F. Jones, who compiled a list of one hundred common spelling demons, let us notice how the right forms are distinguished from the wrong. Some of the list here given are ungrammatical expressions, some confused meanings or uses, and others distorted pronunciations. Not all are found in every community.

RIGHT FORM.	WRONG FORM.
Almost all have arrived.	Most all have arrived.
And should be used sparingly.	*And* used in most sentences.
Are you going?	Be you goin'?
Between you and me.	Between you and I.
Can hardly see.	Can't hardly see.
Did it.	Done it.
Different from.	Different than.
Don't get angry.	Don't get mad.
Everybody look out for himself.	For themselves.
Ought not.	Hadn't ought.
Half an hour.	A (an) half an hour.
Have not, haven't.	Hain't.
Have not any, haven't any.	Haven't got none, haven't none.
Have not obtained, received.	Hain't got.
He is in the city.	He is to the city.
He and I did it.	Him and me done it.
He let us go, permitted us to go.	He left us go.
I am not, he is not, you are not, etc.	I ain't, etc. (no such word).
I am surely glad to see you.	I am sure glad to see you.
I find it nowhere.	I find it no place.
I can't find it anywhere.	I can't find it nowhere, no place.
I do not know, don't know.	I dunno.
I have a bad cold.	I've got a bad cold.
I think it is not.	I don't think it is.
I understand his schemes.	I'm onto him, wise to him.
It isn't anywhere.	It isn't no place.
It is nowhere.	It isn't, ain't, no place.
It is a pleasant (bright, fair, warm, delightful) day.	It is a nice day.
It is of no use to try. It is useless, foolish, to try.	It is no use to try.
It was an entertaining (well acted, etc.) play or motion picture.	It was a grand (swell, etc.) show.
He and I went.	He and myself went.
He lay down to rest.	He laid down to rest.
He would have gone.	He would of ('ve) gone.
John and I did it.	John he and I done it.
Lay the book down there.	Lie the book down there.
Lend me five shillings.	Loan me five shillings.
Let him alone.	Leave him alone, leave him be.
Let the book lie there.	Let the book lay there.
I was reared on the farm.	I was raised on the farm.
Saw (past tense of *see*).	Seen.
Seem unable to do it.	Can't seem to do it.
Set the basket down.	Sit the basket down.
Sit on the carpet by the fire.	Set on the carpet by the fire.
The cup is burst (broken).	The cup is bursted, busted.
The hose has burst (broken open).	The hose has bursted, busted.
Want to come in, go out, climb up, and so on.	Want in, out, up, and so on.
We had a bountiful dinner.	We had a sumptuous repast. we had a beautiful dinner.
We had a pleasant (agreeable, delightful, happy) time.	We had a swell (elegant) time.
Where is he?	Where is he at?
Wish not to (do something).	I don't want to.

How adults may assist children in learning the English language. Grammar and language are hard for certain people because they do not realize their true nature and purpose. Many false notions have been spread abroad by those who have expected too much of children and the books they are studying. A few of these wrong ideas may be noticed briefly here.

1. Contrary to belief of many persons, the dictionary does not fix the standard of usage. Words change in meaning constantly. The makers of dictionaries hope to keep up to date in recording the use of words by careful speakers and writers. Such books merely follow the customs of good writers; they do not attempt to dictate to everybody.

2. Short words are not always preferable to long ones. Sometimes a large word is the sole one that expresses the right meaning. Children must be taught to select the right word, not necessarily the smallest one.

3. Our every-day expressions do not guide the

usage. Only those who make it a business to write and speak carefully have a right to judge which words are best to use. We look to the physician for advice as to our bodies; to the lawyer for advice as to our property; to the clergyman for advice as to our souls; and likewise should we not look to professional authors for advice as to the right use of language?

4. Informal and colloquial speech is sometimes preferable to formal and precise. Purists, however, believe that language should be kept to a certain set form. They advise us never to use words like *isn't, don't, won't;* yet many good authors use them, especially in conversational passages. Some tell us never to end any sentence with a preposition; and yet the good authors repeatedly break this rule. In fact, sometimes a small word that is emphatic *should* come at the close of the sentence. Which do you prefer of these sentences? *About what are you thinking?* and *What are you thinking about?* By avoiding the small word at the end, do we not bring about awkwardness at the beginning of the sentence? Many more expressions, homely in themselves, are to be chosen in spite of any objections by purists.

5. "Peppy" expressions are not necessarily good. Some speakers like to use newly-coined and slang words, just as some people, in other regards, enjoy being different and even fantastic. Slang is a lazy man's substitute for clear, good, living expressions. Much slang like "rubber neck" and other combinations soon passes into oblivion. Now and then a word sticks in good use. Invented expressions, too, attract many persons. Has the combination "stick-to-it-iveness" anything to recommend it? Why not use the good old word *persistence?* Must we speak of "jumping on" a person, when we have a legitimate word *insult*, which originally meant *to jump on?* If we desire to get away from worn, trite language, why not search out some of the expressive and picturesque words already in our vocabularies?

6. Children learn less rapidly by oral than by silent reading of books. Recent tests by several investigators prove this true. Parents, therefore, should encourage their little folks to read much in silence at home.

Enlarging the horizon of child life. Imagination helps children to create a world of their own making. Little folks live in the same world as grown-up persons, but they have in addition their own realm, a fairyland that is real enough to them. Adults often fail to realize this, and so expect their children to grow up too rapidly. Soon enough will our little folks emerge into the world of common day,—of every-day consciousness. We must not, therefore, be too eager to push them along; for they all too soon will abandon their play and their fairies for the life of study and business. To live in dreams, to grow gradually out of the play world, is their birthright.

Books are the portals into a world of fancy. Through them the child widens and widens his vision of the world and of human kind. Together with the school and the home, books form a third vital force in life. Books in English are stepping stones also to the knowledge of language and grammar. From the first few grades in school, they lead up and up to a summit of noble realization. Books give a love for good reading, knowledge of human nature, and zeal for progress. Through reading we acquire much of the grammar that we often miss in the school texts.

Some specific ends attained by early reading are these:

1. Training the imagination and broadening the heart interests.
2. Introduction to a new world of nature, language and history.
3. Preparation of a basis for further studies.
4. Self-expression through reciting, retelling stories, and imitating what they see and read.
5. Teaching of ideals of justice, humanity, and honor, leading to a fine sense of right and wrong.

Reading as an aid to language study. Fortunate indeed are those children who have learned the Mother Goose at their mother's knees. For such simple, primitive verses have a peculiar charm. Children do not fail to observe their faults, and yet the jingles, the pictures, and the quick turns of thought appeal to every little person's imagination. Twenty years or more change the point of view, but the grown-ups still recall with some longing the joys of hearing about Humpty Dumpty, Mother Hubbard and her Dog, Little Jack Horner, Jack and Jill, Old King Cole, Bo-Peep, and Simple Simon. Do what we may, go where we will, and these remain with us as echoes of a happy childhood.

Then follow naturally the fables, animal stories, and the tales of fairies. Children draw largely here on imagination, and they accept as true any little discrepancies of fact; for they look for the spirit, and do not bother about the trifles and inconsistencies. They do not question the marvelous growth of the bean stalk in *Jack and the Beanstalk.* Nor is it difficult to think of Humpty Dumpty as an egg. So their imaginations grow and grow, and become fit for service in adult life, where much depends on vision and foresight. All the world loves fables. The early races put themselves to school at telling fables of men and beasts. Children, also, love tales of animals and human beings. Thus we pass through the early days of love for Little Red Riding Hood, Puss in Boots, The Ugly Duckling, Little Black Sambo, The Three Bears, The Lion and the Mouse, Brer Fox, Uncle Wiggily, Black Beauty, and the long and impressive list of wholesome children's classics for reading in school and home. Then come, a few years later, the Uncle Remus Stories by J. C. Harris, *The Jungle Book* by Kipling, the stories of the Brownies in the many books by Palmer Cox, *The King of the Golden River* by John Ruskin, *The Wonder Book* by Hawthorne, the *Blue Fairy Book* and *Red Fairy Book* compiled by Andrew Lang, and many other works like these. Nor do we forget the simple narratives of our *Bible*, the *Arabian Nights*, all of *Aesop's Fables*, or *Alice in Wonderland.*

Poetry and the child. No childish life is complete without a love of poetry. Few children indeed really dislike verse. Later some of us in the schools grow to hate poetry for various reasons. Yet the race began literature on this earth with poetry, and good poems existed long before good prose, so far as our historical records and legends testify. Verse more than prose

appeals to imagination; hence, the child is at home when reading or hearing good poetry. Rhythm always charms the ear and makes the blood quicken in our veins; for do not the beats of the heart, the ebb and flow of the blood itself, show kinship with sound and motion rhythms? Rimes assist to fix the meanings and sounds of words, as every teacher and reading book seems to know. Narrative poems abound in good, strong life, action that is noble, and ideals that are worth contemplating. Every normal child finds a certain delight in the motion of good rhythms, a certain satisfaction of soul in reading of brave men and worthy ladies, a certain grace and beauty in rimes, words, and combinations of terms into short, telling phrases. For all these reasons, we must never forget our poetry in a stern world of business and science.

By the time the child is eight or ten years old, he should have learned some of the simple, heart-felt lines of Stevenson's *Child's Garden of Verses*, the story of *Little Boy Blue* and other children in the poems of Eugene Field, the noble and majestic *Hiawatha*, Longfellow's poem of Indian life, Tennyson's lilting *Song of the Brook*, Browning's galloping *How they Brought the Good News* and the fable of the *Pied Piper*, together with many simple lyrics by Aldrich, Lowell, Bryant, and Whittier. For humorous verse, which should by no means be slighted, he should know many poems like Cowper's *John Gilpin's Ride*, Lewis Carroll's *Hunting of the Snark*, the *Nonsense Anthology* compiled by Carolyn Wells.

Practical results of this early reading. Aside from the joy of knowing good literature, the moral value of reading noble books, and the entertainment derived from reading stories and poems, many definite practical results are noticed as ends of good reading. Before the child enters the upper grades in school, he should be able to accomplish all of these requirements:

1. To answer questions simply and directly.
2. To describe objects he has seen.
3. To narrate the main elements of any story he has read or heard.
4. To recognize the words that are common in our vocabulary.
5. To make up little stories and tell them to others.
6. To enter freely into language and other games that instruct.
7. To recognize good from bad literature.
8. To analyze carefully any selection from the books he had read.
9. To write with some degree of correctness and simplicity.

Ways of getting children interested. Before the reading book comes the oral narrative. Children compose and tell elaborate stories long before they can read a single page in print. Story reproduction forms a staple method in the kindergarten and first grades. All children respond quickly to direct questions on their reading. Take the pathetic tale of Little Red Riding Hood. The adult reads it slowly to the child. Then he is ready for several questions; such as, Who was Red Riding Hood? Where was she going? Why? How far was it? Whom did she expect to meet there? What was she taking? Who met her on the way? and so on. The object is always to get children to recognize and use words. This is the foundation of all language study. Next, the child may be encouraged to translate the story into his own words. Perhaps at first he may need a great deal of coaching and prompting. Then, again, he may be encouraged to make up similar stories, and to recognize similar ones in other books, or in other oral narratives.

In many schools and homes the story hour is a regular event. Abundant material for reading to children is available to all. At comparatively minimum cost, the home and school library may possess a number of such books from which a great variety of narratives may be drawn. Children love to acquire, save, and often read such books when they have reached the third grade. Some of the many good volumes are Ingfen's *One Thousand Poems for Children*, Baker's *Stories from Northern Myths*, Burt's *Poems Every Child Should Know*, and a similar book of *Prose*, Bryant's *Stories to Tell the Children*, Palgrave's *Child's Treasury of English Song*, Richard's *Five Minute Stories*, Poulsson's *Child Stories and Rhymes*, Baldwin's *Fifty Famous Stories Retold*, and Wiggin and Smith's *The Story-Hour*.

Bryant's *How to Tell Stories to Children* is an excellent work on the art of narration; it is published by Houghton, Mifflin Company.

Study of language and grammar through play. Games often provide a convenient method of interesting children in language. If they are combined with instruction on how to speak correctly, they make fine aids to the school teacher or parent. Some of the plays and games mentioned below will readily suggest others.

1. Acting. All children love to imitate. Dialogue is one of the best class-room methods of reviewing a story. Children may represent the three bears, little Red Riding Hood, and many others. Indeed any simple narrative having two or more characters may be put into play form in the class or home.

2. Games of guessing. Part of the story may be read for the pupils to arrange a convenient ending. Sentences may be written with blanks left in them for children to fill up with correct words. Some child may be sent out of the room, while others decide on some object to be guessed by him on his return. Only words in a certain list may be among those chosen as the object for guessing games. The idea in all such exercises is to train children to speak, recall, and spell certain words. Different other variations on the game of guesses may be originated by any teacher.

3. The game of likes and opposites. One child begins with some familiar word and asks another to give one of similar meaning, or one of opposite meaning. Some one writes all the words on the board for further study. Cross word puzzles even might be introduced as aids to learning synonyms and antonyms.

4. The game of related words. One person says, The ball is *round;* another, The ball is *red*, and so on. Trees, birds, nations, studies, and many other groups may be used to vary the exercise. The object is to collect lists of related objects, or a great variety of adjectives that might refer to a single article.

5. The game of sound families. One may

begin with a word like *at*, while others think of similar variations like *bat*, *mat*, and so on. Every good spelling book now arranges words by sound families, or by phonograms, as they are called.

6. The game of anagrams, which may be purchased at almost any store. This provides a valuable exercise in word groups.

7. The postal game. Postal cards, or slips of paper, are written and circulated among the members of the class. The object is to teach the proper forms for address, salutation, close, and the simple things one may put into a good card or letter. The teacher acts as scorer or critic.

8. Rapid reading game. A page of new material may be assigned for pupils to read. After a sufficient interval, they are questioned to find out how they understood it as a whole, how many new words the readers found, how many familiar names of a certain kind, and so on.

9. Word relay race. Several words are placed on the blackboard. The children are divided into small groups. At a given signal one of them takes a dictionary, looks up spelling, pronunciation, and meaning of a word in the list; then he passes the book to another; and so on. Two or more groups compete against each other.

10. Speed test game. Select a certain class of words,—like names of animals, nouns, adverbs,—and see which pupils or groups can collect the largest number of words in a specified time.

By the time the little folks have reached the grammar school, they should be well grounded in the foundations of language. The chief constructions of simple grammar should also be well learned by this age. Then comes the formal study of grammar in a more complex form. For the purpose of home study or for those who never have had opportunities to sift English grammar thoroughly, the following summary has been compiled. Much has been omitted in an attempt to boil the main principles down to lowest terms.

SENTENCES

A sentence is the expression in words of a single, complete thought. It is the smallest unit of composition. The individual sentence, however, may be composed of two or more ideas, depending on the number of parts or modifiers. *We learn*, as a sentence, contains two ideas: that of several people, including the speaker, and that of the process or act of learning. The relation or comparison of these ideas constitutes a sentence. In similar fashion every sentence is composed of smaller parts or ideas as expressed in words. A word in itself cannot make up a sentence, unless it is like *Yes* or *No*, with the rest understood from the context.

Thus, at the outset, one must learn the difference between an idea and a sentence. It is wrong to say that a sentence contains one idea; for that properly is the definition of a word, which is a symbol of an idea. It takes a group of ideas to make a sentence. *Children learn rapidly in school*, as a sentence, contains four related ideas, making up a single thought or complete unit. These are the ideas of those who learn, of the learning itself, the rate of learning, and the place where the children learn.

Ideas are of two kinds. Sometimes we think of definite objects—concrete things, as we call them. Again, we think of abstract or general qualities. One is material; the other is immaterial. *My hat* is concrete; so is *house*, if we have a particular one in mind, or a concrete idea of a house. On the other hand, *truth, principles, justice, sourness*, are abstract, immaterial conceptions or ideas. Midway between these two extremes lies a common ground, where the two meet; and so *house, hat, desk, ball*, though not in themselves complete, arouse ideas of something tangible. When we say, *My hat, our house, the teacher's desk, John's base ball*, we go as far as possible in making these objects particular, single, and unmistakable.

Sentences must be distinguished from fragments. Every good sentence must be complete in itself. It must have a subject and a predicate, definitely expressed or at least clearly understood. All the parts must harmonize in thought and grammar, so that the whole is complete, well-rounded, and definite. Fragments are of four kinds. 1. Relative clauses, without definite connection. *Which we did*, for example, is not a complete sentence, but a subordinate clause, even though the meaning is clear from the context. Nor must *who* or *what*, in relative clauses, be used independently; for they are not major or independent subjects. 2. Participial phrases must not be used as sentences. *John won the track meet. Being a good runner.* Here the last four words are a real part of the first group. Together both parts should make up the sentence, the last four words being set off from the rest, not by a period but by a comma. 3. Other phrases do not make complete sentences. *With the best of intentions* or *Decidedly the best* are not complete units in themselves, but evidently belong to some part of the sentence that is not here expressed. 4. Adverbial clauses, likewise, may not stand alone as sentences. *John won the prize in spelling. When he was in grammar school.* Here again the two groups of words make up a single sentence, and the second must not be cut away from the first. The same is true of the groups that follow: *John won the spelling prize. Though he is the youngest student in the class.* 5. Stray groups of words should not stand as sentences. For instance: *He was the best student in the class. Evidently. The sooner, the quicker. Best of all.* The last three groups are fragments. The first is a complete sentence.

Sometimes two or more sentences are joined wrongly together as if they were one single sentence. A good sentence, as we have just seen, must be complete, logically and grammatically. On the contrary, a good sentence must be *single*, as the word itself in the definition indicates. Different forms are here illustrated:

1. *He hitched old Dobbin to the cart and drove to town, here he purchased his supplies for the following month.* In this sentence we really have two different thoughts; hence a new division should begin with *here*. Notice that some compound sentences, with parts joined by use of a semicolon, are really single. One should be on his guard, however, against putting two unrelated parts together. Merely because one act or part of a process follows in time order does not make the two connected in any other manner.

2. *It rained hard all day, so we remained indoors.* This sentence is incorrectly written; for there are two distinct parts. The comma, then, should give way to a semicolon. This type of error is one of the commonest in writing, but all recent books on composition teach us to avoid it altogether. Here, again, the two parts must have some logical connection, or two sentences should be formed. Another correct form would be made by placing *and* after the comma.

The two correct sentences would thus be written:

It rained hard all day; so we remained indoors.

It rained hard all day, and so we remained indoors.

3. *He was stingy, though he was an old soldier.* This illustrates a third type of incorrect sentence, since it is illogical and absurd. There is no real connection, necessarily, between the two parts. At best we have here two sentences, or the foundation for two.

Good sentences may be classified in various ways. They may be

1. Long or short or average.
2. Declarative, interrogative, imperative, and exclamatory.
3. Loose, periodic, balanced.
4. Normal or transposed in order.
5. Simple, complex, compound.

1. In length, sentences vary with different writers. Macaulay tends toward a rather short sentence, well knit or balanced, Ruskin toward a very long flowing, loose sentence. Bacon, Emerson, and Stevenson write sentences of average length; Milton writes those that are long and involved, and sometimes Dryden follows his example. No limit can be mentioned as the average, though, roughly speaking, after twenty-five or thirty words, sentences become long. They vary from a single word like *Yes*, which answers a question, to forms of many complex and compound parts.

2. According to intention of the speaker, sentences may be grouped as follows:

a. A declarative sentence affirms or denies, as *Children learn rapidly. The lazy child falls behind the class; for he does not apply himself.*

b. An interrogative sentence asks a question, as—*In which grades do children learn most rapidly?* In this type the verb precedes the subject in most cases.

c. An imperative sentence makes a request, command, or entreaty, as *Children, learn your lessons.* The normal form omits the subject of the verb, which is in the second person.

d. An exclamatory sentence expresses unusual emotion or surprise, as, *How slowly that child reads!* This type is usually characterized by some word like *how*, or some preliminary interjection like *alas, oh, well.*

3. According to arrangement, with reference to termination of the main ideas, sentences are loose, periodic, and balanced.

Loose is the normal form. Many sentences show their meaning before the last word is heard or read.

Dr. Johnson's style, critics once said, is a model for young beginners.

My father recommended this style to me when I began to write letters for him.

All my doubts on the subject were set to rest, but I have since wondered indeed if father really was right in such matters.

In these good loose sentences, the first might end with the word *model;* the second with *style* or *me* or *write* or *letters;* the third with *rest* or *wondered* or *indeed* or *right.*

Many loose sentences, however, are too involved, too rambling, or too disjointed to be thought good in form. These are corrected by division into their several logical parts. For instance, take the extract that follows and note how many real thoughts are expressed therein. "When there is sap enough to fill the large kettles, the boiling begins, as the sap becomes thicker, it is poured into smaller kettles, until it becomes a dark brown syrup, some of this is sent to the market in gallon cans." This quotation from a student composition obviously falls into three natural sentences, the second of which begins with the word *as*, and the third with *some.*

Periodic sentences differ strikingly from loose sentences. Unlike the loose variety, they are complete only with the last word or small group; and the meaning is not entirely clear until the period is reached. *Aye, tear her tattered ensign down!* and *In the spring a fuller crimson comes upon the robin's breast*, are good examples. This kind is used often for emphasis, where the last words are specially important. When employed to excess, or with small, unimportant elements last, periodic sentences quickly become an affectation.

Once the balanced type of sentence was in great vogue. In terse, epigrammatic poetry like that of Pope, it long was popular. Many big and little authors were imitating Pope's style: *To err is human; to forgive, divine.* Many of the *Psalms* are balanced in sentence form, as *A false weight is an abomination to the Lord; but a just weight is His delight.* Men like Macaulay and Carlyle used it almost to excess.

One may see, then, from the preceding discussion that good sentences should follow certain recognized principles. A writer may easily check himself of some of the common faults by asking a number of questions.

1. Is the thought completely expressed?
2. Is there more than a single, complete thought in the sentence?
3. Is the thought there expressed exact and logical?
4. Are the parts arranged so as best to bring out the meaning?
5. Which kind of sentence is preferable,—loose, periodic, or balanced?

4. Normal order in the sentence is subject, verb, and rest of predicate. Many times, however, it seems best to place some modifier or the verb itself before the real subject. In the sentence *Birds fly southward in the autumn*, the order is normal; but place the phrase *in the autumn* first, and the order becomes transposed. In sentences like *Strike for your altars and your fires*, and other imperatives, the emphasis is gained by omitting the subject and placing the verb first. In a sentence like *Generous he was to a degree*, the predicate adjective comes first, making the fact of his generosity all the more prominent. Though the average sentence falls naturally into the regular or normal order, one

should always be on the lookout for chances to emphasize by varying the arrangement.

5. Grammatically, sentences are also classed as simple, complex, and compound.

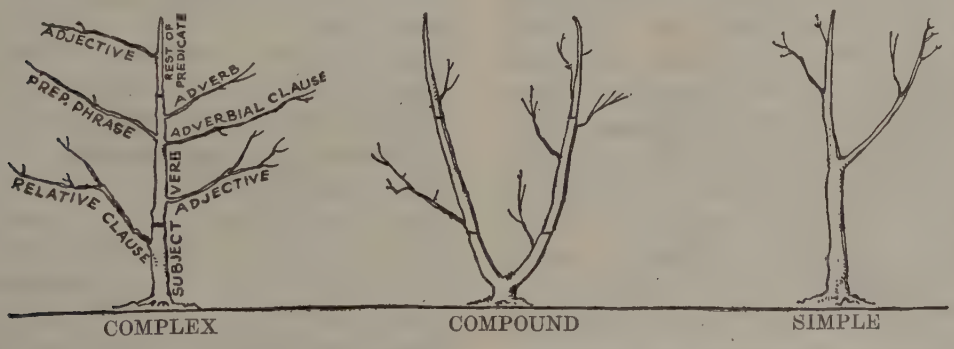
a. A simple sentence contains one statement in a single clause, without any subordinate clause. It has one predicate and one subject group, though either subject or predicate, or both indeed, may be compounded. *Flowers are plentiful here. Rains have been abundant this spring.* These are two simple sentences. If one says *Flowers and grass are abundant here,* the sentence is still simple; for its subject, though compounded, is still simple. *Flowers are abundant and beautiful this spring* has a compound predicate, but the sentence is still simple. *Flowers and grass are abundant and beautiful this spring,* though both subject and predicate are compounded, is still a simple sentence.

b. This last may be turned into a compound sentence by making a slight change. *Flowers are abundant, and grass is plentiful too this spring* is compound; for it has two complete subjects and predicates, combined independently each of the other set. Sometimes the compound sentence omits the conjunction, in which case the best punctuation, as already shown, is the semicolon. *Flowers are abundant; rain has been plentiful*—would illustrate.

c. A complex sentence is built up of one principal and at least one dependent clause. The second may not stand alone; for it is connected to the other and gets its status from the main clause. *Since rains have been abundant, flowers are plentiful this spring* is a good complex sentence. The first part, however, is the subordinate element, which in transposed order, often comes before the principal. *Since rains have been abundant* would be a mere fragment, standing alone. Add to the first part, *and the sun has been hot,* and the sentence becomes compound in its complex element, but is still a complex sentence, having only one principal clause.

d. Different additional combinations are also possible. For instance, the sentence might be both complex in its first element and compound in the second, as *Since rains have been abundant, the flowers have grown, and the grass is much taller than usual this spring.* This is called a complex-compound sentence. Or, the first element might be compound, the second complex, in which case the sentence would be called compound-complex. Since these are only combinations of the other forms, it is not necessary to recognize them as separate and distinct types of sentences.

We have now seen how sentences are built up in their main elements. Later we shall analyze them into their clauses, phrases, and even into separate smaller word groups. For the present, it is enough to get a fundamental idea of the sentence and its chief divisions and forms. This may be expressed in visual language. For a sentence is much like a tree, having a main trunk, and various modifiers or branches. If we take subject, predicate verb, and object or other main part as the trunk, in different sections, the adverbs, adjectives, and other modifying words and groups seem exactly like branches as they shoot off from the main body of the tree. Just as there are twin trees, or two or more growing from the same roots, so there are compound sentences, connected at the root by some conjunction. Just as there are main trunks, and other branchings almost as large, but not independent, just so the complex sentence has one main and at least one large dependent part. All this may be put in form of a pictorial illustration, as noted below:



Phrases and Clauses. Larger parts within sentences are called phrases and clauses. Though often confused, they are easily distinguished when one gets the chief distinction between them. Phrases do not contain either subject or predicate; while clauses have both, but are not complete sentences as such. A phrase never could be a complete sentence, but a clause could, if arranged properly. *While he was here, he bore a good reputation* contains both principal and subordinate clause. The first could stand as a sentence if *while* were omitted; the latter, as it stands could be a sentence, if it were detached from the rest.

As to form both phrases and clauses may be simple, complex, and compound.

1. Simple phrase,—We came *in the afternoon.* The last three words are a prepositional phrase.

2. Complex phrase,—We came *in the afternoon of the last day.* Here the last four words modify the other, preceding prepositional phrase.

3. Compound,—We came *in the afternoon* and *in the way appointed.* These two prepositional phrases are coordinate.

Infinitives are also used frequently in phrases. Any prepositional or infinitive phrase may have one of three uses.

1. As adjectives,—The man *in the moon* looked down too soon. Here the italicized words modify *man* as a single adjective.

2. As adverbs. Any of the illustrations given just above shows the adverb use, as *in the afternoon* modifies the verb *came*.

3. As substantives, that is, as subject of a verb. *To err* is human shows an infinitive as subject of the verb.

Clauses are classified in the same way as to form and use.

1. Simple clause,—*That he would come* is doubtful. The emphasized words are here used as substantive, subject of *is*. The clause is simple since it contains one main part.

2. Complex clause,—*When he came*, it was evident he would not tarry. Since the italicized words modify the verb, they are used adverbially. The clause is complex because it is subordinate to the rest of the sentence, or to the principal clause.

3. Compound clauses,—*That he would come or that he would not* was doubtful. Being on the same footing, these clauses are coordinate; and they are principal clauses, both being subject of *was*. They are thus substantive clauses. He *that would come* illustrates an adjective clause, since the emphasized words modify *he* as an adjective.

Clauses are also named according to their *rank* in the sentence. They are principal (main or independent), subordinate (or dependent), and coordinate.

1. A main clause is one that has subject and predicate, and is not dependent on any other part of the sentence.

2. A subordinate clause depends on a main or principal clause. It may not be written separately. *When man proposes*, God disposes. The italicized words are a subordinate clause, while the rest of the sentence is the main clause.

3. Coordinate means one of at least two. For any coordinate clause, there is, of course, another corresponding one. *Man proposes, but God disposes.* Here are two main coordinate clauses. Two subordinate clauses may also be coordinate if on the same footing.

Classification of the Parts of Speech. Various functions are recognized in the use of words. Some name or point out material and immaterial ideas. Some show action. Others modify or describe. Still others connect. One part of speech is independent of all others in a sentence. According to these functions, then, the following classification may be made:

1. **Name words** like nouns and pronouns.

2. **Action words** like verbs. These are, in turn,

a. Finite, as all regular parts of the verbs.

b. Non-finite, as infinitives and participles. These last may not stand alone, without other related verbs, in a sentence. In other words, every sentence must contain a finite verb, expressed or definitely understood.

3. **Modifiers**, as adjectives and adverbs.

4. **Connectives**, as prepositions and conjunctions.

5. **Independent**, as interjections and extra-grammatical words which are called expletives and which have no grammar connection with the rest of a sentence in which they form a part. In the sentence, *There are many kinds of truths*, the word *there*, for instance, is usually called an expletive.

Each part of speech has certain characteristics called **properties**. Any change or modification of a word is a property. Thus number is a property of both nouns and verbs. Inflection is the name given to any change or variation in words to show their grammatical connections. Other words used in classifying parts of sentences are also defined, below.

1. **Declension** is the inflection of name words.

2. **Comparison** is the inflection of adjectives and adverbs, or modifiers.

3. **Conjugation** is the inflection of verbs. A short form, in which only a certain part like one person in each tense is given, is called a **synopsis**.

4. **Parsing** is the naming of all the properties of a word, with its construction, and rules governing its use.

5. **Syntax** is the construction of a word or group of words with reference to the sentence in which it occurs.

6. **Analysis** is a division of a sentence into its parts to show the construction and syntax of all.

7. **Diagramming** is the representation of the analysis in visual form by means of related lines or other devices.

NOUNS.

Ordinary name words are called nouns. These name a general class without specific reference to individual members, as *boy, man, city, house, walk.* Or, they name a certain person or object that is separated from the general class, as *John Paul Jones, Henry, Washington Opera House, Wilson Plan, League of Nations.* The first group is called common or general; the second, proper or individual.

1. Common nouns, then, designate a group or class generally.

2. Proper nouns designate only certain, particular individuals.

Sometimes one kind becomes the other in use. The common noun *boy*, necessarily, becomes part of the proper name, *Mill Boy of the Slashes.* In the sentence *Birds fly southwest*, the last word is certainly a common noun; it is proper in the sentence, *Birds live in the Southwest in winter.* The same distinction lies in the use, *Birds fly southward in autumn, because they find the climate in the South more congenial than in the North.* In one case, only a general direction is meant; in the other, a definite locality or region. Again, in the sentence, *Daniel was a wise interpreter*, the name is proper; but in the sentence *A Daniel come to judgment*, it is certainly common, and perhaps should be written with a small initial letter.

Since proper names are definite and conventional, they do not fall into different sub-classes. On the other hand, common nouns may be either abstract, or collective, or simple class names.

1. Abstract nouns usually name attributes and qualities. Some of the many words in this class are *bitterness, death, goodness, foolishness, knowledge, valor*, and *warmth.* By personification they become proper.

2. A collective noun groups individuals into a class, which is thought of as a unit. Gram-

matically a collective noun is singular, taking a singular verb.

A few of the many are *committee, company, government, bevy, herd, group, swarm.*

Note: In England many such words are thought of as plurals, such as *committee, company, government;* and the sentence *The committee are* or *The Government are* is common.

3. Class nouns include the hundreds of common words like *day, desk, house, window, men, clothes.*

Properties of nouns. All nouns have four properties; these are person, number, gender, and case.

1. Both singular and plural nouns have three persons, first, second, and third. In the first person, a noun is used only in apposition (usually with a pronoun) or in an absolute construction: I, *Ozymandias,* am king of kings. The second, or person spoken to, is common in direct address: *Ozymandias,* you are king of kings. Most nouns belong to the third person, or person spoken of, as commonly used: *Ozymandias* is king of kings.

2. Number is the property of a noun which shows whether an object is single or more than one. The two numbers recognized in English are singular and plural. These are shown in various ways.

a. By change in the ending of the word, such as by addition of *s* or *es* to the singular to indicate the plural. Desk, desks; box, boxes; ax, axes; church, churches; boy, boys.

b. By changing the main part of the word or the root. Thus: *man, men; woman, women; goose, geese; tooth, teeth; mouse, mice; ox, oxen; foot, feet.*

c. By irregular end changes, as *y* to *i* when *es* is added, as in *cry, cries; fly, flies; lady, ladies; glory, glories;* or by changing *f* or *fe* to *v* when *s* is added, as in *calf, calves; half, halves; beef, beeves;* or by adding *s* only instead of *es* to words ending in *o,* as in *canto, cantos; quarto, quartos; two, twos; solo, solos.* One must learn whether these words end in *oes* or *os,* since no rule includes all, without many exceptions.

d. By adding *s* alone to most proper names. It is a common blunder to write these plurals of personal names with an apostrophe. The correct forms are, *Mary, Marys; Brown, Browns; White, Whites; Henry, Henrys.* Some names already ending in *s* follow the regular rule in adding *es* for the plural. The correct forms are: *Jones, Joneses; Dickens, Dickenses; Edwards, Edwardses.*

e. By adding the apostrophe and *s* to make the nominative and objective plural of letters, signs, symbols, and figures. Thus: mind your *p's* and *q's;* cross your *t's* and dot your *i's;* 3 *9's; *'s; the's; x's.* These forms must not be confused with the possessive case. They illustrate the only forms using the apostrophe for any cases except the possessive.

f. By pluralizing the important part of compound words. *Attorneys-at-law, chess-men, courts martial, commanders-in-chief, spoonfuls, cupfuls, wagon-loads, foemen, hangers-on, knights-errant.* Some in this class add *s* to both parts of the compound: *knights-templars* (or *knights-templar*).

Irregularities in number. Exceptional to the rules, or to any of the six classes of plurals already mentioned, several groups show peculiar formations.

a. Certain abstract nouns conveying indefinite ideas of quantity, with no thought of measure or division into parts, always are thought of as plural. Some of them are *greatness, harshness, meekness, wisdom.* Now and then they may be pluralized by adding *s,* but in such cases a new meaning is apparent.

b. Many common words are plural in form, but singular in meaning and use. Thus: *ethics, news, molasses, physics, mathematics, riches, thanks.*

c. Many words are used only in the plural, as *alms, eaves, dregs, pincers, scissors, scales, colors* (the flag), *bitters* (medicine, plural of bitter).

d. Many words have two plurals, with different meanings.

singular	*first plural*	*second plural*
brick	bricks (individually)	brick (collectively)
cannon	cannons (individually)	cannon (collectively)
cloth	cloths (pieces of goods)	clothes (made into garments)
die	dies (stamping metals)	dice (cubes for gaming)
fish	fishes (individually), or	fish (in bulk)
foot	feet (to stand on)	foot (in compounds, foot-rule, footman)
genius	geniuses (individuals)	genii (spirits)
head	heads (individuals)	head (collectively for number of)
horse	horses (animals)	horse (mounted men)
index	indexes (tables of contents)	indices (as in mathematics)
medium	mediums (people)	media (means, things)
penny	pennies (number of)	pence (by value, or a measure)
shot	shots (loads fired)	shot (in bulk)
staff	staffs (as military)	staves (sticks)

e. Many foreign words adopted into English have two plurals, one foreign, the other English. Sometimes the foreign is technical or scientific; the native popular or general. A few of them are noted here.

singular	*foreign plural*	*English plural*
bandit	banditti	bandits
cherub	cherubim	cherubs
fungus	fungi	funguses
memorandum	memoranda	memorandums
nebula	nebulae	nebulas
nucleus	nuclei	nucleuses
seraph	seraphim	seraphs
stamen	stamina	stamens
tableau	tableaux	tableaus
virtuoso	virtuosi	virtuosos
vortex	vortices	vortexes

f. Foreign nouns with foreign plurals, without corresponding English forms.

singular	*plural*
alumnus	alumni (masculine)
alumna	alumnae (feminine)
analysis	analyses
antithesis	antitheses
axis	axes
bacterium	bacteria
basis	bases
crisis	crises
crucis	cruces
datum	data
ellipsis	ellipses
focus	foci
oasis	oases
parenthesis	parentheses
synopsis	synopses
thesis	theses

Gender is a property of nouns and pronouns related to sex. Four kinds of gender are usually recognized,—masculine, feminine, common, and neuter.

Nouns that represent a male object are said to be masculine. Likewise, those that represent feminine are said to be feminine. Since many words are used without thought of whether they apply to males or females, they are called neuter; and most words belong to this class, like *tree, house, pen, engine, grapes, water* and *street.* Another considerable class like *servant, person, one, somebody, worker, agent,* may indicate either males or females, as the context shows. These are called common; and they are used without any reference to sex.

English is fortunate in that natural and grammatical gender in our language usually are the same. By a sort of personification, some objects like *ships, cities, beauty, college* are said to be feminine; but this type of figurative use, except in poetry, seems to be on the decline at present. Some foreign languages do not follow logical gender in their nouns and pronouns In German, for instance, the word for *boy* is *neuter;* so is the word for *maiden* or *girl;* the word for *key* is masculine; so is *evening, distance, excursion, rising,* and many others that in English are neuter. In fact, in learning German and some other languages, one needs to know the gender of almost every word, and this is marked in the vocabularies. With but few exceptions in English, one knows at once whether a word is masculine, feminine,—either, or neither.

Gender is shown in English in three main ways according to the form of words.

1. Names are known usually to belong to males or females; for we have one set for men and another for women. A few like *Marion, Shirley,* and certain family names as bestowed names, do not in themselves indicate that the person bearing one of them is masculine or feminine.

2. Sometimes entirely different words are used.

masculine	*feminine*
bachelor	maid, spinster
beau	belle
billy-goat	nanny-goat
boy	girl
brother	sister
bull (ox)	cow
colt	filly
drake	duck
drone	bee
earl	countess
father	mother
gander	goose
husband	wife
king	queen
lad	lass
lord	lady
monk or friar	nun
son	daughter
sir	madam
stag	hind
tercel	falcon
wizard	witch

3. Sometimes feminine gender is shown by a slight change from the masculine ending.

masculine	*feminine*
actor	actress
administrator	administratrix
baron	baroness
count	countess
czar	czarina
don	donna
equestrian	equestrienne
fiance	fiancee
Francis	Frances
god	goddess
heir	heiress
infante	infanta
Marion	Marian (Marion)
signor	signora, signorina
testator	testatrix
widower	widow

4. Sometimes prefixes or suffixes show change in gender from masculine to feminine.

masculine	*feminine*
man-servant	maid-servant or woman-servant
peacock	peahen
salesman	saleswoman
guinea-cock	guinea-hen
tom-cat	tabby-cat

Case is determined largely by usage in a sentence, or by the syntax of a noun or pronoun. English recognizes only three cases, the nominative, possessive, and objective.

1. The nominative case has various ordinary uses, chief of which is to indicate that a certain word is the subject, but there are a number of others easily recognized.

a. Subject of a finite verb. *Grammar* is not a difficult study. *It* can be explained simply. The average *person* can understand it.

b. Predicate nominative (attribute complement), when the subject is nominative and the verb is some form of *be, seems, appears* or other link-verbs. Grammar is not a difficult *study.*

c. In apposition to the nominative subject. Henry of Navarre, the French *knight,* was brave. He is your brother, *Henry.* He, your *brother,* should willingly aid you.

d. Subject of an independent participle. *He* having permitted us, we entered the garden. In such sentences, the subject of the participle is different from the subject of the finite verb in the clause.

e. Complement of the participial form of the link-verb. He being our *guide,* we entered the garden.

f. In ordinary absolute constructions. *Child,* come here. Kind old *king!* The good old *days,* where are they? In such cases the construction is independent of the remainder of the sentence; or, as in the second example, it stands alone.

2. The possessive case shows actual ownership or continual possession. When possession is not real, or is temporary, most authorities advise us to use the phrase form. Especially in the case of inanimate objects, the *of* form should be used. Thus, *the streets of the city, mayor of the town, banks of the river* are preferable to *the city's streets, town's mayor,* and *river's banks.* Sometimes, as in the last instance here, the form may be changed from the possessive to the ordinary modifying adjective construction, as *river banks.*

a. The regular form of indicating possession is by the use of the apostrophe and *s. The boy's book, men's houses, the dog's ears.* This applies to both numbers.

b. Plurals ending in *s* already add the apostrophe without a second *s. Boys' games, authors' rights, homes' joys, sailors' snug harbors.*

c. Singulars sometimes also omit the second *s*, especially in words of more than one syllable.

d. Modern authors, however, tend to prefer to use the second *s* in the case of monosyllable proper names and some polysyllables also.

Thus: Burns's poems, Dickens's novels, Jones's store are well recognized among such forms.

Note: the possessive form *'s* is a remnant of an old case ending in English, which was either *es* or *is* for the genitive or possessive case. At present the *e* is replaced by the apostrophe. The possessive in modern English is the only case form consistently different from the others. Nominative and objective of nouns and most pronouns are identical.

e. As an English idiom the possessive case is often used before a participle, which itself has an object or other modifier. *His speaking ill* of them was wrong. *John's shouting to them* was effective.

Note: a common mistake lies in the use of the objective in such cases, as I do not like *him* going, which should be *his going*. Again, there is a difference between *John shouting* to them was effective, and *John's shouting*. In one case it is John that is effective; in the other his shouting. So much confusion results from awkward uses of this construction that one had best avoid it unless he is absolutely certain it is both correct and pleasing. Grammarians differ as to whether the possessive should be classed as the subject of the participle in a sentence like the first above (*His speaking*) or whether it should be called a possessive pronominal adjective.

f. To indicate common ownership by two persons or by a firm, the second name only needs the possessive form. *Reed and Barton's store* is correct, if the store is owned by the two men. Conversely, to indicate single ownership, the form must be used with each separate name in the series. *Men's and women's shoes, Boys' and girls' hats, Washington's and Lincoln's farewell address.* If the last word, *address*, is pluralized, it means that each man spoke more than one farewell address.

Likewise in compound terms like knight-errants, the last of the parts takes the apostrophe and *s*, or the apostrophe only for the plural possessive.

3. The objective case. The third case of the noun is used in several constructions, some of which give considerable difficulty. Below are found the various uses of the objective.

a. Object of a transitive verb. Intransitive verbs take no objects. This object is often called the direct object, or the object complement. God made the *country*, but man made the *town*. Strike up the *drum*. In this latter case *drum* is object of the verb phrase *strike up*, not of the preposition *up*.

b. Object of a preposition. He went to the *town*. Here *town* is the object of the word *to*, not of the verb.

c. Indirect object. Give *me* the book. Here *book* is the direct object, and *me* is another of somewhat different meaning. In many such cases the indirect object might be thought of as the object of a preposition not expressed, as here, Give the book *to* me, would be the full sentence. Notice that the indirect object occurs only when there is already a direct or regular object of the verb.

d. Adverbial objective. Another form somewhat resembling a prepositional phrase without the sign is the adverbial objective. This has to do mainly with measures of time, space, value, and the like. Some examples are: He walked *four miles* (that is a distance of four miles or *for* four miles); The bells rang *all night;* He went too *far*.

e. Subject of the infinitive. He wishes *John* to remain here. They took *Walter* to be a freshman. He wants *me* (to be) *punished*. Let *him* (to) remain. In all such cases the word following the verb is not the object; but is the subject of the following infinitive. All the sentence after the verb, not the noun or pronoun, is the object of the verb. This construction gives constant trouble, because students forget these facts. English, along with most modern languages, has the same idiom,—the subject of the infinitive in the objective case. Historically this construction is rather old; and it is not entirely possible to explain just why it has become idiomatic.

f. Objective complement. If the subject of the infinitive is always objective, and any predicate noun or adjective is used as a complement (or with the verb *be, seems, appears,* or link equivalents), then that complement must also be in the objective case. For, complements agree in case with the subject of the verb in the sentence. They took John to be *me;* here *me* is correctly objective, agreeing with *John*, which is objective, being used as subject of the infinitive.

Warning: The term *objective complement* must not be confused with *object complement*, as the regular object is sometimes called. Because of this possible confusion, due to similarity of the names, it seems wise not to use the term *object complement* at all.

g. False objects. Passive verbs do not take regular objects. Indeed the passive is much overused by ordinary writers. In the sentence *They called him John*, undoubtedly *John* is objective since the infinitive *to be* is understood. He was called *John* is a difficult sentence to construe; for *John* cannot be a real object of the passive. One may say that it remains in the objective form because it is a real objective case in the first sentence. The sentence *The teacher gave me a lesson*, may be changed to *I was given a lesson by the teacher*. In this case *lesson* remains in its old place, and looks like an object, though in all logic it is not. Notice incidentally that the indirect object *me* becomes the subject in the new sentence, while the old subject now becomes object of the preposition *by*.

Parsing of nouns. To explain a noun in any sentence, all the information should be kept in mind. The complete parsing must name these elements: 1, kind and subdivision if there is one; 2, person; 3, number; 4, case; 5, construction; 6, rule; 7, anything unusual.

TABULATION OF NOUN FORMS.

Kinds:

1. Common
   - a. Abstract
   - b. Collective
   - c. Class
2. Proper

Properties:
1. Person
   a. First
   b. Second
   c. Third
2. Number as shown by
   a. Change in ending of word
   b. Change in root
   c. Change irregularly
   d. Change of *y* to *i* with *es*
   e. Addition of *s* to proper names
   f. Addition of *s* to important parts of compounds.

   Number as shown irregularly
   a. No plural of some abstract nouns.
   b. Plural in form, singular in use
   c. Plural only
   d. Double plurals
   e. Foreign singular, foreign and English plurals
   f. Foreign singular, foreign plural
3. Gender: kinds
   a. Masculine
   b. Feminine
   c. Neuter
   d. Common

   Gender as shown in four ways
   a. Different personal names
   b. Different words
   c. Change in ending for feminine
   d. Prefixes and suffixes
4. Cases

   Nominative in
   a. Subject
   b. Predicate complement
   c. Appositives
   d. Subject of independent participle
   e. Complement with participle
   f. Absolute constructions

   Possessive in
   a. Regular singular forms
   b. Regular plural forms
   c. Singulars ending in *s*
   d. Proper names
   e. Possessive with participle or gerund
   f. Possessives in compounds

   Objective in
   a. Object of transitive verb
   b. Object of preposition
   c. Indirect object
   d. Adverbial objective
   e. Subject of infinitive
   f. Objective complement
   g. False objects

Parsing
1. Kind and subclasses
2. Person
3. Number
4. Case
5. Construction
6. Reason or rule for use
7. Anything unusual

PRONOUNS.

Sometimes a word points out an object without naming it. Such a term is used in place of a noun and is called a pronoun. The prefix *pro*, in this case, means *for* or *instead of*.

Pronouns are divided into three classes or kinds. They are personal pronouns, interrogative pronouns, and relative (conjunctive) pronouns.

1. Personal pronouns are used to avoid repetition of corresponding nouns. If one wishes to repeat the essential idea contained in a word, he may use a synonym of that word, or he may use one of the pronouns. For example, one may say *Houses* are costly these days; *they* have risen gradually in price for several years; or, he may say, *Houses* are costly. Such *buildings*, etc., using a synonym.

Corresponding to the three persons, in each number, there are pronouns, as follows:

a. First person, *I* and *we*.
Second, *you* or *thou* and *you*, or *ye*.
Third, *he*, *she*, or *it* and *they*.

You was once plural only, and so at present takes a plural verb; we understand from the context whether one or more than one person is meant. *Thou*, once the only second pronoun, is now used in poetry, in reverential address, or among certain sects like the Quakers. *Ye* is the corresponding plural, but it is less frequently used. Possessive forms are *my* and *mine*, *your* and *yours*, *thy* and *thine*, *his*, *hers*, *its*, and *theirs*. Separate objective forms are *thee*, *him*, *them*.

For convenience, the declension of personal pronouns may be represented in tabular form:

Singular

Nominative, first person, I; second, you, thou; third, he, she, it.
Possessive, first person, my; second, your, thine; third, his, her, hers, its.
Objective, first person, me; second, you, thee; third, him, her, it.

Plural

Nominative, first person, we; second, you, ye; third, they.
Possessive, first person, our; second, your; third, their.
Objective, first person, us; second, you; third, them.

b. Compound personal pronouns are formed by the addition of *self* to the simple forms just described. They are *myself*, *thyself*, *yourself*, *himself*, *herself*, *itself*, *ourselves*, *yourselves*, *themselves*.

They are used intensively and reflexively. *He himself* is to blame, *I myself* will do it; *we ourselves* decline the honor are examples of the intensive use, which is more emphatic, or used to distinguish between one person and another possible person who might but does not do something as specified. So, *I myself* may be taken to mean, I will do it, not someone else. Notice that at present grammarians consider it wrong to use the intensive form without the corresponding other pronoun. *Myself* did it is considered wrong. *He* and *myself* went should be *he* and *I* or *he* and *I myself*. The reflexive use, always objective, shows that the subject of a verb does something that affects or concerns himself. Thus: I hurt *myself;* they deceive *themselves;* the dog hurt *himself;* it hurt *itself*, illustrate. Sometimes in poetry or in certain peculiar idioms in English these distinctions are not maintained.

c. *It* is sometimes used in general or peculiar senses. We call the baby *it*, if we do not know whether the child is male or female,—but no mother feels complimented by this use. *It* is often used as a false subject; or to point out the fact that the real actor is unknown, or is general, that is typical of all persons. *It* is I; *it* is he; *it* is who or who is *it?* illustrate. *It* is human to err; *it* rains; *it* (whatever we see) seems to be a crow, are more general.

The habit of using *it is*, *there are*, and similar expressions frequently is one that speakers and writers should check.

2. Interrogative pronouns are used in questions. *Who* and *what* are the simple interrogatives. *Which*, though often called one of this class, in use really is an adjective; for it is always followed by some noun or pronoun that it modifies. *Which* book is it? *Which* one do you mean? *Which* do you want? In the last

of these illustrations *one* is understood after *which*.

Who is declined as follows:

Nominative, who
Possessive, whose
Objective, whom

Who is among the few words in English that have three forms for the corresponding cases. Though *whose* is recognized as the possessive form of *which*, some grammarians insist that *of which* should replace this form for the possessive.

Questions are either direct or indirect. *Who was it that came?* is a direct question, but *I know not who it was that came* is indirect. One asks the question; the other implies it. Otherwise there is no difference in the uses.

3. Relative pronouns, which also usually connect, are divided into three classes.

a. The simple relatives are *who*, *which*, *that*, and *as*. *Who* is used for reference to persons. In personification this pronoun also may refer to animals, but otherwise it may not. *Which* refers to animate or to inanimate things. As an adjective pronoun, it is used as in the sentence *which person* was it, but this is distinct from the relative use. *That* refers indefinitely to either animate or inanimate beings. After words like *Many*, *such*, *same*, *the like*, the pronoun *as* is used relatively; and in this connection does not change its form for the cases and is used for all persons and both numbers.

Examples:

Who is your aged friend?

The fox, *who* saw his enemy, calmly waited for him. (*Fox* here is personified.)

Whose coat is that? I do not know *whose* it is.

Whom do you wish to interview? Any person *whom* you desire to have speak for the firm. (Why is *whom* objective?)

Whom is it *that* you desire to see?

He is the person *that* is wanted. What animal was it *that* the fox desired to outwit?

It is the same *as* the others. Such articles *as* these should never be sold in bulk.

b. Compound relatives are made by suffixing *ever* or *soever* to *who* and *which*. *Whoever* will may come. *Whosoever* will may *come*.

c. *What* is a single double relative, since it is equivalent to two words *that which*, with *that* as the antecedent of *which*. For this reason, no other antecedent is necessary.

Syntax of Pronouns. So far as construction of the sentence is concerned, or the syntax of its parts, pronouns have various uses.

1. Personal and relative pronouns may have most of the uses of nouns. The main ones have already been discussed in relation to nouns. They are: a, subject; b, predicate complement; c, apposition; d, subject of a participle; e, complement with a participle; in the possessive case, most of the forms that are common; in the objective, a, object of verb; b, object of preposition; c, indirect object; d, subject of the infinitive. Relatives are not used in apposition or in absolute constructions.

Examples: *I* am the man; It is *I*; the donor, *I*, am pleased; *my* studying is all done for today; my studying *him* revealed his purpose; possessives—*my* house, the house is *his*, etc.; objectives—They found *him*; they went to *him*; they gave *him* the book; they took *him* to be *me*. (Here *me* is predicate objective, agreeing with *him*, objective subject of the infinitive.)

2. A pronoun agrees with its antecedent in person, gender, and number. The antecedent of a pronoun may be another pronoun, as *Everyone* should be careful of *his* books. One of the crudest blunders results from the use of the plural pronoun in reference to a singular antecedent. If one says, Every person should look out for *their* books, he is thereby guilty of using the plural *their* when the antecedent is *person*, a singular.

If the antecedent consists of two different words, one being masculine and the other feminine, the use of the masculine pronoun in reference is quite enough. It is stilted to say, Everyone should be careful of *his or her* books. Some purists defend this construction logically, but we must remember that *his*, like *its*, is sometimes used when the antecedent is not strictly in accord in gender.

Being a third personal word, a collective noun requires some corresponding pronoun like *it*. Here, once more, the plural must not be carelessly used for the singular, since collectives are treated always as singular words when they refer to a whole group as a unit.

3. Certain phrases like *it seems*, *he thought*, *we believe*, and *I know* are often parenthetical in a sentence; and hence do not affect the grammar of other parts.

He told us the plan *which he thought* the best one.

He spoke to those who *he thought* would help him.

They are the people, *it seems to me*, who should help.

This is the best article, *we believe*, that we have made.

The underscored words do not change the construction of the pronouns in these sentences.

4. Relative clauses fall into two classes, restrictive and explanatory.

a. A restrictive clause makes more particular or more narrow the meaning of the antecedent. Both the significance and the punctuation should be studied carefully.

Sailors *that are superstitious* will not set sail on Friday.

Oysters *that are stale* are poisonous.

Such restrictive clauses as these are used as adjectives that limit the meaning of the preceding nouns. They are not set off by commas, since an adjective or limiting word is not separated thus from the word it modifies. The first sentence says that some sailors are superstitious and those men will not sail on Friday; or those particular sailors (not all sailors), who are superstitious will not embark on Friday. Those oysters that are stale (but not all oysters) are poisonous.

Now place commas before and after the restrictive clauses and see how the meaning changes. The first sentence now means that all sailors are superstitious and all sailors will not set sail on Friday; and the second that all oysters are stale and therefore poisonous. Both these statements, of course, are false.

b. An explanatory clause merely adds information. It is not absolutely necessary to the thought, but the restrictive clause is. To find out whether a clause is restrictive or explana-

tory, apply this test: if it may be omitted without essentially changing the thought, it is explanatory; otherwise, it is restrictive, since the meaning would be quite different if the clause were omitted.

Lincoln, who is called the Great Emancipator, loved his fellow men.

Washington, Father of his Country, lived a simple, kindly life.

The foregoing subordinate clauses are explanatory, descriptive, or non-restrictive. They may be omitted, without destroying the rest of the sentence meaning.

Errors in the use of Pronouns. Some errors in syntax of pronouns have been pointed out. These are summarized below, and additional mistakes are also noted:

1. A plural pronoun must not be used when the antecedent is singular. The use of *their* when the antecedent is *one, person, somebody, he,* or any other singular word should be especially condemned. Though a common blunder, it has nothing to justify it either in logic or idiom.

2. The use of the objective case as a predicate complement, when the subject is nominative, is equally wrong. Though we hear sentences like *It is me,* for the correct form *it is I,* almost every day, this construction has nothing to recommend itself, beyond the fact of commonness. We must remember that good language is not necessarily that of the great mass of people, but that used by those who write and speak as a profession,—the authorities, so to speak.

3. The third most common mistake is to use the nominative, after a preposition, for the objective case. They gave the books to Mary and *I* should, of course, be to Mary and *me.* This error usually occurs, as in the sentence just given, when the preposition has a double object, and the second one is wrongly put in the nominative case.

4. In modern English the pronoun *them* should not be used for *those.* In the Lord's Prayer, the older form is, "Forgive *them* that trespass against us." This is a survival of the old dative case (common in Old English), with the prepositional prefix *for* in *forgive.* Likewise, *them* should not be used for *those* as a pronominal adjective in sentences like this, Give me *them* books. In the forms, Give it to *them;* He gave *them* the books; Forgive *them;* for they know not what they do, the pronoun is used correctly.

5. *But what* should not be used for *but that* in sentences. I do not know *but that* the report is true is the correct form.

6. *Which* should not be used indefinitely for an idea, a whole preceding clause, or vague grouping of words. *He asked to bring the plans for the building, which he did* should be condemned; for *which* refers neither to *plans* nor to *building.* You will be safe in refusing to use *which* except for a definite antecedent that just precedes the pronoun, or at least when the antecedent may not be confused with some word intervening.

7. *And which* or *and who* should not be used in a sentence unless another preceding *which* or *who* has been used. Thus: He is a prosperous merchant, *and who* is respected by all. All such constructions are wrong, since the *who* introduces a subordinate construction, and this may not be coordinated with a principal; for only similar main or subordinate constructions may be coordinated.

8. *Whom,* the objective, gives no end of trouble, since this is among the few forms that differ as between nominative and objective cases. *Whom* is incorrect in the sentence, *Whom* do men say that I am, since it should agree with I, to which it is a predicate nominative. Men do say that I am *who,* is the normal order.

9. The subject of the infinitive is often mistaken for the object of the main verb. He took *him* to be me, the usual type of troublesome sentence, has *him* in the objective because it is subject of the following infinitive. Though the form would be the same, a student, in parsing, usually errs in saying that *him* is object of *took.* All the rest of the sentence after the verb is the real object. Again, in sentences of this kind, it is often said that *me* is object of *to be,* but this link-verb never takes objects. Sometimes, moreover, *I* is incorrectly written for *me* here.

10. In a dependent clause, the case of the pronoun is determined by its construction in the clause, not by its antecedent.

He is the man, *who* is to go. *Who* is nominative, subject of the verb *is.*

I am the one *who* is to go. (Not who *am* to go.)

11. When *than* is a conjunction, the pronoun following is often put into the wrong case. He is taller than *I,* but I am older than *he* is correct. The corresponding objectives would be wrong.

12. *He* is often used ambiguously in sentences that contain two nouns, either of which might be the antecedent of *he.* He asked him where the school is, and *he* said, "Turn to the right at the next corner." Evidently the second *he* refers to the person previously represented by the *him,* but the sentence does not make this relationship clear. English sadly needs a second pronoun for such cases. Most other languages, if not all, have two pronouns. In our language, we have to resort to cumbersome expressions like *the former, the latter,* or to some other synonym, to make the meaning unmistakable.

13. Most authors avoid using a *he* in sentences where only a possessive or objective has been used. Byron's poetry is full of vigor. *He* rushes on swiftly from scene to scene. Here the *he* has no real antecedent; for the antecedent must be nominative, and the only form used is a possessive.

14. Pronouns modifying the participle or gerund should ordinarily be in the possessive case, in sentences as *I do not like his doing this.* Evidently, I do not like *him* doing this is wrong; besides, it conveys a meaning not intended.

15. Plural pronouns should never be used to refer to singular nouns, as in the sentence, Our forefathers never heard of a *match,* whereas we use *them* every day.

16. Do not use a pronoun obscurely with its antecedent in parenthesis to make the meaning clear. This is a crude mistake. They told him of *his (John's)* good luck. Commonly, in all such sentences, the pronoun may be replaced by the appropriate noun, as, They told him of John's good luck.

17. The pronoun in a relative, subordinate clause does not affect the case of any other pronoun in the main sentence. Let *him* (not he) who will hear these words, lay them up in his heart.

TABULATION OF PRONOUNS AND THEIR USES.

Kinds:

1. Personal
   a. First, second, third, singular and plural.
   b. Compound personal pronouns, used intensively and reflexively.
   c. *It* in some special uses.
2. Interrogative
   Who and *which*.
   What as pronominal adjective.
3. Relative
   a. *Who, which, that, as.*
   b. Compound relatives: *Whoever, whosoever.*
   c. Double relative: *what.*

Syntax:

1. Personal and relative resemble nouns in syntax.
   a. Nominative about the same as that of nouns in use.
   b. Possessive similar.
   c. Objective about the same as that of nouns in use.
   (Relatives not used in apposition or absolutely)
2. Pronouns agree with antecedents in person, gender, and number.
3. Certain phrases like *it seems* do not affect syntax of the rest of the sentence.
4. Relative clauses are
   a. Restrictive or limiting (adjective) in use.
   They are not set off by commas, and are essential.
   b. Explanatory or non-limiting in use.
   They are set off by commas, and may be omitted usually without damage to the rest of the sentence.

Errors in Use:

1. Plural with singular antecedent.
2. Objective for nominative as complement.
3. Nominative with preposition.
4. *Them* misused for *those.*
5. *But what* misused for *but that.*
6. *Which* without definite antecedent.
7. *And which* or *and who* without previous *which* or *who.*
8. Whom in place of *who* or some other correct form.
9. Subject of infinitive mistaken for object of verb.
10. Case of *who* mistaken in dependent clause.
11. Objective instead of nominative after conjunction like *as.*
12. Use of *he* ambiguously.
13. Use of *he* when only a possessive of the antecedent has been given.
14. Use of *him* for *his* in gerund (participial) constructions.
15. Plural pronouns when only a singular word has been used that might be a possible antecedent.
16. Use of pronoun with explanatory noun in parenthesis.
17. Wrong use of pronoun in main clause by attraction to case of pronoun in relative clause.

Parsing of Pronouns. The outlines given just above will provide a review of the information about pronouns. In parsing or explaining the use of these words, one should cover the following items:

1. Kind. 2. Class and sub-class. 3. Antecedent or relation to other words. 4. Agreement in person, number, gender. 5. Case (pronouns need not agree with antecedents in case). 6. Use of the pronoun in the sentence. 7. Reason for its use. 8. Anything unusual or any correction needed.

ADJECTIVES.

Nouns and pronouns, as we have seen, designate ideas and concrete objects. Sometimes it is not enough to know a name or word, or to think of something as a whole; for we desire to know something of its limits or qualities. Certain words make a noun more definite or name its characteristics. These terms are called adjectives.

Adjectives may be defined as words that limit nouns and pronouns or that name some of their qualities. If we say the hill is *steep*, it may also be *long, slippery, icy*, or any one of several other things. We speak of the qualities of the noun. If we say *a* hill, *that* hill, or *many* hills, we designate them without naming any of their qualities. If we say *that* hill is *steep*, we use both classes of adjectives.

Adjectives, then, fall into two main classes. A descriptive adjective is one that refers to the quality of the word it modifies, as *tall* mountains, *fresh* streams, *gay* persons, *grave* old men, *wise* counsellors, *beautiful* ladies. **A limiting or definitive** adjective refers to an object or person to point it out or name it, without specifying any of its qualities, as *a* mountain, *mountain* streams, *no man's* land, *one hundred* guns, *many* old men, *several* gay youths. These two main classes will now be sub-divided and described more fully.

1. Descriptive adjectives divide into three classes:

a. Common, those that name well-recognized qualities of the nouns they describe, as *good* man, *vile* medicine, *insipid* water, *genial* judge, *fertile* plains. Hundreds of these common adjectives are in literary use in English.

b. Proper, those derived from place or personal names, as *Trojan* army, *Dobell's* solution, *Ciceronian* diction, *Elizabethan* age, *Macadam* roads. When the combination becomes familiar and is in good use, the adjective tends to be written with a small letter.

c. Participial, those that are derived from the verb in its present and past participles, as *growing* crops, *waning* moon, *playing* blocks, *deadened* sounds, *weakened* laws, *assumed* powers.

2. Limiting adjectives also divide into three classes:

a. Articles. These are *a*, used before words beginning with a consonant; *an*, before words beginning with a vowel, or *h* silent (usually) followed by a vowel; and *the*, the definite articular adjective, which points out a particular thing, or something well known or just mentioned.

b. Pronominals. These words are numerous, having four or five sub-classes, and some grammars class them as pronouns. Here they are placed among the adjectives, because of their limiting nature.

Some, called demonstratives, point out definitely, as *this, that, these, those, both.*

Some, called distributives, divide the noun into parts or refer to a number singly, as *each, every, either, neither.*

Some, called indefinites, do not specify which one or how many are included, as *all, any, some, few, certain, little, much, none* (singular or plural according to context).

Some, called interrogatives, that are used in questions, as *which* man? and *what* number?

3. Numerals. These adjectives have to do with number, either definitely, as *nine, forty-ninth, fourth, forty-fourth, third from the last;* or indefinitely, as a *few, several, many.*

Cardinals are regular numbers, like *one, twenty-nine, one hundred three, seventy-two.* Ordinals *first, ninth, one hundred third, seventy-second.* The distinction may easily be held in mind, if one remembers that ordinal has to do with the *order,* namely *first, second, third fourth, fifth,* etc.

Uses of adjectives in the sentence. Three chief ways of using adjectives are frequently distinguished. These are the direct, predicate, and resultant adjective uses.

1. Direct adjectives are those that modify the noun or pronoun in the usual way. These adjectives may be placed either before or after their substantives. A *wise* man; the man, *wise* and *good; tall* trees; trees, *tall* and *stately.* Though the normal position of the adjective is before the word it modifies, often it is placed afterward for certain emphasis.

2. Predicate adjectives are those that complete the meaning of the verb and refer to the subject. These occur with *be, seems, appears,* the main link verbs, so named because they link the subject and the predicate noun or adjective. The man is *wise* and *good;* trees are *tall* and *stately* in this wood.

3. Resultant adjectives are those that complete the meaning of a direct object, telling what results to the object. This construction is often used after verbs of making, naming, appointing, and the like.

They made him *president.*

They chose Harold the *secretary.*

The president appointed him a chief *justice.*

Some would supply the infinitive *to be* in such constructions; thus: They made him [to be] president.

Notice that the resultant (sometimes called factitive) adjective becomes a predicate nominative virtually in passive constructions, like,

He was appointed president. (He was president.)

He was chosen secretary. (He was secretary.)

In such cases the passives are thought of as if they were simple active link-verbs.

Comparison of Adjectives. We have already seen, first, that nouns and pronouns are often used without modifying words; and, second, that these may be described or limited by adjectives. Again, in the third place, the form of adjectives is changed so as to bring out different degrees of the qualities they represent. We say that something is *good,* another is *better,* and a third is *best* of all.

The process of varying the form of an adjective to show different degrees is called comparison. Adverbs, too, may be compared, as we shall see later. Three degrees are recognized, positive, comparative, and superlative. Just as things are compared when one is said to be greater than another, they may also be compared by saying one is less than another, and a third is least of the lot. Thus we recognize the minimizing form of comparison, as *good, less good, least good;* or, as more commonly, *good, worse, worst.*

The positive is the original, simplest form, as *good, wise, blue.*

The comparative is the form that expresses the idea of more, or that something is greater than another, as *better* men, *wiser* councils, *bluer* skies. Here the implication is that the men, councils, skies in mind are superior to others.

The superlative degree is the form that shows the highest, lowest, or greatest of all that are considered, as *best* men, *wisest* councils, *bluest* skies.

Different ways of comparing:

1. By changing the end of the word. Comparison here is regular.

positive	comparative	superlative
red	redder	reddest
rosy	rosier	rosiest
rare	rarer	rarest
sick	sicker	sickest

2. By employing the prefix. Long words often are compared by adding *more* for the comparative and *most* for the superlative, or *less* and *least.* A few common words use either the first or second methods of comparison.

positive	comparative	superlative
beautiful	more beautiful	most beautiful
beautiful	less beautiful	least beautiful
preferable	more preferable	most preferable
gracious	more gracious	most gracious
skilful	more skilful	most skilful
skilful	less skilful	least skilful

3. By employing different words, or irregularly.

positive	comparative	superlative
bad, evil, ill	worse	worst
far	farther, further	farthest, furthest / farmost, farthermost
good	better	best
late	later (time) / latter (position)	latest (time) / last (position)
in (also adv.)	inner	inmost / innermost
many (number)	more	most
much (quantity)	more	most
little	less (quantity) / smaller (number, size)	least / smallest
old	older / elder	oldest / eldest

4. Some adjectives are defective in comparison. Several of these have adverbs for their positive degree.

positive	comparative	superlative
[aft, adv.]	after	aftermost
[up, adv.]	upper	uppermost / upmost
[out, adv.]	outer / utter	outermost / uttermost
[eld, obsolete]	elder	eldest
————	under	undermost
————	hither	hithermost

5. Some adjectives, already expressing ideas of fullness or completeness, cannot be further compared.

circular, round, full (logically), dead, empty, golden, perfect, square, everlasting, eternal, perpetual, universal, void.

To be sure, there is some tendency to compare words like *full, round, empty,* and other words logically in this class, but many grammarians and authors carefully avoid using anything but the positive degree. Terminations like *-ish, -ock, -kin* have virtually the effect of comparison, as in *greenish, hillock, bullock, mannikin, bunnikin.*

One and *other*. These two pronominal adjectives (or adjective pronouns) may be declined as shown below:

	singular	*plural*	*singular*	*plural*
Nom.	one	ones	other	others
Poss.	one's	ones'	other's	others'
Obj.	one	ones	other	others

Notice that these pronouns take the regular apostrophe in both singular and plural, but that they are almost alone among pronouns in this respect. Others like *ours, hers, his, theirs* do not take the apostrophe.

ERRORS IN THE USE OF ADJECTIVE.

1. Adjectives and adverbs should not be confused in use. Some forms for both parts of speech are the same, but in other instances the distinctions are worth observing.

He looks *good* means He looks like a good man. As such it is correct. It should not be used for He looks *well*, that is, in good health.

I *sure* was pleased, glad, sorry, etc., combinations frequently heard, are vulgarisms for I *surely* was pleased, and so on.

Less refers to quantity; *fewer* to number. *Less* people were present, therefore, is incorrect.

Most must not be used for *almost*. *Almost* all people is correct; so is *most* people, but not most all people, where the adjective is wrongly used for the proper adverb.

Many hesitate as to whether to use an adjective or adverb in a given construction. If the word refers to the subject, expressing some quality of the subject, the adjective is proper; if, on the contrary, it relates to the verb, and expresses some quality of the action, the adverb is proper. We feel *cold* (adjective) is correct; so We feel *coldly* (adverb) on that subject, is also correct; but the meanings are quite different. He looks *bad* (a bad man) may be true enough, but should not be used for He looks *badly* (in poor health). Silk feels *smooth* (is smooth to the touch), and it does not feel *smoothly* in any case.

2. Adjectives should keep to their own proper meanings. Good writers use epithets carefully. They do not speak of *splendid* dinners; *nice* furniture; *elegant* days; *awful* fine people; *grand* cakes. All these words have their own meaning, as any dictionary points out; they must not be used vaguely or incorrectly, without precise regard to actual significance. Every adjective should describe its noun or pronoun simply, accurately, picturesquely.

3. Adjectives agree with their nouns also in number. Plurals must not be used with singular nouns or vice versa. I do not like *those kind* of people is obviously incorrect. It should be either *that kind*, or *those people*. *These here, those there*, likewise, are evidently wrong in phrases like *These here* baskets, meaning *these at hand;* for in such cases *here* and *there* are superfluous, since *these* and *those* point out objects at hand and at a distance respectively.

4. Comparative and superlative are often confused. The comparative is used when two are compared, the superlative when more than two are. Hence, Which one of the two is *best* is an evident blunder.

5. *Each* and *every*, in a sentence make any corresponding noun singular; and so the verb must also be singular.

Each should be careful of his book.

Each man *goes* to work at eight.

Every person at some time *is* liable to a fine.

Many a man *longs* for his country, when he is abroad.

6. The articular adjective especially should be repeated if two nouns in a sentence are to be taken separately. Thus *a* black and white dog indicates only one animal; if two are meant, the sentence must read *A* black and *a* white dog. We found *the* secretary and *the* treasurer busy in the office, if two men are meant; if one, the second *the* may be omitted.

7. Mixed comparisons should be avoided. *Our team is as good if not better than last year's* is not only ungrammatical but decidedly awkward. One complete comparison should be made before the second is begun. Thus: Our team is *as good as last year's, if not better.*

8. In using the comparative degree, one must not include the subject of comparison (first member) in the class with the thing it is compared with (second member). Thus it is wrong to say, Washington was *greater than any general* of the Revolution, because the second member of the comparison includes Washington himself, since he, too, was one of the generals. It is right to say, Washington was greater than any *other* general of the Revolution. The wrong form is both logically and grammatically inadmissable.

In comparison, one must remember, a single thing is likened to another, similar thing. Two different objects cannot be compared; but they may be contrasted, that is, the dissimilarities may be pointed out.

In using the superlative degree, the original member should be *included* in the second part of the comparison, or in the large group. Washington was the *greatest* of all generals of the Revolution, both in grammar and logic, is correct. So is, Our team is the *best of all* our conference,—including the team itself.

Parsing of Adjectives. To parse adjectives we should give the

1. Kind; 2, class and subclass; 3, comparison; 4, degree and reason; 5, relation to noun or pronoun; 6, rule for construction.

TABULATION OF ADJECTIVES AND USES.

Kinds:
1. Descriptive
   a. Common
   b. Proper
   c. Participial
2. Limiting
   a. Articles
   b. Pronominal
   c. Numerals

Uses:
1. Direct adjectives
2. Predicate adjectives
3. Resultant adjectives

Comparison:
1. By changing the endings
2. By using a prefix
3. By using different words
4. Defective comparison
5. Adjectives not compared

Errors in Use:
1. Confusion with adverbs
2. Improper meanings

3. Disagreement with their nouns
4. Confusion of comparative and superlative
5. *Each* and *every*
6. Failure to repeat article with two nouns
7. Mixed comparisons
8. Ungrammatical comparisons

VERBS.

We have already seen that nouns and pronouns are name words, and that adjectives are modifying or descriptive words. No sentence is possible, however, without a verb; in fact, this is about the only part of speech rarely dispensed with in the sentence. We can get along well enough when subjects are understood, and many nouns stand without modifiers; but it is not possible to infer a verb, except when it or an equivalent is expressed near by.

Verbs are words that express the idea of action. Such a statement must be taken somewhat broadly; for some verbs have to do with states of rest, being, condition, and some (especially the non-finite infinitive and participle) infer or assume action without definitely asserting it. This definition must also apply to questions and other forms that vary from straightforward statements.

Verbs according to meaning, or completeness of assertion. Some verbs tell enough about the subject; others relate the subject to another word or group called an object. The first class may stand alone; the second must have help of the object to complete their meaning. Verbs that have no object are called intransitive; others are transitive, a word which means "passing over," from *trans*, the prefix meaning *across* or *over*, and the Latin word for *go* or *pass*, with an English termination. Since *in* means *not*, it is easy to remember that intransitive means no object is required. On the other hand, one easily sees that a transitive verb is a bridge over which the idea of the subject passes to join the object. Strictly speaking, a transitive verb does not "take" an object; it rather carries the thought begun in the subject over to the related object.

Transitive verbs:
The president *signed* the bill.
In spring we *plow* the fields.
Young boys *love* to play ball.
Worry not work *kills* men.

Intransitive verbs:
It *rains*.
John *plays* well.
Worry not work *kills*.
Animals *live* in the wilds.
The field *has been plowed*.

Some verbs may be either transitive or intransitive according to the meaning intended in the sentence. We *study* hard and we *study* arithmetic illustrate, the latter being transitive. Worry not work *kills* also contains a transitive verb, but the last sentence under transitive verbs above contains an object of *kills*.

Verbs are regular and irregular. They will now be discussed.

1. Regular verbs form their past and past participles by the addition of *-ed*, *d* or *t* to the present form: *climb, climbed, climbed; wish, wished, wished; bless, blessed (blest), blessed (blest)*.

2. Irregular verbs form their past and past participle by some change in the vowel of the words themselves. These are often called strong verbs to distinguish them from the regular forms ending in *ed, d*, or *t*, which are called weak. In our earliest English several classes of strong verbs changed the vowels in different manners; and many of these forms exist today. Each class had its pattern verb, like *drive, choose, bind, shake, fall*, and *bear*. With certain changes in spelling, these classes have come down to modern times, but we usually list all irregular verbs in one group, noting some of the variations from the pattern. Of one hundred fifty fairly common strong verbs, some of the chief ones are listed below. A few are reserved for a special list containing variations from the normal types.

present	*past (preterit)*	*past participle*
abide	abode	abode
bear	bore	born, borne
beat	beat	beaten
begin	began	begun
bid	bade, bid	bidden
bind	bound	bound, bounden (old)
bite	bit	bitten
blow	blew	blown
break	broke	broken
chide	chid	chidden
choose	chose	chosen
cleave (split)	clove, cleft / clave (old)	cloven, cleft
cling	clung	clung
crow	crew, crowed	crowed
dive	dived, dove	dived
drink	drank	drunk, drank (new)
fly	flew	flown
forsake	forsook	forsaken
get	got	got, gotten (new)
hang	hung / hanged (executed)	hung, hanged
hew	hewed	hewn
hide	hid	hidden, hid
kneel	knelt, kneeled	knelt, kneeled
lay (to place)	laid	laid
lead	led	led
lie (to recline)	lay	lain
make	made	made
mean	meant	meant
pass	past, passed	past, passed
say	said	said
seek	sought	sought
sit	sat	sat
smite	smote	smitten, smit
sow (scatter)	sowed	sown, sowed (new)
stand	stood	stood
steal	stole	stolen
stay (to cause to stop)	stayed	stayed
stride	strode	stridden
strive	strove	striven
swear	swore	sworn
swim	swam	swum
swing	swung	swung
take	took	taken
think	thought	thought
throw	threw	thrown
wear	wore	worn
weave	wove	woven
wind	wound	wound
work	worked / wrought (poetic)	worked / wrought

3. In the list below are given certain other verbs that vary from the strong or the weak types. Some have double parts, one strong, the other weak; some are alike in all three parts; some are defective in one or more parts; some have different verbs or spellings altogether in either the past or past participle. The verb *am, be* shows the most irregularities; since it is made up of not less than three different verbs from as many distinct older English dialects. This composite origin explains the different

forms, some of which go back eventually to ancient Latin and Greek.

present	*past (preterit)*	*past perfect*
am, be	was	been
clothe	clothed, clad	clothed, clad
do	did	done
dream	dreamed, dreamt	dreamed, dreamt
go	went	gone
have	had	had
hit	hit	hit
hurt	hurt	hurt
knit	knit, knitted	knit, knitted
let	let	let
light	lighted, lit	lighted, lit
quit	quit, quitted	quit, quitted
set	set	set
shut	shut	shut
spell	spelled, spelt	spelled, spelt
beware	————	————
can	could	————
do (auxiliary)	did	————
have (auxiliary)	had	————
may	might	————
must	must	————
ought	ought	————
shall	should	————
will (auxiliary)	would	————
will (to wish, decide, bequeath)	willed	willed

Principal and Auxiliary Verbs. According to whether they are complete in themselves, verbs are called principal and auxiliary.

1. A principal verb is one that expresses the idea completely, as to time and assertion. The verbs in the lists already given are mostly principal. Boys *play* ball, boys *played* ball are complete assertions, having principal verbs. Boys *can* play, *do* play, *will* play, *have played*, *shall have* played are assertions modified by the attached or helping verbs.

2. An auxiliary verb is one that helps another with reference to mode and tense,—or manner and time of the assertion. All the chief auxiliaries with their present and past tenses, are here given; *be (was)*, *do (did)*, *have (had)*, *shall* and *will (should* and *would)*, *can (could)*, *may (might)*, and *must (must)*. Sentences given here illustrate their principal forms. I *was going*, he *did go*, he *had gone*, he *will have gone*, he *has gone*, I or we *shall go*, he or they *will go;* we all *should go*, he *would go* if he were asked; he *could*, I *can go* now, they *may go*, he *might go* if he got a chance.

Notice that auxiliaries are used in many different senses:

a. *Do* and *did* are mainly emphatic, as I *do promise*, he *does like* to play football; he *did* not *do* it, I *did tell* you that before.

b. Ability or permission. You *can do* it (are able), and you *may* do it (have permission). This distinction,—*can* for ability, *may* for permission,—is carefully maintained by all good writers and speakers.

c. Continued action. They *are building* the house; they *were* still *working* on it. Here the action is continued in the present, and was continued in the past in these two sentences. The use of *are* or *were*, in such cases, is called the progressive form of the verb.

d. Time. Somewhat different, and often hard to distinguish from the progressive forms, are those which merely denote an element of time, as They *are taking* it seriously; they *were coming* home; they *will refuse* to come; they *will be coming* here soon.

e. Necessity or determination is expressed by *must*, and by the verbs *shall* and *will*, as We *must*, they *must*, all *must;* you *shall* do this (that is, I shall force you if it is necessary), I *will* do it (I feel that I must do it). We often say *He should do this*, meaning he is morally obligated to do it; one *should respect* the aged. We also say, in about the same meaning, I *ought to go;* he *ought to find* out.

f. Willingness, I *will go* with you gladly; I *would gladly* pay you if I had the money.

g. Custom. He *would* always *do* this (he was in the habit of doing it). We *would go* always if we could (it was our habit to go whenever we could). He *would be doing* it is sometimes used in a similar meaning.

h. Completeness at a certain time. The work *is finished*, *has already been finished*, *will be finished* tomorrow, *was finished yesterday.*

SHALL AND WILL. Many persons in speaking, and not a few in writing, often confuse the uses and meanings of *shall* and *will.* Several things may be remembered to avoid confusions.

1. Always the point of view is that of the one speaking. He is the one who wishes, promises, determines, or merely thinks that he is going to follow a certain course of action.

2. *Shall* has the ideas of futurity, expectancy, contingency, or something that may be wished for or hoped, or planned, but still may not come to pass, because of forces beyond the power of the one speaking.

Will has the idea of determining. To *will* something is to do all in one's power to bring it to pass, or to carry into execution a plan over which the speaker has complete control. Notice that *will* is more absolute than *shall*, depends less on futurity (often indeed has nothing to do with the future), but sticks to the present intention.

3. *Shall* with the first person expresses mere possibility or something that may or may not come to pass. *Shall*, from the point of view of the speaker, when used of the second and third persons means determination. *Will*, with the first person, is used to express determination, and with the others, mere futurity.

I shall go; we shall go (I and we expect to go, but may not).

I will do it; we will do it (I and we either promise to do it, or determine to do it).

You shall go; he shall go; they shall go (I am going to make them, if they will not voluntarily).

You, he, she, it, they will go (I expect they are going, but here again they may not).

Tabulated, the complete forms are as follows:

Futurity or possibility. (The speaker does not will it, nor can he bring it to pass necessarily).

singular	*plural*
I shall (should)	we shall (should)
you will (would)	you will (would)
thou wilt (wouldst)	they will (would)
he, she, it will (would)	

Determination, Promise, Willing (The speaker can choose and is able to determine).

singular	*plural*
I will (would)	we will (would)
you shall (should)	you shall (should)
thou shalt (shouldst)	they shall (should)
he, she, it shall (should)	

4. *Should* and *would* are used in a similar way as just illustrated. The chief rules that apply to *shall* apply likewise to *should;* those that apply to *will* apply likewise to *would.* Both *should* and *would* are used in conditions. If one is in doubt as to whether the conditional form as used is correct, all he has to do is to translate the word into the corresponding direct form. Thus: he said he *would* go,—Is this correct? What would the original be? If he were promising, it would be, He says he *will* go; if mere future, it would be, He says he *shall* go. The meaning, then, determines the form to be used.

Questions normally employ the form expected in the answer. These sentences illustrate,—

Shall you go? Answer expected is, I *shall* (I expect to) or *Yes.*

Will you go? Answer expected is, I *will* (Yes, I promise); or (I have made up my mind to go).

5. In subordinate clauses *shall* and *should* are used correctly for all persons.

If he shall come, I shall rejoice.

If he should come, I should rejoice.

Notice, finally, that *should* often means *ought,* expressing the idea of obligation. *Would* sometimes means a customary action.

He *should* do this (he ought to do it).

He *would* always fail in arithmetic (customary for him to fail).

Properties of verbs. Verbs change in various ways to adjust themselves to different shades of the ideas they express. These changes are called properties; or, more accurately, they bring out the different properties. Voice, mode, tense, person, and number are the five properties of verbs commonly mentioned. These will now be explained.

1. Voice shows whether the subject of the verb acts or is acted upon. Two voices are recognized,—the active, and the passive.

a. The active voice speaks of the subject as doing something, or being in a certain relationship.

Troy *fell* after a siege.

Falling walls *are* dangerous.

Do you *like* algebra?

Will you *pass* this examination?

I *will assist* you in preparing for it.

Both transitive and intransitive verbs may have voice. A verb does not need an object to express the idea of action. In *Troy fell after a siege,* there is much action asserted, but the verb has no object. Some grammarians, however, inform us that intransitive verbs have only the active voice, since an intransitive verb, logically, may not be changed into a passive.

b. The passive voice speaks of the subject as acted upon.

Troy *was destroyed* by a stratagem.

Bricks *were strewn* all about.

Algebra *is made* too difficult sometimes.

This examination *will be passed* by you.

You *will be helped* by these questions.

Transitive verbs make their passives by adding the past participle to some form of the verb *be* or *is. Was destroyed* consists of the past of *be,* followed by the past participle of *destroy; is made* is the present, singular, with *made,* the past participle. We should be on guard against mistaking a form like He *was going,* for a passive. Here the verb is progressive, past, active, not passive; it shows the action as continuing, and the subject as acting, not acted upon.

c. In certain idiomatic construction active and passive are interchanged. The hotel *is building* is the active voice for the passive, *is being built,*—and many good authors prefer the first of these two expressions. The guests *are* not yet *arrived,* for The guests *have* not yet *arrived,* a form rejected by many as being awkward.

One is always safe in avoiding a passive construction unless the subject is really acted upon, or changed definitely, or at least the receiver of some attention from the verb. For a long time newspaper *funny* men have ridiculed sentences like A pleasant time *was had,* for The company *had* a pleasant time. *Can be seen, could be seen,* are rather illogical expressions for *one can see, one could see,* and so on. Used rightly the passive fills a real place in English grammar, but the genius of our language prefers the active in every case where it is allowable.

Mode in English. Not all statements are made as the truth. Mode is the manner of relating a thought to reality. It may be real, possible, doubtful, contingent or something else, hoped or wished for,—according to the number of modes in English. Some of the older languages had several more modes than our language recognizes. In English three modes are usually classified, indicative, subjunctive, imperative. These are the finite modes, but two others that are non-finite (or in-finite) are the infinitive and the participle, which are usually discussed with verbs.

1. The indicative mode asserts something as true or not true, or questions if it be true. I came an hour ago. The others have not yet arrived. How long have you been here?

2. The subjunctive mode expresses doubt as to whether something is real or true, or certainty that it is not true as supposed. So thought and reality are compared. In English the subjunctive mode is now used less and less frequently. Certain constructions need to keep up the distinction which this mode brings out.

a. Conditions that express something as not true, on which something else depends.

If he *were* here, he would assist us. *(But he is not here* is the inference).

If *he had been* here, he would have helped us.

Here *were* is past subjunctive and *had been* is past perfect. If the past is used, the condition is not true *in the present;* if the past perfect is used, it was not true *in the past.*

Other forms of the same sentences are, O, that he *were* here! and O that he *had been* here. Both these are also contrary to the facts, for he is not here now, and he was not in the past. Apart from the sentences just given, the subjunctive mode is usually distinguished by the conjunctions *if, though, lest, unless, except, whether, till,* when they are used in *subordinate* clauses.

b. Another form is found in the sentence, If it *be* true, then we shall have to arrange differently. This expresses a doubt whether it is true or not, and the present subjunctive is used for this purpose.

In a few other occasional sentences, the subjunctive may be used, but most authors avoid all except the two just mentioned. In forms, the subjunctive conjugation once differed largely from the indicative; at present, however, the present and past show all the important variations, and they are known by the *be* and the *were*, in place of the *am (are, is)* and *was* and *were* of the indicative.

The potential form in English is characterized by the auxiliaries *can, could, may, might, must, could, would,* and *should.* We prefer to call these words ordinary auxiliaries, and so to abandon the use of the term potential mode altogether. The potential shows the relationship between powers or permission and reality.

Can you *do* it? I can, but *may* I? (ability, permission)

Could you believe it? I suppose I *might.* (possibility)

I *would* enjoy seeing the ocean again. (wish)

You *must* not go now. Yes, I *should.* (duty)

May you be happy. (wish)

May there be no moaning of the bar. (wish)

3. The imperative mode expresses the idea of determination on the part of some person other than the speaker. One is entreated or commanded, and he may or may not respond.

Let him *go* his way. Pray, *tell* me why. *Let* there be no crossing of bridges now. *Go* thy way in peace! Ill luck *be* ne'er thy lot.

The imperative mode is used in principal clauses, just as the subjunctive is mainly used in subordinate constructions.

4. Non-finite modes of the verb do not express or assert any action, but take it for granted from the sentence as a whole. They are the infinitive and the participle, to be treated later in a separate section.

Tense is the third property of verbs. Not all actions take place at the present time; for some occurred in the past, and some will probably occur in the future. Tense is that property of the verb which shows the time of the action, being, or state of being. It is not a fancied or possible relation, but an actual one. Tenses are of two general kinds, primary and secondary, and each has another minor division.

1. Primary tenses are present, past, future, illustrated by the forms, I *go,* I *went,* I *shall go;* I *see,* I *saw,* I *shall see;* I *lie,* I *lay,* I *shall lie.*

a. Present denotes that the action goes on now, or is habitually going on, that is, continuous. It has three forms, the progressive, which shows that the action is still in progress, as I *am plowing;* the simple, I *plow,* habitual action or one true at all times; and the emphatic, I *do plow.* Something universally true is expressed in the present, as, The chemist showed us how water is *composed* of hydrogen and oxygen; he said that God *is* always good.

b. Past tense indefinitely states that something happened at a time before the present moment, as I *went,* which does not tell the exact time of the going except that it was in past time.

c. The future states that something is likely to happen after the present moment. It is like the past in not stating definitely when the event will occur.

2. The Perfect tenses (secondary) to the primary, show that the action happened at a relatively definite time.

a. The present perfect states that something began at some indefinite time in the past and continued up to the present. I *have gone;* they *have* already chosen; we *have sent* the message are fair examples.

b. The past perfect tense states that something occurred before some second event in the whole past. I *had gone* before he *came;* we *had sent* the message before we *received* the countermand. This combination really divides the past into two portions.

c. The future perfect tense states that something will occur before some second event occurs in the future. Within a month, I *shall have* completed this work; By the end of the year we *shall have* learned considerable about grammar. One event in the future is to be entirely completed before another begins.

Like the present, these tenses have more than a single form.

Simple past: I went; progressive, I was going; emphatic, I did go.

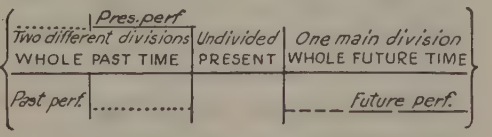
Future: I will go; progressive, I will be going.

Present perfect: I have gone; progressive, I have been going.

Past perfect: I had gone; progressive, I had been going.

Future perfect: I shall have gone; progressive, I shall have been going.

The time relationships among the various primary and secondary tenses may be shown by a simple line diagram. Let the middle line, in various divisions, represent whole past, present (relatively short), and the whole future. Notice the past may be divided into parts and the future into similar ones, but not so many. For convenience parallel lines are drawn to show the division of the past and future into their parts, which are to be thought of as divisions of the main line itself. Dotted lines represent indefinite time; dashes represent the part of the future that leads up to future perfect; upright lines represent the end of the time concerned.



Verbs in the indicative mode have all the tenses named above; in the subjunctive, they have present, past, and past perfect, and others occasionally, with little variation from the indicative, except as described already; in the imperative, only the present; in the infinitive, present and present perfect; in the participle, present and present perfect.

4, 5. **Person and number**, are the fourth and fifth properties of verbs. Three persons and both singular and plural number are represented. Non-finite forms do not show any changes to represent person and number. No particular changes to show person and number exist beyond the present tense. Some verbs having *it* as a subject are used impersonally, as Can *it* be true? *It* grows colder.

Inflection of Verbs. The different changes that show voice, mode, tense, person, and number are called collectively, inflection. Synopsis is the inflection of a verb in all forms, but in a single person and number only, as a sample of the whole.

Inflection of the Verb Be. Present, be; past, was; present participle, been.

INDICATIVE MODE.

Present.

Singular.	*Plural.*
I am	we are
you are, thou art	you are
he, she, it is	they are

Past.

I was	we were
you were, thou wast	you were
he, she, it was	they were

Present Perfect.

I have been	we have been
you have, thou hast been	you have been
he, she, it has (hath) been	they have been

Past Perfect.

I had been	we had been
you had, thou hadst been	you had been
he, she, it had been	they had been

Future.

I shall be	we shall be
you will be, thou wilt be	you will be
he, she, it will be	they will be

Future Perfect.

I shall have been	we will have been
you will (thou wilt) have been	you will have been
	they will have been
he, she, it will have been	

SUBJUNCTIVE MODE.

(*If* is often used with the subjunctive)

Present.

I be	we be
you be, thou be	you be
he, she, it be	they be

Past.

I were	we were
you were, thou wert	you were
he, she, it were	they were

Present Perfect.

I have been	we have been
you have been, thou have been	you have been
he, she, it have been	they have been

Past Perfect.

I had been	we had been
you had been, thou hadst been	you had been
he, she, it had been	they had been

IMPERATIVE MODE.

second person, be, do you be	be, do you be

Participle.

present	Perfect
to be	to have been

Infinitive.

Present	Past
being	having been, or been

Do you be in the imperative is the only emphatic form of *be*. The solemn or familiar form with *ye* in the plural is omitted because it is now practically obsolete. All forms of *be* are intransitive.

Synopsis of a Regular Verb. For the sake of showing all forms of a verb, both active and passive, the regular verb *call* is taken as typical. This verb is either transitive or intransitive. Since the third person singular is the only form that shows variation, this is given in the synopsis.

ACTIVE VOICE.

Indicative.

Present Simple	Present Progressive	Present Emphatic
he calls	he is calling	he does call

Present Solemn
he doth call

Past Simple	Past Progressive	Past Emphatic
he called	he was calling	he did call

Future	Future Progressive
he will call	he will be calling

Present Perfect	Present Perfect Progressive
he has called	he had been calling

Future Perfect	Future Perfect Progressive
he will have called	he will have been calling

Subjunctive.

Present Simple	Present Progressive	Present Emphatic
(if) he call	(if) he be calling	(if) he do call

Past Simple	Past Progressive	Past Emphatic
he called	he were calling	he did call

Present Perfect	Present Perfect Progressive
he have called	he have been calling

Past Perfect	Past Perfect Progressive
he had called	he had been calling

Imperative.

Present Simple	Present Progressive	Present Emphatic
(you) call	(you) do be calling (you) be calling	(you) do call

Infinitives.

Present Simple	Present Progressive
to call	to be calling

Past Simple	Past Progressive
to have called	to have been calling

Participles (Gerunds).

Present	Past	Past Progressive
calling	having called	having been calling

PASSIVE VOICE.

Indicative.

Present	Present Progressive
he is called	he is being called

Past	Past Progressive
he was called	he was being called

Future	Present Perfect
he will be called	he has been called

Past Perfect	Future Perfect
he had been called	he will have been called

Subjunctive.

Present	Past
(if) he be called	(if) he were called

Present Perfect	Past Progressive
(if) he have been called	(if) he were being called

Past Perfect
(if) he had been called

Imperative.

Present	Present Emphatic
(you) be called	(you) do be called

Infinitives.

Present	Past
to be called	to have been called

Participles.

Present	Past
being called	having been called, or called

In the conjugation given above, the reverential or solemn forms like *He hath been called* are omitted. The second person has a corresponding *art, wast, hast, hadst, wilt; thou be, wert, hadst been; mayst, mightst, mayst, have been, mightst have been* for the various tenses of the indicative, subjunctive, and potential. These are now rarely used except in poetry and in prayers.

Notice that the sign of the subjunctive in the past progressive for the third person is *were*. This is singular and must not be confused with the *were* of the past indicative.

If is often used with the subjunctive; to illustrate, it is placed before some of the forms given above, and should be understood as possible before all of them. Since the subjunctive is commonly used in subordinate clauses like *If he were only here, he would aid*, words like *if* are used as the subordinating conjunctions.

Some grammarians do not recognize the potential, which differs little from the indicative, except in regard to the use of the auxiliaries *may* and *might, could* and *would, can*, and the rest.

Parsing of a Verb. To parse a verb is to show its form as used in a sentence. This should include,—

1. Class (transitive or intransitive; regular or irregular).
2. Principal parts.
3. Voice.
4. Mood.
5. Tense.
6. Person and number.
7. Construction and comment on any peculiarities.

Errors in the Use of Verbs. Among the many errors in the use of verbs, or the relation between verbs and their subject, the majority fall into the classes named below.

1. Errors in regard to number.

a. Since *each, every, many a, either, neither* are all singular pronouns, the corresponding verbs must be singular. Notice well these correct forms:

Each person *is responsible* for his own actions. (The pronoun referring to *each* must be singular.)

Every person *is* his own architect.

Many a man does not *realize* his ambitions.

Either he or *I am* wrong; *neither* of us *may be right*.

b. Words joined to prepositional phrases may not be a part of a main subject. John, together with his brother, *is* here. We must remember that *with, together with, in addition to*, are not conjunctive expressions.

c. Collective nouns may take a singular or a plural verb. If they express the idea of unity, or of a group taken as a whole, they must be plural; if they express the idea of the varied individuals in the group, they must be singular. Ordinary collective nouns take singular verbs; and yet a writer or speaker sometimes prefers to think of the parts individually.

The committee *is* ready to report; the Senate *is* in session; the mob *seems* bent on destruction.

British writers are likely to say the committee *are*, the government *are*, parliament *are*.

d. Two singular subjects joined by *or* take a singular verb. The same applies to *nor*. Either *he* or *I am* mistaken. Neither beast, bird, nor fish *is* here in this desert.

e. If the subjects are of different numbers, the verb agrees with the nearer or nearest. *He* or his friends *have* come. In such instances, custom dictates that the plural be placed last; and so the verb is usually plural.

f. In case of two pronouns, the verb agrees with the nearer. Neither he nor I *am* pleased.

g. *Don't* is often incorrectly used for *doesn't*. Since this word means *do not*, it must not be used except with plurals, or with *I*, that is, where the original verb is actually *do* not; while doesn't is confined to the third person singular. *Aren't* is a proper plural form, but there is no such word as *ain't*.

h. Syncopated forms like those mentioned are colloquial. In writing and speaking they are not used, except in quotations in which the original speakers may have used these forms; and then it is pedantic to correct them in dialog that is quoted.

i. When *there* begins the sentence, followed by the real subject of the verb, the subject and verb must agree; for *there*, being independent (an expletive) has nothing to do with the number of the verb.

There *are* many kinds of steel; the real form is, Many kind of steel *are* (exist). *There* is diagrammed by itself. In such sentences a frequent error is the use of the singular verb followed by a plural subject. Use, *there is, there are, it is, it was* sparingly in such sentences

j. Some illiterate people often use the subjunctive *you be* for the indicative *you are*.

k. Though *you* is always construed as singular or plural, according to context, the verb is always plural,—*you are, you were*, etc. Our grammar does not recognize the forms *you is* and *you was*.

l. Plural words in titles of books do not make the verb singular. *Emerson's Essays* is an inspiring volume; Thackeray's *English Humourists* has been a popular study of the eighteenth century writers.

We say, however, *Emerson's Essays* are interesting to thoughtful people. Here the essays are thought of singly, and not as a collection as found in a title name.

2. Errors in regard to tense mainly:

a. Sequence of tenses should be carefully observed. Ordinarily the tense of the subordinate clause corresponds with that of the main clause. This does not mean that it is the same tense, but it is relative as to time. First, if the time is the same, the tense should be similar. Second, if the time is anterior to that of the main part, it should represent this priority. Third, if the time is subsequent to that of the main clause, the verb should represent that time relationship. More often the times correspond.

He said that *he would go*. (Indirect discourse.)

He said that he *will go*. (If the time of going is still in the future.)

He said that he *was going*. (Probably the time of going is now past.)

He said that he *had intended to go*. (That is, he expected to go at some time before the time of the *said*.)

I am not sorry that I *went*. (I went in the past; I am glad now that I went.)

b. Infinitives cause much trouble in regard to time relations.

He *wanted to go* is correct; whereas, *He wanted to have gone* could not be correct, since the time of the infinitive is previous to the time of *wanted*. We *want* to do something in the future or at least in the present. The direct form, present, is, He *wants to go*.

I am sorry not *to have gone* is also correct. It means that I am now sorry that I could not go at some previous time.

I am sorry not *to go* is likewise correct, but the meaning is different. It means I am now sorry that I cannot now go, or cannot go at some time after the present.

c. Transitive and intransitive verbs are frequently confused. *Raise* and *rise*, *lay* and *lie*, *set* and *sit* give rise to the most trouble.

Raise is transitive and requires an object. We *raise* potatoes, grain, hogs, and dust.

Rise is intransitive and does not require an object. We *rise* in the morning; so does the sun.

Lay is transitive and requires an object. We *lay* the book down, concrete roads, bridges, and many other things. Hens *lay* eggs.

Lie is intransitive and requires no object. We *lie* down at night; the dog *lies* on the rug by the fire; books *lie* on the table. *Lie* means to rest upon or recline.

Set is transitive and requires an object. We *set* the jug on the table; we *set* bread, saws, and so on.

Sit is intransitive and requires no object. We *sit* by the fireside; the chair *sits* on the rug; the dog *sits* on his haunches.

(Other forms arise to represent the various tenses, but these can be made when one knows the principal parts of these verbs as they are given in the list in a previous section.)

d. Use the present for expressing the idea of truths that are universal or always the same.

He showed us that an airplane *is* heavier than air (not *was*)

Our teacher showed how water *runs* uphill through a siphon (not *ran*).

e. Do not use the present tense for the present perfect. It is not idiomatic in English to say, *I am already here five weeks*, for *I have been here already for five weeks*. The use of the present in certain cases for the future is a well-established idiom, as *I am to be here for five weeks* for *I shall be here for five weeks*.

f. One tense or number may not be inferred from the use of some other in the same sentence. It is wrong to say, I always *have* and *will do* this. A much less awkward form is I always *have done* this and *will do* it.

g. Nor should the conditional be used for the simple indicative. I *should be glad to see* you, ought to read, *I shall be glad to see* you.

h. Nor should the indicative be used for the idiomatic subjunctive.

First, in conditions contrary to fact, as, If he *were* wise, he would not sell his property now (not *was wise;* since the inference is that he is not wise). Second, in statements implying considerable doubt, as If it *be* true, then I give up (but it may not be true). Here the indicative *is* does not express the right shade of meaning

i. *Shall* and *will* are frequently confused. For discussion of the correct uses see the preceding discussion.

j. No adverb, phrase, or other word should split the two parts of the infinitive. *To plainly see* should be *To see plainly*. Some good authors have sought to justify the split infinitive, but the majority of speakers and writers avoid it as being hardly necessary.

3. Errors in the Meaning of Verbs. Some common mistakes in the use of certain verbs have already been mentioned in the list beginning on page 36, and some in the list of homonyms, doublets, and other words later Now all we need do is collect a few examples to show how these errors may be classified.

a. Wrong combinations. Among the familiar ones are *can't seem* (for *seems not*), *don't think* (for *think* something is *not* as stated), *hadn't ought* (a foolish duplication for *ought not*), *had have* (for a doubtful past construction), *would of*, a phonetic spelling for *would've (have)*, *remember of* with object (for *remember* simply).

b. Doubtful usages. Some words are always striving to break into good society. Newspaper men and others who must write compactly are tempted to invent verbs to replace awkward or long combinations. Some of these not yet fully accepted by good writers are *suicided* and *Sundayed* (for *committed suicide* and *spent Sunday*), *suspicioned*, *electrocuted* (for similar expressions), and *enthuse* (for show enthusiasm).

Principal parts are sometimes confused. Many persons do not realize that *hanged* is the accepted term for legal execution, not *hung*. He *was hung* is, therefore, incorrect; he *was hanged* is correct. Many do not realize that the form *proven* for demonstrated is dialectic and a Scotch legal term never fully adopted into English. It is *proved* is, therefore, the correct expression.

Sometimes active and passive forms are confused. *Graduate* seems to give typical trouble. Purists still assert that a person *is graduated* by the school, which form is litera y correct. Taking the word thus strictly by derivation, then, *He graduated* is wrong, even though it is used by almost every adult, and is found in good authors.

Many homely or colloquial expressions are inadmissible in careful composition. Words like *underhanded* (for *underhand*), *second-handed* (for second-hand), *preventative* (for the correct *preventive*) show a tendency toward reduplication or doubling of certain parts of words. *Bursted* and *busted (burst)* and *dassent* (for *dare not*) are familiar variations that good use never could sanction. *Fix* (for *repair*) is another distorted meaning. *Show up* is a familiar but wrong term for *appear*. Yet it is correct in the sentence, "It is how you *show up* (act) at the show-down that counts."

Claim is often wrongly used for *assert*, *expect* for *suppose*, *leave* for *let*, to give permission, *loan* for the verb *lend*, *indulge in* for *partake of*, *learn* for *teach*, *wait on* for *wait for* or *to court* (as in some localities), and *partake of* for *eat*.

TABULATION OF VERBS.

Kinds:

1. Transitive and intransitive
2. Regular and irregular (weak and strong)

3. Principal and auxiliary (8 uses of auxiliaries)
4. *Shall* and *will*
5. *Should* and *would*

Properties:

1. Voice
   a. Active
   b. Passive
   c. Interchangeable
2. Mode
   a. Indicative
   b. Subjunctive—conditions contrary to fact; implication of doubt
   c. Imperative
   d. Non-finite (Infinitive, Participle)
3. Tenses
   a. Primary,—present, past, future
   b. Secondary,—present perfect, past perfect, future perfect

4, 5. Person and Number
6. Inflection of *be*
7. Inflection of *call*

Errors in the Use of Verbs:

1. Errors in regard to number
   a. Plural used for singular
   b. Plural used with prepositional phrase
   c. Plural with collective nouns
   d. Plural with *or* and *nor*
   e. Wrong verb with different numbers
   f. Wrong verb with two pronouns
   g. Don't for doesn't
   h. Syncopated forms
   i. Wrong use of *there*
   j. Subjunctive for indicative
   k. Singular with *you*
   l. Plural with names of books

INFINITIVES AND PARTICIPLES.

Participles and infinitives are the non-finite forms of the verb. Some grammarians have refused to call them verbs at all; but they have most of the properties exactly as regular finite verbs. In addition both infinitives and participles have many of the constructions of nouns, adjectives, and adverbs. No other words have such a variety of uses; and for this reason alone, participles and infinitives should be well understood by every adult.

1. First of all, let us illustrate the elements that are common between finite and these non-finite forms. Like regular verbs, participles and infinitives may be regular and irregular, transitive and intransitive, active and passive. They likewise have mode, in that they assume even though they do not plainly assert action; some of the tenses; but the same form for all three persons and both numbers.

He was known *to have gone.* Here the perfect infinitive of an irregular verb is illustrated. He was glad *to have repaired* the roof. In this case the perfect infinitive of a regular verb is illustrated. *Having gone* and *having repaired* are the corresponding participial forms.

He came *to visit* his old *friend.* Here the present infinitive has an object. *Visiting* his *friend,* he found some old letters. This illustrates the corresponding participle with an object. Past perfect forms are *to have visited* and *having visited. To be visited, to have been visited; being visited* and *having been visited* are the passive participles and infinitives.

So it is evident from these examples given above that the non-finite forms are intransitive and transitive, regular and irregular, active and passive, just the same as ordinary verbal constructions.

2. Mode is a property of the infinitive and the participle. It is to assume, but there are no indicative and subjunctive; for the participial form is on a similar footing in itself with these modes.

3. Tenses of the infinitive and participle are limited to the present and the present perfect. In use these do not follow the same plan as the tenses of finite verbs. Since the non-finite are subordinate constructions, never principal, the time of the participle and infinitive must depend largely on that of the main verbs. Certainly the present infinitive form takes its time from the rest of the complex sentence, as shown in the following sentences:

I should like *to go* (present, agreeing with *should*).

He went to find out what was *to happen* (present as future, since the time is after that of the main verb).

He will go *to find out* (future, agreeing with future verb).

He went *to find out* (past, agreeing with past verb).

On the other hand, the time of the present perfect infinitive is anterior to the time of the main verbs, as shown in the following sentences:

I would like (now) *to have gone* (past). That is, I am now sorry that I did not go at some past time.

He was sorry not *to have gone.* Both are past, and the time of *to have gone,* is previous to that of *sorry.* That is, he was sorry (past) that he did not go at some anterior time,—one before the time of the main verb.

Participles, in like manner, take their time from that of the chief verbs, as shown in the following sentences:

He passed by me *running* rapidly. Here he comes *running* rapidly. He will have to come *running* rapidly if he catches us. Here the participle, agreeing with the main verb, is past, present, and future in time, respectively. In every case, however, it is the present form that is used, since the participle has no regular past and no regular future.

He passed us *having run* more rapidly. Here he comes *having run* more rapidly than we have. He will have to come quickly *having run* more rapidly than we have. From these examples it is evident that the time of the *perfect* participle is previous to that of the main verb. In each of the three sentences he had to run rapidly before he overtook the rest. So it is seen that the time of the past participles, in every case, is prior to that of the main verb.

4. Person and number of infinitives and participles. No changes in the non-finite forms are made to indicate person and number. No matter whether the person is first, second, or third, and the number singular or plural, the participle and infinitive remain the same.

Subject of the infinitive. Much has been written to explain the case of the subject of the infinitive. In English and in most other modern languages it is in the objective; and in both Greek and Latin it is in the corresponding accusative case. We say that the construction is idiomatic, but we cannot explain just why it should be thus. Customarily we use the nominative or first case as the subject of a finite verb; customarily also we use the objective as subject of an infinitive. Some have sought to explain the idiom on the ground of similarity to the construction in which an object is in the

objective case. Surely careless persons are most likely to explain an infinitive subject as an object of a preceding verb where the two may be confused. They allowed *him* to go illustrates. Here *him* must not be called the object of *allowed*, but the subject of *to go;* therefore, it is objective, not because it is object of anything, but because it is subject of an infinitive. In fact, the whole group (*him to go*) is object of the verb, not the single word *him*.

The subject of an infinitive may be a noun, pronoun, participle, another infinitive, or a group of words:

1. We want *George* to study music abroad.
2. We think *him* well prepared (*To be* understood).
3. Do you not believe *rowing* to be great sport?
4. He likes *to row* to exercise all the muscles.
5. He thinks that to row with the school crew to be the height of any boy's ambition. (*That* perhaps should be omitted.)

The subject of a participle is a noun or pronoun in different constructions:

1. Noun also subject of verb: *John*, seizing the oar, began to row vigorously.

Notice that here the subject is expressed but once, but that, if the subject of the participle differs from that of the main verb, both must be clearly expressed.

Coming up the street, *the trees* swayed from side to side in the wind. Because the subjects are not the same, this sentence is absurd. As *we were coming* up the street, *the trees*, etc. is the correct form.

2. Noun also object of a verb; We saw *John seizing* the oar.

Notice the meaning of this sentence is not the same as that of the sentence that says *John's seizing* the oar.

3. Noun or pronoun used also as predicate nominative: He is *a man trusted* with any sum; he is *one trusted* in the bank. (*Trusted* is the perfect participle.)
4. Object also of a preposition: Go *to* the *man standing* behind the first window.

In apposition also:

5. In apposition: the *cashier*, that *man standing* behind the first window, is the person I mean.

All the nouns and pronouns have double constructions in these sentences; we are interested in them especially because they are used as subjects of participles.

Sign of the infinitive. *To* is the sign of both the present and present perfect infinitives. Usually it is not recognized as a preposition; for, if it were, the verb would be its object. Many verbs customarily omit the sign; some of these are, *make, let, see, hear,* and sometimes *dare, need,* and *help.*

Let him (to) *do* it; let me (to) *see;* let him (to) *dare;* make him (to) *help;* we need not (to) *go.*

Sometimes *in order to* is used in place of the simple sign *to.*

Participles are known by their ending in -ing and by their use.

Infinitives and Participles as Nouns. From the study of non-finite forms used as verbs we now pass to consider infinitives and participles as nouns in various constructions. Infinitives used as nouns are often called verbal nouns; participles similarly used are called gerunds. Yet these names are loosely used or interchanged by many writers.

Specimen sentences showing infinitives and participles as nouns:

1. Subject:

To shop delights most ladies.

Shopping is not a delight for some men.

We think *to study* hard disagreeable (*To be* understood).

We believe *studying* mathematics to be distasteful to many.

2. Object:

We hate *to shop.*

We hate *shopping.*

We like shopping except *to wait* for parcels.

We like shopping except for the *waiting* for parcels.

3. Predicate Nominative:

To study hard is *to learn* thoroughly.

Studying hard is *learning* thoroughly.

4. Objective Complement:

He ordered the cellar *to be filled up.*

He saw the workmen *filling* it *up.*

5. Appositively:

To study hard, *to work* every day, brings results.

Studying hard, *working* every day, brings results.

6. Independently:

To be perfectly frank, I do not like German.

The work *being finished,* the workmen packed up their tools.

7. Predicate Objective: They took him to be *me.* Here *me* is objective because the case must agree with the subject of the infinitive, and the subject is objective.

Infinitives and Participles as Adjectives. Non-finite forms are used in several ways as adjectives and other parts of speech. The examples show various uses of modifiers having adjective force:

1. Predicate adjective:

We are *to go* today.

We want those boys (to be) *punished.*

The house is *to be sold.*

Sleet is *cutting.*

Distinction must be remembered between the use of the participle in *Sleet is cutting* and *Knives are cutting.* In the latter case the verb is present indicative progressive, made up of both these words. *Cutting* here is not a participle.

2. Participle as regular adjective: The *driving* sleet cuts the skin; the *lowing* herd winds slowly o'er the lea; the book *lying* on the table over there is an algebra; the man *sitting* on the fence is a tramp.

Notice that the participial phrase is often used as an equivalent of a relative clause, as *The book lying* for The book, *which is lying* on the table; *The man sitting* for *The man who is sitting.*

3. Participle as factitive adjective: He made his remarks (to be) *displeasing.*

Some prefer to construe this participle as an objective complement with *to be,* having as its objective subject *remarks.*

Infinitives and Participles as Adverbs and Prepositions.

This is the best *to use*. Here *to use* qualifies the predicate adjective *best*.

That iron is *freezing* cold. *Freezing* modifies the adjective *cold*.

If it is true, I should like *to know* it. *To know* is here an adverb of purpose.

Regarding participles, there is much confusion. *Regarding* is used as a preposition.

During the day, some animals sleep. *During* is used as a preposition.

ERRORS IN THE USE OF INFINITIVES AND PARTICIPLES.

1. Use of the perfect for the present infinitive. I was sorry not *to have gone*, already explained, is correct if the time of the possible going was anterior to that of the main verb; otherwise the sentence should read, I was sorry not *to go*.

2. Use of nominative as subject of the infinitive. The normal subject of the infinitive, by English idiom, is placed in the objective case. He wants *him* to go.

3. Use of nominative for predicate objective with infinitive. *They thought him to be we, should be us*, since the case of the noun or pronoun in the predicate after the link verb must be the same as that of the subject, and here the subject is objective.

4. Confusion of progressive finite form with participle as predicate nominative adjective.

Progressive: he is going; he is running; he is interesting us.

Participial adjective: he is interesting; the problem is confusing.

5. Participles without definite substantives.

Right: Coming toward the shore, the wind blew a gale.

Wrong: Coming home, the wind blew furi ously.

Right: As we were coming home, the wind blew furiously.

Wrong: Being seven years of age, my grandfather brought us here.

Right: When I was seven, my grandfather brought us here.

Note: if the participle and the main verb have the same subject, the latter need be expressed but once. *John coming* home *lost* his way.

If the subjects are different, both must be expressed, as in the sentences just given above.

If the participle is used independently, its subject, as well as that of the main verb, must be expressed. John *having failed* to arrive on time, *they did* not wait for him.

6. Participles should not be used with *thus* to add a phrase at the end of a sentence. He did not arrive home on time, *thus delaying* the meal. *Thus* may be omitted; or the two parts may be made coordinate.

Parsing of Infinitives and Participles. Nonfinite forms of the verb should be treated in a way similar to finite verbs.

1. Class.
2. Subclasses.
3. Principal parts of verb.
4. Form found as to properties.
5. Construction and rule.
6. Any peculiarities.

Tabulation of Infinitives and Participles.

1. Elements common to regular verbs
   a. Transitive and intransitive
   b. Regular and irregular
   c. Active and passive
2. Mode: they assume rather than assert
3. Tenses
   a. Present
   b. Perfect
4. Person and number: unchanged throughout

Subjects of Infinitives and Participles

1. Of infinitives, always in objective
   a. Noun
   b. Pronoun
   c. Participle (gerund)
   d. Clause
2. Of participles a noun or pronoun
   a. Noun also subject of verb
   b. Noun also object of verb
   c. Noun also predicate nominative
   d. Noun object of preposition
   e. Noun also in apposition

Sign of the Infinitive

To, sometimes omitted
In order to

Sign of the Participle

Ending *-ing* and use

Infinitives and Participles as Nouns

1. Subject
2. Object
3. Predicate Nominative
4. Objective Complement
5. Appositively
6. Independently
7. Predicate Objective

Infinitives and Participles as Adjectives

1. Predicate adjective
2. As regular adjective (participles)
3. As factitive adjective (participles)

Infinitives and Participles as Adverbs and Prepositions

Errors in the Use of Infinitives and Participles

1. Perfect for present infinitive
2. Nominative as subject of infinitive
3. Nominative for predicate objective of infinitive
4. Participles without substantives (misrelated)
5. Confusion of progressive indicative with participle in predicate
6. Participles with *thus* at end of sentence (trailing)

ADVERBS.

Adverbs qualify verbs, adjectives, other adverbs, prepositions, clauses, and even whole sentences. Sometimes, furthermore, a single adverb like *yes, no, certainly* stands for an entire sentence, but this happens only when the rest is easily inferred. Shall you go? *Yes*, [I shall]. Will you go with us? *Yes*, [I will].

Classes of adverbs as to use. According to their general uses in English, adverbs are divided into two broad classes, simple and conjunctive, and these will now be explained.

1. Simple adverbs modify, but do not connect. Ordinary ones relate to measures of time, means of doing something, or other modifying conditions, such as might be mentioned in answer to questions like *how, when, how long*, and *how many*. Others ask questions directly or indirectly, and so are named interrogatives and indirect interrogatives, as illustrated below.

a. Ordinary class is illustrated by We have been here *a year; how* long it seems! We arrived *here* safely.

b. Interrogatives, as *How* old is Ann? *When* did you arrive? and *how* long will you remain?

c. Indirect interrogatives are found in subordinate clauses, they being used as subject, complement, object, subject of infinitive, and the

like. I am asking, *Where* is he now? I know *where* he ought to be, and *how* he should reach there.

2. Conjunctive adverbs both modify and connect. These again are divided into two groups, regular and relative.

a. Regular conjunctives connect an adverbial clause to a verb, adjective, or adverb. Do *as* I say, not *as* I do. Here *as* modifies *say* and connects *I say* to *do*.

b. Relative conjunctive adverbs resemble relative pronouns, in that they join a substantive and an adjective clause that modifies the substantive. I know the spot *where* the best orchids grow, but now is not the time *when* I should tell you where it is. The subordinate clause *where the best orchids grow* is joined to the main sentence by the conjunctive adverb *where*, and the whole modifies *spot*. Likewise. *when I should tell you* is joined by the conjunctive adverb *when* to the noun *time*.

Adverbs classified as to meaning. According to the ideas or measures expressed, adverbs fall into several classifications.

1. Adverbs of time tell when, how long, while, or how frequently. Some of them are *After, before, forever, heretofore, lately, monthly, recently, soon, sometimes, subsequently, nowadays, by and by, now and then.*

2. Adverbs of place, some of which are *Above, afar, about, behind, close by, down, hither, nigh, wherever, somewhere, nowhere, thereby*, and *whence.*

3. Adverbs of manner, answering the question how, or in what manner, some of which are *As, at length, anyhow, somehow, nohow, considerably, extensively, merely, nearly, namely, silently, wholly, likewise*, and *separately.*

4. Adverbs of degree, telling how great or much, how little or how extensive, some of which are *Also, besides, enough, even, farther, immensely, partly, partially, nearly, somewhat*, and *very.*

5. Adverbs of cause, giving reasons, or telling why, some of which are *Hence, then, therefore, consequently, it follows that, wherefore.*

Some adverbs may not readily fall into these classes, and therefore may be explained by themselves. *Yes, no, truly*, and others might be included.

Single adverbs and adverb phrases. Two or more words are often combined to make a single adverb, which should be explained and diagrammed as a single word. *By and by, here and there, up and down, through and through, hither and yon, day and night, at least, now and then*, and *at random* are some of the many.

Adverbs and expletives. Sometimes words that are adverb in form, but not really in significance, occur at the beginning of sentences. Many writers call these *expletives* and parse them as unconnected with the sentence. *There* are many kinds of steel gives an example. One may not say that the sentence means, Many kinds of steel are *there* (that is, in a certain place). *Why*, I think not. Here, too, it is difficult to explain *why* as a real adverb.

Comparison of adverbs. Adverbs and adjectives are compared in about the same ways. Like adjectives adverbs add *er* and *est* for the comparative and superlative; or use some prefix like *more* and *most;* or use the termination *ly.* It is a common blunder to say that all adverbs end in *ly;* for it is doubtful if even a majority of them so terminate.

Parsing of Adverbs should include these steps: 1, Kind; 2, subclasses if any; 3, comparison; 4, degree used; 5, relation to rest of sentence and rule; 6, anything unusual.

Errors in the Use of Adverbs.

1. Adverbs are often overworked. Some writers constantly use *very, grandly, gorgeously, terribly, only, mostly*, and many superlatives in ordinary senses. Meaning should, of course, suit the word used. If one constantly overuses adverbs, he at last will be like the boy who cried "Wolf, wolf," when there was no wolf; and when there is real need of a strong expression, none will come to his aid.

2. *Only, also, alone*, and other adverbs are often misplaced. Every modifier should be placed near the word it limits. Sometimes it should be placed just before, sometimes after. At any rate, it should not remain near some other word so as to be mistaken as to its real reference.

According to position *only* in a sentence conveys several distinct meanings. *Only* he lost his way. He *only* lost his way. He lost *only* his way. He lost his *only* way. He lost his way *only*. These may mean, taken in order, Everything went well, except that he lost his way. He and nobody else lost his way. He lost his way but not his money or anything else. He lost the only way there was. He lost his way and nothing more; this is similar to number three, but *only* at the end is doubly emphatic.

3. Adverbs should not be placed between *to*, the sign of the infinitive and the verbal part. They are often placed in the midst of verb phrases, as If he would *only* come. Split infinitives like One ought to *carefully* watch these words should read One ought to watch these words carefully.

4. If the natural position of the adverb is before the verb and adjective, the emphatic position is after them in any given case.

5. *Nor* is the correlative that goes with *neither.* In all other cases, however, *or* is the proper word following a first negative, as *either . . . or; not . . . or; never . . . or*, etc. Notice that *nor* is frequently used in the sense of *and nor*, as *Nor* is this true,—something is not true, and something else is not true.

6. Double negatives lead to considerable confusion of meaning. Some wrong expressions are I *can't hardly* see; we *scarcely never* go; we *could not* find *only* a few; we *cannot scarcely* get out of here.

Notice that a certain combination of negatives in English is idiomatic, established by long usage. It is *not improbable* means that it is rather probable. It is *not unlikely* that we shall go, means that it is rather likely, or we rather think we shall go. In these expressions, *not* or some equivalent is combined with a word having some negative prefix like *not, un, il, ig, in, ir.*

7. Adverbs and adjectives are often confused in meaning and use. Under errors in the use of adjectives, some of them have been mentioned. Below is found a list of words often confused.

adverbs	adjectives
nicely	good
poorly	ill
probably	likely
very	real
somewhat	some
well	good
previously	previous
above	foregoing
above	preceding
above	above-mentioned
near by	neighboring
promptly	prompt
differently	different
well, etc.	first-rate

Illustrations in sentences:

right	wrong
I am in good health (well)	I feel nicely
He is feeling ill	He is feeling poorly
He will probably come	He will likely come
The cake is very good	The cake is real good
I am somewhat better	I am some better
I feel well (not ill)	I feel good (not ill)
It happened previously	It happened previous
The foregoing sentences illustrate	The above sentences illustrate
He does well in school	He does first-rate in school
He acted differently	He acted different

Note: *Different* and *differently* are followed by *from*, not by *than*, as He acted differently *from* the others.

TABULATION OF ADVERBS.

Classes as to Use

1. Simple
   a. Ordinary
   b. Interrogative
   c. Indirect interrogative
2. Conjunctive
   a. Regular
   b. Relative

Classes as to Meaning

1. Adverbs of time
2. Place
3. Degree
4. Manner
5. Cause
6. Odd adverbs

Single Adverbs and Phrases, *by* and *by, here* and *there*

Adverbs and Expletives, *there, why,* etc.

Comparison of Adverbs

1. By adding *-er* and *-est,* to positive
2. By use of prefix *more* and *most*
3. Irregularly
4. By adding *-ly*

PARSING OF ADVERBS.

Errors in Use of Adverbs

1. Overworked adverbs
2. Misplaced
3. Split infinitives
4. Out of position
5. Correlatives wrong
6. Double negatives
7. Adverbs and adjectives confused

List

Illustrative sentences

PREPOSITIONS.

A preposition shows how its own object is related to some other part of a sentence. It is connective in use, governs an object, and has a definite antecedent, which may be almost any part of speech. Relative pronouns, some adverbs used as conjunctions, and all conjunctions show relationship, but they are not related to any substantive as a preposition is, since they do not govern any objects. The preposition and its object together are called a prepositional phrase.

Kinds of prepositions.

1. Simple, consisting of one word, like *About, above, after, among, before, beside, between, beyond, by, down, except, into, since, until, under, within.*

2. Phrasal, consisting of two or more words combined in use as if they were a single word. Most writers recognize a preposition phrase as such a group of words; but this must not be confused with a prepositional phrase, as defined above, which consists of a preposition (single or phrasal) plus its object. Some combinations may be both prepositional and preposition phrases. *To the extent of* three miles, illustrates; for the italicized words are used as a single preposition and so are a preposition phrase, and they plus *three miles* make up a prepositional phrase.

Some preposition phrases are, *Because of, in order to, from above, according to, alongside of, in opposition to, in consequence of, in addition to, with regard to, in front of, by means of.*

3. Participles that become prepositions, without retaining their verbal meanings, like *concerning, touching, resembling, following,* and many others, used in phrases as *Concerning* this point; as *touching* the matter in hand; *resembling* the others; *following* the leader.

Objects of prepositions may be almost any major part of speech.

1. Noun: Let us go to *school.*
2. Pronoun: Let us go to *him* and confess.
3. Adverb: Until *now* I did not believe it; they lost the money between *here* and *there.* Many adverbs of place fall into this type of construction as objects of prepositions.
4. Adjective: We are through with them for *good;* take her for *good* or *bad, better* or *worse.*
5. Infinitive: Do you do anything but *stare* at the board? (*To* is omitted before *stare*).
6. Participle: Some callers never think of *going* early.
7. Clause: What does he care what we think of him? How could he after *that which you said?*

In similar ways a preposition may connect its own phrase to a noun, pronoun, verb, adjective, adverb, or some other combination in a sentence.

Prepositions, Adverbs, and Verbs. Frequently the object of a preposition is omitted, not being felt as necessary, and the preposition itself becomes an adverb virtually if not actually.

This is nothing to wonder *at.*

This is something to be thankful *for.*

Feeling the awkwardness of some constructions with *go, visit,* and other verbs, certain speakers say, This is a good place to go (to), or This is a good place to eat (in). Neither grammar nor logic can justify such a phrase, without a preposition.

Sometimes a word which might be used as either a preposition or an adverb attaches itself inseparably to the verb. Such a phrase should be explained and diagrammed as if it were a single verb or a regular verb phrase. Do you like to be *laughed at?* People *laugh at* all inventors for a time. Here *laugh at* has the sense of ridicule. He *ran away* with the money, in a

similar manner is equivalent to he *absconded* with the money.

Parsing of Prepositions includes 1, the kind; 2, relation to object and to rest of sentence; 3, reason or explanation.

Errors in the Use of Prepositions. On the whole prepositions are rather carelessly used. The main errors fall into four or five well-defined classes.

1. Prepositions wrongly chosen. Each of these words has its own appropriate meaning, which must be strictly accounted for. The list given below includes some proper combinations about which there seems to be some misunderstanding.

absolve from
accord with
acquit of
adapted to (thing)
adapted for (purpose)
agree with (person)
agree to (plan)
angry at or toward
attend to (something)
attend upon (person)
beg of, from (not off)
buy from (not off)
compare with
conform to
correspond to (thing)
correspond with (person)
depend on (figuratively)
depend from (literally)
differ with (person in views)
differ from (in traits)
get from (not off)
keep off (not off of)
like to (not for to)
liken to
live in, at (not to)
need of
profit by
profit in (share)
sympathize with (person)
sympathize in (a loss)
taste for (art)
wait for (person, thing)
wait on (to serve, court)

2. Sets of prepositions often confused in use. *Among* should be used in referring to more than two persons or to groups of persons or things. *Between* should be used of two, or between two groups having a definite relationship.

At indefinitely refers to a place where, as He lives *at* Washington, but it might be in the suburbs or near by. *In* is used definitely for within a certain prescribed area. He arrived *at* Washington yesterday and will remain *in* the city four days.

Back of is not in good repute for *behind*.

Beside means literally *by the side of* and should be so used. *Besides* means *in addition to*, as both preposition and adverb. More people *besides* (adverb), More people *besides* us make this mistake (preposition).

But what should not be used for *but that*, in a sentence like, Nobody is present *but that* will agree with me.

By is used for the active force or agent; *with* for the means. He was hit *by* a crazed man *with* a hot poker.

Differ, different from is the idiom in America; in England *different to* is well established. *Different than* is always wrong.

Except is now used as a preposition, to which the corresponding conjunction is *unless*. Good use insists that these be not confused.

In should be used in mentioning objects enclosed in a certain space. *Into* should be used in case of motion from one space to a second. One goes from one room *into* another; he is *in* a room while he chooses to remain.

Like, the preposition, should not be used as a conjunction. *As if* properly connects one clause with another. It seems *like* it would would rain is incorrect for It seems *as if* it would rain.

Of, often used possessively, is also found in the idiom *to die of a* disease, as He died *of* pneumonia. *From* and *with* are not in good use in this phrase. In most cases *from* should be used to imply separation, as He obtained the book *from* us, not *of* us. *Of* an afternoon for during an afternoon is well established by usage. We take a walk *of* an afternoon.

Upon is used rather literally for position, *Upon* the mountain top we await the sunrise. *On* is used more generally and less literally. *Onto* is a needless substitute for *upon*.

Without means literally *on the outside*, or *except*. *Unless* means *were it not that* or *if not*. They should not be confused.

3. Prepositions improperly omitted or inserted.

Of what use is this? It is *of* no use. In these instances *of* must not be omitted. It is best to be sure of the English idiom before omitting a natural preposition.

We remember all that. I admit what you tell me. *Of* should not be inserted after *remember* and *admit*. Transitive verbs do not require prepositions before their objects.

In a group of objects, one preposition may be sufficient for the entire list; if more than one is used, all the objects should have prepositions expressed. The repetition of a single preposition adds emphasis. Have you been *to* New York, London, and Rome? Emphatic: Have you been *to* New York, *to* London, and *to* Rome?

4. Prepositions are sometimes improper at the end of the sentence. Sometimes the preposition adds force at the end of a sentence. Since the last word or group in a sentence is especially emphatic, any word in that position receives more than ordinary interest. If this interest is natural and justified, the preposition may be said to be used correctly at the end. When it is unnecessary and weak, it should certainly not be placed last.

Bacon says, Houses are built to live *in*, not to look *at*. How could this sentence be phrased any more forcefully?

I do not like to be laughed *at*. Could this be stated any more effectively by placing the preposition elsewhere?

On the other hand, the older books on rhetoric used to print this sentence, "A preposition is a poor word to end a sentence *with*." Here *with*, however, is not a poor word because it is a preposition, but more truly because it is superfluous, no matter what part of speech it is.

TABULATION OF PREPOSITIONS.

Kinds
1. Simple
2. Phrasal
3. Participles as prepositions

Objects
1. Noun
2. Pronoun
3. Adverb
4. Adjective
5. Infinitive
6. Participle
7. Clause

Prepositions as Adverbs

Errors in Use of Prepositions
1. Prepositions wrongly chosen
2. Sets often confused
3. Improperly omitted
4. Improperly used at end of sentence

CONJUNCTIONS.

Conjunctions connect words and parts of sentences, without having any other function. Verbs connect and assert action, being, or state.

Infinitives and participles connect and assume action. Prepositions connect and assume relation, and also govern substantives called their objects. Unlike all the rest, conjunctions merely connect.

Kinds of Conjunctions.

1. Coordinating, those which connect clauses and phrases of the same rank or grammatical construction. They may connect either principal or subordinate clauses, but not principal and subordinate at the same time. Some of the chief sub-classes may now be described.

a. Additive, such as *and, likewise, besides, moreover, first, second,* and so on (in series).

b. Adversative, such as *but, yet, still, nevertheless, on the contrary.* These always show that a succeeding part of the sentence takes a different turn in thought and meaning from the one before.

c. Alternative, such as *or, nor, either, neither, else.* These suggest the possibility of a choice between two or among several thoughts or plans.

d. Correlative, *either . . . . or; neither . . . . nor; both . . . . and; not only . . . . but also; whether . . . . or.* This group consists of the alternative conjunctions arranged in pairs to show a choice between two groups or among several.

e. Conclusive, such as, *therefore, hence, accordingly, so, thus,* and *then.* When properly used these show that a certain thought or conclusion grows out of what has been previously stated or done. In logic and mathematics these conjunctions are familiar signs of reasoned conclusions.

2. Subordinating conjunctions are used only in minor clauses to join them to the principal or major clauses. Some of the main sub-classes may now be described.

a. Causal, such as *because, for, since, inasmuch as.*

b. Conditional or concessive, such as *if, though, although, unless, except.*

c. Purposive, such as *that, so that, in order that, lest* (to introduce something that one would avoid).

d. Relating to time and place, such as *where, whence, when, while, until, before, after.*

Other words or groups, especially adverbs, are used as conjunctions on occasion, but these are not important enough to need emphasis here.

Parsing of conjunctions includes, 1, class; 2, subclass; 3, use and rule.

Errors in the Use of Conjunctions are not numerous. A few may be recalled.

1. Confusion of main kinds. When a coordinating conjunction is confused with a subordinating, it is because one has mistaken the nature of the clauses connected. In the use of any conjunction one must decide, first of all, what the grammatical construction is.

Under errors in using prepositions, the *and which, and who* constructions have been noticed.

Wrong: The new cement road is a great convenience, *and which* saves several miles.

Right: The new cement road is a great convenience and saves several miles.

In the *wrong* sentence, a subordinate is coordinated with a principal clause, a form forbidden by the laws of both logic and grammar.

Sentences like *He was cruel and was an old soldier* need not be mentioned here, since the trouble lies in putting two unrelated ideas together, and not in using a wrong conjunction. Such a jumbled sentence should be broken up into parts.

2. Correlative conjunctions should be rightly placed in the sentence. Aviation still is dangerous *both* in reference to control of the plane *and* landing—here the correlated elements are not clearly brought out. A better arrangement is, Aviation still is dangerous in reference *both to* control of the plane *and to* making good landings.

3. Confusion of conjunctions and other parts of speech. Already we have learned that certain prepositions are sometimes used for conjunctions,—*like* for *as* or *as if; except* and *without* for *unless; but what* for *but, but that,* or *that.*

Do *like* I do is wrong for Do *as* I do. He looks *like* me is correct.

Try *and* do this is wrong for the meaning Try *to* do it or See if you can do it. So is Try *and* go for Try to go. Sometimes in such phrases it is difficult to decide whether *and* has its own real force or whether it is misused for *to.* Usually the meaning is clear enough.

As is wrong for the conjunctive *that,* in sentences like I do not know *as* I shall go for I do not know *that* I shall go.

Whether (not *if*) is the proper correlative for *not.* I do not yet know *whether* or *not* I shall go is correct, whereas I do not know *if* I shall go or not should be condemned. Notice, however, in such sentences the phrase *or not* may be omitted, as in I do not know *whether* I shall go.

TABULATION OF CONJUNCTIONS AND USES.

Kinds:
1. Coordinating, which connect like clauses
   a. Additive
   b. Adversative
   c. Alternative
   d. Correlative
   e. Conclusive
2. Subordinating
   a. Causal
   b. Conditional or concessive
   c. Purposive
   d. Relating to time and place
   e. Other words or groups

Parsing of Conjunctions

Errors in Use of Conjunctions
1. Confusion of kinds
2. Misplaced correlatives
3. Confusion with other parts of speech

INTERJECTIONS.

Some exclamatory sentences begin with small words that express strong emotion. These terms are called interjections, since they are thrust in, interjected, between sentences or between parts. Ranging all the way from mild oaths and expressions of contempt, they at last often express calls for attention, as *holla, hallo,* and ship, *ahoy.* Sometimes they are used for a countersign or a rallying call.

Interjections have no special properties, do not relate to any other words in the sentence where they occur, and are parsed and diagrammed as independent parts of speech.

No classification is necessary, and the only one possible is a division of the various exclamatory

words according to their purpose, or the type of emotion expressed.

Some of the chief words are *Ah, alack, alas, avaunt, bravo, eh, fudge, ha, heigh-ho, hush, indeed, la, look, pshaw, tut, shoo, what,* and *zounds.*

Many others are readily identified as the favorite exclamations of our friends, and these run all the way from *goodness gracious* to *Whaddy yuh know about that?*

Older rhetorics and grammars advise school girls and the rest to use exclamations sparingly. In literature the list has shown a marked falling off in the last generation. Sentimental exclamations especially have come into great disrepute.

In punctuating exclamations, two courses are open: either place a comma after the exclamatory word itself or place it after the whole sentence. Except when the exclamation has no evident bearing on the entire sentence, a growing vogue dictates that the mark be placed at the end of the sentence.

ANALYSIS AND DIAGRAMS OF SENTENCES.

Already a brief analysis of the sentence and its parts has been made in the division headed *Sentences.* Having covered the salient principles of the various parts of speech, we are now ready to consider the structure of the whole sentence, its clauses, phrases, and single words.

Analysis shows how the different parts of the sentence are related. It dissects the larger units. Altogether analysis classifies, separates, and arranges all the clauses and phrases. No more beneficial exercise has been adopted to clarify one's thoughts on the subject of English grammar.

Sometimes analysis takes considerable explaining and many words to show the entire story of a sentence. For this reason a convenient device known as the diagram has been invented to show the analysis in visual form. No other purpose is accomplished by the diagram than to save time and to make the entire relationship in the sentence plain almost at a glance. Thus the diagram is something like a bird's-eye view of a sentence. Of late diagrams have been neglected in our elementary schools. Children do not always understand the syntax or arrangement of the sentence parts. For this reason alone, if for none other, diagrams should be made a small part at least of all grammar school study in English. Formerly some teachers and schools over-developed diagramming, to the neglect of other instruction; and so the method fell into considerable disrepute. Yet the pendulum has probably swung too far in the opposite direction.

Parts of Sentences according to Function. According to the part they take in expressing thought, the various word groups in a sentence may be classified as follows:

1. Subject
2. Predicate verb
3. Complements of verb
   a. Nominative (attributive)
   b. Objective (infinitive)
4. Other verb adjuncts
   a. Object (direct)
   b. Indirect object
   c. Adverbial objective (measuring)
   d. Object of make, etc. (factitive)
   e. Subject of infinitive
   f. Objective in apposition
   g. Retained object (in passive cons.)
5. Adjective modifiers
6. Adverbial modifiers
7. Noun clauses
8. Independent words and groups
9. Conjunctions

1. Subjects must be substantives,—nouns or groups of words used as nouns. A substantive is a word or more having the functions of a noun, or serving as subject, object, predicate nominative (attribute complement), and so on.

Noun: *Men* fly.

Pronoun: *We* fly in airplanes.

Infinitive: *To fly* for long was the ambition of inventors.

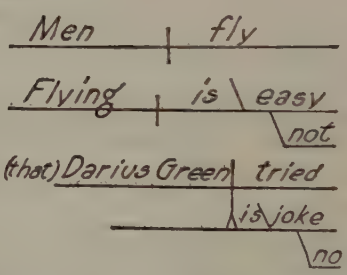
Infinitive phrase: *To fly successfully* is now possible.

A gerund (participial noun): *Flying* is not easy.

An adjective as noun: The *brave* only tried to fly.

Clause as noun: *That Darius Green tried* is now no joke.

Diagrams:



This style of diagram is simple and convenient; some that are labored and elaborate are no more clear or convincing. Let the subject and predicate verb be placed on a horizontal line, with an upright line cutting the horizontal. An object is shown by letting the upright come down to the horizontal, without cutting it. A predicate noun is nominative after the link-verb *is;* this relationship is shown by a slanting line toward the left. An objective complement is shown by placing the word after the regular object and slanting the line toward the right. A clause used as subject of a verb may be placed on a bracket, as shown above. For the present we leave the word *that* in abeyance. Other parts of this scheme of diagrams will be shown as we proceed to different modifiers.

This plan of diagrams resembles the main features in the Reed and Kellog grammars as published by the C. E. Merrill Company. They are used here by permission.

2. Predicates consist of all sentence parts that do not belong to the subjects. It is a mistake to call the verb the predicate, if the predicate is complex. Let us consider the verb first.

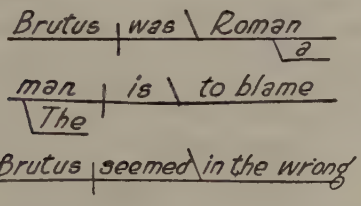
a. Some verbs, including most intransitives, constitute the whole predicate, as John *runs,*

children *learn*, we *ride*. Others require some helping word, which may be either a complement or an object of some sort. Complements may be of different elements as shown below:

Noun: Brutus was *a Roman.*
Pronoun: It is *I.*
Adjective: Brutus is *honorable.*
Infinitive phrase: The man is *to blame.*
Prepositional phrase: Brutus seemed *in the wrong.*
Noun clause: He appears to be *whatever they say of him.*

3. A complement has been given various names. Some grammarians call it a predicate noun, adjective, phrase, or clause. Since it refers to the subject, some call it a subjective complement. Since it completes the predicate verb, some call it a predicate nominative (agreeing with the subject). Since it often gives an attribute of the subject, some call it an attribute complement. No single name seems to win complete favor.

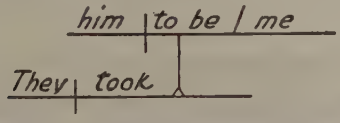
Diagrams:



b. Objective complement is found in connection with infinitives having objective subjects according to idiom.

They took him to be *me.*
They took John to be *wise.*

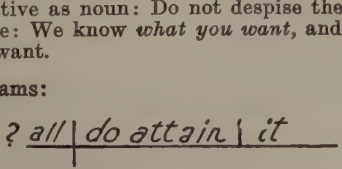
Diagram:



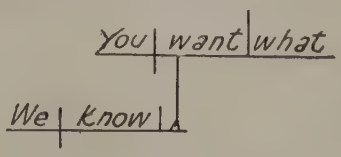
4. Objects or direct objects, as they are often named, are sometimes classed as complements and called object complements. Since this last name is likely to be confused with objective complements, just described above, it is allowable to place them in a separate division. An object may be:

Noun or pronoun: All men desire *immortality.* Do all attain *it?*
Infinitive: Most men desire *to live.*
Infinitive phrase: Men desire *life to continue forever.*
Gerund: We enjoy *living.*
Adjective as noun: Do not despise the *rich.*
Clause: We know *what you want,* and that is all we want.

Diagrams:



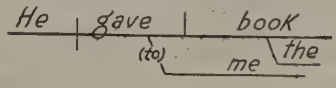
Note: Usually diagrams do not distinguish between a declarative and an interrogative sentence. To show the question form, a mark might be used, either after *it* or before the subject.



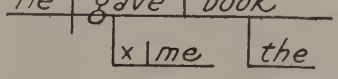
What you want is object of *know*, and *what* is object of *you want.*

b. Indirect objects resemble prepositional phrases with the prepositions omitted. In diagramming they are usually so treated.

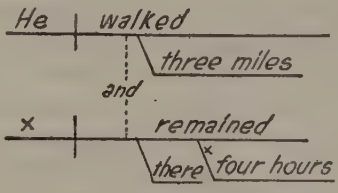
He gave *me* the book.



Note: *To* may be placed on the same line as *me*, leaving the oblique line vacant; or this line may be drawn straight down, in a box form, with *to me* on the horizontal.

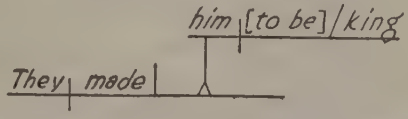


c. Adverbial objectives occur in sentences that mention units of time, distance, or other measures. He walked *three miles*, and remained there *four hours.*



Here *three miles* and *four hours* might be diagrammed as parts of prepositional phrases with the introductory word missing, as this diagram shows; or as simple adverbs. *Three* may be shown as modifying *miles*, and *four* as modifying *hours*, as cardinal adjectives.

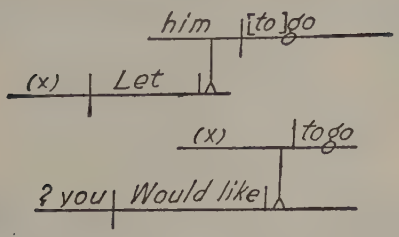
d. The factitive object occurs in sentences containing verbs of *making, naming, appointing,* or their like, and the direct object shows who was made, named, or appointed, while a second object tells what he was made, named, or appointed. The word *factitive* derives from the Latin root meaning *to make.* Many prefer to diagram the sentence as if *to be* were omitted,—



e. Sentences containing ordinary infinitives may be diagrammed in somewhat the same fashion.

Let him go. (Both subject and infinitive sign omitted).

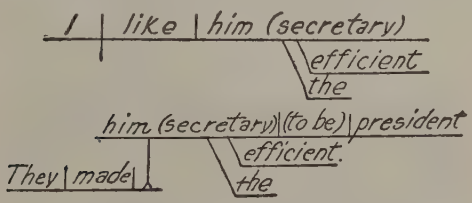
Would you like to go?



f. Sometimes a word or group is appositive to a direct or infinitive objective.

I like him, the efficient *secretary.*

They made him, the efficient *secretary,* president.

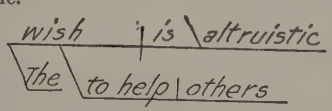


g. Retained objects are mentioned in the case of passive verbs. When the sentence, They made him *president,* is changed into the passive, He was made *president,* the word which was the factitive object in the active is retained, or seems still to be in the objective case.

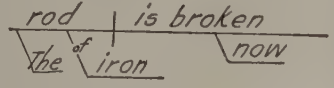
For want of a better name, it is called a retained object, since a passive verb may not logically have an object. Some grammars advise one to turn the passive into an active verb before diagramming the sentence. The sentence in the active would be diagrammed as the last one above is arranged.

5. Adjective modifiers. Simple adjectives give us little difficulty, either in parsing or in diagramming. Various combinations of words, however, may be used to modify nouns and pronouns as adjectives. Some of these will now be noted.

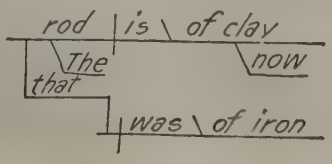
a. Infinitive. The wish *to help others* is altruistic.



b. Prepositional. The rod *of iron* is now broken.

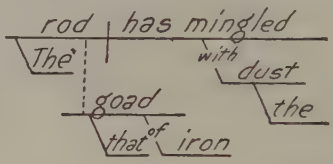


c. Adjective clause. The rod that was of iron is now of clay.



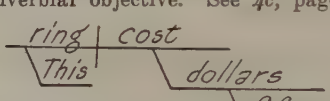
Here the connective nature of *that* may be represented by running part of the upright line horizontally and by placing the relative pronoun upon this line.

d. Sometimes it is difficult to distinguish an appositive use from a restrictive like the phrase *that was of iron.* Usually the form of the sentence guides us sufficiently, as in The rod, *that goad of iron,* has mingled with the dust. Here the phrase is non-restrictive and clearly appositional. For a discussion of restrictive and non-restrictive clauses see section on adjectives. In the diagram, an appositive may be shown by using parenthesis, or by continuing the upright line straight down to the appositive part, as shown here:

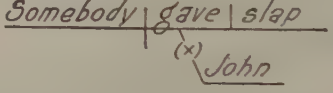


6. Adverbial modifiers. Ordinary adverbs are easily distinguished, but some of the phrases used to modify adverbs, adjectives, or verbs are not always recognized as adverbial in nature. Some of these are the following:

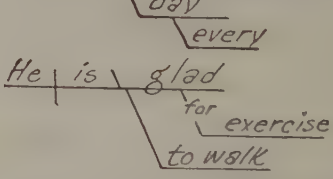
a. Adverbial objective. See *4c,* page 161.



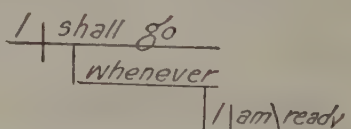
b. Indirect object, or object with *to* or *for* omitted. See *4b* above.



c. Prepositional or infinitive phrase. He walks *to town* every day. He is glad *of the exercise.* He is glad *to walk for exercise.*



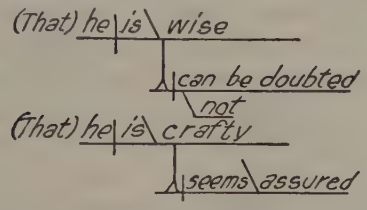
d. Adverbial clause. I shall go *whenever I am ready.*



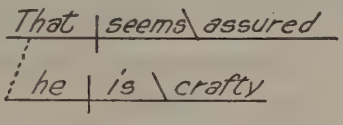
According to the adverb used, adverbial clauses are easily recognized as clauses of place, time, manner, degree, cause, and so on.

7. **The noun clause.** Already in 5 and 6 adjective and adverbial clauses have been mentioned among the various forms. A noun clause is similar, except that it is used as a noun in several ways:

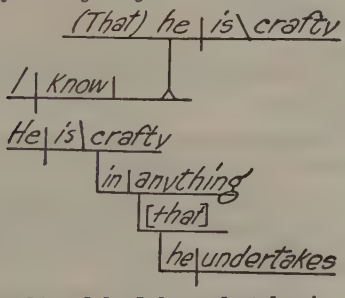
a. As subject of the sentence,—That he is wise cannot be doubted; that he is crafty seems assured.



That is treated as an introductory expletive, having little connection with the sentence, except logically. Notice another type of sentence, in which *that* may be taken as subject of the verb, and *he is crafty* in apposition to *that.*

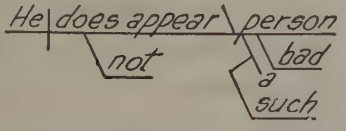


b. As object, I know *that he is crafty;* or is crafty in *anything he undertakes.*

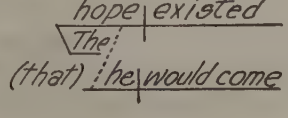


In anything [*that*] *he undertakes* is a prepositional phrase modifying *crafty* as an adverb; *that* understood connects *he undertakes* with *anything,* and *that he undertakes* modifies the noun *anything* as a restrictive adjective clause.

c. As a predicate nominative or attribute complement, as in He does not appear *such a bad person. Appear* is often used as a link-verb, and so the noun clause following [*to be*] *such a bad person* must be a nominative construction.

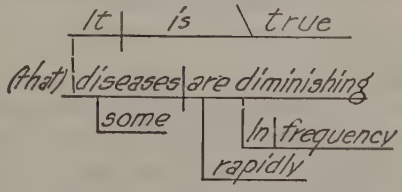


d. As an appositive, as in The hope, *that he would come,* long existed.



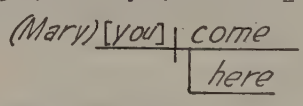
Noun clauses are introduced by relative pronouns and adverbs used conjunctively, such as *who, which, what, that* (often omitted), *whoever, whatever, where, when, whether.*

Some noun clauses are logical, if not grammatical, subjects of the verb, as It is true *that some diseases are rapidly diminishing in frequency.* In the diagram, however, it is customary to represent this clause as appositive to the grammatical subject, which, in the sentence just printed, is *It.*

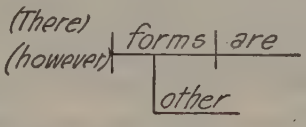


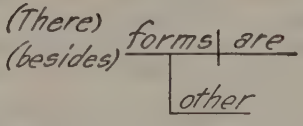
8. **Independent words and groups** are diagrammed independently. They may be placed at one side, as in the sentence just diagrammed; or connected with the sentence by dotted lines, but not placed on the same footing. Some of the independent expressions follow below:

a. A word in direct address,—*Mary,* come here; *child,* what are you doing? In the first sentence *you,* the subject, is understood.

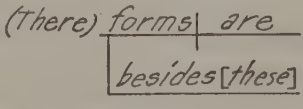


b. A parenthetical word used to connect the thought of one sentence (but not the grammar) with a preceding one,—There are, *however,* other forms. There are, *besides,* other forms.

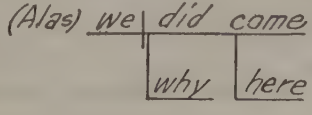




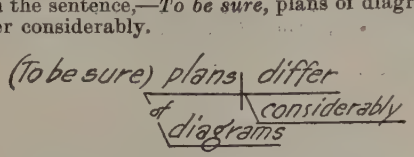
Even short sentences, like these, may have two expletives, or independent elements. If the second sentence just shown appears without punctuation, *besides* may be taken as a preposition governing *these* understood.



c. Interjections anywhere in the sentence,—*Alas,* why did we come here?



d. Phrases having no grammatical connection with the sentence,—*To be sure,* plans of diagrams differ considerably.

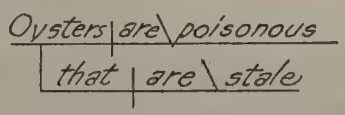


OTHER COMPLEX AND COMPOUND CONSTRUCTIONS.

1. Oysters that are stale are poisonous.

Analysis:

This is a complex declarative sentence, of which the principal clause is *Oysters are poisonous,* and the subordinate, *that are stale.* The subordinate clause is used as a restrictive adjective phrase, modifying oysters and explaining what oysters are poisonous. The sentence says merely that some oysters are stale, and that those that are stale are poisonous. Oysters is the simple subject without modifiers, except the relative clause *that are poisonous,* which is composed of the relative pronoun *that,* used to connect the whole clause as an adjective with *Oysters. Are* is the link verb of the subordinate clause and *stale* the adjective complement telling the quality of oysters. *Are poisonous* is the predicate of the subject *oysters,* consisting of the link verb *are* and the adjective *poisonous,* showing the quality of stale oysters *(oysters that are stale).*



Parsing further explains the syntax of the individual words. *Oysters* is a common, class noun, neuter gender, third person, plural number, nominative case, agreeing with the verb *are,* and subject of the predicate assertion *are poisonous.*

Are is an irregular, intransitive, link verb, active, indicative, present tense, third person and plural number, agreeing with its subject *oysters* and connecting the subject with the predicate adjective *poisonous.*

Poisonous is a descriptive, predicate adjective, positive degree, showing the quality of *oysters,* with which it agrees in plural number and nominative case. Compared: poisonous, more poisonous, most poisonous; poisonous, less poisonous, least poisonous.

That is an indefinite, relative pronoun, used to connect its antecedent *oysters* with *are stale,* the subordinate clause *that are stale* being used restrictively to show that not all oysters are stale. *That* agrees with *oysters* in third person, plural number, neuter gender. It is also subject of the verb *are* and has a predicate adjective *stale.*

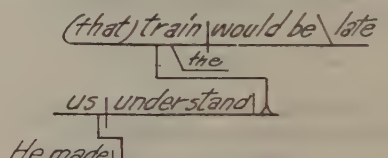
Are and *stale* need not be parsed, since they vary little from the similar words in the same sentence.

2. He made us understand that the train would be late.

Analysis.

This is a complex declarative sentence, of which *He made us understand* is the main and *that the train would be late* is the subordinate clause. *He* is the simple, unmodified pronoun subject of the main clause; *made* is the transitive verb, having as its object the infinitive [to] *understand,* etc.; *us* is the simple pronoun subject of the infinitive, in the objective case, according to idiom (not object of *made*). *Understand,* the infinitive with the sign omitted, has, as object, the subordinate clause entire. *That* is an introductory independent word (expletive), having no close connection with the sentence, except to introduce the subordinate clause, which has the phrase *the train* as a subject and *would be late* as the verb, which is future in meaning with reference to the verb in the main clause. *The* is a simple articular adjective, definite class, modifying *train; would be* is the predicate verb, corresponding to the direct *will be; late* is predicate adjective, nominative case, agreeing with *train.*

In sequence of tenses, *would be* follows the time of the main verb which is past, and *understand* follows the time of *made,* and so the present infinitive is used to show similar time.



Except for the possibility of confusing the three parts, this sentence could be diagrammed all on one line.

Parsing:

He is a simple, third personal pronoun, singular, nominative, subject of *made.*

Made is the past tense of *make, made, made;* it is third person singular, agreeing with its subject *he,* irregular weak form, transitive, active, having as an object the infinitive construction *us understand,* etc.

Us is subject of the infinitive *understand;* hence is in objective case (not object of *made*), plural, personal pronoun, simple (not compound).

Understand, infinitive, without the sign, present form, agreeing in time with that of the verb in the main clause, and with its subject *us,* in first person, plural number.

That is an expletive, being introductory, and having no direct bearing on the sentence. The subordinate clause needs no conjunction.

Train is a common noun, neuter gender, third person, singular number, nominative, subject of verb *would be.*

The, definite articular adjective modifying *train.*

Would be, conditional or subordinate clause form of *will be.*

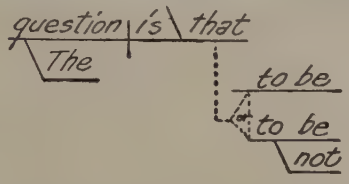
Late, descriptive predicate adjective, nominative to agree with subject of *would be.* Comparison: *late, later, latest.*

3. To be or not to be, that is the question.

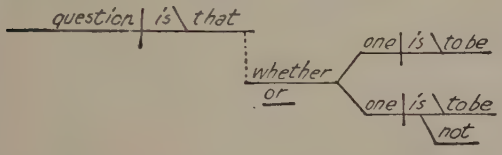
Analysis.

This simple declarative sentence has *that is the question,* as its main sentence element, with *to be or not to be* in apposition with that. The normal form of the sentence may be considered

as *The question is that*, in which *question* is the simple subject modified by the adjective *the; is* the link verb, intransitive, with *that* as a predicate adjective, nominative case to agree with the subject *question*. *To be or not to be* is an infinitive phrase, composed of two alternative elements, joined by the conjunction *or*, the second *to be* modified by the negative adverb *not*.

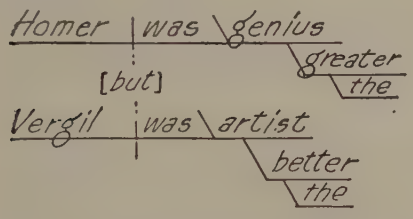


So far as parsing is concerned, nothing new is found in this sentence except the construction of *to be* and *not to be*. These are equivalents of nouns. If the sentence is taken to be equivalent to *The question is whether one is to be or not to be*, it may be diagrammed:



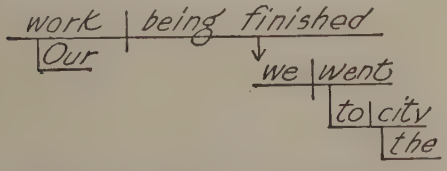
4. Homer was the greater genius: Vergil the better artist.

This sentence is compound, with the conjunction omitted. The two clauses are *Homer was the greater genius* and *Vergil was the better artist*. These parts give no special difficulty, for the analysis is similar to that of other sentences already explained.



5. Our work being finished, we went to the city.

This sentence contains an independent participial phrase attached to a simple sentence.



Diagraming independent elements. Some words or groups in sentences have only a logical connection with the rest. Though there are several kinds of these, the only two that give much difficulty in diagrams are the *expletive* and *independent participial phrases*. For expletive words a method of arrangement has been shown on page 163 in section 7; another on page 164 in section 2. Some books prefer to place expletives on dotted lines, others to place them in parentheses, still others to write them alone without underlining. Independent participial elements are not quite so simple to arrange. One plan is shown under sentence 5 on this page, where the arrow, pointing to *we went to the city* shows that the element, *Our work being finished*, is an independent participial prase. Parenthetical elements, and words and phrases used in apposition, may be treated in a similar way. Whatever plan for analysis or diagraming is used is not so important as is the consistent use of the scheme adopted. To use one line, or symbol, or arrangement for two different constructions is always confusing.

Analysis compared with diagraming. From the specimens shown, one may readily observe the comparative advantages of diagrams. They indeed show the sentence analysis in a form easily grasped by the eye, while all the relationships are instantly apparent. On the contrary, analysis in written form is more lengthy, therefore more cumbersome and not so easily seen as a whole. One who can analyze a sentence can ordinarily diagram it, if he has a plan for diagrams in mind; for the diagram is only a vizualization of the analysis.

Parsing. This form explains each word in the sentence with relation to its classifications and use. It is, therefore, more elaborate than analysis or diagraming. For instance, compare the diagraming of the sentences on page 164 with the parsing of the same ones.

Take the sentence *He made us understand that the train would be late*. Notice, for example, that the diagram as printed on page 164 is economical of space, whereas the analysis takes four times as much printing. The analysis is also not easily understood at a glance.

We may now sum up the advantages of studying grammar by means of analysis, diagrams, and parsing.

1. All forms show relationships clearly and simply. Diagrams are the best of the three forms for showing constructions; parsing for showing both constructions and word classifications; analysis is the literary equivalent of diagrams.

2. They teach one to keep in mind the theory of grammar.

3. They teach one to be alert toward unusual constructions that the average reader often overlooks.

4. They teach one to be regular and neat in arranging one's work, though they should never be made a mere exercise in drawing straight lines or in fancy writing.

5. Irregular forms teach one to be resourceful in showing relationships among sentence elements.

6. All three forms teach one to be logical and systematic; yet they should not be taught as an end in themselves, but as an aid to the intelligent study of the much neglected subject of good old English grammar.

BOOKS FOR FURTHER STUDY OF GRAMMAR.

Elementary grammars are numerous and are to be found in our schools and libraries. Most book publishers of texts have them listed. For the more advanced student, however a number of books might be recommended, of which only a few may here be specified. R. H. Bell: *The Changing Values of English Speech.* George O. Curme: *College English Grammar.* H. W. Fowler: *The King's English.* Otto Jespersen: *The Philosophy of Grammar.* Kittredge and Farley: *Advanced English Grammar.* G. P. Krapp: *Modern English.* T. R. Lounsbury: *Standard of Usage in English.* Brander Matthews: *The Parts of Speech.* J. D. M. Meikeljohn: *The English Language.*

RACES OF MANKIND
OUTLINE OF WORLD HISTORY
OUTLINE OF AMERICAN HISTORY
DICTIONARY OF HISTORY
IMPORTANT WARS
WORLD WAR
PICTORIAL HISTORY
ADMINISTRATIONS

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HISTORIC AMERICA

Fort Mackinac, Michigan
San Xavier Mission, Tucson, Ariz.
Plymouth Rock, Plymouth, Mass.

House of Cornwallis Surrender, Yorktown, Va.
Old Church, Jamestown, Va.
Old Mission, Santa Barbara, Calif.

BOOK III.

HISTORY.

HISTORY.
A Mosaic Painting in the House Reading Room, Congressional Library, Washington.
BY FREDERICK DIELMAN.

RACES OF MANKIND. PREHISTORIC MAN. COURSES AND CURRENTS OF THE WORLD'S HISTORY IN GRAPHIC OUTLINE. DICTIONARY OF HISTORY, EVENTS, NATIONS, PERSONAGES. IMPORTANT WARS OF HISTORY. WARS OF UNITED STATES AND CANADA. WORLD WAR. COLONIAL HISTORY. PICTORIAL AND TOPIC HISTORY OF PRESIDENTS' ADMINISTRATIONS.

RACES OF MANKIND

Human beings are white, black, brown, or red as to complexion and hair. Color, however, is no safe guide to race; for some Caucasians of India are coal black, and not Negroes. Today races are classified according to character of their hair, skin-color, height, shape of head, type of face, nose, and eyes. Once five races were recognized, —the Caucasian, Mongolian, Negro, Malay, and Indian, or the white, yellow, black, brown, and red. Dr. Ales Hrdlicka, American authority, recognizes but three races, the white, yellow-brown, and black, of which there are, necessarily, some sub-classes or combinations. We shall follow the older classifications, recognizing the Malay race as a composite people.

I. CAUCASIAN, living in much of the temperate zones, tropical America, some of the islands of the sea, parts of Siberia, India, Indo-China, and Malaysia. Modern authorities describe three main types. First, is the *Mediterranean,* such as the Italians, some Greeks, Berbers, and other Hamites, many Hindus, Malaysians, and Polynesians. These peoples have dark hair, medium to tall stature, quick minds, an inflectional language, and high culture, art, and religion. Second, the *Nordics* or blond peoples include those of northern and northwest Europe, non-aboriginal Australians, English and Dutch of South Africa, Kurds, Afghans, some Persians, and a few desert tribes of Asia. They have fair hair, eyes, and medium heads. Third, the *Alpine* type in Europe is recognized in the Swiss, French, and other romance language peoples. These peoples have round head, broad face, hair light to dark, varying heights, and stocky build. The Caucasians have often been called Aryans or the Indo-European group, but all single words are misleading as descriptive of them. Today, the Caucasians rule or protect 88% of the surface of the world. We shall now describe some of the sub-divisions of the Caucasian race.

1. *Eastern Hamites.* These include the Egyptians, Nubians, Abyssinians, Gallas, such as the Moors, Berbers (a remarkably pure race for many centuries), the Arabs, both nomadic and settled, and the Egyptians, who are very old, hard to explain, and persistent for some thousand years. Moors may be true Hamites, and Egyptians a mixture of earlier peoples like the Malaysians. The Danakils of Ethiopia seem to have settled among the original Gallas there, and some strange forms of religion and culture come down to our times.

2. *Semitic Caucasians* for centuries have figured in human history. These people swept westward in one of the early migrations of races. From one of these waves or western movements in Asia the great Assyrian empire sprang. This seems also to have contributed the Hyksos kings who conquered part of ancient Egypt before 2000 B. C. About a thousand years later, the Arameans made up a new racial migration into Mesopotamia, Babylonia, and Syria. Of these were the men of Edom, Moab, Canaan, Ammon, and eventually of Israel, as shown in the *Bible.* Then came the Phrygians and the Philistines. All

these may have been earlier Semites. In a second great period of western migrations, the Hittites established themselves firmly in southern Asia Minor, followed by the Habiri, who afterward were called the Hebrews. In later times these people took the name of Jews from the tribe of Judah, one of the ten tribes mentioned in early chronicles. Before them, doubtless the Hittites were the most powerful of the early Semites, for they ruled from the Aegean Sea to Mesopotamia, and were quite the equals of Egypt and Assyria.

3. *Western Caucasians.* Whether the Aryans originated in Africa, Asia, or Europe is still debated. These Indo-European folk were known in central and western Asia long before the dawn of recorded history. Various remains of these men and their implements prove this beyond question. By 2000 B. C. they were in central Italy, the Balkan mainlands, and in what we now call the Hellenic Peninsula. Some think the Greeks came from around the Baltic Sea. Germanic tribes like the Germani, Alemanni, Franks, and Celts perhaps came into north Europe, but from whence is uncertain. Into South Russia came the Iranians, ancestors of modern Persians, and the Phyrgians into Armenia, and the Celts into western Gaul, and evidently into the British Isles. Bronze Age antiquities are abundant in northern Europe, but no literary work dates from before 300 after Christ. Among early Nordics in Europe were the Cimbri who came into Italy and Gaul from the northeast possibly. Crassus of Rome defeated the Bastarnae in the Dobrudja in 28 B. C. Today Nordics are the purest strain in the Scandinavian lands; but in South Bavaria only 14% are of blond type. Some of the Alpine Caucasian type are as far east in Europe as Rumania and northern Turkey. In recent centuries, two branches of the Celts are recognized in Great Britain: the Goidelic, such as Irish, Manx, and Scotch Gaelic people; and the Brythonic, such as the Welsh, Cornish, and Bretons. The Picts of Scotland, hard to classify, are thought to be of a mixed ancestry.

Likewise the Basques of Spain, some of the Portuguese, some people along the Illyrian coast, the early Pelasgiams, and the Gypsies are not yet clearly distinguished, but seem of mixed race, partly Caucasic. Among the early Hellenic peoples were the Achaeans, Argives, Leleges, and possibly Ionians, which some think earlier still for they resemble somewhat other tribes in north and central Europe in early ages.

4. *Slavic Caucasians.* Present Slavonic peoples are descendants of the early Scythians, Saramatians, and Massagetes of the region of the Oder and Dneiper Rivers. Today the main Slavic peoples are the Russians, Ukrainians, Poles, Czechs and Slovaks, Slovenes, Croats, Bulgars, and Serbs. The Southern Slavs, now called Yugoslavs, came from the Carpathians into the Balkans and Greece before 600. By 680 they had settled down in the regions still occupied by their descendants. Today the Albanians are among the remnants of the Illyrians, an early Aryan group once powerful in Bosnia and Serbia. Some of the eastern Russians have undoubtedly a mixture of Mongolian blood in their veins. In Russia proper or White Russia, Lithuania, and Poland are the fairest of the Slavic peoples.

5. *Other Caucasian stocks.* India is the home of many peoples, including some branches of the Caucasian stocks. Another mysterious race in this country is the Dravidians, either a very early or a pre-Aryan people represented today by tribes like the Tamuls, Tagalus, Canarese, Todas, and Khonds. Among far-off Aryans are the Ainus, a very primitive stock in Japan, Indonesians and Micronesians in the isles of the south Pacific, and a few others that left the first home of the Caucasians many centuries ago. Certain traces of Aryan culture are apparent in Australasia also.

II. MONGOLIANS, for the most part, have dark hair, yellow skin, high cheek bones, small nose, stature below the average, monosyllabic speech, and pastoral or nomadic habits. Three main branches will be described below.

1. *Southern Mongols,* such as the men of Tibet, part of Indo-China, China, Formosa, and some of Malaysia, seem to be the original stock. In Tibet at present the earliest traits persist, among them great belief in magic, polyandry, close tribal and family organizations, and resistance to foreign influences. The Himalaya region seems to have cradled the Mongols. In early ages, however, Tibet sent emigrants to Burma, China, and Mongolia as we call that land today. Lamaism still is the official religion of Tibet, one of the most primitive of faiths among civilized folk. In Indo-China Mongolian culture in the lowlands has greatly advanced, while the primitive inhabitants of the uplands still follow the customs of their ancient ancestors. The so-called Shan Mongols of Burma and eastward are said to be of Chinese origin. The Shans of the western borders of China are "free," but after 2000 years of missionary effort by Hindu and other priests they remain true to their ancient literature, culture, and religion. Annam and Siam also are under influence of Shan traditions, dating from 543 or later when they first established Labong and drove out their aboriginal predecessors.

2. *Ocean Mongols,* coming from the Malay Peninsula, spread out to Indonesia, the Philippines, Madagascar, and other regions. Malays is a broad, vague term for such people, called the brown race in early books. The Orangs, a tribe that migrated in recent times, became important in Sumatra. All stages of culture and religion are represented among Malay tribes. The Javanese adopted Hinduism 2000 years ago, have beautiful art, and a great literature. Borneo, Celebes, and Formosa, however, remain low in the scale. The Battas, for ages cannibalistic, for a long time fought off the Dutch. Among the Filipinos, three classes are mentioned Indios, Inñeles, and Moros each with subdivisions.

3. *Northern Mongols,* because of nearness to some nations of Europe, interest us most. Modern scientists use the term Finno-Turkish to describe several branches of the Mongols. In Europe, however, they differ so widely from those in Asia that many have believed them to be either Caucasians or at least a mixed race. "Scratch a Russian, and you find a Tartar" is an old saying that means the Russians, after all, are really Mongols. Let us now consider some types of northern Mongols.

a. The *Scythians,* like the Altaic people, went east or west as fancy or convenience prompted.

Some went from the Russian steppes to Media, married foreign wives, and took on traits of Aryans; but today those who otherwise resemble Caucasians are shown to be Mongols by their long, coarse black hair. Similar to these Scythians are the Parthians and Turkomans, who settled first in Iran, then went west, fought ably against Rome, and only in recent times were subdued by the Russians. Indo-Scythian and Baltic branches, also like Aryans, still betray their Mongol descent by undisputed traits and looks.

b. *Original Turki,* in some respects, seem to be a distinct people, possibly allied to the so-called White Huns mentioned in ancient Chinese, Greek, and Arab records. The White Huns dominated India from 425 to 650, but today are not identified clearly. Both Turki and Finnish Mongols, however, seem to have descendants in modern India. Somehow related to them were the early Uigurs, whom the Chinese called Kao-che, a high civilized and settled (that is, not nomadic) tribe. Both Buddhist and Christian missionaries converted many of them; they adopted Syrian characters in China about 635; and closely resemble the Turki stock. Some of them, possibly a southern branch, went westward to the Aral Sea by 200 of our era, and merged with the Finns in the Ural region. Other Uigurs, perhaps a northern branch, broke away from other Mongol tribes, and at last became part of a vast empire under the Great Khan. They are clearly distinguished in Turkestan today. Yet another eastern Mongol people, called Oghuz and other wise, spread into the Ukraine, Dacia, Balkan lands, and the Russian Caucasus. In southwest Asia they are still numerous; but in southeastern Europe they have blended with Slav and Rumanian tribes, such as the Great and Little Russians, Serbo-Croatians, and Walachians.

c. *Seljuk Turki,* an important branch of the Oghuz Mongols, gained an important place in history, even down to the Ottoman empire of the 19th Century. Their original chief, named Seljuk, took Persia in 1040, his son founded the University of Bagdad, and with Omar Khayyam made revisions in the calendar and in astronomy. Later kingdoms sprang up in Asia Minor, Armenia was conquered, and also Byzantium, and the tribe became Mohammedans and fought against the Crusaders. In Rumelia, Anatolia, and other Balkan regions Christianity greatly modified their life, customs, and culture. Around the Caspian Sea, the Seljuk Turki retain more of their old habits, including that of horsemanship, for which one branch, the Cossacks, have long been noted. The Cossacks, in some ways, today are least Russian of all the peoples that make up the huge Soviet system.

d. *Tatars,* sometimes wrongly called Tartars, consist of several Mongol peoples, notably those now in Manchuria and China, some inhabitants of Mongolia, parts of the Crimea, the Caucasus, and in mixed form in Siberia. The Tatar Republic is a part of the Soviet empire, with capital at Kazan. In literature the word Tatar or Tartar is loosely applied to those Turks who migrated westward into Asia Minor and parts of Russia. The Kazan and Astrakan Tatars are descendants of the "Golden Horde," part of which under the grandson of Genghis Khan swept over Asia Minor and eastern Russia in the 13th century.

e. *Other European Mongols.* Some of the Mongol strains, greatly modified and westernized, persist among the Finns, who seem of Altaic stock once dominant in the Urals and then in the valleys of the Volga. From there they branched out into Lapland, the present Finnish Republic, Livonia, Courland, and adjacent regions. The Finns came after the Metal Ages, in comparatively late times. The Bulgars (the name is modified from Volga), came into the Danube basin about 700; the Avars and Hungarians, allied to the Finns, into the same regions, mainly Pannonia and Hungary, from which base they descended into Italy and into what is now Alsace, Lorraine, and Burgundy. Eight other tribes joined them, chief of which were the Mogers, predecessors of the modern Magyar people. With the Avars these subdued the neighboring Slav tribes, but the Magyars, after St. Stephen embraced Christianity, settled down and continue to speak their own language, a modified Ural-Altaic tongue. Other small and scattered tribes in both Asia and eastern Europe have at least some Mongol blood.

III. NEGROES, either of pure or mixed stock, comprise two-thirds of the peoples of Africa and nearly all of the south sea islands, save for infiltrations of Malays and other races. Hundreds of separate tribes exist, many of which are hard to classify; hence, only the main groups may be given here.

1. *Hamites* in the north, such as the Afars in Ethiopia and Ogadain, the Bejas in the Arabian and Nubian deserts mainly, the Gallas of Ethiopia, the inhabitants of east Nubia, and the Gold Coast, and the Somaili in Somaliland and East Africa. Similar racial mixtures are the Berbers of Morocco, the Fulahs in west and central Sudan, and others south of the Sahara Desert.

2. *True Negroes,* those of pure black race, include those of Nigeria, Fashoda, Sierra Leone, Marua, and Zugeru, and the regions as far south as the westward bend of the continent. They have twisted or crisped hair, tall stature, and bulging forehead.

3. *Negroids* are the mixed tribes, most of them hard to place or describe. Today the chief branches are in the north Gold Coast, the Hausas in the Kano, the Kanuri in Bornu and other districts, the Mossi, Serere, and the Songhi, or Sonike in Senegal and Walata. Most of these show some Egyptian or other foreign influence. They once built great empires, such as that of the house of Sonni Ali of Hausaland in the 15th century, and many are Islamites. The Hausas are the pride of Africa, 5,000,000 in all, good farmers, peaceful, and fairly progressive. In the Lake Chad region, we find the Kenem, Kanuri of Bornu, and those Baghirmi who came under influence of the French in 1901. As late as 1872 some of these tribes built elaborate citadels in trees to protect themselves from being sold as slaves to Islam. By contrast, farther west in central Africa are the Zanadahs who deal in human flesh.

4. The Bantus are also a somewhat composite people, of many single tribes, making up the majority of black peoples south of the lake region. Over 400 dialects of the parent Bantu language are spoken by about 50,000 Negrillos in central and southern Africa. The main ethnic

divisions of the Bantus are the Ama-Xosa, Ashanti, Batotse, Basuto, Bechuana, Dahomey, Luba-Lunda, Mashona, and the Xosa and Zulu Kaffirs. They seem unrelated to the dwellers by the lakes. Some are pastoral, some nomadic; some agricultural and pacific and some hunters and warlike; some sell slaves to foreigners or did until of late, and some are rather advanced in mode of life and thought. The Zulu-Xostas profess long genealogical records. The Wa-Giraymas speak an archaic, perhaps primitive Bantu, worship their ancestors, but believe in a single Supreme Being like the Indian Manitu. The Wa-swahili have adopted the ideas, dress, and manners of Arabs. The Bechuanas, who rule from the Orange River to Lake Ngami under British protection, claim descent from animals, which they hold in great veneration. The Makolas in 1833 entered the Zambezi territory and subdued the Bechuanas, but curiously enough took the language of the latter.

Near the Limpopo River live the Kattea or Bad Men as other tribes call them, the most degraded savages of Africa. They live in the ground, eat human flesh, are low in stature but not pigmies, and speak their own language.

5. *Negrillos* are the pigmies of Africa, known for many centuries. Pepi II of Egypt before 3000 B. C. had a specimen brought to his court. The pigmies seem an early people, much more numerous once than now, and natural dwarfs, not rendered small by disease or injuries. They are nomadic, hunt mainly for their food, and are not high in the human scale. Negritos or Negrillos of low stature are also found in Malaysia, the Deccan of India, and the Andaman Islands.

6. *Bushmen,* an incorrect term for San, a peculiar people of six groups in Kalahari, Bechuanaland, Cape Colony, and adjacent regions. They seem related to the Pigmies, and by some are considered the aboriginal inhabitants of Africa. They have developed art, oral traditions, and a very curious language made up of a series of "clicks" or sounds imitative of animals. Somewhat resembling the Bushmen are the Hottentots or Khoi-Khoin, once thought an offshoot of the former, later a cross between the Bantu and Bushmen, and by some as a Hamitic people, and now as a separate group. Two tribes are extinct and two divisions still living in Southwest Africa, Orange Free State, Cape of Good Hope, and other regions.

7. *Island Negroes* exist in Australasia, such as the Papuans, Melenesians, who seem like the Bantu and Sudanese, men of New Caledonia, the Malay Peninsula, and in the Andaman Island resembling Negrillos.

IV. INDIANS, consisting of nine great families in the Americas, extend from Alaska and the Arctic to Patagonia. The main language groups are the Eskimos, the Athapascan of the northwest; Algonquin, southern Canada and eastward in the United States to the Atlantic; Iroquoian, Ontario and Quebec, the lake regions of Canada and New York, and southward to Alabama; Caddoan, central and southern areas to the Gulf of Mexico; the Shoshonean, Rocky Mountains and Southern California; the Yuman of Arizona and Lower California; the Mexican and three groups south of them. Within these families, many separate tribes exist, only a few of whom may be named.

1. *Eskimos* are a dark, short, stocky race, serious, good workers, and innured to hardships. They live on land in summer in snow-houses or in skin-tents, and in winter in better huts of snow and ice. Stefanssen found some blond Esquimos in Victoria Land, which are not yet fully identified. Of all the American peoples, the Eskimos most nearly resemble those stocks of northeast Asia.

2. *Mackenzie and North Pacific Groups,* with three distinct types, are somewhat nomadic, hunt and fish for food, and are in the copper age of culture. Some Canadian tribes bear names like Yellow Knives, Dog Rib, Hares, Chipewyan, Beaver, and Carriers. North Pacific tribes are the Tlinget, Haida, and Tsimshian in the north, Coast Salish, Nootka, Chinook, Chimakuan, and Bellacoola in the central and south. Some trace through the mother and some through the father as to family groups. Some have three social orders and forbid marriage in the same clan. They have a system of totemism, believe in guardian spirits, and have a primitive mythology. Between these and the Indians of the plains region are tribes like the Nez Perces, Shoshoni, and Shushwap. The mountain or plateau tribes are intelligent and independent in family organization, with the old men as heads and leaders. The California Indians differ from the others in having little weaving or pottery, but good basketry.

3. *Plains Indians* once depended on hunting the buffalo, did not till the soil with any skill, lived in *tipis* or movable tents, made little pottery, but excelled in making clothing from skins. Some of the tribes are the Blackfoot, Crow, Cheyenne, Comanche, Omaha, Osage, Oto, Pawnee, Poncha, and Wichita. Of all plains Indians perhaps the Dakotas were highest in civilization. All these tribes called their great Manitu by the name of *Wakonda.*

4. *Eastern or Woodland Indians* are best known to us through the highly cultured Iroquois or six tribes of central New York, who excelled in agriculture, weaving, and bone and stone work. Others were the Ojibways, now surviving in Canada, the Ottawa, Peoria, Kickapoo, Shawnee, Sauk, and Fox, all these farther west than the Iroquois, while the Algonquins were south and east of them. Less highly developed tribes in the southeast were the Creek, Seminole, Chocktaw, and others less well known.

5. *Southwestern Indians* have recently attracted much attention because of their arts of weaving, pottery, and basketry, and their tribal religious ceremonies and dances. Two types have long existed,—the pueblo or settled Indians, living in clusters or apartments close together, and the nomadic tribes of the same regions.

6. Among the other groups are the *Mexican, Inter-Isthmian, South Atlantic,* and *South Pacific* tribes. The Aztecs and Toltecs in Mexico, the Incas in Peru, the Mixtecs and Zapotecks in Central America, the Mayas in Yucatan, the Quiches in Guatemala were all highly developed. The Mayas built great pyramids, the Incas developed a remarkable political system and accumulated great wealth, and the Toltecs developed peculiar arts of stone and wood.

COURSES AND CURRENTS
OF THE
WORLD'S HISTORY IN GRAPHIC OUTLINE.

A SURVEY OF THE RECORDED EVENTS IN THE HISTORY OF MANKIND IN ALL COUNTRIES FROM THE EARLIEST TIMES TO THE PRESENT DAY. ARRANGED SYNTHETICALLY TO SHOW THE GREAT MOVEMENTS OF EVENTS, THE ACTORS, THE TIMES AND COUNTRIES IN WHICH THEY LIVED. DESIGNED FOR COMPARISON, CONTRAST, QUICK REFERENCE, AND TO DISPLAY A CHRONOLOGICAL OUTLINE OF THE HISTORY OF ALL NATIONS.

A. PREHISTORIC TIMES.

B. PERIOD OF RECORDED EVENTS.

I. The Earliest Civilizations.

1. From the earliest known Records to the Age of Abraham (B. C. 4700-2200).
2. From the Age of Abraham to the Death of David (B. C. 2200-993).
3. From the Death of David to the Time of Cyrus (B. C. 993-558).
4. From the Time of Cyrus to the Time of Xerxes (B. C. 558-480).

II. The Greeks and Romans.

1. From the time of Xerxes to Hannibal (B. C. 480-200).
2. From Hannibal to the Death of Caesar (B. C. 200-44).
3. From the Death of Caesar to the Death of Alaric (B. C. 44-A. D. 410).

III. Middle Ages.

1. Death of Alaric to Coming of Charlemagne (410-768).
2. Coming of Charlemagne to the Death of Hildebrand (768-1085).
3. Death of Hildebrand to the Fourteenth Century (1085-1300).
4. Fourteenth Century to the Invention of Printing (1300-1450.)

IV. The Renaissance.

1. From the Invention of Printing to the Reformation (1450-1517).
2. From the Reformation to the Abdication of Charles V. (1517-1556).
3. From the Abdication of Charles V. to the Assassination of Henry IV. of France (1556-1610).

V. Period of Political Unrest.

1. From the Assassination of Henry IV. to the Death of Oliver Cromwell (A. D. 1610-1658).
2. From the Death of Cromwell to the Death of Louis XIV. of France (1658-1715).
3. From the Death of Louis XIV. to the Coming of George Washington (A. D. 1715-1775).
4. The Time of Washington (1775-1799).

VI. The Age of Science, Mechanical Progress and Democracy.

1. From the Beginning of the Nineteenth Century to the Introduction of the Railway (1799-1830).
2. From the Time of Stephenson to the Election of Lincoln (1830-1860).
3. From the Election of Lincoln to the Founding of the German Empire (1860-1871).
4. From the Founding of the German Empire (1871) to the World War.
5. From the World War to the Present Day.

A. MAN IN PREHISTORIC TIMES

When did man appear on this earth? Scientists hesitate to be positive. If we divide all geological time into three great parts, *Miocene*, the earliest, which some say was 900,000 years in duration; *Pliocene*, estimated at half that number; and *Pleistocene*, about 400,000 years, man appeared very recently on this earth, a statement which agrees with the *Bible*, if the word *day* there is taken as a long period of time. On the same scale, the age of man might be from 200,000 to 500,000 years.

Whether man originally belonged in a small area is not yet shown, but little evidence is found to contradict this theory. It is possible that the races of man, emigrating from one single place, developed marked differences in new habitats. Remains left by bygone generations have appeared in many parts of the world. Various strata have yielded definite traces of primitive cultures, thousands of years ago. Man passed from the time when he used whatever was at hand to help himself, as animals may do today; second he began to chip stones very rudely; then round them or put them into forms; next to make scrapers, cutters, awls; then to decorate his cave homes and to acquire rudiments of art; and finally to work in metals. Less than four centuries ago the Dutch found in Tasmania some aboriginal men who had no shelter, no bows and arrows, (only spears), no animals, no agriculture, for they never had heard of sowing grains. They had no arts of any kind, no clothing, no metal work. Indeed, they were Stone Age men. This illustrates that man has not developed all over the world with any degree of uniformity. Some tribes today are still in the early metal ages, or even emerging from the stone periods. The Tasmanians could build a fire, could make a good spear of wood, could chip a flint to make a rude knife, and could weave containers for food and natural products of tree and soil.

Once two *Stone Ages* were mentioned, the Old or Paleolithic; the new, or Neolithic. Now archaeologists speak of the Old, Middle, and Late divisions of the Stone Age. Objects made by man or artifacts (literally something fashioned by art) show the stages of culture. In Europe, particularly in France, excavations have shown that man existed along with animals, save that no dog, horse, or friendly domesticated animals existed; all wild creatures and men were natural enemies. Hence man learned to make a rude "fist-hatchet," simply by chipping some stones to fit the hand. Then the ice age came, and man could not survive in northern latitudes like Europe. He was driven into Asia, and in America southward below the Great Lakes. The Sahara desert then was fruitful and wooded. The Nile then was a vast river, just as the Mississippi and Missouri. It is possible that early man found his refuge in the valley of what is now Egypt and to the southward into central Africa. The *Middle Stone Age* when the ice came down a fourth time, man took to caves in Europe, had learned to chip stones to make sharp knives and cutters of all sorts, had learned to fashion objects from horns, ivory, and wood. He produced barbed spear-points of ivory, flint daggers, spear-throwers. All these are found in various parts of the world, layer after layer, many feet deep in the ground. Archaeologists today study these different layers and learn much of past ancestors of modern man. The Middle Stone Age developed some art, belief in superior beings, and even in life in some far-off future time, or a return from the dead. Along the Mediterranean is a cave at Grimaldi which shows the different layers of civilization; others have been found in France; and especially the cave where the Neanderthal bones were found in the Rhine valley.

By the end of the Middle Stone Age, black, fertile soil came down the Nile into the deep valleys. Even before this time a rich civilization seems to have existed on the north shore of the Mediterranean, such as in Crete, Greece, and farther inland even. In the *New Stone Age* agriculture developed, and man then became a food producer, and not merely a finder. Some tribes or groups settled in one place, made better weapons, learned that clay will harden when baked (first knowledge of brick-making), buried their dead along with weapons and utensils for their later use, and at last began a regular culture. Not long ago a pin made of copper was discovered in a grave that must be at least 7000 years old. This is at least 1000 years before the days of history or even of oral tradition,—some say 2000 or 2500. Egypt very early had copper mines in what is now Palestine. Flint from Britain, amber from around the Baltic, and other products were traded with men of other regions. No money or written language existed. Between 4000 and 3000 B.C. a civilization began to develop in the Near East,—the lands about the Mediterranean. Then history begins. In this period man had learned to work in iron, then in bronze, and at last in copper. This period just before authentic records begin has been called the *Metal Age.*

Prehistoric Man Himself. Much speculation has given little light as to what sort of creature man was some 10,000 to 15,000 years ago, if he existed that far back. In 1892 certain bones were found and named *Pithecanthropus erectus*, the scientists Latin description of a creature that stood up, had hands well developed, and could move about at will. Perhaps he could not talk, and doubtless did not think as we use that term. His skull resembles that of the gibbon and the lemur among animals known today, but he was advanced far beyond them. Since then it has been shown that this specimen belongs at the upper range of the Pliocene geological age. The *Homo Heidelberg*, since discovered, is placed later than *Pithecanthropus erectus*. His jaw resembles that of man in teeth, and simians or the man-like apes in the rest of the skull and absence of much chin. The *Neanderthal man*, found along a Rhine tributary in 1857, had a deep set skull, a head of abnormal size due to accident or disease, and may have been a simian. Other fragments have been found at Piltdown, England, at Gibraltar, in Croatia, and near Dordogne, France, the so-called Cro-Magnon man.

B. PERIOD OF RECORDED EVENTS

Archbishop James Usher (1580–1656) prepared a Bible chronology in which he fixed the Creation at 4004 B.C. Modern knowledge finds his dates impossible; for it is now sufficiently proved that man existed long before this time. Definite dates much before 1500 B.C., however, are uncertain, subject to adjustment, and still in dispute among the scholars. According to earlier estimates, Menes of Egypt began to rule in 5600 B.C.; later authors fix the date as 3600 or even 3000 B.C. The dates given below for Egypt are from the *Cambridge Ancient History*, Weigall, Breasted, and Baikie, who give us the results of recent excavations, interpretations of monuments, and other evidence. Much confusion in older chronology was due, in part, to the fact that many Egyptian kings admitted their sons or heirs to rule with them in their last years, and the time was counted for both monarchs. Manetho, an Egyptian priest, about 300 B.C. wrote histories and fixed the chronology, but only fragmentary quotations remain, with later distortions of his material. A papyrus now at Turin, inscriptions of the middle and later monarchies, and other lists give some uncertain light. For the other early dates,—for Babylonia, Assyria, and other nations,—the *Cambridge History* is the main authority used in the compilation printed below.

From the earliest known records to the time of Hammurabi, B. C. 4500-2200.

Dates B.C.	Egypt	Tigris—Euphrates Valley
5000	Legendary men and kings, descended from gods. No record of migration of Egyptians from other lands.	Sumerians established in Mesopotamia. Resemble early Semitic people. Middle Asia then perhaps well-watered.
4500	Calendar set up, 4241	Semites conquer Kish, east of Babylon. Tradition gave kings long reigns,—one 400 years, probably his dynasty.
4000	Hieroglyphic writings or pictographs lost to us. Abydos tomb had list of kings before Menes.	Good pottery made at Susa in Elam and at Sumer; remains of neolithic man near, 175 feet below surface.
3600	Still legends only of kings and their deeds. Men said to descend from the gods. Each early king chose special god.	Third dynasty at Kish, 3638. Definite records begun. Each town had its protecting god. Eight kings mentioned.
3500	Menes, first historical king, ruled upper (south) Egypt. Memphis mentioned. Eight kings ruled 264 years; one queen in dynasty. Art objects found in their tombs at Abydos.	Nippur was early sacred city. Names of other chief towns, Adab, Akkad, Akshak, Lagash, Sumer, and Umma. Rule passed first to one, then to another; some coalitions.

Dates B.C.	Egypt	Tigris—Euphrates Valley
3300	Second dynasty, with overlapping of reigns. Time of religious strife. Some worshipped animals; a few the sun. Gods had animal heads as pictured. Sixth king added name of sun to his title. Chenere, 9th king, restored south dynasty along middle Nile. War with north people.	
3200	Third dynasty, six kings. Libyia subdued; navy used against them. Stone work first used for temples. Cedar brought from Lebanon. Second king built great step pyramid at Sakkârah.	By end of century, Akshak became prominent in Sumeria. Babylon not yet founded. Towns of Legash and Umma also strong. Many early clay tablets found telling events of this age. First certain dates in Tigris valley.
3100	Fourth dynasty, seven kings Kheufu or Cheops great religious reformer, best known early king. Fought Bedouins. Built largest pyramid of all; Menkaura, his son, next largest; and latter's son, smallest of the great Gizeh group. Copper mines worked. One diorite statue of superb beauty has come down to us. Other fine works of art.	Lagash dominates. First important inscription of king Ur-Nina. Temples of biscuit-shaped bricks. Akurgal, son of Ur-Nina, priest and king, slew Ush, king of Umma. His sons and others powerful. They completed a canal to shut off Umma, but latter took it and diverted waters. Cuneiform (wedge-shaped) letters.
3000	Fifth dynasty, nine kings. Sephra, second, built great sun-temple at Abusir. Warred on Bedouins and Phenicians. The 8th king, Dedkere, had prince Ptanhotepe (perhaps his uncle) compile fine book of maxims, some say earliest written literature now known. The maxims look very modern. Onnos, last king, established custom of inscribing ritual of the dead on the walls of his pyramid.	Kish overthrew Lagash, during time of Akurgal. To commemorate this, he set up a stele (upright slab) with exquisite carvings on it.
2900	Arthur Weigall's' *History of the Pharaos* give all these dates about 375 years later. Fifth dynasty, for instance, 2708 to 2587.	Ukurgina threw off yoke of Kish, and assumed title king of Lagash. Sent offerings to gods at Nippur, sacred city. Great mass of records extant from this time. Literary style fixed for the chroniclers. Oldest code of laws compiled. Lugal-zaggasi claimed dominion from Persia to Mediterranean. Umma overcame Lagash. Sargon deposed Lugal (2870), and Agade became dominant. One story of Sargon like that of hiding Moses in the bulrushes. Sargon invades the west; founded Semitic kingdom. Priests prominent. Curious hepatic or liver prophesies resembling Roman auguries.
2800	Sixth dynasty, six kings, the first being Thoe or Toti. He retained his personal name, as Onnos did, a new custom. His death mask, first yet discovered, shows him as young man. Some say he was killed by palace guards. Pipp or Pepy, third, dated his reign back, as if second king, was usurper,—2795–2742, being exact date. Fine copper statue of him still extant. Menere, fifth king, went to Nubia in state. His mummy, found in 1880, shows him too as young man. He used Nubian troops to fight Palestine. Pepy II ruled 90 years; Manetho says 94. Last king of line sent to Sudan to get a pygmy for his court.	After Sargon, two priests ruled briefly, then his son, Naram-Sin, a great warrior, who put down a rebellion at home, a coalition of kings against him, and brought back much loot.
2700	Seventh to Tenth dynasties, an obscure period. About 23 kings, 300 years in all. One queen. Two foreign kings. Memphis now capital. Four in 9th dynasty all had last name or suffix Akhtoi. Story says first was eaten by a crocodile "because of his sins." In 10th age, Thebes came to rule by rebellion. Asiatics invaded Egypt in this time.	Town of Guti began to excel Sumer and Akkad. Gudes became king of Lagash. Ur restored many old works and monuments.
2500		Fifth dynasty of Erech founded about this time.
2400	With the eleventh dynasty, the Middle Kingdom began in Egypt, with capital at Thebes. (Early kings often built new capitals.) Fourth king conquered the delta region and ruled all Egypt, perhaps first to do so. This was the bronze age in Greece. All of 11th dynasty bore last name of Menotep.	Amor became prominent. Ur subdued by Amor and Elam. Sumer in power also, with king of Assyria paying tribute. Isin and Larsa now rising to rule. Old order breaking down. Cappadocia attached to eastern empires. Bronze age in Asia Minor and Crete.

From the time of Hammurabi to the Death of David 2200-about 1000 B. C.

2200	Twelfth dynasty, with 7 kings and 1 queen. New land made by dyking a lake. Copper mines highly developed near Mt. Sinai, controlled by Egypt. New arts of gold working. Nubia conquered to second cataract of the Nile. Egypt and Crete trading. Civilization moving westward on Mediterranean shores.	The great Hammurabi ruled for 43 years from 2123. Fortified Babylon, now an important town; conquered Rim-Sin of Ur, and took immense booty. Built a canal for Sumer and Akkad. Best known for his Code of 285 laws, inscribed on fine black diorite monument, discovered in 1901 at Susa. The laws came from Sumer and other ancient places; some original.
2000	Thirteenth and fourteenth dynasties, a time of uncertainty, with 130 princes contending for honor and power. No great progress. Foreign influences. Indo-Europeans appeared in the regions about the western Asiatic countries.	Kassites raid Babylonia in 2072. The sea-country developed. Ur and Uruk destroyed by son of Hammurabi, a great warrior. In 2042 a great dam was built to keep Nippur in subjection; floods prevented the making of permanent marshes as intended. Caravans now going east and west.
1900	Hyksos or shepherd kings from Syria took Egypt, after struggle with Thebes. Josephus says they were Semites. They confined their rule to the Egyptian Delta, and let native princes hold sway in upper Nile country. Used bronze scimitars. Apopis the name of several of them.	Kassites finally subdue Babylon in 1746. They came from the mountains to the east, were of a hardy but inferior stock, and destroyed much of the splendor and art that developed after the time of Hammurabi.

Dates B.C.	Egypt	Tigris—Euphrates Valley
1600	War arose because a Hyksos king said that the roaring of the royal hippos of Thebes disturbed his sleep at Avaris. Ahmose (Amosis) captured Avaris and ended the Hyksos line about 1600. Palestine and Phenicia conquered.	By 1700 also Assyria was growing in power as rival of Babylon, to which it had been subject. Recent discoveries in Greece, Crete, the Cyclades of the Mediterranean, and the shores about the Aegean Sea, show a rich art and high development, somewhat comparable to that of Egypt and Babylon.
1500	Eighteenth dynasty, of which Thothmes I and III, and the four Amenhotep kings were notably great. The wife of Thothmes sent a whole fleet to Put (*Phut* of our *Bible*). Thothmes III was a great warrior in 16 campaigns. Took Carchemish and many other towns and regions in Asia. Built the gigantic Ammon temple at Karnak. Amenhotep III built Luxor. Amenhotep IV, great religious reformer, built a new capital and took the name Ikhnaton, which see in index.	
	Ikhnaton died about 1358, leaving no son, but a daughter married King Tutankemen, whose tomb was found in Egypt in 1922. It contained undreamed splendors of precious things, showing the high state of art in this dynasty. Shortly after his death, the empire declined.	Palestine under Egyptian influence. Hatti, Mysia, Cilicia, Podesa, and others ally against Egypt.
1300	Twentieth Dynasty began about 1350 with usurpers after King Tut. Harmhab, before long, gained the throne and did much to restore the land to prosperity. Rameses I, 1315, succeeded, with Seti I, his son co-king, and successor in the next year. Bedouins overran Palestine, and Seti I drove them back and took the country even to Lebanon. Made his subjects furnish many cedar logs. Restored the monuments, built many more, and ruled in splendor. His tomb one of the most magnificent, and his mummy still extant. Seti I started the great obelisks. Ramses (Rameses) II, younger son, obtained throne. Made war on Kadesh, Palestine, Syria, and Arabia, and won them after an initial great defeat. Merenptah (1225) desecrated many of the works of art, revolt ensued, and final anarchy.	Sidon in Phenicia becomes strong. For three centuries or more this land had been perfecting the arts of dyeing, weaving, working in metals and in glass. Assyria and Rameses of Egypt make a "great treaty," 1266. By 1250 Hittite power on the wane. Shalmaneser I in 1276 reaches Carchemish, conquers Cappadocia and Hani. The Hatti, a new power, help the Hani. Tukulti, 1256, conquers the northwest, captures Babylon, but is murdered by his son. War with Kassites. Israel first mentioned. Bedouin tribes warlike and trouble Babylonia. Beginning of Greek heroic age.
1200	Rameses III (1198) fought off the Philistines and two attacks by Nubia. Egypt ceased working mines in Sinai. About 1150 tombs looted.	End of Kassite dynasty in Babylon. Philistines mentioned, and the Phenicians become more powerful. Aramean peoples migrate to the westward. Trojan war in this period in north Africa.
1100	Delta kingdom independent. Egypt loses Ethiopia (Abyssinia).	Edomites become important. Age of judges in Israel perhaps. Mycena in Crete declines after very high culture as shown by recent excavations there. Phenician arts greatly influence districts about the Mediterranean.
1000	Decline of Egypt under way.	Babylonia wars on Assyria (1107). Nebuchadrezzer defeats Elam, but is humbled by Assyria.

From the Death of David to the Time of Cyrus, about 1000 to 558 B. C.

B. C.	DISCOVERIES, ARTS, CRAFTS.	EGYPT.	TIGRIS-EUPHRATES VALLEY.	SYRIA. Hebrews.	OTHER COUNTRIES.	GREECE.
993?	The "Iliad" and "Odyssey" produced. New Tyre, on an island, and Old Tyre joined by earth fillings under Hiram, the friend of Solomon. Temple of Jehovah built by Solomon. New palace at Jerusalem. Ivory brought to Solomon from Tarshish. Commerce of the Hebrews very extensive. Assyrian architecture, building, sculpture, and literature at its height after 930.	Twenty-second Dynasty, 961-940. **Shishak**, 961-940. Invades Judea and plunders the Temple at Jerusalem, 949.	Brilliant epoch in Assyrian history begins, 930-626. Babylonians constantly at war with Assyrians down to 710.	**Solomon**, 993?-953? Rehoboam, king, 953? Rebellion against Rehoboam; afterwards two Hebrew kingdoms: Judah, loyal to Rehoboam, and Israel, the revolting tribes, under Jeroboam (953-927). Abijah, king of Judah (932?-929), takes Bethel and other cities from Jeroboam. Asa, king of Judah, 929-873. Nadab, king of Israel (927-925), slain. Baasha, king of Israel, 925. Elah, son of Baasha, slain by Zimri.	Zoroaster or Zarathushtra lived about 1000? in Persia. Ethbaal or Ithobalus, high priest of Astarte, murdered Phales, last of the line of Hiram, and becomes king of Tyre, 917?	Rhodians beg navigation laws, 9
900	Beginning of civilization in Mexico and Central America.		Assyrians invade Persia in the ninth century.	Omri, king of Israel, 899. Ahab, king of Israel (877?-853). Contest of the prophets with the idolaters.	The Phœnicians become subject to the Assyrians, 850.	Constitution a laws of Lycurgu 820?

From the Death of David to the Time of Cyrus, 993-558 B. C.

B. C.	DISCOVERIES, ARTS, CRAFTS.	EGYPT.	TIGRIS-EUPHRATES VALLEY.	SYRIA. Hebrews.	OTHER COUNTRIES.	GREECE.
900	Breastplates invented by Jason. Art of alphabet writing by Phœnicians, 900.		**Asshur-natzir-pal** or **Sardanapalus** reigns in Assyria, 886-858. Shalmaneser II., king of Assyria (858-823), wins a victory over Ahab, king of Israel, and allies, at Karkar. Later subjugates Jehu. Rammannirari, the king of Assyria (810-787), captures Damascus and makes Samaria and Philistia tributary. Sammuramit, or Semiramis, was his queen.	Famine in Israel; predicted by Elijah. Miracles of Elisha. Jehoshaphat, king of Judah, 873-848. Ahaziah, king of Israel (853-851). Jehoram, king of Judah (848-844), marries Athaliah. Joram, king of Israel (851-843), assassinated by Jehu. Ahaziah, king of Judah (844-843), slain by Jehu. Jehu, king of Israel (843-815), slays Jezebel and sons and grandsons of Ahab. Athaliah, queen of Judah, 843-837. Joash, king of Judah (837-797), purchases retreat of Hazael, king of Syria.	Carthage founded, 850. Decline of Phœnician power in Tyre.	Pheidon, eminent sculptor, flourishes, 900.
800	Solar eclipses recorded in Assyria, 763. Extension of Greek colonies in the Mediterranean and Black seas, 750. The Chaldeans first observe an eclipse of the moon at Babylon, 721. Roman calendar of ten months reformed and made twelve, 710. Priesthood, augurs, and vestals instituted in Rome, 710.	Twenty-third dynasty, 800. Sebacon invades Egypt, 735. Twenty-fifth dynasty, 730. Ethiopians, under Shabak, conquer Egypt, which they govern for 58 years, 730. Sennacherib's invasion, 705.	Tiglath-pileser II. or Pul (745-727) subjects Babylonia to Assyria, 730. Shalmaneser IV. (727-722) suppresses revolt of Phœnician cities and Israel. Sargon (722-705) destroys the kingdom of Israel, conquers Samaria; subdues revolts in Armenia, Media, and Babylonia, uniting the latter to Assyria; receives tribute from Arabia, Egypt, and Cyprus. Sennacherib (705-681) subdues revolts in Babylonia; unsuccessful in war with Egypt and in the siege of Jerusalem, (700); loses his supremacy over Syria.	Amaziah, king of Judah (797-792), murdered at the capture of Jerusalem by the Israelites. Uzziah, king of Judah, 792-740. Judah becomes tributary to Assyria to escape Damascus and Israel. Jeroboam II., king of Israel (790-749). gives Israel a brief revival of power. Israel made an Assyrian province by Pul, 741. Hoshea, last king of Israel, defeated and captured by Shalmaneser IV., 734. Hezekiah, king of Judah (728-697), allied with Egypt to evade tribute to Assyria. Israel destroyed by Sargon of Assyria, 722.	Romulus, king of Rome, 753. Caeninians defeated; first triumphal procession in Rome, 748. Rome taken by the Sabines; Sabines incorporated with the Romans 747. Romulus ordains Circensian games, 732. Romulus said to have been killed, 716. Numa Pompilius, king of Rome, 715-673. Media made subject to Assyria, 710. Deioces reigns as subordinate prince in Media, 708.	First Olympiad, 776. Until this date the archons of Athens were elected for life; now chosen for 10 years only, 752. First Messenian War, 743-723. Syracuse founded by Archias, 734. Sybaris founded, 721. Tarentum founded by Phalanthus of Sparta, 708.
700	Samians (Greek colonists) discover Spain, 700. The library of Asshur-bani-pal founded at Nineveh, 630. First Athenian code of laws promulgated, 621. Thales calculates eclipses, 610. Highest development of Assyrian art. Capitol at Rome founded, 615.	Assyrians, under Esarhaddon invade Egypt and abolish Ethiopian rule there. Egypt divided into 20 governments, the ruler of each bearing the title of king, but to a certain extent under Necho, ruler at Memphis, 672. Tirhakah rallies Ethiopians, and expels Assyrians, 670. Asshur-bani-pal expels Tirhakah, 667. Egypt for 20 years devastated by Assyrians and Ethiopians. Twenty-sixth dynasty, 653-525. Psamethik, son of Necho, unites the Egyptians and founds a strong monarchy and rules over it at Sais. Resists successfully Assyrians and Ethiopians alike, 653-610. Carries on wars with Syria, Phœnicia, and Palestine.	Esarhaddon (681-668) suppresses revolt of Babylonia, reconquers Syria, Phœnicia, Cyprus, Judah, and part of Arabia; in 672 takes Egypt from the Ethiopians. Asshur-bani-pal or Sardanapalus (668-626) defends Egypt against Ethiopia, but loses it in revolt of Psamethik (653), confirms power in Syria, Arabia, Cilicia, and Babylonia, conquers Elam and receives tribute from Lydia. Medes revolt, 640. Irruption of the Scythian tribes, 632. Sarakos (626-608?) struggles desperately with Cyaxares of Media and Nabopolassar or Nabu-ablautzar (governor of Babylon since 625). After a long siege Nineveh is taken and destroyed. Assyrian Empire ends, 606.	Sennacherib besieges Jerusalem, in vain 700. Manasseh, king of Judah (697-642), introduced the worship of Astarte at the temple and indulged in heathen practices in opposition to the prophets; carried captive to Babylon, but restored. Josiah, king of Judah (640-609). Reaction against idolatry. Jeremiah the prophet. Judah ravaged by the Scythians, 632. Battle of Megiddo; Josiah is slain and Judah becomes subject to Egypt, 609. Phœnicia subject to Egypt, 608. On defeat of Necho at Carchemish, Judah and Phœnicia become subject to Babylonia, 605.	Tullus Hostilius, king of Rome (673-641), destroys Alba Longa, transfers its inhabitants to Rome. Wars with Veii and Fidenæ. Jimmu Tenno, first mikado of Japan, 660-585. Phraortes rules Media (655-633); makes it independent of Assyria (640); conquers Persia, Armenia, and other countries. Ancus Marcius king of Rome, 641-616. Cyaxares reigns in Media (633-593); in alliance with Babylon after a desperate struggle ends Assyrian Empire, 626-608. Ostia, at mouth of the Tiber, built, 627. Gautama, founder of Buddhism, born, 624. Tarquinius Priscus, king of Rome, 616-578. War between Lydians and Medes, 610.	After this date there were nine archons chosen each year, serving one year only, 682. Sea fight, the first known to history, between Corinthians and inhabitants of the island of Corcyra, 664. Greek settlement at Naucratis in Egypt, 660. Byzantium built, 657. Second Messenian War, 645-628. Solon, 638-558. Insurrection of Cylon, 624? Draco gives Athens a severe code of written laws, 621.

From the Death of David to the Time of Cyrus, 993?-558 B. C.

B. C.	DISCOVERIES, ARTS, CRAFTS.	EGYPT.	TIGRIS-EUPHRATES VALLEY.	SYRIA. Hebrews.	OTHER COUNTRIES.	GREECE.
700	Attempt to cut a canal from the Nile to the Red Sea. Phœnicians circumnavigate Africa for Necho. Hanging gardens of Babylon. Bridge over Euphrates.	Necho the son of Psamethik, king (610-595). Undertakes expeditions to Syria. Defeats Josiah, king of Judah, at Megiddo (609). Defeated at Carchemish; loses Asiatic conquests.	Assyria becomes a Median province, 606. Nebuchadnezzar defeats Necho near Carchemish, 605. Nebuchadnezzar is king of Babylon, 604. Babylon takes lead with Media.			
600	Approximate date of the school of philosophy in Greece. Thales teaches the spherical form of the earth, 600. Æsop's *Fables*.	Psamethik II. king, 595-589. Fruitless expedition against Ethiopia. Hophra or Apries, king, 589-570. Egypt devastated by Nebuchadnezzar 579-572. Aahmes or Amasis, king (570-526), makes alliance with Greece (569). Erects many fine buildings.	Jerusalem destroyed by the Babylonians, under Nebuchadnezzar, 586. Nebuchadnezzar besieges Tyre, 586-573. Cyrus, king of Persia, 558-529. Median supremacy passes to Persia.	Attempt of Judah to revolt suppressed, Jehoiakim slain, and many captives carried to Babylon, 597. With aid of Egypt, Judah again tries to gain independence. Jerusalem destroyed and the inhabitants, including the prophet Ezekiel, carried captive to Babylon, 586. The Babylonian Captivity, 586-537.	Media the most powerful monarchy of Asia, 600. First census of the Roman state taken, 566. Astyages, last king of the Medes, 593-558. Servius Tullius, king of Rome, 578-534. Wars with Veii.	First sacred wa 600-590. Reforms of Solo 594. Seven sages Greece—Thales, S lon, Bias, Chilo, Cle bulus, Periander, ar Pittacus, 590. Pisistratus rules Athens, 560. Emigration Athenian nobles Thracian Che sonese.

From the Time of Cyrus to the Time of Xerxes, 558-480 B. C.

B. C.	DISCOVERIES, ARTS, CRAFTS.	EGYPT.	PERSIAN EMPIRE.	ROME.	GREECE AND MACEDONIA.	OTHER COUNTRIES.
558	Buddhism introduced into India, 557. First sundial at Sparta erected about 545. Temple of Artemis at Ephesus built. Callimachus, eminent Greek architect, flourished. The air supposed by Anaximenes of Miletus to be a self-existent deity, the first cause of everything, 530. Phamenides of Elea said to have discovered the identity of morning and evening star, 520-460. Couriers common in Persia, 510. Laws of ostracism established, 510. Temple of Capitoline Jupiter dedicated, 509. Temple of Zeus at Ægina begun, about 508.	Pythagorus visits Egypt, 536. Egypt made tributary by Cyrus, 535. Psamethik III., king, defeated by Cambyses at Pelusium. Egypt becomes a Persian province, 525.	Persian Empire, including Persia, Assyria, and Media, founded by Cyrus, 558. Conquest of Lydia by Cyrus, 554?. Cyrus captures Babylon, 538. Belshazzar, 538. Cyrus ends captivity of Jews, 537. Building of new temple begun at Jerusalem, 535. Death of Cyrus and accession of Cambyses, 529. Cambyses (529-522) conquers Egypt and makes it a Persian province, 525. Darius I., king of Persia, 521-485. Haggai, 520. Zechariah, 519. Darius conquers India, 518. Dedication of the second temple at Jerusalem, 516? Invasion of Europe by Darius, 513. Darius crosses the Bosporus on bridge of boats and marches to the Danube, 508.	Tarquin the Proud, 534. The Tarquins vanquished, 509. Republic consuls, 509. Capitol finished, 507. Dictators 501.	Pisistratus dies, after a long rule at Athens, 527. The Pisistratidæ expelled from Athens: democracy established, 510. Republic under Cleisthenes, 509. Sparta at war with Athens, 506.	Confucius (551-47 born in China, in th reign of Sing-wang Lydia united wit the Persian Empir 549. Death of Buddh the reformer India, 543. Cyrus makes wa on the Babylonian and adds the Bab lonian Empire to th Persian Empire, 53 538. Phœnicia becom subject to Persia, 53 Cambyses of Pe sia (529-522) con quers Egypt by th battle of Pelusiu and Egypt becom a Persian provinc 525.
500	Behistun rock containing records of Darius' reign, 521-485. All the arts flourish in Greece, 480-330. Temple at Agrigentum begun, 480. Daphnis and Mycon, Greek architects, flourish about 450. Xerxes builds a bridge of boats across the Hellespont.	Egypt revolts: subdued by Xerxes, 487.	Athens provokes wrath of Darius, 500. Ionians revolt and burn Sardes, 500. Mardonius of Persia invades Greece. Conquers Thrace and Macedonia, 493. Darius sends an army of 500,000 into Greece, (490). Defeated at Marathon. Egypt revolts; subdued by Xerxes, 487. Death of Darius; Xerxes accedes, 484.	Battle of Lake Regillus: Latins defeated, 496. Tribunes chosen, 494. First secession of Plebs, 494. League formed between Romans and Latins, 493. Coriolanus is banished. With the Volscians he besieges Rome. Retires at his mother's rebuke and wife's entreaties, 491. The first agrarian laws, 486.	Graeco-Persian wars, 500-449. The first Persian expedition against Greece, 493 (492?). Persian fleet nearly destroyed by a storm near the promontory of Athos, and army suffers defeat. The second Persian expedition against Greece, 490. Miltiades defeats the Persians at Marathon.	Darius quells a r volt of the Ionia Greeks who had ca tured and burne Sardes, 500-494. Battle of Lake R gillus: Latins d feated, 496.

From the Time of Xerxes to the Time of Hannibal, 480-200 B. C.

B. C.	DISCOVERIES, ARTS, CRAFTS.	GREECE AND MACEDONIA.	ROME.	OTHER COUNTRIES.
480		Third Persian expedition against Greece under Xerxes, 480. Thessalians and Bœotians submit to Persians, 480. Battle of Thermopylæ, 480. Indecisive sea fight at Artemisium, 480. Battle of Salamis, 480.		Persian War against Greece, 480. War of the Carthaginians, allied with Selinus, against the other Greek cities in Sicily, 480.
		Fourth Persian expedition against Greece, 479. Battle of Platææ, 479. War of Greeks against Persians, 479-449.	Gens Fabia withdraw from Rome, 479, and are destroyed by the Etruscans at Cremera, 477.	Carthaginian army under Hamilcar defeated by Gelon of Syracuse and Theron of Agrigentum, 480.
	Hanno of Carthage explores west Africa to Cape Palmas, 470.	Battle of Mycale, 479.	Tribune of the people murdered for calling the two consuls to account, 473.	Carthaginians buy peace to save their cities of Panormus, Solœis, and Motye, 480.
	Temple of Theseus built at Athens.	State offices of Athens opened equally to the four classes, 478 ?	The lex Publilia or Publilian law places election of the plebeian magistrates in the hands of the comitia tributa, 471.	Confucius died, 478.
		Reduction of Byzantium, 478. Themistocles rebuilds Athens, 478.		
	Long walls of Athens completed, 457-455.	Hellenic confederacy with Athens at its head formed, 477 ?	Plague throughout Italy, 463.	Artaxerxes I., Longimanus, king of Persia, 465-424.
	Phidias, greatest Grecian sculptor, flourished, 442.	Rivalry of Themistocles and Cimon, 477. Cimon leader at Athens, 467 ?	Civil discord in Rome renewed, 460.	Egyptian revolt against Persia suppressed, 462-455.
	The battering ram first employed by Pericles, 441.	Battle of the Eurymedon, 465.	Tribunes of the people increased from five to ten, 457.	Beginning of the decay of the Persian Empire. Revolts of soldiers. Hiring of mercenaries, 455.
	The Parthenon restored, 438.	Age of Pericles, 465-429.	Cincinnatus, dictator, 457.	
	Meton sets up a sundial at Athens, 433.	Third Messenian War, 464-456.		
		War of the Spartans and Bœotians against Athens, 457-445.		
		Armistice between Athens and Sparta for five years, 451 ?		
		Death of Cimon, 451 ?	Decemvirs appointed, who drew up ten tables of laws, 451.	
		Battle of Salamis in Cyprus, 449.	Two more tables added, making the twelve tables, 450.	
		Thirty years' peace between Athens and Sparta, 445.	Consulate and tribunate re-established, 450.	
		Athens controlled by Pericles, 444-429.	Laws of the consuls Valerius and Horatius established, 448.	
		Peloponnesian War, 431-404.	Two quæstors appointed, 447.	
		Five invasions of Attica by the Peloponnesians, 431-425.	Canuleian law legalizing marriage between patricians and plebeians, 445.	
	Statue of Nike erected.	Plague at Athens, 430.	Military tribunes with consular power created and open to the plebeians, 443.	
		Death of Pericles, 429.	Office of censor, a patrician office, created, 444.	
		Mytilene destroyed by Athens, 427.	Spurius Mœlius, a rich plebeian, accused of aiming at royal power, slain, 439.	Xerxes II. of Persia ruled one month and a half and was killed by his brother Sogdianus, who reigned six and a half months and was slain by his brother, who became king Darius II., 424-405.
		Surrender of Platææ, 427.		
		Battle of Amphipolis and death of Brasidas, 422.		
		Peace of Nicias, 421.		
		Battle of Mantinea, 418.		
		Capture of Melos by Athenians, 416.		
		Athenian expedition against Syracuse under Alcibiades, Nicias, and Lamachus.		
		Last nine years of the Peloponnesian War, known as the Decelean War, 413-404.		
		Peloponnesian fleet defeated near Miletus, 412.		
		Democratic constitution at Athens overthrown by the oligarchs, 411.		Egyptians revolt against Persia and secure their independence for sixty years, 414-354.
		Alcibiades recalled, 411.		
		Sea fight at Abydos, 411.		
		Battle of Cyzicus, Peloponnesian fleet annihilated, 410.		Wars between Carthage and Greeks in Sicily, 409-339.
		Battle of Notium, 407.	War with the Etruscans and siege of Veii, 405-396.	
		Battle of Arginusæ, 406.		
		Battle of Ægospotami, 405.		Artaxerxes II., king of Persia, 405-362.
		Surrender of Athens and end of war, 404.		
		Government at Athens by Thirty Tyrants, 404-403.		
		Moderate democracy restored, 403.		Cyrus attacks his brother Artaxerxes II. of Persia and is slain at Cunaxa, 401.
		Retreat of the 10,000 under Xenophon, 401-400.		
400	The Erechtheum completed. Hippocrates makes the first great advances in the medical science, 400.	Socrates executed at Athens, 399.	Latium invaded by Gauls, 391.	Retreat of the Greek 10,000 after Cunaxa, under Xenophon, 400.
		War between Spartans and Persians, 399-394.	Battle of the Allia, 390.	
		Corinthian War against Sparta, 395-387.	Rome taken and plundered by the Gauls, 390.	Conquest of Rome by the Senones under Brennus, 390.
		Battle of Cnidus, 394.	Civil contests renewed, 390.	
		Battle of Coronea, 394.	Licinian rogations proposed to relieve debtors, 376; passed in 367.	
		Peace of Antalcidas, 387.	Four wars with the Gauls, 367-349.	
	Mencius, Chinese teacher, flourished, 372-288.	War between Thebes and Sparta, 379-362.	L. Sextus Lateranus, the first plebeian consul, 366.	
		Battle of Leuctra, 371.	Prætor, a new patrician magistrate, installed, 366.	
		Thebans, under Epaminondas, invade Peloponnesus, 370, again, 369, and a third time, 367.	Curule ædile added, 366.	
		Battle of Cynoscephalæ, 364.	Patricians ceased to exist as a specially privileged class.	
		Fourth invasion of the Peloponnesus by Thebans, 362.		
		Battle of Mantinea, 362.		
		Rise of Macedonian power under Philip, 359-336.		
		Social war of the Athenian league against Athens, 357-355.	Wars with revolted Latin cities, 362-358.	Artaxerxes III., king of Persia, 362-338.
	Temple of Athene Alea erected at Tegea.	Second Holy War against the Phocians, 355-346.		

From the Time of Xerxes to the Time of Hannibal, 480-200 B. C.

B. C.	DISCOVERIES, ARTS, CRAFTS.	GREECE AND MACEDONIA.	ROME.	OTHER COUNTRIES.
350	Lyceum in Attica built, 342.	Demosthenes delivered first Philippic, 351.	Wars with Etruscan cities, 358-351.	Carthage gains supremac over the western half of Sicily 339.
		Philip destroyed Olynthus, 348.		
		Peace of Philocrates, 346.	War with the Volsci and Aurunci, 350-345.	Artaxerxes III. of Persia poisoned and followed by Arses 338-336.
	Aristotle, the philosopher writes. Science of plants originated by Theophrastus, 340.	Philip of Macedon elected to the Amphictyonic Council in place of the Phocians, 346.	Treaty of commerce between Rome and Carthage, 348.	
		League of Hellenic States under Athens against Philip, 343.	First war with the Samnites, 343-341.	Arses, king of Persia, mur dered to make room for Dariu III., Codomannus, 336-330.
		Third Holy War, against Amphissa, 339-338.	Great Latin War, 340-338.	New Tyre, island city o Phoenicia, captured by Alexar der the Great, 332.
	Art of burning colors into wood or ivory said to have been invented by Gausias of Sicyon, 335.	Philip defeats the allied Thebans and Athenians at Chaeronea, 338.	Dissolution of the Latin League, 338.	The Jews subject to Alexar der the Great, 332-323.
		Peace of Demades, 338.		Darius III. of Persia mur dered by the satrap Bessu while fleeing from Alexande the Great after Gaugamela, 33
		Philip leader of the Grecian forces against Persia, 338.		
		Murder of Philip, 336.		Destruction of the Persian Em pire, 330.
		Accession of Alexander the Great, 336-323.		
	Aristotle founds the first private library, 334.	Alexander leads Greeks against Persia, 334.		The Punjab invaded by Alex ander the Great, 327.
		Battle of the Granicus, 334.		Greek kings of Bactria in cluded part of India unt driven out by Scythian invaders
	Pytheas of Massilia, explores Thule, the North Sea, Scandinavia. Nearchus of Macedonia sails from the Indus to the Red Sea, 330.	Battle of Issus, 333.		
		Alexander conquers Syria, Phoenicia, Tyre, Palestine, and part of Egypt; founds Alexandria.		Ptolemæus I., Soter, king o Egypt, 323-283; capital at Alex andria.
		Persian army defeated at Gaugamela or Arbela, 331.		Jews subject to the Ptolemies 323-198.
		Alexander in Persia, 331-328.		
		Alexander invades India to the Hyphasis after the battle of Hydaspes, 326.		Phoenicia a part of th Graeco-Macedonian monarch until 323.
	Expedition of Alexander the Great to Iran, Turan, India, 329-325.	Alexander's fleet and army go down the Indus, 325.	Second Samnite War, 326-304.	
		Nearchus discovers entrance to Persian Gulf, 325.	Caudine Pass, 321.	Phoenicia a part of the king dom of the Seleucidae, 323.
		Alexander returns to Persis and thence to Susa, 324.		Chandra-gupta founds the em pire of Magadha in India, 317 291.
	Sugar found in India by Nearchus, admiral of Alexander, 325.	Death of Alexander at Babylon, 323.	Etruscans take part against Rome, 312.	
		Wars of the Diadochi (successors of Alexander), 323-276.	Battle of Vadimonian Lake, 310.	Wars between Carthage an the Greeks, 317-275.
	Appian Way begun by Appius Claudius, 312.	Lamian War, 323-322.	Romans first use a fleet, 309.	Seleucus I., Nicator, found the kingdom of Syria, and rule from Seleucia on the Tigris, 31 281.
		Demetrius Poliorcetes takes Athens several times, 307-295.	Battle of Bovianum, 305.	
				Carthaginians defeat Agatho cles, tyrant of Syracuse, 306.
				Island of Rhodes an independent state after the battle of Ipsus 301.
				Pontus recognized as an in dependent state by the victor at Ipsus, 301.
300	Art of painting introduced into Rome from Etruria by Quintus Fabius.	Aetolian League formed, 281.	Third Samnite War, 298-290.	Ptolemæus II., Philadelphus king of Egypt, 285-247, and hus band of Arsinoe, founds the mu seum of the Alexandrine library
		Achæan League renewed, 280.		
		Invasion of the Gauls, 278.	Battle of Sentinum, 295.	
	Euclid does the first real work in geometry, 290.		Hortensian law passed, 286?	Kingdom of Pergamon, wit capital at Pergamus in Mysia founded by Philetærus (283-263 who was governor under Lysim achus.
	Egyptians explore the east coast of Africa, 290?		War between Rome and an Italian League, 285-282.	
	Library at Alexandria founded, 284; partly destroyed by Cæsar, 47.		War with Tarentum, 282-272.	Senones exterminated by Ro mans; defeat of the Boii on th Vadimonian Lake, 283.
			Pyrrhus defeats Romans at Heraclea, 280.	Antiochus I., Soter, secon king of Syria, 281-261.
	Earliest known lighthouse built was the Pharos of Alexandria, 280.		Battle of Asculum, 279.	Confederacy of the Galatian in Asia Minor, composed of th three tribes, Trocmi, Tectasage and Tolistoboii, founded in 278
	Colossus of Rhodes, 280.		Battle of Beneventum, 275.	Macedonia and Greece rav aged by a Brennus, 278.
	Aristarchus promulgates theory that the fixed stars and the sun are immovable; determines distances of the sun and moon from the earth, 280.	Antigonus Gonatus, king of Macedonia, 277-239.	First Punic War, 264-241.	Bithynia, with capital at N comedia, founded by Nicomede 277-250?
			Agrigentum taken by Romans, 262.	Carthaginians compel Pyrrhu to leave Sicily, 276, and defe him at sea on his way home, 27
			Romans win first naval victory at Mylæ, 260.	Açoka, grandson of Chandr gupta, reigns over Magadh 263-226.
			Naval victory for the Romans at Ecnomus, 256.	Açoka, the friend of Buddhism
	Silver first coined in Rome, 269.			Eumenes I., king of Perg mon, 263-241.
	The air-gun first made by Ctesibius of Alexandria, 250.		Regulus captured at Tunes, 255.	Antiochus II., Theos, thir king of Syria, 261-246.
	Recipes for preparation of medicine first put into book form by Mantias, 250.	Last attempt of Greece to throw off the Macedonian yoke, 263-260.	Panormus taken by Romans, 254.	End of the Chow dynasty, 25 Tsin dynasty in China, 255-20

From the Time of Xerxes to the Time of Hannibal, 480-200 B. C.

B. C.	DISCOVERIES, ARTS, CRAFTS.	GREECE AND MACEDONIA.	ROME.	OTHER COUNTRIES.
300		Sicyon, freed from its tyrants by Aratus (251), joined the Achæan League. Corinth, freed by Aratus from Macedonian control, joined the Achæan League, 243. Sparta in the hands of a wealthy oligarchy, 241. Agis IV. of Sparta assassinated for attempting reforms, 241? ☐Demetrius II., king of Macedonia, 239-229. Cleomenes III. of Sparta (235?-221) introduced reforms, conquered Argos and Mantinea; and waged successful war against the Achæan League, 227-221. Antigonus Doson, king of Macedonia, 229-220.	Hasdrubal defeated at Panormus, 251. Carthaginians win the sea fight at Drepanum, 249. Hamilcar conducts successful campaign in southern Sicily for six years, 248-242. Roman victory at the Ægatian Islands, 241. War with the Illyrians, 229-228. Rome supreme in the Adriatic Sea, 228. Cisalpine Gaul subdued, 225-222.	Parthians revolted from Persia under Arsaces, who became king, 250(?)-247. Parthians conquered all lands between the Euphrates and the Indus, and thus kept the Greeks and Indians apart, 250. Zeilas, king of Bithynia, 250-228. Ptolemæus III., Euergetes, king of Egypt, made a temporary conquest of Caria, Lycia, Cilicia, and Cyprus, 247-221.
	Temple of Janus closed, 235.	Sparta defeated in the battle of Sellasia, 221. War between the Achæan and Ætolian League, 220-217.	Gauls defeated at Telamon, 225. Second Punic War, 218-201. Hannibal of Carthage crosses the Alps, 218.	Arsaces I., king of Parthia, succeeded by Arsaces II. (247-214), who fully secures Parthian independence.
	Great Chinese wall built, 211-204. Eratosthenes determines the circumference of the earth and the sun, 210. Literature and art of painting encouraged.	Philip V. (III.), king of Macedonia (221-179), formed an alliance with Hannibal against the Ætolian League, supported by the Romans, and brought on the First Macedonian War, 214-205. First Macedonian War, 214-205.	Hannibal defeats the Romans at the Trebia, 218. Roman army severely defeated at Lake Trasimenus, 217. Quintus Fabius Maximus dictator, 217. Battle of Cannæ, the greatest defeat the Romans ever suffered, 216. Carthage forms alliance with Philip V. of Macedon, 216. Hannibal defeated at Nola, 215. First Macedonian War, 214-205. Syracuse taken and plundered, 212. Both Scipios defeated and slain by the Carthaginian army in Spain, 212. Capua surrendered to Rome, 211. Hasdrubal slain at Sena Gallica, 207. Scipio consul, 205, carried the war into Africa, 204, and won the battle of Zama, 202. Humiliating peace for Carthage, 201.	Seleucus II., fourth king of Syria, 246-226. Attalus I., king of Pergamon, 241-197. Cisalpine Gaul leagued against Rome, 238. Prusias I., king of Bithynia, with whom Hannibal sought refuge, 228-183. Seleucus III., fifth king of Syria, 226-222. Antiochus III., the Great, 222-187. Ptolemæus IV., Philopater (221-205). The monarchical power began to decline. Arsaces III. of Parthia (214-196) resisted Antiochus the Great. Che-wang-te (246-210) built the Chinese wall, extended the empire to the sea; and defeated the Mongols; great destruction of books by his order, 213. Dynasties of East and West Han, 206 B. C.-221 A. D. Brilliant period of Chinese history. Ptolemæus V., Epiphanes (205-181), Egypt grew more dependent upon Rome. Spain a Roman province, 205.
		Philopœmen, "the last of the Greeks," led the Achæan League against the Spartans and defeated them at Mantinea, 206.		

From the Time of Hannibal to the Death of Julius Caesar. 200-44 B. C.

B. C.	DISCOVERIES, ARTS, CRAFTS.	ROME.	OTHER COUNTRIES.
200	Archimedes discovers his famous laws: "Law of the Lever" and "Law of Archimedes."	Second Macedonian War, 200-197. Philip driven from Central Greece, 200. Romans joined by Ætolians and Achæans, 199. Flamininus subdues Epirus and defeats Philip at Cynoscephalæ, 197. Romans declare the Greek states free and independent, 197. War with Antiochus III. of Syria, 192-189. Antiochus defeated at Magnesia, 190. Death of Scipio Africanus, 183.	Achæan League joins Romans against Philip V., 200. Second Macedonian War, 200-197. Jews subject to the Seleucid kings of Syria, 198-167.
	Attalus, king of Pergamus, makes books with leaves of vellum. Discovery of parchment; until this time papyrus was used.	Higher offices in Rome become more and more the privilege of the nobility and wealthy, 180. Third Macedonian War, 171-168. Destruction of the Macedonian monarchy, 168. Perseus defeated in the battle of Pydna, 168. Third Punic War, 149-146. Capture and destruction of Carthage, 146. Fourth Macedonian War, 148-146. Achæan War, 146. Battle of Leucopetra, 146. Corinth destroyed by order of the Roman senate, 146.	Eumenes II., king of Pergamon (197-159), founder of the library of Pergamus. Philip V. forced by the defeat at Cynoscephalae to abandon the hegemony of Greece, 197. Romans supported their friends in Greece and often arbitrated between them, 197. Boii power broken at the battle of Mutina and northern Italy rapidly Romanized, 193.
	Nicomedes invents the curve known in mathematics as the *conchoid*. First library in Rome.	Dictatorship practically disappears, 146. Civil War with the Numantines, 143-133. Numantia taken and destroyed, 133. First Servile War, 135-132. Civil disturbances under the Gracchi, 133-121. Slave trade in Rome extensive, 133. Gracchus proposes that the Licinian agrarian law be re-enacted, 133.	Philopœmen forced the Spartans to re-enter the Achæan League, 192. Antiochus III., the Great, of Syria, defeated by the Romans at Magnesia, 190. Deinocrates incited the Messinians to revolt and Philopœmen slain, 183.
	Eudoxus of Cyzicus attempts to circumnavigate Africa.	Tiberius Gracchus tries to secure election to the tribunate in violation of the constitution; he, with 300 followers, killed by the optimates under P. Scipio Nasica, 133. Public lands partly divided under the Licinian law, 133-129. Plebeian consuls chosen, 132. Pergamus becomes a Roman province called Asia, 129. Balearic Isles subjected to Rome, 123.	Death of Hannibal, by suicide, at Bithynia. Power of the Achæan League declined, 183-146. Greece made a Roman province, 147.

From the Time of Hannibal to the Death of Julius Caesar. 200-44 B. C.

B. C.	DISCOVERIES, ARTS, CRAFTS.	ROME.	OTHER COUNTRIES.
200	Astronomy first placed on a scientific basis by Hipparchus.	C. Sempronius Gracchus elected tribune of the people against the will of the senate, 123, and again in 122. Gracchus distributes grain to the people at the expense of the state, 122. Civil strife in Rome between followers of Gracchus and the optimates, 121. Gracchus and Fulvius slain, 121. War against the Cimbri and Teutones, 113-101. Great German migration to the west and south, 113. Jugurthine War, 111-105. Cimbri cross the Rhine, 109. Helvetians press into Gaul, 107. Marius consul five times in succession, 104-101. The Cimbri cross the Pyrenees, 104. The Cimbri, Teutones, and Helvetians invade Italy, 102. Battle of Aquæ Sextiæ, 102. Cimbri annihilated at the battle of Vercellæ, 101. Second Servile War, 103-99.	Prusias II., king of Bithynia 183-149. Mithridates I. founded the empire of the Parthians, 174-136 and ruled Media, Susiana, Persia, Babylonia, and Bactria. Attalus II., king of Pergamon 159-138. Nicomedes II., king of Bithynia, 149-91. Romans in the Achæan War a Leucopetra, 146. Corinth captured and destroyed by the Romans, 146. All the Greek cantons were subject to the Roman governo of Macedonia, 146. (Peloponnesus and central Greece did not become the Roman province of Achaia till about the year 27. Attalus III., king of Pergamon, 138-133, gave his kingdom and treasures to the Romans.
	Hero of Alexandria invents and improves formula for area of triangle.		
100		Marius consul for the sixth time, 100. Reforms by Drusus led to his assassination, 91. Marsian or Social War in Italy, 91-88. Citizenship extended to the Latins and other Italians, 90, and afterwards extended to all Italians who applied for it, 89. First Mithridatic War, 88-84. Civil War between Sulla and Marius, 88-82. Athens conquered by Sulla, 86. Marius consul for the seventh time, 86. Battle of Chæronea, 86; battle of Orchomenus, 85. Sulla defeats the younger Marius and has himself appointed dictator in Rome for an unlimited time, 82. Reign of terror in Rome; 10,000 slaves made citizens (Cornelians), 82. Second Mithridatic War, 83-81.	Strife between Jews and the Pharisees and Sadducees after 100. Sujin (97-30), tenth Mikado of Japan, introduced marked reforms. Nicomedes III., king of Bithynia, 91-75, bequeathed his kingdom to Rome. Phraates III. (Arsaces XII.) king of Parthia, 69-60. Pompeius called to help the Pharisees against the Jews makes the Jews tributary to Rome, 63. Suevi, under Ariovistus, defeated by Cæsar, 58. Wars of Vikramaditya, native prince of India, against Scythians, 57. Cæsar makes two expeditions to Britain, 55 and 54. Cæsar's two expeditions cross the Rhine, 55 and 53. Phraates III. in war with Rome, 54.
	The Tabularium built, 78.	War against Sertorius, 80-72. Sulla voluntarily resigns dictatorship, 79. War against the pirates, 78-67. Third Mithridatic War, 74-64. Revolt of Spartans, 73. War of the Gladiators and Third Servile War, 73-71.	
	Cicero's orations, 60.	Conspiracy of Catiline, 64-62. First speech of Cicero against Catiline, 63.	
	Scaurus builds in Rome a theater to accommodate 30,000 spectators, 58.	Catiline defeated and slain at Pistoria, 62. First Triumvirate—Pompey, Cæsar, and Crassus, 60. Pompey governs Spain, 60.	
	Coal known in Britain, 55.	Cæsar consul, 59; conquest of Gaul by Cæsar, 58-51. Crassus killed by the Parthians, 53.	
	Pompey the Great erects first stone theater in Rome.	Pompey consul without a colleague, and given dictatorial power, 52. Civil War, 49-46.	
	Latin dictionary compiled by Varro, 50.	Cæsar crosses the Rubicon, 49. Cæsar dictator of Rome for 11 days, and afterward consul, 49. Battle of Pharsalus; Cæsar defeats Pompey, 48.	
	Destruction of Alexandrian library, 47.	Pompey murdered in Egypt, 48. Cæsar consul for five years, tribune for life, 48. Alexandrine War under Cæsar, 48-47.	
	Julius Cæsar reforms the calendar, making each year equal to 365¼ days, 46.	War against Pharnaces, son of Mithridates, closed by Cæsar in a five days' campaign (Veni, vidi, vici), 47. Fought in Africa against the followers of Pompey, 47-46. Battle of Thapsus, 46. War against the sons of Pompey, 46-45. Battle of Munda, 45. Cæsar consul for ten years (45); dictator and censor for life, 44.	

From the Death of Caesar to the Death of Alaric, B. C. 44-A. D. 410.

B. C.	DISCOVERIES, ARTS, CRAFTS.	ROME.	OTHER COUNTRIES.
44	Romans extend geographical knowledge and commerce to Central Asia, 30.	Assassination of Cæsar in the senate, 44. Second Triumvirate—Antonius, Octavius, and Lepidus, formed, 43. Cicero murdered; several hundred senators and 2,000 equites outlawed. War between the triumviri and the republican party led by Brutus and Cassius, 43-42. Battle of Philippi; suicide of Cassius and Brutus, 42. Antonius ravaged Asia and Syria; and followed Cleopatra to Egypt, 42. Civil War of Perusia between Octavius and Lepidus against Marcus Antonius and Fulvia, 41-40. Octavius supreme ruler of Italy, 40; and administered affairs in the West; Antonius in the East; and Lepidus in Africa. The triumviri pacify Pompeius by making him ruler over Sicily, Sardinia, probably Corsica, and the Peloponnesus.	Herod the Great recognized by the Roman Senate as a dependent king of the Jews, 40.

From the Death of Caesar to the Death of Alaric, B. C. 44-A. D. 410.

B. C.	DISCOVERIES, ARTS, CRAFTS.	ROME.	OTHER COUNTRIES.
44	Pantheon at Rome built, 27. Dances introduced on the Roman stage, 22. Livy writes, 20. Lake of Constance discovered by Tiberius; Brenner Pass, by Drusus, 15. Theater of Marcellus, begun by Julius Cæsar, completed by Augustus, 13.	Sicilian War between the triumvirs and Sextus Pompeius, 38-36. War between Octavianus and Antonius, 31-30. Antonius and Cleopatra defeated at Actium, 31. Octavianus makes Egypt a Roman province after the suicide of Antonius and Cleopatra, 30. Roman Empire established; Octavianus, the first emperor, as Cæsar Octavianus Augustus, 31 B.C.-14 A.D. Spain conquered, 19. Birth of Christ, four years before our era, 4? B.C. Temple of Janus closed, about 4 B. C. Seneca, 3 B. C.-65 A. D.	Parthia ruled by ten monarchs from 37 B. C. to 107 A. D. Antonius makes war on Phrates IV., of Parthia, 36. Drusus conquers Rætia and Noricum, 15. Expeditions of Drusus from the Rhine, 12-9.
A. D.			
1	Strabo writes on geography, 5. Diodorus writes on history, 5. Philo of Alexandria, philosopher, flourishes, 20. Birth of Pliny, the Elder, 23. Persius, the poet, born, 34. Electricity used as medicine, 43. Bricks introduced into England by the Romans, 44. Magnifying power of convex glasses and concave mirrors, and the prismatic colors produced by angular glass, mentioned by Seneca, 50.	Forces of Quintilius Varus annihilated by the Germans under Arminius in the Teutoburg Forest, 9? Pannonia (southwestern part of Hungary) a Roman province, 10. Tiberius (Claudius Nero), second emperor of Rome, 14-37. Germanicus led three expeditions against the Germans, 14-16; recalled and sent to Armenia, 17-19. Caligula, third emperor of Rome, 37-41. Claudius or Tiberius Claudius Nero, 41-54. Conquest of Britain commenced (43) under command of A. Plautius and T. Flavius Vespasianus; southern part of Britain became a Roman province. Following provinces incorporated: In Africa, Tingitana, Mauretania, Mauretania Cæsariensis (42); in the east, Lycia (43), Judæa (44), Thracia (46). Claudius adopts L. Domitius and appoints him his successor; L. Domitius takes name of "Nero," at his adoption. Claudius poisoned by Agrippina, 54. Nero (54-68) proclaimed imperator by the prætorians; guided during the first five years of his reign by the præfectus prætorio Burrus and his teacher, Seneca. Law against informers. Nero poisoned his step-brother Britannicus (55), had Agrippina put to death (59); drove away his wife Octavia, whom he afterwards executed (62), and married Poppæa Sabina. War with Parthians and Armenians, 58-63. King Tiridates of Armenia forced to acknowledge supremacy of Rome. Suetonius Paulinus suppresses revolt in Britain, 61. Large part of Rome destroyed by fire (64); Christians and Jews accused by Nero of setting fire to the city. First persecution of the Christians, 64. Rome rebuilt on a large scale, 64, Conspiracy of Piso discovered (Seneca), 65. Revolt in Gaul (C. Julius Vindex) and in Hispania citerior, where the governor, Sulpicius Galba, was proclaimed and acknowledged imperator, 68. Nero flees and commits suicide on estate of one of his freedmen, near Rome, 68. Galba, 68-69. Otho, 69. Vitellius (69) proclaimed imperator by the legions on the Rhine; defeats Otho near Cremona, and enters Rome. The three Flavian emperors, 69-96. Vespasianus (69-79); proclaimed imperator first in Alexandria, then in Palestine, where he was directing war against the Jews, in revolt since 66; transferred military command to his son, Titus, and went to Rome, via Alexandria. Discipline in the army and order in the finances restored. Senate reorganized. Revolt of Batavians under Julius (Claudius?) Civilis, 69-71; suppressed by Cerealis. Jerusalem captured by Titus, 70. Triumphal arch of Titus in Rome. Amphitheatrum Flavium (Colosseum) erected. Agricola prepares for complete subjugation of Britain, 78. Titus, 79-81. Informers punished. Eruption of Vesuvius, 79; Herculaneum and Pompeii buried. Death (79) of the elder Plinius, leader of the Roman fleet at Misenum. Rome visited by fire and plague, 80. Domitianus (81-96), planned campaign against the Chatti (83). Roman boundary wall between the Rhine and the Danube begun. Agricola conducts successful campaigns in Britain (81-84), extending Roman power as far as Scotland; recalled by the jealous Domitian. Unsuccessful wars against the Dacians, 86-90; peace of Decebalus purchased by a yearly tribute. Death of Agricola, 93. Persecution of philosophers, Jews, and Christians, 93. Domitianus murdered by the freedman Stephanus, 96. Nerva and his adopted family, 96-192. Nerva (Marcus Cocceius Nerva) (96-98), a senator, raised to the throne by the murderers of Domitian; recalled exiles; reduced taxes; repealed the law of treason; adopted Trajan, whom he appointed his successor. Trajan (98-117), born in Roman colony of Italica in Spain; first person not an Italian to occupy the throne of the Cæsars.	Judæa becomes a part of the Roman provinces of Syria, 6. Expeditions of Germanicus to avenge Teutoburg massacre, 14, 15 and 16. Galilæa independent of Rome until 32. Peræa independent of Rome until 33. Judæa a dependent kingdom under Herod Agrippa I., 41-44. Judæa a Roman province in 44. Claudius reduces Britain south of the Avon and Severn, 43. Boadicea, Queen of the Iceni defeated by the Romans, 58 Revolt of the Jews against Rome, 66-70. Jerusalem destroyed by Romans under Titus, 70. Keiko (71-130), twelfth mikado of Japan. Indo-Scythians defeated at the battle of Kahror by the Guptas and allies, 78. Agricola builds a wall from Firth of Forth to the Firth of Clyde, 78-84. Agricola carries Roman war into Scotland, 78-85. Armenia is lost to Parthia, 90
	Glass used in making windows, 79. The monumental type of triumphal arch, invented by the Romans, first given in perfection in the Arch of Titus, 81. Library of Apellicon sent to Rome from Athens by Sulla, 83. Agricola, a Roman, sails around Britain, 84. Ulpian library of Trajan established in the Forum of Trajan, 98. The forum of Trajan built, 98-117.		

From the Death of Caesar to the Death of Alaric, B. C. 44-A. D. 410.

A. D.	DISCOVERIES, ARTS, CRAFTS.	ROME.	OTHER COUNTRIES.
100	Plutarch writes his "Lives," 100. Trajan's column, 113. Ptolemy writes a treatise on optics, 120. Detrianus, Greek architect, restored Pantheon, built mausoleum of Hadrian, bridge of St. Angelo. Aelian bridge built by Hadrian, 136. Temple of Venus and Roma; represents height of Roman art during Hadrian's reign. Samian ware, a glossy, red enamel made by the Romans, 150. Claudius Ptolemy (Egypt.) completes his geography and atlas. Temple of Jupiter built at Baalbec. The places and distances of the planets discovered by Ptolemy, 161.	First war against the Dacians (101-102), caused by Trajan's refusal to pay the tribute promised by Domitian. Trajan captured fortress of the king Decebalus, forcing him to conclude peace and cede a part of his territory. Second war against the Dacians (105-107); stone bridge across the Danube built at Turnu Severinu by Trajan, who, crossing the river, conquered the Dacians. Decebalus committed suicide. Imposing games at Rome, in which it is said that 10,000 gladiators appeared. Dacia (eastern Hungary, Moldau, Wallachia, Transylvania) a Roman province. Many colonists (from whom the present Roumanians are descended) settle in Dacia. Judæa, to the northern end of the Red Sea, and the region east and south of Damascus taken possession of by the governor of Syria (105) and made the Roman province of Arabia (Arabia Petræa). Column of Trajan at Rome completed, 113. Wars of Trajan with the Parthians (114-116); Chosroës driven from Armenia. Mesopotamia, Armenia, Assyria (including Babylonia), made Roman provinces. Seleucia and Ctesiphon on the Tigris conquered by Trajan, who appointed a king over the Parthians. Death of Trajan at Selinus (Trajanopolis) in Cilicia. Hadrian (117-138); abandoned new provinces of Assyria, Armenia, and Mesopotamia; restored peace in Mœsia; began his progress through all the Roman provinces with a visit to Gaul, 121. Magnificent buildings in Rome, including the Athenæum. Wall of defense against Picts and Scots built in Britain. The jurist Salvius Julianus begins collection of edicts of the prætors (edictum perpetuum). Revolt of the Jews (132-135) because of the establishment of the colony of Ælia Capitolina. While ill, Hadrian adopted L. Ælius Verus, and appointed him Cæsar, who died first. Hadrian then adopted T. Aurelius Antoninus on condition that the latter should adopt his nephew, M. Annius Verus, under the name of Marcus Aurelius, and L. Commodus Verus, son of the deceased Cæsar, Ælius Verus. Antoninus Pius (Titus Aurelius Antoninus Pius), 138-161. Marcus Aurelius (161-180); a Stoic philosopher; reigned until 169 in common with Lucius Verus, his brother by adoption. War against the Parthians (162-165), under command of L. Verus, whose legatees burned Seleucia and Ctesiphon, conquered Artaxata, and appointed a king in Armenia. Part of Mesopotamia again became a Roman province. Famine and plague in Italy, 166. War with the Marcommani and Quadi, 166-180. Conquest of the rebel Avidius Cassius in Syria, 175. Triumph in Rome, 176. Death of Marcus Aurelius in Vindobona (Vienna), 180.	Splendid period of Palmyr 105. Northern Korea conquered b the Chinese, 109. Hadrian's wall built from th Tyne to the Solway Firth, 121. Chosroës (Arsaces XXV. king of Parthia (107-121), trie to retake Armenia and is pu ished by Romans under Trajan Rebellion of Jews against R mans; great slaughter and di persal of survivors, 132-135. Vologeses III. (Arsace XXVII.) of Parthia (149-192), i volved in war with M. Aureliu of Rome, is completely subdue Legendary date of introdu tion of Christianity into Brita by the conversion of Luciu king of the Trinobantes, 180. Parthia loses northern Assyri to Rome during reign of Kin Vologeses IV., 192-213.
200	Equestrian statue of Marcus Aurelius, 180. Temple of Sun, at Baalbec, built, 200. Triumphal Arch of Septimius Severus marks beginning of decline in Roman art, 203. Baths of Caracalla, 215. Herodian, the Greek historian, writes, 225.	Commodus (180-192); purchased peace of the Germans by a tribute; intrusted the government largely to the præfectus prætorio; murdered by his intimates. Imperators appointed mainly by the soldiers, 193-284. Pertinax murdered by the prætorians, 193. Didius Julianus placed on throne by the prætorians, 193. Septimius Severus (193-211) proclaimed by Illyrian legions, recognized by the senate, and maintained himself against Clodius Albinus in Gaul and Pescennius Niger in the East, the other pretenders. Through the jurist Papinianus, improvements were made in the administration of justice. Successful campaigns in Mesopotamia. Expedition to Britain against the Scots, 208; Roman wall restored. Death of Septimius Severus at Eboracum (York). Caracalla (211-217); murdered his half-brother and co-regent Geta: also Papinianus and thousands of others. That higher taxation might be imposed, Roman citizenship was conferred upon all inhabitants of the provinces, by the Constitutio Antoniana. Provinces systematically plundered; unsuccessful wars against the Goths in Dacia; inhabitants of Alexandria cruelly treated; plundering expedition against the Parthians. Caracalla murdered. Macrinus, 217; bought peace from the Parthians. Elagabalus (218-222); proclaimed imperator by the soldiers; government conducted by his mother and grandmother; murdered by the prætorians. Severus Alexander (222-235); advised by the jurists Julius Paullus and Domitius Ulpianus; the latter killed during a mutiny of soldiers. Severus Alexander conducts war in the East (226-233), caused by dissolution of the Parthian (Arsacidæ) monarchy and establishment of the new Persian empire of the Sassanidæ by Artakshatr (Artaxerxes). Murder of Severus Alexander. Maximinus Thrax (235-238), a Thracian, raised to the throne by the soldiers. German townships devastated. Gordianus I. (237), a senator; proclaimed imperator by the legions in Africa; his son, Gordianus II., co-regent. Both defeated by the præfect of Mauretania, the son falling in battle, the father committing suicide. Senate at Rome elected the senators Pupienus Maximus and Cælius Balbinus, Augusti, also the young grandson of Gordianus I. Maximinus Thrax killed by his own soldiers at siege of Aquileia. The two imperators appointed by the senate, Balbinus and Pupienus, murdered by prætorians at Rome. Gordianus III. (238-244), sole imperator. War with the Persians 241. Philippus Arabs, co-regent in 243, murdered Gordianus III., 244.	Jingu-Kogo (201-269), empre of Japan, led an army into K rea and subdued it. Severus adds to wall of H drian, 210. Artabanus III. (Arsaces XXX last king of Parthia, 215-226. Artaxerxes I., king of Pers (226-240), defeats and slays Art banus, the last king of Parthi at Hormuz, 226. Parthia absorbed by the Sa sanidæ, or New Persian em pire, 226-641. Epoch of the three kingdom of China, 221-265. Religion of Zoroaster restore in Persia, 227. Sapor I., king of Persia (24 271), makes successful w against Rome, 241-244.

From the Death of Caesar to the Death of Alaric, B. C. 44-A. D. 410.

A. D.	DISCOVERIES, ARTS, CRAFTS.	ROME.	OTHER COUNTRIES.
200	Churches built under ground by Christians, in Rome, 250-260. Longinus, Greek author, writes his criticisms, 255.	Philippus Arabs (244-249). Peace with Persia. Thousandth anniversary of foundation of Rome celebrated, 248. Mœsian and Pannonian legions revolt and proclaim one of their officers imperator. Decius (249-251), sent by Philippus to subdue the mutiny, forced by the legions to accept title of imperator; defeated and killed Philippus in battle of Verona. General persecution of Christians, 250. Fabianus, bishop of Rome, a martyr. Goths defeated by Decius, who fell in battle, 251. Gallus (251-253), elected by the legions; has his co-regent, Hostilianus, son of Decius, put to death. Fatal pestilence throughout the empire. Gallus deposed by the conqueror of the Goths, Æmilianus (253), who four months later was killed by his soldiers. Valerianus (253-260); general of legions in Germania and Gaul; his son, Gallienus, co-regent. War with the German bands. Unsuccessful expedition against the Persians. Valerianus defeated at Edessa, captured and made the slave of King Artaxerxes. Gallienus (260-268). Many pretenders to the throne. Invasions of the barbarians. "Time of the thirty tyrants." Tetricus pretender in Spain and Gaul, Odenathus (of Palmyra) in Syria. Mesopotamia won from Persia by Odenathus, whom Gallienus recognized as co-regent for the East. Murder of Odenathus (267), after which Palmyra was ruled by his consort, Zenobia. Gallienus besieged Mediolanum, and was there murdered by the contrivance of the pretender Aureolus, who himself was put to death by Claudius II. (268-270), raised to the throne by the soldiers. Alamanni and Goths defeated.	Wuti consolidates the Chinese Empire and founds the dynasty of Tsin, 265.
	Erection of a new wall around Rome, including the enlarged imperial city, commenced in 271, completed in 276.	Aurelianus (270-275). Province of Dacia sacrificed to the Goths. Many Roman colonists transported to Mœsia, a portion of which was now called Dacia (Aureliana). Alamanni and Marcomanni defeated (victory on the Metaurus). Aurelian, "Restorer of the universal empire," defeated Zenobia at Antiochia and at Edessa, conquered Syria, besieged and demolished Palmyra, captured Zenobia, and reconquered Egypt, 273; defeated and captured Tetricus at Chalons, 274; murdered on an expedition against the Persians. Tacitus (275) elected imperator by the senate; defeated the Alani; died after three months. His brother Florianus, striving for the succession, was defeated by Probus, 276-282. Alamanni, Burgundians, Franks, and Vandals driven back by Probus, who entered Germany and strengthened the wall between the Rhine and the Danube. Many Germans enrolled as mercenaries in the Roman army.	Ojin (270-310), mikado of Japan, still worshiped as the God of War. Hormisdas, king of Persia 271-272. Zenobia defeated by Aurelian 272. Varahran I., king of Persia, 272-275. Varahran II., king of Persia, 275-292. Korean civilization introduced into Japan, 285.
	Swamps drained and roads and canals built by the Roman soldiers, who in resentment against such work murdered Probus, 282. Beginning of Diocletian era, 284.	Carus (282-283), the præfectus prætorio, succeeded; appointed his sons Numerianus and Carinus Cæsars, and later Augusti; overcame the Sarmatians; killed (by lightning?) on an expedition against the Persians, after the capture of Ctesiphon. Numerianus (284) accompanied his father to the East; murdered by his father-in-law. Carinus (284), who had stayed in the West, fought, at first successfully, against Diocletianus (284-305), whom the soldiers had proclaimed imperator. Carinus eventually murdered by his own troops. Diocletian ruled the East from his court at Nicomedia in Bithynia, intrusting the West to his co-regent, Maximianus, 285. Constantius Chlorus appointed a Cæsar by Diocletian, and given the government of Spain, Gaul, and Britain, Maximianus receiving that of Italy and Africa, 292. Galerius, also made a Cæsar by Diocletian, appointed to the government of Illyricum, including Greece and Macedonia, 292. Revolt of Egypt quelled by Diocletian; and one in Britain, by Constantius, 296. Galerius fought against the Persians, at first unsuccessfully, but gained an important victory in 297, and again extended the frontiers to the Tigris. Insurrection in Africa put down by Maximianus. The Alamanni defeated by Constantius.	Independence of Britain under Carausius, 286-294. Varahran III., king of Persia 292. Narses, king of Persia (292-301), drives Tiridates from Armenia, 296; and is defeated by the Romans, 297. Tigris, the general boundary between Persia and Rome, 297.
300	Some of the leading principles of optics known to the Platonists, 300.	General persecution of the Christians (303), but discouraged in his province by Constantius. Diocletian, having obliged Maximianus to resign, abdicated (305) and retired to Salonæ in Dalmatia. Constantius and Galerius raised to Augusti. Maximinus and Severus appointed Cæsars, the former receiving Syria and Egypt, the latter Italy and Africa. Death of Constantius in Britain (306), following which his son, Constantine, assumed title of Cæsar and control of his father's provinces, Spain, Gaul, and Britain; fought successfully against the Bructeri and Franks. Maxentius chosen imperator (306) by the prætorians at Rome, his father, Maximianus, resuming his previous dignity. The Cæsar Severus, created Augustus by Galerius, proceeded to Italy (307) to attack Maxentius; but, deserted by his soldiers, he was slain at Ravenna. In his place Galerius appointed Licinius co-regent and Augustus, and Constantine assumed the same title. Maximianus captured in Massilia and slain by order of Constantine, 310.	Monachism begins in Egypt, 305. Britain re-subdued. Early Christian martyrs in Britain, *c.* 310. Hormisdas II., king of Persia. 301-309.

From the Death of Caesar to the Death of Alaric, B. C. 44-A. D. 410.

A. D.	DISCOVERIES, ARTS, CRAFTS.	ROME.	OTHER COUNTRIES.
300	Water system commenced in Rome by Appius Claudius, 313.	Death of Galerius, 311.	Sapor II., king of Persia, 3
		War between Constantine and Maxentius.	
		Constantine issues edict in favor of Christians, 311.	
		Maxentius defeated by Constantine at Turin, and at Saxa Rubra, four miles from Rome, and drowns while attempting to cross the Tiber, 312.	
	Foundation of the new temple at Jerusalem, 327.	Constantine became a protector of the Christians, but continued a catechumen until his death.	Edict of Milan, 313.
		Alliance between Constantine and Licinius, 313.	
	Glass first used in cathedral windows, 330.	Constantine fought against the Franks, Licinius against Maximinus, who was defeated and committed suicide in Tarsus.	Christianity introduced in Africa, 330.
		Constantine and Lucinius the only rulers in the empire (313-323), the first in the West, the second in the East. In a conflict (314) between the two, Licinius was defeated and forced to cede to Constantine Achaia, Illyricum, and Macedonia.	
	Constantinople becomes important center of art and literature, 330.	Second war between Constantine and Licinius, 323.	
		Licinius, defeated at Adrianople and Chalcedon, surrendered in Nicomedia, and by order of Constantine was executed, 324.	
		Constantine (the Great) sole ruler, 323-337.	
	Metrodorus, first Christian architect, 340.	Christianity recognized by the State and favored at the cost of paganism.	
		First general (œcumenic) Council of the Church at Nicæa, in Bithynia, 325. Arianism rejected, and the doctrine of Athanasius of Alexandria declared a dogma of the Church by the Symbolum Nicænum.	
		Constantine chose Byzantium (Nova Roma, Constantinopolis) for his capital, 330. Empire redistricted. Four great prefectures of Gallia, Italia, Illyricum orientale, Oriens, divided into 13 dioceses, these into 116 provinces. New hierarchy of officials, seven superior court officers. New arrangement of taxes. Council of state (consistorium principis).	
		Constantine cruel in his family. Through the plots of his wife, Fausta, herself afterwards put to death, his eldest son, Crispus, and one of his nephews were executed.	
		Before his death, Constantine divided the administration of the empire among his three sons as Augusti and two nephews as Cæsars; after his death (337), in Bithynia, his son Constantius caused the death of the two Cæsars.	
		Empire divided at Constantinople by the three sons of Constantine, 337.	
		Constantinus II. (337-340) given the West (prefectures of Gallia, Italia, and a part of Africa).	
		Constantius (337-361) given the East (the prefecture Oriens).	
		Constans (337-350) given part of Africa and prefecture of Illyricum orientale.	
	Art of miniature-painting, imperfect among the Greeks, applied to Christian uses, 350.	Constantius fought indecisively against the Persians.	
		Constantinus II. attacked Constans and fell at Aquileia.	Persian war with Rome 3
		Death of Constans, 350.	350.
		Empire again united by Constantius, after defeat of the usurper Magnentius, 353.	
		Julianus, appointed Cæsar, defeated the Ripuarian Franks and the Alamanni; assigned the Salian Franks lands in northern Gaul.	
		Paganism restored, 361.	Second Persian war wi
		Death of Constantius (361) on an expedition against Julianus (361-363), whom the legions had proclaimed Augustus Julianus, known as the apostate for his adherence to the heathen philosophy; defeated the Franks and Alamanni; restored frontier fortresses which had been erected against them; defeated the Persians at Ctesiphon; on his return, died of a wound, 363.	Rome, 359-363.
			Western shores of Britain ra
			aged by Scots from Irelan
			360.
		Jovianus (363-364), a Christian, raised to the throne by the soldiers. Christianity reinstated in the privileges granted by Constantine. Greater part of Mesopotamia ceded to the Persians.	Great earthquake in Egy
			365.
		Valentinianus I. (364-375) raised to the throne by the legions. Appointed as co-regent first his brother, Valens (364-378), who governed the East from Constantinople; later, his son, Gratianus (367-383), who governed the West. Upon the death of Valentinianus I., Gratianus acknowledged as co-regent for the West, his half-brother, Valentinian II. (375-392), whom the soldiers had proclaimed imperator.	Third Persian war with Ron
			371-376.
			Beginnings of the migrati
			of the northern Teutonic trib
			375.
		Beginning of migration of Teutonic tribes, 375.	Huns cross the Volga, 375.
			Huns conquer the East Goth
		Death of Valens at Adrianople in battle against the West Goths, 378.	The Huns invade Russia, 3
		Theodosius (379-395), appointed co-regent by Gratianus, and given charge of the East; became a Christian; fought successfully against the West Goths, but was compelled to accept them as allies in their homes in Thrace and Mœsia.	Battle of Adrianople; Vale defeated and slain by the W Goths, 378.
			Artaxerxes II., king of P
			sia, 379-383.
			Sapor III., king of Pers
			383-388.
		Death of Gratianus (383) in battle against Clemens Maximus (383-388), whom the legions in Britain had proclaimed imperator.	Armenia divided between P
			sia and Rome, 385.
	Basilica of San Paolo fuori le Mura built at Rome, 388	Theodosius recognized Maximus as co-regent on condition that Valentinian II. retain Italy.	Varahran IV., king of Pers
			388-399.
		Valentinian, driven from Italy (387) by Maximus, fled to Theodosius, who returned with him, captured Maximus at Aquileia, and slew him.	
		Paganism proscribed, 390.	
		Uprising in Thessalonica (390) put down with great cruelty by Theodosius, for which he was excluded by bishop Ambrosius of Milan from Christian communion, until he had done penance.	
	San Lorenzo at Milan built, 390.	Valentinian II. murdered by Arbogastes, 392.	
		Eugenius, set up by Arbogastes, killed in battle with Theodosius at Aquileia, 394.	Alaric, leader of the W
			Goths, lays waste Macedon
			Illyria, and Greece, 395.
		Arbogastes commits suicide.	Stilicho attacks the W
		Empire reunited under Theodosius, 394-395.	Goths, but they elude him, 39
		Death of Theodosius, 395.	War of Britons with Picts a
			Scots, 396.
		Division of administration into an eastern and a western section becomes a permanent division of the empire, 395.	Isdigerd I., king of Pers
		The eastern portion of the empire was ruled by Arcadius, with Rufinus, imperial vicar. Capital, Byzantium or Constantinople.	399-419 or 420.

From the Death of Caesar to the Death of Alaric, B. C. 44-A. D. 410.

D.	DISCOVERIES, ARTS, CRAFTS.	ROME.	OTHER COUNTRIES.
400	Triumphal arch of Theodosius built, 405. First use of bells in Europe, 405. Public schools established by Theodosius at Rome; attempted restoration of learning, 420.	The western portion was ruled by Honorius (395-423), and the Vandal Stilicho was appointed his guardian and chancellor. The enemies of Stilicho defamed him to Honorius, who caused him to be murdered (408). Rome was the capital, but after 402 Ravenna was the royal residence. Last triumph at Rome, 404. Alaric at Rome, 408-410. Romans leave Britain, 409-420. Sack of Rome by Alaric, 410. Disintegration of Roman Empire. Beginning of barbarian kingdom, 410-451.	Stilicho fights a drawn battl with Alaric at Pollentia, 402. Stilicho annihilated fightin bands of Germans under Radagais at Fæsulæ, 404-406. Burgundians settle on the Middle Rhine, 406-413. Salian Franks settle in northern Gaul, 408. Bands of Vandals, Suevi, and Alani, after defeat by the Franks, settle in Spain, 409. Honorius renounces the sovereignty of Britain and withdraws Roman legions, 409-420. Death of Alaric at Cosenza in lower Italy, 410.

From the Death of Alaric to the Time of Charlemagne, 410-768 A. D.

D.	PERSIA.	ROME.		TEUTONIC TRIBES.			
		Western Empire.	Eastern Empire.	Britons.	Franks.	Visigoths (West Goths).	Vandals.
410	Varahran V., 419 (420)-440. The pretender Chosroës slain. Christians persecuted. War with Rome; peace (422), Varahran promising to end the persecution. Seven thousand Persian captives ransomed by Acacius, bishop of Amida. Beginning of wars with the Ephthalites, a people probably of Tibetic or Turkish stock, living beyond the Oxus. Invading khan surprised, defeated, and slain. Tatars punished in their own country. Isdigerd II., 440-457. War with Rome declared; peace immediately concluded. Nine years' war with the Ephthalites; their final defeat in their own country. Isdigerd's efforts to convert Armenia to Zoroastrianism caused religious war; Christians defeated, 455 or 456. Armenia forcibly converted. Isdigerd II. defeated by the Ephthalites. Civil war between Hormisdas and Perozes, sons of Isdigerd II.; Perozes (459-483?) victorious. Great famine, 466?. Unsuccessful war and ignominious peace with the Ephthalites, 464-465. Armenian revolt under Vahan.	Joannes, emperor, 424. Valentinian III., emperor, 425-455. Government by his mother, Placidia, as regent, at first. Origin of Venice, 452. Valentinian III. murdered by Petronius Maximus, 455. Petronius Maximus, emperor, 455; killed just before the capture and 14 days' plunder of Rome by the Vandals, 455. Eudoxia, widow of Valentinian, compelled to marry Petronius Maximus, 455. Genseric at Rome, 455. Avitus, usurping emperor (455-456), deposed by Recimir. Majorianus, emperor (457-461), placed on the throne by Recimir and deposed by him. Libius Severus, emperor (461-465), placed on the throne, and probably deposed by Recimir.	Theodosius II., 408-450. Government carried on by Pulcheria, sister of Theodosius II., 414-446. Death of Theodosius II., 450. Huns exact repeated contributions. Pulcheria again ruler with Marcianus, emperor, 450-457. Leo. the Thracian, emperor, 457-474. Unsuccessful expedition against Vandals in Africa, 468.	Angles and Saxons summoned by the Britons to aid in repelling Picts and Scots, 449; founded eight states,—Sussex, Wessex, Essex, Kent, East Anglia, Mercia, Bernicia, Deira; last two later united to form Northumbria. Hengist and Horsa, Jute chiefs, land in Thanet, 449. Country between the Thames and Andredsweald gradually conquered. East and West Kent.	Treves taken from Rome. Large territories on the Meuse and the Scheldt held by the Franks as the suzerains of Rome. Franks fought under Aetius against Attila on the Catalaunian fields (Battle of Chalons), 451.	Led by Athaulf (410-415) to Gaul. Athaulf married sister of Honorius, in Narbonne, 414. Athaulf, pursued by the imperial general Constantius, proceeded to Spain; subdued Barcelona; was murdered, 415; his successor, Sigric, murdered. Walja, king, 415-419. Treaty with Honorius concluded. Walja fought for Rome against Alani, Vandals, and Suevi; obtained a grant of southern Gaul under Roman supremacy. Kingdom of Tolosa (415-507) founded by Walja; capital at Tolosa (Toulouse); soon independent. Aid the Romans against Attila, 451. Theodoric I., king of the West Goths, slain in battle on the Catalaunian fields, 451.	Vandals and part of the Alani taken to Africa by King Genseric (Gelseric), 429. Genseric successful over Roman governor Bonifacius; brief peace, 435; conquest of Carthage, 439. Vandal kingdom in Africa, 429-534; capital, Carthage (St. Augustinus, bishop of Hippo Regius, d. 430). Plunder by their fleets the coasts of lower Italy and Sicily, 440. Pillage of Rome for fourteen days, 455. Control islands of the western Mediterranean and entire northern coast of Africa as far as Cyrene.

From the Death of Alaric to the Time of Charlemagne, 410-768 A. D.

A. D.	PERSIA.	ROME. Western Empire.	ROME. Eastern Empire.	TEUTONIC TRIBES. Britons.	Franks.	Visigoths (West Goths).	Vandals.
410	Ephthalites again attacked by Perozes, who was defeated and slain. Balas (Persian, Valakhesh or Volgases), 483?-487. Tribute probably paid to Khush-newaz, the Ephthalite khan. Armenia pacified. Edict of toleration. Fire altars destroyed. Kobad, son of Perozes, first reign 487?-498. Victorious war with the Khazars, a people of uncertain race, living between the Don and the Volga. Kobad and many others converts to the ascetic and communistic doctrines of Mazdak, a high priest of Zoroaster, which causes disorders in Armenia and Persia. Kobad deposed. Zamasp (brother of Kobad), 498-501.	Government of Rome by Recimir, 465-467. Anthemius, emperor (467-472), placed on the throne by Recimir. Olybrius, emperor, 472. Death of Olybrius and Recimir, 472. Glycerius placed on the throne by the Eastern court, 473. Julius Nepos (474-475) appointed by emperor of the East. Romulus Augustulus (475-476), last of the imperial line in the West, placed on the throne by his father, Orestes, prominent among the mercenaries. Odovaker (Odoacer) deposed Romulus Augustulus, 476. War between Odovakar and Theodoric the Great, 489-493; Odovakar defeated. Battle of Aquileia (489); of Verona (489); of the Adda. (490). Theodoric takes the title of king of Italy (493-526), and makes Ravenna his capital.	Theodoric a hostage at the Eastern court, 462. Zeno, emperor (474-491), after a brief regency for his son Leo II. Zeno suppresses the rebellion of Basiliscus by the aid of the Ostrogoths, 475-477. Zeno encourages Theodoric to wage war on Odoacer, 488. Anastasius I., emperor, 491-518.	South Saxons (Ælle, Cymen, Cissa, Wlencing), land at Cissanceaster (477) and conquer region south of the Andredsweald. Ælle first Bretwalda of Britain. Storm of Anderida, 491; inhabitants massacred. West Saxons, under Cerdic and Cynric, found important settlement on southern coast, west of the Andredsweald, 495.	Childeric at Paris, 464. Battle of Soissons, 486; Roman governor Syagrius defeated by Salic Franks under the Merovingian Chlodwig (Chlodowech, Clovis, 481-511). Frankish kingdom in northern Gaul. Chlodwig sole ruler of all the Franks; victory over the Alamanni, 496. Chlodwig and the Franks converted to Catholic Christianity: Chlodwig baptized by Remigius, bishop of Rheims, 496.	Thorismund, 451-453. Theodoric II., 453-466. Euric, 466-483. Alaric II., 483-507.	Decay o kingdo after deat of Genseric 477. Hunneri (477-484), so of Genseric persecute the Catholics wars agains the Moors o Africa. Guntamund 484-496. Thrasa mund, 496-52 The Vandal aided by th Goths resis the Moors o Tripoli.
500	Escape of Kobad to the Ephthalites and return at head of an army. Voluntary resignation of Zamasp. Second reign of Kobad, 501-531. Support of Mazdak withdrawn. War declared against Eastern Empire for its refusal to fulfill its agreement to aid in the defense of the pass of Derbend, in the Caucasus, the common route of the nomadic tribes in their invasions of the Eastern Empire and Persia. Amida sacked, 502. Peace impelled by an Ephthalite invasion, 507. Anastasius, emperor of the East, erected fortress of Daras, twelve miles from Nisibis. Second war with Eastern Empire, 524-531; Persians at first victorious, but defeated by Belisarius in the battle of Daras, 528 Chosroës I., Anushirwan ("The Just"; son of Kobad), 531-579; possibly the greatest of the Sassanid kings.	Amalasuntha, daughter of Theodoric, becomes regent for her son Athalaric, 526-535.	Justin, emperor, 518-527. Justinian I., emperor (527-565); law codified in form known as the *Corpus Juris Civilis* (Tribonianus). Schools at Athens closed, 529. Code of Justinian published, 529. Parties of the circus; whites, reds, blues, greens; sanguinary contests ("Nika"), 532.	Royal title assumed by Cerdic and Cynric, 517. Battle of Mons Badonicus, 520; repulse of Saxons attributed by Cymric traditions to Arthur, king of the Silures. Saxons in Essex, 527. Angles, 527.	Chlodwig vanquished the Burgundians at Dijon, and made them tributary, 500; overcame the West Goths at Vouillé or Voulon, near Poitiers (507), but was defeated by them at Arles. Death of Chlodwig. Kingdom divided, 511. Theoderic I. (Thierry, 511-533), Childebert I. (511-558), Chlodomer (Chlodomir, 511-524), and Chlotar I. (Clotaire, 511-561), the four sons of Chlodwig, ruled from the court camps of Metz, Paris, Orléans, and Soissons. Theoderic I. conquered kingdom of the Thuringians, 530-532; northern part given to their allies, the Saxons; southern part retained by the Franks. Two younger brothers of Theoderic I. overcame the Burgundians, 530-532.	Defeated by the Franks at Vouillé or Voulon, near Poitiers, 507. Are victorious over the Franks at Arles, 507; retain control of Septimania (coast between the Rhone and Pyrenees). Spanish possessions and those in southern Gaul governed (507-526), by Theodoric the Great for his grandson, Amalaric, 507-531. West Gothic (Visigothic) kingdom in Spain, 507 (526)-711. Amalaric assassinated, 531. Theudis rules in Spain, to which the Visigothic empire was limited, 531-548.	Hilderi (523-530), so of Hunneric Hilderic de posed by Ge imer, 530. Power i Africa de stroyed b Belisariu (533-534), gen eral of Jus tinian, East ern emperor Gelime captured.

From the Death of Alaric to the Time of Charlemagne, 410-768 A. D.

. D.	DISCOVERIES, ARTS, CRAFTS.	PERSIA.	EASTERN EMPIRE.	TEUTONIC TRIBES.			
				Britons.	Franks.	Visigoths (West Goths).	Ostrogoths (East Goths).
500	Greek School of painting, 500. Boethius writes his geometry and arithmetic, which formed the basis of mediæval mathematics, 510. Pamirs and Punjab visited by Hoe-sing of China, 518-521. Anthemius of Lydia and Isidorus of Miletus build church of St. Sophia at Constantinople, 525-537. Benedict (480-543) forms his first monastery on Monte Cassino, in central Italy, 529. Code of Justinian published, 529. Procopius says that eggs of silkworms were brought from China by monks, about 530. The *Aqua Paola* aqueduct at Rome restored by Belisarius, 537. Farm labor on Sunday prohibited by the Council of Orleans, 538. Earliest reference to wooden coffin in England, 542. Bells first known in France, 550. Notation by nine digits and zero, called Arabic figures, known in Hindustan, 550. Silkworms reared in Constantinople, 551. Quills used for pens, probably about 553. Fifth great council of the Church at Constantinople, 553. Monastery of Iona founded by St. Columba, in Scotland, 563.	Peace with Rome (533): 11,000 pounds of gold paid by Rome for fortification of the Caucasus; Daras to retain its fortifications, but not to be Roman headquarters; recent conquests surrendered by each; *eternal* friendship and alliance (causing this peace to be called the "endless peace"). War declared against Rome, 540. Antioch captured, 540. Ransom exacted from chief cities of western Asia Minor. Truce concluded, 545. War (549) with the Lazi (people of ancient Colchis), who were aided by Rome. Petra captured by the Romans and Lazi, 551. Chosroës's expedition to Arabia (562) against the Christian kingdom founded there early in the sixth century by the Abyssinians; Abyssinians expelled and country left to the control of Saif, leader of the native Homerites, after whose murder Arabia became a Persian province. Expedition of Chosroës to India? Unsuccessful invasion of Dezabul, khan of the Turks, who had conquered the Ephthalites, and became an ally of the Eastern Empire. Peace with Rome (563): Rome to receive Lazica and to make an annual payment to Persia; Christians in Persia permitted exercise of their faith; commercial intercourse between the empires limited to certain marts and roads; diplomatic intercourse to be free; Daras to keep its fortifications; arbitration to settle future disputes; allies of either party included in the peace; Persia to maintain the Caspian Gates alone; the peace concluded for fifty years. Victorious wars with the Khazars and Ephthalites. Mohammed or Mahomet, 570-632.	Belisarius, 535-560. Campaigns of Belisarius against the Vandals in Africa, 533-534; and the East Goths in Italy, 540, 544-549. Church of St. Sophia, built by Constantine (Hagia Sophia), burned and magnificently rebuilt. Empire's decline under successors of Justinian. Persians, and, later, Arabs, conquer a part of the African and Asiatic provinces. Narses destroys kingdom of the East Goths, 555. Exarchate. Almost entire Exarchate conquered by Longobards (Lombards); Calabria, Naples, Venice, Ravenna, retained by Eastern Empire. Death of Belisarius and of the Eastern emperor Justinian, 565. Justin II. emperor, 565-578. War with Persia renewed, 572. Tiberius Constantinus, emperor, 578-582.	Modern Berkshire conquered by Cynric, 534-556. Wessex made powerful by Ceawlin (556-591 [3]), later called the second Bretwalda of Britain. Battle of Deorham, 577. Power of Ceawlin extended to the Severn. Cymry of Cornwall (Devraint) separated from those of West Wales. East Saxons settle north of the Thames. Camulodunum (Colchester) sacked. Small kingdom established near the Wash. Middle Saxons settle about London. East Angles occupy region north of the East Saxons, the forest, and the great fens about the Wash. North Angles settle Deira and Bernicia (547), north of the Humber. Central Yorkshire conquered. Under Ida, "the flame bearer," conquests of the Angles extended to the Esk. Angles occupied (early in sixth century), the present counties of Leicester, Lincoln, Northampton, Nottingham, and Warwick; later united in the kingdom of Mercia (Cridda), 582 ?.	Provence obtained, 536. Supremacy over Bavaria and Swabia upon fall of East Gothic kingdom, 555. Kingdom reunited under Chlotar I. (558-561), who survived his three brothers. Death of Chlotar I., 561. Kingdom divided (561) among grandsons of Chlodwig: Charibert I. (561-567), Chilperic I. (561-584), Guntram (561-593), Sigibert I. (561-575).	Theudis assassinated, 548. Kingdom of the Suevi in Spain united with that of the West Goths, 585. Converted to Roman Catholic Church, 587.	Kingdom in Italy founded by Theodoric the Great (493-526); residence, Ravenna, sometimes Verona. Cassiodorus, the historian. A part of southern Gaul added (507) to the kingdom by Theodoric the Great, who also governed (507-526) the Spanish possessions and Gallic lands of the West Goths. Symmachus and Boëthius executed, 525. Death of Theodoric the Great, 526. Amalasuntha, daughter of Theodoric, regent for her son, Athalaric, 526. Death of Athalaric, 534. Amalasuntha made coregent with Theodahad, who murdered her. War with Eastern Empire, 535-555; King Vitiges carried captive to Constantinople. Belisarius, general of Eastern emperor, Justinian, offered Italian crown by the East Goths; declines. Under Totila, reconquered large part of Italy. Rome recaptured by Belisarius; taken a second time by Totila. Totila defeated and slain by Narses, general of Justinian, at Taginæ or Busta Gallorum, 552. Kingdom destroyed by Narses, 555.

From the Death of Alaric to the Time of Charlemagne, 410-768 A. D.

A. D.	DISCOVERIES, ARTS, CRAFTS.	PERSIA.	EASTERN EMPIRE.	TEUTONIC TRIBES.			Other Countries
				Britons.	Franks.	Lombards.	
500		War declared on Persia (572) by Justin, emperor of the East. Syria devastated by Chosroës, 572. Fall of Daras, 573. Empire divided into four governments. Fixed land tax in place of former variable tax on produce; tax collectors under supervision of the priests. Improved irrigation. Army reformed. Foreigners protected. Learning encouraged. Revision of laws of Artaxerxes. Shah-na-meh, or Book of the Kings, the basis of Firdusi's epic. Fables of Pilpay and game of chess introduced from India. Death of Chosroës in Mesopotamia, 579. Hormisdas IV. (Hormazd), 579-589; son of Chosroës; ruled wisely at first, but became the worst of Persian kings. Invasion by Maurice, emperor of the East, 579. Persians defeated at Constantia, 581. Alternate victory and defeat. Invasion (589) by Khazars, Arabs, and the great Khan of the Turks; the last defeated and slain by the Persian general, Bahram. Hormisdas invades Lazica and provokes war with Rome, 589. Defeat of Bahram on the Araxes. Bahram, insulted by the king, revolts. Hormisdas deposed and murdered, 589. Chosroës II., Eberwiz, 589-628. War with Bahram. Chosroës II. driven from the kingdom. Crown assumed by Bahram (Varahran VI.), 590-591. Chosroës II. restored to the throne by a Roman force. Flight of Bahram to the Turks.	Persians invade Byzantine territories, 572, and continue a war for 19 years. Maurice, emperor, 582-602. Period of decline caused by deficient or unfortunate rulers who drained upon the resources of the empire, and following the Persian War by a burden of taxation, and inroads by Slavs and Avars from the north. Gregory I. (the Great), bishop of Rome (590-604). Beginning of the Papacy.	Britain divided by 575 between Cymry and Teutons, by a line drawn almost north and south midway of the breadth of the land. Kingdom of Northumbria formed (588), by enforced union of Deira and Bernicia under Æthelric, king of Bernicia. Æthelbert, king of Kent, later named the third Bretwalda, ruler over East Anglia, Essex, Middle Britain, 590-616; married Catholic Christian princess Bertha, daughter of Charibert, king of the Franks. Augustine, legate of Pope Gregory the Great, arrived, 597. Kent converted. Quarrel between Augustine and the British church (form of the tonsure, date of Easter). East Saxons converted. Laws of Æthelbert. East Angles revolt against efforts for their conversion. Middle Britain subjugated (about 610-617) by Rædwald of East Anglia, later called the fourth Bretwalda.	Death of Charibert I., 567; his territory equally divided among his brothers: Austrasia, capital Rheims, population mostly German; Burgundy, capital Orléans; Neustria, capital Soissons; population of the two latter divisions Romano-Celtic or Romance. Family divisions and frightful wars. Feud of Brunhilde of Austrasia, daughter of Athanagild, king of the West Goths, and Fredegunde of Neustria (597), slave, and later wife, of Chilperic I. Decay of the Merovingian power following a period of anarchy. Entire kingdom united (613) under Chlotar II. of Neustria, great-grandson of Chlodwig.	Alboin (?-573) destroys kingdom of the Gepidæ on the lower Danube; leads the Longobards (Lombards) into Italy, which he conquers as far south as the Tiber, 568. Almost the entire exarchate of the Byzantines conquered. Kingdom of the Longobards in Italy (568-774) established. Cleph, son of Alboin, king (573-574?), pushes conquests to lower Italy and establishes independent Longobardian duchies, but rules helplessly amid anarchy. After an interregnum of about ten years Authari or Flavius, king (583-590), institutes an admirable form of government. Conversion of the Longobards to Christianity begun through the influence of Theodelinde, wife of Authari. Theodelinde, wife of Authari, unites the Lombards to the Church. Agilulf, (590-615). From his time may be dated the beginning of civilization among the Longobards.	Actual history remains practically blank from about 400 A. D. until the Mohammedan Period. Previous to 590 north China was ruled for about 200 years by Tunguse family called Toba. Simultaneously with the growth of the Tobas Tunguses in north China a power called the Jeujen has sprung up in the desert region, and was at the height of its power probably about 585-590. Yang Kien, Chinese general of the Chow dynasty, succeeds (590 once more in unifying China, founding the Suy dynasty which rules 590-618. Mohammed's flight (Hegira) from Mecca to Medina 622.
600	Suicide a crime, and those committing it denied funeral services and decent burial, 578. The eight musical modes begun by St. Ambrose and known as the "Gregorian modes" completed by Pope Gregory (590-604). Block-printing said to have been invented by the Chinese. Saddles were known in England, probably 595. Paper made from cotton, 600. The oath in judicial proceedings said to have been introduced into England, about 600.	War with Phocas, murderer of Maurice, 603-610; Daras captured; Armenia, Galatia, Phrygia, and Syria devastated; Antioch sacked.					

From the Death of Alaric to the Time of Charlemagne, 410-768 A. D.

A. D.	DISCOVERIES, ARTS, CRAFTS.	PERSIA.	EASTERN EMPIRE.	TEUTONIC TRIBES. Britons.	Franks.	Lombards.	Mohammed and the Caliphate.
600		Cappadocia invaded, 612. Damascus captured, 614. Jerusalem sacked, 615. Persian general Shahr-Barz captures Alexandria and Pelusium; Egypt subjugated, 616. Chalcedon captured, 617. Persian camp within a mile of Constantinople. Rhodes and Ancyra captured, 620. Limits of empire under Darius I. again attained. Romans land in Gulf of Issus; Shahr-Barz defeated, 622.	Heraclius, emperor, 610-641.	Battle of Chester, 607; Cymry of Strathclyde defeated by Æthelfrith of Northumbria, who, extending his realm to the sea, separated Strathclyde from Wales. Battle of the Idle; Æthelfrith defeated and slain by Rædwald. Eadwine of Northumbria (617-633) supreme over all Teutonic Britain except Kent; the fifth Bretwalda. Eadwine converted, 627.	Brunhilde seized, tortured, and dragged to death by a wild horse, 613. Majores domus become powerful; at first, superintendents of the royal household; later, leaders of the feudal retainers; hereditary claim to the office acquired first in Austrasia, later in Neustria, by the Pipins (Carolingians), of pure German blood.		Mohammed victorious in Arabia, 629. Death of Mohammed, 632. Abu-bekr, father-in-law of Mohammed, caliph, 632-634. Collection of the Koran, afterwards enlarged by the transcription of the Soona, an oral tradition. Believers separated into Soonees, who accepted this addition, and Sheeahs, who rejected it, and considered Ali, son-in-law of Mohammed, his only rightful successor.
	Sugar brought into Europe from Asia, 625. Cotton cloth known in Arabia, 627. Bronze throne of Dagobert, now in the Louvre, made about 630. First convent in England erected at Folkestone, 630. Enameling on gold and metals carried to high degree of perfection, 630. Byzantine styles predominate in articles of furniture, 630. Carvings in ivory, including cups and vases, made with some degree of artistic excellence, 630. Consular diptychs or folded two-leaved tablets of ivory are known to date from this time and earlier, 630. During the dark ages many of the processes of industrial arts were lost; notably those of pottery and glass.	Retreat of Chosroës. Romans winter in Albania. Battle of the Sarus, 625; Shahr-Barz defeated. Alliance of Chosroës with the Avars. Unsuccessful attack on Constantinople. Battle of Nineveh, December 12, 627; Persians defeated. Flight of Chosroës. Persian troops at Ctesiphon, under two of the king's sons, mutiny. Chosroës captured and murdered, 628. Kobad II. (Siroës), 628-629 (?). Peace with Rome concluded on a basis of exchange of captives and conquests. Death of Kobad.	Heraclius sails to Lazica and invades Armenia, 623. Jerusalem recovered from the Persians by Heraclius, 628.	Mercians revolt under Penda (627-655); in alliance with Cadwallon of Wales are victorious over Eadwine at battle of Heathfield, 633. Death of Eadwine. Penda of Mercia supreme (633-655) over East Anglia, Essex, and Middle Britain. Battle of the Hevenfeld, 635; Cadwallon defeated by Oswald of Bernicia. Conquest of Deira. Oswald of Northumbria, later called the sixth Bretwalda, supreme over Kent, Sussex, Wessex, Essex. Conversion of Northumbria by Irish missionaries.	Kingdom divided (622-678), with several temporary unions: (1) Austrasia, chiefly German, divided by the Scheldt from (2) Neustria (Romance, northern France to the Loire) and Burgundy. Bretagne independent, Vasconia and Aquitania nearly so. Dagobert, 628. Battle of Testri (near St. Quentin), 687; Pipin of Héristal, major domus of Austrasia, victorious over major domus of Soissons (Neustria), and made sole major domus of entire kingdom of the Franks.	Rothari (636-652) famous for declaring code of Lombard laws, 644. Lombards assimilate with and are refined by contact with the Italians.	Omar (634-644), founder of Arabian domination in the East; assumed title of Emir-al-Mumenin ("Prince of the faithful"), after wards held by all the caliphs. Syria (Damascus 635), Palestine, Phœnicia, subjugated. Empire of the Sassanidæ (New Persians) destroyed by the battle of Nehavend, 641. Egypt conquered by Amroo, general of Omar. Alexandria captured. Othman (Osman), 644-656. Northern Africa conquered Rhodes captured. Othman murdered during an uprising, 656. Ali (Mohammed's son-in-law) (656-661) not generally recognized.
	An Alexandrian library said to have been burned by the caliph Omar I., 640. Latin first taught in England. Mass in Latin introduced into England. It is said that the caliph Omar opposed a plan for cutting a canal across the isthmus of Suez.	Purandocht and Azermidocht, daughters of Chosroës II., reign. Period of anarchy; throne held successively by nine or ten nobles. Isdigerd III. (632-641 [651]), grandson of Chosroës II., last Sassanid king. Struggle against the caliphs Abu-Bekr and Omar. Kaled's expedition to Hira, 633; Persians defeated. Arabs capture entire region west of the Euphrates, their devastations extending throughout Mesopotamia.	The throne was usurped by Shahr-Barz, but before two months he was murdered by his own troops. Constans II., emperor, 641-668. Pope Martin seized and banished by Constans, 653.	Contest over East Anglia between Oswald and Penda; the former defeated and slain in battle of the Maserfeld, 642. East Anglia, Wessex, Deira, under Penda. Battle of the Winwæd, 655; Penda defeated and slain by Oswiu, brother and successor in Bernicia of Oswald. Oswiu of Northumbria, the seventh Bretwalda, supreme (655-659) over all Teutonic Britain except Kent, Sussex, and Wessex.			

From the Death of Alaric to the Time of Charlemagne, 410-768 A. D.

A. D.	DISCOVERIES, ARTS, CRAFTS.	PERSIA.	Mohammed and the Caliphate.	EASTERN EMPIRE.	TEUTONIC TRIBES.		
					Britons.	Franks.	Lombard
600	Organs introduced into churches, 660.	Persian army of 120,000 levied.	Muawwiyah proclaimed himself caliph in Syria.		Revolt of Mercia under Wulfhere, 659.		
		Battle of Cadesia, 636; Persians defeated by Sa'ad Ibn Abi Wakas; royal standard (Durufsh-kawani) lost.		Constantine IV., emperor, 668-685.	Kings of Northumbria henceforth sovereigns of local power only.		
	I-tsing, of China, travels through Java, Sumatra, India, 671-695.	Mesopotamia invaded by Sa'ad, 637.	Civil wars.	Sixth General Council of the Church at Constantinople, 680.	Rivalry between Rome and the Irish missionaries. Oswiu convened a council which decided in favor of Rome.		
	Bæda, 672?-735; "Historia ecclesiastica gentis Anglorum."	Ctesiphon captured.	Ali murdered.	Justinian II., emperor, 685-711.	The English church organized by Theodore of Tarsus, archbishop of Canterbury, 669.		
	French glass-makers installed at Wearmouth, England, by St. Benedict, 675.	Battle of Jalula; Persians defeated.	Sooneite or Sunnite Ommiads obtained caliphate, 661-750.	Justinian II., banished (695), and restored, 704.	Ine, king of Wessex, 688-726. Kent subjugated, 694.		
	Greek glass workmen called to France, 677.	Susiana and Persia proper invaded by Arabs, 639; Hormuzan, Persian general, captured.	Muawwiyah I., great-grandson of Omeyyah, 661-680.	First doge of Venice elected, 697.			
	Cædmon, ?-680.	Sa'ad recalled.					
	French glaziers at work in York, England, 699.	Persian army of 150,000 raised.					
	Byzantine mosaics and marble used in churches.	Battle of Nehavend, 641. Fall of Sassanid power.	Residence of the caliphs transferred from Medina to Damascus.				
		Persia hereafter governed by the caliphs.					
		Isdigerd III. a fugitive for ten years; murdered, 651.	Caliphate made hereditary.				
700		Conquest of Byzantine Africa as far as Atlantic ocean completed by the governor Musa about 700.		Philippicus Bardanes, emperor, 711-713.	Wars with the Cymry of Cornwall, 710.	Eudes, duke of Aquitaine, asks aid of Charles, son of Pipin, against Arab invaders.	Grimoal duke of Be eventur seizes t throne a complet conversion the Long bards.
	Embalming among the Egyptians probably ceased about 700.	Islam accepted by the Berbers, who, with the inhabitants of Greek Punic, and Roman descent, became amalgamated with the Arabians under the name of Moors. Moors in Spain, 711-1492.		Leo the Isaurian, 717-741. Worship of images prohibited.	Laws of Ine, the oldest West Saxon code.	Arabs defeated near Tours by Charles Martel (major domus 714-741), 732.	Liutpra (712-74 raised th Lombards highest pr perity.
		Battle of Xeres de la Frontera on the plains of the Guadalquivir, 711; kingdom of the West Goths (Spain) destroyed by Tarik, a general of Musa.		Contest over images, 726-842.	Ine abdicated, 726.	Pipin the Short (752-768), son of Charles Martel, raised upon the shield at Soissons, as king of the Franks.	Aistulf (7 756); effort conque Rome feated Pipin, king the Fran who co pletes the tinction the ex chate Ravenna.
		Province of the caliphate in Spain.		Separation of Greek and Latin Churches, 729.	Boniface (Winfrith), apostle of the Germans.	Poperecognized as head of the church by the Concilium Germanicum, 742.	Pipin, short, vades It and restra the Lo bards, 7 755.
	First mention made in history of the navy of Franks, 728.	Country of the Basques penetrated and Gaul invaded.			Willibrod, missionary to the Frisians.	Childeric III., last Merovingian king, deposed and placed in a monastery, 751.	Charlemag sends his w back to h father, Ki Desideriu 756-774.
		Battle between Tours and Poitiers, 732; Arabians defeated by Charles Martel.		Last confirmation of a Papal election by the emperor of the East, 731.	Cuthbert, bishop of Lindisfarne; Wilfrith, of York.	Pipin and his sons Charles and Karlmann are anointed as kings of the Franks by Pope Stephen III., 752; Carolingians in France, 752-986.	Charlemag invades It and ove throws Lo bardy, 774.
		Greatest extent of the caliphate under the last of the Ommiads, including southwestern Asia, northern coast of Africa, part of the Spanish peninsula, Narbona in southern France, Corsica, Sardinia, the Balearic Isles.			Benedict Biscop, abbot of Wearmouth.		
					Æthelbald of Mercia supreme (733-752) over all England south of the Humber.		
					Battle of Burford (Oxfordshire), 752; the West Saxon Cuthred victorious over Æthelbald of Mercia.		
	First public pharmacy erected by Al-Mansur, the Arabian, 745.	Constant wars with followers of Ali.		Constantine V., emperor, 741-775.	Teutonic Britain divided into three great kingdoms, Mercia, Northumbria, Wessex.		
		The Abbassides, 749-1258. Residence, Bagdad.			Strathclyde conquered for Northumbria by Eadbehrt, 756.		
		Merwan II., last Ommiad caliph, overthrown (750) by Abul Abbas, great grandson of an uncle of the prophet.			Offa, king of Mercia, 757-794.		
	A clock is said to have been sent by Pope Paul I. to Pipin, king of Franks, about 760.	All the Ommiad princes (90) murdered except one, Abd-er-Rahman, who fled to Spain and founded there (756) the caliphate of Cordova.					
	Astronomy and geography cultivated by the Arabs, 760.	Most brilliant period of Moorish civilization, 756-1031.					

From the Time of Charlemagne to the Death of Hildebrand, 768-1085 A. D.

A. D.	Discoveries, Arts, Crafts.	Franks Under Carolingians.	England.	Eastern Empire.	Caliphate.	Other Countries.
768	In the eighth century the progress in discoveries, arts, and crafts was very slight, especially during the last half of the period. The Byzantine and Basilical styles of architecture which rose in the sixth century, the one in the East and the other in the West, continued to flourish side by side, the Byzantine style undergoing some minor changes in its development. In sculpture, painting, science, and invention, the century is practically a blank.	Charles the Great (Charlemagne), 768-814; sole ruler after the death of his brother Karlmann, 771. War with the Saxons, 772-804. Eresburg captured, Irminsul destroyed, 772. Sons of Karlmann fled to Desiderius, king of the Longobards, who, upon refusal of the Pope to crown them, occupied the Pentapolis and threatened Rome. Pavia captured. Desiderius placed in a monastery. Charlemagne king of Italy (i. e., the kingdom of the Longobards, northern and central Italy), 774. Sigiburg captured, 775. Saxons west of the Elbe conquered. Eresburg destroyed by the Saxons, who were resubjugated, 776-777. First May-field (assembly) in the Saxon land at Paderborn. Wars with Spain, 778. Saragossa subdued. Frankish rear-guard defeated upon return by Roncevaux, or Roncesvalles. Death of Roland, margrave of the Breton coast. Fresh outbreak of the Saxons upon news of Charlemagne's defeat in the Pyrenees, 778; put down by an army of Alamanni and East Franks. Battle of Bocholt on the Aa, 779; Charlemagne victorious. Saxons subdued, 780; accept Christianity. General revolt of the Saxons under Widukind or Wittekind. Frankish army defeated. Slaughter of 4,500 Saxons on the Aller, 782; result, a formidable uprising, 783. Charlemagne successful at Detmold and on the Hase. Surrender (785) of Wittekind, who became a Christian. First landing of Danes, 787. Second revolt of the duke Tassilo; result, duchy of the Bajuvariæ (Bavarians) disestablished, 788. Wars with the Slavs and the Northmen. Wiltzi defeated by Charlemagne, who proceeded to the Peene, 789. War with the Avars, 791-799. Uprisings among Saxons in the North, who took refuge with the Danes. War with the Danes, 793-804. Frankish march invaded by Gottfried, king of Denmark. Coasts of the German Ocean harassed by Danes. King's Ring, principal camp of the Avars, stormed, 796.	Mercia: Oxfordshire won from Wessex, 777 (?); Welsh kingdom of Powys conquered; Offa's dyke from mouth of the Dee to that of the Wye; laws of Offa. First recorded landing of the Northmen in Britain on coast of Devonshire, 787; invasion, 789-866.	Boundaries extended both in Asia and Europe; administration reformed; commerce encouraged; and colonies planted by Constantine V., 741-775. Monasteries dissolved, 770. Leo IV., son of Constantine, emperor, 775-779. Constantine, son of Leo, emperor (779-797), with Irene, his mother, as regent. Irene has her son blinded and deposed, 780, and reigns until 803. The accession of a woman a pretext for transferring the crown from the Eastern Empire to the Western.	Abd-er-Rahman I. (756-788) receives the caliphate of Cordova in Spain from the Arab chiefs. Saracens expelled from Southern Gaul, 759. Caliphate in Spain divided into six provinces. Residence of Abbasside caliphs transferred from Damascus to Bagdad, 750. Al-Mahdi, caliph at Bagdad, 775-785. Spanish march established by revolting Christians, after 778. Al-Hadi, caliph at Bagdad, 785-786. Harun-al-Rashid, caliph at Bagdad, 786-809. Bagdad the center of learning and civilization. The height of power and splendor of the eastern caliphate. Hisham I., ruler of caliphate at Cordova, 788-796. Al-Hakem I., ruler of caliphate at Cordova, 796-812.	Military feudalism in Japan. Persia becomes the center of Abbas side rule after 750. Arabia loses the pre-eminence which Mohammed had given it and yields to Persian greatness. Many principalities enjoying complete independence arise in Arabia Inroads of the Tatars in China almost incessant from 763 to 780. Mohammedan invasion of India. Capital of the Japanese empire, the home of the mikado and the kuge, permanently fixed at Kyoto, near Lake Biwa, 794
	Cynewulf, early English author, writes two short poems. Christianity introduced into Saxony by Charlemagne, 785. Learning encouraged by Charlemagne, who founded schools, monasteries, and cathedrals, 790. Irish monks visit Iceland, 795.					

From the Time of Charlemagne to the Death of Hildebrand, 768-1085 A. D.

A. D.	Discoveries, Arts, Crafts.	Franks Under Carolingians.	England.	Other Countries.
768		Frankish empire annexed the country between the Raab and the Ems, 796. Kingdom of the Avars soon destroyed. Pope Leo III., driven from Rome (799) by relatives of his predecessor, went to Charlemagne's camp at Paderborn; re-established in Rome by Charlemagne.		Western Africa or Mauretania separated from Egypt and formed into a Mohammedan kingdom by Idris, 789.
800	Couriers instituted by Charlemagne, 800. Canonization instituted by Pope Leo III., 800. St. Mark's at Venice begun, 800.	Office of Emperor of the West revived by Charlemagne, who was crowned emperor by Leo III., on Christmas Day, 800. Ludwig, son of Charlemagne, strengthened the Spanish march, 801. Charles, eldest son of Charlemagne, repulsed the Danes, who retreated beyond the Eider, 808. Charlemagne conducted in person war against Gottfried, king of Denmark, 810. Gottfried murdered by his own servants. Peace with the Danes. Saxony north of the Elbe retained by the Frankish kingdom. Wends conquered. Charlemagne's residences were Aachen (Aix-la-Chapelle), in Austrasia, Ingelheim, and Nymwegen. Imperial rescripts (capitularii). Men of all rank, both laymen and churchmen, members of the assemblies. Alcuin a resident at the court of Charlemagne.	Ecgberht, king of Wessex, 802-837; Cornwall made tributary; Beornwulf of Mercia defeated at battle of Ellandune, 825; Essex and all England south of the Thames subjugated. Ecgberht overlord of Northumbria and Mercia, 828; submission of Wales, 828. All England south of the Forth, except, possibly, Strathclyde, united under Ecgberht.	Barcelona taken from the Moors by the Franks, 801. Nicephorus I., Eastern emperor (802-811), tributary to Harun-al-Rashid. Bulgarians invade the Eastern Empire and slay Nicephorus I., 811. Leo V., the Armenian, Eastern emperor (813-820), defeats the Bulgarians. Michael, the Amorian, Eastern emperor (820-829), loses Crete to the Saracens. Beginning of the Moslem conquest of Sicily, 827. Theophilus, Eastern emperor (829-842), in constant war with the Caliphs. Mohammedans conquer Messina in Sicily, 833. Netherlands invaded and Utrecht sacked by the Northmen, 835. Antwerp burned and Flanders sacked by the Northmen, 836.
	The emperor Charlemagne establishes postal service, 807.	Counts of the border districts; governors of counties; imperial messengers, who periodically visited different parts of the empire to hear complaints, which they reported, with suggestions and observations, to the emperor.		Northmen make their first expedition up the Rhine, 837. Asia Minor invaded by the Caliph Motassem, 838. Amorian War, 838.
	Clergy large owners of land, and dominant in state affairs.	Ludwig the Pious (Louis le Débonnaire), son of Charlemagne, 814-840. Bernhard, nephew of Ludwig, king of Italy under supremacy of Ludwig, revolted, was captured and slain. Empire divided among sons of Ludwig, 817; Lothar given the imperial crown and the greater portion of the empire; Pipin, Aquitania; Ludwig, Bavaria. New division of the empire (829) giving Karl, youngest son of Ludwig, the royal title and Alamannia. Rebellion of three elder sons of Ludwig; civil war. Ludwig the Pious deserted by his troops on the Field of Lies, near Colmar, Alsace, 833; captured (public penance in the church at Soissons); soon liberated by his son Ludwig, and established upon the throne, 834. Death of Pipin, 838; his part of the empire divided between Charles and Lothar, at which Ludwig rebelled. Death of Ludwig the Pious, 840.		Woo-tsung, emperor of China (841-847); temples destroyed, nunneries and monasteries closed; all foreign priests banished. Northmen sail up the Seine and sack Rouen, 842. Theodora, empress of the East, 842. Michael III., Eastern emperor, 842-867. Ludwig, the German, 843-876. Wars with the Slavs, Charles the Bald, and Northmen. Simultaneous attack by Northmen upon all three Frankish kingdoms.
	Romualdus, French architect, flourishes, 830. He built the cathedral at Rheims.		England under West Saxon kings, 828-1066. Sheppey devastated by the Northmen, 834. Ecgberht repulsed by the Danes, 834. Battle of Hengestesdun, 836; Ecgberht victorious over Danes and Welsh. Death of Ecgberht, 837. Æthelwulf, son of Ecgberht, 837-858. Picts and Scots united, 843. Kenneth II., Scotland.	Dublin taken by the Northmen under Olauf, 852. Eastern or Byzantine Empire ruled by the Macedonian line (867-1057). Magyars, Bulgarians, and Arabs attack the empire. Jarls or Vikings defeated at Hafurstfjord, 872. Rolf Ganger in Neustria, 876. Charles the Fat, son of Ludwig, 876-887; emperor, 881; king of the West Franks, 884; united again the monarchy of Charlemagne, except Burgundy; deposed by East and West Franks; abdicated, 887. Syracuse captured by the Saracens, 878
	Catechisms said to have been compiled in the ninth century, perhaps as early as 835. Arabian literature at its height, 840.			

From the Time of Charlemagne to the Death of Hildebrand, 768-1085 A. D.

A. D.	Discoveries, Arts, Crafts.	Franks Under Carolingians.	England.	Other Countries.	Caliphate.	Scandinavia.
800	Norsemen explore Faroe Islands and round the North Cape of Europe, 860. Naddod, Norseman, discovers Iceland, 861. Coast of Greenland explored by Gunnbjörn, a Norseman, 870. Drunkenness made an offense punishable by death by Constantine, king of Scots, 870.	Battle of Fontanetum (Fontenay or Fontenaille), 841; Lothar defeated by Ludwig and Charles. Bi-lingual oath of Strassburg, 842. Treaty of Verdun, 843; imperial dignity retained by Lothar, who received the central Frankish lands (bounded by the Alps and Rhine in the east, the Rhône, Saône, Meuse, Scheldt in the west, and Frankish Italy); Ludwig the German given eastern part of the Frankish lands (between the Elbe and the Rhine), from which in time the German nationality developed; Charles the Bald given western part of Frankish lands, from which the French nationality gradually developed. FRANCE AND SPAIN. Carolingian kings of the Franks, 843-987. Charles the Bald, 843-877. Jura, Meuse, Ourthe, French-German boundary. Normans in France, 860-932. Fiefs made hereditary, 877. Ludwig the Stammerer (Louis II., le Bègue), 877-879. Ludwig III. (Louis III.), in northern France, 879-882. Karlmann (879-882) in Aquitaine. Rebellion of Boso, duke of cisjurane Burgundy, 879. Ludwig victorious (881) over Northmen at Saucourt (Ludwigslied). Ravages of Northmen increase. Karlmann ruler of entire kingdom, 882-884. Charles the Fat of Germany (884-887) chosen king by the nobles; whole empire united. Deposed.	London and Canterbury captured by Danes, 851. Danes winter in Sheppey for the first time, 855. Æthelbald, son of Æthelwulf, 858-860. Æthelberht, brother of Æthelbald, 860-866. Æthelred I., brother of Æthelberht, 866-871. Northmen invade and conquer different parts of the country, 866-1003; settlement in Northumbria. Danes in East Anglia, 866; in Mercia, 868; conquer and settle East Anglia, 870. St. Edmund, king of the East Angles, a martyr. Croyland and Peterborough sacked. Danes in Wessex, 871. Nine battles with the Danes (871), who were defeated at Æscendun by Æthelred and his brother Ælfred. Ælfred the Great, 871-901. Guthorm, Danish king in East Anglia, entered Wessex, 876. Danes settled in Northumbria, 876. Lands in Mercia divided among the Danes, 877. Wessex ravaged by Danes, 878; defeated at Ethandun. Treaty of Wedmore between Ælfred and Guthorm; Danes abandoned Wessex, but received East Anglia and a part of Mercia; London retained by Ælfred. The greater part of England held by the Danes; called "Danelagh." Peace in Wessex, 880-893. Laws revised; judicial department separated from the executive. Fleet created, 882. Several Welsh provinces submit. Danes invade Kent, 893; defeated at Buttington.	Arnulf of Carinthia, 887-899, grandson of Ludwig, the German, defeated Northmen at Löwen, 891; allied with Magyars in invasion of Hungary, 893; crowned emperor, 896; founder of kingdom of Moravia. Ludwig, the child, Arnulf's grandson, 899-911; internecine feuds in Franconia. Conrad successful. Image worship fully restored in Eastern Empire.	Al-Mamun, son of Harun-al-Rashid, caliph at Bagdad, 813-833. Abd-er-Rahman II. (821-852), caliph at Cordova. Government of Mohammedan Spain was the best in Europe at the time.	Godfrey, king of Jutland, in contest with Charlemagne. Halfdan the Black, king of Norway, 841-863; subjugated many petty kings. Dublin conquered by Olauf of Norway, 852. Discovery and settlement of Iceland, by Norwegians, 860-875, etc. Gorm the Old (about 860-935), first king of all Denmark; persecuted Christianity until forced by Henry I. of Germany to desist. Harald Haarfager, king of Norway, 860-933; son of Halfdan; completed conquest of Norway and introduced feudal system. The Jarls defeated at Hafurstfjord, 872. Great migration of the Jarls, the most famous of the vikings. Erik Emundsson, king of Sweden, made important conquests in the East; died 885 ?. Slavs subjugated by Swedes. Settlement of Swedes around Novgorod, the foundation of the future Russian Empire.
900	Time was measured in England by burning candles which lasted twenty-four hours, 886. Alfred the Great establishes a mint at Oxford (879), and builds a fleet of galleys, 897. Arabic figures brought into Arabia from Hindustan, 900. Horn used for window lights in England, 900. Mints established in England, 928.	Northmen under Rolf (Rollo) obtain permanent foothold on the Seine (Normandy), 911 ?; feudal sovereignty over Brittany. Treaty of St. Claire sur Epte. Rollo baptized under name of Robert. Battle of Soissons, 923; Robert, duke of France, brother of Eudes, previously proclaimed king, slain. Charles III. imprisoned by Herbert of Vermandois; died, 929. Flight of Eadgyfu (Edwina), wife of Charles III., with her son Ludwig IV., to her brother Æthelstan, king of England. Death of Rudolf of Burgundy, 936. Louis IV., 936-954.	Death of Ælfred, 901. Eadward the Elder, son of Ælfred, 902-925. Fortresses erected along Mercian frontier. The Five Boroughs (Derby, Leicester, Lincoln, Nottingham, Stamford) conquered by Æthelflæd, "Lady of the Mercians," daughter of Ælfred the Great. Mercia added to Wessex. Essex and East Anglia conquered. Strathclyde and all the Scots submit, 924. Eadward lord of all Britain; died, 925. Æthelstan, son of Eadward, 925-940. League of Danes, Scots, and Welsh crushed, 926. League renewed, but shattered by defeat of the allies at battle of Brunanburh, 937. Eadmund, brother of Æthelstan, 940-946. Scots and Danes revolt. The Five Boroughs and the Danelagh reconquered. Malcolm, king of Scots, given Cumberland as a fief.	Mohammedan invasion of India, 900. Five Chinese dynasties (Later Leang, Later Tang, Later Tsin, Later Han, Later Chow), 907-960. Independent states in Szechuen, Ho-nan, and other provinces of China. Conrad I. of Franconia, 911-918, elected by nobles. Henry I., the Fowler, 919-936. Otto, the Great, king, 936.	Abd-er-Rahman III., ruler of Cordova, 912-961; assumed title of caliph, 929. The *emir al omra* (935) given entire secular power; the caliph the spiritual head. Egypt independent under Fatimites, 969.	Erik Blodöxe king of Norway, 930-934. Haakon, king of Norway, *c.* 930-961. Harold Bluetooth (Blaatand), king of Denmark, 935-985. War between Norway and Denmark.

From the Time of Charlemagne to the Death of Hildebrand, 768-1085 A. D.

A. D.	Discoveries, Arts, Crafts.	France and Spain.	England.	Italy and Germany.	Scandinavia
900	Triangular masonry bridge at Croyland abbey, probably built about 930. Cotton grown and manufactured in Spain, about 950. Linens and woolens manufactured in Holland, 950. Candlesticks used in Britain in the days of king Edgar, 959.	Ludwig from Beyond Seas (Louis IV., d'Outremer), 936-954; recalled by the nobles. Civil war between the king, Hugh the White, or Great, and Otto, king of Germany. Lothar, (954-986); son of Ludwig; influenced by Hugh Capet, son of Hugh the Great. Invasion of Otto II. of Germany. Ludwig V. (Louis le Fainéant), 986-987. With his brief and troubled reign the direct line of Charlemagne is extinct. Capetian dynasty, direct line, 987-1328. Hugh Capet, 987-996. In 987, six great principalities (later called Lay Peerages): Aquitaine, Burgundy, Champagne, Flanders, Normandy, Toulouse. Feudal nobles very powerful. Paris the new capital. Charles the Carolingian captured. Robert II., 996-1031. Incessant wars with the nobles. Rising of the serfs, 997.	Eadmund murdered, 946. Eadred, brother of Eadmund, 946-955. Rebellion of the Danes quelled, 954; final submission of the Danelagh. Eadwig, nephew of Eadred, 955-959. Dunstan, abbot of Glastonbury, driven from the country. Eadgar, the under king of Mercia, 958-975; brother of Eadwig; Dunstan, the true ruler, recalled, 958. Large fleet maintained. Laws revised. Edward the Martyr, son of Eadgar, 975-979. Æthelred II., the Unready, son of Eadgar, 979-1016. Beginning of Danish invasions, 980. Death of Dunstan, 988. Battle of Maldon against the Danes, 991; Brihtnoth, ealdorman of the East Saxons, slain. Ten thousand pounds raised by a special tax (Danegeld) to buy off the Danes, 991. Kent devastated (994) by Swegen (Svend) and Anlaf (Olaf Tryggvasson), who were paid 16,000 pounds. Almost incessant ravages of the Northmen, 997-1015.	Magyars ravage Germany, 908; defeated Ludwig near the Lech, 910. Tribute paid to the Magyars. Deadly feuds in Franconia; Rudolph, bishop of Würzburg, of the family of Conrad of Hesse, against Adalbert of Babenberg. Conradines victorious. Adalbert slain in front of his castle. Death of Ludwig the Child, 911. Crown refused by Otto the Illustrious, duke of Saxony. Conrad I. of Franconia, 911-918; elected by the nobles. Incursions of Slavs, Magyars, and Danes. Incessant war between Conrad I. and West Franks and with his own subjects in the effort to obtain their acknowledgment of his sovereignty. Lotharingia, except Alsace, annexed to kingdom of the West Franks. Kings and emperors of the Saxon house, 919-1024. Henry I., the Fowler, 919-936; unificator of the German empire. Arnulf, duke of Bavaria, and Burkhard, duke of Alamannia (Swabia) forced to recognize Henry's supremacy. Fresh invasion of the Magyars (Hungarians), 924. Nine years' truce with Magyars; peace in Thuringia and Saxony procured by payment of tribute. Lotharingia recovered, 925. Otto I., the Great, 936-973.	Harold of De mark forced Otto II. of Ge many to conse to introduction Christianity, 97 Svend Fork Beard (Tves jaed), king Denmark, 9 1014. Greenland d covered and s tled by Erik t Red of Norwa 985. Vinland (Am ica) seen Bjarne, visit by Leif and o ers, 986-1011. Harald Gra fell, Hakon Ja king of Norwa 988-995. Tributar Wends succe fully revo against De mark. Olaf, the La king, 993-102 first Christi king of Swede Svend of De mark in Englan 994. Olaf Tryggv son, king of N way, 996-1000.
1000	The clock escapement said to have been invented in the eleventh century; sometimes ascribed to Gerbert, about 1000. Newfoundland, Nova Scotia, coast of New England, discovered by Leif Erikson, son of Erik the Red, 1000?. A London bridge built of wood, 1014; partly burned, 1136. Buschetto da Dulichio, Italian, architect of the cathedral of Pisa; flourished, 1016. Science of optics greatly advanced by Alhazen, 1025. The scale of musical intervals, the *gamut*, mentioned by Guido Aretino, a Tuscan monk, 1025.	Suffering of the entire country as a result of the papal edict upon Robert II. because of his marriage with his cousin, Bertha of Burgundy. Rise of the kingdom of Castile, 1020-1230. Famine, 1030-1032. Normandy given the Vexin on the Seine. Dissolution of the Caliphate of Cordova, 1031. Henry I., 1031-1060. Many petty Moorish kingdoms in Spain, 1031-1086.	Northmen given 24,000 pounds, 1002. All (?) Danes in England massacred (November 13, 1002), by order of Æthelred. Feudal system introduced into Scotland, 1008. Northmen given 36,000 pounds in 1007, 48,000 pounds in 1012. Death of Swegen, 1014; succeeded by his son Cnut (Canute). Danes again in possession of that part of England acquired in 878 by treaty of Wedmore. Death of Æthelred, 1016. Cnut chosen king by Danish party in England. Eadmund Ironside, son of Æthelred, chosen king by English party. Many battles between Danes and English, 1016. Eadmund defeated at Assandun; peace concluded. Eadmund given East Anglia, Essex, Wessex, London, and nominal overlordship of England; Cnut given Mercia and Northumbria. Death of Eadmund, 1016. Cnut king of England, 1016. Danish supremacy over England, 1016-1042. Cnut, 1016-1035. England divided into four governments: Wessex, under Cnut; East Anglia, Mercia, Northumberland under jarls or earls. Huscarls, Cnut's personal following. Cnut in Rome, 1027. Laws of Cnut, 1028. Malcolm, king of Scots, subjugated, 1031. Harold, son of Cnut, 1035-1040.	Roman revolt, 1001. Death of Otto III., 1002. Henry II. (the Saint), 1002-1024; son of Henry the Quarrelsome of Bavaria; elected king after the murder of his rival Eckard, margrave of Meissen. First expedition to Italy against Ardoin of Ivrea, 1004. Henry crowned king of Italy at Pavia, 1004. Wars with Boleslav, king of Poland, 1004-1018; Poland retained Lusatia, but was forced to give up Bohemia. Bishopric of Bamberg founded, 1007. Power of the church increased. Monasteries reformed. Public peace vigorously enforced. Henry crowned emperor at Rome, 1014. Ardoin submits, 1014; dies in a monastery, 1015. Normans settle in Italy, 1015. Rudolf III., last king of Burgundy (Arles), resigned in favor of Henry, who to secure this inheritance, went to war, 1016-1018. Wars with the Grecians in lower Italy, 1022. Death of Henry II., July 15, 1024. Franconian or Salian emperors, 1024-1125. Princes of all the tribes present for the first time at an election, 1024. Conrad II., 1024-1039. Rebellion (1025-1030) of Ernest, duke of Swabia, who claimed Burgundy (Arles) as the personal heir of Henry II. Conrad II. crowned king of Italy at Milan, 1026; Ravenna and Pavia compelled to submit. Conrad II. crowned emperor, 1027. The Eider made the boundary between Denmark and Germany, the former receiving Schleswig.	War of Swed with St. Olaf Norway. Knut the Gre (1016-1035), king Denmark a England; most his time spent England. Norway united under Olaf (II.), 10 1030. Unsuccessful tempt of Ulf-J to make Har knut king in De mark; Ulf-J afterwards kill by order of Kn Christianity troduced in Norway. Knut p claimed king Norway, 1028. Magnus t Good, son Olaf, king Norway, 10 1047. Hardekn (Hathacnu succeeded Kn his father, in De mark, 1035-1042 The Graagas or book of t law (Norway) War of Dan with Magnus Norway co cluded by t agreement th whoever o lived the oth should inherit kingdom.

From the Time of Charlemagne to the Death of Hildebrand, 768-1085 A. D.

A. D.	Discoveries, Arts, Crafts.	France and Spain.	England.	Italy and Germany.	Scandinavia.
1000	Mohammedan architecture reaches final fixed types, eleventh century; the golden age of the architecture of this people dates from the tenth century.	Exploits of The Cid, 1034-1090. Rise of the kingdom of Aragon, 1035-1258.	Harthacnut, son of Cnut, 1040-1042. Godwine, earl of Wessex. Siward, earl of Northumberland. Leofric, earl of Mercia. Eadward, the Confessor, son of Æthelred, 1042-1066.	Poles under Mieczeslav II. devastated Germany to the Saale, and carried 10,000 prisoners to Poland. Hungarians unsuccessfully attacked, 1030.	
		Truce of God (Treuga Dei), limiting the days available for warfare to eighty a year; introduced by the clergy, 1041.	Norman influence supreme at court. Godwine exiled, 1051; recalled (1052) and caused a general banishment of the French; died, 1053. Wales subjugated by Harold, earl of Wessex, 1063.	Ernest, duke of Swabia, slain in battle, 1030. Conrad II. victorious over the Poles, forcing them to surrender their prisoners; Lusatia restored to the empire, 1031. Mieczeslav a vassal of Conrad II., 1032. Death of Rudolf III. of Burgundy, 1032.	Magnus, king of Denmark, 1042-1047. Svend Estridsen, king of Denmark, 1047-1074; nephew of Knut.
	The curfew bell introduced into England, 1068.	Norman conquest of Sicily, 1060-1093.	Harold, earl of Wessex, shipwrecked on coast of Normandy (1064), became vassal of William, duke of Normandy, and promised to secure to him the succession to the English throne? Death of Eadward, 1066. Harold, earl of Wessex elected king, 1066.	Burgundy won from Odo, count of Champagne, heir of Henry II., and united with the empire; later the Romance portions along the Durance, Isère, Saône, and Rhône, were annexed to France. Small fiefs made legally hereditary in Italy; this was the custom in Germany.	Emund Gammle (the Old), last king of the Upsala line, in Sweden; died about 1056. Stenkil, king of Sweden, 1056-1066.
	Rise of Romanesque style of architecture in the eleventh century; it began in Germany, Italy, and France, later extending into England and Spain.	Philip I., 1060-1108. Normans conquer England, 1066. Vow of celibacy required of all priests, 1073.	Succession claimed by William, duke of Normandy. Yorkshire invaded by Harold Hardrada, king of Norway, and Tostig, brother of Harold of England; invaders defeated and slain at battle of Stamford Bridge, September 25, 1066. Battle of Hastings or Senlac (October 14, 1066), between William of Normandy and Harold of England; Harold defeated and slain. Eadgar Ætheling, grandson of Eadmund Ironside, chosen king; soon submitted, with the chief men, to William. Norman kings, 1066-1154. William the Conqueror (1066-1087) elected king. Anglo-Saxons ill-treated and robbed of their estates. Northumbria and Mercia unsubmissive. Rebellion in the north aided by a Danish fleet under Swegen, 1068; Danes bought off by William, and insurgents crushed. Northumberland devastated by fire and sword. English revolt (1071) under Eadwin and Morkere; Eadwin defeated and slain; Morkere sought refuge with the outlaw Hereward at Ely, which was captured. The four large earldoms abolished, 1071. Shire the largest political division; sheriffs in each appointed by the king. Continental feudalism induced. Norman barons placed over lands of the English nobility. English Church reformed and organized by William. Mutiny of Norman barons in England soon quelled, 1075-1076. Rebellion of the conqueror's son Robert in Normandy, 1077-1080. Odo, bishop of Bayeux, William's brother, imprisoned for intrigue. Invasion from Denmark and Norway averted, 1085.	Second expedition of Conrad II. to Italy, 1036. Death of Conrad II. at Utrecht, 1039. Henry III. ("the Black"), son of Conrad II., 1039-1056. Imperial power at its height. Henry III. also, for a time, duke of Bavaria, Franconia, and Swabia; ducal throne in Carinthia long unoccupied. Peter, king of Hungary, reinstated by Henry III., became a vassal of the empire. Bavarian Eastmark extended to the Leitha. First expedition of Henry III. to Rome, 1046-1047. Synod compelled by Henry III. to depose the three rival popes (Sylvester III., Gregory VI., Benedict IX.), each accused of simony. Suidger, bishop of Bamberg, appointed Pope as Clement II. Henry III. crowned emperor by Clement II., Christmas, 1046. Three German popes in succession after Clement II. appointed by Henry III. Drogo, son of the Norman Tancred of Hauteville, invested with Apulia. Rebellion of Godfrey the Bearded, duke of upper Lotharingia; his province given (1049) to Alsatian count Gerhard, ancestor of house of Lorraine. Second Roman expedition, of Henry III., 1055; death at Gozlar, 1056. Henry IV., 1056-1106; his mother, Agnes of Poitou, regent. Carinthia given to Berthold of Zähringen; Bavaria to Saxon count Otto of Nordheim; Swabia to Rudolf of Rheinfeld. Henry IV., abducted from Kaiserswert to Cologne by Archbishop Anno, 1062. Archbishop Anno compelled to share administration of the empire with Adalbert, archbishop of Bremen (1065), against whom the princes conspired. Imperial Diet at Tribur, 1066. Adalbert banished from court for three years; death, 1072. Otto of Nordheim, duke of Bavaria, deposed; Bavaria given to his son-in-law Welf, son of Azzo of Este. Magnus, duke of Saxony, a prisoner. Saxon uprising; Henry's flight from the Harzburg, 1073; humiliating peace; the Harzburg destroyed. Contest with Pope Gregory VII. (Hildebrand), 1073-1085. Celibacy of the clergy strictly enforced.	Seventeen years' war of Denmark with Harold Hardrada of Norway ended in 1064. Harald III., Hardrada, king of Norway, founded Opslo (Christiania); slain at battle of Stamford Bridge, England, 1066. Magnus II., king of Norway, 1066-1069.
	Tide mills in use in Venice, 1078.				
	Omar Khayyám, a Persian astronomer, proposes a reform of the calendar similar to that later accomplished by Pope Gregory XIII.: error in this proposed calendar, one day in 5,000 years; error in Gregorian calendar, one day in 3,325 years, 1079.				Wars for two hundred years between the Gauta and the Svea, Sweden.
	Church of St. Mark's at Venice completed, 1085.	Domination of the Almoravides in Spain, 1086-1147.			Taking of Malta by the Normans, 1091. War of Danes with the Wends. Olaf, king of Norway, 1069-1093. Harold Heyn, king of Denmark, son of Svend, 1077-1080. St. Knut, son of Svend, king of Denmark, 1080-1086.

Death of Hildebrand to the Fourteenth Century, 1085-1300 A. D.

A. D.	Discoveries, Arts, Crafts.	England.	France.	Italy and Germany.	Crusades.	Scandinavia.	Other Countries.
1085	Compilation of the Domesday book, the record of a statistical survey of England in 1085-1086. It contains populations, information regarding ownership, state and area of cultivation, etc.	Oath of fealty from all under tenants to the king direct, 1086.		Hermann of Salm set up as king by the Saxons; abdicates and dies, 1088.	Peter of Amiens (the Hermit, c.1050-1115) preaches the Crusade, 1095.	Nobles of Sweden attain supremacy in the Diet.	Seljuk supremacy in the East, 1080.
		William II., the Red, 1087-1100; second son of William the Conqueror.	Normandy invaded by William II. of England, 1090.				
				Saxons, assured of their ancient privileges, submit.	Bands led by Peter, Walter of Pacy, Walter Senzaveir, and others, nearly annihilated in Hungary and Bulgaria.		
			Peace with England, 1091.		First Crusade, 1096-1099.	Olaf Hunger, king of Denmark, 1086-1095.	
		Death of Lanfranc, 1089.			Bishop Adhemar of Puy, first to take the cross at Clermont, papal legate.		
	A history of the kings of England from 449 to 1125 by William of Malmesbury, who was born 1095.	Revolt of the Norman barons in favor of Robert, eldest son of the Conqueror, quelled by aid of the English, 1090.	Normandy again invaded by William II., 1094.	Third expedition of Henry IV. to Italy, 1090-1097; generally unsuccessful except capture of Mantua.	Nicæa surrendered, 1097.		
	Norwich cathedral, Anglo-Norman architecture, begun 1096.	Donald Bane, 1093-1098.			Crusaders victorious over sultan Kilij Arslan at Dorylæum, 1097.	Erik Ejegod, king of Denmark, 1095-1103.	
	Church of St. Saturnian, Romanesque style of architecture, dedicated, 1096.	Policy of confiscation, lessening power of the nobles, begun by William II., 1095.	Philip I. excommunicated, 1095.		Antioch besieged 1097-1098.		Empire of the Seljuks separated into several small sultanates, 1092.
	The first formal duel in England between William, count d' Eu, and Godfrey Baynard, 1096.	Edgar, nephew of Eadgar Ætheling, king of Scotland, 1098-1107.		Rebellion of Conrad, son of Henry IV., 1092.	Crusaders in Antioch besieged by Kerboga.		
			Normandy pledged by Robert to William II. of England for 10,000 marks, 1096.		Seljuk army defeated.		
					Death of Bishop Adhemar of Puy, 1098.	Magnus III., Barfod, king of Norway, 1095-1103.	Portugal becomes a Castilian fief under Henry of Burgundy, 1095.
		William II. partially successful in attempt to conquer Maine, 1098.			Storm of Jerusalem; terrible massacre, July 15, 1099.		
					Kingdom of Jerusalem established.		
	Painting on glass practised in France and Germany, 1100.	William II. is threatened with excommunication, 1099.		First crusaders, under Peter the Hermit and Walter of Perejo, cross Germany, 1096.	Sultan of Egypt defeated at Ascalon by Godfrey of Bouillon, Protector of the Holy Sepulcher, 1099.	Orkneys, Hebrides, and Dublin conquered by Norwegians.	Wars in Spain of Ruy Diaz, called by Arabs the Cid; died 1099.
1100	England's public records first regularly kept by order of Henry I., 1100.	Henry I., Beauclerc, 1100-1135.	Disastrous crusade of French princes and knights, 1101.	War with Conrad (dies, 1101).	Death of Godfrey, 1100.	Death of Magnus of Norway in Ireland, 1103.	
	Basilica of St. Clement's at Rome rebuilt, 1108.	Charter issued, restoring the "Law of Edward the Confessor."		Henry V., son of Henry IV., 1106-1125.		Ejsten, Sigurd, Olaf, sons of Magnus, rule in conjunction in Norway.	Alphonso I. of Aragon, 1105-1134.
	It is said that tolls were first paid by vessels passing the Stade on the Elbe, 1109.	Invasion of Robert of Normandy, son of the Conqueror, 1101.	War with Henry I. of England and Normandy, 1101-1119.	Henry V. excommunicated.		Niels, king of Denmark, 1105-1135.	John the Good, Byzantine emperor (1118-1143), fought the Seljuks, Hungarians, Servians, and Armenians.
	Stone bridge erected at Bow, near Stratford, about 1109.	Rebel barons punished.		German princes revolt; Saxons victorious at Welfesholze, 1115.	Baldwin I., king of Jerusalem.	Pilgrimage to Jerusalem by Sigurd of Norway 1107-1110.	
	Moorish tiles introduced into Italy, 1115.	Henry invaded Normandy, 1104.	Louis VI., the Fat, 1108-1137.	War of the investiture ended, by Concordat of Worms, 1122.		Death of Ejsten and Olaf of Norway.	
	Cathedral of Pisa, Italy, completed, 1118.	Battle of Tinchebrai, 1106; Robert defeated and imprisoned.	Battle at Brenneville, 1119; Louis VI. defeated by the English.	Lothar of Saxony, 1125-1137; crowned by Pope Innocent II.		Sigurd sole ruler of Norway, 1122.	
	Tournaments were probably introduced into England, about 1125.	Death of Henry's son William by sinking of the "White Ship," 1120.	Count of Flanders murdered, 1127.	Feudal homage of Bohemia.	Acre, Berytus (Beirut), Sidon, Tripolis, conquered with the aid of Genoa and Pisa.	Magnus the Blind, son of Sigurd, king of Norway, 1130.	
	Mint said to have been established at Winchester by Henry I., 1125.	David I., Scotland, 1124-1153.	Letters of franchise granted to cities and towns by Louis VI., 1135.	Wends driven back.		Wars over the succession in Denmark.	
	Granting of charters in England by Henry I., 1182.	Death of Henry I., 1135.		Mittelmark conquered by Albert the Bear, and called Brandenburg.		Erik Emun, king of Denmark, 1134-1137.	
		Stephen of Blois, 1135-1154.	Marriage of the king's son Louis (VII.) with Eleanor, heiress of Gascony, Guyenne, and Poitou, 1137.	House of Hohenstaufen, 1138-1254.		Half the kingdom of Norway ceded (1134) to Harald Gille, who comes from Ireland and claims to be a son of Magnus Barfod.	
		Charter of Oxford, 1136.		Conrad III., 1138-1152.	Death of Baldwin I., 1118.		
		Battle of the Standard, 1138.		Ghibellines and Guelfs, 1140-1495.			
		Matilda landed in England, 1139.		Death of Henry the Proud, 1139; Saxony claimed by his son, Henry; Bavaria, by his brother, Welf VI.			
		Civil War, 1139-1142.					
		Battle of Lincoln, 1141; Stephen defeated and captured.	Louis VII., 1137-1180.		Baldwin II.; dies, 1131.	Civil war in Norway.	Aragon and Catalonia united. 1137.

Death of Hildebrand to the Fourteenth Century, 1085-1300 A. D.

A. D.	Discoveries, Arts, Crafts.	England.	France.	Italy and Germany.	Crusades.	Scandinavia.	Other Countries.
1100	Cistercians in England.	Matilda elected "Lady of England" by the clergy. War between Stephen and Matilda. Death of Robert of Gloucester, 1147.	Eleanor divorced; married Henry of Anjou (later king of England), conveying to him Gascony, Guyenne, and Poitou, for which Henry did homage to Louis.	Battle of Weinsberg, 1140; Conrad victorious. Death of Leopold of Austria, Oct. 18, 1141; Bavaria given to his brother, Henry Jasomirgott.	Fulco of Anjou; dies, 1143. Edessa conquered (1144) by Emadeddin ('Imad-ed-Deen) Zenki, emir of Mossul; conquered and destroyed by his son Noureddin (Noor-ed-Deen), 1146.	Erik Lamb, king of Denmark, 1137-1147. Sven III. made king of Denmark, 1147. Bonder dynasty, Sweden, 1150-1250.	Saladin, 1137-1193. Tatars spread over China. The kingdom of Portugal founded, 1139. Manuel Comnenus, Byzantine emperor (1143-1180), left the affairs in bad condition.
	Chemistry introduced into Spain by the Moors, about 1150.	Henry of Anjou landed in England, 1153. Henry recognized as heir to the crown. House of Anjou (Plantagenet) in the direct line, 1154-1399.		Frederick I., Barbarossa, 1152-1190. Diet at Merseburg. Convention of Constance between Frederick and the Papal See, 1153.	Second Crusade, 1147-1149; without result; leaders, Conrad III. of Germany, Louis VII. of France.	Erik IX., the Saint, king of Sweden, 1150-1162. Christianity introduced in every part of the kingdom of Sweden.	Invasion of Spain by the Almohades, 1146-1232.
	Edrisi of Sicily produces his geography, 1154. The exchequer (bureau for assessing and collecting taxes), reëstablished.	Henry II., 1154-1189. Resumption and restoration of estates. Ireland given to Henry II. by a bull of Adrian IV., 1157. Unsuccessful Welsh war, 1158.	Louis VII. married Constance of Castile (his second wife), 1154.	First expedition to Italy, 1154-1155. Frederick crowned king of Italy in Pavia; emperor at Rome. Diet at Würzburg, 1157.	Louis and the French nobility sail from Pamphylia for Antiochia.	Waldemar I., the Great, king of Denmark, 1157-1182.	Wars of Gen and Hei, rivals in Japan, 1156-1185.
	Manufacture of silk encouraged in Sicily, c. 1146. Convent church at Alcobaça, Portugal, built, 1148-1222.	Scutage introduced. Second Welsh war, 1163. Contentions between Henry II. and Becket. Danegeld abolished. Constitution of Clarendon, 1164.		Homage to the imperial power (Holy Roman empire) by nearly all states of the West. Royal crown given by Frederick to the Bohemian duke Vladislav.	Common soldiery reach Cilicia by land, and are annihilated by hunger and the enemy.	Wends conquered by the Danes.	
	Large quantities of sugar brought into Europe from Asia, 1150.	Becket tried and condemned; fled to France. Third Welsh war, 1165. Assize of Clarendon, 1166.		Second expedition to Italy, 1158-1162. Milanese revolt. Quarrel between the emperor and the pope. Alliance between Alexander III. and the Lombard cities.	Conrad goes by sea from Constantinople to the Holy Land (1148) and, with the French, unsuccessfully attacks Damascus.	Magnus V., king of Norway, 1161-1184.	
		Dermod, king of Leinster, Ireland, fled (1167) to Henry II. Becket returned to England; quarreled with the king; murdered by knights of Henry's court, 1170.		Third expedition (1163) to Italy, without an army. Fourth expedition to Italy, 1166-1168; Paschal III. conducted to Rome by Frederick. Lombard League (1167) between cities of Lombardy and those of the Veronese March. Guelfs and Ghibellines united.	Baldwin III., king of Jerusalem; dies 1162.	Archbishopric of Upsala, Sweden, established, 1163.	
	Notre Dame cathedral of Paris built, 1163-1214.	Henry's expedition to Ireland, 1171. Richard of Clare (Strongbow) made earl of Leinster. Southeastern part of Ireland submitted to Henry.		Waldenses, 1170. Great Council of Venice, 1172.	Amalric; dies, 1173.	Ancona, on island of Rügen, captured by the Danes, 1168.	Leon and Castile separated again, 1157.
	Origin of the public funding system in Venice, 1171.	Absolution of Henry, 1172. Revolt of Henry's eldest son, Henry, and general league of English and French lords, William the Lion of Scotland, and Louis VII., against the king.		Fifth expedition to Italy, 1174-1177; Lombardy entered over Mont Cenis. Battle of Legnano, 1176. Reconciliation of the emperor and the pope, 1177. Henry the Lion put under ban of the empire and his fiefs declared forfeited, 1180.	Pilgrimage to Jerusalem by Henry the Lion, 1172.	Revolt in Skaania subdued by the Danes.	William the Lion, Scotland, 1165-1214.
	The leaning tower of Pisa built, 1174-1350.	Scotch invasion, 1173. Penance of Henry II. at Becket's tomb, 1174. William captured; released upon acknowledgment of Henry's suzerainty, 1175.		Peace with the Lombard cities at Constance, 1183. Bremen, Hamburg, Lübeck, in time become free cities.			Strongbow in Ireland 1169-1170.
	The Canterbury cathedral choir rebuilt, 1174-1184.						

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A. D.	Discoveries, Arts, Crafts.	England.	France.	Italy and Germany.	Crusades.	Scandinavia.	Other Countries.
1100	Chapter house at Bristol, Anglo-Norman architecture, built, 1155-1170. Football first mentioned in England, 1175. Late old *London Bridge* commenced by Peter of Colechurch, 1176. A bridge 3,000 feet long, with 18 stone arches, built over the Rhône at Avignon, 1180. Paris streets first paved by Philip Augustus, 1184. Church of San Michele at Lucca, Italy, built, about 1188. Mosque of Old Delhi, India, commenced, about 1190. Insurance said to have been in use in Italy, 1194. Standard weights and measures provided for England by the sheriffs of London, 1197.	Assize of arms, 1181. Militia service restored. Death of Henry the Younger, 1183. Conspiracy of Henry's sons, Richard and John, with Philip of France, 1189. Humiliation and death of Henry II., 1189. Richard I., Cœur-de-Lion, 1189-1199; away from England during most of his reign. Scotch king released, 1189. Eleanor, Richard's mother, regent during his crusade and imprisonment by the emperor. Jews persecuted. War caused by intrigues of the king's brother John and Philip of France; quickly suppressed after Richard's return, 1194. Richard in France at war with Philip. John Lackland, 1199-1216; recognized in England, secured Normandy.	Philip II., Augustus, 1180-1223. War with the count of Flanders, 1185; county of Vermandois and city of Amiens won by Philip II. (Third) Crusade with Richard Cœur-de-Lion. Philip attacked Normandy (1190), but with little success. Death of Richard Cœur-de-Lion, 1199. Philip took up but did not prosecute the claims in Normandy of Arthur, Richard's nephew, against Richard's younger brother John.	Sixth expedition to Italy, 1184-1186; peaceful. War between Henry, son of Frederick, and Henry the Lion; concluded, 1189. Henry VI., son of Frederick, 1190-1197. First expedition to Italy, 1191. Henry goes to Naples to rescue from Tancred the inheritance of his wife, Constance. Naples unsuccessfully besieged. War with Henry the Lion, 1192-1194. Second expedition to Italy, 1194. Henry threatened with excommunication (1194) for withholding from the pope the estates of Matilda. Diet at Würzburg, 1196. Third expedition to Italy, 1197. Philip of Swabia, youngest son of Frederick Barbarossa, 1198-1208. Otto IV. of Brunswick, son of Henry the Lion, 1198-1215 (1218). War for the crown between the house of Hohenstaufen and of Welf, 1198-1215.	Baldwin IV.; death, 1184. Baldwin V.; death, 1186 (not of age). Veit (Guy) of Lusignan; captured at Tiberias. Acre and Jerusalem conquered (1187) by Saladin (Salah-ed-Deen). Guy of Lusignan regains freedom and besieges Acre for two years, 1189-1191. Third Crusade, 1190-1192; conquest of Acre (St. Jean d'Acre) or Ptolemaïs; leaders, emperor Frederick I., his son Frederick of Swabia. Frederick I. conquered Iconium; drowned in the Calycadnus, Cilicia, 1190. Richard Cœur-de-Lion, king of England, and Philip II. of France go by sea to the Holy Land, 1190; reach Acre, 1191. Death of Frederick of Swabia, 1191. Acre compelled to surrender, July 1191. Philip quarrels with Richard; returns to France, 1191. Armistice with Saladin. Coast from Acre to Joppa given to the Christians.	Sverre, king of Norway, 1177-1202. Knut VI., king of Denmark, 1182-1202; son of Waldemar. Wends aided by the emperor Frederick I., 1184. Hither Pomerania and part of Mecklenburg submit to the Danes. Knut, "king of the Slavs." Expedition of the Danes to Esthonia. Lübeck and Hamburg conquered by the Danes. Adolf of Holstein captured by the Danes.	Alexius II., Byzantine emperor, 1180-1183. Andronicus I., Byzantine emperor, 1183-1185. Cyprus an independent sovereignty, 1184. Battle of Danno-ura in Japan; the downfall of the house of Hei, 1185. Angelus dynasty in the Byzantine empire, 1185-1204. Isaac II., Byzantine emperor, 1185-1195. Bulgaria, led by John Asen, revolts against the Byzantine empire and founds a new realm, capital at Tirnova, 1186. Alexius III., Byzantine emperor, 1195-1203.
1200	Troubadours flourish in England, Spain, and Italy, 1200-1300. Chimneys introduced in England, 1200. The *London Bridge* (begun, 1176) completed, 1209. Heavy cavalry covered with coat of mail; some horsemen had visors and skullcaps. Franco of Cologne invents "rests" in music, 1220. Robert de Lusarche, French architect, designed cathedral of Amiens; flourished, 1220.	Death of Arthur while in John's power, 1203. John lost Anjou, Maine, Normandy, Touraine, and a part of Aquitaine; restricted henceforward to his English kingdom. Death of Hubert Walter, archbishop of Canterbury, 1205. Disputed election. Stephen Langton elected archbishop of Canterbury by command of Innocent III., 1207; refused by John. Interdict upon England, 1208. John finally submits, receives Langton, and accepts his kingdom as a fief of the papacy, 1213. Barons refuse to follow John to France, 1213. John defeated at Bouvines, Flanders, 1214.	Quarrel between Philip II. and Innocent III.; Philip submitted, 1200. Philip again attacked Normandy. Fall of Château Gaillard. Normandy submitted, 1204. Summons to appear for trial on account of the murder of Arthur disobeyed by John; his fiefs declared forfeit. Storming of Beziers, 1207. County of Toulouse, conquered by Simon of Montfort, 1211-1215. War in Flanders with the feudal lords, supported by Otto of Germany and John of England; Philip, assisted by the cities, victorious at Bouvines, 1214.	Philip assassinated at Bamberg by the count palatine, Otto of Wittelsbach. Otto IV. crowned at Rome by Innocent III., 1209. Quarrel with the pope, who put forward Frederick, son of Henry VI., as anti-emperor, 1212. Battle at Bouvines, 1214; Otto IV., in alliance with England, defeated by Philip II., Augustus. Death of Otto IV. at the Harzburg, May 10, 1218. Frederick II. (also king of the two Sicilies), 1212-1250; opposes spiritual supremacy; was crowned German king in Aachen, 1215; promises to undertake a crusade. Henry, son of Frederick II., given Swabia, 1217; elected king of Rome, 1220.	Fourth Crusade, 1200-1204; Latin empire, 1204-1261; directed originally against Egypt; undertaken at instance of Pope Innocent III.; leaders, powerful French barons. Baldwin, count of Flanders, Boniface, marquis of Montferrat. Crusaders besiege Zara, in Dalmatia. Constantinople captured. Emperor unable to fulfill promise to the crusaders of union of Greek Church with that of Rome and large payments of money. Constantinople on fire. Greek populace revolt. Death of Isaac. Alexius murdered by Greeks. Constantinople again captured, partly burned.	Waldemar II., the Conqueror, king of Denmark, 1202-1241. Haakon III., king of Norway, 1202-1204. Guttorm the Child, king of Norway, 1204. Inge Baardsen, king of Norway, 1204-1217. Holstein granted as a fief to Waldemar's nephew, Albert of Orlamund. Oesel and a large part of Prussia conquered by the Danes. Waldemar II., of Denmark recognized Frederick II. as emperor and received a cession of all conquests in Germany, north of the Elbe and the Elde. Haakon IV., king of Norway, 1217(1223)-1262; crushes rivals.	Hojo family supreme in Japan, 1200-1333. Isaac II., Byzantine emperor (restored), 1203-1204. Alexius IV., Byzantine emperor, 1204. Alexius V., Byzantine emperor, 1204. Constantinople taken and sacked, 1204; Latin empire established (1204-1261). Latin line of Byzantine emperors, 1204-1261. Baldwin I., Latin emperor, 1204-1205. Mongols subjugate southern Russia, 1206. King John invades Ireland, 1210.

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A. D.	Discoveries, Arts, Crafts.	England.	France.	Italy and Germany.	Crusades.	Scandinavia.	Other Countries.
1200	Guido of Siena, first recognized Italian painter, flourishes, 1221.	Alexander II., Scotland, 1214-1249.	Philip's son Louis made unsuccessful expedition to England, 1216.	Frederick leaves Germany for fifteen years; renewed promises made to Innocent III. (feudal supremacy of papal chair over his hereditary domain, crusade); crowned at Rome by Honorius III.	Latin empire established, 1204; Baldwin, emperor	Expedition of the Danes to Esthonia, 1219.	Genghis Khan (1206-1227) invades the Kin provinces of China, 1213; died, 1227.
		London occupied by the confederated lords, 1215.			Venetians given many coast districts and islands.		
		Magna Charta granted by John at Runnymede, June, 1215.			Marquis of Montferrat made king of Thessalonica.	The Dannebrog, or national standard of Denmark, 1219.	Kublai Khan, 1216-1294.
		Pope declared the Magna Charta null and void.	Siege of revolted Toulouse; death of Simon of Montfort, 1218.	Henry, son of Frederick, crowned king at Aachen, 1222.	French dukes in Achaia, Athens, etc.		Arabians defeated at Tolosa, 1212.
	Franciscans arrive in England, 1224.	Langton suspended.			Greek empire established at Nicæa by Theodore Lascaris.		
		Crown declared forfeited by the French party among the barons and bestowed by them upon Louis, son of Philip of France.	Louis VIII., 1223-1226.	Promise of a crusade renewed, 1225.		Power of the clergy weakened in Norway.	Henry of Flanders, Latin emperor, 1206-1216.
		Louis comes to England, 1216.		Diet at Cremona, 1226.	Empire of Trebizond established on coast of the Pontus Euxinus by a descendant of the Comnenes.		
	Drainage of London first provided for by legislative enactment, 1225.	Death of John Lackland, October 19, 1216.	Fresh crusade against the count of Toulouse, whose lands had been declared forfeit.	Disputes with the Lombard cities, 1226.		Erik Eriksson Læspe, king of Sweden, 1223-1250; Birger Jarl the actual ruler.	Peter of Courtenay, Latin emperor, 1216-1219.
		Henry III., of Winchester, 1216-1272; son of John; coronation secured by the English party.		Crusade begun, but broken up by a contagious disease, 1227.			Yolande, Latin emperor, 1219-1221.
		William Marshall regent, 1216-1219.		Emperor placed under the ban by Gregory IX., 1227.			Robert, Latin emperor, 1221-1228.
		French fleet defeated off Thanet.	Louis IX. (St. Louis), 1226-1270.	Battle of Bornhövede, 1227. Danes are decisively defeated.		Waldemar II. of Denmark and his son captured (1223) by Henry, count of Schwerin, and imprisoned for three years in the castle of Danneborg, Hanover.	
	Zinc mentioned by European writers, 1231.	Louis gives up contest and returns to France.		Crusade of Frederick II., 1228-1229.	Children's Crusade, 1212; thousands of French and German boys, many of whom died on the way, many sold into slavery.		Ogdai, son of Genghis Khan, Mongol emperor in China, 1227-1241.
		Magna Charta twice reissued in a modified form.		Papal (key) troops driven by Frederick from his dominions, 1229.			
		Death of William Marshall.	Blanche, mother of Louis, regent during his minority; quelled revolt of the barons.	Peace with the pope at San Germano; ban removed, 1230.	Fifth Crusade, 1216-1220; Jerusalem regained for a short time; leader, Frederick II., emperor of the West.		
		England governed by Peter des Roches, Pandulf, the papal legate, Hubert de Burgh the justiciary, and Archbishop Langton.		Legislation of Frederick in his Sicilian kingdom, 1230-1240; feudal relations regulated; representation of the cities.		Waldemar of Denmark obtained release from imprisonment by the count of Schwerin, by renunciation of his conquests south of the Elbe and in the Slavic countries and by payment of a large ransom.	John of Brienne, Latin emperor, 1229-1237.
	Gunpowder first used in cannon by the Chinese, 1234.	Second coronation, 1220.	Inquisition as regular tribunal established by Pope Gregory IX.	Rebellion of King Henry, in alliance with the Lombard cities and the lower German nobility, 1234.	Crusade of Andrew II., king of Hungary, 1217; without result.		Ferdinand III., Leon, and Castile, 1230-1252.
		Langton superseded Pandulf as legate, 1221.		Henry submits; imprisoned.			Fall of the Kin dynasty in China, 1232.
		Third reissue of the charter, 1223.		Reconciliation with the Welfs.			
			County of Toulouse between the Rhone, the sea, and the Pyrenees, acquired, 1229.	Diet at Mainz.			
	Church of San Antonio, at Padua, built, 1237-1307.	Beginning of Henry's personal government, 1227.		Enactment of a public peace; first law published in German as well as in Latin.	Egypt unsuccessfully attacked (1218-1221) by John of Brienne, "king of Jerusalem."	Renunciation of Waldemar of Denmark annulled by the pope.	Baldwin II., Latin emperor, 1237-1261.
			Unsuccessful wars in France, 1232.	Successful campaign against the Lombards, 1236.			Retreat of Moors to Granada, 1238.
				Frederick the Warlike of Austria, a follower of the rebel Henry, deposed and put under the ban, 1236.			Kiev devastated by the Mongols, 1239.
		Fall of Hubert de Burgh, 1232; of Peter des Roches, 1234.	Sancerre, Chartres, Blois, ceded by Theobald of Champagne and Navarre, 1234.	Diet at Speier, 1237.	Frederick II. goes by sea to Acre; receives from sultan Kameel (El Kámil) Jerusalem (where he crowned himself), Nazareth, a strip of land to the coast, and Sidon, on condition of a ten years' truce, 1229.	Battle of Bornhœved (Bornhövede), 1227; Waldemar of Denmark defeated in his attempt to regain Holstein.	
	Wall tiles, domestic pottery, and vases mentioned in a charter of James I. of Aragon to the Saracens of Xativa, 1239.			Conrad, second son of the emperor, crowned German king, 1237.			
				Battle of Cortenuova, 1237.			
				War of Frederick II. with Popes Gregory IX. and Innocent IV., 1239-1250.		Kingdom of Denmark divided among Waldemar's three sons, Abel receiving Schleswig.	Mongols defeat the Germans in the battle of Wahlstatt, 1241; then ravage Hungary.
		Great council henceforward called Parliament.	Macon purchased, 1239.				

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A. D.	Discoveries, Arts, Crafts.	England.	France.	Italy and Germany.	Crusades.	Scandinavia.	Other Countries.
1200	A pharmacopœia and a list of equivalent drugs published by Nicholas Præpositus, 1240-1250.	Enormous sums of money exacted by the pope.	War with the nobles and their ally, Henry III. of England, 1242-1243; Louis IX. victorious.	Frederick excommunicated, 1239.	Jerusalem captured by the Kharesmians, 1244.	Death of Waldemar II. of Denmark, 1241.	Novgorod becomes important as a commercial republic, in fact, almost independent of Russia, though continuing to assert allegiance; only part of Russia to withstand the invasions of the Mongols (1239); finally submitted.
	Cathedral of Siena, Italy, begun.	Only Aquitaine and Gascony of the French possessions of the Angevines retained by Henry.	Albigenses exterminated, 1244.	Death of Gregory IX., 1241.		Civil war, strife for the succession, in Denmark,	
	Tiles first made by the English, probably about 1246.			Flight of Innocent IV. (1243-1254) to Lyons.			
	The first concordance of the Bible made under Hugo de St. Caro, 1247.	Alexander III., Scotland, 1249-1285.		Emperor deposed by the pope.		Erik, king of Denmark, 1241-1250.	
	Arnolfo, Florentine architect (1232-1310), began abbey and church of Santa Croce, Florence.	Return of Simon of Montfort, earl of Leicester, from the government of Gascony, 1253.	Marriage of Charles of Anjou, the king's brother, and Countess Beatrice, 1246.	Spiritual princes elect Heinrich Raspe (1246-1247), landgrave of Thuringia.			
	Cotton cloth made by the Chinese, 1250.	Richard, of Cornwall, king of the Romans, 1256-1271.		Heinrich defeated at Ulm by Conrad; dies, 1247.	Sixth Crusade, 1248-1250; without result; leader, Louis IX. of France (St. Louis).	Clergy become powerful in Sweden; forbidden to take oath of allegiance to the king, 1248; celibacy introduced.	
	The mariner's compass was known to the Swedes, 1250.	Parliament of Oxford, 1258.	(Sixth) Crusade of St. Louis, 1248-1250; Blanche regent.	William of Holland (1247-1256), second anti-king; no authority in Germany.	St. Louis captures Damietta, 1249; defeated by the Ayoubite sultan Toorán-sháh (Almoadan) on an expedition against Cairo, 1249; cut off from Damietta; captured with entire French army, April, 1250.	Folkunger dynasty, Sweden, 1250-1365.	
		Provisions of Oxford, a list of grievances presented by the barons.		Frederick defeated before Padua, 1248.		Waldemar, king of Sweden, 1250-1275; son of Birger Jarl.	Alfonso X., the Learned (1221-1284), king of Castile and Leon (1252-1282), author of the code of laws known as *Las Siete Partidas;* not officially promulgated as national law until 1348. The Alfonsine astronomical tables compiled under his direction.
		War between the king and the barons, 1262; arbitration of Louis IX., 1264.		Battle of Fossalta, 1249.		Abel, king of Denmark, 1250-1252.	
		Provisions of Oxford annulled.		Treason (?) of Frederick's chancellor, Peter of Vinea, 1249.		Towns of Denmark began to send representatives to the council (Danehof).	
	Earliest complete clock made by a Saracen mechanic, probably about 1250.	War renewed.	Henry of England given Périgord, the Limousin, and southern Saintonge; renounced claim to Normandy, Anjou, Maine, Poitou, northern Saintonge, Touraine.	Death of Frederick II., 1250.	Treaty of peace delayed by overthrow of the Ayoubites by the Mamelukes.	Christopher, king of Denmark, 1252-1259.	
		Battle of Lewes, 1264; Henry III. and his son Edward defeated.		Conrad IV., son of Frederick, 1250-1254 (anti-king; William of Holland).		War in Denmark concerning Schleswig, the king claiming it to have been a personal fief, the descendants of Abel, an hereditary fief.	
		Treaty (Mise of Lewes), 1264; native counselors presented; new council arranged by a parliament in which there were added to the clergy and nobility four knights from each shire.		Conrad fought for his realm in Italy since 1252.			
	The police system in London may be said to have begun about 1253.	Council of Nine.	Wager of battle prohibited.	Hanseatic League (union of seaports and cities between the Baltic and the Elbe), 1241-1669.			
	Rubruquis reaches Karakorum, the ancient seat of the Mongol empire, 1254.	Parliament of Simon of Montfort, January 20, 1265; first parliament to which representatives of the boroughs were called.	Feudal jurisdiction limited.	Interregnum in Germany, 1256-1273.	St. Louis coasts along Palestine; fortifies Acre and other coast cities; returns to France, 1254.	Stockholm founded, 1255.	Lahore taken by the Moguls with great carnage, 1241.
	An association of French surgeons, Collége de St. Côme, organized by Jean Pitard, 1254.	Edward released.	Right of appeal to the king from the feudal courts in all cases established.	Richard, earl of Cornwall (England), elected by a part of the princes; crowned at Aachen; recognized only along the Rhine.	Latin empire destroyed by Michael Palæologus of the Nicæan empire, 1261.	Large duchies assigned by Birger of Sweden to his other sons.	
		War renewed.		Alfonso X. of Castile elected by the other princes; never came to Germany.		Contention in Denmark with the Archbishop Jacob Erland.	
		Battle of Evesham, August 4, 1265; Earl Simon defeated and slain.		Manfred, son of Frederick II., chancellor of the two Sicilies for the minor king Conradin, son of Conrad IV.; later (1258), king.	A new crusade openly preached, 1263.	Erik Glippingsen, king of Denmark, 1259-1286.	End of caliphate at Bagdad, 1258.
		Death of Henry III., November 16, 1272.	Arles, Cahors, Foix, and Forcalquier acquired, 1262.	Charles of Anjou given the crown by the pope.	Mohammedans take Antioch, 1268.	Norway made influential among European nations.	
	Marco Polo visits central Asia, China, India, Persia, 1271-1295.	Edward I., Longshanks, 1272-1307; devotes a year to Gascony; crowned in England, 1274.		Battle at Beneventum, 1266; Charles of Anjou conquers and slays Manfred.		Iceland conquered by Norway, 1260.	Seat of government in China transferred to Pekin, 1264.
	St. Peter's College, Cambridge, founded by Hugh de Balsham, 1284.	Court separated (1275) into three tribunals: Exchequer, King's Bench, Common Pleas.	Second (seventh) crusade and death of St. Louis, 1270.	Charles of Anjou king of Naples and Sicily.	Seventh Crusade, 1270; without result; leader, Louis IX. of France (St. Louis).	Submission of Greenland to Norway.	Byzantine empire restored by the Palæologi, 1261-1453.
						Haakon of Norway defeated in expedition against Scotland; died, 1262.	Michael VIII., Byzantine emperor, 1261-1282.
						Magnus Lagabœter, son of Haakon IV., king of Norway, 1262-1280.	Andronicus II., Byzantine emperor, 1282-1328.

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A. D.	Discoveries, Arts, Crafts.	England.	France.	Italy and Germany.	Crusades.	Scandinavia.	Other Countries.
1200	Andrea da Pisa, Italian architect (1273-1349), designed castle of Scarperia, and the bronze doors of the Baptistry at Florence.	Financial, legal, and legislative reforms. England's first commercial treaty signed with the Flemings, 1272. Conquest of Wales, 1276-1282.	Philip III., le Hardi (the Rash), 1270-1285. Philip IV., le Bel (the Fair), 1285-1314. Civil (Roman) law introduced and developed. Ecclesiastics ineligible to parliament, 1287.	Conradin accompanied Frederick of Baden (Frederick of Austria) to Italy; defeated on Lago di Celano, 1268; put to death at Naples.	Nazareth captured by Prince Edward (later king Edward I.) of England, 1271.	The Hebrides and Isle of Man ceded to Scotland by Norway. New code of Norwegian laws collected and published, 1264-1279. Death of Birger Jarl of Sweden, 1266.	Henry Crassus, king of Navarre, 1270.
	Florence Academy of Fine Arts founded, 1270. Velvet was known probably as early as 1272.	Prince Llewellyn forced to cede the coast as far as Conway, 1277.		Genoa powerful under Doria, 1270-1284.		Waldemar, king of Sweden, imprisoned (1275) by his brother Magnus, duke of Södermanland.	The Mongol or Yuen dynasty established in China, 1275. Missionaries introduced into China by Marco Polo, 1275.
		Llewellyn and his brother David rebel, 1282.	Edward I., of England, renounces his claims to Normandy and receives 10,000 livres from Philip.		At Tunis, Louis IX. and the greater part of the army are victims of disease.	Magnus, king of Sweden, 1279-1290.	Nicholas III., 1277-1280. Peter III., king of Aragon (1276-1285); conquers Sicily, 1282.
	First English gold coin struck, probably about 1275.	Death of Llewellyn, 1282.	Strife between English and Norman sailors, 1292-1293.	Rudolf of Hapsburg, 1273-1292.		Erik, priest-hater, king of Norway, 1280-1299.	
	Cathedral of Strassburg, Germany, nave finished, 1275. Clock placed in the old palace yard, London; it remained until the 16th century.	David hanged, drawn, and quartered, 1283.	La Rochelle sacked. Edward I. of England surrenders Guienne to Philip as security.	Ottocar of Bohemia defeated in the battle of Marchfeld, 1278; the result was the establishment of the Hapsburg dynasty in Austria.		War between Denmark and Norway over dowry of Ingeborg, mother of Erik of Norway.	Reign of Diniz or Dionysius I. in Portugal, 1279-1325; "the father of his country"; he built 44 cities or towns.
		Wales annexed to England, 1284. Title "Prince of Wales" hereafter given to heir of the crown. Over 16,000 Jews expelled from England, 1290.	Edward's fiefs declared forfeited.				Sancho IV., king of Leon and Castile, 1284-1295.
	Spectacles said to have been invented about this date by Salvinus Armatus of Pisa, 1280.	Interregnum, 1290-1292. Baliol, heir to Scottish throne, becomes king of Scotland, 1292. Revolt of Madoc in Wales, 1294. War with France, 1294.	England (1292-1297) defeated in Gascony and Flanders.	Papal states recognized by the emperor Rudolf of Hapsburg, 1278.		War (1284-1285) between Norway and the Hansa towns. Erik of Norway defeated.	Joanna of Navarre marries Philip the Fair of France, 1284.
	The "great conduit," the first cistern of lead in London, built, 1285.	War with Scotland, which joined France. Berwick captured, 1296. Scots defeated at Dunbar, 1296. Crown resigned by Baliol, 1296.	Quarrel with Pope Boniface VIII., 1296-1304.	Sicilian vespers, 1282; all the French in Sicily massacred.	Mamelukes storm Acre (Ptolemaïs), 1291.	Erik Menved, king of Denmark, 1286-1319.	Crown of Navarre united to that of France, 1284-1328. Margaret of Scotland, 1285-1290.
	Clock costing £30 put up at Canterbury cathedral, 1292.	Scotch coronation stone carried to London, 1296. Scots under Sir William Wallace revolt, 1296-1298.	Ecclesiastical property taxed.			The queen mother regent in Denmark, 1286.	The last sultan of the Afghan slave dynasty assassinated, and sultan Jelal-uddin ascends the throne, 1290.
	Roger Bacon said to have been familiar with the magnet's property of pointing to the north, 1294.	Barons refuse to follow Edward to Flanders, 1297. Reissue of the Great Charter and the forest charter, 1297. Truce with France, 1298.	The Flemings defeated at Furnes, 1297.	Naval power of Pisa destroyed by Genoa, 1284-1299.		Birger, son of Magnus, king of Sweden, 1290-1319.	League of the Forest Cantons, Switzerland, 1291.
		Scotland invaded by Edward, 1298. Battle of Falkirk, 1298; defeat of Scots.	Peace with England concluded, 1299.	Peter of Aragon king of Sicily; Charles of Anjou limited to kingdom of Naples.		Torkel regent in Sweden, 1290-1306.	James II., king of Aragon; surnamed the Just, 1291.
	The camera-obscura said to have been constructed by Roger Bacon.	Appeal to the pope, who claimed suzerainty over Scotland.	Flanders annexed to France.	Boniface VIII., 1294-1303.	Christians abandon their last possessions in Palestine (Berytus, Sidon, Tyre), 1291.	Haakon V., king of Norway, 1299-1319.	Ferdinand IV., king of Leon and Castile, 1295-1312.

Fourteenth Century to the Invention of Printing, 1300-1450 A. D.

A. D.	Discoveries, Arts, Crafts.	England and Scotland.	France.	Germany.	The East.
1300	Paper made from rags, 1300. Glass mirrors first made at Venice, 1300. Introduction of Arabic figures into England, about the year 1300. Oldest known Chinese work treating of ceramic art, 1325. Glass windows, 1345. First gold wire made in Italy, 1350. William de Wykeham, English architect, flourishes. Built New college, Oxford; rebuilt part of Winchester cathedral; and planned a portion of Windsor castle, 1375.	Bruce, king of Scotland, 1306-1329. Edward II., 1307-1327. Bannockburn, 1314. Edward II. deposed and murdered, 1327. Edward III., 1327-1377. Mortimer and Queen Isabella rulers until 1330. Peace of Northampton. David II., Scot., 1329-1370. Edward III. claims the French crown. Baliol seizes crown of Scotland, 1332. War renewed, 1332-1363. David Bruce gains Scottish throne, 1341. Battle of Neville's Cross, 1346; Crécy, 1346. Black Death, 1348-1349. Battle of Poitiers, 1356. Peace of Bretigny, 1360. Robert II., Scotland, 1370-1390. Black Prince dies, 1376. Richard II., 1377-1399. Tyler's rebellion, 1381. Robert III., Scotland, 1390-1406. Richard II. deposed and imprisoned, 1399. House of Lancaster, 1399-1461.	Quarrel between Philip IV. and the pope renewed, 1301-1305. Parliament of Paris, 1302-1771. Papal residence removed to Avignon, 1309-1376. Order of Knights Templars abolished, 1312. Louis X., the Quarrelsome, 1314-1316. Philip V., the Tall, 1316-1322. Charles IV., 1822-1328. House of Valois, 1328-1498. Philip VI., 1328-1350. Hundred Years' War with England, 1339-1453. English victory at Sluys, 1340. Calais captured by English, 1347. John II., the Good, 1350-1364. Charles V., 1364-1380. Du Guesclin, constable of France, 1370. Charles VI. (1380-1422) king when 11 years old; being seized with madness, the dukes of Burgundy and Berry are regents, 1392.	Henry VII., 1308-1313. Conflict for 12 years between Ludwig of Bavaria (1314-1347) and Frederick the Fair of Austria (1314-1330) for the crown of the Holy Roman Empire, at the end of which time they are joint sovereigns until the death of Frederick. The Swiss Cantons rebel against the claims of Austrian supremacy; battle of Morgarten (1315); Swiss independence. Emperors of the Luxemburg-Bohemian line, 1347-1437. Charles IV., 1347-1378. Persecution of the Jews, 1349. The Golden Bull of Charles IV. made the fundamental law of the empire, 1356.	Osman I. founded th supremacy of the Osma (Ottoman) Turks in As Minor about 1300. Urchan, son of Osma I., 1326-1359. Tamerlane, 1336-1405. Murad I., 1359-1389. Adrianople residence the sovereigns, 1365. Bajazet I., son of Mura I., 1389-1403. Battle at Nicopolis, 139 Bajazet victorious ov the allied French, Hung rians, and Poles.
1400	Beginning of the period of the "Renaissance," culminating with Michelangelo and Raphael. Prince Henry, of Portugal, encourages Portuguese voyages of discovery, 1415-1460. London streets paved, 1453.	Henry IV., 1399-1413. Battle of Shrewsbury, 1403. Prince James of Scotland captured, 1405. Henry V., 1413-1422. War with France, 1415-1420. James I., Scotland, 1423-1437. Henry VI., 1422-1461. Wars between England and Scotland, 1434-1436.	Henry V. of England captures Harfleur, and wins the battle of Agincourt (1415). Rouen captured (1417); treaty of Troyes (1420); Henry marries daughter of Charles VI. and becomes regent and heir of France. Charles VII. (1422-1461), at first recognized south of the Loire only; in the north, Henry VI., infant son of Henry V., is acknowledged king, the duke of Bedford regent. Siege of Orleans (1428); raised by Joan of Arc (1429); Charles crowned at Rheims (1429). Joan of Arc burned at Rouen, 1431.	Wenzel, eldest son of Charles IV. (1378-1400), deposed, 1400. Rupert, count palatine, 1400-1410. Sigismund, 1410-1437. Council of Constance, 1414-1418. John Huss burned, 1415. Hussite War, 1419-1436. Battle of Prague, 1420. Emperors of the House of Hapsburg, 1438-1740. Albert II., son-in-law of Sigismund, 1438-1439. Frederick III., last emperor crowned at Rome, 1442-1493. Printing practised by Gutenberg, 1450.	Battle at Angora, 140 Bajazet I. defeated ar captured by Timur Ler (Tamerlane). Death of Bajazet I. Tamerlane's camp, 1403. Mohammed I., 1413-142 Murad II., 1421-1451. Mohammed II., 145 1481. Conquest of Constan nople by Mohammed I 1453; Eastern Empire d stroyed.

From the Invention of Printing to the Reformation, 1450-1517 A. D.

A. D.	Discoveries, Arts, Crafts.	England and Scotland.	France.	Germany.	America.
1450	Cut metal type invented by Gutenberg of Mentz, 1450. Cast metal type first used, 1450. First certain date of copper-plate engraving, 1461; said to have been known in Germany, 1450. Arquebus, an old form of hand firearm, in use, 1465. Gunther Zainer introduces printing in Augsburg, 1468.	Cade's rebellion, 1450. Wars of the Roses (Red Rose of Lancaster, White Rose of York), 1455-1485. Battle of St. Albans, 1455. Battle of Bloreheath, 1459. Battle of Northampton, 1460; York victorious. Battle of Wakefield, 1460. Battle of Mortimer's Cross, 1461. Second battle of St. Albans, 1461. House of York, 1461-1485. Edward IV., 1461-1483. Battle of Towton, 1461. Hedgeley Moor and Hexham, 1464. Battle of Stamford, 1470. Battle of Barnet, 1471. Battle of Tewkesbury, 1471. Death of Henry VI. in the Tower, 1471.	English expelled from France, 1453. Louis XI., 1461-1483. Pragmatic Sanction of Charles VII. revoked. Conspiracy of League of Public Weal (1464); battle of Montlhéry; treaty of Conflans, 1465. Edward IV. of England, in alliance with Burgundy, invaded France, 1475. Bayard, 1476-1524. War of Charles the Bold with the Swiss cantons. Charles the Bold defeated in the battles of Granson, 1476; Murten (Morat), 1476; defeated and slain in battle of Nancy, 1477.	Wars with France caused by the marriage (Aug. 18, 1477) of Frederick's son, Archduke Maximilian, with Mary, daughter and heiress of Charles the Bold, duke of Burgundy. Duchy of Burgundy lost to France, 1477. War with the Netherlands.	

Fourteenth Century to the Invention of Printing, 1300-1450 A. D.

A. D.	Spain and Portugal.	Italy.	Russia.	Scandinavia.	Other Countries.
1300	Peter IV., king of Aragon, 1336-1387; suppressed the power of the nobles. In Castile, war between Peter the Cruel (1350-1369) and his brother, Henry of Trastamara (1369-1379); Peter aided by England, Henry by France. Peter the Cruel of Castile defeated and slain by his brother Henry, 1369. The Schism, 1378. Legitimate line of Burgundy in Portugal became extinct, 1383. Illegitimate Burgundian line in Portugal, 1385-1580. John of Gaunt in Spain, 1386. Ceuta and Tangiers captured by Portugal. Voyages and discoveries under the patronage of the Infant, Henry the Navigator (1394-1460) of Portugal.	Dante Alighieri banished from Florence, 1302. Milan under the Visconti as imperial viceroys from the time of the emperor Henry VII., 1308-1313. Death of Dante Alighieri at Ravenna, September 14, 1321. Struggle of Venice and Genoa, 1350-1381. Conspiracies in Venice; the doge Marino Falieri executed, 1355; the Council of Ten. Tyrants in Italy, 1364-1380. Naples under the elder line of Anjou until the death of Joan I., 1382; under the younger (Durazzo) until the death (1435) of Joan II., 1386-1435. Decline of Genoa. Venice powerful. Corfu acquired by Venice, 1387. Florence powerful. Milan under the Visconti as dukes since 1395.	Kiev conquered by the Lithuanians, 1320. Moscow the national center. War with the Tatars, 1380. Moscow burned, 1383. Tamerlane invades Russia, 1395.	Magnus Smek, king of Sweden, 1320-1363; of Norway, 1320-1350. Christopher II., king of Denmark, 1320-1334; driven out by Geert, count of Holstein, but returns. Waldemar IV., king of Denmark, 1340-1375. Haakon VI., king of Norway by his father's gift, 1350-1380. Copenhagen plundered by the Hanseatic League. Albert of Mecklenburg, king of Sweden, 1365-1388. Olaf, king of Denmark, 1375-1387; his mother, Margaret, regent; king of Norway, 1380-1387. Margaret, queen of Norway and Denmark, 1387; and of Sweden, 1388-1397. Union of Calmar, 1397; uniting Norway, Sweden, and Denmark. Erik, king, 1412-1439. Danes renounce allegiance, 1438; and the Swedes in 1439. Flight of Erik to Gothland, 1439. Christopher of Bavaria elected by the Danes, 1439-1448. Union of Calmar broken by Sweden after the death of Christopher, 1448. Christian I., king of the Union, 1448-1481.	Woo-tung, emperor of China, 1307-1311. Jin-tsung, emperor of China, 1311-1320. Hojo family in Japan exterminated, 1333. Casimir the Great of Poland, 1333-1370; made Poland a power in Europe. Swiss Confederation, 1351. Hung-woo (1368-1398), founds the Ming dynasty in China. Louis the Great of Hungary, 1370-1384; period of Poland's greatest power. Turks buy off the Mongols from the Punjab. Winkelried at Sempach, 1386. Poland and Lithuania united by Hedvige's marriage with Jagellon (Vladislav II.), 1386-1434. House of Luxemburg in Hungary, 1387-1437. Tartary subjugated by China.
1400	Alphonso V., of Aragon and Naples, 1416-1458. Porto Santo and Madeira discovered by Portuguese, 1418-1419; Cape Verde, 1445; Azores, 1447.	Medici family acquired princely rank in Florence about 1400. Sicily again united with Aragon, 1409. Naples conquered by Alfonso V. of Aragon, 1435. Venice, the three terrible state inquisitors, since 1439. Line of the Visconti in Milan became extinct, 1447. Milan a republic; power seized by Francesco Sforza (husband of a daughter of the last Visconti), who became duke of Milan, 1450.			Yung-lo, emperor of China, 1403-1425. Famous battle of Grunwald or Tannenberg, 1410. Polish victory over Teutonic knights. Philip the Good, duke of Burgundy, 1419-1467. Vladislav III., king of Poland (1434-1444), defeated and slain by the Turks at Varna. Vladislav Postumus, king of Poland with John Hunyadi regent, 1444-1458. Ching-tung, emperor of China (1436-1465), captured by Tatars, 1450. Swiss confederacy practically independent, after the victory over the Germans at Ragaz, 1446.

From the Invention of Printing to the Reformation, 1450-1517 A. D.

A. D.	Spain and Portugal.	Italy.	Russia.	Scandinavia.	Other Countries.
1450	Marriage (1469) of Ferdinand the Catholic of Aragon (1479-1516) and Isabella of Castile (1474-1504), before either ascended the throne. Ferdinand and Isabella joint rulers, 1479-1504.	Ferdinand I., king of Naples, 1458. Death of Cosimo (Cosmus) de' Medici, "father of his country," 1464.	Ivan III., the Great, 1462-1505; founder of the united monarchy.	Danes elect Christian of Oldenburg, while the Swedes elect Charles Knutson. Charles compelled to resign Norway to Denmark. Charles Knutson loses Sweden through an insurrection, 1457. Christian I. crowned king of the three kingdoms, but obliged to contend with Charles Knutson for the throne of Sweden, and, after the death of Charles, with Sten Sture, to whom had been committed the administration of the kingdom of Sweden, 1470.	Constantinople taken, 1453. Turks defeated at Belgrade by John Hunyadi of Hungary, 1456. Hungary powerful. Matthias Corvinus, king of Hungary, 1464-1490. Ching-hwa, emperor of China, 1465-1488. Peace of Thorn (1466) ended war between Prussia and Poland. Poland's greatest extent. First regular assembly of the states-general in the Netherlands, 1477; followed by the "Groot Privilegie" or Magna Charta of Holland.

From the Invention of Printing to the Reformation, 1450-1517 A. D.

A. D.	Discoveries, Arts, Crafts.	England and Scotland.	France.	Germany.	America.
1450	Caxton's press in England, 1474.	Edward V., April-June, 1483. Richard, duke of Gloucester, regent. Richard III., 1483-1485. Murder of the princes in the Tower, 1483.	Death of Louis XI., 1483. Extinction of the House of Anjou.	Frederick III., at war with Matthias Corvinus, king of Hungary, driven from Austria; restored by Maximilian after the death (1490) of Corvinus.	Landing of Columbus on Guanahani, one of the Bahama Islands, Oct. 12, 1492; Cuba, Oct. 28.
	Printed musical notes first used, 1476.	Battle of Bosworth Field, 1485.	Charles VIII., 1483-1498.		First colony (Navidad) on Haiti.
	Watches first made at Nuremberg, 1477.	House of Tudor, 1485-1603.	Charles marries Anne of Brittany, 1491.		Second voyage of Columbus, 1493-1496.
	A kind of large pistol, called the "petronel," came into use, 1480.	Henry VII., 1485-1509. Battle at Stoke, 1487. James IV., of Scotland, 1488-1513.		Death of Frederick III., 1493.	Land—Prima Vista, Cape Breton Island (?). Newfoundland(?)—discovered by John and Sebastian Cabot, 1497.
		War with France caused by the annexation of Brittany by Charles VIII., 1491.	Houses of Orléans and Angoulême, branch line of house of Valois, 1498-1589. Louis XII., 1498-1515.	Maximilian I., 1493-1519; first took the title of "Roman emperor elect."	South America discovered by Vespucci, 1497.
				Diet of Worms, 1495; perpetual public peace.	Third voyage of Columbus, 1498-1500.
1500	The clock first made use of in astronomy, 1500?	Henry VIII., 1509-1547. War with France, 1512-1514.	Naples conquered (1501) by Louis XII. French defeated on the Garigliano, 1504. Holy League formed (1511) by Venice, Ferdinand, and the pope, to drive the French from Italy.	Aulic Council established, 1501.	Second voyage of Vespucci, 1499-1500. Columbus accused at court, sent in chains to Spain (1500), but released immediately upon his arrival, and treated with distinction.
	First coach brought from Scotland to France, 1501?	Battle of Guinegate. France, 1513; Henry VIII. and Emperor Maximilian victorious.	Battle of Novara; French defeated by the Swiss.	League of Cambray (1508) between Maximilian, Pope Julius II., Ferdinand the Catholic, and Louis XII., against Venice.	Newfoundland discovered by Cortereal, 1500. Voyage of Vespucci under a Portuguese commander, 1501.
	Sugar refining introduced into Europe by a Venetian, 1503.		Peace with the pope, Spain (1513), the emperor, and Henry VIII., 1514.		Fourth and last voyage of Columbus, May 11, 1502-Nov. 7. 1504.
	English shillings first made, 1503-1504.	Battle of Flodden Field, 1513; James IV. of Scotland (allied with France) defeated and slain.	Francis I., 1515-1547. Swiss defeated and Milan reconquered by the victory of Marignano, 1515.		Columbus shipwrecked at Jamaica, 1503.
	Discovery of Madagascar by the Portuguese, 1506.	James V., of Scotland, 1513-1542.	Treaty of Geneva, 1515. Treaty of Fribourg, 1516.	Pope's withdrawal from League of Cambray. Diet of Cologne, 1512.	Death of Columbus at Valladolid, 1506. Florida explored by Juan Ponce de Leon, 1512.
	Solis, Spaniard, reaches La Plata, 1516.	Thomas Wolsey made cardinal and chancellor, 1515; papal legate, 1517.	Concordat with the pope, 1516.	Maximilian joins the Holy League against France, 1513.	Pacific ocean discovered by Vasco Nuñez de Balboa, 1513.

From the Reformation to the Abdication of Charles V., 1517-1556 A. D.

A. D.	Discoveries, Arts, Crafts.	England and Scotland.	France.	Germany.	America.
1517		Henry VIII. given title "Defender of the Faith," by Pope Leo X.	Meeting of Francis I. and Henry VIII. near Calais, 1520; "Field of the Cloth of Gold."	Beginning of the Reformation, 1517.	Hudson Bay discovered by Sebastian Cabot, 1517
	Circumnavigation of the globe by Magellan's expedition, Sept. 20, 1519-Sept. 6, 1522.	Wolsey sentenced; pardoned; died, 1530.	Order of Jesuits founded by Ignatius Loyola, 1534.	Luther's ninety-five theses nailed upon the church at Wittenberg, 1517.	Cortez, Spaniard, conquers Mexico, 1519-1521.
		Henry's divorce from Catharine of Aragon pronounced by Cranmer, Archbishop of Canterbury; annulled by the pope.	Wars with Charles V.	Charles V., 1519-1556.	
	The musket said to have been used in the armies of Charles V., 1521.	Henry VIII. married Anne Boleyn, Jan. 25, 1533; excommunicated.	Political rights of the Parliaments restricted.	Luther excommunicated, 1520.	
		Act of Supremacy, 1534.	Calvin at Paris, 1532-1534.	Diet of Worms, 1521.	
	Insurance policies first used in Florence, 1523.	Reformation in England.	Brittany annexed to France, 1532.	Ban of the empire pronounced against Luther.	Magellan Strait sailed through by Magellan, 1520.
		Mary, queen of Scotland, 1542-1567.	Protestants persecuted.	First war of Charles V and Francis I., 1521-1526.	
	Manufacture of soap begun in London, 1524.	Ireland made a kingdom, 1542.	Death of Francis I., 1547.	Battle of Pavia, 1525.	De Soto discovered the Mississippi River, 1528.
		Battle of Solway Moss, 1542.	Henry II., son of Francis I., 1547-1559.	Peasants' War, 1525.	
	Ballot box said to have been used in electing aldermen in London, 1526.	France invaded, 1545. Edward VI., 1547-1553.	Growing power of house of Guise.	War with the Turks, 1526-1532.	Pizarro conquers Peru, 1532-1533; rules, 1533-1536.
		Mary the Catholic, 1553-1558.	War with Charles V., 1552.	Louis II., king of Hungary, slain in battle of Mohacs, 1526.	
	Spinning wheel invented by Jergens, 1530.	Catholic bishops restored.		Second war of Charles V. and Francis I., 1527-1529.	
		Execution of Lady Jane Grey (1554) and her husband.		Peace of Cambray, 1529.	Canada discovered by Jacques Cartier, 1534.
				Diet at Augsburg, 1530.	
		Protestants persecuted, 1555.		Peace of Nuremberg.	
	First portable clock made, 1530?	Cardinal Pole, Archbishop of Canterbury and papal legate, 1556.	Bishoprics of Metz, Toul, and Verdun seized.	Fourth war of Charles V. and Francis I., 1542-1544.	
				Peace of Crespy, 1544.	
				Council of Trent, 1545-1563; not attended by Protestants.	
				Battle of Mühlberg, 1547.	
				Peace of Augsburg, 1555.	
				Abdication of Charles V. at Brussels, 1556.	

From the Invention of Printing to the Reformation, 1450-1517 A. D.

A. D.	Spain and Portugal.	Italy.	Russia.	Scandinavia.	Other Countries.
1450	Spanish inquisition, 1481-1525. Conquest of Granada (capital of the last Moorish kingdom in the peninsula), Jan. 2, 1492. Golden Age of Portugal. Acquisitions in America for the crown of Castile. That part of world not possessed by any Christian prince divided between Spain and Portugal by a bull of Pope Alexander VI., 1493. Emanuel the Great of Portugal, 1495-1521. Discovery of the ocean route to the East Indies by Vasco de Gama, 1498.	Cyprus given to Venice by Catharine Cornaro, 1489. Alexander VI., pope, 1492-1503. Death of Lorenzo de' Medici, 1492. Invasion by Charles VIII. of France, 1494. Peter de' Medici driven from Florence. Savonarola excommunicated; executed, May 23, 1498.	Republic of Novgorod subjugated, 1478. Mongol supremacy in Russia overthrown by Ivan Vasilovitch, 1480.	Sten Sture, administrator of Sweden, 1470-1520. Battle of Brunkeberg; Christian defeated, 1481. Death of Christian I., 1481. Succession of John of Denmark (1481-1513). Union of Calmar renewed (1483), but John could never establish himself firmly in Sweden. Birth of Gustavus Vasa, 1496.	Hung-che, emperor of China, 1488-1506. Hungary and Bohemia united under Ladislaus II., 1490-1516. Philip the Handsome, sovereign of the Netherlands, 1493-1506.
1500	Conquest of Cuba, 1500. Conquest of Naples for the crown of Aragon, 1501-1504. Death of Isabella, 1504. Conquests on the coasts of Barbary, 1505-1510. Treaty of Villafafila: Philip regent, 1506. Death of Philip, 1506. The League of Cambrai, 1508-1509. Ferdinand again regent. Holy League against France, 1511-1513. Conquest of Navarre, 1512-1515. Death of Ferdinand, 1516. Charles I. (V.), 1516-1556.	Naples conquered by Louis XII. of France and Ferdinand the Catholic, 1501-1504. Julius II., pope, 1503-1513. Naples an appanage of Spain since 1504. The Medici restored in Florence by victory of the Holy League, 1512. Leo X., pope, 1513-1521.	Ivan IV., Russian czar, 1533-1584.	Christian II., king of Denmark and Norway (1513-1523), seeks allies for the purpose of reducing Sweden.	Ching-tih, emperor of China, 1506-1522. Louis II., last king of Hungary and Bohemia. 1516-1526.

From the Reformation to the Abdication of Charles V., 1517-1556 A. D.

A. D.	Spain and Netherlands.	Italy.	Scandinavia.	India.	Other Countries.
1517	Revolt in Castile suppressed; absolute monarchy established, 1518-1522. Charles I. of Spain, king of Germany and emperor-elect, as Charles V., 1519-1556. Reformation in the Netherlands, 1521-1555; severe measures for repression instituted 1523. Persecution and extermination of the Moors in Spain, 1524. The Pragmatic sanction, 1549. Abdication of the throne of the Netherlands by Charles V.; the accession of Philip II., 1555.	Medici a second time expelled from Florence, 1527. Genoa freed from French supremacy (1529) by Andrea Doria, who gave the republic a new constitution. Alexander de'Medici appointed hereditary ruler in Florence by Charles V., 1530. Cosimo (Cosmus) de' Medici, duke of Florence, 1537. Inquisition established by Pope Paul III., 1542. Unsuccessful conspiracy of Fiesco in Genoa, 1547. Pope Paul IV. (Caraffa), 1555-1559.	War waged upon Sten Sture by Trolle, who was captured, 1517. Christian II. and French allies repulsed near Brännkirka, 1518. Massacre of Stockholm, 1520. Successful insurrection by Gustavus Vasa, 1521-1523. House of Vasa in Sweden, 1523-1654. Gustavus I., Vasa, king of Sweden, 1523-1560. Throne of Sweden made hereditary. Christian II. deposed. Frederick I. (his uncle), king of Denmark and Norway, 1523-1533. Union of Calmar dissolved, 1523. Denmark and Norway united. Spread of Reformation. Feuds of the counts in Denmark, 1533. Christian III., son of Frederick I., king of Denmark, 1536-1559.	Mughal (Mogul) Empire, 1526-1761 (1857). Battle of Panipat, 1526; sultan of Delhi defeated by Babar, a descendant of Tamerlane. Rajputs of Chittor defeated, 1527. Humayun, son of Babar, 1530-1556. Sher Shah, Afghan ruler of Bengal, expelled Mughals from India. Return of the Mughals under Humayun's son Akbar, 1556. Afghans defeated by the Mughals at Panipat, 1556.	Soliman II., the Magnificent, sultan of Turkey, 1520-1566. Turks at war with the Hungarians, 1521-1526. Portuguese established at Macao, China, about 1522. Battle of Mohács, August 29, 1526. Turks at war with Charles V., 1526-1532. Rival kings of Hungary, 1527. Turks before Vienna 1529. After 1541 Hungary divided into three parts. Tatars under Yen-ta invade China in the reign of Kea-tsing, 1542. Japanese fleet harasses the coast of China.

Abdication of Charles V. to the Assassination of Henry IV. of France, 1556-1610 A. D.

A. D.	Discoveries, Arts, Crafts.	England and Scotland.	France.	Germany.	America.
1556	First step in photography—effect of light on horn silver observed by Fabricius, 1556. Tobacco brought into Europe possibly from Mexico, 1559. Copper mines discovered in England, 1561. Peaches brought from Persia into England, 1562.	Loss of Calais, 1558. Elizabeth, 1558-1603. Thirty-nine articles adopted, 1563. Abdication of Mary, queen of Scots, 1567. Drake sails around the world, 1577-1580. James VI., of Scotland, 1578-1625. Risings in Ireland, 1579-1580. Battle of Zutphen; death of Sir Philip Sidney, 1586. Babington conspiracy against Elizabeth, 1586. Mary, Queen of Scots, beheaded, 1587. Defeat of the Spanish Armada, 1588. Rebellion in Ireland, 1597.	War with Philip II. of Spain, 1556-1559. Francis II., 1559-1560. Charles IX., 1560-1574. Catharine de' Medici regent. Wars of the Huguenots, 1562-1598. Night of St. Bartholomew, 1572. Henry III., 1574-1589. Holy League, 1576. War of the Three Henrys, 1585-1589. House of Bourbon, 1589-1792. Henry IV., 1589-1610. Battle of Ivry, 1590. Edict of Nantes, 1598.	Ferdinand I., emperor, 1556-1564; king of Hungary and Bohemia since 1526. Constant warfare over Hungary, a great part of which was lost to the Turks. Maximilian II., 1564-1576. War with the Turks and with Zapolya, prince of Transylvania. Death of Sultan Soliman II. before Sigeth, 1566. Truce with Selim II., 1566. Reaction against Protestantism. Rudolf II., 1576-1612.	Slaves brought by the English to America, 1563. Frobisher's voyages, 1576, 1577, 1578. Drake touches the west coast of North America and claims the country between 38° and 42° N. for England, 1579. Sir H. Gilbert claims Newfoundland for England in right of the discovery by the Cabots, 1583. Raleigh's settlement on Roanoke Island, 1585; expedition to Guiana, 1595.
1600	Forks in use on Continent about 1600 Dutch reach Australia, 1601. Silk cultivated in England, 1604. The telescope introduced into England, 1608.	House of Stuart, 1603-1649. Union of the crowns of England and Scotland. James I. of England and VI. of Scotland, 1603-1625. Gunpowder plot, 1605. Pilgrims to Delft, 1609.	Henry IV. assassinated by Ravaillac, 1610.	Protestant Union (1608) led by Frederick IV., elector Palatine. Catholic League (1609) led by Maximilian, duke of Bavaria. Rudolf forced by his brother Matthias to cede Austria, Hungary, and Moravia.	Champlain sails up St. Lawrence, 1603; founds Quebec, 1608; discovers Lake Champlain, 1609. Port Royal, Nova Scotia, founded by French, 1605. Jamestown settled, 1607. Hudson skirts coast from Newfoundland to Chesapeake Bay; sails up Hudson River in search of a northwest passage, 1609.

From the Assassination of Henry IV. to the Death of Cromwell, 1610-1658 A. D.

A. D.	Discoveries, Arts, Crafts.	England and Scotland.	France.	Germany.	America.
1610	Logarithms invented by Napier, 1614. W. Baffin, of England, enters Baffin Bay, 1616. Napier perfects the theory of decimal fractions, 1617. First horses in Massachusetts, 1629-1630.	Weakening of loyalty by the unpopularity of James. Charles I., 1625-1648. Petition of Right, 1628. The Long Parliament, 1640-1653. Battle of Edgehill, 1642. Marston Moor, 1644. Naseby, 1645. Charles I. beheaded, 1649. Montrose beheaded, 1650. Commonwealth under Oliver Cromwell, 1653-1658.	Louis XIII., 1610-1643. Maria de' Medici, regent, 1610-1617. Cardinal Richelieu, 1624-1642. The French Academy founded, 1635. War with Spain, 1635. Louis XIV., 1643-1715. Cardinal Mazarin, 1643-1661. Disturbances by the Fronde, 1648-1653.	Matthias, 1612-1619. Thirty Years' War, 1618-1648. Ferdinand II., 1619-1637. Battle of Prague, 1620. Wallenstein, 1625-1634. Siege of Stralsund, 1628. Battle of Lützen, 1632. Ferdinand III., 1637-1657. Treaty of Westphalia, 1648.	St. Johns, N.F., settled, 1613. Dutch on Hudson, 1614. Pilgrims at Plymouth, 1620. Dover, N. H., settled, 1623. English in N. Scotia, 1624. Maine settled, 1625. Swedes in Delaware, 1627. Salem settled, 1628. Maryland settled, 1634. Connecticut settled, 1635. Providence settled, 1636. Delaware settled, 1638. Montreal founded, 1642. N. Carolina settled, 1653.

From the Death of Cromwell to the Death of Louis XIV. of France, 1658-1715 A. D.

A. D.	Discoveries, Arts, Crafts.	England and Scotland.	America.	France.	Germany.
1658	Versailles built, 1661-1687. Marquette and Joliet discover upper sources of Mississippi, 1673. Rebuilding of St. Paul's cathedral begun by Wren, 1675. La Salle sails on the Great Lakes, 1679; Father Hennepin sails up the Mississippi, 1680; La Salle takes possession of the valley for Louis XIV., and calls it Louisiana, 1682.	Richard Cromwell, protector, 1658-1659. Restoration of monarchy, Charles II., 1660-1685. Corporation act, 1661. Act of uniformity, 1662. War with Holland, 1665-1667. Great Plague in London, 1665. War with France, 1666-1667. Treaties of Breda, 1667. Declaration of Indulgence, 1672. Test act, 1673. Titus Oates plot, 1678. Habeas Corpus act, 1679. Whigs and Tories, 1679. Rye House plot, 1683. James II. king, 1685-1688. Monmouth's rebellion, 1685.	François de Laval, bishop of New France, 1659. South Carolina settled, 1659. Charter of Connecticut granted, 1662. Grant of Carolina to Earl of Clarendon, 1663. Charter of Rhode Island and Providence Plantation, 1663. Grant to James, duke of York and Albany, of the New Netherlands, from the Connecticut to the Delaware, 1664. New Amsterdam surrendered and name changed to New York, 1664. Acadia restored to France, 1667. Hudson Bay Company incorporated, 1670. Kingston, Canada, founded, 1673. King Philip's War, 1675-1678. Bacon rebellion in Virginia, 1676. La Salle in the West, 1678. New Hampshire separated from Massachusetts, 1680. Hennepin's discoveries on the Mississippi, 1680. Pennsylvania granted to William Penn, 1681.	Peace of the Pyrenees ends war with Spain, 1659. Louis XIV. assumes personal government on the death of Mazarin (1661). Colbert controls the finances, 1662-1683. War with Spain over the Netherlands, 1667-1668. Triple Alliance of England, Holland, and Sweden compels Louis to sign peace of Aix-la-Chapelle, 1668. War of conquest against Holland, 1672-1678. Peace of Nimeguen restores Dutch possessions and establishes peace of Europe, 1678-1679. Louis at the height of his power, 1680. Revocation of the Edict of Nantes, 1685.	Leopold I., emperor, 1658-1705. First war with the Turks (1661-1664) ended by a truce for twenty years. War of the empire against Louis XIV., 1674-1679. Second war with the Turks, 1682-1699. Hungarian conspiracy foiled, 1683. Vienna unsuccessfully besieged by the Turks, 1683. Turks defeated at Mohacs, 1687.

Abdication of Charles V. to the Assassination of Henry IV. of France, 1556-1610 A. D.

A. D.	Spain and Netherlands.	Italy.	Scandinavia.	India.	Other Countries.
1556	Philip II., 1556-1598. Moors and Protestants persecuted. War of liberation of Netherlands, 1568-1648. Battle of Lepanto, 1571. Pacification of Ghent, 1576. The Union of Utrecht, 1579. Independence of Netherlands declared, 1581. Spanish Armada, 1588. Philip III., 1598-1621.	Venice lost commercial supremacy through the discovery of sea route to India. Galileo Galilei (1564-1642) taught at Florence. Turks took Cyprus from Venice, 1573. Gregory XIII. (1572-1585) revised the calendar. Sixtus V. (1585-1590) suppressed the bandits in the papal states.	Erik XIV. of Sweden. John III. of Sweden. Augsburg Confession was received at Upsala, 1530. Christian III. (1534-1559) of Denmark and Norway, completes the work of the reformation. Frederick II. of Denmark and Norway, 1559-1588. Christian IV., of Denmark and Norway, 1588-1648. Sigismund of Poland in Sweden, 1593-1604. Charles IX., of Sweden, 1604-1611.	Akbar the Great of India, 1556-1605. Akbar's empire includes India north of the Vindhya Mountains, 1594.	Oki-Machi, mikado of Japan, 1558-1588. Turkish power declines after the death of Soliman II., 1566. Lung-King, emperor of China, 1567-1573. Poland seizes Livonia. Moscow burned by the Crim-Tatars, 1571. Poland an elective monarchy, 1572-1791. Rudolph elected king of Hungary, 1575. Western Siberia conquered by Russia. Jesuits ordered from Japan, 1588. Feodor(1584-1598),last sovereign of House of Rurik. Boris Godunoff chosen czar of Russia by the nobles (1598-1605). Christianity preached in China by Ricci, 1603. Iyeyasu (1603-1616), first Tokugawa shogun of Japan (1603-1868). Demetrius, the impostor, crowned in Russia, 1605. Revolt and civil war in Russia, 1606-1610. Moscow taken by Ladislas of Poland, 1610.
1600	Moors (500,000), expelled from Spain. Twelve years' truce with Holland, 1609.				

From the Assassination of Henry IV. to the Death of Cromwell, 1610-1658 A. D.

A. D.	Spain and Netherlands	Italy.	Russia.	Scandinavia.	Other Countries.
1610	Spanish-Netherlands War renewed, 1621. Philip IV., 1621-1665. Death of Maurice, 1625. Frederic Henry, 1625-1647. John DeWitt grand pensionary of Holland, 1653.	War of the Mantuan succession, 1627-1631. Venice struggles with the Ottomans.	Michael Feodorovitch (1613-1645) founds the house of Romanoff. Growth of Russian and decrease of Polish power. Alexis, 1645-1676. Code of laws introduced by Alexis. Victories of Russians over Polish, 1654.	Gustavus Adolphus, 1611-1632. Oxenstierna, 1583-1654. Sweden obtains Riga and Livonia from Russia, 1617-1621. Tilly defeated by Gustavus, 1631. Christina, 1632-1654. Charles X., 1654-1660.	Waning power of Turkey. Independence of Portugal, 1640. Fall of the Ming dynasty in China, 1644. Cretan War with Turkey, 1645-1669.

From the Death of Cromwell to the Death of Louis XIV. of France, 1658-1715 A. D.

A. D.	Spain and Portugal.	Italy.	Scandinavia.	Russia.	Other Countries.
1658	By the Peace of Pyrenees war with France is ended, and Louis XIV. marries Maria Theresa, daughter of Philip IV., 1659. Death of Philip IV., 1665. Charles II., of Spain, 1665-1700. Louis XIV. claims the Spanish Netherlands, and declares war (1667-1668), by which Spain loses 12 fortified towns. Peace of Lisbon, 1668. By the second war (1672-1678) Spain lost to France several possessions.	Turks defeated by the Venetians, 1661 and 1662. Germany and France help Venice. Turks retain Candia, 1669 Savoy makes war on Genoa, 1670. Dutch and Spanish fleets in the Mediterranean, 1676.	Charles X., Gustavus of Sweden, invades Denmark successfully, 1658; unsuccessfully, 1658-1659. Frederick III. (1648-1670) of Denmark receives absolute authority, 1660. Charles XI., king of Sweden, 1660-1697. Peace of Oliva between Sweden and Poland, 1660. Peace of Copenhagen between Sweden and Denmark, 1660, by which Denmark cedes all of the southern peninsula. Peace of Kardis between Sweden and Russia, 1661. Sweden, an ally of France, defeated by the elector of Brandenburg at Fehrbellin, 1675. Sweden, by the treaty of St. Germain-en-Laye, receives all conquests made by Brandenburg in Pomerania, 1679.	House of Romanoff gives Russia strength and influence. Feodor III., 1676-1682. Little or White Russia reconquered from Poland. Death of Feodor, 1682. Ivan and Peter, czars, 1682-1696. Sophia, elder sister, guardian. War with China, 1684-1689. Russia joins Holy League, 1686. First Russo-Turkish War, 1687. Sophia sent to a convent by Peter the Great, 1689. Death of Ivan, 1696. Peter sole ruler, 1696-1725.	Aurungzebe (1658-1707), Mughal emperor in India. Hindu kingdom of the Mahratas formed in the Dekkan, 1660 and later. Kang-he (1661-1721), emperor of China, conquers Tibet and Formosa. Bombay ceded to England in the dowry of Catherine of Braganza. John Casimir of Poland abdicates, 1668. John Sobieski, king of Poland, 1674-1696. Tsunayoski, emperor of Japan, 1681-1708. Holy League formed, 1684. Holy War against the Turks, 1684-1696.

From the Death of Cromwell to the Death of Louis XIV. of France, 1658-1715 A. D.

A. D.	Discoveries, Arts, Crafts.	England and Scotland.	America.	France.	Germany.
1658	College of William and Mary chartered, 1692.	Revolution; landing of William of Orange, and flight of James, 1688.	Charter of Massachusetts forfeited, 1684.	France opposed by the League of Augsburg in a war against the Palatinate, 1688-1697.	Eugene victorious at Zenta, 1697.
	Bank of England, 1694.	Declaration of Rights, 1689.	Sir Edmund Andros governor of New England, 1686-1689.		
	University of Halle, 1694.	William III. (1689-1702) and Mary, 1689-1694.	King William's War with the French, 1689-1697.		
	First fire insurance office, 1696	War with France, 1689-1697.	Port Royal seized by Sir William Phips, 1690.		
		Bill of Rights, 1689.	Salem witchcraft persecutions, 1692.		
		Battle of the Boyne, 1690.		Mastery of the sea passes to England from France by the victory of La Hogue, 1692.	Peace of Carlowitz (1699) gives Hungary and Transylvania to Austria and Morea to Venice.
		Massacre of Glencoe, 1692.	Andros governor of Virginia and Maryland, 1692.		
		Peace of Ryswick ends war with France, 1697.	Frontenac's expedition against the Iroquois, 1693, 1696, 1697.		
1700	Yale College founded, 1701.	Act of Settlement, 1701.	Peace with the Iroquois, 1701.	French and Bavarians defeated at Blenheim by Eugene and Mariborough, 1704.	Frederick III. takes the title of Frederick I. king of Prussia, 1701.
		War of the Spanish succession, 1701-1714.	Queen Anne's war with the French, 1702-1713.		Joseph I., son of Leopold, emperor 1705-1711.
		Anne, queen, 1702-1714.	Province of Pennsylvania erected, 1703.		
		Gibraltar taken, 1704.		Villeroi defeated at Ramillies, 1706.	
	Newcomen's steam engine, 1705.	Victory at Blenheim, 1704.	Port Royal taken by an English fleet, and name changed to Annapolis, 1710.		Charles VI., 1711-1740
		England and Scotland united as Great Britain, 1707.		French excluded from Italy, 1706.	
	Discovery of Herculaneum, 1708.	Peace of Utrecht, 1713.	Louisburg founded, 1713,	Vendome defeated at Oudenarde, 1708.	
		House of Hanover or Brunswick, 1714.	Hudson Bay and Straits, Nova Scotia, Newfoundland, and St. Christopher ceded to England by France, 1713.	French humbled at Malplaquet, 1709.	War of Turks with Venice, 1714-1718.
		George I. king, 1714-1727.			

From the Death of Louis XIV. to the Coming of George Washington, 1715-1775 A. D.

A. D.	Discoveries, Arts, Crafts.	Great Britain.	America.	France.	Germany.
1715	First ships built at Quebec, 1715.	Jacobite rebellion in Scotland, 1715-1716.	New Orleans founded, 1718.	Louis XV., king (1715-1774), Philip, duke of Orleans, regent (1718-1723).	War of Turks with the emperor, 1716.
		Septennial parliaments instead of triennial, 1716.	Government by proprietors overthrown in Carolina, 1719-1729.		Eugene conducts the war in Hungary; Belgrade taken, 1717.
		First Septennial parliament, 1717.	William Burnet, governor of New York (1720) obstructs trade of the French.	Policy of Louis XIV. abandoned. Joins the triple alliance with England, 1717.	Peace of Passarowitz, 1718.
		Triple alliance of England, France, and Holland against the Pretender, 1717.	New England wars with Indians, 1724.	Joins the quadruple alliance, 1718.	Emperor joins the quadruple alliance 1718.
		Quadruple alliance of England, France, the emperor, and Holland to enforce the Peace of Utrecht, 1718.	Abenakis take Berwick; colonists burn Norridgewock, 1724.	War with Spain, 1718-1720.	Pragmatic sanction planned to secure succession, 1720.
	First stage between Boston and New York, 1732.	War with Spain, 1718.	Treaty of peace between Massachusetts and eastern Indians, 1726.	Financial distress through the South Sea Bubble, 1720.	Short-lived alliance with Austria and Spain to support it, 1725.
	College founded at Princeton, New Jersey, 1738.	South Sea Bubble bursts, 1720.	Burnet governor of Massachusetts, 1728.	Duke of Bourbon administers affairs, 1723-1726.	War of the Polish succession, 1733-1735.
		George II., king, 1727-1760.	Carolina divided into North and South Carolina, 1729.	Cardinal Fleury in control, 1726-1743.	Peace of Vienna 1735.
		Porteous riot in Edinburgh, 1736.	Georgia settled in 1733, under Oglethorpe.	Joins Spain and Sardinia in support of Stanislaus, in the war of Polish succession, 1733-1735.	Unsuccessful war with the Turks, 1736-1739; Peace of Belgrade, 1739.
		War with Spain, 1739-1748.	King George's War between England and France, 1744-1748.	Joins Bavaria and Spain in the war of the Austrian succession against Austria (1741-1745).	Death of Frederick William I., of Prussia 1740.
	First paper in Canada, 1752.	Battle of Fontenoy, 1745.	Louisburg taken by Pepperell, 1745.	With Bavaria invades Austria and Bohemia and takes Prague, 1741, but was there besieged.	Frederick II., the Great, 1740-1786.
		Second Jacobite rebellion, 1745.	Cape Breton restored to the French by the treaty of Aix-la-Chapelle, 1748.	Louis XV. invades Holland, 1744.	Male line of Hapsburgs broken by death of Charles VI., 1740.
	Franklin's electrical experiments, 1752.	Battles of Prestonpans (1745) and of Culloden (1746).	Ohio Company formed, 1748.	With the Bavarians takes Munich, 1745.	Maria Theresa, 1740-1780.
	England adopts the Gregorian calendar, 1752.	Peace of Aix-la-Chapelle, 1748.	Halifax founded, 1749.	Victorious at Fontenoy, 1745.	War of the Austrian succession, 1741-1745.
	British Museum founded, 1753.	Clive in India, 1750.	Peace with the Six Nations concluded by Governor Clinton of New York, 1751.		First Silesian war 1740-1742.
			Georgia becomes a royal colony, 1752.		Charles VII., 1742-1745.
			Washington treats with French regarding settlements in the west, 1754.		Battle of Dettingen 1743.
			Union of the colonies proposed by Franklin at Albany, 1754.		Second Silesian war 1744-1745.
			Old French and Indian War, 1755-1763.		Francis I. (Lorraine Tuscany), 1745-1765.
			Massachusetts troops take Forts Beausejour and Gaspereaux in Acadia, 1755.		Peace of Dresden 1745; of Aix-la-Chapelle, 1748.
		Seven years' war with France, 1755-1763, carried on in America, Europe, India, and at sea.	Exile of the Acadians ("Evangeline") from Acadia, 1755.		
			Defeat and death of Braddock at Fort du Quesne, 1755.		
		Black Hole at Calcutta, 1756.	French defeat at Lake George, 1755.		
		Battle of Plassey, 1757	Massacre at Ft. William Henry, 1757.		
			Battle of Plains of Abraham (Quebec); Death of Wolfe and Montcalm, 1759.		

Photos 1, 2, 5, 7, 9 from Keystone View Co.; 3, 6, 8 from Ewing Galloway; 4 from Brown Bros.

EARLY CHARACTERS IN AMERICAN HISTORY

Lord Calvert (Lord Baltimore)
Gov. Winthrop (Mass.)
Roger Williams

General Ogelthorpe
Rev. Cotton Mather
William Penn

Hendrick Hudson
Capt. John Smith
Peter Stuyvesant

Photos, 1 from Brown Bros.; 2, 3, 7, 8, 9 from Keystone View Co.; 4, 5, 6 from Ewing Galloway.

FAMOUS AMERICAN FRONTIERSMEN

Daniel Boone
Capt. William Clark
Gen. Sam Houston

Major Robert Rogers
John C. Fremont
Gen. G. A. Custer

John Sevier
Capt. Merriweather Lewis
William F. Cody ("Buffalo Bill")

From the Death of Cromwell to the Death of Louis XIV. of France, 1658-1715 A. D.

A. D.	Spain and Portugal.	Italy.	Scandinavia.	Russia.	Other Countries.
1658	Spain joins the Augsburg League against France, 1689.	Peloponnesus or Morea taken by Venice, 1685-1687.	Charles XII., king of Sweden, 1697-1718.		Calcutta founded, 1686.
			Frederic IV., king of Denmark, 1699-1730.		Augustus II., king of Poland, 1697-1733.
					Fall of the Ottoman power in Europe began with the treaty of Carlowitz, 1699.
	First Partition Treaty divides the Spanish possessions, 1698.			Peter I., the Great, journeys in Europe, 1697-1698.	
1700	Second Partition Treaty, 1700.	Italy a seat of war in the War of the Spanish Succession.	Northern War (1700-1721) between Sweden and Russia.	Petrograd, (St. Petersburg) founded, 1703.	Jesuits in China, 1700.
	Death of Charles II., 1700.	Eugene invades Italy, 1701.	Secret alliance of Russia, Denmark, and Saxony against Sweden.		
	Philip V., 1701-1746.	Battle of Luzzara, 1702.	Peace of Travendal between Sweden and Denmark, 1700.	Charles XII. of Sweden invades Russia, 1708.	Bahadur Shah, Mogul emperor in India, 1707-1712.
			Swedes victorious at Narva, 1700		
	War of the Spanish succession, 1701-1713.	Eugene victorious at Turin and French driven from Italy, 1706.	Peace of Altranstädt, 1706.		
			Swedes defeated at Pultowa, 1709.	Russia victorious at Pultowa, 1709.	Jahandar Shah, Mogul emperor in India, 1712-1713
	Spanish monarchy dismembered, 1713.	War of Turks with Venice, 1714-1718.	Charles in Turkey, 1709-1714.		
			Prussia, Saxony, Denmark, Hanover, and Russia in league against Sweden, 1714.	Peace of the Pruth with Turkey, 1711.	

From the Death of Louis XIV. to the Coming of George Washington, 1715-1775 A. D.

A. D.	Spain and Portugal.	Italy.	Scandinavia.	Russia.	Other Countries.
1715	Philip punished adherents in Spain of Charles, archduke of Austria.	Dukes of Savoy and Piedmont called kings after the peace of Utrecht.	Pomerania taken, 1715; and Wismar, 1716.	Finland conquered, 1715.	Rajputana independent of the Moguls, 1715.
	Old constitutions and old rights withdrawn.	Savoy compelled by the quadruple alliance to exchange Sicily for Sardinia.	Charles XII. assassinated, 1718.	Peter the Great visits Denmark, Holland, and France, 1716.	Muhammad Shah, 1719-1748.
	Sardinia seized (1717) and Sicily (1718) caused the quadruple alliance to be formed against Spain, 1718.				Dekkan independent under the governor, 1720-1748.
	Sicily and Sardinia evacuated, 1720.		Ulrica Eleanora, queen of Sweden, 1719; placed the power in the hands of her husband, Prince Frederic of Hesse-Cassel, 1720-1751.		Yung-ching, emperor of China, 1721-1735.
					Yoshimune, Japanese shogun, 1717-1744.
					Christians expelled from China, 1723.
	Spain supports the Pragmatic sanction of Emperor Charles VI.			Russia restored Finland to Sweden, 1721.	Turks unite with Russia in an attack on Persia, 1723.
	Spain supports Stanislaus in the war of the Polish succession, 1733-1735.	Revolt of Corsica against Genoa, 1730.	Christian VI. of Denmark, 1730-1746.	Peter succeeded by his wife, Catherine I., 1725-1727.	Oudh enjoys independence, 1732 1743.
				Menschikoff in control.	Kien-lung, emperor of China, 1735-1795.
	Don Carlos secures Naples and Sicily, 1738.	Baron Neuhof of Westphalia took the title of King Theodore I. of Corsica, 1736.		Peter II., 1727-1730.	Nadir Shah, of Persia, drives out the Turks, 1736; invades India and sacks Delhi, 1739.
		Medici family extinct in 1737.		Anna Ivanovna, 1730-1740.	
	Spain joins France and Bavaria against Austria in the war of the Austrian succession, 1740-1748.	Paoli's Corsican revolt, 1755.	Sweden's unsuccessful war with Russia, 1741-1743.	Ivan IV., 1740-1741.	
			Peace of Abo, 1743.		Turks defeated at Kars, 1744.
	Ferdinand VI., 1746-1759.				France and England carry the war to India, 1744-1748.
					French take Madras (1746) and hold it until the peace of Aix-la-Chapelle.
		Naples and Sicily governed by the Spanish Bourbons; Ferdinand receiving them in 1759.			Mogul emperors mere puppets after 1748.
	Joseph I., Emmanuel, king of Portugal, 1750-1777.				Ahmad Shah, emperor in India, 1748-1754.
	Carvalho, marquis of Pombal, minister to Joseph.				Clive defends Arcot against the French, 1751.
					Ahmad Shah Durani, Afghan ruler at Kandahar, makes five invasions of India.
	Lisbon earthquake, 1755.				French and English at war in India, 1756-1763.
	Jesuits banished from Portugal, 1759.	Genoese call in the French to subjugate Corsica, and cede it to them in 1768.	Adolf Frederic, king of Sweden, 1751-1771.		Black Hole of Calcutta, 1756.
					Battle of Plassey, 1757.
					Clive, governor of Bengal, 1758.

From the Death of Louis XIV. to the Coming of George Washington, 1715-1775 A. D.

A. D.	Discoveries, Arts, Crafts.	Great Britain.	America.	France.	Germany.
1715	Potatoes planted in France, 1761. Spinning-jenny invented by Hargreaves, 1767. Arkwright's invention for spinning, 1769. Cut nails introduced, 1774. Mule spinner invented by Crompton, 1779.	George III., king, 1760-1820. Peace of Paris, 1763. Stamp Act passed, 1765. Townshend Acts, 1767. Lord North, minister, 1770-1782. Boston Port Bill passed, 1774.	Montreal and all Canada surrendered to England, 1760. Peace of Paris, 1763. Pontiac's conspiracy, 1763. Twenty-eight delegates meet in New York to resist the Stamp Act, 1765. Stamp Act repealed, 1766. Boston massacre, 1770. Destruction of 342 chests of tea in Boston harbor, 1773. Kentucky settled by Daniel Boone, 1773. Continental Congress at Philadelphia passes a declaration of rights, 1774.	Seven Years' War with England, 1756-1763. France beaten almost everywhere and loses all Canada. Corsica annexed, 1769. Dauphin marries Marie Antoinette, 1770. Louis XVI., king, 1774-1793. Turgot minister of marine and finance, 1774-1776.	England allied with Prussia, 1755. Seven Years' War, 1756-1763. Battle of Minden, 1759. Joseph II., emperor, 1765-1790.

Time of Washington and Development of Canada, 1775-1799.

A. D.	Discoveries, Arts, Crafts.	Great Britain.	United States.	France.	Germany.
1775	Gas balloon by Montgolfier, 1783. Fitch's steamboat, 1786. First mechanical patent in the United States, 1790. Whitney's cotton gin, 1792. Rocky Mountains crossed by Mackenzie, 1793. Vaccination, 1796. First French newspaper in Canada, 1798.	War of Independence of the Colonies in North America, 1775-1783. War between Great Britain and France, 1778-1783. Gibraltar defended by Elliott, 1779-1782. War between Great Britain and Spain, 1779-1783. Lord George Gordon riots, 1780. Russia, Denmark, Sweden(1780), Prussia, Austria (1782), Portugal (1783), Spain, and France, form the Armed Neutrality against British Right of Search. War between Great Britain and Holland, 1780-1783. Surrender of Lord Cornwallis at Yorktown, 1781. Peace of Versailles and Paris, 1783. Representative institutions granted to Canada, 1791. United Irishmen, 1792. French republic declares war, 1793. Jay treaty with the United States, 1794. England seizes Dutch possessions in the East, 1795. Spain declares war, 1796. Battle of the Nile (Abukir Bay), 1798. Great Irish Rebellion, 1798.	Battles of Lexington and Concord, 1775. Ticonderoga taken by Ethan Allen, 1775. Mecklenburg Convention, 1775. Washington commander in chief at Boston, 1775. Battle of Bunker (Breed's) Hill, 1775. Siege of Boston, 1775. Evacuation of Boston, 1776. Declaration of Independence adopted July 4; signed August 2 and after, 1776. Battle of Trenton, 1776. Battles of Princeton, Bennington, Saratoga, Brandywine, 1777. Burgoyne surrenders, 1777. Articles of Confederation are adopted, 1777. Alliance with France, 1778. British leave Philadelphia, 1778. Battle of Monmouth, 1778. Paul Jones victorious at sea, 1779. Treachery of Benedict Arnold, and hanging of Major Andre as a spy, 1780. Battle of King's Mountain, 1780. Battle of Cowpens, 1781. Siege of Yorktown and surrender of Lord Cornwallis, 1781. Independence of the United States recognized by Holland (1782); Sweden, Denmark, Spain, and Russia, 1783. Treaty of Versailles, 1783. Washington's farewell to the army, 1783. Shays's Rebellion in Massachusetts, 1787. Constitutional Convention meets at Philadelphia, 1787. Constitution signed (1788) except by North Carolina (1789), and Rhode Island (1790). First Congress meets at New York, 1789. Washington, president; John Adams, vice-president, 1789-1793. Indian war, 1790-1795. Vermont admitted, 1791; Kentucky, 1792. Washington and Adams re-elected, 1792. Washington proclaims neutrality in the war between France and England, 1793. Whisky insurrection in Pennsylvania, 1794. Tennessee admitted, 1796. Washington's farewell address, 1796. John Adams, president; Jefferson, vice-president, 1797. X. Y. Z. affair in France, 1797. Death of Washington, 1799.	Necker, minister of finance, 1776-1781. Benjamin Franklin, United States minister to France, 1778. Rochambeau sent with 6,000 men to aid America, 1780. Calonne, minister of finance, 1783-1787. Great extravagance at court and enormous debt. De Brienne, minister of finance, 1787-1788, when Necker was recalled. Beginning of the French Revolution, 1789. National Assembly formed from States-General, 1789-1791. Tennis-court oath, 1789. Bastille stormed and destroyed, 1789. Lafayette commands the new National Guard, 1789. Tricolor adopted, 1789. Emigration of nobles begins, 1789. Peasant uprisings in the provinces, 1789. Outbreak of Paris mob; royal family, saved by Lafayette, go to Paris, 1789. Constitution accepted by the king, 1790. Flight and capture of the king, 1791. Legislative Assembly, 1791-1792. Tuileries stormed, 1792. War with the First Coalition, 1792-1797. Massacre of royalists, 1792. National Convention, 1792-1795. Monarchy abolished; France a republic, 1792. King executed, 1793. Committee of Public Safety, 1793. Reign of Terror, 1793-1794. Queen executed, 1793. Government of the Directory, 1795-1799. Napoleon commands the army, 1795.	War of the Bavarian Succession, 1778-1779. Peace of Teschen, 1779. Joseph II. reigned alone, without his mother, Maria Theresa, as co-regent, 1780-1790. Joseph's attempted reforms were revolutionary and stirred up much opposition; the League of German Princes, 1785. Frederick William II. of Prussia, 1786. Leopold II., emperor, 1790-1792. Belgians in the Austrian Netherlands revolted at Joseph's reforms, but were put down by Leopold, 1790. Old constitution and privileges restored by Leopold. Prussia concludes a treaty with the Turks to force favorable concessions from Austria and Russia, 1790. Austria and Prussia form an alliance against the French disturbances, 1792. Francis II., 1792-1806. French revolutionists declare war against Austria, 1792. Lafayette, fleeing from Paris, imprisoned by Austrians in Olmütz until 1796. Austrians victorious at Neerwinden, 1793. Austrians defeated by Pichegru, 1793.

From the Death of Louis XIV. to the Coming of George Washington, 1715-1775 A. D.

A. D.	Spain and Portugal.	Italy.	Scandinavia.	Russia.	Other Countries.
1715	Charles III., 1759-1788.			Elizabeth, 1741-1762.	
		Tuscany controlled by Austria, 1765-1859.		Peter III., 1762.	Battle of Plassey, 1757.
	War between Spain and Portugal, 1762-1778.			Catherine II., 1762-1796.	
				Catherine's war against the Turks, 1768-1774.	First division of Poland, 1772, among Russia, Austria, and Prussia.
			Gustavus III., king of Sweden, 1771-1792.		
	Jesuits expelled by Aranda, 1767.		Crushed power of the nobles, 1772.		
		Jesuits expelled from Rome, 1773.			Warren Hastings governor of Bengal, 1772-1774; governor general of India, 1774-1785.

Time of Washington and Development of Canada, 1775-1799.

A. D.	Spain and Portugal.	Italy.	Canada.	Russia and Scandinavia.	Other Countries.
1775	Spain allies with France and declares war on England, 1779.	Tuscany concludes peace with France, 1795.	Invasion by Americans, 1775.	Russia proposes the armed neutrality at sea (1780) for the protection of commerce during the American war.	Lord Pigot governor and commander in chief of Madras, 1775.
					Period of peace in Poland, 1776-1792.
		Savoy and Nice annexed to France, 1796.	Americans driven out of Canada, 1776.	Russia takes Crimea, 1783.	Hastings repels Hyder Ali's invasion of the Carnatic, 1780; defeats the alliance of the Nizam, the Mahratas, and Hyder Ali.
	Spain retained Minorca and Florida by the Peace of Paris, 1783.		Boundary between Canada and United States first settled, 1783.	Catherine's second war with the Turks, 1787-1792.	Kokaku, mikado of Japan, 1780-1816.
		Napoleon's campaign in Italy, 1796.			Tippoo Sahib, 1782-1799.
			Migration of British Loyalists to Canada, 1784.	Sweden's war with Russia, 1788-1790, concluded without gain to Sweden.	Hastings recalled, 1785; impeached, 1788; acquitted, 1795.
	Charles IV., king, 1788-1808.	Whole of Lombardy conquered, 1796-1797.			War on Tippoo, sultan of Mysore, by Lord Cornwallis, 1791, 1792.
			St. John, N. B., incorporated as a city, 1785.	Suwarrow takes Ismail, 1790.	Conquest of the Gorkhas and Nepaulese by China, 1792.
		Peace with the Pope at Tolentino, 1797; Romagna, Bologna, and Ferrara given to France.			Second division of Poland, 1793.
			New Brunswick made a separate province, 1785.	Peace of Jassy, 1792.	Kosciuszko leads a Polish revolt, 1794.
	Revolutionists in France declare war against Spain, 1793.			Gustavus III. assassinated, 1792.	
					Third and last division of Poland, 1795.
		Mantua surrenders, 1797.	Canada divided into Upper and Lower, 1791.	Second division of Poland, 1793.	
				Kosciuszko leads a Polish revolt, 1794.	
		Bonaparte crosses the Alps, 1797.	First election in Canada, 1792.		
	Spain loses Santo Domingo to France, 1795.	End of republic of Venice, 1797.		Third and last division of Poland, 1795.	
			Abolition of slavery, 1793.		
		Roman republic, 1798.			
				Kurland added to Russia, 1795.	
			Jay's treaty with United States, 1794.		
					Kiaking, emperor of China 1796-1820.
		Kingdom of Naples becomes the Parthenopæan republic, 1799.		Paul I., czar of Russia, 1796-1801.	Napoleon's war in Egypt, 1798. Seringapatam captured and Tippoo slain, 1799.

Beginning of the Nineteenth Century to the Introduction of the Railway, 1799-1830.

A. D.	Discoveries, Arts, Crafts.	Great Britain.	United States.	France.	Germany.
1799	Webs of paper, 1798.			War with the Second Coalition, 1799-1802. Government of the Consulate, 1799-1804. Napoleon consul for 10 years.	Austria, in the Second Coalition, opposes Napoleon, 1799-1801. Archduke Charles defeats Jourdan and compels him to lay down his command, 1799.
1800	Volta's electric battery, 1800. Steel pens, 1803. Trevithick's locomotive, 1804. Fulton's *Clermont*, first successful application of steam to navigation, 1807. McGill University founded, 1811. Storage battery, 1812. Stephenson's locomotive, 1814. Davy's safety lamp, 1815. Lachine canal built, 1821-1825. Erie canal finished, 1825. Quincy, Mass., railway finished, 1827. Friction matches, 1827.	Malta taken, 1800. Legislative union of Great Britain and Ireland, forming the United Kingdom, 1801. Battle of Copenhagen, 1801. Peace of Amiens, 1802. War with France renewed, 1803. Emmet's rebellion in Ireland, 1803. England, Russia, Austria, and Sweden, form Third Coalition against France, 1805. Battle of Trafalgar, 1805. Ministry of All the Talents, 1806-1807. Berlin Decree, 1806. Abolition of slave trade, 1807. Orders in council, 1807. Russia declares war, 1807. Convention of Cintra, 1808. Peninsular War, 1808-1814. Prince of Wales regent, 1811. War with the United States, 1812-1814. Treaty of Vienna, 1815. Battle of Waterloo, 1815. George IV. king, 1820-1830. Thistlewood's conspiracy, 1820. Ashantee War, 1824. Burmese War, 1824-1826. English at Navarino, 1827.	Congress met first at Washington, 1800. Thomas Jefferson, president; Aaron Burr, vice-president, 1801. Tripolitan War, 1801-1805. Ohio admitted, 1802. Louisiana purchase ($15,000,000), 1803. Hamilton killed by Burr in a duel, 1804. Thomas Jefferson, president; George Clinton, vice-president, 1805. Jefferson's embargo act, 1807. Burr tried and acquitted of treason, 1807. Embargo repealed except as to England and France, 1809. James Madison, president; Clinton, vice-president, 1809. Louisiana admitted, 1812. War declared against Great Britain, 1812-1814. James Madison, president; Elbridge Gerry, vice-president, 1813. Treaty of Ghent, 1814. Hartford convention in opposition to the war, 1814. War with Algiers, 1815. James Monroe, president; D. D. Tompkins, vice-president, 1817-1825, two terms. Era of good feeling. Mississippi admitted, 1817. Seminole War, 1817. Illinois admitted, 1818. Alabama admitted, 1819; Maine, 1820. Missouri Compromise, 1820. Monroe Doctrine enunciated, 1823. John Quincy Adams, president; John C. Calhoun, vice-president, 1825-1829. "Tariff of abominations," 1828. Andrew Jackson, president; Calhoun, vice-president, 1829-1837.	Campaign in Italy, 1800. Napoleon crosses the Alps, 1800. Battle of Hohenlinden, 1800. Napoleon consul for life, 1802. Napoleon emperor of the French, 1804-1814. Code Napoleon, 1804. Third Coalition makes war on France, 1805. Confederation of the Rhine, 1806. Battle of Jena and Auerstadt, 1806. Battle of Eylau, 1807. Peace of Tilsit, 1807. War between Napoleon and Great Britain in Spain and Portugal, 1808-1814. War with Austria, 1809. Peace of Vienna, 1809. Holland annexed to France, 1810. War with Russia, 1812. Retreat from Moscow, 1812. Napoleon abdicates and retires to Elba, 1814. Congress of Vienna, 1814-1815. Louis XVIII., 1814-1824. Napoleon returns to Paris, 1815. Napoleon sent to St. Helena, 1815. Death of Napoleon, 1821. Charles X., king of France, 1824-1830.	Austrians defeat Scherer, Moreau, and Massena. Austrians defeated at Marengo, 1800. Peace of Lunéville, which marks the abolition of the old Holy Roman Empire, 1801. Austria joins the Third Coalition against Napoleon, 1805. Whole Austrian army, 30,000, surrenders to Napoleon at Ulm, 1805. Murat takes Vienna. Austrians and Russians defeated at Austerlitz, 1805. Peace of Pressburg, 1805. Francis II. abdicates the crown of the Holy Roman Empire, 1806; end of the old German Empire; Francis I., 1804-1835. German Empire dissolved, 1806. Austria appeals to the Germans to oppose Napoleon, 1809. Archduke Charles defeats Napoleon at Aspern and Essling, 1809. Napoleon defeats Charles at Wagram, 1809. Austria declares war on France, 1813. Napoleon defeated at Leipzig, 1813.

From the Time of Stephenson to the Election of Lincoln, 1830-1860.

A. D.	Discoveries, Arts, Crafts.	Great Britain.	United States.	France.	Prussia.	Austria.
1830	Manchester and Liverpool railway opened, 1830. First steamship to cross Atlantic, 1830. Chloroform, 1831. McCormick reaper, 1831. First railway in Canada, 1836. Bunker Hill monument dedicated, 1843. Morse's telegraph line between Baltimore and Washington, 1844.	William IV. king, 1830-1837. First Reform Act passed, 1832. Slavery abolished throughout the empire; indemnity of $100,000,000, 1833. Victoria queen, 1837-1901. Rebellion in Canada, 1837; *Caroline* burned. People's Charter drawn up at Birmingham, 1838. Opium war with China, 1839-1842. Queen marries Albert, 1840. Upper and lower Canada (Ontario and Quebec) united, 1840.	Webster's reply to Hayne on states-rights, 1830. Tariff Act, 1832. Nullification Act in South Carolina, 1832. Compromise Tariff Act, 1833. Seminole War, 1835. Arkansas admitted, 1836. Michigan admitted, 1837. Martin Van Buren, president; R. M. Johnson, vice-president, 1837-1841. Commercial panic, 1837. Gag resolutions, 1838-1839. Sub-treasuries established, 1840. W. H. Harrison, president; John Tyler, vice-president, 1841. Death of president and succession of Tyler, 1841. Ashburton treaty settles north-eastern boundary dispute, 1842. Dorr rebellion, 1842. Florida admitted, 1845. Texas annexed, 1845. James K. Polk, president; George M. Dallas, vice-president, 1845-1849.	Algiers taken by the French, 1830. July Revolution: the three days of July (27, 28, 29), 1830. Charles X. abdicates, 1830. Louis Philippe, king of the French, 1830-1848. Louis Napoleon attempts to gain throne; sent to America, 1836. Second attempt of Louis Napoleon, 1840. Napoleon's remains reinterred in Paris, 1840. Ministry of Soult and Guizot follows that of Thiers, 1840-1848.	Foundation of the German customs union — Zollverein, advocated by Prussia in 1818, 1833. Frederick William IV., 1840-1861. Alliance against the demands of the Turks, 1840. Revolutionary movements caused by influence of the French revolution, 1848.	Ferdinand I., emperor 1835-1848. Metternich chancellor of state. Alliance against Mehemet Ali 1840. Uprising in Vienna, Metternich driven from the city, 1848; followed by a second and a third uprising. Citizens and students controlled the city.

Beginning of the Nineteenth Century to the Introduction of the Railway, 1799-1830.

A. D.	Spain and Portugal.	Italy.	Canada.	Russia and Scandinavia.	Other Countries.
1799		King of Naples returns and abolishes the Cisalpine republic, 1799.		Russia joins the Second Coalition against Napoleon, 1799; withdraws, 1800.	
1800	By the Peace of Lunéville Spain loses Louisiana to France, 1801. Spain allied with France against the Third Coalition, 1805. Spanish and French fleets defeated at Trafalgar, 1805. Portugal refuses to join the Continental system; seized by Junot; royal family fled to Brazil, 1807. Napoleon seizes throne of Spain for his brother Joseph, who becomes king, 1808. Peninsular War, 1808-1814.	Napoleon's second campaign in Italy, 1800. Genoa capitulates, 1800. Cisalpine republic restored, 1800. Napoleon victorious at Marengo, 1800. Tuscany given to Parma and becomes Etruria, 1800. Neapolitan possessions and island of Elba given to France by peace of Florence, 1801. Sardinian fortresses annexed to France, 1802.	Manitoba first settled, 1811. War of 1812-1814. Invasion of Canada by Americans, 1812. Americans repulsed, 1812. Americans secured control of Upper Canada, 1813. Americans gave up attempts to conquer Canada, 1514. Treaty of Ghent, 1814.	England forces Denmark to withdraw from northern convention, 1801. Alexander I., czar of Russia, 1801-1825. Russia joins the Third Coalition, 1805. Defeated at Austerlitz, Russians retreat, 1805. Sweden joins the Third Coalition against Napoleon, 1805. Russia joins Prussia against France, 1806-1807; defeated at Eylau, 1807. Alliance of Denmark with France, after loss of fleet, 1807. Peace of Tilsit, 1807. Sweden surrenders most of Finland and Aland to Russia, 1809. Gustavus IV. of Sweden deposed, 1809; crown given to Charles XIII., 1809-1818. Bernadotte crown prince of Sweden, 1810. Napoleon invades Russia, 1812. Burning of Moscow, 1812. Sweden joins Russia and England against France, 1812. Nicholas I., czar of Russia, 1825-1855. Russian fleet at Navarino, 1827. Russo-Turkish War, 1828-1829. Russians take Varna, 1828. Peace of Adrianople, 1829.	Wellington defeated the Sindhia at Assaye, 1803. Miranda in Venezuela, 1804. Lord Minto, governor general of India, 1807-1813. Mehemet Ali and the Mamelukes, 1811. United Netherlands, 1813. War with the Gurkhas of Nepal, 1814-1815. William I., Netherlands. 1815-1840. Argentine Confederation, 1816. Last Mahrata war, 1817-1818. Chile independent, 1818. Mexico independent, 1821. Greek war of freedom, 1822-1829. Brazil independent, 1823. Lord Amherst, governor general of India, 1823-1828.
	Corunna; death of Moore, 1809. Battle of Salamanca, 1812. Battle of Vittoria, 1813. Ferdinand VII., 1814-1833. Constitution of 1812 restored by uprising of liberals, 1820. Revolutions and civil wars in Spain, 1820-1834.	Napoleon king of Italy, 1805; and Eugène Beauharnais, viceroy of Naples. Piedmont, Parma, and Placenza given to France, 1805. Bourbons in Naples dethroned, 1805. Tyrol subdued, 1809. Kingdom of Two Sicilies restored, 1814. Austria invades Italy, 1821.	First Indian treaty, 1817. First Canadian bank, 1817. The Family Compact, 1820-1837. Northeast boundary of U. S. settled, 1827.		First Burmese war; England secures Assam, 1824-1826. Peru independent, 1825. Bolivia under Bolivar, 1825. Missolonghi taken by the Turks, 1826. Sir William Bentinck, governor general of India, 1828-1835. Suppression of the sati or suttee (widow-burning) and of the thagi or thugs (assassins). Dom Pedro, emperor of Brazil, 1831-1889. Leopold, king of the Belgians, 1831-1909.

From the Time of Stephenson to the Election of Lincoln, 1830-1860.

A. D.	Spain and Portugal.	Italy.	Canada.	Russia and Scandinavia.	Other Countries.
1830	Dom Pedro of Portugal delegates crown of Brazil to Pedro II., 1831. Civil war in Spain follows the death of Ferdinand VII., 1833-1840. Don Carlos in Spain, 1833-1839. Civil war in Portugal, 1836.	Uprisings in Modena, Parma, and Romagna quelled by Austria, 1831. Death of Pope Gregory XVI., 1846. Pius IX., his successor.	First Railway, 1836. Insurrection in Lower Canada, 1837. Rising in Upper Canada, 1837. Outbreak of rebellion in both provinces, 1837-1838. First daily paper, 1840.	Russia suppresses revolt in Poland, 1830. Warsaw captured, 1832.	India thrown open to European trade and settlement encouraged, 1833. East India Company's exclusive trading privileges in China cease, 1834. Emperor of China forbids opium trade; 20,283 chests destroyed, 1839. Refusal to pay indemnity on this brought on the first war with Great Britain (Opium War), 1840-1842. Canton, Amoy, Fuchau, Ningpo, and Shanghai opened to British trade by the treaty of Nanking, 1842. Hongkong ceded to Great Britain, 1842. Cushing treaty between China and the United States, 1844.
	Espartero supported claims of Isabella II. against Don Carlos, brother of the king. Insurrection in Barcelona, 1843. Espartero overthrown, 1843.	Revolt in Naples secures a liberal constitution, 1848. Sicily in revolt, subdued, 1848.	Responsible government, 1841. Union of two provinces as Canada, 1841. Opening of first united Parliament, 1841. Ashburton treaty, 1842. Oregon boundary treaty, 1846.		

From the Time of Stephenson to the Election of Lincoln, 1830-1860.

A. D.	Discoveries, Arts, Crafts.	Great Britain.	United States.	France.	Prussia.	Austria.
1830	Gold discovered in California, 1848. Corliss engine 1848. Telegraphic communication between France and England, 1851. Great industrial exposition at Hyde Park, 1851. Magazine rifle, 1854. Safety matches, 1855. Rubber dental plate, 1855. First Atlantic cable laid, 1858.	Total repeal of corn laws, 1846. Famine in Ireland, 1846-1847. Rebellion in Ireland (O'Brien and Mitchell), 1848. Chartist riots, 1848. Navigation laws repealed, 1849. Roman Catholic hierarchy established in England, 1850. Clayton-Bulwer treaty with the United States. 1850. Crimean War, 1853-1856. Treaty of Paris, 1856. War with China, 1856-1860. Indian Mutiny, 1857-1858. India transferred to England, 1858. Property qualifications of members of parliament abolished, 1858. Jews admitted to parliament, 1858. Queen proclaimed sovereign of India, 1858.	Iowa admitted, 1846. Wilmot proviso, 1846. Mexican War, 1846-1848. Oregon boundary settled, 1846. Wisconsin admitted, 1848. Zachary Taylor, president; Millard Fillmore, vice-president, 1849. Fugitive Slave law, 1850. Fillmore, president, on death of Taylor, 1850. Franklin Pierce, president; William Rufus King, vice-president, 1853-1857. Gadsden purchase, 1853. Treaty with Japan, 1854. Fishery rights secured by treaty with Great Britain, 1854. Republican party formed, 1854. Kansas-Nebraska bill, 1854. James Buchanan, president; J. C. Breckinridge, vice-president, 1857-1861. Dred Scott case, 1857. Minnesota admitted, 1858; Oregon, 1859. John Brown's raid at Harper's Ferry, 1859.	Revolution of February, 1848. Louis Philippe abdicates in favor of his grandson, Count of Paris, 1848. France a republic, 1848-1851. The days of June—insurrection in Paris, 1848. Louis Napoleon Bonaparte, president of the republic, 1848, afterwards, by coup d'état, president for 10 years (1851); and then as Napoleon III., emperor, 1852-1870. France shares in the Crimean war against Russia, 1854-1856. War of France and Sardinia against Austria, 1859.	Prussia cooperates with other German states in the German National Assembly to promote union, 1848-1849. Constitution for German Empire completed, 1849; but rejected. Alliance of the three kings (Prussia, Hanover and Saxony), 1849. Prussia swears allegiance to the new constitution, 1850. Prince of Prussia becomes regent, 1857 and 1858.	Archduke John of Austria chosen president of the German National Assembly, 1848. Slavonic Congress at Prague, 1848. Abdication of Ferdinand I., 1848. Francis Joseph I. emperor of Austria, 1848. War with Sardinia, 1848-1849. Hungarian revolt under Kossuth, 1848-1849. New constitution adopted, 1849. Kossuth governor of the Magyars, 1849. Hungarians defeated and capitulated, 1849. War with France and Sardinia 1859.

From the Election of Lincoln to the Founding of the German Empire, 1860-1871.

A. D.	Discoveries, Arts, Crafts.	Great Britain.	United States.	France.	Prussia.	Austria.
1860	Antiseptic surgery, 1861. Second industrial exhibition at London, 1862. Telegraphic communication between America and England completed, 1866. Dynamo electric machine, 1866. Dynamite, 1866. Great exhibition in Paris, 1867. Suez canal opened, 1869. Pacific railway, 1869. Westinghouse air brake, 1869. Celluloid, 1869.	Mason and Slidell taken from the British mail steamer, *Trent*, 1861. Death of the prince consort, 1861. Cotton famine, 1862-1863. Maori War in New Zealand, 1863-1869. Ionian Isles ceded to Greece, 1864. Insurrection in Jamaica, 1865. Second Reform bill extends the franchise, 1867. Fenian uprisings in Ireland, Chester, and Clerkenwell, 1867. Dominion of Canada formed by the union of Ontario, Quebec, New Brunswick, and Nova Scotia, 1867. Abyssinian expedition under Lord Napier, 1867. Irish church disestablished and disendowed, 1868. Irish land act passed, 1870. National education established by law, 1870.	Abraham Lincoln, president; Hannibal Hamlin, vice-president, 1860. South Carolina secedes (1860) followed by Mississippi, Florida, Alabama, Georgia, Louisiana, and North Carolina (January, 1861); Texas (February); Virginia (April); Tennessee, and Arkansas (May). Confederate States of America formed at Montgomery, Ala., February 8, with Jefferson Davis, president; Alexander H. Stephens, vice-president. Kansas admitted, 1861. Fort Sumter fired on by the Confederates, April 12, 1861, and surrendered, April 14. McClellan succeeds General Scott as commander-in-chief of the Union forces, 1861. Emancipation Proclamation issued, 1863. Grant commander-in-chief, 1864. Nevada admitted, 1864. Lincoln re-elected president; Andrew Johnson, vice-president, 1864. Lincoln assassinated, 1865. Andrew Johnson, president, 1865. Amnesty declared, 1865. Civil Rights bill passed over the president's veto, 1866. Nebraska admitted, 1867. Reconstruction Act over the president's veto, 1867. Alaska purchase, 1867. President Johnson impeached, but acquitted, 1868. Terms of amnesty widened, 1868. U. S. Grant, president; Schuyler Colfax, vice-president, 1869-1877. Fifteenth amendment ratified, 1870.	Mexican expedition by France, England, and Spain, 1861-1867. England and Spain withdraw, Napoleon III., expecting the United States to be broken up in civil war, planned a monarchy in Mexico. Puebla taken by French, 1863. Crown of Mexico offered to Maximilian, brother of Francis Joseph of Austria. United States orders the French troops to withdraw, 1867. Maximilian carried on the war alone and was captured, tried, and shot, 1867. Franco-German War, 1870-1871. (For details of battles see Important Wars of History.)	William I., king of Prussia, 1861-1888. Constitutional difficulties over reorganization of the army cause resignation of the ministry, 1861. Von Bismarck president of the ministry, 1861. Especial care given to the army. War with Denmark, 1864. Prussians storm Düppel and capture it. Prussians defeat the Danes in the island of Alsen. War with Austria, 1866. Prussians invade Bohemia. Peace of Prague, 1866. North German Confederation formed, 1867. Franco-Prussian War, 1870-1871.	New constitution with separate diets for the united monarchy, 1861. Francis Joseph summons German princes to consider reorganization of Germany, 1863. War with Denmark, 1864. Peace of Vienna. War with Prussia, 1866. Austrian victory at Trautenau. Austria consents to be left out of the reorganization of Germany. Francis Joseph crowned apostolic king of Hungary, 1867. The Ausgleich of 1867 recognized Austria and Hungary as separate states under a common head.

From the Time of Stephenson to the Election of Lincoln, 1830-1860.

A. D.	Spain and Portugal.	Italy.	Canada.	Russia and Scandinavia.	Other Countries.
1830		Anarchists and republicans rule in Rome; city besieged for two months and captured by the French, 1849.	Victoria, B. C., founded, 1843. Oregon boundary treaty, 1846. Riots in Montreal, 1849.	Wars of Schleswig-Holstein against Denmark, 1848, 1849, and 1850-1851. Treaty of London closes the war, 1852.	Hienfung emperor of China, 1850-1860. Tai-ping rebellion, 1850-1864. Turkish fleet at Sinope, 1853.
	Death of Godoy, 1851.	Mazzini at Rome, 1849.	Postage stamps introduced, 1851. First American Y. M. C. A. at Montreal, 1851.	Russians cross the Pruth, 1853. Crimean War, 1854-1856.	Commodore Perry of the United States navy enters Yedo (1853) and concludes a treaty with Japan, 1854.
		Pope returns to Rome from Gaeta, 1850. Gioberti in Italy, 1852.	Reciprocity treaty with United States, 1854.	Russians repulsed at Silistra, 1854. Siege of Sebastopol, 1854-1855.	Persian war, 1856-1857.
	Death of Don Carlos in exile, 1855.	Sardinian war with Austria, 1848-1849.	Gold found in British Columbia, 1858. Decimal coinage, 1858. Ottawa, capital of Dominion, 1858.	Siege of Kars, 1855. Alexander II. emperor of Russia, 1855-1881.	Chinese war with Great Britain and France (*Arrow* affair), 1856-1860. Surrender of Peking, 1860.
		Sardinia joins France against Austria, 1859. Battle of Magenta, 1859. Battle of Solferino, 1859.	First railway bridge across St. Lawrence, 1859.	Treaty of Paris, 1856.	Yokohama, Hakodate, and Nagasaki opened to trade, 1859.

From the Election of Lincoln to the Founding of the German Empire, 1860-1871.

A. D.	Spain and Portugal.	Italy.	Canada.	Russia and Scandinavia.	Other Countries.
1860	Spain supports Napoleon III. in the Mexican expedition, 1861.	Victor Emmanuel receives from Napoleon III. Lombardy and takes Tuscany, Parma, Modena, and papal legations; giving up Savoy and Nice to France, 1860.	Winnipeg founded, 1860. Victoria bridge opened, 1860.	Emancipation of Russian serfs, 1860.	First Japanese embassy sent to the United States, 1860. Tunchi emperor of China, 1860-1875.
				Death of Frederic VII. of Denmark, 1863.	George king of Greece, 1863. French in Mexico, 1864.
	Withdrew with England, 1862.		Nova Scotia and New Brunswick join confederation, 1866. Invasion by Fenians, 1866.	Christian IX. king of Denmark, 1863-1906. Insurrection in Poland, 1863.	Rebellion in China suppressed by England; Nanking taken by "Chinese" Gordon, 1864. Shimonoseki (Japan) bombarded by English, French, Dutch and American ships to avenge an attack, 1864. Indemnity $3,000,000 of which the United States receives $785,000.
		Garibaldi marched on Palermo, 1860. Sicily and Naples united to Sardinia, 1860. Victor Emmanuel king of Italy, 1861.	First meeting of Parliament at Ottawa, 1866.		
	Spanish revolution at Cadiz, 1868. Serrano insurgent, victorious; Queen Isabella flees to France and is deposed, 1868.		Dominion of Canada formed, 1867.	War of Austria and Prussia against Denmark, 1864.	
					Keiki, the last shogun, resigns, 1867. Maximilian shot in Mexico, 1867.
		Death of Cavour, 1861. Florence capital of Italy.	Red River rebellion, 1869-1870.	Russian advance in Asia, 1864-1877.	
	Bourbon house deposed, crown offered to the prince of Hohenzollern, 1870. Duke of Aosta, second son of Victor Emmanuel, elected king under title of Amadeus I., 1870-1873.	Venice united to Italy, 1866. Italy becomes the sixth great power, 1867.	Addition of Northwest Territories and Manitoba, 1870; British Columbia to confederation, 1871. Treaty of Washington, 1871. School act passed, 1871. Departure of last battalion of British troops from Quebec, 1871. Fenian riots suppressed, 1871.		War between Brazil and Paraguay, 1868. Mikado restored; end of dual government, 1868. Abolition of feudalism in Japan, 1871.
		Vatican council, 1870.			Introduction of western civilization into Japan begins, 1871.

A. D.	Discoveries, Arts, Crafts.	Great Britain.	United States.	France.	German Empire.	Austria-Hungary
1871	Ontario Ladies' college founded, 1874.	Alabama claims settled by the treaty of Geneva, 1872.	Civil Service Commission authorized, 1871.	France a republic (third time), 1870 to the present day.	William I. emperor of Germany, 1871-1888.	Turke cedes Bosn and Herz govina t Austria, 18
	Centennial exhibition at Philadelphia, 1876.	Vote by ballot established, 1872.	Treaty of Washington settles Oregon boundary, fishery dispute, and Alabama claims with Great Britain, 1871.	Uprising of the Commune, 1871.	Imperial Parliament adopts constitution, 1871.	Bismar concludes defensiv alliance Vienna, 18
	Telephone, 1876.	Ashantee War, 1873-1874; Kumassi taken by Wolseley, 1874.		Rule of the Socialistic Commune, March 28-May 22, 1871.	German troops leave French territory, 1873.	Lectures Bohemian established the Univer ty of Prag 1881.
	Portland cement, 1876.	Suez canal shares bought from the khedive of Egypt, 1875.	Colorado admitted, 1875.	Second siege of Paris by Marshal MacMahon, 1871.	Congress of Berlin adjusts Anglo-Russian difficulties in the East, 1878.	Distur ances in Bo mia, Herzeg vina and D matia que ed, 1882.
	Phonograph, 1877.	Queen, empress of India, 1877.	Custer's troops massacred by Indians (Sitting Bull), 1876.	Thiers elected president, 1871.	Defensive alliance with Austria, 1879.	Forms trip alliance wi German and Ital 1882.
	Edison introduces electric lighting, 1878.	Treaty of Berlin. England takes Cyprus, 1878.	Electoral commission appointed to decide presidential election, 1876.	Death of Napoleon III. in England, 1873.	Conference of Berlin to enforce provisions of the Congress upon the Porte, 1880.	Preven Bulgar from inva ing Serv 1885.
	International exposition at Paris, 1878.	Zulu War, 1878-1881.	Rutherford B. Hayes, president; W. A. Wheeler, vice-president, 1877-1881.	Thiers forced to resign and MacMahon elected, 1873, and made regent for seven years as "President of the Republic," 1873.	Reichstag rejects Bismarck's proposed tobacco monopoly, 1882.	Franchi extende 1896.
		Afghan War, 1878.		Republican constitution passed, 1875.	Alliance with Austria and Italy, 1883.	Jewish fa recogniz by Hunga an law, 18
		Irish Land League, 1879.	Specie payments resumed, 1879.	Death of Thiers, 1877.	Frederick III. emperor, 1888.	Czech l guage ma equal to G man in Bo mia, 1897.
		Boers revolt, 1880-1881.	James A. Garfield, president; Chester A. Arthur, vice-president, 1881.	MacMahon resigns; succeeded by Grévy, 1879-1887.	William II., emperor, 1888.	Ausgle or compro ise renew 1899.
		Surrender of Transvaal, 1881.	President Garfield shot, July 2; died September 19, 1881; succeeded by Arthur.	Jesuits ordered to disband, 1880.	Von Moltke resigns from the command of the army, 1888.	Empress Austria assassinated an anarchi 1898.
	Industrial exhibition at Ottawa, 1879.			Death of Gambetta, 1882.	Bismarck resigns, 1890.	
	Royal Canadian Academy of Arts, 1880.		Chinese laborers forbidden admission for ten years, 1882.	French occupancy of Madagascar opposed by natives, 1883.	Von Caprivi chancellor, 1890.	
			Civil Service bill, 1883.	President Grévy reelected, 1885.	Von Hohenlohe chancellor, 1894.	
	Brooklyn bridge opened, 1883.	Irish Coercion Act, 1881; Land Act, 1881.	Grover Cleveland, president; T. A. Hendricks, vice-president, 1885-1889.	Expulsion of the French princes, 1886.	Naval increase in Germany, 1895.	
		Murder of Lord Cavendish, 1882.	Presidential succession law, 1886.	President Grévy resigns, 1887.	Lèse-majesté prosecutions, 1895.	
		Alexandria bombarded, 1882.	Strikes and riots suppressed by civil and military force, 1886.	Sadi-Carnot, president, 1887.	Social democrats increase in the Reichstag, 1898.	
	White squadron or new steel navy of the United States begun, 1883.	Tel-el-Kebir taken and Arabi's rebels routed, 1882.	Bering Sea complications, 1886.	Boulanger removed from the army for political intrigue; but elected to the Chamber of Deputies, 1888; flees from government investigation, 1889.	Death of Von Bismarck, 1898.	
		War in the Sudan 1883-1885.	Interstate Commerce Act, 1887.	Electoral reform, 1889.	German emperor visits Constantinople and the Holy Land, 1898.	
	Linotype machine, 1884.	Gordon arrives at Khartum, 1884.	Department of labor created, 1888.	Franco-Russian agreement, 1891.	Caroline Islands ceded by Spain, 1898.	
		South African Republic erected, 1884.	Australian ballot introduced, 1888-1889.	Triple alliance renewed, 1891.	Germany receives two of the Samoan Islands by treaty with United States, 1899.	
		Mahdi captures Khartum and slays Gordon, 1885.	Department of agriculture created, 1889.	French protectorate over Dahomey, 1892.		
		Home Rule bill defeated, 1886.	Benjamin Harrison, president; Levi P. Morton, vice-president, 1889-1893.	Panama scandal in France, 1892-1893.		
	Canadian Pacific Railway opened, 2,905 miles, 1887.	Queen's jubilee, 1887.	Oklahoma settled, 1889; territory, 1890.	President Sadi-Carnot assassinated, 1894		
		Heligoland given to Germany in exchange for Zanzibar, 1890.	North Dakota, South Dakota, Montana, and Washington admitted, 1889.	Casimir-Perier, president, 1894.		
	International exposition at Paris; Eiffel tower, 984 feet, 1889.	Free Education bill, 1891.	Samoan treaty signed, 1889.	Dreyfus affair, 1894.		
		Home Rule bill again defeated, 1893.	Anti-trust (Sherman) law, 1890.			
	World's Columbian fair at Chicago, 1893.		Idaho and Wyoming admitted, 1890.			
		Jameson raid in South Africa, 1895.	McKinley Tariff Act, 1890.			
	Submarines in French navy, 1893.		Strikes in Idaho, at Homestead, Pa., and in Tennessee suppressed by martial law, 1892.			
	Nansen's expedition, 1893-1896.	Irish Land Act, 1896.	People's Party nominates for presidency, 1892.	Casimir-Perier resigns through criticism, 1895.		
	Manchester ship canal opened, 1894.	Kitchener in Egypt, 1896.	Grover Cleveland, president; Adlai E. Stevenson, vice-president, 1893.	Felix Faure, president, 1895.		
		Queen's 60th anniversary, 1897.	Wilson-Gorman Tariff Act, 1894.	French protectorate over Madagascar assured, 1895; and a colony is formed, 1896.		
	North Sea-Baltic canal opened, 1895.	The Mahdi defeated and slain in Egypt, 1899.	Rebellion in Cuba, 1895.	Dreyfus affair revived; and pardon extended, 1898-1899.		
	X-rays, 1895.	Canada extends a tariff preferential to Great Britain of 25 per cent., 1889; increased to 33⅓ per cent. in 1900.	Venezuela-British Guiana dispute settled by commission, 1896.	Clash with England over Fashoda, 1898.		
	Wireless telegraphy, 1896.	Old age pensions in New Zealand, 1898.	Utah admitted, 1896.	Death of President Faure, 1899.		
	Gold discovered in the Klondike, 1897.	Black Week, 1899.	William McKinley, president; Garret A. Hobart, vice-president, 1897-1901.	Emile Loubet, president, 1899.		
			Dingley Tariff Act, 1897.			
			Spanish War, 1898.			
			Hawaii annexed, and territorial government provided, 1898.			
			Philippine insurrection, 1899-1902.			
			Aguinaldo captured, 1901.			
			Samoan Islands divided between the United States and Germany, 1899.			

From the Founding of the German Empire to the World War, 1914

A. D.	Spain and Portugal.	Italy.	Canada.	Russia and Scandinavia.	Other Countries.
1871	Sagasta, prime minister, 1871. Amadeus resigns the crown, 1873. Spain a republic; anarchy and civil war reign, 1873-1874.	Rome capital of Italy, 1871. Death of Victor Emmanuel, king of Italy, 1878. Humbert I., king of Italy, 1878-1900. Death of Pope Pius IX., 1878. Leo XIII., pope, 1878.	San Juan Island settled by British herders, 1872. Lord Dufferin, governor general, 1872-1878. Prince Edward Island in Confederation, 1873. Parliament prorogued, 1873. New ministry, Oct. 23, 1873. Destructive fire, St. John, N. B., 1876. Supreme Court of Canada, first session, 1876. Bread riots in Montreal, 1876. Trouble with Orangemen, 1877.	Turko-Russian War, 1877-1878. Plevna taken, 1877. Storm of Kars, 1877. Peace of San Stefano, 1878.	Bulgarian insurrection, 1874-1876. Kwangsu emperor of China, 1875-1908. First railroad opened in China, Shanghai to Woosung, eleven miles, 1876. Rebellion in Satsuma, Japan, 1877.
	Restoration of monarchy, Alfonso XII. king, 1875-1885. Don Carlos declared a usurper; flees to England, 1875.	Death of Garibaldi, 1881.	Conservative ministry formed, 1877. Canada and United States fishery commission meet at Halifax, awarding $5,500,000 to Canada, 1877.	Responsible ministry act passed in Norway, 1884.	War between Chile and Peru, 1878-1883.
	Alfonso XII. insulted by mob in Paris, 1883. Hereditary house of peers abolished in Portugal, life and elective peers, 1885. Earthquakes in Spain; great loss of life, 1885. Death of Alfonso XII., queen Maria Christina regent, with Canovas, Campos, and Sagasta, prime ministers in turn, 1885. Alfonso XIII. born, 1886.	Italy joins Triple Alliance with Germany and Austria, 1883. Unfriendly relations with John of Abyssinia, 1885. Italian army increased to 252,000, 1887. Death of Dupretis, 1887. Crispi, Rudini, and Giolitti, successors.	New ministry, 1878. Marquis of Lorne, governor general, 1878-1883. The National Policy, a protective tariff adopted, 1879. Northwest territories divided, 1882. Marquis of Lansdowne, governor general, 1883-1888. Riel's rebellion, 1885.	Activity of nihilists in Russia, 1880. Alexander II. murdered in St. Petersburg, 1881. Alexander III., emperor of Russia, 1881-1894. Alexander consecrated at Moscow, 1883. Merv and Sarakhs annexed, 1884.	Jakub Beg defeated and assassinated, 1877. Thessaly to Greece, 1880. New constitution established in Japan, 1882. Arabi Pasha's rebellion, 1882. Korea opened to trade, 1883. Russians attack Pendjeh, 1884. Revolt in Bulgaria, 1886. Constitution of Japan proclaimed, 1889. First International Conference of American Republics, 1889-1890. Wilhelmina, queen of the Netherlands, 1890.
	Death of Dom Luis of Portugal, 1889. Carlos I., king of Portugal, 1889. Anglo-Portuguese treaty, 1891. Revolt in Cuba, 1895. Spanish-American War, 1898. Treaty of Paris, 1898. Spain cedes Caroline Islands to Germany, 1899.	Papal jubilee, 1888. King Milan abdicates, 1889. Bank scandal, 1893. Defeat at Adowa by Menelek of Abyssinia, 1896. Strikes and riots, 1898.	Town of Vancouver totally destroyed by fire, 1886. Unrestricted reciprocity with United States established, 1887. Baron Stanley, governor general, 1888-1893. Earl of Aberdeen, governor general, 1893-1898. Franco-Canadian treaty, 1894. Opening of Sault Ste. Marie Canal, 1895. Earl Minto, governor general, 1898-1904.	Harsh laws enforced against the Jews in Russia, 1890. Radicals gain control in Norway and advocate universal suffrage, 1891. Nicholas II., emperor of Russia, 1894. Nicholas II. consecrated at Moscow, 1896. Sven Hedin of Sweden journeys in central Asia, 1899-1902.	Matabele War, 1893. Chinese-Japanese War, 1894-1895 Battle of Yalu river, 1894. Nasr-ed-din, shah of Persia, assassinated, 1896. Port Arthur leased by China to Russia for 25 years, 1898. Weihaiwei leased to England, 1898. Khartum occupied, 1898. Open-door policy in China, 1899. First meeting of The Hague Peace Conference, 1899.

From the Founding of the German Empire to the World War, 1914

A. D.	Discoveries, Arts, Crafts	Great Britain	France	Germany	Belgium, The Netherlands	Austria-Hungary
1900	First train from Cairo to Khartum; first Zeppelin airship; Paris Exposition. Lafayette statue, gift of American children, unveiled in Paris. Duke of the Abruzzi reached 86° 33′ North, 14° farther than Nansen.	Commonwealth of Australia formed. Boer War 1899–1902. British lost heavily in first year. Orange Free State and South African Republic annexed. Lord Roberts placed in command in Africa.	Ministry gained in provincial elections. Anarchy gave way to more stable government and progress assured.	von Bülow Chancellor. New civil code went into effect in courts, replacing old Roman system.	Annexation of Congo State by Belgium. Ship canal from sea to Bruges opened. Municipal systems of insurance against unemployment instituted in Belgium 1900–1904.	Marriage of Franc Ferdinan the heir a parent.
1901	Passenger steam turbine ship. Sir William Crookes discovered element victorium. Cleopatra's emerald mines explored. Santos Dumont of Brazil circles Eiffel Tower, Paris, in airship.	Queen Victoria died Jan. 22. Edward VII king 1901–1910. Census of India. First Australian Parliament.	Unauthorized religious orders and associations forbidden. Diplomatic relations broken with Turkey. French fleet at Mitylene forced Sultan to settle disputed claims.	Industrial depression and trouble widespread. Prussian royalty celebrated bicentenary of rule.	Marriage of Wilhelmina, queen of Holland, and Duke Henry Frederick, of Mecklenburg-Schwerin.	
1902	Rhodes scholarships at Oxford founded. "Jubilee" diamond found in S. Africa, over 971 carats. First wireless message across Atlantic. Mme. Curie discovered radium. Campanile, famous bell tower of Venice, collapsed. British cable from Canada to Australia, completed world cable circuit.	Peace concluded in S. Africa. Japanese alliance formed. Marquis of Salisbury resigned as premier. Lord Rosebery opposed Irish Home Rule.	Panama Canal rights and equipment sold to United States. Strikes at Marseilles. M. Combes formed new ministry. Some religious schools closed.	Veterans pensioned. New tariff laws increased duties on foods. Triple Alliance with Austria and Italy renewed. Prince Henry visited the United States. England and Germany pressed claims against Venezuela.	Popular opposition to plural vote in Belgium caused demand for constitutional revision. Strike of 350,000 men to force universal suffrage unsuccessful.	Triple Al ance renewe The langua question b tween Ge mans an Czechs aros Death Count Tis to who Hungar owed man reforms.
1903	Cape to Cairo railway laid to near the Zambezi. Seven-room schoolhouse, 4,000 years old, unearthed in Babylonia. Amundsen sailed to Boothia Land to find north magnetic pole.	Coronation durbar in India. King Edward visited France, Italy, and Portugal, and Pres. Loubet visited England. Irish tenants given right to purchase land.	Separation of Church and State agitated. Dreyfus declared innocent. President Loubet visited King Edward in England.	Child labor law passed. Germany's inclination to dominate proved a cause of friction in Europe. Social Democrats gained many seats in Reichstag.	Enactment in Belgium to compensate workmen for injurious accidents. Famous laws against railroad strikes in the Netherlands unsuccessful.	New Tar bill. Visit Czar of Ru sia. Conce with Russ for reforms Macedonia.
1904	Antarctic expedition brought a mass of data back to England. Workmen's college established in England. Great cataract surpassing Niagara in size and splendor found in South America on Iguassu River.	England and France signed treaty governing colonies. Russian fleet killed two British fishermen in the North Sea. Younghus-band entered Tibet, and latter allowed foreign trade.	Anglo-French treaty concerning Newfoundland and Africa. Religious orders further restricted. Bill to separate Church and State introduced. Arbitration treaties with Holland, Spain, Sweden, Norway, and United States.	War with African colonies, 1904–05; troops defeated in Africa. Moroccan intervention. Arbitration treaty with England signed.	Catholic party majority reduced owing to dissension on subject of military service and fortification of Antwerp.	Legislatio dead-locke in Hunga 1904–190 Ultimatum the Sultan i sued. Gre railwa strike.
1905	Sir William Ramsay discovered radioactive element thorium. Railway bridge across Zambezi River opened. First turbine liner crossed from Liverpool to Montreal. Scopolomin, a new anesthetic, from one of the nightshade plants, first used.	Earl Minto succeeded Lord Curzon, resigned, as viceroy of India.	Law for separation of Church and State passed. Further troubles over Morocco. Delcassé resigned as foreign minister.	Kaiser visited sultan of Morocco. New commercial treaties made. Crown Prince married. von Bethmann-Hollweg became minister of the interior. Country favored an open door policy as to Morocco.	Celebrated 75th anniversary of Belgian independence; great manifestation of loyalty to King Leopold II for successful reign. Albert I became heir apparent upon death of father. Court of Flanders Nov. 17.	Hostility Serbo-Bu garian cu toms conve tion. Treat with Ge many ratifie Universal su frage on education basis agitate
1906	Danish expedition to Greenland under L. M. Erichsen of Sweden. Wireless telegraphy conference at Berlin. Cable from Guam to Japan completed. Amundsen found northwest ocean passage.	Agitation for woman suffrage begun. King Edward in Paris. Commons rejected protective tariff. Trade Union Congress demanded 8-hour day. James Bryce was ambassador to U. S.	Fallieres president. Morocco question referred to Powers, but Germany made proposals that were accepted. Dreyfus restored to rank and elected to Legion of Honor. Great mine disaster, followed by strike of 30,000 miners.	Social Democrats very active. Unable to force German language on Polish element. Granted United States reciprocal tariff rates.	The Belgian Chamber voted to annex the Congo Free State.	Princ Schillinfurs succeede Baro Gautch Hungaria Parliamer dissolved u der threat force.
1907	Sven Hedin first foreigner to explore Tibet. *Lusitania* made her maiden voyage. Second Hague Peace Conference held. Central America held a peace conference. Marconi began wireless service from Canada to Iceland.	Anglo-Russian agreement to prevent trouble in Persia. King Edward paid important visit to Francis Joseph of Austria.	Landed troops in Morocco, and opposed new sultan. Wine growers secured law against adulteration of wines.	William II visited London. Prince von Bülow's resignation as chancellor was not accepted. Restrictive laws as to *lèse majesté* modified.	The Hague Peace Conference met for second time Oct. 18.	Univers male suffra established Austria for a above 2 years.

From the Founding of the German Empire to the World War, 1914

A. D.	Spain and Portugal	Italy and Greece (and Vatican)	Balkan States	Russia and Scandinavia	Other Countries
1900	National Union formed in Spain to promote government reforms. Azcarraga cabinet succeeded Silvela ministry.	King Humbert I assassinated by anarchist Bresci. Victor Emanuel III king of Italy.		Russian made the official language of Finland. First election in Norway with universal suffrage.	Boxer uprising against foreigners in China. Legations relieved by allied army, and a heavy indemnity exacted. von Kettler, German minister, slain in Peking. Empress and emperor driven out; and various reforms secured. Germany and Great Britain agreed to open door policy in China.
1901	Spain adopted firm policy on religious questions.	The Zanardelli ministry, 1901–03, succeeded Seracco cabinet in Italy. Labor troubles 1901–1905. Francesco Crispi died.	Ellen M. Stone abducted by Bulgarian brigands, Sept. She was ransomed on Feb. 25 following.	Swedish military service compulsory. Tolstoy excommunicated. Norway gave women taxpayers local franchise.	Habibulla Khan succeeded Abder-Rahman as ameer of Afghanistan. Great Britain and Japan backed China against Russian encroachments. Cuba adopted a constitution.
1902	Alfonso XIII assumed government, followed by ministerial changes.	Italy renewed Triple Alliance with Austria and Germany.	For 3½ years Turkey had failed to carry out Treaty of Berlin and now neighbors began to unite to force action.	Massacre of Jews at Kishinev. Famine in Sweden. Pres. Loubet of France visited Russia. Denmark refused to sell Danish West Indies to United States.	Russia agreed to evacuate Manchuria. Further reforms in China, and interest in western culture. Great Britain and Japan signed a neutrality treaty. T. E. Palma first Cuban president. Eruption of Mt. Pelee killed 30,000 in Martinique.
1903		The Giolitti ministry, 1903–11. Silver Jubilee of Pope Leo XIII; death of Leo XIII; Pius X became pope.	King and Queen of Serbia assassinated; Peter I became king. Bulgarians in Macedonia revolted against Turkish rule.	Expedition of Baron Toll of Russia to Arctic regions.	Russia failed to leave Manchuria in 18 months as agreed. San Carlos, Venezuela, bombarded by German fleet, but Hague tribunal brought peaceful settlement.
1904	Death of former queen Isobella II at Paris. Closer relations with France established.	Attempts made to reconcile the Church and State. King and Queen of Italy visited England.	Powers accepted higher Turkish duties for promise to devote some proceeds to reforms.	War between Russia and Japan 1904–05 (see Important Wars in History). Russia restored constitution of 1889 to Finland. Drew commercial treaty with Germany.	Japan declared war on Russia Manchuria to be returned to China, neutrality of China maintained by the Powers.
1905	Marquis de Segouzac explored a portion of Morocco, and visited the headwaters of the Draa in Africa. Attempted assassination of King Alfonso and Pres. Loubet in Paris. Four Spanish cabinets during year.	International institute of agriculture. General strike in Italy. The railway bill passed in Italy.	Constitution given Montenegro. Crete proclaimed union with Greece, but Powers refused sanction.	Union between Sweden and Norway dissolved. Russian expedition explored Kotui and Severnaya rivers.	Earthquake in northern India killed 20,000. Chinese boycotted American goods; 16 ports in Manchuria opened to foreign trade. Concessions to Japan in Liaotung.
1906	Alfonso XIII married Princess Ena of Battenberg, a grand-daughter of Queen Victoria. Attempts made to regulate religious orders in Spain.	Violent eruption of Mt. Vesuvius. Sonnino premier. International exhibition at St. Milan.	Rivalry among Balkan states prevented action against Turkey. Disorders in Albania.	First Russian popular assembly or duma. Death of Christian IX of Denmark; succeeded by Frederick VIII. Haakon VII king of Norway.	Sixty Chinese cities opened to foreigners. China acknowledged sovereign in Tibet, but English rights protected. Self-government granted Transvaal by Great Britain.
1907	Son born to King and Queen of Spain. King and Queen visited England. Virtual dictatorship in Portugal under Premier Franco.	Italy signed arbitration treaty with Argentina.	Russia and England agreed to force reforms in Turkey.	Death of Oscar II, king of Sweden. Gustav V succeeded as king.	Kingston, Jamaica, largely destroyed by earthquake and fire. New constitution in Persia. Peru and Chili made first treaty of friendship.

From the Founding of the German Empire to the World War, 1914

A. D.	Discoveries, Arts, Crafts	Great Britain	France	Germany	Belgium, The Netherlands	Austria-Hungary
1908	Farman made first cross-country airplane flight, 17 miles, Bouy to Rheims. Eucharistic Congress held in England. *Mauretania* made record of 5 days, 5 minutes in crossing Atlantic, reduced by *Lusitania* to 4 days, 20 hours, 7 minutes.	Old age pensions act passed. Commons rejected unemployment compensation act. Two cent postal rate with United States agreed to. Asquith Prime Minister, and Lloyd George Chancellor of the Exchequer. King Edward visited Berlin.	Clemenceau cemented relations with England. Deputies sustained by huge vote government policy in Morocco. Secret ballot adopted in elections.	Industrial code amended. Juvenile courts. Socialists demanded universal suffrage. Reichstag decreed German must be used in all public meetings.	Belgium ratified treaty annexing the Congo. Treaty for the maintenance of the *status quo* on the North Sea. Holland sent a warship to Venezuela.	New custo treaty. Austria Serbia at odds o border raids.
1909	Lieutenant Shackleton reached 111 statute miles from South Pole. Peary discovered North Pole. New naval code adopted by chief nations. Halley's comet sighted by Heidelberg observatory.	Treaty made at Washington for settling disputes between Canada and United States. Radium from refuse of Cornwall mine. Conference on imperial defenses held in London.	Clemenceau defeated in debate by Declassé on state of navy, and Briand formed new cabinet. France and Germany agreed on Morocco.	Women admitted to all universities. Bülow resigned July 14; Von Bethmann-Hollweg became Chancellor.	New military law in Belgium. Reforms in the government of the Congo announced. Heiress to the throne of The Netherlands, Princess Juliana, born. Death of Leopold II; Albert I became king.	Bosnia and H zegovina annex and Turkey co pensated. Trou with Serbia sett by Russia's rec nition of anne tion.
1910	Mme. Curie discovered element polonium. First flight across English Channel. Crossing of Alps. Air journey of 385 miles across France. Duralumin, a new alloy, discovered by H. B. Weeks of Barrow, England.	Death of King Edward VII May 6; George V became king. South African Union formed. Herbert J. Gladstone governor-general. Louis Botha premier. New Parliament met Feb. 15. Commons proposed to limit veto power of Lords.	Destructive floods in France. Briand Cabinet resigned. Great railway strike suppressed by Briand, after forming a new Cabinet.	Alsace-Lorraine granted a constitution. Roosevelt as private citizen reviewed German army. Approved new tariff with U. S. Socialists active.	Territory along the Congo River opened to freedom of trade. Hague Court settled long-standing Newfoundland fisheries dispute.	Archduke Fra Ferdinand heir parent. Hung demanded univer suffrage.
1911	Sir James Dewar solidified oxygen. Roald Amundsen discovered South Pole Dec. 14, 1911. Carnegie gave funds for constructing largest telescope in world. First air mail service in England. Galton Laboratory for study of eugenics founded at Univ. of London.	King George and Queen Mary crowned. Lords accepted Veto Bill. Strikes of seamen, dock laborers and railway employees. Insurance Bill passed. Opium agreement with China. Durbar at Delhi. Commons endorsed free trade.	Greenwich time adopted in France and Algeria. Troops sent to quell Moroccans. Agreement made with Germany by ceding part of French Congo. New ministry formed by Premier Morris. Mme. Curie received Nobel prize. Seamen went on strike.	German gunboat sent to Agadir, Morocco. Free hand given France in Morocco for portion of Congo territory. Emperor urged policy of reclamation. Reichstag passed new workmen's insurance bill.	New Dutch tariff law.	Large expen tures for increase armaments. Ar and navy streng ened.
1912	Capt. Robert F. Scott and 4 others reached South Pole Jan. 18. All perished on return journey in March. Assouan dam was completed. *Titanic* sank off Newfoundland with loss of 1513.	Government took control of telephone lines. Coal miners went on strike. Minimum Wage Bill. National Health Insurance Act. Suffragettes militant.	Review of 72 war airships near Paris. Moroccan question settled with Spain. Extensive naval program. Morocco made a protectorate. Election reforms.	Triple Alliance renewed. Large socialist gains in German Reichstag.	Rioting in Belgium over elections of June 2.	Socialist Dem crats are agai Balkan interf ence. Riots in Hu garian parliame Death of Prem Ærenthal.
1913	Wireless messages sent across Atlantic. Prof. Malledra went down Vesuvius 1200 feet and reported a temperature of 626° F.	Objected to Panama Canal tolls. Ulster rejected home rule.	Raymond Poincaré president. Extensive increase in military defense authorized. Remarkable records made in aviation.	Increased military and naval preparations. *Imperator*, largest ship afloat, launched at Hamburg. Death of August Belch.	Strike for manhood suffrage in Belgium by 200,000 workers April 14; compromise accepted April 22.	New Hungar cabinet formed w Count Tisza as p mier.
1914	First important use of airplanes in war. Mawson Antarctic expedition returned to Adelaide. Volcanic eruption in Japan. Nonmagnetic yacht *Carnegie* began valuable series of explorations by studying the coasts of Norway and Iceland.	Irish Home Rule Bill passed Commons. Welsh Disestablishment Bill became law May 21. Great Britain sent an ultimatum to Germany Aug. 3d asking that Belgian neutrality be respected. Declared war on Germany Aug. 4; on Austria Aug. 12; Turkey Nov. 5; bombardment of Dardanelles. Egypt proclaimed a British protectorate.	Upon Germany's declaration of war upon Russia Aug. 1 France as Russia's ally prepared for war, and as Germany had occupied Luxemburg, France declared that a state of war already existed Aug. 2. Invasion of France through Luxemburg and Belgium commenced Aug. 2; German armies entered France Aug. 24. Seat of government removed to Bordeaux. German advance checked at the Battle of the Marne. Government restored to Paris. Battle of Aisne.	Germany backed Austria's demand upon Serbia and asked Russia to stop mobilizing July 30; declared war upon Russia Aug. 1. Sent troops to French border Aug. 2; demanded that Belgium allow free passage to German troops which was refused Aug. 3. War upon Germany declared by Great Britain Aug. 4; Germans attacked Liege Aug. 5. Serbia declared war upon Germany Aug. 6; Japan Aug. 23.	Germany's demand for free passage of German troops through Belgian territory refused. The king of Belgium asked diplomatic intervention to safeguard the integrity of Belgium Aug. 3. German troops invaded Belgium Aug. 4; Liege attacked Aug. 5; fall of Liege Aug. 7; destruction of Lorrain Aug. 19; surrender of Brussels Aug. 20; fall of Antwerp Oct. 9.	The crown prin Franz Ferdina and his wife shot Sarajevo in Bos June 28. Aust claiming evide of Serbian comp ity, sent ulti tum to Serbia J 23. Austria p nounced Serbia's piy unsatisfact and declared upon Serbia J 28; declared upon Russia A 6; upon Great B ain Aug. 13; u France and B gium immediat afterward.

From the Founding of the German Empire to the World War, 1914

A. D.	Spain and Portugal	Italy and Greece (and Vatican)	Balkan States	Russia and Scandinavia	Other Countries
1908	Carlos I of Portugal and Crown Prince assassinated; Manuel II became king of Portugal.	Destructive earthquake in Sicily and Calabria. A Jewish mayor elected in Rome.	Turkish parliament opened; constitution restored. Bulgaria independent; Ferdinand is king. Young Turks deposed Abdul Hamid; Mahmud V sultan. Bosnia and Herzegovina annexed to Austria-Hungary. Powers withdrew troops from Crete.	General Stoessee of Russia found guilty of neglect of duty in defense of Port Arthur. Russian university professors ordered to withdraw from unauthorized political parties.	Pu Yi (Hsuan-tung) emperor of China 1908-1912. New sultan and civil war in Morocco. China apologized and paid Japan for seizure of steamer *Tatsu Maru*, averting war. Martial law in Persia. Venezuela and United States at odds over claims. Persia sends ambassador to Greece, first in 2399 years.
1909	Riots over Moroccan war led to martial law in Spain. Execution of Socialist Ferrer caused disturbance throughout Europe.	Greece left dispute over Crete to the Powers. Naval mutiny suppressed.	Great Powers reached agreement regarding new Bulgarian kingdom and Austrian control over Bosnia and Herzegovina.	Russia and China signed agreement as to Manchurian railway. Russian troops invaded Persia.	Rebellion, new ruler, and parliamentary concession in Persia. Rebellions in Santo Domingo, Colombia, Morocco, and Nicaragua. China promulgated new constitution.
1910	Revolution in Portugal; King Manuel expelled; republic formed. Theophile Braga provisional president. Spain forbade unauthorized religious associations; recalled envoy when Vatican protested.	King of Greece ordered revision of the constitution. Venizelos formed new Greek cabinet.	Montenegro became a kingdom. Turkey repelled Albanian irregulars.	Jews expelled from Russia. Knox plan to neutralize Manchurian railway rejected.	China adopted decimal coinage. First popular national assembly. Manchurian treaty between Japan and Russia signed. Korea annexed to Japan. Mad Mullah scattered destruction and death in Morocco. Naval rebellion in Argentina.
1911	Royal family of Portugal banished. First constitutional assembly in Portugal. Manuel de Arrioga elected first president Aug. 24. New ministry in Spain. Serious labor troubles. Martial law declared. Spain prohibits creation of further religious orders. Republic of Portugal recognized.	Trial in Italy of 36 Camorrists. Quarantine dispute with Argentina settled. Italo-Turkish war; Tripoli bombarded and captured; Tripoli and Cyrenaica annexed to Italy.	Albania accepted Turkish concessions.	Russo-Chinese differences settled. New suffrage law in Sweden. Baltic and Black Sea fleets enlarged. Russia in Persia. Russia and Turkey agree on Persian independence. Russian treaty of 1832 abrogated by the United States.	Chinese rebellion; revolutionists form cabinet. China adopted western calendar. Persia employs American financiers, W. M. Shuster as head, but dismissed them in Dec. on demand of Russia. Pres. Diaz resigned in Mexico; Madero succeeded him.
1912	Premier Canalejas of Spain assassinated. Franco-Spanish treaty settled Morocco problem.	Camorrists found guilty—society disbanded. The Balkan crisis and Italian victories forced Turkey to give African possessions to Italy. Greece declared war on Turkey. Salonika captured. Turkish peace proposals rejected.	Coalition of Balkan states. Declared war on Turkey. Turkey appealed to the Powers and armistice was signed. Autonomy given Albania and Serbia access to the Adriatic.	British troops in Persia. Women granted offices in Norway. Swedish women eligible for election. Death of Frederick VIII of Denmark; succeeded by Christian X.	Emperor Pu Yi abdicated. Chinese republic proclaimed Yuan Shih-Kai provisional president. Death of Mutsohito, emperor of Japan; succeeded by Hoshihito. Northern Manchuria independent.
1913	Elections in Spain placed Liberal party in power. Attempted assassination of king of Spain.	Greeks captured Janina. King George assassinated; Constantine became king. Allies signed treaty of peace at London. Trouble with Bulgaria. Greece and allies victorious. Peace of Bucharest. Crete annexed to Greece.	Young Turks came into power. Balkan war reopened; Turks defeated. Balkan allies quarrelled. Rumania joined other allies against Bulgaria and Turks retook Adrianople. Peace signed at Bucharest. William of Wied, ruler of Albania.	Serf class abolished in the Caucasus by Russia. Russia and Austria agreed to withdraw border troops.	First Chinese parliament; Yuan Shih-Kai elected president. Pres. Madero killed; Huerta succeeded. Japan formally protested U. S. immigration ban.
1914	Spain and Portugal pledged support to Great Britain in World War.	Italy declared neutrality in World War.	Abdication of William of Wied of Albania. Assassination of Austrian Crown Prince brought ultimatum from Austria to Serbia. Austria declared war upon Serbia July 28; bombardment of Belgrade July 29.	Russia asked delay of Austria's ultimatum to Serbia. Russia notified Austria invasion of Serbia could not be allowed. Czar called reservists to colors. Germany demanded Russia to stop mobilizing. Germany declared war on Russia Aug. 1.	Japan as British ally declared war on Germany Aug. 20; captured Tsing-Tau and Kiau-Chau Nov. 13. Turkey joined Germanic alliance and began war against entente Nov. 7.

From the World War to the Present Day, 1914-

A. D.	Discoveries Arts, Crafts.	Great Britain	Spain and Portugal	France	Germany
1915	Transcontinental telephone service established in U. S.	Independent Labor Party refuses to support war. Frequent strikes throughout year. Winston Churchill resigns after failure of Dardenelles expedition becomes apparent. MacDonald, laborite, denounces alliance with Russia and France. Cabinet reconstructed.	Revolution in Portugal Spanish Cabinet resigns.	Briand becomes Premier Oct. 29, with strong cabinet including Bourgeois, Painlevé, Viviani and Clementel. Radical socialist oppose government's war aims.	Food situation becomes serious as year advances. Herr Hasse, socialist member of Reichstag, denounces German war profiteers, and demands peace. Anti - socialist demonstrations.
1916	French complete Marseilles-Rhone Canal, Alaskan Railway project under construction.	Parliament passes conscription Act. Sinn Feiners start rebellion in Ireland. Sir Roger Casement executed. Lloyd George Chancellor of Exchequer forces Asquith out of office. War Council formed on bipartisan basis.	Portugal seizes German and Austrian vessels. War on Portugal declared by Germany.	Decline of franc causes uneasiness. War council formed of Briand, Ribot, Lautey and Lacáze, Government of decree is virtually substituted for parliamentary government. Radical Socialists support Stockholm Socialist Congress.	Socialist leader Karl Liebknecht is expelled from socialist party, for refusal to support war. Food dictatorship is established. English blockade is effective. Germany can get food only from neighboring states. Germany promises Poles autonomy. Reform of Prussian electoral laws.
1917	Invention of Liberty Motor.	An Imperial War Cabinet is formed of representatives of British Colonies. Refusal of South Irish to enlist (being previously exempted from Conscription Act), causes bad feelings. Sinn Feiners under leadership of De Valera continue to give trouble.	Serious strikes in Madrid.	Briand resigns because of criticism of war policies. Ribot becomes Premier followed in few days by Painlevé. Socialists demand France denounce all imperialistic aims. Clemenceau succeeds Painlevé whose ministry lasted two months. Malvy and Caillaux accused of spreading German propaganda.	Socialists demonstrations continue. Laws against Jesuits repealed. Chancellor announces Germany will not make peace on "no indemnity" basis. Erzberger leader of Catholic or "Centrists" denounces submarine warfare. Michaelis succeeds von Bethmann-Hollweg as Chancellor. Harden's Journal Die Zukunft suppressed. Socialists force out Michaelis. Von Hertling becomes Chancellor.
1918	First fabricated steel ship launched.	Electoral Reform Act passed. Labor Party demands social legislation, including nationalization of public utilities and coal. Coalitionists win at general election. Sinn Feiners get 73 seats, wiping out old Nationalist party. Irish convention is held.		Execution of Bolo Pasha takes place. Caillaux is banished for five years. Charter of Bank of France is renewed for 25 years. Debt of France 170 billion francs.	Revolution breaks out in Oct. Ludendorf resigns. Kaiser accepts reforms demanded by Reichstag. Kaiser resigns. Revolutionists take Berlin. Universal suffrage laws enacted. All states of German become democracies by end of year.
1919	Airplane flight across Atlantic. Discovery of the non-explosive, Helium gas.	Glasgow shipyard riots. Labor unrest.	Spain joins League of Nations. Royalists revolution in Portugal.	Attempt is made to assassinate Clemenceau Feb. 19. Versailles Treaty ratified Oct. 2. Press censorship abolished. Financial difficulties November election won by the ministry. Radicals defeated.	Ebert becomes the first president of the German Republic. Scheidemann Premier. President elected by the people for term of seven years. Reichstag elected for term of four years. Ministry responsible to Reichstag. Liebknecht killed in a riot. Extreme radical "Spartacides" attempt to overturn government. National Assembly meets at Weimar. Scheidemann resigns June 21, succeeded by Gustave Bauer.
1920	Great progress in telephotography. Radio much improved. Ford Motor Co. of Detroit, open Technical Institute.	Martial law in Ireland. Irish Home Rule bill does not go into effect because of disorders in Ireland. Profiteering in coal leads to increasing demands for nationalization. Russian negotiations for re-opening of trade, France and Great Britain disagree on foreign policy, especially regarding occupation of Ruhr. Egyptian nationalists cause trouble.	Industrial unrest in Spain. Reforms are promised. Former King Manuel II renounces claim to throne of Portugal.	Radical socialists gain in power as conditions become worse. Exchange of Ambassadors with Germany takes place, the first since 1914. France concludes treaties with Czecho-Slovakia and Poland. Sends officers to instruct Polish army. Feeling against Germany high because of failure to live up to treaty. Deschanel elected president over Clemenceau, retires because of ill health. Millerand chosen President.	Frequent attempts at revolution. Great disorders in Ruhr because of French occupation. No ministry succeeds in obtaining the confidence of Reichstag. Mark continues decline, unemployment increases.

From the World War to the Present Day, 1914–

A. D.	Austria & Hungary	Italy	Japan	Russia	China	Other Countries
1915	Count von Berchtold resigns as Premier succeeded by Baron von Rajescz. Food situation remains serious. Minority races especially Bohemians hinder prosecution of war. Count Karolyi urges government to make peace.	Earthquake Jan. 13, in Abruzzi district, results in loss of 30,000. Italy enters war to gain Trentino and part of Dalmatian coast.	Elections in House of Representatives result in victory for military party. Army greatly increased. Japanese exports greatly increased. Okuma reconstructs cabinet.	Pro-German Party in control most of year. Charges made that this element is responsible for defeat of army.	Japan makes demand for special concession; China compelled to yield on most points. Japanese dominant in Shantung Peninsula.	Bulgaria makes war on Serbia. Terrible massacre of Armenians.
1916	Austrian Prime Minister Count Stürgkh assassinated Oct. 21. Emperor Francis Joseph, who has been on the throne since 1848 dies Nov. 21. His grand-nephew Charles, becomes Emperor. Radical opposition in Hungarian Parliament led by Count Karolyi demand sweeping reforms. Economic conditions become worse.	Italy insists on her claim to Dalmatian coast and her Allies agree to recognize it. The Salandra Cabinet resigns and Boselli becomes Premier. Italians capture Goriza.	Disorders throughout the year. Attempt made to assassinate Count Okuma. Child Labor act passed forbidding employment of children under 15 years for more than 12 hours per day. Okuma resigns as Premier. Count Terauchi forms Cabinet. Russia and Japan come to accord regarding Asiatic interests.	First income tax law is passed. Public school appropriations increased. Premier Sturmer regarded as pro-German. Prof. Miliukoff becomes recognized leader of "Reformers." Rasputin, monk whose influence was used in interest of Germany, murdered Dec. 31. Foreign Minister Sazanoff, who stood for firm war policy, resigns.	Monarchy temporarily restored. New rebellion compels Yuan Shi-Kai to restore Manchu dynasty. Attacks by Chinese soldiers on Japanese garrison results in Japan making more demands including the policing of Inner Mongolia. U. S. sympathy with Chinese.	
1917	Bohemian question becomes acute. Emperor issues Amnestry Proclamation June 30. pardoning persons convicted of hindering the war. In Hungary Count Tisza, reactionary Premier, resigns succeeded by Count Andrassy, a Liberal. The Ausgleick (constitutional agreement between Austria and Hungary) is renewed. Czechs accuse government of bringing on the war. Poles and Jugo-Slavs show discontentment.	Boselli ministry resigns after great defeat of Italians by Austria and Germany. Orlanda becomes Premier.	Special interest in South Manchuria and eastern Inner-Mongolia asserted making Chinese question acute. Elections result in victory for military party led by Terauchi.	Duma convenes Feb. 7. Food riots, Strikes. Czar abdicates in favor grand Duke Michael, Prince Lvoff forms cabinet. Duma abolished. Council of workmen and soldiers assemble. Kerensky Premier. Bolsheviki force Kerensky out. Lenin and Trotsky dictators. Republic established.	Imperialistic plot re-establishes the Manchu Dynasty. War declared against Germany. Chinese coolies sent to France. China asks suspension of Boxer indemnities. Japan loan to Chinese.	King Constantine of Greece abdicates. Greece joins Allies. U. S. enters War.
1918	Mutinies in army, occur with increasing frequencies. Czechish soldiers desert breaking up regiments. The von Seidler and Hussarek ministries fall. Austria asks for armistice Oct. 29 and it is granted Nov. 3. Czechs and Slovaks form a republic, Serbs, Slovenes, Croatians form kingdom of Jugo-Slavia.	Baron Sonnino, Foreign Ministry, favors policy of territorial expansion. Opposed by Socialists. Labor disturbances frequent.	Terauchi ministry forced out and Kei Hara of the constitutional party becomes Premier.	Feb. 29 Russia withdraws from war by signing treaty of Brest-Litovsk. Russia gives up Baltic Provinces and Finland. Ukranian independence recognized. Russian royal family murdered. Rule of terror inaugurated.	Civil war continues and anarchy exists. Sun Yat-Sen sets up rival government at Canton. Empire established for ten days, but Tuan restores the republic. China accused of favoring Germans.	Anatolia becomes part of Turkey.
1919	Austrian elections show Socialists and Christian Socialists to be strongest parties. Communist in Hungary, led by Bela Kun, succeed in getting hold of governments.	Cabinet resigns because of too moderate views on annexations. Nitti, new Premier, demands entire Dalmatian coast including Fiume. Vatican removes ban against Catholics taking part in Italian elections. Catholic party wins 100 seats in election.	Trade with U. S. exceeds that of any other country. Suffrage agitation due to very limited suffrage.	Admiral Kolchak and General Denekin lead unsuccessful anti-Bolshevik attack. Many of nobility executed. Lenin recognized as dictator of Russia.	Japan forces more concessions including extension of lease of Port Arthur. Trouble between China and Japan breaks out at Versailles Peace Conference.	Greece and Jugo-Slavia make alliance for mutual interest. Turkish Nationalists ask U. S. to act as mandatory. Mustapha Kemel appears as leader of Nationalists.
1920	Situation in Austria grows worse. Horthy becomes leader of Austria.	Premier Nitti resigns succeeded by Giolitti. Agrarian revolts frequent. Labor Unions take over industries in imitation of Bolsheviki.	Passage of California land act causes bitter feeling against U. S. Korean uprising severely repressed Siberia is evacuated.	Bolsheviki strengthen their hold on Russia. General Wrangel holds out against Bolsheviki greater part of year. Sebastapol is captured by Trotsky.	Over 1,000,000 Chinese soldiers engaged in Civil wars. Canton and Peking governments fighting for supremecy.	Bad feeling in Bulgaria over loss of Dobrudja with 70,000 Bulgarians and Macedonia with 100,000 Bulgarians. Thomas Masaryk becomes President of Czecho-Slovakia.

From the World War to the Present Day.

A. D.	Discoveries, Arts, Crafts	Great Britain	France	Germany	Spain and Portugal
1921	Permanent Court of International Justice projected; first judges elected in Sept. 1921. Dr. J. O. Arnold, Sheffield Univ., discoverer of vanadium, announced a new steel process.	Laborites gained seats in Parliament. Unemployment increased. Imperial Conference granted self-governing colonies part in English foreign policy. Prince of Wales visited India.	Leygues ministry fell, and Briand formed cabinet based on following principles: No concession to Germany; English alliance. Briand attended Disarmament Conference in U. S.	Julius Wirth succeeded Fehrenback as Chancellor. Erzberger assassinated. Government suppressed militarists. Peace signed with U. S.	Spanish troops beaten in Morocco. Premier Dato assassinated. Revolution in Portugal.
1922	Radio became popular in all walks of life. Mt. Everest expedition studied ability of man to live in comfort 22,000 feet above sea level. Einstein theory of relativity announced. Extensive archaeological discoveries made in North Africa and Near East. Tomb of King Tut-Ankhamen discovered in Egypt.	Lloyd George's coalition ministry being deserted by Unionists resigned Oct. 19. Strained relations with France. Conservatives won at general election. Andrew Bonar Law became Prime Minister. Irish Free State established. Northern Ireland and Free State signed peace compact. Parliament recognized Egypt as independent kingdom.	Briand ministry resigned Jan. 12; unable to meet demand of forcing Germany to live up to treaty. Premier Poincaré stated policy was to deal with Germany alone, even though it meant break with England. France declined. Clemenceau visited United States. Woman suffrage passed by Deputies; defeated in Senate.	Reparations Commission decided Germany must pay 720,000,000 gold marks in 1922 and 1,450,000,000 in goods. Walter Rathenau, Foreign Minister, assassinated June 24. Government unable to cope with labor disturbances. Wirth resigned Nov. 14. Cuno became Chancellor and formed anti-Radical Cabinet.	Spanish military failures in Morocco. Portugal had nine ministerial changes in one year.
1923	Important discoveries in excavations of ancient cities of Ur and Kish in Asia. Centenary of great French scientist Louis Pasteur celebrated. Chemical element hafnium discovered by scientist at Copenhagen.	Bonar Law resigned because of ill health May 20; Stanley Baldwin became Premier. Unemployed numbered over 1,000,000, placing heavy burdens upon the government pension law. Parliament dissolved. Elections resulted in party majority.	Occupation of the Ruhr completed, in spite of liberal opposition. Poincaré received almost unanimous support. Ex-President Wilson stated France was violating the Versailles Treaty. Heads of Krupp works sentenced, fined and imprisoned for inciting riot.	The mark became worthless, causing immense loss to speculators. New currency rentenmark was issued. Cuno resigned, succeeded by Stresemann as Chancellor. Bavarian reactionaries took over government, Ludendorff leader.	Spanish army revolted and demanded cabinet resignation. Extensive strikes in Barcelona. Spain claimed victory in Morocco. Señor Gomes became president of Portugal. Portugal issued first internal loan.
1924	Carter opened the coffin of King Tut-Ankhamen. Diesel engine perfected. Invention of rotor ship by Flettner of Germany. Radium-bearing rock found in Czechoslovakia. Pallopas, a glass substitute, made in Austria.	Baldwin ministry was overthrown by Liberals and Laborites, Ramsay MacDonald formed England's first labor ministry. Disturbances occurred in the Irish Free State. Labor party was defeated. Elections resulted in sweeping victory for Conservatives. Baldwin again Premier.	French reduced troops in Ruhr. Poincaré's ministry ended. Pres. Millerand resigned when all of new dominating bloc refused to form ministry with him. Doumergue was elected President; Herriott became Premier. France agreed to evacuate Ruhr within one year. First Soviet ambassador received.	Reichstag was dissolved Mar. 13. The Dawes report recommended establishment of a new German Bank of issue. New Reichstag accepted Dawes report. Germany requested admission to League of Nations.	Spain completely defeated in Morocco; Spanish provinces revolted.
1925	Roosevelt brothers explored Western China and Tibet. Amundsen flew within 157 miles of North Pole.	Further reforms in the House of Lords. Demonstration against Balfour in Damascus. Gold standard restored. Coal mine operators subsidized to avoid strike on wage reduction. Prince of Wales visited Africa.	Premier Herriott refused confidence of Chamber, resigned. Painlevé became premier with Briand as foreign minister of finance. Evacuation of Ruhr completed. War with native tribes of Morocco and Syria.	Pres. Ebert, first president of German republic, died. Field-Marshal von Hindenburg was elected president. French relinquished occupation of certain Rhineland cities.	President Gomes of Portugal resigned, but Congress refused resignation. General Primo de Rivera took title of premier of Spain, relinquished title of dictator. Direct cable to United States established.
1926	The Sellin expedition found first Hebrew settlement in Palestine after Abraham parted from Lot. Prof. Gerhardt of Germany worked out plan for using the Michelson interferometer for measuring particles as small as 1,125,000 of an inch.	Dominions placed on equal status. General strike called to support miners who struck on withdrawal of government subsidy to coal miners.	French subdued Riff tribes. War debt to United States funded. Poincaré succeeded in passing legislation for balancing budget and stabilized currency.	Germany admitted to League of Nations. Treaty of neutrality established with Russia.	Year marked end of Riff war. Spanish criminal code revised. Spain made treaty of friendship and cooperation with Italy. Republican government in Portugal overthrown.
1927	Inauguration of trans-Atlantic radio-telephone service by A. T. & T. Television demonstrated as practical. Lindbergh made first west to east trans-Atlantic solo airplane flight.	House of Lords proposed reduction of number, abolition of hereditary memberships and greater voice in politics. Relations with Russia severed. Recognized the independence of Iraq. Irish Free State reelected Cosgrove and floated loan in New York. Naval program cut despite failure of disarmament conference.	Treaties of arbitration signed with Yugoslavia and Rumania. Business became more stable and finances more certain. Trade treaty with Germany. Proposed to outlaw war with United States.	Accepted compulsory arbitration under World Court. Continued industrial progress. Led in forming international cartels. Inter-allied control of Germany ceased.	New assembly in Spain, but virtual dictatorship continued. Assembly acted in advisory capacity only. Frequent student riots in Spain. Further disturbances in Portugal put down.

From the World War to the Present Day.

A. D.	Central Europe	Italy and Greece	Russia	Japan	China	Other Countries
1921	Strong sentiment manifested in Austria for union with Germany. Economic conditions chaotic. Kronen declined. Dr. Benes, prime minister of the Czechoslovakian republic, supported Austria in application for credit in London and Paris.	Giolitti ministry resigned June 27. Anti-Socialist group known as Fascisti became prominent. Italy and France adopted divergent foreign policies and unpleasant incidents occurred in both countries. Treaty made with Russia.	Lenin modified communist system to satisfy peasants. Destructive famines prevailed. Congress gave $20,000,000 for Russian relief. Bolshevik leaders repudiated old Russian debt, ruining credit of Russia. Trotsky denounced Washington Conference.	Dead-lock between Japan and China over Shantung continued. Japanese in League of Nations insisted upon concession in China. Crown Prince Hirohito became Regent. Japan took part in Washington disarmament conference; accepted 5–5–3 naval ratio.	German property in China restored to its owners. Southern Republic under Sun-Yat-Sen held out. Liang Saishyi, noted banker, became premier.	Situation in Bulgaria improved as compared with Balkan countries. Turks under Kemel defeated the Greeks in Asia Minor. Treaty of Sèvres was abrogated because of Franco-English split.
1922	League of Nations undertook to rescue Austria from bankruptcy; loans $135,000,000; League appointed commissioner-general to supervise expenditures.	Fascisti precipitated civil war; Mussolini, Fascist leader, became Premier when King feared for safety of dynasty. Greek army in Asia Minor wiped out. Constantine overthrown. Prince George became King. Britain broke off diplomatic relations with Greece.	Government operation of industries failed, and the leasing system was tried. Lenin admitted foreign capital was necessary. Severe famines continued. Bolsheviki killed many of the middle class who remained in Russia.	New cabinet under Admiral Kato, liberal, was formed. Army was reduced; general anti-militarist measures adopted. Siberia was evacuated by Japanese troops.	Internal conditions grew more chaotic. General Wu had success against rival government in Canton.	Trouble between Poland and Lithu nia over possession of Vilna. Turks deposed Sultan.
1923	Conditions in Austria improved under League of Nations. Anti-Semitic riots occurred in Vienna. Pan-German element lost support as more hopeful feeling prevailed. 50,000 superfluous government officers dismissed.	Mussolini's rule became complete dictatorship. Relations with Vatican improved, and Catholics rallied to Mussolini's support. Reorganization of the army under Gen. Diaz. Italian parliament ratified armament limitations treaties negotiated at Washington.	Conflict between government and church. New constitution adopted July 4. Trouble with Great Britain over Bolshevist propaganda in India. U. S. Secretary of State, Hughes, declared Russia still an outcast among nations. U. S. withdrew help as Bolshevists exported wheat. Lenin announced president of U. S. of Russia.	Premier Kato died Aug. 23; Count Yamamato became Premier. Greatest earthquake of modern times on Sept. 1st, followed by fire, resulted in death of over 200,000 persons and immense destruction of property in Tokio and Yokohama.	Bandits captured foreigners and held them for ransom. European powers discussed advisability of intervening in Chinese affairs. Pres. Li Yuanhung was forced out of Peking, China, by the militarists. Sun-Yat-Sen reestablished the Canton government.	Agrarians gained in Bulgaria. Premier Stambuliski, peasant leader, was killed. King Boris supported the revolution.
1924	Austria and Rumania made commercial treaty on "most favored nation" basis. Conditions continued to improve in Austria and Hungary.	By treaty with Yugoslavia, Fiume became an Italian territory. The King conferred upon Mussolini the title of Prince of Monteneyoso. Fascisti won in April elections.	Lenin died and the power passed to Trotsky. Russia resumed commercial relations with many countries; foreign capital actively sought. Premier Rykoff admitted spreading Communist propaganda in England, France, U. S. Trotsky went into "exile."	The new immigration law of U. S. excluding the Japanese by name resulted in anti-American demonstrations throughout Japan. The ministry lost in the May elections.	Disastrous floods wiped out many villages. Civil war broke out near Shanghai, endangering lives and property of foreigners. Gen. Chang Tsolin, war lord of Manchuria, declared against the Peking government. China again involved in a general war.	Premier Theunis of Belgium resigned April 5; Count Poullet formed new cabinet.
1925	Jeremiah Smith became finance director of Hungary. Czechoslovakia accused Hungary of not disarming; issue shelved in League of Nations. German nationals in upper Silesia deported from Polish section and Poles from German section. New Shelling currency went into effect in Austria. Finances removed from control of the finance committee of the League of Nations.	Mussolini spoke against Pan-German annexation of Austria. Women granted suffrage in Italy. Italian war debt to U. S. funded; marked economic recovery. Gen. Pangalos became premier of Greece. Venizelos again became leader. All Greeks forced to leave Turkey.	Bolshevists sought further outside capital, changing Communist program. Land was again leased to peasants. Treaty with Japan. Japan withdrew troops from Northern Sakhalin, in turn receiving economic concessions. Treaty with Germany.	July 1st recommended as "Humiliation Day" in Japan to commemorate U. S. immigration act of July 1st, 1924, barring Japanese. Diplomatic relations resumed with Russia.	Riots throughout all China. Soviet propaganda caused trouble in China. Chinese granted tariff autonomy.	Turkey refused to accept adjudication of Mosul boundary dispute with Great Britain by League of Nations.
1926	Austrian sentiment strongly favored union with Germany. Gen. Pilsudski overthrew Polish government with help of army, made himself dictator. Pronounced economic progress in Czechoslovakia.	Attempted assassination of Mussolini. Italian colonial expansion completed. Greece returned to constitutional government. Italy made treaty; consolidated its Adriatic position by treaty with Balkan states.	Stalin strengthened hold on Russia. Trotsky deported; went to Turkey. Relaxation of communistic policies in order to secure the cooperation of peasants. Increased persecution of churches. Russia began to invite foreign capital under its N.E.P. (new economic policy).	Bolshevist propaganda failed. Japan continued to accept American ideas.	General Chang seized Peking. General Chiang-Kai-Shek, follower of Dr. Sun, turned against Bolshevists in Southern China. General Chiang was most successful Chinese general. Purpose was to unite China.	Turkey and England agreed on Mosul boundary. Kemel ruled as dictator. Ivar Kreuger of Sweden built up Swedish Match Company to a world power.
1927	Great riot in Vienna with many deaths due to conflict between reds and fascisti. Treaty between Yugoslavia and France.	Capital punishment restored in Italy. Treaty with Albania aroused Yugoslavia. Italian electoral laws revised to increase power of Premier Mussolini. Trouble between Greece and Bulgaria over irregulars of Bulgaria.	Proposed disarmament to League of Nations; standing army largest in Europe. Defeated revolutionary policy in China and Europe. Trade relations with England severed, also diplomatic relations with China.	Emperor Yoshihito died and was succeeded by Hirohito. The rapid fall of the yen with failure of large business houses led to financial crisis.	Continued turmoil with civil war in China with Southern armies under Chiang-Kai-Shek making progress.	Persia abandoned culture of opium.

From the World War to the Present Day.

	Discoveries, Arts, Crafts	Great Britain	France	Germany.	Spain and Portugal
1928	Louvain library restored. Centennial of Schubert, famous composer. Turkey adopted Latin alphabet. Invention of teletypesetter machine. World wide telephone communication established.	Commons again rejected Prayer Book revision. Simon Commission on Indian Home Rule. King George gravely ill. Dr. Lang new archbishop of Canterbury.	Returned to gold standard. Poincaré returned to power by large majority. Stopped easy divorces for Americans. Proposed to U. S. a new treat against war. Vainly tried to ban U. S. films.	Mueller, Socialist Chancellor, in power. Government upheld in general election. Chancellor advocated union with Austria. Communistic spirit rising, especially in Berlin.	Spain received aid from America and England for stabilization of currency. Premier Primo de Rivera unpopular with masses
1929	International expositions at Seville and Barcelona. Einstein reported new theories. Graf Zeppelin made successful flight around world.	Labor party under Ramsay MacDonald won in general elections. First election under universal adult suffrage. Lloyd George with Liberals held balance of power. Dawes received as Ambassador to Great Britain.	Death of Marshall Foch. Second Dawes Reparation Committee met in Paris. Final settlement of reparation accomplished. Kellogg pact for outlawing war signed in Paris.	Ratified Kellogg peace treaty. Final settlement of reparations through efforts of Dr. Schacht. Dawes plan reparations amounted to 595 million per year. Young plan the sum was 487 million per year. Communists' riots suppressed by police.	Opening of Ibero American exposition in Seville. Another attempted revolution in Spain suppressed. Primo de Rivera placed newspapers under strict censorship.
1930	Coste and Bellando made successful east to west flight from Paris to New York City. Steamer Europa established new trans-Atlantic record.	London Naval Treaty. Indian Round Table conference opened Nov. 12. Imperial Dominion conference. First parliament opened by George V. with Labor Cabinet in office. Simon report on India. Mahatma Ghandi defied salt monopoly. Death of Balfour and Earl Berkenhead.	Briand puts forward idea of U. S. of Europe. Death of Clemenceau. Fall of 20th cabinet since war; average life of cabinet 7 mo., shortest, Herriot of 1926, 2 days; longest, Poincaré of 1926-28 which saved the franc. Theodore Steeg premier.	Strenuous efforts to regain foreign trade by reducing wages and prices. Death of Von Tirpitz. Pres. Hindenberg invoked article 48 of Ger. const. to pass budget increasing taxation. Rise of Hitler party from 9th to 2nd place in Reichstag.	Primo de Rivera out; Berenguer prime minister. Don Jose S. Guerra, four times prime minister, acquitted of high treason. Revolution led by Major Franco, Spain's foremost aviator, put down with force.
1931	Progress made in study and control of cancer and infantile paralysis. Prof. Auguste Piccard and assistant, Charles Kipfer, reached altitude of 52,000 feet in stratosphere.	Ghandi and Viceroy Irwin signed truce on non-violence campaign. Labor Cabinet fell over financial crisis. MacDonald formed coalition cabinet. Mahatma Ghandi in London for second Indian Conference. National Cabinet cut dole, greatly increased taxes. England suspended gold standard.	Death of Marshall Joffre. Fall of Steeg cabinet as result of wheat scandal. Pierre Laval, Briand protégé, formed cabinet. Agreement reached with Italy on naval disarmament. Doumer elected president. Laval and Briand visited Berlin.	Extradition Treaty with United States. Bruning Germany's second iron chancellor. "Fundamental rights" or personal liberty are suspended. Financial crisis. Serious bank failures. Bourse closed. Foreign loans tide over crisis.	Revolution in Spain. International credit of $60,000,000 granted Spanish government. Spain became a republic. King Alfonso abdicated. Zamora provisional president of Spain. First popular election won by Republicans.
1932	Dr. Jas. Chadwick declares existence of neutrons. Compton and Millikan develop cosmic ray theories. Graf Zeppelin makes record of 5,060 miles continuous flight.	Britain abolishes free trade. Becoming a tariff nation for first time in history. Chamberlain successfully exchanges 5% bonds for 3½'s saving 100 million in interest.	Laval cabinet falls. Tardieu premier. Death of Briand. Pres. Doumer assassinated. Lebrun 14th Pres. of France. Herriot premier. Cabinet falls over debt question.	Hindenburg reelected Pres. Create pocket battleships. Chancellor Bruning resigns "Cabinet of Monocles" by Von Papen. Communists and socialists riot. Versailles treaty reparations cut to 1c on dollar.	Revolution in Spain. Church and state separated.
1933	Prof. Willstatter of Munich obtains Nobel chemistry prize on enzyme work. Heisenberg of Leipsic wins 1932 physic prize.	MacDonald visits Mussolini to discuss disarmament. World monetary and economic conference with 66 nations attending at London fails. MacDonald visits Roosevelt. England pays token of only $7,500,000 on U. S. debt.	Boncour forms cabinet. Boncour falls. Daladier premier. Herriot visits Roosevelt. Daladier out, Sarraut premier. Sarraut out. Chautemp premier.	Hitler chancellor. Reichstag fire and trial. Communists and socialists banned. Luther minister to U. S. Hitler becomes dictator. Jews exiled. Border troubles with Austria. Withdraws from League of Nations.	Premier Ozana replaces Church schools for public. Breaks up large estates of Grandees for peasants. Spanish election turns conservative.
1934	Dr. Wolley unearths Ur of Chaldee. Death of Madame Curie. Mt. Everest encircled by airplane. New air record from England to Australia won by Dutch.	Trade war with France, also Japan. Chamberlain announces balanced budget with surplus. Taxes reduced. Opening of Queensway at Liverpool.	The Stavisky scandal. Chautemp out. Doumergue forms "Non-political cabinet." Barthou creates Eastern Locarno Pact. Barthou assassinated at Marseilles. Doumergue out. Flandin premier.	The "Code Hitler" passed. Hitler abolishes state Diets. 1934 budget 40% increase for war purposes. Establishes "Peoples' Court." Von Papen out. Nazi blood purge. Death of Von Hindenburg.	Martial law in Spain. Serious strikes. Woman suffrage passed. Proletarian revolt suppressed, shooting 3000.
1935	French S. S. Normandie sets new Atlantic record. Army balloon ascended 14 miles near Rapid City S. D. China Clipper, flying boat, completed round trip from U. S. to Asia.	Complete aerial agreement with France. Year of King George V Silver Jubilee. Agrees with Germany on 35% naval ratio. MacDonald resigns as Prime Minister. Baldwin takes place.	Ups tariffs against Belgium. Sticks to gold standard. Treaty of Mutual Assistance with Russia. Premier Flandin ousted. Laval Premier. Dole payment ended Nov. 29, but conditions remain unsettled.	Saar returns to Germany. Hitler announces Germany is rearmed. Danzig remains "Free City." Further "coordination" of church, labor, national groups. Jews further restricted.	New conservative cabinet in Spain in Sept. Bonds converted to issues at lower interest. Two divisions added to army. New constitution in Portugal.

From the World War to the Present Day.

A. D.	Central Europe	Italy and Greece	Russia	Japan	China	Other Countries
1928	Polish election strengthened Pilsudski. King Ferdinand of Rumania died. Peasant party won power in Rumania.	Fascist council granted legal status in Italy. Italy returned to gold standard. Venizelos again premier of Greece. Italo-Greek treaty of friendship.	Stalin succeeded in banishing opponents. Resumed war on private property among peasants. Established communal farms; at same time invited foreign capital.	Troubled with China in Shantung. A Japanese flier circled the globe in 36 days. First Japanese election under manhood suffrage.	General Chiang-Kai-Shek in control of most of China. Manchuria still under General Chang. China abrogates unequal treaties. Chiang-Kai-Shek president of Chinese.	Egypt abolished slavery. Albania became Kingdom with Zog as king. Economic conditions in Belgium and Scandinavian countries improved.
1929	Ignaz Seipel resigned as chancellor of Austria; Dr. Ernest Steeruwitz elected. King of Yugoslavia became dictator. Rumania under peasant premiership of Maniu assured new outlook.	Mussolini held nine out of fourteen cabinet positions. Temporal power of Pope restored by Lateran Treaty.	Unrest among peasants; Trotsky's supporters arrested. Stalin obtained firm grip on Central committee. Russia exported while reports stated people in need.	Prime Minister Tanaka stated dominating point in foreign policy was friendly relations with United States.	New uprisings against the nationalists. Threats of war with Russia over Chinese Eastern R. R. Chinese enacted first national tariff.	Turkey made rapid steps in modernization and grants religious freedom.
1930	Chancellor Schober resigned. Seipel forms cabinet for Austria. Poland opens port of Gdynia rival of Danzig. Pilsudski dissolved Sejm. Riots in Budapest. Prince Carol returned to Rumania. King Boris of Bulgaria married Princess Giovanna of Italy.	Prince Umberto married Princess Marie José of Belgium. Mussolini advocated revision of treaty of Versailles. Continuation of Mafia trials. Italy increased navy. Mussolini's Milan speeches stirred France. Accord between Greece and Turkey.	Russian dumping policy brings criticism. Completed Transib R. R. connecting Siberia and Turkestan. Stalin pushed 5 year plan for industrialization. Stalin dismissed Rykov and all members of "Right" party.	Strikes closed banks. Yen dropped. Yen was replaced on gold basis. Prince Tokugama visited United States. Attempted assassination of Prime Minister Hamaguchi.	Civil war continued. Opening of Chinese mint at Shanghai. Weihaiwei returned by British to China. Chinese Eastern R. R. dispute still caused trouble. China abolished extraterritoriality of foreigners. Pestilence and starvation prevailed.	Netherlands completed largest canal lock in world, connecting Amsterdam with North Sea. Princess Marie José of Belgium married Crown Prince Umberto of Italy. Norway celebrated "Silver Jubilee."
1931	Death of Vintila Bratianu, last of famous brothers of Rumania. King Alexander of Yugoslavia relaxed dictatorial hold. Customs union between Austria and Germany abandoned.	France and Italy accord on naval limitation. Pope made first world-wide radio talk. First air formation to cross Atlantic from Italy to South America under Italian flag.	Red standing army largest in world. Food and industrial conditions were chaotic. Recommended piece work and abolishing of equal pay, thereby changing one of leading Soviet principles.	Trouble with head hunters in Island of Formosa. Major league baseball established. Daughter born to Empress and Emperor of Japan.	China imposes higher tariff. Worst flood in world history occurred in Yangtze valley. Cantonese unite with Nanking to combat Japanese in Manchuria.	Kemal retained hold on Turkey. Ordered sweeping reform; abolished narcotics. Attempted assassination of King Zog of Albania.
1932	Continued friction between Hungary and neighboring states over border. Riots in Poland. Czechoslovakia making best progress.	Italy makes great strides in building up merchant marine.	Trouble with Japan over Chinese Eastern R. R. Industrial progress very slow. Food at tremendous cost. Soviet not pleasing to peasants. Celebrates 15th Soviet Birthday.	Ki Muaki Premier. Conquest of Manchuria. U. S. reminds of violation of 9 power treaty. Saito Premier. Manchukuo recognized as separate state.	Japan attacks Shanghai. League of Nations committee visits Manchukuo and China. Communism prevails in some provinces.	Holland reclaims most of Zuider Zee. Rumania in financial straits. Turkey enters League of Nations. Economic civil war in Ireland. Death of Kreuger and scandal.
1933	Dr. Edward Benes leading diplomat in Central Europe. Alexander of Yugoslavia assumes dictatorship. Dollfuss chancellor of Austria.	Venizelos resigns. Four Power Treaty of Il. Patto signed by Italy, France, Germany, Great Britain. Balbo air squadron in U. S. 6100 mi.	Food short despite 5 yr. plan. 46,000 Cossacks sent to Siberia for not filling orange quota. Trial of English engineers. Signs non-aggression treaty with 7 neighbors. Received recognition by U. S.	Lytton report denounced. Completes conquest of Manchuria. Leaves League of Nations. Cheap labor, devalued yen, promotes great exports. Continued war preparations.	Japan takes province of Jehol. Chiang Kai-Shek outstanding leader. Suppress communism. 19th Route army at Shanghai. Dr. H. H. Kung balances budget.	World court gives Greenland to Denmark. Kemal Pasha continues reforms. Stop opium in Turkey. DeValera refuses oath of allegiance. Dutch naval mutiny.
1934	Polish German treaty removes "Corridor" trouble. Civil war in Austria. Thos. Masaryk, Pres. of Czechoslovakia for 4th term. Dollfuss assassinated. Dr. Schuschnigg chancellor.	Mussolini forms the corporate state. Masses 75,000 troups on Austrian front. Italy reclaims Pontine marshes. Abyssinian frontier dispute.	Troyanovsky Soviet ambassador to U. S. Starvation rampant despite reported record crops. Admitted to League of Nations. Kirov incident used to suppress enemies. 117 shot.	Great tension over C.E.R.R. toward Russia. Votes largest war budget in history. Places Henry Pu Yi on throne of Manchukuo. Establishes "Asiatic" Monroe Doctrine. Oil policy stirs U. S. and Gr. Britain.	Prospect of United China created by buying off war lords. Japan forces China to "Up"rates on other nations, "Down"rates on Japanese. Protests U. S. silver policy. Industrial development pronounced.	Death of King Albert of Belgium. Leopold king. Dole riots in Netherlands. Ibn Saud creates Kingdom of Saudi Arabia. Assassination of King Alexander of Yugo Slavia. Peter II King. Prince Paul regent.
1935	Death of Pilsudski. Poland ruled by "Elite Cabinet." German party strongest in Czechoslovakia. Austria asks right to rearm. Lithuania sets up new money system.	Mussolini gains more power. On Oct. 2, invades Ethiopia. League of Nations powerless to prevent. Sanctions against Italy applied by 52 nations.	Stalin opens All Union Congress of Soviets. Russian military greatly increased. Farm restrictions lessened. Engineman shot for running his train into another. The second "five-year plan" for industry began.	Sends ultimatum to China, in effect repeating the famous 21 demands of 1915. Acquires C.E.R. for 39.2 million dollars.	American silver policy closes Chinese banks. Submits largely to Japanese demands. Japan demands Nanking government withdrawn from North China. Chehar and other areas neutralized by Japan. Unrest continues.	Mosul Oil fields of Irak shipping oil. Zambezi bridge opened in Africa. King of Siam abdicates. Belgium devalues gold. Death of Queen Astrid.

From the World War to the Present Day

A. D.	Discoveries, Arts, Crafts	Great Britain	France	Germany	Spain and Portugal
1936	Alexis Carrel and C. A. Lindbergh demonstrate "robot heart" to scientists. New Queen Mary, largest passenger boat, makes trans-Atlantic record. Prof. Jean Charcot and 30 French explorers drown off Iceland.	Baldwin government upheld in Commons. Eden new foreign secretary. King George dies Jan. 20. Senate in Ireland abolished. Edward VIII abdicates on Dec. 10; brother George becomes George VI.	Radical parties give premiership to Blum. Ministry reconstructed (99th in 65 years). Sit-down strike of over 300,000 workers. Franc decreased in gold content by 30%, making it worth 4⅔ cents American.	Danzig question serious. Reich troops occupy Rhineland. League of Nations declares Germany violated Locarno Treaty. Hitler backed by plebiscite. Military service increased to two years.	Civil war rages throughout Spain. Leftists win in Spanish elections. New riots in many districts. Pres Zamora deposed. Many prominent Portugues exiles given anmesty.
1937	On June 8 many astronomers on Canton Island, mid-Pacific, study longest total eclipse of sun in 1,200 years. Third largest group of sunspots ever found reported in July. Ultra-violet rays thought to be able to purify air.	Largest arms budget in history, £7,000,000,000. Coronation of George VI. Imperial Council in London. Chamberlain made Prime Minister. Former King Edward marries Mrs. Simpson in France; is made Duke of Windsor by George VI.	Paris Exposition. Labor front policies of Blum overthrown by Senate. Chautemps becomes Premier. Marshal Foch buried under dome of Les Invalides. Ratifies 1936 London Naval Treaty. Suspends gold and foreign exchange payments on June 29.	Restricts the church. *Deutschland* incident. Stresses colony question. Closer alliance with Italy. Dirigible *Hindenburg* crashes near Lakehurst, N. J., killing 36. Pledges integrity of Belgian territory. Jews restricted.	Civil war continue in Spain. Warships o Great Britain, France Italy and Germany pa trol waters about Spain League of Nations re fuses to again elec Spain to membership.
1938	New evidence found of migrations from Asia to North America by way of the Aleutian Islands. Huge star cluster found in constellation Sculptor. New container for radium made from tungsten, nickel and copper. King Solomon's seaport unearthed on Red Sea.	New accord with Eire as to land claims. Gives fortified Spike Island in Cork Harbor to Irish. George VI and Elizabeth visit France. Chamberlain confers at Munich with Hitler and French premier; agrees to German partition of Czechoslovakia.	Restored Rheims Cathedral bells peal again after silence of 24 years. Premier decrees suspension of the 40-hour week in defense industries. Army takes over port of Marseilles tied up by strike. Daladier agrees with Chamberlain to partition of Czechoslovakia.	Makes close agreement with Mussolini. Takes over Austria on pretext of the calling of a plebiscite by the Austrian premier. Hitler visits Rome. On October 1 occupies Sudeten area of Czechoslovakia by agreement with Chamberlain and others in Munich conference.	Rebel planes bomb Barcelona, killing hun dreds. Franco abolishe autonomy of Catalonia declares 36 of 50 prov inces already are sub dued. On August 3 the Loyalist govern ment offers a 13-poin democratic program.
1939	Uranium found to release great power. Protactinium divided into elements. Energy of stars studied. Sulfanilamide most beneficial drug discovered to date. Non-cracking glass invented. Vitamin K purified.	Chamberlain drops appeasement policy. Prepares for war. Military pact with Poland. Warns Italy on aggression. Declares war on Germany Sept. 3, two days after invasion of Poland. British prepare for air raids, blockade at sea.	Feeds thousands of Spanish refugees. Daladier given supreme power. Petain, ambassador to Spain. Joins British in war on Reich. Fifth columnists active in France. Maginot line strengthened, with no activity occurring.	Hitler declares Germany must "export or die." Takes over Czechoslovakia. Memel rejoins Reich. Destroys Poland in few weeks. Air raids on England. Resettles Germans in parts of Poland. Jews in only one section.	Civil war in Spai ends with Franco look ing toward Madrid Nationalist Spain make anti-Comitern pact wit Italy and Germany.
1940	Anti-influenza serum promised. Radio-active carbon discovered. Electrical and radio disturbances may be due to sunspots. Byrd expedition finds two extinct volcano craters in Antarctica. Typhoon sweeps Guam.	Given support of dominions. Norway abandoned in full to Nazis. Chamberlain out; Churchill new Prime Minister. Withdraws from Dunkerque in greatest retreat in history. Cripples French fleet in harbors. Nazis lose air battle for Britain. Dakar incident.	Reynaud new premier. German *blitz* irresistible. Paris falls on June 14. Government surrenders on June 17. Petain given totalitarian powers. Germany occupies ⅜ths of France and all coastline. DeGaulle joins British. Weygand in Africa. Government in Vichy.	Denmark and Norway occupied. Low countries surrender May 14 to 27. Occupies Paris June 14. Armistice held in Foch's car in Campiegne. Heavy air raids on England. Takes over Hungary and Rumania. Establishes triple alliance with Italy and Japan.	Lisbon only ope port of entry in Europe Spain takes over Tan gier. Efforts to hav Spain join Axis fai Spain in starving con dition. Portugal cele brates 800th annive sary of founding.
1941	Bronze Age town unearthed in Spain. Primitive cave paintings found in France. New typhus vaccine sent to Europe for possible epidemic.	Eden heads War Ministry. Sweep Italians out of Libya. Australians arrive at Singapore. Destroys Italian fleet in Ionian Sea. Conquers Ethiopia. Enters Middle East. Heavy losses in Greece and Crete. Declares war on Hungary, Finland, Rumania. Loses Hong Kong to Japs. Repudiates Munich agreement of Chamberlain.	Darlan replaces Laval. More concessions to Germany. DeGaulle men in Africa make gains and aid in near East. Vichy breaks with Russia. Protests British bombings of industries. Petain Chief of State under new constitution. Part of navy disabled, part with Free French, part interned. Food scarce.	Complete control of Bulgaria and Rumania. Overruns Greece. Yugoslavia and Greece the 14th and 15th nations under Swastika. Foreign laborers impressed. Ten-year agreement with Turkey. Forces British into Egypt. June 21 attacks Russia. Dec. 11 declares war on U. S. Oppression of small nations intensified.	King Alfonso of Spai dies in Italy. Maintai neutrality. Franco i Spain in sympathy wit Axis. Possessions i Africa not endangered Commerce increases.
1942	Penicillin, a mould, proves powerful germicide. Norwegian scientists producing artificial leather, bread flour, and gas from peat. Japanese extract Vitamin B from silkworm cocoon for food. Pentamidine, new treatment for African sleeping sickness. Deposits of tin, antimony, tungsten, and nickel found in the Ural Mountains and Siberia.	Cabinet reorganized twice in February. Loss of Singapore and Burma. General Wavell in charge in Asia. Cripps' mission offering post-war independence to India fails. Wendell Willkie visits Britain. Home food production greatly increased. Submarine problem most vital.	Germans execute many French hostages. German inspired war guilt trials fail. British seize Madagascar; restore it to French rule. Americans occupy Morocco, helped by Darlan. Darlan shot. French contest for power among leaders. Nazis occupy all France. Fleet at Toulon scuttled. Giraud escapes from France to Morocco.	On April 6 bread ration 4 lb. 6 oz. a week; meat 10.5 oz. Hitler recalls several generals; some restored. Advance in Caucasus. Dominate Balkans. Agents active in South America. Some arrested. British drive Rommel from Egypt; nearing Tunisia by end of year. Laval again friend of Hitler and making concessions for France.	Watchfully waiting Madrid signs commer cial accord with Argen tina. Keeps arm ready. Spain threaten to resist any violatio of her neutrality b joining opposite side Portugal quiet and prof iting financially.
1943		Montgomery's 8th Army reaches Tripoli and Tunisia. 1st Army takes Tunis.	Political prisoners released in North Africa. French troops aid in freeing North Africa from Axis.	Round-the-clock bombings by Allies. Transportation system failing. Wolf pack submarine pack policy being used.	

From the World War to the Present Day

D.	Central Europe	Italy and Greece	Russia	Japan	China	Other Countries
936	Benes president of Czechoslovakia. Austria and Germany *anschluss*. Austrian government reorganized. Haile Selassie pleads for Ethiopia before League of Nations.	King George again rules Greece. Italy conquers Ethiopia. Sanctions lifted. Annexes Ethiopia on May 9. Decreases gold in currency.	New form of representative government declared. Huge industrial expansion. Stalin says Russia prepared for war. Stalin purges army.	Japanese now in Peiping. Withdraws from five-power naval conference. Army mutiny. Treaty with Germany arranged. Military hold on China increased.	Gen. Chiang Kai-Shek says China to resist further Japanese encroachments. North and South China show signs of closer cooperation.	Arabs attack Jews in Palestine. Egypt given more liberty by British. New political system organized in India under Act of 1935 by Great Britain.
937	Political unrest in Rumania. Italy and Yugoslavia agree on concessions as to frontiers and minorities.	Refuses to withdraw from Spanish war. Rome-Berlin "axis" strengthened. Begins suppression of Jews. Withdraws from League of Nations.	Gold output second largest in world. Thirteen prominent officials executed for treason. China and Russia sign non-aggression pact. New Russian Congress meets under new Constitution.	Prince Konoye becomes premier. Sends army into interior of China. Blockades east coast. Accused by League of Nations of violating nine-power pact.	Abduction of Chiang Kai-Shek. Chahar Province under control of Japan. withdraws toward interior. Sets up several inland capitals. Thousands killed in Japanese air attacks. Shanghai taken over by Japan Nov. 26.	Closer relations between Scandinavian countries. Juliana of Netherlands marries Prince Bernhard of Germany. Fascists under Degrelle defeated in Belgium.
938	Poland threatens Lithuania. Jews sell property in Rumania; King Carol dictator there. Bulgaria holds first parliament in four years. Hitler forbids Austrian plebiscite on union with Germany.	Italy renews concordat of 1931 with the Vatican. Italian troops still in Spain. Mussolini asks concessions from France. Parliament becomes Chamber of Fasces.	Trial of traitors continues with vigor. First session of new parliament on January 12; Joseph Stalin a member. Leading officials confess plot to destroy Kremlin and seize power. Clashes with Japan on eastern borders.	Drives Chinese farther inland with great property loss. Bombs foreign ships but apologizes. Says attack on U. S. Panay due to error. Declares object is to drive out present rule in China. Refuses U. S. request for naval policy.	Chiang Kai-Shek resigns as premier to become chief general. H. H. Kung premier. Japan sets up government in north China. Trek continued inland.	Kemal Ataturk, president of Turkey, dies; Ismet Inonu succeeds him.
939	Czechoslovakia absorbed by Germany with part going to Hungary. Hungarian-Rumanian relations bitter. Poland bombed severely. Poles treated as slaves. Hungary leans to Reich.	Italy's demands on France refused. Takes over Albania. Britain and France warn against further aggression. Pope Pius XI dies.	Molotoff replaces Litvinoff as Foreign Minister. Non-aggression pact with Hitler. Divides Poland with Hitler. Great losses in war on Finland. First to use parachute troops. Gives Vilna to Lithuania.	Continues war with China. Strained relations with Britain over Tientsin affair. Attempts new puppet government in central China. Over 18,000 killed in territory disputes with Russia.	Rebuilding western China, and setting up small industries there. Gains occasional successes in war. New huge army being trained. Interior towns bombed; also three colleges.	King of Iraq killed in accident. Turkey signs mutual pact with the Allies. Jews continue clashes with Arabs in Palestine. Gandhi agrees not to resist for the present.
940	Germany demands right to police Danube. Rumania loses Bessarabia and part of Moldavia to Russia. Hungary gets part of Transylvania; Bulgaria part of Dobrudja. Switzerland maintains neutrality.	Italy enters the war with Germany. Libyan army marches toward Egypt. Invades Greece but is repulsed with terrific losses. African army annihilated; also loses in Ethiopia.	Incorporates Latvia, Estonia, Lithuania in Soviet Union. Retakes Bessarabia and Moldavia from Rumania. Political commissars removed from army. Economic treaty with Germany.	Makes triple alliance with Italy and Germany. Protests U. S. fleet in Pacific. Establishes air bases in French Indo-China. Makes little progress in China.	Japan sets up puppet government in Nanking with Wang Ching-Wei. Chiang Kai-Shek fights communist armies of China. Burma road closed, then opened.	Finland surrenders to Russia on March 13. Australian troops arrive in Egypt.
941	Antonescue controls Rumania under Axis domination. Much unrest and sabotage. Guerrillas resist in Yugoslavia. Bulgaria signs pact with Turkey; breaks with Yugoslavia. Croats favor Axis. Poles agree with Russia on mutual problems.	Germany establishes air bases in Italy. Ethiopia lost. Italian Navy defeated by British in Ionian Sea. Greeks and Albanians fight Italian invasion. Germans aid Italians in conquering Greece and Crete. Acropolis falls on April 28.	Stiffens opposition to Axis. Non-aggression treaty with Japan. Stalin made premier on May 6. Germany attacks on June 21. Moves large factories into Ural section. Britain sends supplies and clothing. Nazis halted before Moscow. Some ground regained during winter.	Assembles fleet in Gulf of Siam. Matsuoka visits Axis capitals. Takes over French Indo-China. Tojo becomes premier. Kurusu, special envoy, at Washington. Attacks Pearl Harbor, Dec. 7.	United China gains against Japanese. Western migration continues. Wins delaying battle. Perfects guerrilla warfare. United Nations send men and supplies. Chungking severely bombed. Great impetus in higher education.	Unrest in middle East; Axis agents active. Saudi-Arabia expels Nazi agents. Free French gain in Central Africa. Dakar incident in December. Denmark allows U. S. to protect Greenland. Iceland breaks from Danish crown. Haile Selassie restored to throne.
942	Continued unrest in Rumania, with staggering losses in armies of Hitler. Yugoslav guerrillas active. At least 180,000 Serbs killed by Germans. Nazis aim at extinction of Jews in Poland.	Greeks starving under Nazi rule. All Italian Africa lost. Nazi tighten hold on Italian industrial life. British bomb chief manufacturing cities. Italian soldiers deserted by Rommel in retreat from Egypt. Crowds beg king for peace. Pope appeals for peace.	Germans occupy 700,000 sq. mi., about 9% of country. Loses Maikop oil fields. Factories moved inland increase tempo of production. Siege of Stalingrad continues. Winter campaign recovers Stalingrad and carries forward close to Dnieper River. Lend-lease arrives in ever-increasing amount by Arctic and Iranian routes.	Now largely on defensive. Fail in Australia, India, Hawaii; Aleutians and central islands. U. S. Marines occupy Guadalcanal. Total land occupied by Japan about ½rd size of the United States. Staggering losses in men and ships. Few signs of internal collapse.	Japanese puppet government makes no headway. Hold off many attacks. Loss of Burma road greatly restricts incoming supplies. New routes through North India and by transport plane. Chenault's Flying Tigers great aid. Country more unified than before. Education now steadily increasing. Madame Chiang Kai-Shek visits America.	Norwegians remain "silent" on anniversary of German occupation. Clergy still resisting. Ghardi again arrested. Distress increases in all occupied lands. Sweden becomes more alarmed. Finland tired of the war. North African political situation much confused.
943		Italians expelled from Africa.	Siege of Leningrad lifted.	Merchant marine losses heavy. Kiska continually bombed.		

Events in America in the Twentieth Century.

A. D.	Discoveries, Arts, Crafts	United States	Canada	Latin Ameri
1900	Value of artificial ice made in U. S., $14,000,000. Census Bureau announced population as at least 76,300,000. The army canteen was abolished. High speed steels first made.	Samoan treaty ratified, Jan. 16. Gold Standard Currency bill signed Mar. 14. Charles H. Allen, first civil governor of Porto Rico, Apr. 12. Gen. MacArthur issued a proclamation of amnesty to the Filipino insurgents, June 15. Civil government established in the Philippines by a second commission of five, with William H. Taft as president, Sept. 1. Tornado at Galveston, Texas, caused the loss of 7,000 lives and $30,000,000 of property, Sept. 8. McKinley re-elected 292 to 155 for Bryan, Nov. 6.	Parliamentary elections resulted in victory for the Liberals. Great fire at Ottawa, Apr. 26. Forest fires in northern Ontario destroyed millions of dollars' worth of timber. Fenians attempted to dynamite a lock on the Welland Canal. Many Canadians engaged in the South African war. Immigration question debated; prejudice against admission of foreigners.	General Diaz president of Mexic ous earthquake at Venezuela. Castro a to seize the presi Salvador, was foun and shot. Boundary Costa Rica and settled by Presiden of France. Revol Colombia. Severe fi and around Panama restored after 6 mo
1901	Thirty-seven torpedo boats included in the United States navy. Andrew Carnegie gave 10 millions to establish a research institute in Washington. Hall of Fame instituted by gift to New York University. Automobile mower perfected by the Deering Company.	Army Reorganization Bill signed Feb. 2. First session of the Territorial Legislature of Hawaii began Feb. 20. Aguinaldo captured by General Funston Mar. 23. Pan-American Exposition at Buffalo May 1 to Nov. 2. McKinley fatally shot at Buffalo, Sept. 6. Died Sept. 14. Roosevelt succeeded as 26th president. Isthmian Canal treaty between the United States and Great Britain signed Nov. 8. Hay-Pauncefote treaty on Panama Canal ratified by U. S. Senate.	R. L. Borden chosen leader of the Conservative party to succeed Sir Charles Tupper, defeated in elections of 1900. May 24th made a public holiday by Parliament; called "Victoria Day." Population, 5,369,666. Steady growth of the Free Trade sentiment. Act passed for the establishment of a branch of the Royal mint at Ottawa.	Colombian libera surrendered at Colo cabinet in Chile. president of Chile. tion in Venezuela. matic relations resu tween Venezuela and War between Venez Colombia, 1901–190 J. Santos Zelaya r president of Nicarag ond international c of American repu Mexico.
1902	Alternating current locomotive ran 99½ miles per hour. Wireless messages sent across the Atlantic by Marconi. Value of total gold product of the world $295,000,000; of U. S. $80,000,000. Baldwin-Ziegler polar expedition returned after an absence of one year; reached latitude 80° 25′. Peary reached 84° 17′ north latitude in western hemisphere.	Act to reclaim arid public lands, June 17. President authorized by Congress to build Panama Canal if French rights could be bought for $40,000,000. Act for civil government in the Philippines. Provision for legislature of two houses; one elected house; two resident commissioners in the United States; right to bear arms and to trial by jury withheld, July 1. Anthracite coal workers of Pennsylvania struck May 12 to Oct. 21. Samoan controversy decided against the United States by King Oscar of Sweden Oct. 21. Reciprocity treaty with Cuba signed Dec. 11; in force, Dec. 27, 1903. A permanent Census Bureau created. American occupation of Cuba ended.	Alaskan boundary still unsettled. Discussion in the House concerning the buying of controlling interests in Canadian railways by United States capitalists. Formation of companies for the production of electrical power from Niagara Falls. The Canadian Northern Railway obtained permission to construct a transcontinental line. Canadian-Australian cable completed.	Germany, Great and Italy attempte lect claims of Ve Puerto Cabello bor Gen. Mendoza, Ve revolutionist, defeat Venezuelan governm pealed through the States for arbitration pean claims. Civil Colombia ended. C public formally est Estrada Palma elect dent.
1903	William Ziegler of New York sent out, under Anthony Fiala, an Arctic expedition. Valuable and extensive deposit of mica discovered in Colorado. Pacific cable to China completed by way of Hawaii, Guam, and the Philippines. President Roosevelt sent a message around the world in 12 minutes. Wright brothers made first airplane flight at Kitty Hawk, N. C., Dec. 12. Edison invented the nickel storage battery. Gold discovered in Idaho, platinum in southern Wyoming, and molybdenum in Colorado.	Panama Canal treaty between the United States and Colombia signed Jan. 22. Department of Commerce and Labor created Feb. 12. Reciprocity treaty between Cuba and the United States ratified by Cuba Mar. 11; by United States, with amendments, Mar. 19. Chicago celebrated the hundredth anniversary of settlement, Sept. 26 to Oct. 1. Republic of Panama recognized by the United States, Nov. 6. Purchase of friars' lands in the Philippines agreed to.	Settlement of the Alaskan boundary question. Silver mines discovered in Cobalt, Ontario. The Chamberlain tariff proposals. Canadian exchange reports showed notable decrease. The rights of Canada to Germany's "most favored nation" tariff clause withdrawn by the latter government.	Trouble between V and Colombia refe Hague Court of Ar for settlement. Se Colombia rejected Canal treaty. Pana merly a dependency lombia, asserted its in ence and was recog the United States. treaty with United ratified by Panama.
1904	Tin found in the York region of Alaska. Louisiana Purchase Exposition held at St. Louis. Tunnel completed connecting New York City with New Jersey. New York subway opened to traffic. Ninth satellite of Saturn, named Phoebe, discovered by W. H. Pickering at Harvard Observatory in Peru. Steam turbine came into use.	Merger of Northern Pacific and Great Northern Railways declared unconstitutional by Supreme Court. United States Supreme Court decided that Porto Ricans are not aliens, Jan. 4. Commercial treaty between China and the United States ratified, Jan. 13. Fire in Baltimore destroyed $70,000,000 of property, 2,500 buildings, and burned over 140 acres, Feb. 7 and 8. Excursion steamer, *General Slocum*, burned in the East River, New York, with loss of more than 950 women and children, June 15. United States sent warships to Turkey. Demands as to treatment of American citizens and schools in Turkey complied with. Agreement between Secretary Taft and President Amador settled differences between United States and Panama, Dec. 2. Sherman Act enforced in Northern Securities case.	Plan for transcontinental railway. Revision of the militia laws; division of the Dominion into military districts. General elections in Quebec, Prince Edward Island, Nova Scotia. Liberal victories. Lord Grey succeeded Lord Minto as governor general. Restriction of Chinese immigration. Anglo-French treaty. Sale of Magdalen Islands.	Venezuelan diplom ficulties with the States. The Hague tion Court, to wh claims against Venez referred, decided Venezuela. Trea Panama, concernin ratified by United Manuel Amador ina as president of Porfirio Diaz re-elect dent of Mexico. I Pardo proclaimed of Peru. Last Ame diers withdrawn fro

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FAMOUS STATESMEN—I

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Abraham Lincoln

Benjamin Franklin
Henry Clay
Prince Otto von Bismarck

Thomas Jefferson
John C. Calhoun
Daniel Webster

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Charles Evans Hughes
Rene Viviani
Elihu Root
Georges Clemenceau
David Lloyd George

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HISTORIC SCENES IN AMERICA—I

1 Oldest building in U. S. A., Postoffice, St. Augustine, Fla. 2 The Alamo, San Antonio, Texas. 3 Old city gate, St. Augustine, Florida, built 1702. 4 St. Carmel Mission, California. 5 Old slave market, St. Augustine, Florida.

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HISTORIC SCENES IN AMERICA—II

1 Old bridge, Concord, Mass. 2 Faneuil Hall, "Cradle of Liberty," built 1763, Boston, Mass. 3 Ethan Allen Gate, Fort Ticonderoga, New York. 4 Meeting House, Concord, Mass., where met Oct. 11, 1794, first provincial congress. 5 Bunker Hill Monument, Charlestown, Mass.; site of the battle on June 17, 1776. 6 Old South Church, Boston, Mass.

Events in America in the Twentieth Century.

A. D.	Discoveries, Arts, Crafts	United States	Canada	Latin America
1905	The second Hudson River tunnel completed; it is 15 ft. in diameter and 5,780 ft. long. Luther Burbank succeeded in originating new plant life, roots, and flowers. Carnegie gave 10 millions for pension fund for college professors in United States, Canada, and Newfoundland, and J. D. Rockefeller gave 10 millions to General Education Board. Solar total eclipse observed in Canada, Spain, North Africa, and Arabia.	Beef Trust declared illegal by the United States Supreme Court, Jan. 30. Insurance investigation begun in New York, led to restrictive legislation. Body of John Paul Jones discovered in Paris by Gen. Horace Porter, brought to the United States and interred at Annapolis July 24. Theodore Roosevelt, president, 336 electoral votes; Barker, 140; Charles W. Fairbanks, vice-president. Panama Canal property bought from the French company Apr. 27. International Railway Congress at Washington opened May 3. John Hay, secretary of state, died July 1; Elihu Root succeeded. Treaty of peace between Russia and Japan signed at Portsmouth, N. H., Sept. 5. Work begun on Panama Canal. Senate annulled arbitration treaties with foreign powers.	The provinces of Alberta and Saskatchewan created. Bill passed providing annual pension of $3,500 for all cabinet ministers and ex-ministers who had been five years in office. Negotiations completed for the manning of Canadian navy with Canadian troops. Rapid economic advance of northern Ontario owing to the development of silver resources. Boundary dispute between Quebec and Newfoundland. Report of explorations in Hudson Bay region; traces of coal found. Misunderstanding between Canada and the United States regarding water boundaries.	Venezuela agreed to prefer claims of Germany and Great Britain to the amount of $26,000,000. Venezuela and Brazil settle long-standing boundary dispute. Steps taken by Italy to force Venezuela to a settlement of Italian claims. General Cipriano Castro is re-elected president of Venezuela for term of 6 years. The Panama railroad purchased by United States. President Morales, of Santo Domingo, left the capital.
1906	Robert E. Peary of the United States reached 87° 6′ n. lat., the record of farthest north. Atmosphere of the earth calculated by Prof. T. J. J. See to be 131 miles in height. New England woolen manufacturers on own accord raised wages of 30,000 employees. Pure Food Bill passed by Congress. U. S. Senate ratified Red Cross convention for relief.	Hepburn Act regulated railway rates. Consular service reorganized. Battle of Jolo, Philippines, Mar. 8; 600 Moros killed. Earthquakes and fire at San Francisco, Cal., destroyed property worth $400,000,000, Apr. 18–21. United States intervened to preserve peace in Cuba by second military occupation. Brownsville, Tex., riots. Hepburn act made railway rebates to shippers unlawful.	The Canadian members of the International Waterways Commission reported the maintenance of Niagara to be a national matter. Departure of last British garrison. Diamonds found in Canada. Noticeable increase in number of immigrants.	Earthquake and fire at Valparaiso, Chile. President Morales of Santo Domingo impeached.
1907	Captain Mikkelson and Mr. Leffingwell reached 71° 17′ n. lat. *Mauretania's* first trip across the Atlantic, 5 d., 5 h., and 10 min. Central American peace conference. Steel cars in use, including first steel Pullman.	Reed Smoot sustained as senator. Jamestown Tercentenary Exposition. Revelations of methods in Colorado strikes of 1903, 1904. Standard Oil Company fined $29,240,000 for accepting rebates. Judgment set aside by U. S. Circuit Court of Appeals in 1908. First Philippine legislative assembly. Oklahoma made a state. United States fleet sailed around the world (Dec. 16, 1907–Feb. 22, 1909). United States authorized to collect customs of Santo Domingo.	Discussion in Parliament regarding navigation of Hudson Strait. University established in the province of Alberta. Increase in subsidies to the western provinces. Financial stringency during last three months of the year. Demonstrations against Japanese.	Boundary between Panama and Costa Rica settled. Tehuantepec National Railroad opened. Chilpancingo and Chilapa, Mex., destroyed by earthquake. Protocol signed by Central American states for permanent peace.
1908	The East River tunnel opened. Wilbur Wright flew 1 h. 54 m. in airplane. Hudson River tunnel opened. Wireless communication between San Francisco and Hawaii. Food and Drugs Act drove many brands of goods off the market, including false misbranded whiskies.	Conference of governors at Washington. United States remitted claim to $11,900,000 of Boxer uprising indemnity from China. Death of ex-President Grover Cleveland. Two-cent postal rate between the United States and Great Britain. House adopted resolution fixing boundaries of Colorado, New Mexico, and Oklahoma. Arbitration treaties with various nations. William H. Taft received 321 electoral votes to 162 for W. J. Bryan, Democratic presidential nominee.	Sovereign Bank of Canada went into liquidation. Government made loan of $40,000,000 to western farmers. Province of Alberta purchased the Bell telephone system within her boundaries. Province of Manitoba bought Bell system. Mint at Ottawa opened.	Guatemalan Northern Railway opened. President Castro of Venezuela declined request of United States to arbitrate claims. General Simon was elected president of Haiti.
1909	Pacific entrance of Panama Canal opened Feb. 2. R. E. Peary reported discovery of North Pole Apr. 6. Stovaine and strychnine successfully used as an analgetic in surgery; Dr. W. L. Dudley of Vanderbilt University explained phenomenon of the aurora borealis; Prof. W. W. Campbell of Mt. Whitney found no evidence to prove Mars inhabited.	Congress voted $800,000 for relief of earthquake sufferers in Italy. Battleship fleet returned to Hampton Roads. Pres. William H. Taft and Vice-President James S. Sherman inaugurated. U. S. troops evacuated Cuba. 700,000 acres of government land opened to settlement in Washington, Montana, and Idaho. Cape Cod Canal begun. Payne Tariff Law signed. Pres. Taft and Pres. Diaz of Mexico met at El Paso, Texas. United States acted against Nicaragua. New copyright law.	A treaty signed at Washington to provide for the settlement of questions in dispute between Canada and the United States, Jan. 11. First Canadian navy; 16 dreadnoughts planned. Canadian loyalty emphasized by formation of King's Colonials Yeomanry, to serve in any part of the world under permission of home government. Georgian Bay Canal project and workings far advanced.	The Yaqui Indians end a thirty-five years war with Mexico. Revolution in Nicaragua. Transandine Tunnel opened. Extended government control of railways in Mexico.

Events in America in the Twentieth Century.

A. D.	Discoveries, Arts, Crafts	United States	Canada	Latin America
1910	Halley's comet passed the sun, May 18. Southern Health Congress planned to fight hook-worm disease, with aid of a million from J. D. Rockefeller. Carnegie gave another 10 millions to institute at Washington.	Tariff Commission appointed. Statehood Bill, Railroad Bill, Postal Savings Bank Bill, Campaign Publicity Bill passed. Civil service for second class postmasters. Rules of House of Representatives amended to curb speaker's power.	Canadian Pacific Railway wreck, one of the worst in Canadian history; caused by an avalanche at Roger's Pass May 5. Anti-Trust Bill in Dominion Parliament. New Fisheries Treaty with United States.	Cartago, Costa Rica, stroyed by earthquake. clones in Cuba. Naval r nies in Brazil. Boun disputes between Peru Brazil, Peru and Chile, tled. Putumayo rubber s dals in Peru. Diaz ina rated president of Mexic the eighth term.
1911	Multiplex telephone. Phosphate beds found in Montana and Nebraska. Wireless completed between San Francisco and Japan, and between Nova Scotia and Italy, 4,000 miles. Hydro-airplane invented by Glenn H. Curtiss.	Postal Savings Banks in operation. Commerce Court organized. Panama Canal fortifications were begun. Treaty made with Honduras. Japanese treaty was ratified. Treaty made with Nicaragua giving United States concessions. Treaty made with Great Britain and Russia, abolishing pelagic sealing for 15 years. Canadian Reciprocity Bill passed but rejected by Canada. Arbitration treaties with France and Great Britain signed. Russian treaty of 1832 abrogated.	Duke of Connaught appointed Governor General, Jan. 29; installed, Oct. 13. Reciprocity pact before the people, July 29, rejected Sept. 21. Laurier ministry ended. New census taken. New ministry, Oct. 6. 12th Parliament opened Nov. 15. 15 experimental farms and stations established.	Revolution in Haiti. R lution in Mexico; peace signed. Diaz resigned. Da quake in Mexico City. F cisco I. Madero ele president.
1912	Spinal meningitis serum discovered by Dr. Simon Flexner. Largest deposit of radium in world discovered in Colorado. V. Stefansson returned after four years spent in scientific observation in the Arctic. Pulitzer School of Journalism opened at Columbia University, New York.	New Mexico and Arizona made states. First presidential primary. Children's Bureau created. Bristow amendment to the constitution sanctioned income tax. Eight-hour Bill for government employees passed. Commerce Court abolished. Pension Bill passed. Americans were victors in Olympic games. Committee of Industrial Relations appointed. Civil Service extended to include fourth-class postmasters.	New district, "Patricia," in Ontario, Apr. 21. Opium and Drugs act passed. Seed Control act passed. Dry Docks act passed. Dominion Medical Council. New department created to deal with external affairs and all matters relating to foreign consular service. Naval policy reversed.	Revolutions in Cer America. U. S. gunboats marines at Dominican public, Haiti, and Nicara Chilean railroad over Andes. Chile and Peru peace. Negro uprising Cuba over elections. U intervention. Peru reor ized navy. Indians in B made citizens. Mexican r lution continued.
1913	Germ of infantile paralysis discovered by Dr. Simon Flexner. Wireless communication established between Eiffel Tower, Paris, and Arlington, Va. First interdenominational church congress met in New York City. Benjamin Altman left an art collection valued at 15 millions to New York City. Ford set aside 10 millions for aid to employees and established basic wages of $5 a day. Fossil of animal the size of a wolf, oldest in America, found by American Museum of Natural History.	Parcels post in operation. Pension agencies discontinued. Income tax amendment ratified by the states. Department of Labor created. Immigration Bill and Webb Liquor Bill passed over veto. Inauguration of Woodrow Wilson and Thomas R. Marshall. 63d Congress in extra session. XVIIth amendment ratified. California anti-alien land act passed. Governor Dunne of Illinois signed bill giving suffrage to women for statutory offices. United States District Court of Utah sanctioned dissolution plan for Union Pacific-Southern Pacific railroads. President Wilson outlined his Mexican policy before Congress. Governor Sulzer impeached by N. Y. Asssembly, tried, and removed from office. Underwood Tariff Bill signed. Arbitration board of 41 Eastern railroads and their trainmen filed an award of 7% increase in wages to trainmen, about $6,000,000 a year. Hetch-hetchy Bill and Federal Reserve Bill signed.	Rapid rise of industrial development, especially in pulp business. Prosperity general throughout Dominion. Extension of rural free mail delivery system.	President Madero of M ico resigned; assassina Feb. 23; Gen. Huerta, visional president. Opp tion "constitutional" gov ment announced by Carranza of Coahuila. war between the facti with much fighting, in w the insurgents were gener successful.
1914	Colonel Roosevelt explored an unknown Brazilian river. James Campbell gave 35 millions to St. Louis University for medical research and hospital. I. N. Lewis invented the aircooled gun. Dr. W. C. Farabee on borders of Brazil and Guiana found tribes that never before saw a white man. Nearly complete skeleton of dwarfed horned dinosaur found in Montana. Panama Canal and Cape Cod Canal opened to small vessels.	Alaska Railroad Bill passed. Alcoholic liquors for drinking prohibited in U. S. Navy. Resolution justifying use of "armed forces of the United States to such an extent as may be necessary to obtain from General Huerta the fullest recognition of the rights and dignity of the United States" passed, Apr. 20. U. S. troops sent to Colorado mines. Volunteer Army Bill passed. Seizure of Vera Cruz by U. S. war vessels because marines had been killed at Tampico. Mediation offer of Argentina, Brazil and Chile accepted. Federal Reserve Banks established. Declaration of neutrality with belligerents in European War.	The Canadian Pacific liner *Empress of Ireland*, on her way from Quebec to Liverpool, with 1360 passengers and a crew of 413, was rammed amidships by a Norwegian collier during a fog in the early morning, and sank within a few minutes in the St. Lawrence, near Father Point, P. Q. Of the passengers 1024 were lost and 211 of the crew, May 29. Canadian Northern Railway nationalized.	A successful revolution Peru; Benadides was m president. Revolution Haiti; Gen. Oreste Za became president. Clash tween United States Mexico. The United St seized Vera Cruz. Good A B C mediators accep President Huerta fled M ico. Carranza, Villa, Zapata factions battled control.

Events in America in the Twentieth Century.

A. D.	Discoveries, Arts, Crafts	United States	Canada	Latin America
1915	Eruption of Mt. Lassen, Cal. Fossil bacteria in limestone from Montana proved ancient existence of such forms. Alexander Graham Bell in person established first transcontinental telephone service. Wireless between moving trains. U. S. found ways to make coal tar dyes. Stefansson reported discovery of arctic land.	Peace treaties providing arbitration completed with 26 nations. Increasing violations of neutral rights by the allies and by Germany. President Wilson protested to warring nations. German submarine sunk *Lusitania*.	Four Canadian brigades, outflanked by 150,000 Germans at Ypres, held their positions and saved Calais from capture.	South American delegates at 3d Pan-American Scientific Congress in Washington.
1916	Federal farm loan act passed to help agriculture. United States Shipping Board organized to acquire and operate ships for merchant trade.	Pres. Wilson appointed Louis Brandeis, radical, to the United States Supreme Court. Sec. of War Garrison resigned because of disagreement with Pres. Wilson. Germans continued their policy of sinking U. S. merchant ships. Congress appropriated nearly 300 millions for army. U. S. bought Danish West Indies. 7 railroads filed injunction suits against Adamson 8-hour law. Woodrow Wilson elected Pres. of U. S. for second term, being opposed by Supreme Court Justice Chas. E. Hughes. Newton Baker became Sec. of War.	Parliament buildings at Ottawa destroyed by fire; new ones begun Sept. 2. Nearly 400,000 Canadians volunteered in cause of the Allies. Prohibition movement gained, especially in western provinces. Manitoba and Alberta gave vote to women. Conscription debated in Parliament.	Carranza is recognized by the U. S. and Latin America governments. Policy of confiscating church property adopted by Mexico. 19 Americans killed at Santa Ysabel.
1917	Building 1,000 years old unearthed at Mesa Verde, Colo. Stefansson found much copper in Canadian arctic regions. Congress voted by large majority to submit a prohibition amendment to the several states for ratification. New York became gold center of the world. Three meteors fell in Wisconsin, one at Colby weighing 200 pounds. New solution for use in wounds discovered by Carrel and Dakin, later named Dakin's Solution.	U. S. declared war against Germany Apr. 6. War appropriations totaled over 7 billions. Selective Draft Act passed. Gen. Pershing given command of U. S. Expeditionary Force. First Liberty Loan of 2 billions over-subscribed. American Merchant Marine tonnage reached nearly 12 million tons. Exports and imports of U. S. totaled 9 billions of dollars. Supreme Court upheld Oregon Minimum Wage Law, and Adamson Law, giving Congress right to regulate hours and wages in the interest of the public. First U. S. Tariff Commission appointed.	Greatest cantilever bridge in the world completed at Quebec; 640 feet long, weight 5,400 tons. Conscription Act passed by Dominion Parliament after bitter opposition from French Canadians; coalition cabinet formed with Quebec unrepresented. Explosion of munitions ship at Halifax resulted in loss of 1,500 lives and property damage of $50,000,000.	Mexico adopted new Constitution with many radical features, including expropriating of land of religious orders. Many Catholic regular clergy left Mexico. Carranza elected President of Mexico. Brazil broke relations with Germany. Chile and Argentina adhere to neutral policy.
1918	Excavations in New Mexico revealed new light on Indian life in the pueblo region. Total eclipse of the sun occurred June 8. First airmail service between Washington and New York. Rockefeller Foundation disbursed over 15 millions. Ancient Indian pueblo of Hawikah unearthed in New Mexico,—one of famed "seven cities of Cibola." Further exploration of Valley of Ten Thousand Smokes, Alaska.	U. S. Supreme Court declared unconstitutional Child Labor Act. Influenza carried off 350,000 persons in U. S. from Sept. 15 to Dec. 4. "Compulsory Work" laws passed by many state legislatures. Winter of 1917–18 coldest recorded. Railroads of U. S. came under government control, with Sec. of Treasury McAdoo, Director General. Cost of living doubled in ten-year period. U. S. shipbuilding increased by 2 millions of tons during year. W. G. McAdoo resigned as Sec. of Treasury, and was succeeded by Carter Glass. Pres. Wilson's "Fourteen Points" accepted by warring nations as basis for ending war. Nov. 11 Armistice signed. 50,000 U. S. soldiers lost during year.	Draft riots in Quebec marked by rioting and bloodshed. French-Canadians resisted the Draft Act. Canada sent 250,000 troops overseas. Women over 21 given federal vote.	A peaceful year in Mexico, judged by Mexican standards. Old dispute between Peru and Chile over Tacna-Arica boundary became acute.
1919	Capt. John Alcock and Lieut. A. W. Brown, English officers, cross the Atlantic Ocean by airplane, a non-stop flight of 1,960 miles. Woman suffrage amendment sent by Congress to the states for ratification. Airmail service established between New York and Cleveland. Largest acreage of wheat ever sown in U. S.	New Child Labor Act passed by Congress. Andrew Carnegie died. Government prosecuted I. W. W. and continued policy of deportation. Theodore Roosevelt died Jan. 6. Year marked by many strikes and lock-outs. U. S. government expenditures for year over 6 billions. King Albert of Belgium visited U. S. English Prince of Wales made first visit to U. S. Senate refused to ratify Versailles Treaty, embodying League of Nations. Relations between Pres. Wilson and Republican leaders of Congress reached breaking point. Demand that U. S. intervene in Mexico became insistent. Supreme Court upheld prohibition amendment. Pres. Wilson called a national industrial conference.	First step toward permanent nationalization of railroads when Grand Trunk was taken over by government. Canadian deaths in war announced as 96,680 out of 641,000 men. Sir Wilfred Laurier, noted Liberal leader and past Premier, died. Feeling between French and English Canadians due to lack of support of war on part of French heightened by return of soldiers from Europe.	Outbreaks against citizens of U. S. in Mexican oil fields. Carranza showed inability to preserve order. Civil war broke out again, with Gen. Villa leading the revolutionists.

Events in America in the Twentieth Century.

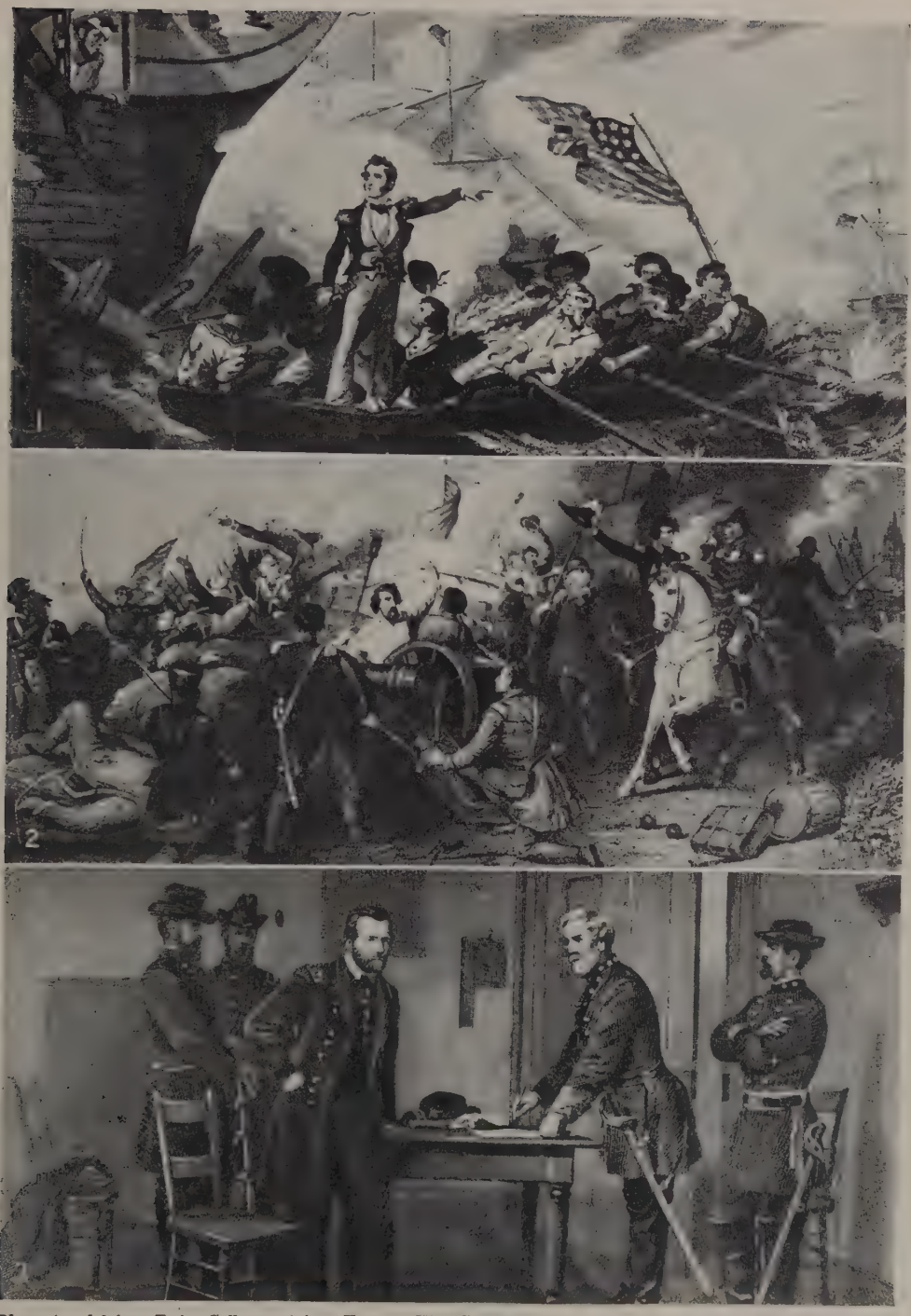
A. D.	Discoveries, Arts, Crafts	United States	Canada	Latin America
1920	Congress appropriated $1,000,000 for study of plant diseases. Greatest production of petroleum yet known. Canada developed additional hydro-electric power in Niagara region. New form of Bessemer process of making steel developed at Univ. of Wis. Dr. Shapely of Mt. Wilson announced a way of photographing very faint objects.	18th (prohibition) amendment became effective Jan. 16; and 19th (women suffrage) ratified by the states. Pres. Wilson awarded the Nobel Peace Prize of $40,000. U. S. captured first place in Olympic games held in Brussels, Belgium. Railroads of country restored to owners under guarantees of Esch-Cummins Act. Railroad Labor Board established. Pres. Wilson struck down with serious illness while on tour speaking for League of Nations. Sec. of State Lansing, dismissed by Pres. Wilson, succeeded by Bainbridge Colby. Warren G. Harding of Ohio elected Pres. of U. S. and Calvin College V. Pres. Jas. M. Cox and Franklin D. Roosevelt, Democrats. U. S. Supreme Court declared U. S. Steel Corporation not in violation of Sherman Act. U. S. refused to act as mandatory power for Armenia.	Sir Robert Borden, Conservative, resigned as prime minister. Western Canadian provinces went "dry." England granted Canada separate diplomatic representation to U. S. Large oil deposits discovered in western Canada. Grand Trunk Railway was nationalized.	Chile adopted program social legislation, includ regulation of liquor tra tax on wealth, minim wage, arbitration of la disputes. Revolt in Mex led by Generals Obregon Gonzales resulted in ov throw and assassination Carranza. Obregon beca president. United States fused recognition.
1921	Prof. A. A. Michelson of the Univ. of Chicago announced the diameter of the star Betelgeuse as 300 million miles. Madame Curie, discoverer of radium, visited the U. S. Airship *Santa Maria*, largest air craft, covered 18,000 miles, carried 2,000 safely, and was in air a total of 270 flying hours. Helium first used in airships by U. S. Navy. Science produced synthetic rubber, camphor, and pearls.	Pres. Harding called Limitation of Armaments Conference to meet in Washington. Special investigating commission declared against granting Philippines independence soon. 1920 census gave population of continental U. S. as 105,710,620. New Federal Budget system put into operation with Gen. Chas. Dawes as Director General. Stringent Immigration Law went into effect, designed to discourage immigration from southern and eastern Europe. The so-called Agricultural Bloc made its presence felt in both houses of Congress. Pres. Harding appointed Wm. H. Taft Chief Justice of U. S. Supreme Court to succeed Edwin D. White, who died May 19. U. S. granted Colombia $25,000,000 for loss of Panama.	Liberal party gained control of Parliament, with W. MacKenzie King as premier. Population, 8,788,500.	Dispute between Peru Chile over Tacna-Ar boundary reached cris United States continued withhold recognition fr Obregon. Mexico put hea tax on oil leases and oil ports, causing protest fr Americans interested in industry. Colombia accep $25,000,000 from the U. in reparation for loss Panama.
1922	Dr. F. G. Banting and associates at Toronto Univ. discovered successful treatment for diabetes. New serum known as insulin. Perkin medal given to Dr. Wm. Benton of Whiting, Ind., for new "cracking" process for gasoline. Neon first used for detecting spark discharge and strength in auto spark plugs.	U. S. Supreme Court declared invalid second Child Labor Law. Strike of coal miners involved over 500,000 men and lasted for five months. Congress passed Fordney-McCumber Tariff Act. Republicans lost seats in Congress in Nov. elections. Farm bloc held balance of power. 34 men killed in explosion of U. S. dirigible, Roma, Feb. 21. Senate ratified treaties and agreements resulting from Limitation of Arms Conference. Supreme Court held that labor unions may be sued for damages done during strikes.	Premier King won over National Progressives and strengthened the ministry. Policy of reducing navy to save expense was adopted. Canada and U. S. agreed to take naval vessels from Great Lakes.	Tacna-Arica dispute tween Peru and Chile sett by arbitration, Pres. Hard acting as arbiter. 900 kil in Chilean earthquake. C ombia engaged financial pert from U. S. Relati between U. S. and Mex involved.
1923	First non-stop flight from New York to San Diego. Scientists began more intensive campaign to eradicate rust and smut on wheat, white pine blister, chestnut blight, and potato wart. Completion of Shandaken tunnel, 18.1 miles, longest in the world, part of water supply system for New York City. Transcontinental airmail service established.	Pres. Harding died, Aug. 2. Calvin Coolidge became president. Agreement with Great Britain over Debt Refunding; total of $4,600,000,000 to be paid in 63 annual installments. Oklahoma legislature removed Gov. Walton. New York state legislature, by repealing Mullan-Gage Act, refused to help U. S. enforce prohibition. U. S. contributed over $10,000,000 for aid of Japanese earthquake sufferers. Last American troops leave Rhine. Many southern negroes attracted to North by industrial advantages. Immigration further restricted.	Government stimulation of immigration brought in an average of 16,000 a month. Liberal party under Premier King lost seats at by-elections. Government adherred to low-tariff policy despite strong effort of high staff. While military establishment put on peace basis.	Cuban Congress by reso tion warned U. S. to k hands off. U. S. gave for recognition to Obregon. pulsion of Papal Legate fr Mexico result of strong a clerical feeling. Mexico Venezuela severed diploma relations.
1924	U. S. Navy fliers encircle the globe. Photographs transmitted by telephone circuits. Since 1899 chemical products had risen from ¾ billion to 6 billion in value annually. Important experiments and discoveries as to atoms. New and effective agent found to fix hydrogen and nitrogen in form of ammonia.	U. S. Government sold arms to Obregon to help put down the de la Huerta rebellion. Oil scandal resulted in resignation of Sec. of Navy Denby, and Attorney General Dougherty. Failures among wheat-state banks assumed alarming proportions. Woodrow Wilson died Feb. 3. New Japanese exclusion policy disturbed relations with Japan. "Two-Percent" Immigration Law became effective. Congress passed a Bonus Bill. Amendment to U. S. Constitution giving Congress power to regulate child labor passed Congress. U. S. received first envoy from Irish Free State.	Emigration to U. S. alarmed Canadian government. Western provinces restored sale of liquor, under government supervision. Canada cooperated with the U. S. to stop liquor smuggling across border.	Great Britain broke off lations with Mexico beca of expulsion of British age General Calles, choice Obregon, elected President Mexico. Military coup d'e in Chile resulted in flight Pres. Alessandri.

Events in America in the Twentieth Century.

A. D.	Discoveries, Arts, Crafts	United States	Canada	Latin America
1925	Prof. R. A. Millikan discovered new rays far more powerful than X or gamma rays. Dick scarlet fever serum introduced.	Calvin Coolidge, President; Charles G. Dawes, Vice-President. Senator LaFollette of Wisconsin died, leaving Farm Bloc without a leader. Scopes "Evolution Trial" attracted world-wide attention. Italy and Belgium funded debts to U. S. Postal rates increased. Child Labor Amendment to the Constitution failed as an insufficient number of states ratified. Harlan F. Stone succeeded Joseph McKenna in U. S. Supreme Court.	General election resulted in defeat of Liberal party. Premier retained office with assistance of progressives. Serious coal strike in Nova Scotia. Prohibition losing out in Canada. United Church of Canada formed.	Isle of Pines treaty ratified with Cuba. Tacna-Arica commission headed by Gen. Pershing. Revolution in Ecuador. Boundary dispute between Brazil, Peru and Ecuador settled by U. S. arbitration.
1926	Richard E. Byrd of U. S. Navy flew from Spitzbergen to North Pole and back. Dr. W. D. Coolidge made a new cathode tube. Invention of sun compass and new sextant. Suspension bridge opened between Philadelphia and Camden.	Air Commerce Act passed by Congress. Treasury surplus allowed cut in income taxes. France negotiated on terms for war debt settlement. Florida's east coast hit by hurricane, killing 372 and causing a hundred million in damages. Senate voted adherence to World Court but with reservations which made it unacceptable. Sesquicentennial at Philadelphia.	MacKenzie King elected prime minister of Canada with Liberal party. Vincent Massey first minister plenipotentiary to United States. Gold standard restored.	Brazil gave notice of withdrawing from League of Nations. Foreign policy of U. S. made Monroe Doctrine unpopular. Church properties seized in Mexico.
1927	Col. Charles A. Lindbergh made first solo transatlantic flight. New aviation records of all types established. Michigan and Harvard established observatories in S. Africa, making 5 in all.	Disastrous floods occurred in Mississippi valley and Vermont. Seventieth Congress opened. Naval limitation conference between Japan, England and U. S. held at Geneva, failed. Federal radio commission appointed. McFadden banking bill permitted chain system of banking. Sacco and Vanzetti execution aroused storms of protest. Arbitration treaty signed with France.	Canada elected to League of Nations' council for three-year term. First U. S. minister to Canada appointed. Formal opening of Peace Bridge over Niagara river. Protests U. S. classifying Canadians who cross border daily to work as immigrants.	Pres. Calles of Mexico put down political uprisings. Dwight Morrow ambassador to Mexico. Mexico appropriated petroleum properties. Chile nitrate industry faces serious depression. Chile deported radicals.
1928	Rapid development in movietone and television. Koehl, Fitzmaurice and von Huenfeld flew from Berlin to Canada. Monument dedicated at Kitty Hawk, N. C., to commemorate Wright's airplane flight of Dec. 17, 1903.	Mississippi flood control bill passed. Lindbergh made good will flight to South American nations. U. S. led in Pan-American Congress at Havana. Charles E. Hughes elected to Court of International Justice. Herbert Hoover elected president. Hoover visited South America. Baumes Laws in New York sent 65 habitual criminals to prison for life. Farmer co-operatives sold two billions worth of produce. Coolidge signed bill for Boulder Dam.	Canada began an era of industrial expansion. Diplomatic relations established with France and Japan.	Obregon elected president of Mexico; assassinated; E. Portes Gil became president. Mexican oil laws removed. Pan-American conference at Havana. Chile, Peru resumed diplomatic relations, first since 1911.
1929	Rapid expansion of transatlantic communication. Rockefeller began restoration of Williamsburg, Va., to old colonial times. Edison's golden jubilee celebrated. Bridge from Detroit to Canada finished at cost of $20,000,000.	Herbert Hoover became President; Charles Curtis, Vice-President. Kellogg-Briand treaty for outlawing war signed and ratified by Senate. Extra session of Congress called for farm relief and tariff revision. Census and reapportionment bill passed. Federal farm board for relief of agriculture established. Wickersham head of committee established for law enforcement. U. S., through Young, Morgan and Lamont, took leading part in final settlement of World War reparations. Solution was termed "Young Plan." Oil conservation agitation began. Prison riots became serious.	Diplomatic protests to U. S. arose over sinking of Canadian rum runner *I'm Alone*, sunk by U. S. coast guard cutter *Dexter*.	Religious difficulties settled in Mexico. Gomez retired from dictatorship of Venezuela. Tacna-Arica dispute finally settled, Tacna going to Peru, Arica to Chile.
1930	Dr. Karl Landsteiner awarded 1930 Nobel prize in medicine. Sinclair Lewis awarded Nobel literary prize. Rockefeller established radio cultural center in New York City. Goodyear airship dock at Akron, O., largest in world.	Depression and drought throughout country made unemployment issue serious. Democrats won seats in both Senate and House. Messrs. Morrow, Adams, Stimson, Robinson, Reed, U. S delegates to London Naval Conference, England. U. S. and Japan signed pact. Italy and France refused. Hawley-Smoot Tariff Bill passed. Charles E. Hughes confirmed as Chief Justice; Owen D. Roberts as associate. French war debt settlement ratified. Death of ex-President Taft. 1930 census showed decided increase of urban over rural population. Population of continental U. S., 122,775,046.	Hanford MacNider envoy to Canada from U. S. Liberal party lost to Conservatives, MacKenzie King defeated by Richard B. Bennett, Prime Minister. Canadian emergency tariff bill passed.	Dr. Vargas, President of Brazil, ousting President Washington Luis. Coffee situation serious in Brazil. Irigoyen, Argentine dictator, ousted by revolution. General Jose Uriburn head. Cuba in throes of grievous depression. Col. Luis Sanchez Cerro, head of Peru, ousting dictator Leguia. Mexico changed agrarian policy. Revolution in Bolivia ousting Pres. Siles.
1931	Star-Spangled Banner officially the national anthem. Amelia Earhart made first transcontinental flight in autogiro. Wiley Post and Harold Gatty girdled earth in airplane making 13 stops in 8 days, 15 hours and 51 minutes. Nagata's comet discovered. Urey discovers heavy hydrogen.	Unemployed estimated at 5,300,000. Wickersham report on law enforcement. Congress passed Bonus Bill over President's veto. President vetoed Muscle Shoals Bill for government operation. 71st Congress ends in filibuster over oil question. U. S. faced nearly one billion deficit. Hoover electrified world with debt moratorium. Martial Law in mid-continental oil fields, prohibited production. Loans by U. S. and France avert financial crisis in England. Hoover announced plan to aid home building. Premier Laval of France visits U. S. French delay spoils debt moratorium plan. Record wheat crop forces price to lowest in history. Democrats win Congressional majority.	Ponsonby, 9th Earl of Bessborough, Governor General. Canada raised tariff. First shipment of grain from Churchill, on Hudson Bay, established new short route to Europe. Herridge minister to U. S.	Revolution in Panama. Prince of Wales and Prince George open exposition at Buenos Aires. Managua, capital of Nicaragua, destroyed. Gomez, president of Venezuela. Mutiny of Chilean navy subdued. Brazil exchanged coffee for wheat with Farm Board. Machado ousted in Cuba. Bolivia, Peru, Argentina, Brazil, Ecuador, Paraguay experience revolution from May 28, 1930 to Nov. 9, 1931.

Events in America in the Twentieth Century.

A. D.	Discoveries, Arts, Crafts	United States	Canada	Latin America
1932	Dr. Beebe uses deep sea diving bell to study marine life. More synthetic products. Quicker method for diagnosing cancer.	Congress approves Hoover moratorium. Creates R. F. C. Glass-Stegall Banking Act passed. Mellon, Ambassador to England. Cardozo takes Holmes' seat in Supreme Court. Lindbergh baby kidnapped. Labor injunction bill (Yellow Dog) outlawed. B. E. F. march on Congress. Hoover recommends sales tax, direct relief, public works; signs economy bill, unemployment relief bill. Insull failure. Growing unrest and riots among farmers. Democrats sweep election—Roosevelt elected. Hoover invites Roosevelt to debt conference, disagree. Fifty-two war debt nations default.	Mobs in Newfoundland; liberals defeated; Britain and Canada help pay debt interest, while experts refinance the principal. Imperial conference at Ottawa creates closer ties with entire Empire.	Justo new Argentina p dent. Unrest in Chile Brazil. War of Gran Ch continues. Mexican relig trouble not yet settled.
1933	Persepolis uncovered by Herzfeld. Century of Progress at Chicago. Wiley Post makes solo world flight record of 7 days, 18 hr., 49 min. Dr. Ditmars brings bushmaster and live vampire to New York City Zoo. Development of streamline trains.	Death of Calvin Coolidge. Attempt on Roosevelt's life by Zangara. Roosevelt inaugurated. National Bank Holiday. California earthquake. 73rd Congress in special session. Economy bill passing fiscal power from Congress to executive. Creation of CCC, TVA, HOLC, SEC. U. S. goes off gold. All gold called in. Gold contract abolished. Agricultural Adjustment Act (AAA) and National Industrial Recovery Act with Blue Eagle symbol. Processing taxes on foodstuffs. London Economy Conference fails on Roosevelt commodity-dollar stand. Credit inflation appears. CWA and PWA established.	Recovery continues in most provinces with money scarce. Loan floated in London, not New York as in last 30 years. New Deal proposed.	Riots break out in Ch Alesandri returns to power Chile. Peru and Colombia agree on Leticia. Riots c tinue in Cuba. Cardenas is president of Mexico. Presid Cerro of Peru killed. San M tin, new president of Cuba.
1934	Dr. Kramer develops infantile paralysis serum. Dr. Johnson develops amniatic fluid for peritonitis. Dr. Urey, Nobel chemistry prize for heavy hydrogen, D20. Grant Wood creates "Purely American Type of Art." Drs. Whipple, Minot, Murphy, Noble prize for pernicious anemia.	73rd Congress in session. Government launches silver program. President signs Gold Reserve Act of 1934, devaluating dollar to $.5906 with $2,800,000,000 profit. Cancellation of airmail contracts. Creation of subsistence homesteads. FERA in action. Johnson bill passed. Foreign nations defaulting cannot sell securities in U. S. Passage of Bankhead Cotton Bill. Severe strikes. Export-Import Bank established. The Great Drought with dust storms. Rise of Sinclair, Townsend, Coughlin, Long plans. Congress overrides veto of pension bill. Democrats win elections. NRA reorganized.	Dionne quintuplets born at Calendar, Ontario, the 31st set recorded in history. Liberals win some elections. Some call for a new Dominion constitution.	New constitution in Bra Gomez again president Venezuela. Lopez new p dent of Colombia; Soranzo Bolivia; Mendieta, of Cu Gran Chaco war continues.
1935	Stone tools in Alaska said to indicate early men come from Asia. Dr. A. E. Douglas studies past weather through his improved tree-ring calendar. Vitamin B explained.	Opening of 74th Congress. Supreme Court declares oil code unconstitutional, sustains administration on gold devaluation. Senate defeats Roosevelt on World Court. Congress passes 4.88 billion dollar Relief Bill. Rise of the Share the Wealth Movement. NRA declared unconstitutional by unanimous court decision. Guffey Coal Bill passed. Huey Long assassinated. Deficit is three and one-half billion dollars.	Parliament provides for relief, central bank, new excises, a new marketing law, and investigates price fixing. Liberals victorious in Ontario and Saskatchewan.	Religious troubles continu Mexico; also disputes with c siders. Arbitration ends long war in the Gran Chaco tween Bolivia and Paragu President Vargas of Br visits Argentina.
1936	Serums perfected for control of influenza, pneumonia and peritonitis. Harvard professor says American Indians resemble men of Tibet. European starling, now considered a pest, said to destroy Japanese beetles. Massachusetts Institute finds possible long-distance transmission of electricity by rods in tubes.	Supreme Court declares AAA unconstitutional. Security Bill passed. Landon and Knox nominated on the Republican ticket; Roosevelt and Garner on Democratic ticket. Severe drought in agriculture states. Federal job insurance begins in January. Guffey Coal Act, Railroad Pensions Act and N. Y. Minimum Wages Act invalidated during year. Bonus bill passed over veto. U. S., France and Great Britain sign new naval limitation pact and agree to stabilize money. Democrats carry all states except Maine and Vermont. Roosevelt and Garner re-elected.	President Roosevelt visits Canada. Trade act passed for dealing with U. S. Liberals suffer first defeat in Quebec since 1900. Supreme Court declares Marketing Act and compulsory Social Security Act unconstitutional; ties in vote on minimum hours, wages and the 48-hour week.	Calles exiled from Mex Gomez of Venezuela d Riots in Caracas against p censorship. Bolivian offi take over government. Pr dent Roosevelt receives g ovation in South America.
1937	New machine picks only ripe cotton bolls. First direct radio-telephone messages to France and China from U. S.	Roosevelt begins second term. First to take office in January. Governmental reorganization plan defeated. Buenos Aires Conference. Greatest floods in Ohio Valley history. President proposes Supreme Court enlargement plan. Sit-down strikes in Michigan. Supreme Court validates Social Security Act and Wagner Labor Act. Court construed as now liberal in tendencies. C. I. O. makes heavy demands on industry.	Drouth cuts down crops, but industries improve in towns. Royal commission seeks to reduce taxes. Unemployment insurance, limit of work hours and other acts invalid.	"Good Neighbor" confere in Buenos Aires. Leon Trots exile from Russia, finds harbor in Mexico. Oil confiscation still a problem Mexico. Brazil suffers f internal unrest.
1938	New container for radium made from alloy. Dr. A. H. Compton thinks cosmic rays from Milky Way, not beyond.	Business recession throughout year. Supreme Court allows government loans to municipal electric plants. Stanley Reed replaces Sutherland on Supreme bench. United Mine Workers leave A. F. L. Richard Whitney bankruptcy. Three billion dollar Relief-Recovery Bill passed. Tom Mooney freed. Unemployment still above 10,000,000. Supreme Court says government must give fair hearing in quasi-judicial proceedings. Kansas City Stockyards case. $80,000,000 loan to China. Anti-New Dealers make important gains in Congress.	International commission thinks ship canal from Montreal to Hudson River too costly. Sit down strikes outlawed in Canada. Prosperity increases.	Mexico nationalizes pe leum industry. Bolivia Paraguay, after 100 years of puting, sign treaty as to G Chaco. Effect unfavorable Bolivia where riots oc Ecuador expels industrial Je Conference of American st at Lima, Peru.



Photos 1 and 2 from Ewing Galloway; 3 from Keystone View Company.

EVENTS IN AMERICAN HISTORY—I

1 Perry at Battle of Lake Erie, from painting by W. H. Powell.
2 Jackson at Battle of New Orleans.
3 General Lee surrendering to General U. S. Grant at Appomattox Court House, Virginia.

Photos 1 and 2 from Keystone View Company; 3 from Ewing Galloway; 4 from Brown Brothers.

EVENTS IN AMERICAN HISTORY—II

1 Engagement between Serapis and Bon Homme Richard.
2 Battle of Lexington, The Minute Men.
3 Signing the Declaration of Independence (from painting by Trumbull).

Events in America in the Twentieth Century.

D.	Discoveries, Arts, Crafts	United States	Canada	Latin America
9	Textiles made from skim milk, glass and other substances. Progress in synthetic rubber. New lucite transmits electricity without wires. San Francisco-Golden Gate Exposition and New York World's Fair open.	Congress develops opposition. Approves cutting WPA lists, votes to expand defense forces, allows President to reorganize federal agencies, reduces corporation taxes, defeats Townsend plan. Political activity of employees curtailed by Hatch Bill. Refuses to fortify Guam. Budget reduced. Sitdown strike outlawed by Court.	George VI and Queen Elizabeth first monarchs to visit Canada. Continue tour into U. S. Dionne quints taken to Toronto to see the British monarchs. Canada makes agreement to support Great Britain against Germany.	Brazil obtains U. S. loan of 75 millions. New Popular Front government in Chile. Earthquakes kill 20,000 in Chile German Busch dictator in Bolivia. U. S. increases payments to Panama because of dollar devaluation.
0	Several new explosives announced, but hard to control. Further discoveries in chemical elements, especially as to power of uranium.	Myron Taylor ambassador to Vatican. Death of Senator Borah. Roosevelt pleads for peace in Europe. Congress repeals the Neutrality Act. Cash and carry plan adopted. Asst. Sec. of State Wells visits European capitals for President. Five billion voted for defense. U. S. joins Latin Republics in formation of economic cartel. Republicans Stimson and Knox become Sec. of War and Navy respectively. Willkie and McNary nominated by Republicans; Roosevelt and Wallace by Democrats. Aid to Britain becomes more open. 1940 campaign one of most intense in U. S. History. Roosevelt and Wallace elected. Two term tradition broken. Democrats win 38 states. Roosevelt trades 50 destroyers to England for air and naval bases on British land—Newfoundland, Bermuda, St. Lucia, Antigua, Trinidad. Trucks, munitions, tanks sent to Canada. National Registration Act, Sept. 16, 1940, affects all men from 21 to 36. National guard assigned active military duty. Philip Murray succeeds John L. Lewis as leader of the CIO. A. F. of L. says the New Deal has not solved economic problems. U. S. secures an agreement from Mexico to pay for oil wells.	McNaughton's Division to British Isles. Death of Lord Tweedsmuir. Mackenzie King wins election of March 26. Canada becomes air training center of British Empire, with air fields from coast to coast. Earl of Athlone new Governor-General. Canadian industry at full speed, especially in ship building and aircraft manufacturing. Receives tanks, planes from U. S. for training purposes. Agrees with U. S. on wheat production. Quebec gives women vote in province elections. Montreal sets up new form of government. R. B. Havison new opposition leader. All over 16 required to register for military service. Canada floats two large war loans at home. Factory production greatly increased.	Camacho defeats Almazon in Mexican election. Brazil receives loans from U. S. Export-Import Bank for steel plant. Severe earthquake in Peru. British ships drive German *Graf Spee* to port. Crew scuttles it. Uruguay and Argentina have trouble with interned Germans from *Graf Spee*. Brazil supports Chile in dispute with Spain over refugees. Pres. Vargas of Brazil advocates American solidarity; makes trade treaty with Argentina. Coffee Board formed to ration shipments from 14 nations,—50% from Brazil. Ecuador eliminates fifth columnists. Paraguay has new constitution. Uruguay opposes U. S. naval base. Pres. Ortiz of Argentina dies. Conference at Havana in July draws Americas together. Chile torn by party struggles.
1	Alaska unearths ancient town, 2,000 years old. Element thulium found in sun's atmosphere. Mushroom enzyme reduces high blood pressure. New electron microscope magnifies 100,000 times. Anti-rust agent found for light alloys. Influenza vaccine developed. Tannic acid relieves effects of poison ivy. National art gallery opened in Washington.	Lend-Lease Bill passed, giving huge supplies to Democratic nations. Closes certain Italian consulates. Seizes German and Italian ships in ports. Strikes become numerous and serious. Places Greenland within scope of Monroe Doctrine. May 1 extends patrol of American shipping. Radio frequencies adjusted. Supreme Court upholds 1938 wage-hour law. Employment up to 37 millions, but 4 millions still idle. President thinks war in Pacific unlikely. Enrollment drop of 9.1% in 669 U. S. colleges. Our citizens hold 58 billions of tax-exempt securities. Nearly 400,000 bituminous coal miners strike. Canada and U. S. plan to build a St. Lawrence-Great Lakes waterway. Supreme Court annuls California law against migrant workers. U. S. helps stabilize Mexican currency.	Government control of plants ends strikes. Coalition cabinets in Manitoba and British Columbia. Liberals continue in Nova Scotia. Canada provides unemployment insurance. Premier Mackenzie King visits Washington three times. The Duke of Kent and later Prime Minister Churchill visit Canada. Free French seize the islands of St. Pierre and Miquelon off eastern shore, but complications are avoided.	Closer cooperation with U. S. Mexico and U. S. joint air bases. Most countries take over German and Italian ships in ports. Panama has new constitution. Brazil halts yellow fever. Pres. Aguiree of Chile dies; socialists hold power in Congress. Party strife in Colombia abates. U. S. troops protect Surinam for the Netherlands. Argentine President and Congress at odds; radical party holds up actions. Brazil has hottest summer in 26 years. German agents busy in some areas.
2	First cable telephone coast to coast; from Omaha to Sacramento underground. Injection of blood plasma a success. Ultra-violet rays help locate ores in ground. Safe morphine substitute found. New vitamin discoveries, including molecule plan of biotin, valuable B vitamin.	War Labor Board set up. Senate Truman Committee says defense program lags. Liner Normandie, being reconditioned, burns and sinks at N. Y. pier. C. C. C. projects abandoned. Congress passes and then repeals bill to grant members pensions. New lend-lease agreement with Britain postpones payments. Soldiers pay raised to $50. Gasoline rationed in east; in west in November. Procedure code written for $1.00 a year men in Washington. Budget of 56 billion dollars submitted. House votes 209 billion in three years. Sugar ration in June; coffee in November.. Six Nazi saboteurs executed. Anti-inflation bill enacted. Willkie makes round-the-world flight.	Voters approve selective service. Premier King urges economic freedom. Relief ships sent to Greece. Overseas forces doubled in year. Unshackles Nazis in prison camps. Further economic plans made with U. S. Japan shells Vancouver Island telegraph station. Joins with other nations in pool of wheat. Alcan highway opened, Dawson Creek, Canada, to Fairbanks, Alaska, 1671 miles.	Brazil breaks with Axis after protesting loss of her ships. At last 21 American nations unite for common defense. Chile declares neutrality. Russia sends envoy to Mexico. Latter agrees to shelter 5,000 Poles. U. S. agrees to take Brazilian rubber; sends workers there. Uruguay adjourns Congress and the elections. Costa Rica continues work on the inter-American highway. Cuba executes a Nazi spy.
3		Vice-president Wallace visits South America. Ruml tax plan under discussion. Continued expansion of all services. Broadening of all rationing. Coal strike threatened. U. S. 2nd Army takes Bizerte.	Canadian navy being enlarged.	Chile breaks with Axis. Argentina remains neutral. Brazil aids in submarine campaign Roosevelt visits Camacho at Monterey.

DICTATORSHIP

Dictatorship, like Democracy, is no new way of governing men. Nor has the word always carried the meaning we now associate with it. "Good tyrant" was once not necessarily a contradiction in terms. In Aristotle's analysis, "Monarchy" is the rule of one man who governs in the interest of all. "Tyranny" is the perversion of this rule, he said. But today any one-man government inevitably is considered tyrannical.

In ancient times the Dictator was a recognized official legally appointed to rule during a crisis. From the sixth to the third century B. C. Roman dictatorship served at irregular intervals as emergency in domestic and foreign affairs required. All such dictatorships, continuing for a stated legal term, were ordinarily short lived. The dictators themselves were not irresponsible except within the terms of the appointment. The rule of dictators at Sicyon from 676 to 560 B. C. was more prolonged than in any other Greek state, while the Roman dictatorships of Sulla and Caesar are, for length of tenure, in a class by themselves. Sulla came into office with a mandate to reconstitute the commonwealth. His tenure was unlimited, his power absolute. No dictatorship, before or since, has quite matched the terrible use he made of his power. Under his regime nearly 5000 persons were massacred in cold blood. Caesar, on the other hand, of all dictators, old or new, was perhaps the most powerful, the most tolerant and the most merciful. Proclaimed dictator in 49 B. C. by the Roman populace, he had served only eleven days when he laid down his office for that of Consul. He was renominated dictator more than once, eventually for life, but he seemed never to have forgotten that the source of his power was in the people.

In our readiness to denounce present-day abuses, we tend to overlook the fact that dictatorships have been a stage, an essential device, in the development of nations. States, like individuals, do not emerge full-grown. Thus the history of fifteenth century England, more specifically the so-called War of the Roses, is the story of a nation "not yet ready for the efficient use of the liberties it had won." And yet, as a nation-state, England was already centuries old. Also, precocious England, though far ahead of any other European nation in national unity, in political and personal liberty, reverted from time to time to dictatorship. All constitutional limitations on the exercise of their dictatorial power were persistently violated. However, after the defeat of the Spanish Armada, Parliament successfully reasserted claim to power never altogether abandoned or ignored.

The essence of dictatorship, old style, is that it must not be prolonged beyond the period of the emergency which called it into being. The Stuart kings, among others, floundered on this rock. For, unlike their Tudor predecessors, they never understood the conditions on which absolute power had been conferred. James II, unlike Charles II, learned nothing from the intervening Cromwellian regime. A second reaction toward dictatorship was followed by a second revolution—that of 1688—which sealed indefinitely the fate of monarchial dictatorship in England. The history of France exhibits even more strikingly this fluctuation between constitutional and dictatorial rule, foreshadowing in the person of Napoleon the masterful strategy of present-day dictators.

Herein one may note an important distinction between dictatorship and despotism, between dictatorships of old and dictatorships today: the one served rather to train the people for self-government, while the other obviously seems designed to ensure the continuance of arbitrary rule.

England's long apprenticeship in self-government, her centuries of struggle to achieve national unity, her periodic reversions to dictatorship, should hearten those who fear that all mankind is now in danger of coming under the yoke of modern dictators. It should be recalled that as nation-states Italy and Germany are about seventy-five years old, while Turkey and Russia have hardly reached the age of a voter. These facts, quite apart from specific situations and causes, may explain, in part at least, the surge toward dictatorship which first manifested itself, October 1917, in Russia. After a brief flirtation with constitutionalism, the government fell into the hands of a revolutionary oligarchy and the limited freedom of the Czarist regime gave way to communist dictatorship. Only slowly did men enamored of the 18th-19th century democratic ideal realize that an important political experiment was in progress—a new kind of democracy Stalin proclaimed in announcing his Constitution of 1936—"dictatorship of the proletariat."

The year 1922 witnessed seizure of absolute power in Italy and our generation saw the emergence of dictatorship bearing the fancy label "Fascism." Again those regarding popular government as pre-destined were incredulous. They could not accept the view that any form of dictatorial rule expressly repudiating democracy and individual liberty could long endure. By 1933, however, both Stalin and Mussolini became thoroughly established and in that year the latter published his political and social doctrine—a dictatorial creed as challenging as Marxian communism. In 1933 also Adolf Hitler took over the government of Germany on the invitation of President von Hindenberg himself.

Meanwhile, dictatorships had arisen in Spain, Turkey, Poland, Japan and elsewhere. As these were chiefly military in character, they were not infrequently explained on the score of political immaturity, or as reflecting conditions of instability present in those countries. But Marxian communism as applied in Russia. National Socialism in Germany, Fascism in Italy could not be so easily explained away. All these new political creeds not only denied individual freedom, repudiated democracy, but made a virtue of doing so.

Contemporary dictatorships, especially Fascism, have been regarded as political by-products of the first world war, as something peculiar to the psychology of the country over which they have triumphed. Such explanations appear increasingly superficial. Post-war conditions did, however, undoubtedly aid Fascist success, viz: Acute economic crises, especially among ex-soldiers and wage earners; a stunned and embittered nationalistic humiliation; paralysis of parliamentarianism, inability of existing governments either to formulate or to execute a policy. The weakness of post-war democracies is measured by the fact that both Mussolini and Hitler were helped to accomplish revolution and dictatorship by the very democratic institutions they destroyed.

In general, modern dictatorships are characterized by the fact that they are designed and are proclaimed to be not merely temporary contrivances, serving to tide over an emergency. Offering as they do a well rounded, complete scheme of life, they are intended to endure into the incalculable future and their peoples are taught to accept this. Totalitarianism is the watch-word: "Everything within the state, nothing outside the state, nothing against the state." All things, human and material, are embraced within the political, subordinated to or controlled by the state,—industry, labor, agriculture, radio, sports, theatre, school and home. Whatever the theoretical differences between various dictatorial brands—Fascism, National Socialism, Communism, etc.—all are totalitarian in practice. That is, they all institute rule by one party to the exclusion of all others. Far from being one among many factional groupings, seeking office and power, the party is declared by law to be the government, the state. Towering above all, "to see, to oversee, and foresee everything" is the leader, Il Duce —der Fuehrer.

There are, of course, certain advantages under dictatorial rule as practiced today, where everyone takes orders from above, where public opinion is not permitted, where even the expenditure of the people's money—as in Germany—is a state secret. Under dictatorship, a nation's life can be and is planned, ordered at will; the people's standard of living can be and is lowered to meet the requirements of military aggression, and nobody may protest. Those who do so run the risk of being purged or locked up without warrant of arrest or trial.

Diplomacy and armament likewise move unhindered when they do not have to meet the requirements of democracy. No treaty, no principle of international law or morality sets a barrier against the dictator's will. He can turn his country into munitions factories without regard for the rights either of capital or of labor. Even in time of so-called peace (which for Mussolini is but "a pause between two wars") strikes and lock-outs are not to be tolerated.

Present-day dictatorships, like those of old, are born of crises. They can endure only as they are driven along by the dynamic, revolutionary spirit that produced them. But unlike their ancient prototypes, they cannot turn back or stand still or come at last to peace and stability. To exist for any period they must at all times keep the public mind stirred with the hope of a greater country, greater power, or some particular benefits for the people they dominate. In short, they must forever agitate, conspire, wage war.

DICTIONARY OF HISTORY

A. B. C. POWERS. Name given to Argentina, Brazil, and Chile in 1914 when President Wilson called upon them to arbitrate certain differences between the United States and Mexico. Representatives of these three countries met at Niagara Falls, Canada, but no tangible results followed, except that the nations themselves agreed on a treaty of arbitration for their own disputes. Already Brazil and Chile had signed treaties in 1899, Argentina and Chile in 1902, and Brazil and Chile in 1905. By 1909 the A. B. C. Powers were recognized as having common interests in maintaining the stability of South America.

ABDICATIONS, IMPORTANT.

Sulla, Roman dictator, voluntary	B. C. 79
Diocletian and Maximian, Roman emperors	305
Stephen II, of Hungary, became a monk	1131
Richard II, of England, forced to abdicate	1399
Charles V, of Spain, in favor of his son	1556
Mary, Queen of Scots, forced	1567
Charles I, of England, deposed by Commonwealth	1649
Christina, of Sweden, for life of study	1654
John Casimir, of Poland, became a monk	1668
James II, of England, fled from country	1688
Poniatowski, of Poland, forced by other nations	1795
Francis II, of Holy Roman Empire, resigned title	1806
Charles IV, of Spain, succeeded by his son	1808
Gustavus IV, of Sweden, forced	1809
Louis Buonaparte, of Holland	1810
Victor Emmanual I, of Sardinia	1821
Pedro IV, of Portugal, went to Brazil	1826
Charles X, of France	1830
Pedro I, of Brazil (IV of Portugal)	1831
William I, of Holland, in favor of his son	1840
Louis Philippe, of France, compelled	1848
Ferdinand, of Austria, by revolution	1848
Isabella II, of Spain	1868
Napoleon III, of France	1870
Alexander of Bulgaria	1886
Milan I, of Serbia, after quarrel with queen	1889
Pedro II, of Brazil, forced	1889
Abdul Hamid II, of Turkey, forced	1909
Emperor of Korea, deposed by Japan	1910
Manoel II, of Portugal, dethroned	1910
Nicholas II, of Russia	1917
William II, of Germany	1918
Ferdinand I, of Bulgaria	1918
Charles I, of Austria-Hungary	1918
Constantine, of Greece	1922
George II, of Greece	1923
(restored by plebiscite)	1935
Hussein, of the Hedjaz	1924
Prajodipok, of Siam	1935
Haile Selassie, of Ethiopia	1936
Edward VIII, of Great Britain	1936

ABOLITIONISTS. As early as 1700 the Quakers of Pennsylvania sought to exclude from their membership all who held slaves. In 1815 Benjamin Lundy, a Quaker, formed the first anti-slavery society in the United States, and in 1819 began the first abolitionist newspaper. In 1824 he was joined at Baltimore by William Lloyd Garrison of Bennington, Vermont; and in 1829 Garrison began to advocate immediate emancipation of all slaves. Lundy favored more gradual measures. Garrison, therefore, set up his *Liberator* at Boston, Jan. 1, 1831, the official organ of the movement until 1865. Societies against slavery multiplied rapidly from this time. In 1840, however, another division of opinion occurred. One group led by Garrison believed in moral and voluntary agitation, not in state and political action: the other group insisted upon political measures at once. Garrison for years was the leader of the moderate or conservative abolitionists. Wendell Phillips, the orator of the movement, spoke with calm but with deadly conviction. Samuel May led the Unitarians. Lucretia Mott organized many women's societies against slavery. Gerritt Smith led in assisting slaves to escape from servitude to Canada, or into friendly free territory in the North.

ABSENTEEISM. See Ireland, Land Question in.

ABUKIR. See Battle of the Nile.

ACADEMIES. Today every modern nation has its academy of science, literature, or political affairs. Such a body is made up of various scholars and specialists in different fields of knowledge or investigation. Some academies have been considered as the final arbiters in matters of taste, culture, or even of fact. Perhaps the most influential of all learned societies is the French Academy, which has at times dictated customs in writing and manners, and even the grammar and spelling of the French. It was founded in 1630, and, with five other academies, makes up the Institute of France. The Royal Society of Great Britain, dating from 1616, has had a powerful influence on the development of science and invention. Likewise, the Prussian Academy, founded in 1700, has done much to foster culture, science, art, and learning among the Germans. Some societies that foster arts have been the Milan Academy of Architecture, founded about 1380; the British Royal Academy of Arts, 1768; and the celebrated Madrid Academy founded by Philip V. The chief societies of this nature in the United States are the American Academy of Arts and Letters, a union of several groups in 1904; the American Institute of Architects, founded in 1857; and the American Academy of Philadelphia, the influence of which on scholarship and investigation has been widespread.

ACADIA. Name given by early settlers to part of Nova Scotia, which became known later as the home of French colonists who refused to adopt English ways, or submit to the government. Henry IV, in his charter to Samuel Champlain to explore the region of the St. Lawrence basin, intended that the French should claim everything down the river into the lands beyond, the later maritime provinces of "lower" Canada and Nova Scotia. All this territory was the battle ground for many years between England and France. The Acadian people went to one or the other, as victory should determine. When the British finally won this territory, they gave the Acadians in 1755 their choice of whether they would become English subjects and retain their land, or, refusing to become loyal, they should be sent to some other districts. Refusing to do either, the stubborn Acadians were at last distributed among other English colonies, some of the 3,000 being sent as far south as Georgia and Louisiana, though most were settled in the middle Atlantic states. Longfellow's *Evangeline*, though not historically correct in some ways, traces the wanderings of these Acadians. In some of his Louisiana stories, G. W. Cable writes of the Acadians in their new Louisiana homes.

ACHAEANS. Inhabitants of several cities in the northeast of the Peloponnese, said to be allied to the Dorians and Ionians, and possibly other early tribes of Greece. The Achaeans come into history about 1300 B. C. Recent excavations, notably in 1922, show that they belong to a culture much older than the Grecian. From a Hittite text lately deciphered, we learn that they were prominent in Asia Minor, and other parts of the Near East, in the 16th century before our era. Before the death of Alexander the Great, the cities of Achaia had a powerful league. This was broken up about 300 B. C., formed again sixty years later in the struggle against the power of Macedon, but again broken up by the Roman legions in 158 B. C., who carried off to Rome as hostages a thousand of the Achaeans. The Achaeans again revolted, but were finally brought under the yoke in 146 B. C. This powerful alliance of northern cities of Greece often threatened the supremacy of Athens and Sparta in the Hellenic Peninsula.

ACROPOLIS. Many ancient towns of Greece and Asia Minor had a citadel on their summits, and this was called the acropolis, meaning in Greek a "high place." The Acropolis at Athens was the glory of ancient Greece and the despair of modern artists who would imitate the best in the buildings of the world. Today on the Acropolis stands, even in its ruined splendor, the Parthenon, greatest of the works of the classic age of Phidias, the Greek sculptor, and called by many the noblest building known to man. Some of the other great architectural triumphs of the ancient Acropolis were the many statues and temples, now most of them entirely gone or badly battered by the rough hands of time, the great open-air theatre

of Dionysus, and a statue of Athena some 30 feet tall. The Acropolis suffered in the middle ages from military operations. As late as 1687 an explosion of gunpowder in the Parthenon caused great havoc in the walls. Since the Turks were driven out in 1835, the Greeks have done much to preserve and restore the ancient citadel and its artistic monuments.

ACTIUM. Off the promontory and town known as Actium, western Greece, Octavian (who later became the emperor Augustus) defeated a force of Antonius, known to modern times as Mark Antony, on Sept. 2, 31 B. C. Octavian had about 100,000 men and Antony 80,000, and each side had 12,000 cavalry. Antony had about 220 large and well-fitted ships, while Octavian collected 260 smaller, but much more agile craft. Cleopatra of Egypt had allied herself with Antony, furnishing about 96 ships for his navy. She is said to have persuaded him to risk the final issue by a naval, rather than a land battle. During the fight, she became alarmed, fled toward Egypt with her own ships, and Antony followed her. Thus Octavian, as an outcome of this campaign, became master of the Roman world. See *Mark Antony* in Biography.

ADMIRALTY COURTS. By 1360 in England the deputy of an admiral often tried cases arising out of piracy, prizes at sea, or other maritime affairs. Conflict arose with civil courts on matters of jurisdiction. In 1540 laws governing delays in sailing were set up; in 1834 the punishment for crimes at sea were determined; and, in 1840 and 1841, the scope of the courts was enlarged. Practice in admiralty courts was quite distinct from cases arising on land. At last in 1875 admiralty courts were combined with others in the new British High Court of Justice. Prior to 1925, such cases in the United States were handled by the Supreme Court, and afterward in appropriate district courts.

AEDILES. These Roman officials were first chosen in 494 B. C. For over 100 years they were taken from the ranks of the plebeians. Later patricians were allowed to serve, and in 44 B. C. Julius Caesar appointed two such in addition to supervise the corn supply. The main functions of the aediles were to see that the city was well kept; that provisions were plentiful and of good quality; and that the public games were properly conducted.

AFGHANISTAN. This turbulent district in central Asia has enjoyed something like independence since 1709, after being for generations a part of Persia or of the great Mogul empire at Delhi. After Nadir Shah died in 1747, Ahmed Shah Durani conquered the various provinces and in 1861 defeated the supposed invincible Mahrattas of west and central India. His son Timur, after ruling 30 years, left 30 sons and no end of trouble for the Afghans. A British army from India entered Kabul in 1839, but in 1841 the British garrison was besieged there for 41 days, and only one man escaped alive of the 16,000 who set out on the long trek to India. Another British force returned the next year and severely punished the Afghans, leaving them again in internal disorder and intrigue. During the next 40 years Great Britain and Russia agreed on the boundaries between their territory and Afghanistan. The king or emeer of that country smoothed these in 1880. Habibullah Khan, who reigned from 1901 to 1919, favored foreign influences; his successor was deposed in 1929 for following European customs. His brother died after ruling only three days, and a brigand assumed the throne, but Nadir Khan, uncle of the deposed emeer, killed the usurper in Oct. 1929. Nadir Khan himself was killed in 1933, and his son succeeded to the throne.

AFRICAN COLONIES. Excepting Liberia and one or two other small native districts, all of Africa in 1900 was dominated by white races after the fall of the government of Ethiopia. Great Britain and France control almost equal parts, with Italy, Spain, Belgium, and Portugal coming next in order as to size of holdings. Egypt, though nominally independent, is under protection of Great Britain. All this partitioning of Africa has come since 1844 when the Berlin Conference recognized Belgium as dominant in the Congo Free State. In 1890 Great Britain, France, and Portugal agreed as to their spheres of influence in Africa, except for Morocco, the Nile valley, and a few other portions. By 1914 France was admitted as dominant in Morocco, and England in the upper Nile valley. After the Boer War in South Africa, Orange Free State and the Transvaal fell to England; Tripoli to the French; and Congo Free State to Belgium. Settlements following the World War gave France mandates over the Kamerun and Togoland; both parts of the former German colonies to Great Britain, with a portion to Belgium and Portugal. Among the native populations, the sentiment for independence grew after 1910, and in 1919, 1921, and 1923, large groups of Negroes met in conferences to discuss the return of more advantages in Africa to the native peoples.

AFRICAN EXPLORATIONS. Today Africa is still the least known of the continents; until 1770 it was literally the "dark continent" to modern nations. Earliest exploration known was by members of the Theban kingdom in the 11th dynasty, about 2100 B. C. Islam gained great favor in north Africa before 800, and nomads came in the 11th century. Save for two or three brief colonies on the coasts, little was done to explore Africa until Vasco de Gama circled the Cape of Good Hope in 1498. James Bruce found the Abai sources of the Nile in 1770 and visited Ethiopia, and men like Lucas Lander and Houghton followed him before the time of Dr. Heinrich Barth, a German under English command, who did remarkable exploring after 1845. Meanwhile David Livingstone had penetrated from Bechuanaland to Lake Ngami in 1841–49; to the Zambesi in 1851; to Lake Nyassa by 1864; and to Bangweolo in 1866. At Luabala Cataract, in 1871 he was rescued by Sir Henry M. Stanley, but he returned and died at Bangweolo in 1873. Stanley himself made several discoveries, as did Burton and Speke in Somaliland. Sweinfurth of Russia in the valley of the White Nile and the Belgians in the Congo after 1876. Stanley, searching for remains of the expedition of "Chinese" Gordon, in 1889 discovered the pygmy race in the Congo. Grogan and Sharp first crossed Africa from south to north in 1899. Since then explorations have been numerous and fruitful.

AFRIKANDER BUND. See *Jameson's Raid*.

AGINCOURT. Here at a small village known today as Azincourt—in northern France, Henry V of England was opposed by a French army of 50,000. The English ranks had been cut down by privations and much disease, while Henry was trying to reach the coast to get back home. The battle began in Oct. 25, 1413 with an attack by the British archers who were supported by masses of infantry. Weighed down by their heavy ancient armor, and floundering in the deep mud, the French columns were driven into confusion, and many whole companies were cut down by the deadly aim of the English bowmen. The French lost 14 000 including the Duke of Orleans the French constable or chief general, three dukes, five counts and over ninety barons. The English lost not over 1,600. Shakespeare's *Henry V* has some stirring scenes from this battle.

AGRARIAN LAWS. The Romans took the lands of conquered peoples, but left owners usually in charge; after portions were distributed to the soldiers and some reserved for the state. They also had laws to prevent the accumulation of too much land by one person or family. In 133 B. C. Tiberius Gracchus, tribune at Rome, allowed 312 acres to each person, with half that for each of his sons. From the surplus taken from the great estates that had accumulated in violation of ancient customs, he gave each landless person 20 acres. After the time of Gracchus and his brother Caius land again began to accumulate, and the failure to give a chance to the great mass of the peasants was one cause of the disintegration of the empire. Before the Norman Conquest in England the king in theory owned all the land; in turn he granted it out to the nobles; and they in turn gave it to the common men for services in war and in protecting the estate from robbers. Later there grew out of this the custom of keeping estates intact for the eldest son. In the United States small tracts of land were given to former soldiers, those who paid a small settlement fee or agreed to live on the land a certain length of time. Much of the public domain has thus been distributed under the homestead acts. In colonial days patents to land, or great tracts like Pennsylvania, were given by the crown to companies and individuals who in turn sold or gave it out to actual tenants. In Ireland the land question has always been troublesome. In 1903 laws were passed to secure for Irish tenants compensation for new buildings or improvements while they occupied tracts of land. In several countries, notably Russia in communal or group farming, and Mexico, where there has been much individual dis-

tribution of land of late, since the World War the peasants have obtained some share in actual ownership of the soil. See *Homestead Acts.*

AGRICOLA, CNAEUS JULIUS (37-93). A Roman governor, who spent at least seven years in Britain, making improvements and confirming the conquest of the island. In four campaigns he subdued the Ordovices in North Wales, the country about the River Tay in Scotland, the region of the firths of Forth and Clyde, and then the Caledonians or ancient inhabitants in the north of Scotland. In 70 he commanded the twentieth Roman legion in Britain. He circumnavigated the island, built forts, and laid out some roads that exist to this day. The emperor Domitian recalled Agricola to Rome, and some say to his death. The historian Tacitus married his daughter and wrote his life.

AGUINALDO, EMILIO (1870-). Able Filipino leader in the war for independence against Spain, and after 1898 against the United States. He set up an independent government, appealed to the powers, and for some time carried on a guerrilla warfare against occupation by American forces. In March 1901 he was captured by Gen. Fred Funston, after a time took the oath of allegiance, and ceased to be prominent as an opponent of the United States, even at times acting as advisor in Philippine affairs. When the new government was organized in 1935, Aguinaldo was honored with recognition as one who early had shaped the events leading to Philippine freedom.

AISNE, BATTLES OF. During the World War, at times fighting was concentrated between the Aisne and Ailette Rivers on a plateau. The Germans fell back upon this position after the battle of the Marne in 1914, and here the battle of the trenches continued until early in 1917. Then, in April the Germans threw 300,000 men into this sector alone, whole regiments of attacking men being mowed down. In May, after resisting no less than 40 counter attacks, the French at last had to give some ground, and in the end the allies were forced from the sector. After the second battle of the Marne, July 1918, American guardsmen from Michigan and Wisconsin forced the Germans to retreat in late August and September. In only five days the 32d American Division lost nearly 3000 men. Later the French and Italian reenforcements drove the Germans back from the district. The Armistice cut short further operations.

ALABAMA CLAIMS. After the government at Washington had obtained an order to hold the *Alabama,* which had been built at Birkenhead, England, this craft escaped from the harbor, took on war equipment at the Azores, and in less than two years destroyed 70 northern ships. On June 11, 1864, while seeking to refit in the harbor of Cherbourg, France, the *Alabama* was at last sunk by the federal gunboat, *Kearsarge.* The United States demanded compensation from Great Britain for allowing the ship to be built and then to escape from English waters. Negotiations dragged on until 1871, when international commissioners, including men from Brazil, Switzerland, and Italy, awarded the United States $16,000,000. These and other claims were finally adjusted and paid in 1885.

ALAMO. This historic building at San Antonio, Texas, now a public memorial, was at first a Franciscan Mission, then a fort. Here in 1836 some 4000 Mexicans under Gen. Santa Ana besieged 180 Texans officered by Cols. W. D. Travis, James Bowie, and David Crockett. During an attack of 13 days, about 500 Mexicans had been slain. On March 6, a hole was made in the Alamo, and the Mexicans killed the six survivors left in the Alamo. Only a servant and her young daughter escaped. The child was adopted and educated by the republic of Texas. Shouting the cry, "Remember the Alamo," a band of Texans under Gen. Sam Houston defeated and captured Santa Ana at San Jacinto on April 21, 1836. Since 1883 the Alamo has been a state and city museum.

ALARIC I (d. 410). This Visigoth barbarian, trained by the Romans, marched on Constantinople and defeated Valens, the Emperor of the Eastern Roman Empire. Valens promised the invaders food and supplies, but his agents withheld most of the funds and food provided. Alaric afterward turned against Greece, where he sacked Corinth, Sparta, and other cities, but allowed Athens freedom for the payment of a ransom. After being checked twice by armies of Honorius, Emperor of the West, Alaric at last invaded Italy, where he hesitated twice before attacking Rome. Professing to be angered by an attempt from ambush on his life, he entered and plundered the city for three days in 410. He planned to invade Sicily and Africa, but death cut him off before he could collect his army. To protect the western empire from the Goths, many Roman legions had to be recalled from Britain and Gaul, and so Britain lay open to the inroads of the Angles, Saxons, and Danes from the eastward.

ALASKA. Ethnologists believe that the American Indian came from Asia across the bridge from Siberia to Alaska in early days, when the distance was shorter than it now is. The Russians came to Alaska in 1741, and by 1799 the Russian American Company gained control. The United States bought this land in 1867 and organized it as a Territory in 1912. The original purchase price was $7,200,000. Claims by the United States to exclusive rights to seal fisheries off the coast were rejected, but in 1903 a mixed boundary commission gave all the coast north of 54° 40′ to the United States. The interior is sparsely inhabited, the entire population of whites being only 60,000. Distinct languages are spoken by four native tribes, Esquimaux, Thlinket, Athabaskan, and Aleut, the first three being Indian in stock, and the Aleuts, Asiatic. The chief products are fish, furs, various metals, coal and some oil. Near Point Barrow oil fields are reserved by the government. Aviation is now playing a great part in developing Alaska, chiefly in the interior. In the gold rush across the Canadian border, Nome became the outfitting point for the prospecters; three years later, 1899, rich deposits were found nearby. In 1900 the population of Nome was 12,488; in 1910 it was only 2600. In 1935 the government sent to Alaska a large number of colonist families for settlement on land provided in the Manatuska Valley.

ALBANIA. Independent monarchy north of Greece, whose inhabitants call themselves *Skipetars,* and their land *Shkipria.* The people are of two main groups, often at war, and resentful of authority. From 1431 to 1478, Turkey ruled in Albania, after which Venice for some time shared with Turkey. Native chiefs often revolted, but never gained complete mastery, while often Mohammedans fought against Servian troops, and now and then the local rulers took one side or the other as advantage favored. The London Conference in 1912 agreed to establish Albania as a separate nation. William of Wied ruled from Feb. 21 to Sept. 3, 1914, when he felt it best to abandon the throne. After three years of uncertainty, Albania was proclaimed a republic under Italian protection in 1917, but in 1925 Ahmed Zogu became king. In 1930 a violent earthquake caused much destruction in the Valona district.

ALEXANDRIA. Great city of the ancient world, founded at the Canopic mouth of the Nile by Alexander the Great in 332 B. C. Here the Pharos lighthouse was built, a wonder of antiquity, the tomb of Alexander, the temple of Serapis, and other magnificent works. The *Septuagint,* or Greek translation of the Old Testament, was made in Alexandria, and here Jewish scholars were much influenced by Greek culture, which in turn greatly modified Christianity. At one time the city was the capital of Egypt, the seat of an extensive library, and the haven of scholars from the entire East. After the defeat of the navy of Mark Antony and Cleopatra, Egypt fell to Augustus in 30 A. D., came to be called "the granary of Rome," and for centuries was the crossroads of commerce between Europe and Asia, until Constantinople arose in the fourth century. After the Arabs destroyed much of Alexandria in 638 and a bit later, Cairo became the seat of the Egyptian caliphs. From 1517 to recent days, the main influence has been Turkish, though the European quarter has the appearance of a British or American city.

ALGECIRAS CONFERENCE. Great Britain and France agreed on their respective interests in Egypt and Morocco in 1904. Germany, however, landed a force at Tangier in 1905, while the sultan of Morocco also resisted the French authority in northern Africa. The Algeciras Conference of powers on April 7, 1906 awarded special Moroccan privileges to France. On July 2, 1911 Germany again interfered by sending a warship to Agidar, but a war was averted by a conference with French delegates. Since then France has maintained her hold on Morocco, save for the interests of Spain in a territory along part of the coast.

ALGERIAN WAR. Until 1830 piracy by Algerians was a menace to ships in the Mediterranean. In 1815 some natives captured an American boat and reduced its crew to slavery. The United States sent Commodore Stephen Decatur with a fleet, which captured the

chief vessel of Algeria. Decatur made the dey or ruler sign a treaty on the deck of his flagship. This recognized the rights of foreign craft in the Mediterranean and agreed to pay the United States adequate damages. In 1816 Great Britain and in 1830 France bombarded the coast of Algeria because of similar piracies by natives.

ALHAMBRA. This fortified citadel of the Moorish kings of Granada dates from the 9th century. It covers 35 acres, is a monument of medieval art, the product of men like Yusuf I in the century after 1248. The entire group of buildings includes the citadel proper, palaces, numerous smaller buildings, and other structures. When the Moors were driven from Granada in 1492, their successors almost at once began to spoil the marvelous beauty of the architecture. Charles V also rebuilt parts in incongruous Renaissance style, and Philip V, to show Italian influence, degraded many of the rooms by placing partitions within them. Even today some of the extant Moorish parts show rare taste and skill, such as the Court of Lions and the Hall of the Two Sisters. Washington Irving has delightfully recreated the age and splendor of Moorish art in his sketches in *The Alhambra.*

ALLEN, ETHAN (1739-1789) This American frontiersman was born in Connecticut, went to New Hampshire to take up land, and organized the band known as "Green Mountain Boys," or at least fought with them against the claims of New York to part of what is now Vermont. Their miniature civil war was interrupted by the necessity of driving away the British. With a small force of men, according to Allen's own narrative, he captured Fort Ticonderoga "in the name of the Great Jehovah and the Continental Congress." He went into Canada with the expedition under Schuyler and Montgomery, was captured near Montreal in 1775, and was not released by the British for two and a half years. Afterward he again opposed the "Yorkers," sought some alliance with the British in holding northern Vermont, and in 1787 removed to Burlington, where he died.

ALLENBY, SIR EDMUND (1861-1936). Distinguished British general, who obtained his early training in the campaigns in Bechuanaland, in the Zulu War, and in the War in South Africa. In command of cavalry, he invaded Palestine by way of Egypt during the World War, captured Jerusalem from the Turks in Dec. 1917, and in the following September, at the battle of Samaria, defeated 100,000 Turks under German leadership, captured most of the forces, and some 350 guns. This campaign at last freed Palestine completely from Mohammedan rule,—a dream that the various Crusades tried and failed to realize. Allenby led the way for the formation of the present government in Palestine under British mandate.

ALSACE-LORRAINE. This name became current after the two separate districts of France were ceded to Germany following the Franco-Prussian War of 1870-71. In ancient times the Gauls lived here, but in Lorraine a Latin Civilization followed the conquests of Julius Caesar; while in Alsace, the influence was from the German tribes after 500. Lorraine, though ruled chiefly by native nobles, up to the 18th century was long in dispute between Prussia and the Franks. In 1766 the district was incorporated with France. Part of Alsace went to France in 1648, more in 1697, and another part during the French Revolution. In 1872 the inhabitants were asked to declare their preference as to nationality. Over 50,000 left the region in 1872 when Germany took charge. By the terms of the Versailles Treaty in 1918, practically all this territory of Alsace and Lorraine went back to France, at which time over 100,000 Germans in turn chose to withdraw. By 1922 financial and, in part, religious questions had been adjusted in the three new governmental divisions set up under French rule.

ALVA, DUKE OF (1508-1583). Spanish general, who was called by a German historian "the hangman of the Netherlands." He defeated John of Saxony at Mühlberg in 1547, overran the states of the Church, but, after the abdication of Charles V, had to give up the lands he had annexed. Philip II sent him to the Netherlands, where he boasted that he caused over 18,000 persons to be put to death. At Antwerp he erected a statue showing himself trampling two figures designed to represent the lords and people of the Netherlands. Late in life he conducted a campaign in Portugal with similar cruelty.

AMEN HOTEP. See *Ikhnaton.*

AMERICA, DISCOVERIES OF. See *Historical Outlines, Explorations,* and *Colonial History.*

A. E. F. Popular designation of the American Expeditionary Forces sent from the United States to the World War. Congress on April 6, 1917 authorized President Wilson to declare war on Germany. General John J. Pershing on May 18 was appointed to take charge of operations in Europe, while plans were made to send over one division as soon as possible, a total of nearly 30,000 men of all classes. The Selective Draft Law, passed on May 18, provided for 500,000 men from 21 to 31, and an equal number if necessary. By Aug. 24, 1918, some 10,481,000 men had registered as likely to be called into service. In the first draft, July 20, 1917, 625,000 names were drawn. Meanwhile, on June 8, 1917 General Pershing and his staff arrived in England, and three days later in Paris. In May medical men, Red Cross Workers, and engineers had gone on ahead to assist the British and French. On June 27, 1917, the men in the First Division arrived in France, an event commemorated nine years later by a statue at St. Nazaire. Original plans called for increasing the Regular Army from 133,000 to 488,000; the National Guard from 67,000 to 470,000; and also for the creation of a third unit, the National Army. Many new officers were drawn from those who had previously attended the Citizen Training Camps. Altogether, upwards of 4,000,000 men were raised for service, over half of whom went to Europe, with 1,300,000 actually seeing service in front lines. On Oct. 21, 1917 American soldiers first reached the trenches in France at Somerville; the first American shot was fired on Oct. 27; first trench fighting on Nov. 3, with three men killed, five wounded, and 11 taken prisoners. By Jan. 1918, the 1st, 2nd, 32nd, 41st and 42nd Divisions arrived in France, the first exclusive American sector being northwest of Tours on the St. Mihiel salient. The first American offensive was at Cantigny on May 28, when that town was taken, three days before the 2nd and 3rd Divisions turned the tide at Château-Thierry.

AMERICAN LEGION. Largest American organization of World War veterans, both men and women, with honorable records regardless of rank or type of service. The Legion was organized in 1919 for the purpose of promoting the mutual interest of veterans. Legionnaires have done much to assist soldiers in need, to provide hospital facilities for the ill and disabled, to assist families, widows, and orphans of soldiers, and to secure for the veterans adequate compensation for services in time of war. The organization of the Legion consists of general offices, state divisions with complete roster of officers, and local units or posts of various kinds. Main headquarters are in Indianapolis. The membership of the Legion in 1931 was 766,850; in 1936 was over 900,000. The Grand Army of the Republic, composed of veterans of the Civil War, reached the highest peak of membership of 409,489 in 1890. Congress in 1936 authorized the payment of the Soldiers Bonus. By midsummer most of the veterans had taken advantage of the liberal provisions of the legislative act. The main provisions assure to ex-service men compensation at the rate of $1.25 for every day of service overseas, and $1.00 for service at home. The men received about the same money value in 1936 that they would have obtained in 1945, the time originally fixed for payment of the bonus.

AMHERST, JEFFREY, BARON (1717-1797). British general who succeeded Abercrombie in command of all the British forces in America. He led an expedition which captured Ticonderoga and Crown Point in northern New York in 1759. He was in personal charge in the campaign at Montreal, forcing the French to surrender all rights in Canada to England in 1760. He became governor-general of all British North America and was made a Knight of the Bath, next to the highest civil and military rank in England.

AMPHICTYONIC LEAGUE. Twelve states of Greece united to protect the sacred shrine of Apollo, first near Thermopylæ and later at Delphi. From this alliance three wars resulted. The first ended with the battle of Crissa in 585 B. C.; the second, ending in 346 B. C., was caused by the entry of Philip of Macedon into Greek affairs; and the third, ending with the battle of Chæronea in 338 B. C., was caused by the impiety committed by Amphissa in tilling the ground near the shrine. The influence of the League was considerable, down even to the time of Augustus, who increased its membership and powers. At certain times, however, the largest cities of Greece, like

Athens and Sparta, combined to restrict the power of the Amphictyonic towns.

ANDERSONVILLE PRISON. Stockade in Sumter County, Georgia, where almost 50,000 federal soldiers were confined during the Civil War, the number at one time being as high as 33,000 huddled together on less than 27 acres of space. Nearly 13,000 died of disease, filthy conditions of the prison enclosure, and lack of good food. Henry Wirz, who had been the superintendent of the prison, was tried by court-martial, convicted, and hanged on Nov. 10, 1865.

ANDORRA. This tiny state of 191 square miles, less than 6000 inhabitants in 30 villages, has been autonomous since about 1278. The district lies in the Pyrenees valleys, between France and Spain, and still pays a nominal tribute to France and to the bishop of Urgel. For a thousand years it was governed by a council of 24 selected from the older heads of families. In 1933, however, some 60 young men forced their way into the Parliament, and compelled the Council to grant universal manhood suffrage. French gendarmes broke up the Council itself, but an election on Aug. 31 gained some seats for the young men of Andorra. The language is Catalan, the religion Roman Catholic, the money French or Spanish, and many of the customs medieval.

ANDRE, JOHN (1751-1780). English spy, hanged for connection with the Arnold treason. Captured by Montgomery at St. John's (1775); exchanged (1776); captain (1777); major (1778); captured near Tarrytown, September 23, 1780, with incriminating writings of Arnold concealed in his boots. Tried by court-martial and hanged at Tappan, New York (1780). Washington declared that Major André was "more unfortunate than criminal."

ANGLES AND SAXONS. Beyond the southern part of England, the Romans did not greatly influence the inhabitants of Britain. North of the Tweed dwelt the Picts; beyond the Severn in the west, the Welsh. When the Romans left in 428, the southern Britons called for help against their northern and western enemies. From the lands about the North Sea came the Angles, Saxons, Jutes, and others. Hengist and Horsa drove the Picts back north, and received as reward the island of Thanet, but the visitors were not content with this gift. They invaded Sussex in 491; Wessex in 516; Essex in 526. The Angles settled in what is now Northumbria in 547; in East Anglia in 577; in Mercia in 584. The Jutes occupied Kent and other small areas. Edgar united these districts in 828, and Alfred confirmed this union in 886. For the composite language that developed from the dialects spoken by these tribes, the name Anglo-Saxon is applied, but a better term is Old English. See *Heptarchy*.

ANNAPOLIS. This town, settled by Puritans from Virginia, is famous for its many historic memories. Here the first royal government in Maryland was set up; here Congress met from Dec. 1783 to June 1784, and Washington resigned his command on Dec. 23, 1783; and here met the Annapolis Convention in 1786. Delegates from New York, Pennsylvania, Virginia, New Jersey, and Delaware assembled, passed resolutions for mutual aid, and led the way to the more representative gathering in Philadelphia in 1787, when the new Constitution was at last written. Annapolis has many old institutions, such as St. John's College, founded in 1696 as a preparatory school, and in 1786 as a college; the beautiful statehouse of Maryland with its lofty dome and grand portico, dating from 1772; and the buildings of the United States Naval Academy on a campus of 200 acres bordering on the River Severn.

ANTARCTIC EXPLORATIONS. Previous to the expeditions of Admiral R. E. Byrd, several parties explored the southern seas beyond latitude 60°. Some of the leaders were Capt. James Cook, 1772-75, who sailed around the Antarctic Continent; Bellingshausen, 1819-21, with a group of Russians, who brought away a mass of scientific data; American, French, and British navigators between 1827 and 1843; J. C. Ross, who found the sea that now bears his name; the *Belgica* party, the first to winter in the south Arctic; and Capt. R. F. Scott, who found King Edward Land in 1902-03, but laid down his life ten years later, after attaining the Pole, only to learn there that Roald Amundsen had preceded him on Dec. 14, 1911. Sir Ernest Shackleton returned from a fortunate voyage to the Antarctic in 1914; explored the north regions in Siberia; and in 1922 also lost his life in South Georgia on his second southern voyage. Admiral Byrd, on two occasions, made the most complete records yet attained. He first explored the Antarctic from his base in Little America on the Bay of Whales, in the winter of 1928-29, and again in 1933-35, when he found that the continent at the South Pole is one continuous mass of land and ice, and not two as many had supposed. With three companions he flew over the Pole on Nov. 28, 1929, explored part of the high polar plateau, discovered a new mountain range, and brought back many complete observations. Other explorers have been Sir Hubert Wilkins, Sir Douglas Mawson, and Lincoln Ellsworth with one companion, who set out by airplane in the fall of 1935, and was rescued early in 1936 near Admiral Byrd's base at Little America.

ANTIETAM. On the banks of the Antietam River, near Sharpsburg, Maryland, and nine miles from Harper's Ferry, Gen. G. B. McClelland sought to cut off the Confederates under Gen. Robert E. Lee, who were threatening the vicinity of the national capital. On September 16 and 17, 1862, the Confederates were caught between the Potomac and the armies of the North, but McClelland failed to press his advantage and to close the sole remaining bridge across the Potomac. The Confederates escaped at night, with a loss of 1546 killed and 7752 wounded, but the Federals lost one-third more of their men. Lee's strategy in this battle has been pronounced beyond reproach.

ANTIOCH. With Alexandria and Rome, Antioch shared the honors among ancient cities. Founded as one of 12 towns named in honor of Antiochus about 300 B. C., Antioch fell under control in turn of the Greek kings of Asia Minor and the Roman governors, who favored the city for their courts. Augustus Caesar, Herod, Tiberias, Antonius Pius, and Constantine all added beautiful structures there. It had a great library and school of philosophy. The city became the center of the early Christian faith, the home at times of St. Paul, the starting point of his missionary journeys. Between 538 and 1084, Antioch was overrun by Persians, Saracens, Greeks, and Mohammedans. Before 700 the city was damaged ten times by earthquake, and even as late as 1872. The Crusaders made this region their headquarters, and here they ruled from 1098 for about 200 years. From 1517 to 1920, Antioch was the center of Turkish power in Asia Minor, except for a brief time under Egypt from 1840. The League of Nations mandated the district to France in 1920. In the second part of the third century, several important church councils were held there, and in the next century Chrysostom said the city had 100,000 Christians. Today, Antakiek, as the place is known, has but 30,000 inhabitants.

ANTI-RENT WAR. In 1629 the States-General of the Netherlands gave the Dutch West India Company certain feudal or manorial rights to large tracts of land in the New Netherlands. Thus the Schuylers, Van Rensselaers, Roosevelts, and others became patroons, meaning in Dutch *patron* or *protector*. These patroons paid annual rentals or dues to the Company, and in turn farmed out the land for rental to tenants. In 1839 the last one of the patroons died. His heirs sought to collect back rents and other monies on the old feudal terms. Tenants insisted on the privilege of buying the land outright. Albany, New York, was the center of the disturbances that followed, called the Anti-Rent War. The tenants gained considerable political influence. Opposition to this special system of renting land, different from the rest of the country, increased until the Court of Appeals in 1852 ruled that the rents need no longer be paid. Then the tenants agreed with the heirs of the old patroons to buy the lands at fair prices. This patroon system was not unlike the English system in Virginia of setting up large estates.

ANTWERP. The main business city of Belgium, noted as one of the strongest fortresses in Europe, and one of the most beautiful cities in the world. During the World War, after Brussels fell to the Germans, Antwerp held out long enough to permit the army to take stands to better advantage. Since 1920 the forts have been restored and strengthened. Antwerp was mentioned in the 8th century, known for its commerce before 1300, and in the 16th century became the commercial capital of the world. The city had a free government and people well educated and cultured. When the Spanish took the city in 1576, nearly 8000 inhabitants were slaughtered, and the City Hall and hundreds of noble buildings were destroyed. Then followed a period of decline. Among the many beautiful buildings in Antwerp are the new picture gal-

lery, the Bourse of 1872, replacing that of 1531, and the noble Gothic cathedral of Notre Dame, the finest of its kind in northern Europe. In the cathedral are three pictures by Rubens, including his masterpiece, *The Descent from the Cross.* In 1930 Antwerp and Liége joined in holding an exposition to celebrate the centennial of Belgian independence.

ANZACS. See Australia.

ARABIA. Until the death of Mohammed in 632, Arabia was divided into districts inhabited by hostile tribes, some claiming to be of Semitic origin, descendants of Ishmael. Under the Caliphs of Islam after 632, prosperity followed for a time, but afterward much trouble occurred between the civil and religious authorities, since the caliphs always claimed temporal power, following the lead of Mohammed. Neighboring countries, like Abyssinia, Egypt, and Persia, often exercised some influence over Arabia, but the native tribes, unorganized and nomadic, usually held their own. To this day the conflict also between the towns and the tribes of the desert continues and prevents unity of the rule save in nominal respects. Yet Ibn Saud, since 1926 king of Hedjaz or Saudi Arabia, has exerted considerable influence. Arabia is divided into Saudi Arabia, Yemen, Kuweit, and Oman, the last three only nominally controlled by any outside political influence. See articles on *Caliphate, Hedjaz, Hegira, Hussein,* and *Mohammed.*

ARBELA. Here between Alexander the Great and Darius Codamanus was fought in Assyria on Oct. 1, 331 B. C., a battle which decided that the Persians would not rule in Europe. The Macedonian phalanx, or form of battle line, together with the stern discipline of Alexander, was altogether too powerful for the oriental hosts. When the Macedonians charged the Persian center, the king and all his men fell into a panic, giving Alexander a quick victory. In true ancient manner, the victors carried off all the spoil they could capture in cities like Susa, Persepolis, and Babylon. Some estimates place the booty at 100 millions in value, which tradition tells us required 20,000 mules and 5000 camels to transport.

ARBITRATION, INTERNATIONAL. Arbitration in civil disputes is as old as Roman jurisprudence, or as old as the history of man. International arbitration has had a slow growth, one reason being the difficulty in enforcing awards. Yet the idea has recently grown, and few nations now refuse to accept awards of arbitrations. Boundary claims, fighting about borders between nations, fishing rights, and damages to shipping are the subjects often referred to arbitral boards. Sometimes the dispute is submitted to a king or president of a neutral nation; sometimes a mixed commission is appointed, an equal number coming from each nation to the dispute, and then some third party acts as umpire. A few arbitrations grow out of diplomacy, or are combined with diplomatic settlements. Typical arbitrations were those by the Queen of Spain as between Holland and Venezuela over Aves Island; by the president of the United States as between Great Britain and Venezuela over boundary lines; by a mixed commission as between Great Britain and Russia over the boundaries of Afghanistan; various disputes between United States and Canada settled by mixed commissions; by the president of France as between the United States and Portugal over arrest of officers on ships. Agreements establishing the Permanent Court of Arbitration at the Hague in 1899, and the Covenant of the League of Nations, both furthered the interests of international arbitration. Some recent cases were in the settlement in 1929 by an American Commission and President Hoover of a dispute between Peru and Chile over Tacna and Arica, dating from 1882; and the cessation of hostilities between Bolivia and Paraguay in 1935 after an international conference, followed by arbitration. See also *Alabama Claims, Boundary Disputes, Hague Peace Conference, League of Nations,* and *United States Arbitrations.*

ARBITRATIONS, UNITED STATES. The nations of the American Continent have made various agreements to arbitrate international disputes. In 1910 a treaty was made to submit pecuniary claims to impartial boards for adjustment. In 1922 and 1929 conferences went much further in regard to all disputes, all important nations, save Argentina, coming to definite agreements. Perhaps the United States has led the world in willingness to arbitrate serious questions, three or four of which might elsewhere have led to wars. Prior to 1914, according to the Carnegie Foundation reports, some 88 disputes involving the United States were settled by diplomatic negotiations, by straight arbitrations, or by mixed commissions, with a neutral umpire. A mixed commission is made up of equal members from both disputing parties, with a neutral as umpire in the dispute; in some cases, the umpire renders the deciding vote, as when Lord Alverstone voted with the three Americans in the Alaskan boundary dispute in 1903. Canada and the United States led off in 1818 by agreeing not to fortify the boundary between them, and to submit disputes to outside parties for adjudication. Three boundary, one fishing, and several other disputes have been so settled. Other serious disputes, for instance, have been mutual claims of France and United States, growing out of the Civil and Franco-Prussian Wars, settled in 1884, by a mixed commission, with Brazil as umpire; the Pious Fund case involving property of the Roman Catholic Church in California damaged or confiscated by Mexico, settled by a mixed foreign commission in favor of the United States; seizure of ships by Venezuela, settled by a mixed commission, with Norway and Sweden, as umpire, and an award of $141,000 to the United States. Out of the 83 disputes mentioned above, 52 resulted in an award to the United States, and 17 split the award. See articles on *Alabama Claims, Boundary Disputes, Hague, League of Nations,* and the article just preceding this one.

ARCTIC EXPLORATIONS. Most early voyages into the arctic regions attempted to find a short cut over the top of the world to Asia. Some of the notable attempts to find a *northwest passage* were those of J. Rut, 1527; Portuguese navigators, 1574; Martin Frobisher, 1576; Henry Hudson, 1607, 1610; James Cook, 1778; Ross and Parry, 1818; and in 1926 Amundsen, Ellsworth, and Nobile crossed from Svalbard to Teller, Alaska in the dirigible *Norge.* Attempts to find a *northeast passage* were made by Sir Hugh Willoughby, 1553, who perished in Lapland, but Chancellor, of his expedition, got to Archangel, Russia; Henry Hudson, 1607, but was forced westward; Parry, 1827; and at last, Prof. Nordenskiöld, 1878, accomplished the feat for which men had tried 326 years. *Noted discoveries:* John Cabot, 1497, Cape Breton and Nova Scotia; Stephen Burrough, 1556, Novaya Zemlya and Kara Strait; Henry Hudson, 1607, Jan Mayen Land, and 1610, Hudson Bay; William Baffin, 1515–16, northern outlet to Baffin Bay; J. Parry, 1819, Prince Regent Inlet and Melville Sound; and V. Stefansson, 1908–12, a blond race of Eskimos. *Notable exploring expeditions:* Martin Frobisher, 1578, in search of gold; William Barentz, 1596, first to winter in the north; William Baffin and Robert Bylot, 1616, region of Baffin Bay, and found the outlet; J. Parry, 1819, 1821–23, made many important scientific discoveries, and in 1827 attempted trip to Pole; J. C. Ross, 1831, north magnetic pole; Charles Hall, 1860, found remains of stone house built by Frobisher in 1578; A. W. Greeley, 1841–4, much data, but all save Greeley and five others perished; R. E. Peary and others, 1891–95, north edge of Greenland; V. Stefansson, 1908–12, spent much time in north to prove one can live off the land, and 1914–15, lived 15 months on the polar ice pack; Donald Macmillan, 1915–17, proved Crocker Land a myth; Com. R. E. Byrd and Floyd Bennett, flew over Pole, 1926. Admiral R. E. Peary reached Pole, April 6, 1908. *Chief disasters:* Henry Hudson and small son sent adrift by mutinous crew and never heard from, 1610; J. A. Ross and uncle, J. Ross, picked up by whaler, 1833, after being forced to spend four winters in the Arctic; Sir John Franklin party all perished, 1847; *Jeannette* crushed in the ice, 1883; Prof. S. A. Andree and two companions in a balloon, lost, 1897, and bodies found by S. Horn on White Is., 1930; airship, *Italia,* lost, 1928, and Roald Amundsen and two others lost in a search for survivors.

AREOPAGUS. Highest judicial tribunal in Athens, named for the meeting spot on the hill of that name. It decided unusual cases, could even bring officials to account; under Draco's Laws, also tried murder suspects; and under Solon could try offenses against public policy or morals. Solon, however, limited its legislative powers, but for centuries the court was greatly respected as an early type of supreme tribunal.

ARGENTINA. After some preliminary explorations by de Solis, killed by Indians in 1516, and by Sebastian Cabot, 1525, settlement was made by Mendoza and 2000 Spaniards at Buenos Aires in 1535. The first colony was broken up, another was planted at Asuncion, and in 1805 the present Buenos Aires was founded. In 1806 and 1807 British attacks were repulsed. The Argentine broke away from Spanish rule

in 1816, but anarchy followed until 1853, when the long tyranny of Juan Manuel Rosas ended in revolution led by his former lieutenant, Urquiza. The latter set up a constitution, held office for six years, and in the battle of Cepeda forced Buenos Aires to join the new confederation. During the World War, Argentina remained neutral, sold huge quantities of supplies abroad, but suffered a depression when the war ended. Passage of the Fordney-McCumber Tariff by the United States, intervention in Nicaragua, and the refusal of the Sixth Pan-American Congress, 1928, to outlaw entirely all intervention caused Argentina to assume an unfriendly attitude toward Uncle Sam. In 1930 President Irigoyen, holding his second non-consecutive term, was deposed by a popular uprising, and the government passed to the conservatives under the new leader, José Uriburu. Though the new administration professed willingness to "cooperate to the fullest extent with the United States," the press continued the attacks on the American tariff and policies. Argentina withdrew from the League of Nations in 1920, and voted to return in 1932, but with the reservation of refusing the sanction of the article approving the Monroe Doctrine. When Pres. Uriburu completed a provisional term, he was succeeded on Feb. 21, 1932 by Gen. Augustin P. Justo, a Conservative.

ARGONNE, BATTLE OF THE. Major battle of the American forces in the World War, with 1,200,000 men in readiness, and 600,000 actually taking part. The offensive, taking the Germans by surprise, began on Sept. 26, 1918, and lasted, in three stages, until early November. Five hundred planes, 200 tanks, 200,000 men began the first assault. The first stage carried the advance seven miles, half through the main positions of the Hindenburg line; the third offensive found the Americans pursuing the Germans back of the line on Nov. 10. Some of the United States troops engaged were the 35th Division, National Guard, of Missouri and Kansas, the 138th Infantry of St. Louis, the 137th of Kansas, and the 70th Brigade, all of which suffered terrible fire for four hours, until only 40 of the 138th were left; the 139th and 140th, which took Charpentry, and resisted a murderous counter-attack by the Germans; and the 35th Division, which stood two days of heavy artillery fire and counter-attack, so that in five days, the loss was 6966. Elsewhere, the 91st Division from various western states and Alaska, after heavy casualties, pressed through the woods near Gesnes; while the 37th (Buckeye) Division from Ohio advanced at night, and by flanking captured Montfaucon, suffering the tortures of high explosive and gas attacks, with 3460 casualties. Other Divisions engaged were the 79th from Virginia, Maryland, and the District of Columbia; the 80th from Pennsylvania, Virginia, and West Virginia; the 33rd from Illinois. In the second and third stages of the battle, the main units engaged were the 1st of the Regular Army; the 32d from Michigan and Wisconsin (National Army), in the battle of the Vesle and Juviny; the 3rd Division or Marines, heard of first at Château-Thierry; the 80th or Blue Ridge Division again; the 77th (Liberty), the 82d (All American), the 78th (Lightning) from New Jersey, Delaware, and New York; the 42d (Rainbow); 89th (Midwestern), and the 90th from Texas and Oklahoma. All these engaged in their own sectors, often against great odds, over muddy ground, through forests, and in counter-attack and cross-fire. The Americans fought in an area of some 500 square miles. Here in the Argonne near Romagne, Congress established a national cemetery, where over 20,000 soldiers now rest.

ARMADA. This Spanish word for military force is now applied especially to the fleet of 129 vessels sent in 1588 by Philip II of Spain to crush the Protestant power in England. Spain had 8000 sailors, and about 19,000 marines; while England had but 80 ships, only 30 being of the line type. Yet the English craft were lighter, and, under the skill of Admiral Howard, with Drake, Frobisher, and Hawkins serving under him, they made quick work of the Spanish vessels. With the portion of the fleet that remained intact, the Spanish admiral decided to return by way of the route around Scotland. Storms and hostile natives completed the destruction, so that only 54 ships, much disabled, returned to Spanish ports. Over 4000 of the attacking fleet were killed and but 100 of the British. Queen Elizabeth had a medal struck, bearing these words: "God blew, and they were scattered."

ARMENIA. No people have suffered more from war and persecution than the Armenians. After centuries of independence, they fell at last in turn to Assyria, Media, Persia, Macedonia, and Rome, with Parthia contending with Rome for mastery from 25 B. C. to 400 A. D. Part went to Greece in the 11th century and part to the Kurds and Turks, and all in 1242 to the Mongols. Russia for centuries protected Armenia and welcomed her exiles. During the Turkish régime, from 1829 to the end of the World War, thousands of Armenians suffered martyrdom, the main pogroms being in 1895, 1901, 1904, and during the World War. At times the nations of Europe, mainly England, and also the United States, protested, but the atrocities continued. In 1920 Armenia became independent with her capital at Erivan, but in 1922 joined with Azerbaijan and Georgia to form the Transcaucasian Republic, a part of the Soviet Union.

ARMS AND ARMOR. Prior to Greek times stone, iron, and bronze weapons were the only ones. Homer mentions the bow, which Egypt and Syria also used. Greek shields were round, Roman oval or rectangular. The Assyrians used chariots with scythes attached to the axles, also catapults or stone throwers, much employed by the Romans in sieges. Northern peoples used battle axes. The Normans had cross-bows, which the English adopted, but the English long-bow was more deadly. Plate armor developed in the 14th century, even horses being so protected, but chain mail dates from very early ages. Many ingenious forms were invented, such as the hauberk,—a kind of mail jacket,—metal skullcaps, closely fitted joints that were comfortable, special breast plates, and greaves or plates for the legs below the knees. Cannon came into England in the 14th century, hand guns 200 years later. Iron plates for ships were used before the Civil War in America, the *Monitor* and *Merrimac* being early forms for gunboats.

ARMY. Most ancient armies consisted of hired soldiers or mercenaries. Rameses II of Egypt built up a warrior class by exemption from taxes about 1300 B. C. For his invasion of Greece, Xerxes from 484 to 480 B. C. levied on all the tribes and nations subject to his dominion. Greece adopted compulsory service, Sparta being most exacting of the cities. The Macedonian phalanx, or solid formation of men from six to 16 deep, for centuries was imitated in Europe, even later in England. Rome commanded military service of all men from 18 to 46, poor men in the infantry, and the rich in cavalry. Soldiers received pay. Each Roman legion, when complete, was made up of 3000 footmen, 1200 light soldiers, and 300 cavalry. Augustus had a standing army of about 300,000. In time the army class, contending with the emperors or the people or both, became one cause of the decline of the empire. Carthage mainly used hired men in her armies. In the feudal ages in Europe, the king demanded fealty and service of the nobles, who, in turn, commanded help from the peasants in return for land and other favors. Scotch and German pikemen gained much renown by 1400, and later both the Swiss and the French had separate infantry and cavalry units. England employed no mercenaries, but her rivals frequently relied on outside help in war. Standing armies became common about 1650, after the Thirty Years' War.

ARNOLD, BENEDICT (1741-1801). After an honorable record in the battles of Lexington, Ticonderoga, and Lake Champlain, and after being wounded at Quebec, Arnold was made a major general by Congress for special gallantry at Ridgefield, Conn. While commandant at Philadelphia, he was accused of extravagance, great ambition, and dishonesty. After being found guilty by court-martial, he was gently reprimanded by Washington, his friend, in 1780. Arnold seemed to feel that he was not appreciated. While commanding at West Point, he betrayed the secrets of the defense there to Major André, acting for the British, but escaped to England when the plot was exposed. As a brigadier general of the British forces, he raided Richmond, Va., New London, Conn., and killed the garrison at Fort Griswold. On being refused a permanent place in the army, Arnold retired to St. Johns, New Brunswick, where he became a merchant. There he was accused of trickery, and returned to England, where he died.

ARRAS, BATTLES OF. Five distinct battles were fought around Arras in the World War. On Sept. 6, 1914, German infantry entered the town, following cavalry, hoping to make this a main point in a line stretching 50 miles to the English Channel. On Sept. 18 the French cavalry arrived, fortified the city, and the Germans withdrew, but again drove the French back upon Arras Oct. 4, and took possession of the

rich coal fields. The French resisted a violent German attack, after a terrific bombardment on Oct. 21, taking Vimy Ridge on Oct. 24. In the second battle, June 1915 (also called Battle of Artois), Marshal Foch began an attempt to rid the region of Germans, and with two months of heavy engagements, he succeeded in straightening the salient and in taking several towns, including the ruined Souchez, Neuville, and the Labyrinth. The French lost 113,000 in these battles. The British fought the other three battles at Arras. In the first, during April 1917, Sir Douglas Haig brought down 46 German planes, smashed the German defenses by long range fire, and on April 9, stormed Vimy Ridge, the work being completed by the Canadians on April 10. Despite strong counter-attacks, the Hindenburg line and all former German positions remained in British hands. The fourth battle, March 1918, constituted an important part of the last great German bid for victory by attempts to break through at Arras, and later north of there. Fifteen German divisions were used up, the Allies retreated, but the lines held. The fifth battle, August-September, 1918, left Canadian and British troops at the gates of Cambrai, with 18,850 prisoners and 200 guns, while the German losses were appalling.

ARTICLES OF CONFEDERATION. See under *United States Government* in Department of Government.

ARTHUR, KING. Legendary or mythical king of the Britons, who later became the hero of a literary and political tradition in France, Wales, Ireland, and England. Arthur was said to have been the son of Uther Pendragon, another valiant king, or to have come across the sea in a fairy boat, or to have been the son of a knight of Uther's court. He was secreted until the time for him to become king. In twelve great battles he defeated various neighboring tribes, such as the invading Angles and Saxons. In some stories his capital was at Caerleon-upon-Usk, on the borders of Wales, where the ancient Britons made a last stand. Early story tellers mention him as a real king, such as Nennius (850), Geoffrey of Monmouth (about 1136) and Sir Thomas Malory, whose *Morte d'Arthur* was one of the first books printed by Caxton in 1485. Later authors to draw upon the Arthur legends were Spenser, Tennyson for the *Idylls of the King*, William Morris, and Swinburne. See *Arthurian Cycle* in Department of Literature.

ARTILLERY, EARLY. Even before Roman times stones were cast by different mechanical devices. The Roman catapult or stone thrower is well known. In the 7th century of our era the Chinese used gunpowder, but the Arabs seem to have first adapted it to military purposes. Ghengis Khan used cannon in China about 1234, the Moors probably in 1343, and Edward III of England first at Calais in 1337, and probably at Crécy in 1346. Roger Bacon, who died in 1292, wrote about the use of gunpowder among western nations. Brass cannon seems to have been used before 1640. In 1529 a cannon on a castle along the Rhine threw a projectile weighing 180 pounds, including 64 pounds of gunpowder. Shrapnel came into use about 1800, siege guns by 1840, and smokeless powder in 1900. The Civil War greatly developed different forms of artillery, but the World War increased the size and range tremendously. Mobile artillery, in three classes, range in size from 75mm. guns to 155. The German "Big Bertha" guns had a range of about 75 miles.

ASSYRIA. Two great empires, Babylon and Assyria, for several centuries, contended for the mastery of central Asia. The Assyrians were a Semitic stock, with long beards and hair, allied to the Hittites politically for a time. Then they were conquered by Sargon I, united with Egypt against Babylonia, and at last conquered the latter in 1100 B. C. The Assyrians adopted horses and chariots for use in battle. Tiglath Pileser was the greatest of their monarchs. Ninevah continued as the capital, for it was built of stone, unlike Babylon, with its flimsy structures of brittle clay. For a time the Arameans kept Assyria away from Egypt, as narrated in II *Kings*, xv-xvii, while Tiglath II was founding a mightier empire. At last Sennacherib, a later conqueror, appeared on the borders of Egypt with a mighty host, which was smitten by pestilence as described in II *Kings*, xix. When the Medes took Ninevah, about 150 years later, Assyria gave way to the new Chaldean or second Babylonian empire.

ATHENS. The pride of all Greek cities for learning and the arts, the ancient capital of Attica, and of modern Greece. Tradition says that Codrus was the last king, or typical of them at least. After the time of Codrus the people chose archons or magistrates to rule them, and set up a more democratic government. After 1000 B. C. Athens veered back and forth between aristocracy and democracy, until Draco established wise laws to help the peasants in 620 B. C., and Solon followed with other reforms thirty years later. For 50 years, however, beginning about 561 B. C., Pisistratus was the first of a line of rulers who divided offices among their friends, and came to be known as tyrants. Today they might be called dictators. After the menace of the Persians had diminished, great prosperity came to Athens, culminating in the golden age of Pericles and ending about 430 B. C. Until after 500 of our era, Athens remained the foremost city in eastern Europe. Schools of philosophy, art, and politics flourished. In the middle ages, while the Turks occupied Greece, little was heard of Athens. In 1578 the population did not exceed 12,000. In 1687 the Venetians bombarded the city, destroying some of the Parthenon. When Greece gained her independence from Turkey in 1833, Athens began to take her place again as the leader among the cities of the Hellenic or Grecian world.

AUSTERLITZ, BATTLE OF. With an army of 65,000, Napoleon in 1805 defeated a combined force of 83,000 Russians and Austrians. The allies lost 37,000 killed, wounded, and missing, while the French lost only 7800. In this battle Napoleon was at his best as a strategist. He forced Austria to conclude the unfavorable peace of Pressburg.

AUSTRALIA. This continent seems once to have been attached to Asia. Centuries ago the island was inhabited by a black race, then by a dark-skinned people, the ancestors of the 150,000 natives there when the British made the first settlements in 1788. Vague rumors about this far-off continent are found in ancient and medieval literature, and numerous maps and explorers described it vaguely before 1750. Captain James Cook explored the east coast in 1770, and, with two companions, landed at Botany Bay on April 28. Here the first settlement was made in 1788,—a penal colony of over 1000 under command of Gov. Philip, where the city of Sydney now stands. A church was erected in 1793, and two years later a *Gazette* was issued. Tasmania nearby was settled in 1803. Then followed an era of interior exploration by many different groups, several of which became lost in the wilds and never again returned. To this day parts of Australia are almost unknown and uninhabited by white people. South Australia was organized in 1836, Victoria in 1851, Queensland in 1859, and West Australia in 1863. After various internal difficulties and failure to agree on any plan of union, all these districts were at last federated in 1901. Meanwhile, the settlers had disputed with France over New Caledonia and with Germany over New Guinea. In 1909 a complete system of defense was arranged. Out of about 10,000,000 inhabitants, Australia sent 575,000 to the World War, of whom 60,000 were killed and 143,000 wounded. The *Anzacs* (so called from the first letters of the words Australian-New Zealand Army Corps) fought gallantly in Gallipili, Egypt, Palestine, and France. Australia afterwards was beset with economic and financial troubles, due mainly to the lack of cooperation among the provinces and to debts of some of the divisions like New South Wales. The recent establishment of a federal capital at Canberra tends to unify the continent.

AUSTRIA. Formerly a part of the dual monarchy of Austria-Hungary, since 1920 Austria has been a federal republic. Much of the older history is that of the component parts of the Austrian empire, including the present narrow limits of Austria, Hungary, Bohemia, Bosnia, Herzegovina, and a few lesser divisions. In ancient times this region was inhabited by the Boii in the fifth century, and then tribes like the Vandals, Goths, Huns, Lombards, Avars, and Bavarians. Once the Danube constituted a natural barrier separating the wild northern tribes from the outposts of the late Roman empire. When Charlemagne subdued the Avars in 796, he set up an East Mark or division, from which modern Austria gradually developed. The Hungarians, who obtained a goodly part of the land, were defeated by Otto the Great in the battle of Augsburg in 955. Otto established the house of Bebenburg, which continued until 1246. Leopold VI, an able general, kept the Huns and Turks in check, but his successor, Frederick, died in battle with the Magyars, and the Bebenburg line ended. Meanwhile, the name *Oesterrich* (eastern rule) was adopted, later changed to

Austria, to distinguish the central Europe people from other Germanic groups. Vienna became the capital in 1160, and for centuries has been a center of culture, science, and the arts.

Various minor divisions were gathered into what became the later empire of Austria. Ottokar in 1251 became duke of the Oesterrich, in 1253 king of Bohemia, in 1261 ruler of Styria, and in 1269 lord of Carniola. Ottokar fell in battle in 1278, and the Habsburgs came to rule without interruption to modern decades. Rudolph, who conquered Ottokar, took the title of Holy Roman Emperor, which the Habsburgs at last relinquished in 1806. Rudolph divided Austria proper and Styria between his sons, Albert and Rudolph, but the former was soon killed by a nephew, who claimed Albert had taken away his lands. When the line of Rudolph died out, Albert II reunited the whole Austrian provinces. By purchase, by marriage, and by conquest, Austria obtained a chief place in Europe. Albert V acquired Hungary and Bohemia by marrying the daughter of Emperor Sigismund. In 1477 Maximilian, of another branch of the Habsburgs, married the daughter of Charles the Bold, and so gained the Netherlands. His son, Philip, annexed parts of Bavaria and Venice, and by marriage to Joanna of Spain prepared the way for his son, Charles V, to become ruler of Spain and also German emperor by election in 1519. The Habsburg power was at its height.

Charles V, in turn, divided old Austria and allowed his brother, Frederick, to become head of the German Habsburgs. John Zapolya contested the claim of Frederick to Bohemia and Hungary. The Turkish Sultan, Solyman, assisted Zapolya, and in the end the territory of Austria shrank to about its original bounds. Yet his son, Maximilian II, obtained again Austria proper, Hungary, and Bohemia; the second son, ruled the Tirol; and the third, Styria and Carinthia. Maximilian proved a wise and just ruler, but his successors were less able and more unscrupulous. The Thirty Years' War ensued when the Bohemians nominated for their king a Protestant, Frederick V. Ferdinand II, third son of Maximilian, conquered Bohemia and Hungary in 1612, and by winning the battle of Prague, 1620, was able to hold Bohemia. Yet the Peace of Westphalia, 1648, gave Alsace to France. In 1683 the Turks besieged Vienna, which was saved by an army of Poles and Germans under John Sobieski and other leaders. In 1699 the Turks were finally expelled from Hungary, but continued to claim that kingdom until 1718.

Meanwhile, the War of the Spanish Succession enabled Austria to regain her power in the Netherlands in 1713, and also a foothold in Milan, Naples, Mantua, and Sicily. In 1740, however, the male Habsburg line became extinct. (See Austrian Succession just below.) Maria Theresa, queen of Austria, by agreement of the European Powers called the Pragmatic Sanction, continued to rule Austria for 40 years until 1780, during which time she lost little save Silesia, at the end of the Seven Years' War. Austria gained part of Poland when that country was divided up by Russia, Prussia, and Austria. Joseph and Leopold II, sons of Maria Theresa and Francis duke of Lorraine, her husband, were unable to maintain the Austrian prestige as of old, and Francis II, son of Leopold, in 1797 lost Lombardy and later the Netherlands. Again, in 1815 Austria became the leader in the German Confederation. Francis I became emperor of Austria, dropped the title of Holy Roman Emperor, and continued to be powerful in European affairs. By the defeat of Austria in 1866 by Germany, under Bismarck, Austria was excluded from the German Confederation, which became modern Germany. Afterwards Austria became more progressive, giving Hungary more freedom, and consolidating the empire in the long reign (1848-1916) of Francis Joseph.

The assassination of Francis Ferdinand, son of the brother of Francis Joseph and heir to the throne, 1914, was the spark which started the European war. Another nephew, Charles VII, succeeded Francis Joseph two years later, but on Nov. 11, 1918 renounced the throne, went to Madeira, and died there in 1922. Austria-Hungary suffered defeat, dismemberment, and national disgrace at the close of the World War. Its present area is about that of the original district of Austria, shorn of all the later additions. Money was greatly depreciated, people in despair, enemies threatening from all sides. Austria suffered privations and financial distress almost unparalleled in modern nations. Her former enemies came to the aid with loans, Herbert Hoover's relief committee distributed $72,000,000 in food and clothing, and the League of Nations finally rehabilitated the finances through work of a commission. Much political uncertainty continued, increased by threats and attacks by socialists and communists, culminating in the murder of Chancellor Dolfuss in 1934. Dr. Kurt Schuschnigg succeeded, aided by Prince Ernst von Starhemberg, who was forced out in 1936.

AUSTRIAN SUCCESSION. When the male Habsburg line became extinct in 1740, Maria Theresa, daughter of the late emperor, Charles VI assumed the throne. Both Frederick II of Prussia and the elector of Bavaria, who was crowned king of Bavaria in 1742, claimed the succession on the basis of old laws which forbade a woman to be queen of Austria. England sided with Austria, and France with the elector of Bavaria, who was chosen as Charles VII, emperor of Austria. In 1742 Maria Theresa gave up Silesia to Prussia in consequence of the war which ensued, called the War of the Austrian Succession. In 1745, Charles VII died, and Francis, Duke of Lorraine, husband of Maria Theresa, was elected Roman emperor as Francis I. By other treaties in 1745 and 1748 Austria gave up certain districts to Don Philip of Spain, but Maria Theresa was not dethroned. Frederick was guaranteed the possession of Silesia, following the Seven Years' War (1756-63.)

AZTECS. Though applied loosely to ancient stock in Mexico and Central America, the name really belongs to the seven tribes who came from the north and settled near what is now Mexico City, but called Tenochtitlan. The Aztecs conquered some of the nearby peoples, and flourished for at least two centuries, until overthrown by Cortez in 1521. Some of their descendants in valleys near Mexico City still speak an ancient Aztec language. These people were highly cultured, but barbarous in war, and indulged in bloody human sacrifices to their gods. Their writing was pictorial, and their year had 18 months of 20 days each.

BAALBEK. The word means City of Baal, the center of worship of Baal, the ancient sun god; a place 35 miles northwest of Damascus in Syria. Noted for its imposing ruins. The sun temple was about 290 by 160 feet, and had 58 corinthian columns, each 75 feet high and over seven in diameter, with entablature 14 feet high. Six columns still remain upright. Great stones held up the mound on which the temple was erected, these being 64 by 14 feet, and hoisted up by a process now unknown. Romans, Arabs, Tatars, and Turks occupied the region in turn. It was taken by the Allies in the World War, and now is in French mandated territory of Syria. Baalbek suffered from warfare, and several times from earthquake, being greatly damaged in 1759. The French have laid out fine roads about the town, which today has about 3000 inhabitants.

BABEL. Recent explorations have revealed a huge temple or *Ziggurat* at Babylon. This was started in early ages, stood for centuries, and was finished by Nebuchadrezzer about 500 B. C. It consisted of six circular galleries or stages, the lowest one being 120 feet high and 300 square at the base. Scholars think this is the Tower of Babel mentioned in *Genesis* ii. Nothing remains now save the stones, which for centuries were used to make lime and later buildings.

BABYLON. This ancient city dated from about 3800 B. C., reaching its height about 2100 in the time of Hammurabi. Assyria destroyed much of the area in 689 B. C., but later monarchs, such as Nebuchadrezzer, again restored its glory. Among the great works were the temple of Baal, the residence of the royal family, and the hanging gardens, one of the seven wonders of the ancient world. Cyrus greatly damaged the city in 539 B. C., but his successors built it up. Alexander likewise began to clear away the ruins of the temple, and his son employed 10,000 men for two months to complete the task.

BADEN-POWELL, ROBERT STEPHENSON SMYTHE (1857-1937), best known as the founder of the Boy Scouts in 1909, and the Girl Guides, with his sister, 1910. He entered the British army in 1876, served in colonial campaigns, and gained considerable fame in the defense of Mafeking for 215 days during the South African War. He was made a major general in 1902, retired as lieutenant general in 1909, and was created a baron in 1929.

BAGDAD. Once a magnificent city, the capital of Iraq, and built on both banks of the Tigris River, the

old town being on the western side. For centuries, before the Suez Canal was opened, Bagdad was on important caravan routes to the east. The *Arabian Nights* picture the great splendor of the city in the age of Harun-al-Raschid, who died in 809. Here the Mohammedan caliphs ruled from 762 to 1258; then the Tatars, who were expelled in 1393. Turkey and Persia afterward contended for domination in the province. In 1917 the British forces under General Maude captured and held the city.

BALAKLAVA, BATTLE OF. The charge of the Light Brigade here on Oct. 25, 1854, when the English allies were trying to dislodge the Russians from the hills about Balaklava in the Crimea, has been immortalized in Tennyson's poem. Russian cavalry was driven back by the 4th Dragoon Guards, but reformed again, and the Light Brigade (13th Light Dragoons) was asked to prevent the enemy from removing their guns. In this attempt, the Light Brigade fell between a cross fire and also met a direct frontal attack. In 20 minutes the Brigade lost 247 men out of a total of 673 engaged.

BALBOA, VASCO NUNEZ DE (1475-1517). Spanish adventurer and explorer, who went with an expedition to the West Indies in 1501, and then settled in Santo Domingo. Failing to prosper, in 1510 he joined a party going to Darien, crossed the isthmus, and discovered the Pacific in 1513. He became governor of the territory for Spain, but later was deposed and was executed after his successor, Pedrarias Davila, whose daughter Balboa had married in 1514, accused him of intentions to rebel.

BALKAN WARS. The Balkan states of southeastern Europe lie between the Adriatic, Aegean, and Black Seas, and between the Save and Danube Rivers. Greece, in her own peninsula, is often included. Today, Balkan countries are Albania, Jugo-Slavia, Bulgaria, Rumania, Greece, and Turkey in Europe. Religious, racial, and political differences have prevented unity among the Balkan peoples for their mutual protection. Often open warfare has grown out of attempts to secure more land at the expense of another Balkan state. For centuries much of this region was dominated by the Turks. Bulgaria has desired expansion into Macedonia; Rumania, more territory to the east of her borders; and Serbia, union with Montenegro and other districts into a great Pan-Slav state, an object brought about after the World War.

Austria for many years sought to create strife between the Slav states of Bulgaria and Serbia against Greece and Rumania. The Austrian annexation of Bosnia and Herzegovina in 1908 was a cause leading to the World War. Bulgaria broke away from Turkey in 1876, and nine years later took Eastern Roumelia after a revolution there. Then Russia withdrew her protection from Bulgaria, and Serbia tried to gain some new territory at Bulgarian expense. Bulgaria maintained her own, but her prince, Alexander, was forced to give way to a nominee, Ferdinand, from Saxe-Coburg-Gotha. In 1912 Serbia, Bulgaria, Greece, and Montenegro waged a successful war against Turkey. Failing to agree over the division of new territory, the three former allies turned upon Bulgaria. After three stages of the conflict, and the breaking of two armistices, a peace conference in London failed to bring about a permanent solution of the Balkan questions in dispute. When the World War came in 1914, Bulgaria and Turkey both allied themselves with the German forces, while the other Balkan countries opposed the central powers. See *Congress of Berlin* and articles on the several countries mentioned.

BANNOCKBURN, BATTLE OF. Three miles from Stirling, Scotland, Robert Bruce, with only 30,000 men, by strategy defeated 100,000 English under King Edward II on June 24, 1314. The English lost 30,000; the Scots 8000. This victory guaranteed the independence of Scotland. Here also James III was beaten by his subjects in 1488.

BARBARY STATES. All north Africa, along the coasts, save Egypt, and including Morocco, Algeria, Tripoli, Tunisia, Fezzan, and Barca. The Mauri, Numidians, and Phenicians occupied these coasts in ancient times; then the Romans set up magnificent colonies there, of which many ruins are extant. The Vandals, Mohammedans, Moors, and Turks in succession held these regions, which from 1300 to 1830 were infested by hordes of pirates that levied tribute on nations seeking to trade in the Mediterranean. (See articles on *Decatur*, *John Paul Jones*, and *Tripoli*). France conquered Algeria in 1847, Tunis became a French protectorate in 1881, and Morocco in 1912. Barca, Tripoli, and Fezzan went to Italy in 1912.

BAREBONE'S PARLIAMENT. Nickname for the little Parliament called by Cromwell in 1653 and in session from June 4 to Dec. 12. Praise-God Barebon, or Barebone was a prominent member. The 140 members came from lists made up by the various Congregational churches. In spite of much contemporary ridicule, this parliament passed many good measures, some of them similar to progressive laws already in force in the New England colonies.

BARNET, BATTLE OF. This final struggle in Hertfordshire, England, decided that the house of York should be dominant and that the barons, supported by the house of Lancaster, should lose much of their power. It culminated the Wars of the Roses. Here and at Tewkesbury, in 1471, Edward IV crushed the Lancastrians and left Warwick, "the king maker," dead on the field.

BASTILLE. This fortress in Paris, the scene of many political struggles, was at last stormed by a mob on July 14, 1789. The seven prisoners found there were released. Charles V erected the Bastille in 1370. Many distinguished persons, at various times, were thrown into the dungeons there, such as Cardinal Richelieu, Voltaire, Cardinal de Rohun, and that mysterious person who always wore an iron mask, and who has been variously conjectured to have been nineteen different persons. On the following day the mob completely destroyed the building.

BATTALION OF DEATH. Regiment of Russian women, so named because of an agreement to die rather than be taken prisoners, who began to serve in 1917 on the Kreva front. They met with no little success. During the revolution in November, they steadfastly guarded the Winter Palace in St. Petersburg from attack by the Bolskeviki.

BAVARIA. Since 1919 a free-state of the German republic, to which in 1920 Coburg, another republic, was joined by popular vote. Occupied before our era by the Boii, a Celtic race, conquered by the Romans, who gave way finally to the Ostrogoths, and they to the Franks. Bavaria was part of Charlemagne's empire. In 1180 it fell to the Wittlesbach family. In 1805 Napoleon made it a kingdom, and the king confirmed by him succeeded in retaining the territory and in obtaining more by the final settlements of 1814 and 1815. A new constitution was written in 1818, Bavaria joined the North German Confederation in 1870, and in 1918 the king abdicated.

BAYARD, PIERRE TERRAIL (1473-1524). This French cavalier, in his time known as the knight without fear and without fault, has become the hero of numerous legends and literary works. Bayard was educated in the household of the Duke of Savoy, distinguished himself in 1494 in the battle of Fornovo, and served in the wars in Italy with Louis XII. He is said to have held back the enemy in France with a small force, and to have checked a host of Spaniards single-handed while defending a bridge. Kings honored him, enemies released him without ransom, his exploits became the pattern of chivalry. Bayard fell while defending Bonnivet against the Spanish.

BAYEAUX TAPESTRY. Scenes from the Norman Conquest, embroidered in eight colors on a band of linen 231 feet long and 20 inches wide. They are 72 in number and were once thought to have been the work of the wife of William the Conqueror, but now supposed to have been made at the request of Odo, bishop of Bayeaux, half-brother of William. The 1512 figures of the tapestry throw great light on the dress, customs, and history of the period about 1066, or beginning with the visit of King Harold of England to Bosham and ending with the flight of the English from the field after the battle of Hastings. The borders of the set contain various small scenes from the *Fables* of Aesop, old legends, incidents of farm life, pictures of birds, and details of the Conquest itself.

BEATTY, DAVID (1871-1936). Created Earl of the North Sea and Brooksby in 1919, distinguished himself during the World War at various times. He was made a rear admiral in 1910, vice admiral in 1915, admiral in 1919. He was in command of the Grand Fleet of England from 1916 to 1919, and in the Battle of Jutland Banks successfully engaged the Germans in 1916. He was made a Grand Officer of the Legion of Honor. Admiral Beatty married Ethel, oldest daughter of the late Marshall Field of Chicago.

BEAUHARNAIS (*bo-ar-náy*), **EUGENE DE** (1781-1824). Celebrated French noble and general, who was made viceroy of Italy by Napoleon and in 1806 married Princess Amelia Augusta of Bavaria. Napoleon made him his adopted son and heir to the crown of Italy, which Beauharnais defended against Austrian attacks. When the French hosts fled from Russia, after the disastrous campaign in 1812, Marshal Ney and Beauharnais saved the army from complete annihilation. Likewise, much of the credit for the victory at Lützen should go to him.

BECKET, THOMAS (1118-1170). English statesman and archbishop, at first a close friend and later an opponent of Henry II, rose from the merchant class to be Chancellor of England in 1155 and Archbishop of Canterbury in 1162. Becket maintained a princely retinue, but finally drew closer and closer to the ideals of the church. At last he was forced to choose between his friendship for Henry and his vows to his episcopal office. He refused his consent to the Constitution of Clarendon, was forced into exile in France for six years, and lost much of his property by confiscation to the crown. He was permitted to return and to take up his office again in 1170, did all he could to avert a final break with Henry, but would not give up what he called his duty to the church. Four knights gained entrance to the Cathedral and put Becket to death before the altar. This sacrilege so shocked the entire realm that Becket was made a saint in 1172. Henry III erected a noble shrine to Becket's memory at Canterbury, and this was the goal of thousands of pilgrims, until Henry VIII despoiled it and erased Becket's name from the church calendar.

BELGIUM. Until 1831 Belgium was known as the South Netherlands, a part of Holland since 1579. Following incidents of the French revolution of 1830, the people of Brussels and other districts rebelled, and the new government then established was recognized by a conference of Austria, Prussia, Russia, and England, in London. Prince Leopold of Saxe-Coburg was elected king on June 4, 1831, and in 1839 the Powers guaranteed the neutrality of Belgium, this being again confirmed in 1870 by a treaty between England, Prussia, and France. Leopold II gained great wealth from trading in the Congo in Africa, which became Belgian territory in 1908. Albert I, nephew of Leopold, succeeded in 1909 and corrected many of the abuses of Belgian occupation in the Congo. He distinguished himself by his democratic ways, his careful study of government, and his gallant service in the World War. Belgium refused permission to Germany to allow troops to cross her borders on the way to France in 1914. In consequence, her lands were overrun, her cities laid in waste, and 80,000 of her soldiers perished defending their country. During the course of the war, the government offices moved from Brussels to Antwerp, then to Ostend, and finally to Havre, France. In the final settlement, Belgium received ample indemnities and Eupen, Melmedy, and Moresnet, with 328 square miles and 65,000 inhabitants. Rehabilitation proceeded rapidly, with some aid from foreign allies. Belgium suffered from dissensions concerning the speaking of Flemish as a separate language in Flanders, from the fall in currency values, which forced abandonment of the gold standard in 1935, the increase in taxations, and threats of Fascism. In 1934 King Albert was killed by falling from a cliff near Namur and was succeeded by his son as Leopold III. Queen Astrid was fatally injured in an automobile accident in Switzerland in 1935. Though political conditions in Belgium, of late, have been varied, the country seems disposed to return as quickly as possible to pre-war stability.

BELISARIUS (d. 565). This Byzantine general in 530 defeated a great Persian army, quelled a severe riot in Constantinople, and saved the city for the Roman emperor, Justinian. He fought the Vandals in north Africa, recovered Italy from the Ostrogoths, 540, again sent an army against the Persians, and in five campaigns barely held his own against the invaders of Italy. He was accused of a conspiracy against Justinian, lost his command, and was imprisoned for a time. Belisarius, though stern in discipline, was greatly beloved by his soldiers and was kind to the conquered. A legend of the 10th century describes him as going about begging in his old age; it has often been told in story and pictures. See Vandals.

BENNINGTON, BATTLE OF. During the Revolution, this village, dating from 1761, became the headquarters of the Green Mountain Boys, soldiers organized by Col. Ethan Allen and others. Gen. John Burgoyne dispatched two detachments of Hessians and Indians to capture a storehouse there. Gen. John Stark, of the colonial militia, defeated them with great loss on Aug. 16, 1777. It is said that the flag raised there was the first "stars and stripes" in the United States. An imposing monument, some 301 feet high, commemorates this victory of the Americans over the British.

BERING SEA DISPUTE. From 1872 to 1911, Canada, Great Britain, and the United States disputed over the unlawful killing of seals by poachers, during the breeding season, off the Pribilof Islands. When Russia sold Alaska to the United States in 1867, the latter contended that the words "adjacent waters" in the agreement made Bering Sea practically closed waters to fishing by other nations. In 1886 three British craft were taken by the United States, but were released after a protest on the part of Canada. Great Britain and the Dominion denied that unlawful taking of seals threatened to exterminate the herds. In 1892 the subject was submitted to arbitration, which went against the United States. Over $473,000 damages were awarded to British and Canadian interests. Pelagic sealing continued to be sanctioned, until in 1911 the United States, Great Britain, Russia, and Japan abolished the practice by treaty. See *Alaska* and *Boundary Disputes*.

BERLIN. Founded as a village in the 13th century, Berlin became an important capital from the time that Prussia was consolidated in 1701. In 1786 the population was only 145,000; today it is upwards of four millions in the greater city, organized in 1920. It is the center of a vast commercial, transportation, and agricultural trade of north Germany. As the capital of the present Reich, Berlin has most of the government departments. The city government consists of 12 unpaid councilors, an assembly of 225 members, a supreme court, various lower tribunals, and 20 voting districts. Twice during the World War revolutions disturbed the city, and the National Assembly in 1919 moved temporarily to Weimar. Berlin is noted for its beautiful streets, such as Unter den Linden; its great art galleries, university of 10,000 students, wonderful botanical and zoological collections, and Academy of Science; its old castles, such as the one enlarged by William II to contain 600 rooms; and its monuments, such as the statue of Frederick the Great and the Column of Victory, celebrating the success in the Franco-Prussian War.

BERLIN, CONGRESS OF. Since Russia seemed to dominate in the Balkans after the treaty of San Stefano in 1878, a conference met for a month in Berlin that year under the Presidency of Prince Bismarck. The resulting Treaty of Berlin gave temporary stability to the Balkans. Bulgaria was to be semi-independent from Turkey, and was promised religious freedom; Rumania, Serbia, and Montenegro were established as separate states; and Austria was to take general charge over Bosnia and Herzegovina. Some other adjustments then made were causes of friction for years, such as the awarding of the Dobrudja to Rumania, and of part of Bessarabia to Russia. Eastern Roumelia, like Bulgaria made autonomous in 1878, was united to Bulgaria in 1885; the Dobrudja to Turkey in 1919; and Bessarabia to Rumania in 1918, after declaring independence the previous year; and Bosnia and Herzegovina annexed by Austria in 1908. See article on *Balkan Wars*.

BERLIN DECREE. One of three decrees made by Napoleon to cripple the commerce of Great Britain. The Berlin Decree declared the British Isles in a state of blockade. England retaliated by forbidding foreign ships to enter France without first touching at an English port. In 1807 Napoleon, in his Milan Decree, forbad ships to land in England. His Bayonne Decree, the same year, commanded that all ships in French harbors belonging to the United States should be seized. Many crews were imprisoned, and for a time the United States was near war with both France and England. These decrees, with retaliatory acts by the United States, helped bring on the War of 1812.

BERNHARDI, FRIEDRICH VON (1849-1930). German military critic and official historian of the army staff, who was born in St. Petersburg, served in the Franco-Prussian War, and as general of cavalry, 1907-1909, at which time he retired to write of military topics. Bernhardi declared war to be a biological necessity, and peace efforts a sign of national

weakness or often cloaks for selfish aspirations. His *Germany and the Next War*, 1912, urged that Germany could obtain a "place in the sun" only by ruthless conquest. Some other books were *Britain as Germany's Vassal* (1914) and *The Heroic Fight of Germany* (1921).

BETHLEHEM. Now known as *Beitlahm*, a town in Palestine, about five miles south of Jerusalem, is frequently mentioned in the Scriptures as the early home of Ruth and of David and the birthplace of Jesus. In early ages a grotto or cave near the town was indicated as the place of the Nativity, but St. Jerome found this spot given over to pagan rights in the second century. Empress Helena erected a convent at Bethlehem, which Justinian and others enlarged, and today this is given to Latins, Greeks, and Armenians for a church. A star in the Grotto Shrine burns incessantly, surrounded by 15 lamps. The Crusaders occupied Bethlehem, and later the town was the seat of a Greek bishop. The British under Gen. Allenby captured Bethlehem on Dec. 8, 1917. Since then much has been done to preserve the Grotto and other religious shrines there, while the village has grown to a city of nearly 8,000.

BILL OF RIGHTS. Declaration by a sovereign to respect certain rights belonging to his subjects; or, statements in constitutions confirming privileges or rights to people. In Great Britain, the Bill of Rights, in a particular sense, refers to the guarantee of the throne to the Prince and Princess of Orange, who became joint sovereigns as William and Mary in 1688. This document summed up provisions already claimed by the British people, but disregarded by the last of the Stuart kings. Of the 13 provisions of the English Bill of Rights, some of them were that the king should not nullify laws passed by Parliament, should not levy taxes without consent of the people, should not maintain a standing army in times of peace, should not interfere with justice or elections, should not unjustly punish offenders, and should not deny the rights of citizens to petition the crown. Many similar declarations have been made in modern countries. During the time of the Revolution in France, particularly from 1789 to 1815, several similar declarations were made by different parties or groups. The Constitutional Convention of the United States discussed many such provisions. The delegates finally agreed to embody them in first amendments to the Constitution. Accordingly, ten such articles were proposed at the first Congress of the new United States, and all were ratified in December 1791. For the text of these articles in our Bill of Rights see the *Constitution* in the Department of Government.

BLACK DEATH. One of the forms of plague that appeared in Asia and sometimes in Europe in past ages. Some of the awful visitations of this deadly scourge were those in Syria in the third century B. C.; in Egypt, about the Mediterranean, and finally in Europe from 542 to after 600; beginning in China in 1333, reaching Europe in 1342, and then northern Africa. During this last, estimates place the dead in China at about 13 millions, in Europe twice that number, including nearly half the people of Italy, and over a million in both Germany and England, 100,000 in and around London alone. One English writer declared that "The sheep and cattle strayed through the fields and corn, and there was none left who could drive them." The pestilence was marked by black spots under the skin caused by hemorrhages, by boil-like eruptions on the surface, and by death of the patient usually in two or three days. Important social changes followed the Black Death, some of them being increase in wages, land grants to the peasants, and the decline of feudalism. See *Wat Tyler's Rebellion.*

BLACK HAWK WAR. In 1804 the United States persuaded the Sacs and Foxes, two Indian tribes, to give up their land east of the Mississippi. Their chief, Black Hawk, objected and joined the British in the War of 1812. Again in 1815 and 1816 the tribes agreed, even Black Hawk assenting, and in 1823 they moved westward under leadership of Chief Keokuk. Black Hawk in 1831 openly rebelled. Gen. Atkinson at Bad Ax River and Gen. Dodge at the Wisconsin River defeated the braves, who finally settled on their land near Fort Des Moines in what is now Iowa.

BLACK HOLE OF CALCUTTA. During the Seven Years' War, the native ruler of Bengal in India sacked Calcutta in 1756, but most of the British residents escaped. Some 156, including soldiers, were taken and thrust into a room that was 18 feet by 14 feet 10 inches in dimensions, with ventilation through one small inside window. Only 23 survived the night. One of the soldiers named Holwell wrote a narrative of their terrible suffering from congestion, thirst, and heat.

BLACK PRINCE. For some reason not known, but conjectured to be from the color of his armor, Edward, the eldest son of Edward III of England, was called the Black Prince. He gained fame in the wars in France, notably at Crécy and Poitiers, and went to Spain to help Pedro, the deposed king of Castile. His campaigns ruined his health, so that he resigned his claims to land in France, and died four years after the siege of Limoges.

BLAKE, ROBERT (1599-1657). Celebrated English admiral, who blockaded Lisbon and forced Prince Rupert to give up the Scilly Islands, Guernsey, and Jersey in 1652. The next year he defeated the Dutch, but ill-health kept him from finishing the campaign. In 1657 he silenced the shore batteries of Spain, burned the fleet off Santa Cruz, but died as his victorious flagship was entering the harbor of Plymouth in England on his return.

BLENHEIM, BATTLE OF. Through his defeat in this battle, Louis XIV lost his chance to become master of western Europe. The French and Bavarian armies, commanded by marshals Tallard and Marsin for Louis, numbering 60,000, engaged the allied British and German forces, numbering about 53,000, and commanded by the Duke of Marlborough and Prince Eugène, on Aug. 13, 1704 near Blenheim in Bavaria. Tallard's army was nearly annihilated, but Marsin's got off easier. The French lost 11,000 men, 100 guns, 200 flags, and 24 battalions surrendered.

BLUCHER, GEBHARD LEBERECHT VON (1742–1819). After serving in the Swedish army, he distinguished himself in the war by Prussia against Napoleon. In 1813 he defeated the French in several battles, ending with the taking of Laon. Napoleon defeated him at Ligny in 1815, but Blücher arrived at Waterloo in time to help the British and to pursue the retreating French all one night. On July 7, 1815, he entered Paris in triumph. In his honor, Frederick Wilhelm III of Prussia created the Order of the Iron Cross. His native town of Breslau erected a giant statue of him in 1819.

BOERS. Dutch word meaning *tillers* or *husbandmen* and pronounced *boors* by the Dutch themselves in early days. Specially applied to the Dutch of the southern part of Africa who farmed and raised cattle. In the 16th century some of the Boers settled near the Cape of Good Hope under influence of the Dutch East India Company. Here they were joined by some refugee Huguenots from France. After Great Britain acquired the cape territory in 1814, the Boers came to dislike the new administration, partly because it favored natives and in 1833 freed the slaves. In 1835 the Boers went on a "trek" or emigration northward. So they occupied Natal, Orange Free State, and the Transvaal in time. Later they again came into conflict with the British in the Transvaal, which led to the South African War. Afterward they settled down, and many of the Boers like De Wet, Smuts, and Botha became influential in the Union of South Africa.

BOHEMIA. With Moravia this land in 1918 formed the main part of the new republic of Czecho-Slovakia. The name comes from the Boii, a tribe of Celts from the east and south, which came to this region about the beginning of the Christian era. Bohemia was once a powerful country before the house of Luxenburg began to rule in 1310. After Wenceslas, who tolerated the reforms of Huss, the emperor Sigismund adopted a repressive policy, which ended when George of Podiebrad, in 1458, was elected as a protestant king. King Louis was killed in battle with the Turks in 1526, and Bohemia and Hungary came under Frederick I of Austria. The election of Frederick V as king in 1618 brought on the Thirty Years' War, during which Bohemia came into the hands of the Habsburgs, and so remained until the World War disintegrated the Austro-Hungarian empire. The Czecks or native Bohemians form 63% of the population, Germans the rest. See *Hungary.*

BOLEYN OR BULLEN, ANNE (c. 1501–1536). This brilliant but headstrong queen of Henry VIII was the daughter of Sir Thomas Boleyn and Elizabeth, daughter of Thomas Howard, the Earl of Surrey. After getting a dispensation divorcing his first wife, Catharine of Aragon, Henry announced his marriage to Anne

at Easter, 1533, though it probably had occurred two or three months before. It was legally confirmed on May 28. The success of Anne turned her head, and Henry began to doubt the wisdom of his choice, one reason also being the lack of a male heir. Their daughter became Queen Elizabeth in 1558. Anne was accused of having several lovers, was tried and condemned by 27 peers, and went to the block May 29, 1536. She had previously admitted she was not free to marry Henry. Four of her alleged lovers were put to death with her. Though Anne's own father testified to her guilt, which was affirmed by many others, no positive evidence of this now exists.

BOLIVIA. This South American country was named for Simon Bolivar, the George Washington not only of Bolivia, but also of Venezuela, Ecuador, and Peru. Bolivar was born in Madrid, came to the United States after studying law, and then gave himself to the freeing of South America from the Spaniards. In 1825 Bolivia proclaimed independence and adopted the constitution proposed by Bolivar. Political conditions there have been much disturbed in recent years, two presidents being deposed since 1930. Trouble with neighboring countries has also kept this nation backward. Bolivia joined with Peru in a war with Chile in 1879, and in consequence lost her seaports, the rich guano beds, and had to pay an indemnity. By an international compromise in 1904, Bolivia was given the right of access to the sea. For many years Paraguay disputed with Bolivia over the Gran Chaco, a rich plain, sparsely populated, and about as large as Arizona. The rival claims of these countries led to war in 1928. Within three years 100,000 soldiers died in battle. The League of Nations tried to force the belligerents to compromise, and in January, 1935, ruled that Paraguay had violated her international obligations. In consequence, an arms embargo against Bolivia was raised, and also tightened against Paraguay. An armistice resulted on June 15, and complete demobilization was accomplished on Oct. 28. Yet a peace conference of South American countries, aided by the United States, finally ended in a stalemate. The ownership of the Gran Chaco remains still unsettled, both Bolivia and Paraguay refusing all concessions or compromises.

BOLSHEVISM. When Nicholas II of Russia abdicated in March 1917, he was succeeded by a moderate government of intellectual Socialists headed by Alexander Kerensky. In October another revolution placed in power the Bolsheviki, or left wing of the Socialists, the name itself meaning "majority." Nicolai Lenin, Leon Trotsky, and other new leaders tried to follow more or less literally the theories of Karl Marx. They believed the land should be distributed or "nationalized," and that the peasants should have a chance under local committees, to enter into affairs of government. Though the minority party or Mensheviki, and the old Russian aristocrats, so far as they could, opposed most of these measures, Trotsky and the Red Army were able to install many of the new methods. Lenin died in 1924, Trotsky was banished in 1929, and more moderate ideals have gradually come into the foreground. Under Joseph Stalin, a disciple of Lenin, the fate of state socialism (often wrongly called Communism), seems to be in dispute. See article on *Russia.*

"BONHOMME RICHARD." See *John Paul Jones.*

BOONE, DANIEL (1734-1820). This intrepid frontiersman was born near Reading, Pa., went with Braddock to the western part of the state, visited Florida in 1765, and was twice captured by Indians. In 1769 he engaged to explore the Kentucky country, purchased of the Cherokees a great tract of land for a company of speculators, and selected some for himself. He failed to register his purchase properly, and the claims were not allowed. Boone retired in 1798 to the settlement called La Charette, then in Spanish territory, and now in Missouri. Here he acted as agent and scout for the Spanish and travelled as far as the Yellowstone. His Missouri titles were also found faulty, but Congress gave him a tract of land in consequence. In 1845 the remains of Boone were removed from Missouri to Frankfort, Ky., where a monument was erected by the state. Boone is hero of many legends, is mentioned in Byron's *Don Juan,* and in Daniel Bryan's poems, *The Mountain Muse.*

BOOTH, JOHN WILKES (1839-1865). President Lincoln was mortally wounded by Booth while occupying a box at Ford's Theatre, Washington, on April 14, 1865. Booth entered from the rear, fired point blank, and then jumped down from the box to the stage, breaking his leg. He had been crazed by his small success as an actor and by the failure of the southern cause, for which he had fought. In the confusion Booth escaped into Maryland, where an unsuspecting doctor named Mudd set his leg. Mudd was afterward convicted of aiding a criminal, sentenced to federal prison, and saved many inmates while an epidemic of cholera raged. He was then pardoned. Booth took refuge in a barn, where he was probably shot, after the barn had been fired. Four others, including one woman, were executed for aiding in the conspiracy.

BORODINO, BATTLE OF. One of the bloodiest battles of history, 70 miles from Moscow, Sept. 7, 1812. Though Napoleon and his allies, numbering 120,000, defeated an equal number of Russians, with losses of over 30,000 on each side, he failed to follow up the advantage, and so had to continue the campaign, which ended in total failure.

BOSS RULE. In the United States a political system under which bosses (from the Dutch *baas,* meaning *master*) have built up a modern practice of handing favors down to ward healers from a central committee or political group, and from the healers to the rank and file. It is to advantage to keep the system going by obtaining contracts for public works, franchises, and other ways of providing jobs and money to circulate. One notorious scandal in New York City resulted in the conviction of William Tweed, known as Boss Tweed, in 1873. He was heavily fined, served in all over three years of a twelve-year term, cut short by his death in 1878. Many others, rightly or wrongly, have been called bosses in their cities or states, some of them being Richard Croker in New York, Nelson A. Aldrich in Rhode Island, Marcus A. Hanna in Ohio, Matthew Quay, William A. Vare, and Boies Penrose in Pennsylvania, Thomas Pendergast in Missouri, and Huey P. Long, of Louisiana. By different methods these are some of the men who have wielded great influence, in their districts.

BORDER RUFFIANS. Border disputes have been known for many centuries in all parts of the world. During the Revolution and before, various quarrels often led to open fighting between the colonies, such as between Vermont and New York, Connecticut and Pennsylvania, Massachusetts and Rhode Island. The border wars between England and Scotland led to the death of countless champions and knights. During the Civil War, some of the border states, like Kentucky, Maryland, Delaware, and Missouri, were scenes of factional strife. When settlers began to go to Kansas and Nebraska, the old question of slavery led to much open conflict. Should these new states be admitted as free or slave territory? Manhattan, Kansas, was raided by a party of sympathisers with slavery; in reprisal, John Brown did likewise at Pottawattamie, Kansas, and his raid at Harper's Ferry, Va., in 1859, was but a larger example of this same border warfare. In the new western territory, the raiders were often called Border Ruffians. See *Green Mountain Boys* and *Wyoming Massacre.*

BOSNIA. See *Balkan Wars* and *Treaty of Berlin.*

BOSTON, EARLY HISTORY OF. Built on a peninsula known to Indians as Shawmut, and to early colonists as Trimountaine, now spelled as Tremont in the name of a street, church, theater, and other local designations. John Winthrop's colonists from Salem settled there in 1630, on invitation of William Blackstone or Blaxtun, who had been there since 1626. Later important dates: first meeting-house, 1632; capital of Massachusetts Bay Colony, 1632; controversy with Roger Williams and Anne Hutchinson, 1636; first post office, 1639; mint coined pine-tree shillings after 1652; first bank of colonies, 1686; printing office, 1674; and first regular colonial newspaper, *Boston News Letter,* 1704; largest town in America by 1705; riots after impressment of seamen, 1747, and other outbreaks leading to Revolution, such as Boston Massacre, Stamp Act, and Tea Party, described below; fortification of Charleston led to battle of Bunker Hill, 1775. Washington's foresight, daring, and skill in fortifying Dorchester Heights, 1776, forced the British to evacuate Boston, March 17, a day still celebrated there. See later history under *Fifteen Largest Cities.*

BOSTON MASSACRE. Resistance to oppressive acts by Great Britain began in 1747 in Boston. An open clash with quartered soldiers occurred on March 5, 1770, when seven "redcoats," taunted by a crowd,

killed three outright and wounded seven, of whom two died later. After a mass meeting of citizens in protest, the two regiments were withdrawn and stationed on Castle Island. When the soldiers were tried for murder in October, John Adams and Josiah Quincy defended them. Two were convicted of manslaughter and given light sentences.

BOSTON STAMP ACT. This was but one of various British acts leading to the Revolution. In 1761 a writ giving officers power to search private houses was passed in England, in 1764 one providing for a tax on sugar, followed the next year by one taxing tea, the last being repealed in 1776. On Dec. 16, 1773 a group of citizens, disguised as Indians, boarded three ships in Boston Harbor and cast into the bay about 350 chests of tea. In retaliation, the British Parliament passed the Boston Port Bill, signed by the king in March 1774. By this act the seat of government was moved to Salem, Marblehead was listed as a port similar to Boston, and commerce was otherwise stifled. The citizens, now completely alarmed, appointed a day for prayer, and the first Continental Congress was assembled to consider these various acts. The sending of more troops to the Boston vicinity precipitated the Revolution.

BOTHA, LOUIS (1862-1919). South African leader, who was born in Natal of Boer parents from Cape Colony. He helped establish the new republic in Zululand, which merged with the Transvaal in 1888. During the war with England, he succeeded Joubert in command of the rebels in the Transvaal, but saw by 1902 that the best method was to make peace with Great Britain. He became premier of the Transvaal in 1907, and of the Union of South Africa in 1910. Botha materially assisted the British during the World War and became one of the dominion delegates to the Conference at Versailles in 1919.

BOUNDARY DISPUTES. Several boundary disputes between states of the Union have occurred, and also between the United States and Canada. Vermont and New York, Connecticut and Pennsylvania came to blows over grants of land. New York claimed all east to the Connecticut River, and Connecticut claimed all west to the Hudson; while Virginia controlled much of southwestern Pennsylvania until after the Revolution. Between 1789 and 1910 boundaries between Canada and the United States, at certain points were only tentative. Disputes as to lines between Maine, the Oregon territory, and Alaska and the Dominion of Canada caused much feeling. From 1814 to 1822 a commission discussed ownership of a number of islands in Passamaquoddy Bay in Maine, three of which at last went to the United States. Maine also claimed territory farther north than the St. John's River; but, in turn, Great Britain wanted all south to the Aroostook River or even beyond. Troops were sent in 1839 to quell a disturbance known as the Aroostook War. Three years later the Webster-Ashburton Treaty gave the United States over 7000 square miles of land, most of it now in Aroostook County, Maine. Yet the northeastern boundary with New Brunswick was finally settled only in 1910. (See map under administration of Harrison and Tyler). In 1818 Great Britain gave up a generous corner of what is now Minnesota and North Dakota, receiving in return a small strip of land that belonged to Montana in the former surveys. The line marking the water boundary in the Great Lakes (for the most part the middle of each) was fixed in 1842. The Democrats in 1844 made the Oregon district boundary a campaign issue. They created the slogan of "Fifty-four Forty or Fight," meaning that they insisted the northern boundary of the United States should be far north. It was fixed at 49° after the election, without much ado or protest. Not until 1903 was the boundary between Canada and Alaska fixed by a mixed commission, which determined that Canada had no rights north of the old 54° 40′, where British territory meets Alaska. In 1819 Mexico received a generous slice of southeastern Texas, which the United States had claimed as part of the Louisiana Purchase. After the Mexican War the Gadsden Purchase (which see in special article) straightened out another dispute. So did the annexation of Texas, which once and for all set the boundary line at the Rio Grande River.

BOURBONS. Two reigning houses both in France and Spain, founded by Henry IV (1553-1610). The French branch ruled until 1848, with interim of the Revolution of 1789 and Napoleon. Leading members of the French or Orleans branch included Philip II, regent of France (1715-1723) for Louis XV; Louis Joseph Philippe, who renounced his rank during the Revolution, took the name of Citizen Egalité (Equality), and died in 1793 by the guillotine; and his son, Louis Philippe, king of the French from 1830 to 1848. Some of the chief Spanish members of the Bourbons were Philip V, placed on the throne by his grandfather, Louis XIV of France, in his desire for more territory; Ferdinand VII (1784-1833); Isabella II (1830-1904); Alfonso XII and XIII, father and son, the latter being dethroned in 1931. Don Carlos, son of Philip V, became king of the Two Sicilies as Charles III in 1735; Ferdinand I was twice king of the Sicilies; and Francis II, dethroned in 1860 when the Sicilies became part of united Italy.

BOXER REBELLION. The Boxers is a foreign name for a Chinese society organized to drive "the foreign devils" from China. In 1900 they killed the German minister to China, a number of missionaries, and compelled 200 refugees to take shelter in the British legation compound, where the revolutionists besieged them for two months. Allied troops from the United States, British, French, German, Russian, and Japanese stations, some 18,000 in all, destroyed the Taku forts, but were repulsed from Peking. On Aug. 14 a second force entered the city after heavy fighting. China agreed to pay 333 millions indemnity. In 1908 the United States remitted her portion of 13 millions for education of Chinese youth in America. When China joined the Allies in the World War, these nations remitted their portions also. China made other concessions, such as the privilege of fortifying foreign legations in Peking and changes in customs inposts as to weights.

BOYNE, BATTLE OF. On the banks of the Boyne in Ireland, William III on July 12, 1690, checked the forces of James II, numbering about half as many as the English army of 40,000. James II fled to France from the field, and so ended his attempts to claim the British throne.

BRADDOCK'S DEFEAT. During the French and Indian War, Edward Braddock, a British general, was sent against the enemy in western Pennsylvania. Near the site of the present city of Pittsburgh, the Indians drew the English force into an ambush. Braddock was mortally wounded and, on July 13, 1755, died at Great Meadows, 60 miles away, where he had been taken. Col. George Washington and others of the expedition had warned Braddock of his danger, but the general relied on English training of soldiers to withstand any tactics of the redmen. Half the English force of 1200 were slain, and Washington led the rest to safety.

BRAZIL. Vincente Pinzon skirted the coast of Brazil in 1500; the Portuguese under Alvarez Cabral took possession of the coast near Porto Seguro that same year. A Portuguese force in 1567 overthrew a Huguenot colony and founded the present Rio de Janeiro. Discovery of gold in 1693, and of diamonds in 1729, stimulated colonization, and the capital was removed from Bahia to Rio de Janeiro. When Portugal failed to protect the royal family against dangers from the French in 1808, the emperor went to Brazil, opened up commerce, and in 1821 returned to Portugal, leaving his eldest son as regent. The latter proclaimed independence in 1822, and ruled as Dom Pedro I until 1831, when he resigned in favor of his son, a mere child, who became Dom Pedro II in 1840. Save for wars with Buenos Aires in 1852 and with Paraguay in 1865-70, his reign was one of uninterrupted peace and prosperity, until the royal family was exiled in 1889, when Brazil became a republic. Dr. Getulio Vargas, failing to win the presidency, in 1930 overthrew Luis Pereira de Souze, the incumbent, by a popular uprising. Brazil withdrew from the League of Nations in 1926. A new Constitution went into effect in 1933.

BRITISH EMPIRE. Six principal divisions, not including mandates, of countries, colonies, districts, protectorates, and small islands comprise the vast British Empire. The total land area of the Empire is over 13,000,000 square miles, the total population exceeds 490,000,000, in both cases more than one-fourth of the globe. These areas are about equally divided north and south of the equator, and nearly so, east and west, so far as alternation of night and day is concerned, though the actual land area lies about two-thirds in the eastern hemisphere. It is therefore literally true that the sun never sets on the British Empire. Most of the lands controlled by

Great Britain rallied to the service during the World War. Since 1918, however, distinct tendencies have caused the government at London to recognize more fully the autonomous character of seven of the dominions. These dominions are regarded as co-equal and self-governing "in the community of nations known as the British Empire." So states the treaty allowing the Irish Free State in 1921. The British Empire has seven members in the League of Nations:—The United Kingdom (Great Britain and Ireland), Commonwealth of Australia, Dominion of Canada, India, Dominion of New Zealand, Union of South Africa, and Irish Free State. Newfoundland is a dominion, but not represented in the League of Nations or British Imperial Council. Below are the names, status, and date of final acquisition of various parts of the British Empire.

If two dates are given, one is of first or part acquisition, the second part that of final; or first, of acquisition, later relinquished, and second date that of final authority.

1. *The United Kingdom,* often miscalled the British Empire, consists of England proper, dating from Edgar, 958; Scotland, claimed early, united to England and Wales in 1603, and parliaments united, 1701; Wales, 1536; Ireland (excluding the Free State, now a dominion), claimed early in 1172, Irish parliament abolished in 1801. The Isle of Man, almost independent, but not admitted as a dominion, finally purchased 1829. Channel Isles came with the Normans to England.

2. *Self-Governing Dominions,* to each of which is sent a governor general who in theory has power of veto in some cases, but rarely attempts to exercise it, his function being mainly social and advisory. Newfoundland, claimed by Humphrey Gilbert in 1583, is the oldest settled territory outside the United Kingdom itself. (In 1933 made temporarily a crown colony). Canada, conquered in 1759, formally ceded by France 1763, organized as a dominion in 1867, and other parts added later. Labrador has always been part of Newfoundland politically. Australia, settled in 1788, parts united as a commonwealth in 1901,—more independent than other dominions,—with new capital at Canberra (1931); includes Tasmania, an island group. New Zealand, 1840; now has mandate over Western Samoa. South Africa, as a union in 1910, and as dominion, 1930, is made up of Cape of Good Hope, 1795-1803, 1806; Natal, 1824, but annexed in 1843; Orange Free State, 1848-54, 1900 (after Boer War), Transvaal, 1877-81, then virtually independent, annexed in 1900 (after Boer War). The Irish Free State, 1921.

3. *Modified Autonomy,* intermediate between dominions and crown colonies. Malta, 1800, constitution suspended, 1930-32; Southern Rhodesia, 1889 organized by South African Company, annexed 1923, asked dominion status, 1932.

4. *Crown Colonies,* without responsible government, and controlled by the Secretary of State for Colonies. In North America: Barbadoes, 1605-25; Bermuda, 1609; British Honduras, 1638; Jamaica, 1655; Bahamas, 1666; Tobago, 1763, 1803; Falkland and South Georgia Is., 1765, 1832; Trinidad, 1797. In Asia: Aden and Perim, 1839; Hongkong, 1842, an island with a "perfect harbor"; Straits Settlement (including Singapore), East India Company, 1819, 1874-95; Federated Malay States, 1875; Weihaiwei, leased from China, 1898. In Africa: Northern Rhodesia, South African Company, 1889, 1923.

5. *Colonies and Protectorates jointly,* midway between protectorates and colonies. Some have resident commissioners. The chief ones are Sierra Leone, 1787; Gold Coast, 1871; Nigeria, 1884-86; Kenya (East Africa), 1888, 1920.

6. *Protectorates,* differing from crown colonies in that they are not officially annexed to the Empire, and their residents are not British subjects. Administration is usually by native chiefs, under English sanction, with aid in case of trouble or foreign encroachments. Some of the chief protectorates are St. Helena, 1651, 1673; Basutoland, 1868; North Borneo, 1881, 1888; Papua, 1884; Somaliland, 1884, 1887; Bechuanaland, 1885-91; Sarawak in North Borneo, land of the hereditary white rajah, 1842-1888; Brunei, 1888; Uganda, 1890-96; Zanzibar, 1890, received from Germany in trade for Heligoland in the North Sea; Nyassaland, 1891; Unfederated Malay States (part), 1909. Scores of small islands, mostly uninhabited, are protectorates, such as the Fiji, 1874; Southern Solomon and others, 1877; Christmas, Fanning, and others, annexed, 1898. See article on *Mandates* for territory allocated to the British Empire.

BRITTANY. This district in northwest France, once called *Armorica,* for many centuries has been inhabited by a Celtic race allied to the Welsh of Wales, the Cornish people, and the ancient Cymri. The Breton language, now used by 1,250,000 people, is often called Armorican, and is like Welsh in many respects. Before 300 Brittany was divided into petty states, later into monarchies, subject still later to the Franks, and then assigned to the Northmen in the 10th century. In 992 Geoffroi, Count of Rennes, became duke of Bretagne, and the duchy was united with France when Charles VIII married Anne of Brittany in 1491.

BROOK FARM. One of over 125 communities established before 1875 in the United States according to the principles of Fourier and other sociologists. Brook Farm contained 200 acres at Roxbury, south of Boston. Each one there was to share in the labor of the farm and to follow his own pursuit, art, or profession half the time at least. The plan failed because of bad management, burning of a large building with no insurance, and the inability of the members to combine practical labors and other work. The scheme continued from 1841 to 1847. Some noted persons who spent time at Brook Farm were Nathaniel Hawthorne, Margaret Fuller, Louisa M. Alcott, Charles A. Dana, George W. Curtiss, and George Ripley, the chief founder. Hawthorne's *Blithedale Romance* is founded in part on life at Brook Farm.

BROWNSVILLE RIOT. On Aug. 13, 1906, colored troops of companies B, C, and D of the 25th Infantry stationed at Fort Brown shot up the city of Brownsville, Texas, on the Rio Grande River opposite Mexico. The army investigation disclosed that no soldier would implicate any of his companions, and so recommendation was made that all be discharged *en masse* without honor, a course followed by President Roosevelt. After much criticism, once more in 1910 a special court of inquiry rendered a verdict that the men of the 25th Infantry were guilty of the outrage. No further action was taken.

BRUMMEL, GEORGE BRYAN (1778-1840). From the time that he was at Eaton and Oxford, "Beau" Brummel was known for his immaculate taste in dress and manners. Fashionable persons used to imitate and quote him in disputed matters of etiquette. For years he was a familiar companion of the Prince of Wales. After temporary estrangements, the Prince at last cut Brummel from his favor completely. The dandy then fell into extravagance, debt, and bad habits. In 1816 he fled to France, where from 1830 to 1832 he was a British Consul. For a time he was helped by his old friends, but at last died in a charity home at Caen.

BUCCANEERS AND PIRATES. Every child has imagined the life of Captain William Kidd, and his bold band of pirates, described elsewhere in this history. He may not know that several associations existed for the purpose of capturing vessels on the high seas, and governments gave commissions to individuals and companies to harry the commerce of rival nations. The Buccaneers were a group of French and English sailors who preyed on the Spanish possessions in the new world. They captured and looted the city of Panama in 1671. From 1525 they took many vessels of the Spanish in the West Indian trade. One of the pirate leaders, Henry Morgan, was knighted and became governor of Jamaica. The French called these men *Filibustiers,* a word that is known today for an illegal expedition or tactic. Later they were called *marooners* from the custom of setting off their captives on desert islands to shift for themselves. Sir Francis Drake, John Hawkins, Sir Walter Raleigh, and others in the age of Elizabeth were given commissions to prey on the commerce of Spain. They were hardly more than legalized pirates. When Great Britain frowned on such practices, and punished those who engaged in them, the privateers turned to actual piracy. Of such men were Capt. Kidd, Blackbeard, and men like Roberts and Avery, other noted marooners. A Dutchman, Esquemeling, who served with Morgan, wrote what seems like a true story of the buccaneers, of whom much fable has been written in later times. Privateering existed as late as Revolutionary days. Piracy existed even among the Phenicians. The Northmen were the great pirates of the Middle Ages in the north. The corsairs of Algiers infested the seas for many years. (See *John*

Paul Jones, and the *War in Tripoli*). Pirates swarmed in the English Channel as late as 1700, long after Great Britain had outlawed them. Austria, Prussia, and Russia passed stringent laws against piracy in 1841. As late as 1864 five men were hanged in London for murder and piracy.

BUENA VISTA, BATTLE OF. General Zacharay Taylor, in the war with Mexico, on Feb. 22, and 23, 1847, defeated 17,000 Mexicans under Santa Ana. The United States forces numbered about 4700. This battle practically closed the northern campaign, which was terminated shortly afterward by the successful operations in the vicinity of Mexico City under Gen. Winfield Scott.

BUENOS AIRES. Capital of Argentina, largest city in South America, and set up as a district of its own politically. Juan de Solis in 1515 and his party sailed up the Platte River, seeking the fabled road to the eastern hemisphere. He and most of his followers were killed by the native Indians. Magellan and Sebastian Cabot sailed up the river, but did not try to plant a colony. In 1535 Pedro de Mendoza landed where Buenos Aires now is located, but returned to Spain, leaving a small colony, which soon went farther up the river. In 1580 the first permanent settlement was made by Juan de Garey. By 1650 the town had several hundred people. Cattle brought from lands across the sea started the great meat and dairy industry of modern times in Argentina. The present city is built in form of squares, with over one hundred parks covering 3000 acres, over 2,000,000 inhabitants, many notable structures, some of them in ornate and uniform French Renaissance style.

BULGARIA. Since 1908 an independent kingdom in southeastern Europe. After 500, the Bulgars migrated from northern Europe and settled in the Danube valley, where they were christianized in the 11th century, and later conquered by Byzantium. The Bulgars revolted successfully in 1186, but in 1393 were subdued by the Turks. After the Russo-Turkish War, the Congress of Berlin in 1878 set up Bulgaria as an autonomous state, but with an hereditary prince subject to Turkey. Alexander of Battenburg became the first prince in 1878, and the last, Ferdinand, became king in 1908. In the Balkan Wars of 1912-13, Bulgaria gained territory, which was also increased in 1916 by taking the Dobrudja, after joining the Central Powers in the World War. The final settlement reduced these conquests, curtailed the army, and forced payment of reparations. When the premier, who led an agrarian movement, was assassinated in 1919, Bulgaria asked and obtained an increase in her army. This was one cause of enmity of Greece and of the invasion of Bulgarian territory in 1925, but the League of Nations forced Greece to pay Bulgaria an indemnity. Much disorder in Bulgaria in 1934 and 1935 endangered the throne of King Boris, who was obliged to submit to a Fascist regime in 1934, but succeeded in forcing out two militaristic cabinets and replacing them by civil officers, after setting up a new constitution in 1935.

BULL MOOSE. Name adopted for the third party led by Theodore Roosevelt in 1912 when he ran for the presidency. Roosevelt's friends declared that he did not come under the custom forbidding a third term, since he had only one full term of his own, besides part of that of Pres. McKinley. Roosevelt received 88 votes, Pres. Taft 8, and Wilson 435. Bull Moose as a name is said to have originated from Roosevelt's remark, "I feel as fit as a bull moose."

BULL RUN, BATTLES OF. First great engagements of the Civil War, on July 18 and Aug. 29-30, 1861. In the first battle, after five hours of fighting, the Confederates started to withdraw, but Gen. T. J. Jackson held them like a "stone wall," and became known as Stonewall Jackson afterward. The Union army lost 2800, and the South 2000. In the second battle, after two days of heavy fighting, the Confederates under Gen. Longstreet drove back the northern army under Gens. McDowell, Porter, and Heintzelman. As a result, Maryland lay exposed to the armies of the South.

BUNKER HILL, BATTLE OF. (Really Breed's Hill). Twice the colonial militia drove back the British regulars to their ships in Charleston Harbor near Boston on June 16, 1775. Most of the town was burned when the Americans had to retreat for lack of ammunition. British loss about 1050, American 450, among them Gen. Joseph Warren. The results greatly encouraged the colonists. Gen. Lafayette laid the corner stone, and Daniel Webster spoke the oration in 1825, when the foundations were laid for a monument, completed in 1843, when Webster spoke again.

BURIAL, ANCIENT. Three methods have been recognized: inhumation or interment in earth or stone; cremation or burning; and embalming and treating to preserve indefinitely. Cave-dwellers buried in grottos and crevices, as in France and America; stone-age people buried in trenches or barrows. Babylonia buried in mounds, later in earth jars, and in regular plots, with weapons, ornaments, and other objects. Egypt first buried in the sand, and later in elaborate pyramid tombs, in which the mummies and property of the dead were kept for many centuries. The Greeks used monuments, tombs, and inhumation in trenches, and later, cremation. The Romans added mourning customs, funeral processions with torches, use of hired mourners, the latter known also in Babylonia. Christians abandoned cremation, used cemeteries rather than single tombs, and resorted to burial in underground chambers, or catacombs.

BURMA. Mongolians succeeded the early inhabitants of Burma, noted for instability of civil rule, but for religious systems of monastic life that endured for centuries. Some of the great dynasties were these: Pagan, from 1054 to 1287, ended by Kublai Khan; then the Shan to 1531, a time of chaos; the Taungoos; next the Alompra (1752-1760), when all the enemies were subdued; Badawaaya (1782-1819), during which age foreign nations interfered; and at last Thebaw (1876-1885), when Burma became a British dependency. In 1930 uprisings in Rangoon, capital of Burma, led to the recommendation of the British Imperial Conference that Burma be set off from India.

BYNG, JULIAN HEDWORTH GEORGE (1867-1935). Beginning with service in India and South Africa, Byng became a major general in 1909. He served as commander in Europe, then on the Dardanelles expedition, next in charge of the Canadian forces (1916), and, after the war, 1921-26, as governor-general in Canada. For skill in the attack at Vimy Ridge in 1917, he was created First Viscount of Vimy in 1926. He served as head of the Metropolitan Police, known as Scotland Yard, in 1928.

BYZANTINE EMPIRE. In the words of the French historian, M. Taine, the eastern Roman Empire, with capital at Byzantium, was "a gigantic mouldiness lasting 1000 years." Yet it at least served to keep back the barbarian hords that threatened to break into Europe from Asia, and at times to check the Huns, Goths, and others from the north. Here Justinian, known for his wise laws, ruled from 527 to 565, but his son proved a weakling, incapable of holding outsiders in check. When Charlemagne became dominant in the west, the dream of uniting both the eastern and western Roman empires came finally to naught. Commenius, during the early Crusades, sought to keep out the wandering and plundering Normans; his successor, John the Good, vainly tried to fight off the Seljuks, Serbians, and other tribes. The rest is a mere procession of emperors in name only, until in 1453 Constantinople, as Byzantium came to be called, fell to the Turks. The city itself was settled by the Dorians in the 7th century B. C. After being influenced, in turn, by Athens, then by Sparta, then by Philip of Macedon, the Celts, and at last the Romans, Constantine made it the eastern capital in 330. In 1929 the name was officially changed from Constantinople to Istanbul. See article on *Constantinople*.

CADORNA, LUIGI (1850-1928). Italian general, who was educated at Turin Academy, commanded divisions in Naples and Genoa, and then, as chief of staff, prepared the Italian army to enter the World War. For two years he directed operations against Austria, then was sent to Versailles as one of the Allied Military Council, but finally in Feb. 1918 gave way to Gen. Diaz. Mussolini restored Cadorna to favor, and made him a field marshal, along with Diaz, in 1924. After that he did much to reorganize the army.

CALCUTTA. Metropolis of India, capital of Bengal, a city on the Hoogly River about 86 miles from the sea. Calcutta is the educational and business center of a vast territory, being chiefly the port for the trade between Europe and the Far East. The Nawab invited the East India Company to establish the city in 1690. Eight years later the Company

purchased it outright of the governor of Hoogly, and held it until 1756 when it was captured by the Nawab of Bengal. At this time the English garrison were huddled into a narrow space called the Black Hole, described elsewhere. One year later Clive and the British captured the city, after which great prosperity followed. In 1876 a new city government was adopted, amended in 1900, and in 1923 changed to a mayor and council form. Over 60 per cent of the inhabitants are Hindus, 30, Mohammedans, and the rest scattered among many faiths. From 1772 to 1912, Calcutta was the capital of British India.

CALIPHATE. Somewhat comparable among the Mohammedans to the Pope among Roman Catholics, but never as powerful. Different dynasties of caliphs ruled in Bagdad and elsewhere. The Ommiads were defeated by the Abassides in 750, and the latter continued to hold sway until 1258. One of the Ommiads set up a rival caliphate at Cordova, Spain, and this grew to great wealth, culture, and power. Being a rival to the oriental caliphate, this helped hold back the Mohammedans from entering Europe from Asia. Turkey assumed the caliphate in the 16th century, and the sultans exercised, in theory at least, both temporal and spiritual powers. The Nationalists or Young Turks, however, deposed the sultan-caliph, Mohammed VI, on Nov. 2, 1922. The sultanate was abolished, and Addul-Méjid was named caliph. For some years previously, the eastern Mohammedan nations had been lukewarm toward Turkish claims to sovereignty. On March 3, 1924, the National Assembly at Angora, the new capital of Turkey, deposed the caliph, and abolished the office. King Hussein of Hedjaz assumed the title, which was said to lapse when he abdicated in 1924. Two conferences in 1926, one at Cairo and one at Mecca, failed to elect a new caliph.

CALVINISM. Following the beliefs of John Calvin, some of the religious sects have held that God "ordains" or "elects" that some persons shall be saved, and others shall be lost. Arminius, a Dutch scholar and opponent of Calvinism, declared that such a doctrine made God the author of sin, and that all efforts to save persons must be futile if some are doomed to be lost, and only the elect are to be saved. The ensuing controversy left the Church of England much inclined toward the tenets of Arminius, and the Scotch Presbyterians inclined toward Calvinism. Early Puritanism, however, was strongly influenced by Calvinism.

CAMBRAI, BATTLES OF. Two great battles of the World War were fought about Cambrai in France, one in 1917 during the British advance and the second toward the close in 1918. In the August retreat of the Allies in 1914, the enemy had taken Cambrai. The British in 1917 planned the use of army tanks on a large scale. Beginning on Nov. 20, two infantry corps and 350 tanks were launched against the Hindenburg lines, all three of which they crossed, but the tanks could not get over the Scheldt Canal. The British took 10,500 prisoners and 142 guns in this advance, which demonstrated the value of tanks in covering ground. In the next two or three months, the Germans gained equally, however, and altogether the British lost about 45,000 men in these operations. The Hindenburg lines about Cambrai were then made supposedly impregnable to tank offensives. On Sept. 27, 1918 another great advance began, which in one day, with 53 tanks, destroyed the Hindenburg outer defenses, took 10,000 prisoners and 200 guns. The final failure of the boasted Hindenburg defense system was a great shock to German morale. The Americans with General Haig, using 175 tanks, and many British Divisions, on Sept. 29, pushed forward. One great feat was the crossing of the Scheldt by rafts, lifeboats, and other means. Thirty British divisions were engaged, two American, and 39 German. The Allies took 36,500 prisoners and 380 guns. It was the greatest of all Allied victories to this point, and perhaps of the war, and was the main cause of the German bid for peace in October and early November.

CAMDEN, BATTLES OF. Lord Cornwallis defeated the Americans under Gen. Horatio Gates at Camden, S. C., on Aug. 16, 1780. Many of the colonials were green recruits, who fled when suddenly attacked by the enemy. The troops from Maryland were commanded by Baron Johann DeKalb, one of the Bavarian allies of Washington, who was mortally wounded, when his force stood their ground.

CAMPUS MARTIUS. One of eight large fields in the city of Rome, which were used as athletic and military training grounds. The name means Field of Mars, and our modern word *campus* comes from this phrase. The Campus Martius was also used for patriotic and civic assemblies. Later it was covered with public structures and residences for the wealthy. Today the district is still known as Campo Margo.

CANADA, DOMINION OF. Some of the early explorers positively known to have visited what is now Canada were John Cabot, 1597, Henry Hudson, 1610, Jacques Cartier, 1535, who sailed up the St. Lawrence to where Montreal now stands, Samuel de Champlain, 1605-35, who spent years in this region, and he was followed by numerous Jesuits, many of whom perished from cold and Indian attacks. By 1666 a mission station was planted on Lake Superior; Joliet and Marquette in 1673 had explored as far as the Mississippi. Montmorenci came to represent the church, and, in his turn, Frontenac, to represent the state, the latter being the only early ruler able to hold the Iroquois Indians in check. For many years England and France contended for preeminence in Canada. At last Acadia went to Great Britain in 1713, and all of Canada in 1763, after winning the Seven Years' War. From 1670 to 1869 the Hudson's Bay Company controlled large tracts, eventually sold to the Canadian government. Because of the Revolutionary War, many loyalists to the mother country emigrated from the United States into Canada, mainly into New Brunswick. Upper Canada (now called Ontario) in 1791 was set off from the district down the St. Lawrence River, known as Lower Canada, with Montreal as the chief city and with customs and language predominantly French. Following a rebellion in 1837-38, both Upper and Lower Canada, were united into a single province, which became semi-independent of British control. Governments were set up in Prince Edward Island in 1851, British Columbia, 1852, and Newfoundland, 1855. With the exception of Newfoundland, these were joined with Upper and Lower Canada to form the Dominion of Canada in 1867. To this day Newfoundland is a separate dominion on the same status as the Dominion of Canada itself. The provinces of Alberta and Saskatchewan were added to the Dominion in 1905. The Yukon Territory was formed in 1898, and Northwest Territory in 1920, with three divisions or districts, Mackenzie, Keewatin, and Franklin, all nominally a part of the Dominion of Canada.

The great political leaders have been Sir John A. Macdonald, who did much to promote the union, Sir Wilfrid Laurier, Liberal leader for 32 years, followed by William L. Mackenzie King, twice premier. Robert L. Borden, leader of the opposition or Conservative Party, has also been twice premier. Since 1921 a new Farmer or Progressive Party has gained much influence. Rebellions were led by Louis Riel in 1869-70 and again in 1885, when he was executed. Canada sent 600,000 men to the World War, of whom 210,000 were killed or wounded. Some of their great battles were Vimy Ridge, Hill 70, the Somme, Amiens, and Cambrai. Canada was allowed to send ambassadors to foreign lands in 1926 for the first time, and given a seat in the League of Nations. In 1925 the Congregationalist, Methodist, and most of the Presbyterian churches formed the United Church of Canada. Some of the great problems of Canada have been fisheries, tariffs, transcontinental railways, water routes, boundaries, and differences in races and religion.

CANNAE, BATTLE OF. By the River Aufidus at Cannae the Romans suffered a great defeat by Hannibal, general of the armies of Carthage, in 216 B. C. Though outnumbered two to one, Hannibal drew up his forces in crescent shape, with artillery on his wings, and a dense center of about 25,000 Gauls and Spaniards. He purposely allowed some of the Roman legions to break through, only to slaughter them, while not more than one-third of the Roman legions could engage the enemy, since the Carthagenians were protected by the solid center.

CARSON, CHRISTOPHER (1809-1868). Commonly known as Kit Carson, an American hunter, trapper, and scout for the government. He was born in Kentucky, saw service in the northwest, and was with Frémont on his expedition to take possession of California during the Mexican War. He conducted parties to California during the gold rush in 1849-50, and four years later settled at Taos, N. M., where he served as Indian agent. For service in the southwest during the Civil War, he was brevetted brigadier general. Once he drove 6500 sheep overland to Cali-

fornia, and again 50 horses and mules over 500 miles to Fort Laramie.

CARTHAGE. Once a great city in northern Africa, near the present Tunis, and early occupied by the Canaanites, who named it Kirjath. First a merchant city, then a great sea power, and by the 5th century B. C. dominant over all the southern Mediterranean lands. At its height Carthage had 700,000 inhabitants. This district was long the battle ground between the Semitic and Aryan races. As a result of the First Punic War, Carthage gave up Sicily and paid a large tribute, and later, while putting down a revolt of mercenary soldiers, the city lost Sardinia and Corsica to Rome. Three great names arise in the conflicts with Rome,—Hamilcar, his son, Hasdrubal, and Hannibal, brother-in-law and successor of the latter in 221 B. C. Carthage, under the first two of these great generals, won victories in Spain, established Cartagena, and took Saguntum in 219. In 202 peace was concluded with Rome, after the great Scipio had defeated Carthage at Zama. At last in 146 B. C. the Romans took Carthage, after a siege of two years. More than a century later, Augustus carried out the plan of his uncle, Caius Gracchus, in rebuilding the African city, which flourished for two centuries. It became the Vandal capital in 439, of our era, fell to Belisarius in 533, and again was razed by Arabs in 647, after which the once proud mistress of Africa, and of parts of Italy and Spain, never attained any prominence. Modern excavations at the site of Carthage have revealed interesting ancient foundations. See *Hannibal* and *Hasdrubal.*

CARTIER, JACQUES. (1494-1557). Like most early westward explorers, Cartier sought a northwest passage to the Pacific and to the riches of Cathay or ancient China. In 1534 he visited the region of Newfoundland, continued on to Cape Breton, Prince Edward Island, and named the Bay of Chaleurs. At Cape Gaspe he raised a cross to claim the land for France. He returned in 1535, proceeded up the St. Lawrence to Stadacona, where Quebec now is, and carried off to France the Indian chief, after proceeding to Mount Royal farther up the river. Cartier was back again as pilot of the fleet that brought the first French governor general in 1541, wintered once more in Canada, and took back some ore that he wrongly thought to be gold. He was granted a manor near his native town.

CASTES OF INDIA. The commercial and social system of India was once so highly complex that over 200 castes existed. The native word is *jâti, race,* and the early traders from Europe called it *casta,* an equivalent word. The Brahmins recognized four chief castes: the priestly, the military, the agricultural and commercial, and servants, including slaves. Remains of the ancient system still hinder the progress of India. The castes once extended into religious, social, and fraternal relations, as the numerous orders, societies, and groups even today testify. Many subdivisions existed, such as in agriculture, where a man might grow vegetables, but not certain specified ones, or fruits or nuts. In marriage, business, and in social life generally, combinations were frowned upon. Even criminal castes or tribes still exist. Other parts of Asia have their peculiar caste systems, such as in Siam. So did the aborigines of Australia, America, and even today in northwest Canada among natives. In the feudal system of Europe, classes, societies, and orders resembled the caste systems in modified forms.

CASTILE AND ARAGON. Separate districts of Spain at last united to form the modern nation, though still differences exist and tend to disunion. Old Castile was the northern portion, so named because of the numerous castles built as protection against the Moors. Other districts of Spain were the Asturias and Leon, ruled by native dukes, until Ferdinand I (1035-1065) united Castile and Leon. In 1465 Isabella became queen. Four years later she married Ferdinand of Castile, and in 1475 modern Spain emerged from the union of all monarchies.

CATHAY, or *Khita,* the name of the Tartars, who before 1100 lived in what is now the northern part of China. In medieval Europe the impression was common in the middle ages that this land was much farther north than it is. It was not until after 1600 that Cathay was recognized as merely part of the great empire, of which the southern part had long been known as *Mangai.* Early voyagers were trying to reach Cathay by a northwest passage from the Atlantic into the Pacific. South China still retained the old Sung culture, while the north was impressed by the Tartars; and so the distinction was not wholly artificial. In Russia and some other lands today, China is still called Khitai or Kitai.

CAVELL, EDITH (1865-1915). An English nurse shot as a spy by the Germans at Brussels on Oct. 12, 1915. She had been, for several years, a matron of the Birkendael Medical Institute in Brussels, and this became a Red Cross station during the World War. She was accused of aiding Belgian, French, and British prisoners to escape, a charge which she did not deny. In spite of protests by the Spanish and American ambassadors in Belgium, the sentence was carried out. A memorial service was held for her in Westminster Abbey, she was buried in Norwich Cathedral, and a monument was erected in her honor in St. Martin's Place, London.

CAWNPORE, INDIA. During the Indian mutiny against Great Britain, in July 1857, hundreds of women and children, with some soldiers under Gen. H. M. Wheeler, were besieged at Cawnpore for 21 days by Nana Sahib, Brahmin peshwa or leader. Though promised safe conduct after surrendering, about 600 were butchered while on the way to embark on the River Ganges. Two hundred more were slain later and thrown into a well, the site of which is now marked by a memorial garden. Nana escaped to Nepal, where he seems to have died three years later.

CEYLON. This island, sixty miles southeast of India, a dependency of Great Britain, was once inhabited by the Vaddas, then by a Dravidian stock, and now by Singhalese. Early writers mention Ceylon frequently. George Tourneur (1794-1843) translated the history of Ceylon from the early Pāli language chronicles in verse. He gives the names of 165 kings in a period of 2341 years, tracing the history down to 1798. In customs, dress, or general culture little change has occurred there since the times of Ptolemy in 150 A. D. The religion is Buddhism and Brahminism.

CHACO, GRAN. See Bolivia.

CHÆRONEA, BATTLE OF. In 338 B. C. Philip of Macedon crushed a force of about 50,000 Athenians and Thebans between the two wings of his army of 32,000. Thus perished the liberties of Greece. Two years later Philip left to his son, Alexander, the task of conquering the rest of the world. Again at Chæronea, Sulla with only 30,000 Romans, 86 B. C., defeated thrice that number commanded by Archelaus of Pontus.

CHALONS, BATTLE OF. Here at last Attila the Hun met his match. The Romans pitted against him had the support of the Goths, and the night before the battle in 451, the Franks broke through the Hun lines, after 15,000 Franks had been slain. His augurs or soothsayers told Attila that he would lose, but the enemy would lose their general. As night was coming on, he prepared for battle, but the Romans drew the Huns out from camp, so that they could fall on one flank, while the Visigoths crushed the other. This old plan, used against Rome by Hannibal, succeeded perfectly. Châlons was the last great battle of the western Roman empire. In revenge Attila invaded Italy the next year, but died before he could do much damage.

CHAMPAGNE, BATTLES OF. See under *Aisne, Argonne, Château-Thierry, Soissons-Rheims,* and outline history of the World War.

CHAMPLAIN, SAMUEL DE (1567-1635). After two years in the West Indies, the results of which were a book advocating a canal across Panama, this explorer in 1603 was sent to Canada. He ascended the St. Lawrence to the site of Montreal, in 1604 turned south as far as Cape Cod, and in 1609 founded Quebec. While seeking a short route to Asia, he discovered the lake in New York which now bears his name. In 1613 with some Indians he attacked the Onondaga tribe near Oneida Lake in central New York. While acting as lieutenant general in New France, Champlain was captured by the British in 1629 and taken a prisoner to England. Four years later, this part of Canada went back to France and Champlain to his old post, where he died in 1635. His kind treatment of the Canadian Indians was of great value to France.

CHANCELLORSVILLE, BATTLE OF. Midway between Washington and Richmond, on May 2, 1863, the

Confederate army under Gen. R. E. Lee engaged a Union force under Gen. Joseph Hooker. The Northern army had been driven back the day before, and Lee sent Gen. T. J. (Stonewall) Jackson to reconnoitre. Jackson fell mortally wounded when fired upon by his own men, who mistook his party for the enemy. When Lee saw that his army was menaced by part of the Northern forces, he advanced against Hooker, who finally withdrew. The Federals lost 17,300 killed, wounded, and missing; the Confederates about 13,000. Gens. Howard, Sickles, Slocum, and Sedgwick commanded divisions under Hooker, who had succeeded Gen. Burnside as commander-in-chief.

CHARLESTON. Historically important city, seven miles from the ocean, the capital of South Carolina, 1783 to 1790. It was founded in 1670, but was moved to its present site in 1680. Here a company of Huguenots settled in 1686, 1200 Acadians from Canada in 1755, and 500 French refugees from Santo Domingo in 1793. In 1775 Charleston was the third seaport in the country, the first southern city to join the Revolution, and the first place to adopt a state constitution. After repulsing two prior attacks, in 1780 the garrison surrendered to 16,000 British under Sir Henry Clinton. In 1784 the first bale of cotton to go to Europe was shipped from Charleston. It was the center of a nullification movement in 1832, the scene of the first nullification convention in 1860, and the scene of the opening battle when Fort Sumter was fired upon. Until Feb. 1865 it was held against attacks by northern troops and fleets. In 1886 much of the city was completely wrecked by an earthquake, which did $8,000,000 worth of damage, with considerable loss of life. Today Charleston is an important commercial port, the site (on Sullivan's Island nearby) of a complete artillery unit, recently much improved, and a large United States navy yard, besides two excellent forts, Moultrie and Sumter.

CHARTER OAK. Sir Edmund Andros was one of the most disliked of the British governors of New England colonies. In 1687 he came to Hartford, Conn., to demand their charter, which contained many liberal principles. A meeting of the colony council was called to hear Andros, but, during the sessions somebody put out the lights, and the charter vanished from the council table. For about two years it was concealed in a hollow tree, later known as the Charter Oak, which was blown down in 1856. When Andros was recalled to England, somehow the charter reappeared. In 1935 a picture of the Charter Oak appeared on the postage stamp issued to celebrate three hundred years of Connecticut history.

CHARTER, THE PEOPLE'S. Magna Carta, the great charter of English liberties, was granted by King John to his rebellious barons at Runnymede in 1215. Various other demands have been made from time to time for the extension of British liberties to the common people. In 1832 the Reform Bill in England gave many rights to the middle class. With the rise of cities, during the new industrial order brought about by the growth of factories, the working men felt they were not represented. Hence, in 1838 they joined in a formidable agitation known as *Chartism*, because they demanded a People's Charter. These demands were: 1, universal manhood suffrage; 2, secret ballot in elections; 3, adjustment of electoral districts; 4, yearly parliaments; 5, abolition of property qualification for members of Parliament; 6, pay of members of Parliament. The monster petitions making these demands were rejected in 1839 by Parliament. No particular changes were made until after the revolution in France in 1848, when many of these demands were granted. Meanwhile, improvement in the economic conditions tended to divert attention.

CHATEAU-THIERRY. Small city on the Marne River, 59 miles northeast of Paris, where the American troops in the World War first saw service on a large scale. It was occupied by the Germans in 1914, but was recovered by the British, and became the scene of heavy fighting in the summer and fall of 1918. In the second battle of the Marne, the Americans fought with the 6th French army. On May 31, 1918, the 7th Machine Gun Battalion of the 3d Division, United States Army, prevented the Germans from crossing the river on the way to Paris, after the French colonial troops had shown signs of weakening. Then the 2d and 3d Divisions were ordered to advance to the lines of battle, relieved later by the 26th American or Yankee Division, assisting the French 43d. Here in July the 28th or Keystone American Division, with the French, were too much for the German batteries. So the great fifth and last German offensive failed. Then Foch used the First American Corps made up of various Divisions, in a pivot, while the 26th and 3d American Divisions swept forward in a counter offensive, and this showed signs of the turn of the tide of the war in favor of the Allies.

CHERRY VALLEY MASSACRE. Walter Butler with about 200 Tories, some English, and 600 Indians under Joseph Brant of the Mohawk tribe, put to death about 50 inhabitants of Cherry Valley, Otsego County, New York, on Nov. 11, 1778. They also treated so cruelly 70 prisoners on the march back to the Canadian settlements that many of them died. Later Brant became a Christian convert, greatly regretted his act, translated the Bible into Mohawk, and went to England to raise money for an Episcopal Church in Canada.

CHESAPEAKE, THE. After the Revolution, Great Britain continued to claim the right to search American ships for possible deserters from the British navy. In April 1807 the British man-of-war *Leopard* overtook the American *Chesapeake* outside the harbor of Norfolk, Va., demanded permission to search the ship, and fired on her when refused. Several of the crew were killed, and four sailors were taken, two of them Americans. Great Britain refused redress and reparation. This, and several similar incidents, led to the War of 1812. On June 1, 1813, the *Chesapeake* was engaged off the coast near Boston by the British *Shannon*. Both ships were badly disabled, but the Americans lost 146 to 84 for the British. Captain Lawrence, mortally wounded, cried, "Don't give up the ship." This became the American rallying-cry during the rest of the war.

CHICAGO. See *Fifteen Largest Cities* in Department of *Geography*.

CHICKAMAUGA, BATTLE OF. Twelve miles east of Chattanooga, Tenn., a fierce battle was fought on Sept. 19 and 20, 1863. Gen. Rosecrans of the federal army, with 55,000 men, prevented Bragg from cutting him off from the city. The Confederates had about 70,000 troops. General Thomas, for the North, resisted a terrific attack on the first day, and again, on the second, stood firm against some Confederates who broke through the federal lines. For this he was dubbed "The Rock of Chickamauga." The North lost 16,000 men, and the South two thousand more. The forces of Rosecrans and Thomas continued to hold the city.

CHILE. Magellan landed on the coast of Chile in 1520, and the successors of Pizarro fought the natives, but wars continued for over 200 years. Santiago was founded in 1542. Revolutionary movements in South America led to the defeat of the royalist or Spanish forces by Bernard O'Higgins, a native Chilean, and José de San Martin. From 1830 to 1861 a dictatorship held power, followed by a liberal government for thirty years. Meanwhile Chile supported Peru in her efforts to gain freedom from Spanish domination, but in 1879-82 fought both Peru and Bolivia over a boundary dispute. In 1891 Pres. Balmeceda was defeated by forces called the Congressionals, and he committed suicide. Jorge Montt succeeded him. President Ibañez, 1930, resisted an attempt to unseat him. After a boundary dispute with Argentina had been settled by arbitration in 1902, both countries agreed on a permanent arbitration treaty. Great Britain arbitrated another dispute with the United States in 1911.

CHINA, ANCIENT. Traditions in China go back to 4000 B. C., but definite records are relied upon only from the Chou period, some 2700 B. C. During the reign of Yu-wang, an eclipse is recorded, which astronomers have checked as correct for Aug. 29, 776. Five states were then set up, with resulting warfare among them, until about the coming of the great sage, Confucius in 551. Other early wise men were Lao-Tze and Mencius. The Chou dynasty continued until 256 B. C. Many rulers, tribes, and influences prevailed, but there were no great periods, until the great T'ang dynasty from 618 to 917 A. D. These rulers pushed the limits of their empire to the Caspian Sea on the west, founded a great library (destroyed by the Boxers in 1900), used printing by blocks, and carried on a very extensive commerce. In the Sung period, from 960 to 1278, the arts flourished as never before, until Kublai Khan, the Mongol chief,

dethroned the last emperor, who cast himself into the sea. Kublai then ruled from his capital near the present Peiping (formerly Peking), not only over both China and Mongolia, but even to the Euphrates. Trade routes became safer, and Europeans commenced to come to Kublai's court, such as Marco Polo of Venice. After the Mongols, came the Ming dynasty in China, 1368-1644, during which Tonking and Cochin China were added; but the Tatars troubled the land. Finally the Manchus were invited in to help China against the Tatars, but they forgot to leave, until forced out by the revolution in 1912. The emperor then deposed became emperor of Manchukuo in 1934. See article on *Manchus*.

CHIVALRY. Though mentioned by the German historian, Tacitus, in early days, chivalry in western Europe flourished only after the Norman conquest of England. No person was born a knight or squire. Boys were early trained to help knights as personal servants, after which at 12 they became squires, by the wish of some knight, but later as a sole honor from a king. The Crusades highly developed the customs, orders, and requirements of knighthood. Before attaining the rank of knight, a candidate had to perform a lonely vigil, as in some church, for prayer and meditation. To test their valor, knights had to conquer in some feat at arms, as in a tournament, or in a joust with another knight, the victor being allowed the horse and armor of his adversary. Sometimes winning knights chose some lady to preside over the sports as Queen of Love and Beauty, or went on quests for some distressed person. Even a king had to go through the regular training of knighthood. A vast literature in story, legend, and poetry grew up in the middle ages, but most of this was laughed out of court by works like the *Orlando Furioso* by Arioso and the *Don Quixote* by Cervantes.

CID, THE. Sometimes called the Cid Compeador, or champion, the hero of the most popular epic of Spain, a poem of 3725 extant verses, written about 1140. Recent investigations show that he was alive in 1064, when Sancho II and Alfonso, sons of Ferdinand of León, quarreled, and the Cid took service with Sancho. When Alfonso came to the throne, on the death of Sancho, the Cid took service with the new king. He was banished from Spain in 1081, fought with different armies, both Christian and Moorish, and at last ruled over Valencia and Murcia. The Cid died in 1099, after being defeated at Ceneca by the Moors. Though the epic poem describing the Cid omits his treachery and cruelty, it gives a good picture of life in Spain.

CINCINNATI. Metropolis of the middle Ohio River district, a large manufacturing and distributing center, Cincinnati is also known for its civic enterprise and good government. George Rogers Clark, the celebrated explorer, established two block houses on the site in 1780, and eight years later the district was bought of the government and was laid out under direction of Col. Israel Ludlow. Here Fort Washington was built the following year. Until 1790 the town was known as Losantiville, and then was named by Gen. St. Clair in honor of the Society of the Cincinnati. Steamboats came up the river in 1811, a city government was set up in 1819, and the opening of the Miami Canal hastened settlement. In 1924 a city manager form of government was adopted. Cincinnati is noted for its beautiful parks, commodious government buildings, and modern public social institutions.

CINCINNATI, SOCIETY OF THE. Founded by officers of the Americans and French who fought in the Revolution, and organized in 1783 at the close of the war. Membership is hereditary, made up from eldest sons in direct line from some officer of the Revolution. Many of the states have their own local officers, who sponsor projects for the good of members and of patriotism. Number of members, about 1200.

CINQUE PORTS. Official designation for five large ports on the southeastern coast of England, Dover, Sandwich, Hastings, Romney, and Hythe. The number was later increased by adding Winchelsea and Rye. Even in Anglo-Saxon times these towns were important in defense of the coast. Edward the Confessor gave them a charter, and William I made the strip of coast including these ports a special district, governed by a warden. In early times these ports had to provide ships for defense of the realm, and in turn their taxes were remitted. In the reign of Edward I, they were obliged to be ready to supply 57 ships on fifteen days notice. From 1200 to 1400, these towns played an important part in the scheme of defense of England. In 1688 some of their privileges were taken away, and in 1835 the number of members to Parliament was reduced from sixteen to three, and since then the district has been merged with the county. The lord warden no longer has civil authority, but still has some local importance, and has today the privilege of carrying the canopy over the sovereign's head when a new monarch is crowned.

CLAYTON-BULWER TREATY. In 1850 Great Britain agreed with the United States that any canal built across the Isthmus of Panama should be internationalized. No one nation should have exclusive control, and no nation should establish a colony along the canal. John M. Clayton, U. S. Secretary of State, and Henry Bulwer, British Ambassador at Washington, negotiated the treaty; hence its name. In 1901 the new Hay-Pauncefote Treaty abrogated these provisions.

CLIFF DWELLERS. Ancestors of modern pueblo Indians of the arid southwest of the United States. Once supposed to be of a different race, but now their dwellings show that man first lived on the ground, then in more sheltered places, and finally for protection in rooms hewn from the solid rock along the faces of canyons. Some pueblos still in New Mexico and Arizona are on high cliffs, like Acoma and a few of the Hopi settlements. In the ruins of Pueblo Bonita, New Mexico, three levels or stages of civilization are represented. Other notable former homes of cliff dwellers are at Mesa Verde in southwest Colorado, in several canyons of Arizona, such as the Canyon de Chelly. Most of these date from before 1500, some possibly from 900.

COLIGNY, GASPARD DE (1517-1572). An admiral of France, who aided Francis I and Henry II in the wars against Spain, but was cast into prison after the defeat of France at St. Quentin in 1557. Then he became a convert to the cause of the Huguenots, the Protestants of France, who were demanding freedom of worship, which Coligny and others secured by a treaty in 1563. Catherine de' Medici, the queen mother, opposed all concessions, and little by little the old intolerance revived, ending in a second war in 1567. When Prince Condé died, Coligny became chief general for Henry of Navarre. Again, Catherine feared his growing influence over the new French king, Charles IX. During the Massacre of St. Bartholomew, 1572, Coligny was murdered in his bed. See *Huguenots*.

CODY, WILLIAM FREDERICK (1846-1917). This American scout and showman was born in Iowa, was one of the riders of the Pony Express across the western plains, and served during the Civil War as scout and later in the 7th Kansas Cavalry. While providing buffalo meat on contract for laborers building the Kansas Pacific Railway, he was called "Buffalo Bill," a name he loved to be known by late in life. Again he served in the army from 1868 to 1872, afterward in the Nebraska Legislature, and in the 5th Cavalry in the Sioux uprising, 1876. From 1883 for twenty years he was engaged in exhibiting western life by his Wild West Show.

COLOMBIA. Ojeda, Vespucci, and Columbus visited the northeastern coast of South America in 1499 and 1500, and Balboa made settlements on the Isthmus of Panama in 1511 and 1517. Until 1718 this district was called New Granada. Independence from Spain was won in 1818, after which Colombia, Venezuela, and Ecuador united, but were unable to agree in 1829. From then to 1863 agitation continued as to whether Colombia should become a federal republic or a mere collection of states with a loose bond of union. Constitutions were adopted in 1858, in 1863 when the federal form was finally chosen, and in 1886. Revolutions occurred in 1860, 1884-86, 1890, and 1901. Panama, which was part of Venezuela from 1821 to 1856, and then united to Colombia, seceded finally under influence of the United States in 1903. Not until the United States paid Colombia $25,000,000 in 1921 did that country acknowledge the independence of Panama. War between Colombia and Peru over seizure by the latter in 1932 of Puerto Leticia, a town on the Amazon, was finally settled by a League of Nations commission, when Peru expressed regret and withdrew from the town in 1934.

COLUMBUS, CHRISTOPHER. See under *Scientists*.

COMMUNISM. The idea of holding property in common did not originate in Russia, nor is it a modern development. Some early Christian sects tried to have a single treasury, and no individual ownership of goods, but they found it did not work. Later it was declared a heresy. The early Cretans and Spartans also tried a form of communism. So did the Franciscan monks, and the Brethren of the Common Lot. Moore's *Utopia* shows the interest in an ideal commonwealth in 1516. Fourier (1772-1837) in France and Robert Owen (1771-1858) in England, Ireland, and America started experiments in common holding of property. Probably absolute communism never was tried for any length of time, nor has it even been a success for long on a limited scale. Fourier proposed *phalanges* or groups of about 1800, these to be self-contained social units in life and business. Scores of similar experiments were made in the United States after 1800. George Rapp, a German, started his Harmony Society in Pennsylvania, in 1803, then went to Indiana in 1815, and back to Pennsylvania to found the town of Equality. Robert Owen bought the property, and founded New Harmony, Indiana, which lasted from 1824 to 1827 only. Brook Farm near Boston, described elsewhere, took up the ideas of Fourier late in its existence. Horace Greeley, in his New York *Tribune*, wrote many earnest pleas for some society like that advocated by Fourier. The North American Phalanx in Monmouth County, N. J., lasted for 12 years, ending in 1856. The Amana Society, of Iowa, once near Buffalo, N. Y., was founded by Quakers from Switzerland and Germany, and exists today as a business organization only. So does the Oneida Community, founded in 1848 in Oneida County, N. Y., by J. H. Noyes, but the sect had peculiar ideas as to marriage, and was broken up as a communistic experiment. All these societies have been inspired by religious and social zeal. Each has had its own peculiar feature, like celibacy among the followers of Rapp, whose idea was to amass much property for Christ to use when he should come again. Some had good business shrewdness; others were totally impractical, and soon this was demonstrated. The control of property by the state, or by a class like the proletariat in Russia, or sharing things under state control is not communism as such but some form of state socialism, or class control. In the early theories of communism, all were to share somewhat alike, but not all necessarily on the same numerical footing. Many societies did not advocate equal distribution.

CONCORD, MASS. The oldest town inland in Massachusetts, settled in 1635. It was the scene of the first county convention ever assembled in the state, 1774, of the first Provincial Congress over which John Hancock presided, and of the memorable battle on April 19, 1775. By the old North Bridge, some 200 "minute men" drove back 800 British regulars, who sought to destroy the great quantity of stores and munitions collected by the colonists in anticipation of war. Several on both sides were killed at Concord, and nearly 300 of the British altogether on the way back to their ships in Charlestown Harbor. While the "redcoats" had gone on to Concord from Lexington, the warning of Paul Revere and others had stirred up the whole country; so that, on their retreat from Concord, the British fell into a nest of hornets, when every farmer shot at them from behind trees, stone walls, and any obstruction in the path. Careful army discipline was no match for such tactics. Concord became for years the literary center of New England, the home of Emerson, Hawthorne, Louisa May Alcott, and Henry D. Thoreau.

CONSTANTINOPLE. Before 330 called Byzantium, and renamed Istanbul in 1929. Constantine beautified this ancient city and gave it his own name. Here for a thousand years was the flourishing capital of the Eastern Roman Empire. In 1453 the Turks took the city, after years of threatening the peace of Europe, and there the seat of empire remained until it was moved to Angora (now Ankara) in 1924. Today even the patriarch of the Greek Catholic Church signs himself "Archbishop of Constantinople, New Rome." Important church synods were held there in 281, 553, 692, 754, and 815. Though often attacked, Constantinople was invaded but three times, twice by the Crusaders in 1202 and 1204, and by the Turks in 1453. Over 20 ancient churches remain, the most celebrated of which is St. Sophia, dedicated on Christmas Day, 538, now the most ornate example of Byzantine architecture, and one of the noblest buildings of the world. The old mosques, bazaars, small ancient buildings of various types, all greatly interest visitors from the western world. Yildiz Kiosk, favorite palace of the sultan Abdul Hamid II, now a public museum, reveals the art, culture, and life of the older Turkey. Beginning in 1912, after the revolution of the Young Turks, the city has been modernized, including electric lights, tramways, widened streets, and a new roof on St. Sophia's in 1927.

CONSTITUTION, THE FRIGATE. Known as "Old Ironsides." Probably the best known of the early warships of the United States. As one of the first real ships of the navy, it was commissioned in 1797 in service against French privateers, later against the pirates of Tripoli. Old Ironsides came out of three battles of the War of 1812 with flying colors. On Aug. 19, 1812, commanded by Capt. Isaac Hull, this frigate left the British *Guerrière* a tangled wreck off the coast of Massachusetts after a hot battle of 30 minutes. When the sailors saw the shot from the British cannon bounding off the sides of the *Constitution*, they dubbed her "Old Ironsides." In charge of William Bainbridge, she conquered the British *Java*, on Dec. 29, 1812, off the coast of Brazil, the battle lasting two hours. Other victories include those over the *Cyane* and the *Levant*, in a battle fought in the Atlantic between the Madeira Isles and Gibraltar in 1815. She was repaired in 1833, following the appeal of Oliver Wendell Holmes in the poem, *Old Ironsides;* also reconditioned in 1877, 1897, and 1927. Except for tours to other ports, she has been on exhibit at the navy yard in Charleston, Mass., since 1897.

CONSULS, ROMAN. When the Tarquin kings were expelled from Rome in 510 B. C., two administrators from the noble class took their place. The name consul was applied to these about 300 B. C. They acted as kings, dressed in a white toga with purple band as a sign of power, each checked the other, and both were checked by the Roman Senate,—an early example of what we now call the "check and balance system" in government. Each consul was accompanied by a band of twelve men, called lictors, each lictor bearing the fasces or bundle of rods, and an ax, the symbols of authority. Modern fascism harks back to the days of the consuls. Later the plebeians, or commons, elected two more consuls. Still later one from each class was chosen, and was ineligible for a second term. In 443 B. C., however, *censores*, somewhat like modern judges, had been elected to pass on certain matters once controlled by the consuls.

CORINTH, MISS., BATTLE OF. On April 6-7, 1862, Gen. Grant won decisive victories during his western campaign at Shiloh and later at Corinth. The union army had taken Corinth in May, and here Grant had his headquarters, because the town was an important railway junction. Early on Oct. 2, the Confederates attacked with 22,000 men, but Rosecrans, with about 20,000, drove them back. When the southern troops at last retreated, the northern generals followed them, inflicting great damage at the Hatchie River.

CORINTH. This splendid city of ancient Greece was located on a hill commanding a wonderful view of the sea beyond the Corinthian isthmus. It was the center of trade from the 8th century before Christ to the conquest of Greece by Rome in 146 B. C. Then the Romans carried off the many art treasures, destroyed the great buildings, and sought to cripple the power of Greece by ruining its noblest city, save Athens and Sparta. St. Paul founded a church at Corinth and addressed two epistles to the people of that city. From 1458 to 1687, and from 1713 to the Greek Revolution in 1823, Corinth was ruled by the Turks, except for the period after 1687 by the Venetians. Both in early and late ages the city suffered much from wars, and in 1848 the city was almost completely annihilated by an earthquake. Since 1926 excavations, carried on extensively at Corinth, have unearthed a civilization as far back as neolithic times, and from then down to 1850. The telltale remains of past civilizations include theatres, baths, statues, coins, wonderful terra cotta, vases, and marble and limestone slabs of great artistic beauty.

COPENHAGEN. Situated on two islands, Copenhagen (Köbenhavn in Danish) is the capital of Denmark, possessed of one of the best harbors in the world, deepened and improved in 1901 and 1921. Its growth dates from about 1167 when the bishop of the town fortified it against pirates. During the late Middle Ages it was often attacked by the cities of the Hanseatic League. King Christopher made it his capitol in 1443. It suffered three formidable at-

tacks,—the first in 1658-59 by the Swedes, but the city resisted and saved the country from foreign domination; by an allied fleet of England, Holland, and Sweden in 1700; and in 1807 by the British. Here Nelson defeated and almost destroyed the entire Danish Navy in 1801, because of an armed neutrality. Copenhagen has a university, dating from 1497, but reorganized two or three times since then, with one of the best modern libraries, collections of manuscripts, and other documents. The Danish Royal Academy, founded in 1472, the Academy of Arts, 1754, and the Royal Antiquarian Society are known among students throughout the world. By establishing a free port in 1894, Copenhagen secured a large part of the carrying trade of the Baltic Sea.

CORN LAWS. This name was applied to various statutes and tariffs passed in Great Britain to govern the importation of grains, often called *corn* there. The first tariffs were arranged in 1360. In 1463 Parliament forbad bringing in corn whenever the price fell under 6s. 6d. a measure. Some export duties were also in force, these being abolished in 1689. In 1773 Edmund Burke secured legislation adjusting the prices according to supply at home. About 1800 bounties were given by the government for exporting grain. Napoleon cut off the supply to England, and the prices became very high. Workmen began to complain. In 1828 the Government, with the Duke of Wellington as Prime Minister, enacted an adjustable scale for import duties based on the home market. His system led to excessive speculation, and many men were ruined, while the price of bread remained too high for poor people. Agitation grew, meetings were held, petitions were circulated, societies were formed. Cobden, Bright, and others formed a League for legislation. Failure of the potato crop in Ireland led to actual famine. Sir Robert Peel became a convert to lower tariffs in 1836, and three years later secured enactment of laws abolishing duties on grains, save for a registration fee, abandoned in 1869. Prices, however, remained high; when they did come down, this was largely due to other causes, such as immigration to America, larger crops, and substitution of new foods.

CORNWALLIS, CHARLES (1738-1805). Though opposed to war with the American colonists, he was sent to command the British armies across the Atlantic. Success of the British on Long Island, in New Jersey, and in South Carolina was largely due to his foresight. Most of the reverses were due to causes which he could not avoid, such as the capture of some Hessians under his general command at Trenton, N. J., Dec. 26, 1776, and the later success of Col. Greene in the South. He once offered to resign his command, but King George refused to permit this. His final defeat and surrender at Yorktown were due to combinations of bad luck, weakness of his position (he had been bottled up on the peninsula by the armies of Washington and Rochambeau), and the feeling that further fighting would be useless, since the French ships of DeGrasse in the bay made his retreat all the more impossible. He served twice later in India, was made a marquis, and put down a rebellion in Ireland so ably as to gain the respect and good will of most of the Irish people. He was a skilled and humane general.

CORONADO, FRANCISCO VASQUEZ DE (c. 1500-1554). One of the numerous Spanish seekers for treasure, who went to Mexico in 1535, and four years later became governor of New Galicia. Hearing of the untold wealth of the "seven cities of Cíbola," he set out with 250 horsemen, 70 footmen, a party of Indian guides, and abundant supplies. He reached a great rock in what is now southern New Mexico, and there to this day may be read the carved names of many of his party. It is now known as Inscription Rock, a national monument. Then his party proceeded westward until they came to Hawikuh, an Indian town, which they destroyed. The ruins now appear not far from the Zuñi settlement, the largest Indian village at present in the United States. Finding no wealth of gold there, he divided his party into three portions. One of them, under Alarçon, went as far as the Gulf of California and up the Colorado River some distance. Others went to the Hopi and Moqui settlements, and the Grand Canyon. Coronado again gathered his forces at the Rio Grande in the autumn of 1540. They still sought in Texas the fabled El Dorado, pressed on into the south central states, perhaps as far as the present Nebraska. In 1542 Coronado, with his dejected followers, again returned to Mexico, only to face fines and disgrace. Yet the leader found some favor afterward, while he continued as governor of New Galicia until 1544.

CORSICA. A rocky, but rather fertile island south of Italy, and north of Sardinia. Political conditions were disturbed until the French assumed control in 1768. The Romans ruled in Corsica for centuries, then the Vandals for 65 years from 649, then the Moors from 811, followed by the Roman Church, and finally Genoa and Pisa after 1138. Aragon reduced the island to subjection in 1347, but again the Genoese returned within the century. In 1768 the islanders cast their lot with the French. Napoleon was born in Corsica.

CORTES, HERNANDO (1485-1547). After studying law at Salamanca, Cortes went to Santo Domingo, and then to Cuba with the expedition of Velásquez. In 1518 he set out with ten ships, 600 footmen, 18 horses, and some artillery, to conquer the Indians of Mexico, which had been recently discovered by Griljava. For a time the natives received the invaders as gods, but Cortes knew that the Spanish did not favor his enterprise. He founded Vera Cruz in 1519, made the emporor Montezuma at Mexico City surrender some natives who had attacked Vera Cruz, and these he burned alive before the gates of the palace. He subdued several districts, defeated the Spanish force sent by the emperor to oppose him, put down a revolt in which Montezuma was killed, and again took Mexico City in 1521. Charles V finally appointed him governor and created him marquis of Oaxaca. After a visit in Spain, Cortes returned this time with a civil governor to share rule with him in Mexico. His last years were spent in Spain trying to explain why he failed to find the great treasure of gold in the new world, why so many fortunes were ruined in the quest, and why so many ships were sunk.

COSSACKS. The Don Cossacks, as they are commonly called, by 1600 were known for their unsettled mode of life, their skill in horsemanship, and valor in battle. They are of Polish, Tatar, and Russian stock, but did not conform to the Russian yoke until about 1650. Gogol and Tolstoy gave vigorous pictures of their life and ideals. For many years the Russian czars relied on their aid in subduing rebellious peasants. The Cossacks helped in the 1917 revolution, but afterward clashed in many ways with the Soviets. Their territory in southeast Russia became the Don Republic in 1918.

COSTA RICA. This smallest country of Central America was visited by Columbus in 1502, settled in 1530, was part of Guatemala until 1821, then attached for two years to Mexico, and not fully recognized as an independent republic until 1848. William Walker, an American, conducted a filibustering expedition into Nicaragua, gained control for a time, and actually made war on Costa Rica in 1856, but was driven out the next year. Costa Rica has had fewer internal disorders than her neighbors, yet trouble came to a head in 1917, 1919, and 1930. Costa Rica gave women the vote in 1920, withdrew from the League of Nations in 1925, and asked for a definition of the Monroe Doctrine in 1928.

COVENANTERS, SCOTCH. Long before the Reformation in Europe, groups of men agreed in writing to conform to certain courses of life or belief. In 1577 many of the Scotch Presbyterians agreed to maintain the evangelical movement there. Another definite Covenant in 1581 bound them to resist reaction in matters of faith. In 1638 this was renewed as the National Covenant. All innovations subversive of the Reformation ideals were condemned. Charles I tried to bring the Scotch Covenanters into line by force; instead of succeeding, he had to promise in 1639 not to oppose whatever the Scotch General Assembly should agree upon. When Charles refused to abide by the Covenant, the Scotch invaded England, and turned Charles over to the English Parliament for trial. When Charles II came to the throne, in seeking to repress freedom of worship, he so embittered the Scotch that they refused the Presbyterian worship restored to them by official act, because the act did not specially recognize the Covenants. Despite their evident fanaticism, these Scotch dissenters kept alive the spark of liberty when oppression became the order of the times.

CRECY, BATTLE OF. At Crécy, northern France, in 1346 the French under Philip of Valois attacked the English, led by Edward III. The British had 3900 men-at-arms, 11,000 archers, and 5000 Welsh

troops; the French had at least double that total. On that day the English showed the great superiority of the long-bow over the heavy cross-bow of the French archers. Little impression was made by at least sixteen attacks by the French on the solid English lines. Some 1542 of the flower of France were counted dead on the field at nightfall, with an estimated total slaughter of at least 25,000. The British loss, in comparison, was paltry. This great victory left the English at the height of their power across the Channel.

CRETE. Also called *Candia*, fourth largest island in the Mediterranean. Recent excavations there have discovered a rich culture remaining from centuries before written history. First, came the Phenicians and Egyptians, then the Dorians with an elaborate life, perhaps the first of the Greek peoples to settle around the Mediterranean. In the Homeric age, second century B. C., Crete had at least 100 towns. Like most eastern small political units, this island fell a prey to various conquering nations. At last, in 1669 the Turks secured a foothold, and held this until 1912, save for a brief period of Venetian influence, and twenty years, 1832-1852, under Egypt, a time of great prosperity. Greece finally annexed Crete in 1912, after some years of uncertainty, during which the Powers tried to maintain the *status quo*. From 1910 to 1932, Eleutherios Venzelos, a native of Crete, took a prominent part in the affairs of Greece. He was several times premier, came to the rescue in times of need, assisted the allies in the World War, and was recognized throughout the world as an able statesman. In 1935 once more he sought to organize a better government in Greece, but his plans failed, he went into exile, and died abroad in 1936.

CRIMEAN WAR. Russia for some time had shown signs of seeking to extend her borders to the south toward Constantinople. In 1853 she professed to wish to protect certain Christians in the realm of the sultan, and Turkey declared war on Oct. 4. Russia and France had been disputing over the guardianship of the holy places in Palestine, particularly the Holy Sepulchre. Great Britain and France declared war on Russia on March 12, 1854; Austria and Prussia remained neutral. The Turks won a few skirmishes, but lost the naval battle at Sinope. The allied French and British forces failed to gain any particular advantages against Russia along the Alma River and also along the Baltic Sea. In Oct. 1854 they began the siege of Sebastopol, making Balaklava a port of the allied fleet. On the land at Balaklava, the British Light Brigade was almost annihilated, as described in Tennyson's poem. Because of mismanagement, the soldiers suffered untold misery in the winter of 1854-55, but the nursing units under Florence Nightingale did much to brighten the distress. The allies had 170,000 in the field, the Russians about 150,000. Russia was defeated on land in August, and Sebastopol fell the next month. By the treaty of peace, she gave up all claims to lands along the Danube, ceded a part of Bessarabia to Moldavia, and allowed the Black Sea and Danube to be free to navigation.

CROWN POINT, CAPTURE OF. The French built a fort at Crown Point on Lake Champlain in New York in 1731 and held this until 1759, when the British under Lord Jeffrey Amherst took possession. The English spent about ten millions on the fortifications, never completed them, and now they are in ruins. On May 11, 1775, Seth Warner, with some of his Green Mountain Boys, as recruits from Vermont were called, seized the fort from the twelve men who composed the inadequate garrison. Crown Point and the fort were made into a public state park in 1910.

CRUSADES. These were numerous expeditions from Europe to some point in Asia, the main design being to rescue the holy places from the control of the Mohammedans. Such was the fever that raged in all christendom from 1090 to about 1300 that rich and poor alike forsook their homes, families, and possessions to go on religious quests. Men like Pope Urban II, Bernard of Clairvaux, and Pope Innocent III urged the multitude to capture the Holy Land. Many princes, kings, and adventurers went on crusades, some of them for the profit as much as for religious zeal. In 1212 two crusades for children were led by mere youths. In the first, many of the children were seized and sold as slaves; in the second, most perished trying to get over the Alps, and adults preyed upon them, while professing to aid. Men like Walter the Penniless, Peter the Hermit, and other leaders, without waiting to make sufficient preparation, rushed off in 1096, and many of them perished at the hands of the Turks.

Seven major crusades were sponsored by nobles and kings. The first one was led by Geoffrey of Bouillon, Robert of Normandy, and the Count of Toulouse. They laid siege to Nicea in May 1097 and to Antioch from October to the next June, and finally took Jerusalem in July 1099. About ten thousand of the original army ten times that size finally got to the Holy City. After sacking the city, killing at will, the band left Geoffrey in charge as "Baron and Defender of the Holy Sepulchre." His brother Baldwin set himself up in Edessa, and another prince took charge of Antioch. Conrad III of Germany and Louis VII of France led the second major crusade, 1147-1149, but, after many delays, deserted their hosts, who perished in droves, and pressed on to Jerusalem with only a chosen band. All who took vows for this crusade were promised remission of their sins, also for any acts committed en route, and freed of any debts they might have incurred,—the last an attractive provision to the medieval princes. The Emperor Saladin recaptured Jerusalem for the Mohammedans and for Egypt in 1187. Frederick Barbarosa, Philip of France, and Richard the Lion Heart of England joined in the next crusade. Frederick was drowned in Syria, the others took Acre, but Philip returned home after a quarrel with Richard, who pressed on, and was forced to make an inglorious peace with Saladin, who now dominated from Egypt to Mesopotamia. Dandolo, the wily doge of Venice, persuaded Baldwin of Flanders, Louis of Blois, and Simon Montfort of England, leaders of the fourth crusade, to change their original purpose of attacking Jerusalem to that of attacking Constantinople. Venice furnished the ships at good rentals, to take the crusaders to Turkey, succeeded in getting her rival city, Zara, put to great disadvantage in commerce, and secured for the time the island of Crete, besides priceless art treasures and a billion in booty from Constantinople and other cities. On the fifth crusade Frederick II of Germany retook Jerusalem; on the sixth, Louis IX of France was defeated in Egypt and made to pay an enormous ransom; on the seventh, Louis IX returned to the East, aided by Edward of England, and both signed a peace in 1272. Many other smaller crusades were started into every corner for almost every purpose. The main results of the Crusades were to check the growth of Mohammedanism in Europe; to learn about the culture of foreign nations; and, perhaps greatest of all, to help the definite breakdown of the old feudal system of Europe, thus giving way to the rise of a new merchant and middle class. Scott's *Talisman* vividly pictures the crusades.

CUBA. Columbus found Cuba on his first voyage, and named the island Juana, on his second, for a son of Ferdinand and Isabella. Some other early names were Fernandina, Santiago, Ave Maria, but the Indian original was at last adopted. Diego, son of Columbus, assisted Velasquez in founding Santiago and other places. For two centuries the island was in terror from the French, Dutch, and other privateers that infested the Caribbean. The French destroyed Havana in 1538 and again in 1554. Cuba revolted against the hard rule of Spain in 1830, 1867-68, and finally in 1898, when the United States assisted in winning complete independence. From 1898 to 1902, American marines kept order in Cuba, and some returned later at four different times. Cuba set up a government similar to that of the United States, but much opposition has arisen, such as the revolt against the methods of Pres. Palma in his second term, 1906; against Zayas in 1924, and against Machado, who was driven from office in 1933, after months of terrorism. In 1934 a new treaty with the United States stipulated that no longer would the American government interfere to quiet internal strife in Cuba. Strikes, disorders, suspension of the constitution, followed by a dictatorship by President Mendieta, finally led to formation of strong opposition parties in 1935. Toward the close of the year, the constitution of 1901 was again put into force, the president resigned, and early in 1936 Miguel M. Gomez became chief executive.

CUSTER, GEORGE ARMSTRONG (1839-1876). One of the brigade commanders in the battle of Gettysburg and a major general at the close of the Civil War. Custer served with Gen. Hancock against the Cheyenne Indians in 1868, against the Sioux in Dakota in 1872, and again in Wyoming in 1876. In

the 1876 campaign, in charge of Gens. Crook, Terry, and Gibbon, Custer was asked to locate the Indians who were led by Sitting Bull. He exceeded his orders, went beyond the line of safety, and was ambushed by 6000 braves near the junction of the Big Horn Rivers. The entire band of 264 soldiers was annihilated. The American troops under Gibbon and Terry arrived a day too late to be of assistance. Sitting Bull fled into Canada, but four years later was allowed to surrender under promise of certain immunities.

CZECHOSLOVAKIA. Settlements following the World War fixed the boundaries of the new republic of Czechoslovakia, which is now made up of all or parts of what were Bohemia, Moravia, Slovakia, Silesia, and Ruthenia. Prague (Praha) became the new capital. Bohemian influence was strong during all the centuries of suppression by the German, Austrian, and other governments. The Czechs settled in the region after 500, Bohemia was won to Christianity about 900, the native dukes became kings about 1150, and so ruled until the Premysl line ended in 1306. Under Ottokar (1253-78), Bohemia was a powerful empire stretching from the Adriatic to northern Germany; but the Austrian Habsburgs reduced the borders considerably after 1300. During the time of the Luxemburgs, mainly in the reigns of Wenceslas and Sigismund, the Hussite wars ruined much of the country. From 1437 to about 1700, the Czechs remained fairly peaceful, but from 1750 on kept the Austrians worried even to the time of the World War. Seeing a great opportunity, the different rebellious peoples of the Austrian empire, mainly the Czechs and Slovaks, raised several regiments for service against Germany. From 1893 to 1918, Prof. Thomas G. Masaryk, a native of Moravia, devoted his energies to improving the conditions of the Czechs. While an exile abroad after the World War began, he secured cooperation in forming a National council, which the Allies recognized as the government of the country in 1918. Masaryk acted as president, —having been elected four times,—from 1918 to 1936, when he resigned because of advancing age, and Edward Benes succeeded him.

DALMATIA. Since 1918 a part of Jugo-Slavia, but from 1814 to the close of the World War a province of Austria-Hungary. As a part of the Illyrian kingdom, Dalmatia was conquered by the Romans in 168 B. C. Diocletian, the Roman emperor, built a palace at Spaleto that is still extant. It was part of the Croatian kingdom from 1102. Between 1115 and 1420 Hungary, Croatia, and Venice fought 21 wars. From 1420 to 1797 Venice held control over part of the coastline. In 1797 Dalmatia and Venice went to Austria, an arrangement confirmed by the peace of 1815. After 1890 the Croats, Serbs, and Slovenes began to think of national unity, an ideal consummated in 1918.

DAMASCUS. Capital of the Syrian republic mandated to France in the settlements following the World War. Some say that Damascus is the oldest, continuous city in the world. It was conquered by King David, by Assyria in the 8th century B. C., when some of the inhabitants were exchanged for Assyrians, and by Pompey for Rome in 64 B. C. Early Christian bishops lived at Damascus. After 635 it was the seat of some of the caliphs of Islam; besieged by Baldwin, the Crusader, in 1148; taken by Nureddin in 1154, and then by Saladin, who died there in 1193. When Tamerlane, the Mongol, took the city in 1401, he slaughtered most of the inhabitants and burned the chief buildings. Selim I took Damascus from Egypt in 1516, but in 1832 Damascus went to Egypt again for nine years, when both Egypt and Syria went to Turkey. Moslems killed about 6000 Christians in Damascus in 1860. Gen. Allenby of the British forces, after defeating the Turks in various battles in Asia Minor, entered Damascus on Sept. 30, 1918, and ended centuries of misrule there. The city has over 200 mosques, 70 of them being large, that of the Ommiad caliphs being very ancient and once a heathen temple, then a Christian church to the 4th century, and finally rebuilt in magnificent Mohammedan style by the sixth Ommiad ruler.

DANES IN ENGLAND. In 787 the Danes first appeared on the English coast, and in 795 they settled in Ireland. By 866, after repeated invasions, they became firmly established. They retained parts of East Anglia, Essex, Northumbria, and Mercia, even after Alfred checked them in Wessex. Ethelred II, the Saxon king, paid tribute money (called Danegeld) until on Nov. 13, 1002, he ordered a general massacre of all Danes. The Danish king, Sweyn, came across to England, ravaged the country, and took possession in 1013. After contending with native rulers, his son became sole monarch of England in 1016. The Danish line continued until 1042. Meantime the Danes, along with other Norsemen (men from the north) paid ravaging visits to the coasts of Spain, Andalusia, Africa, and Italy.

DANTON, GEORGE JACQUES (1759-1794). This brilliant French lawyer, orator, and revolutionary leader opposed the arrest of Marat, who in 1790 was writing against the monarchy, and in consequence Danton had to flee to England. After his return to Paris, he was a member of the notorious Committee of Safety, which instigated the Revolution. He voted for the execution of Louis XVI in 1793, opposed a more radical group than the original Committee of Safety, though he declined a seat on the Committee. Later, when the fury of the Revolution broke forth anew, Danton and some fourteen others were arrested and executed on April 5, 1794. He counseled moderation, and so lost his power with the mob, and also his life, when Robespierre supplanted him in popular esteem.

DANZIG. By the Treaty of Versailles Danzig was created a free city and district on Nov. 9, 1920, and ruled by a commissioner for the League of Nations. Its legislature consists of a diet of 72 members and a senate of 12. Since the 10th century, Danes, Poles, Germans, Prussians, and Teutonic Knights at various times claimed sovereignty over this area on the Baltic Sea. The Knights held it from 1308 to 1434, when Danzig became autonomous with Poland as protector, but fell to Prussia in 1795, and was a part of the German empire until after the World War. Recently Poland and Danzig have disagreed over currency, customs, and holding of offices in Danzig by people of Polish birth.

DARDANELLES. Name of the channel, 40 miles long and never more than four in width, which separates southeastern Europe from Asia, and is the gateway to the Sea of Marmora. It was known in ancient times as the Hellespont. Xerxes made a bridge of boats over which his hordes passed on their way to war against Greece in 480 B. C. Alexander crossed with his army to Asia in 334 B. C. As narrated in Marlowe's poem, Leander swam the Hellespont to meet Hero, priestess of Sestos. Lord Byron swam from Abydos on the Asia side to the same spot in 1810. From 1841 to 1911, by international agreement, no nation could send a warship through the Dardanelles without the consent of Turkey. In the war with Italy in 1915, and during the World War, the Turks closed this strait to navigation. In 1915 the Anglo-French navy attempted to get through to assist Russia, but met with defeat when three cruisers were sunk and three disabled. By the Treaty of Lausanne, the territory about the Dardanelles was demilitarized, but the Turks began to fortify it again in 1936.

DARE, VIRGINIA. First white child of English parentage to be born in the American colonies. Her father, Ananias Dare, married a daughter of John White, who came in 1587 as the first governor to the settlement which Sir Walter Raleigh attempted to plant in Virginia. What became of Virginia Dare is not definitely known. She was born about a month after the party reached the new world.

DEARBORN, HENRY (1751-1829). This notable American soldier, who began his career as a doctor, marched with 60 men to join in the battle of Bunker Hill. He also fought at Stillwater, Monmouth, and Yorktown. Dearborn became secretary of state under Jefferson, 1801-1809; was general in command of the army in 1812, and helped capture York (now Toronto) in Canada and Fort George; and from 1822 to 1824 was minister to Portugal.

DECATUR, STEPHEN (1779-1820). American naval hero, who twice brought to terms the pirates of the Mediterranean, and gained great fame in the War of 1812. His most daring exploit was entering the harbor of Tripoli in 1804, where he burned the frigate *Philadelphia*, which the pirates had captured. Lord Nelson of the British Navy declared this act "the most daring of the age." In 1812 he captured the frigate *Macedonian*, but in 1815, when his flagship, the *President*, was disabled by accident off Sandy Hook, he was captured by the British and taken, with his ship, to Bermuda. Later he commanded a fleet of three frigates, one sloop, and six other craft against

the pirates of Algiers, and made Algiers, Tunis, and Tripoli agree not to molest American shipping or to enslave American sailors.

DECEMVIRS. Ten persons appointed in Rome to replace the tribunes and other magistrates in enforcing laws. In 455 B. C. three commissioners were sent to Greece to study the laws there. On their return in 452 B. C. a dispute arose as to whether the patricians or plebeians were to have charge of revising the Roman laws. In 451 B. C. the task was given to representatives of the nobles, who compiled ten "Tables" of laws in their term of office. Ten others codified two more "Tables" the following year, the notorious Appius Claudius being the only one from the first decemvirs. He and others tried to continue in office beyond their terms; and other acts of tyranny led to insurrection, and the abolition of the office. These twelve sets of laws became the foundation for Roman and many modern legal systems.

DeKALB, JOHANN (1721-1780). Baron DeKalb was a Bavarian, but served with the French troops in the Revolution, having been made a brigadier general in the French army in 1761. He came to the United States first in 1768 with a French mission, and then with Lafayette in 1777. Congress made him a major general, and he was sent to assist Washington in the New Jersey Campaign, and then to be second to Gates in command in the South in 1780. DeKalb was mortally wounded in the battle of Camden, South Carolina, that same year.

DELHI. Since 1912 the capital of India and once the seat of the great Mogul empire, the chief palace of which is now called The Fort. The Moguls built a wall around Delhi, and this was repaired by the British early in the 19th century. The oldest part of Delhi dates from about 1500, after the Mohammedans, Moguls, and Afghans had ruled in succession in the district. Shah Jehan rebuilt the city on a most splendid scale in 1638, the chief features being the Imperial Palace, with its magnificent Peacock Throne, the tail of which contained jewels valued at about 30 millions in our money. Shah Jehan also built the Taj Mahal at Agra, the most princely building erected in modern times, and here he and his wife were buried. Delhi fell to the British in 1803. The city was the scene of a magnificent coronation ceremony, called a Durbar, in 1877 when Queen Victoria was proclaimed Empress of India, again when King Edward was crowned as Emperor in 1903, and King George V in 1911. In 1913 endowments were provided to make Delhi the educational and political center of India, the capital having been moved from Calcutta in 1911.

DENMARK. This small country occupies the Jutland peninsula north of Germany, where the Angles, Saxons, and Jutes settled in prehistoric times. They were followed by the Danes, an active Viking race that pushed out in all directions, doubtless even to the shores of America before 1000 of our era. Three Danish kings ruled in England from 1017 to 1041. Meanwhile, the Danes became dominant in Norway, and in 1397 Denmark, Norway, and Sweden were united under one king. In 1523 Sweden succeeded in breaking away and in becoming, before long, a powerful rival of Denmark. The Danes took the Protestant side in the wars between 1618 and 1648, but allied with France in the time of Napoleon, in consequence of which they were beaten badly in naval engagements in 1801 and 1807. Denmark was forced to give up Norway to Sweden in 1814. With the aid of Austria and Prussia, two southern provinces, Schleswig and Holstein, broke away in 1864; but the former voted to join Denmark again in 1920. When Norway became independent of Denmark in 1814, Iceland remained with the latter. In 1918, however, Denmark recognized Iceland as a sovereign state, joined to Denmark only in that they have the same king at present, and until 1940 Denmark has charge of foreign affairs in Iceland. A joint committee considers bills that are important to both countries. When the United States bought the Virgin Islands of Denmark in 1916, she gave up all claim to the Northern Greenland because of the discoveries of Admiral R. E. Perry. In 1933 the World Court validated the sovereignty of Denmark over East Greenland.

DEWEY, GEORGE (1837-1917). A famous officer in the American navy; born at Montpelier, Vermont; was graduated from Annapolis Naval Academy in the class of 1858. At the outbreak of the Civil War Dewey was commissioned a lieutenant, serving on the Mississippi. He was present when the West Gulf squadron forced a passage up the Mississippi ahead of Farragut in 1862. He attained the rank of commodore in 1896 at the age of 59. In 1898, when war with Spain broke out, he was placed in command of the Asiatic squadron. He sailed from Mirs Bay, China, April 27, 1898, under orders to capture or destroy the Spanish fleet. Admiral Montojo's fleet was in Manila Bay. On Saturday night, April 30, Dewey daringly entered the bay; engaging the Spaniards next morning he defeated them, and completely destroyed their fleet, having only nine wounded and not a single death. Manila, the chief Philippine port, was thus placed in his power. Dewey received the thanks of Congress and a handsome sword, with medals for his men. Rear admiral (1898); rank of admiral re-created to confer it upon him (1899); presided over the Schley inquiry (1901); commander-in-chief of the mobilized naval forces at the naval maneuvers (1902).

DIAZ, ARMANDO (1861-1928). Italian general, who succeeded Gen. Cadorna after the disastrous battle of Caporetto on Oct. 24, 1917. In nine days he checked the Austrian offensive, forced back the invaders east of the Piave, inflicting tremendous losses, and, after months of careful preparations, launched a new drive which crushed the Austrian lines. One week later Austria sued for peace, Nov. 4, 1918. Diaz was regarded as one of the greatest strategists of modern times, as a result of his skill in turning defeats into great victories. In 1922 he became minister of war of Italy, but was compelled to resign because of ill-health in 1924, at which time both he and Gen. Cadorna (now restored to favor) were given the new rank of marshal.

DICTATORS. Between 501 B. C. and 200 B. C., Rome set up 88 different dictatorships; between 216 B. C. and 82 B. C. there were none. Roman dictators were specially appointed for the public good, in times of stress, and for never over six months at a time. They differed from consuls in that dictators were not responsible to the Senate, but they were usually considered responsible to the people. In 82 B. C. Sulla secured the dictatorship for three years. Julius Caesar was made a dictator for one year, then for ten, and finally for life. After his assassination, Mark Antony had the office abolished for good. Dictatorships were uncommon in the middle ages, or at least were not known as such, even though many rulers had the power of life or death over their subjects. In South America military dictatorships have been fairly common. These have come out of revolutions, and often the dictator has been replaced by a counter-revolution. Haiti, San Domingo, Mexico, Colombia, Venezuela, the Argentine, and Paraguay have known more than one dictator. Sometimes these have recently been called provisional presidents. Gen. San Martin in Cuba in 1936 was ruling as a dictator, even though not so named. Cromwell was a benevolent dictator, but Carlisle called his government a directorate. During the French Revolution, the Committee of Public Safety was a dictatorship. In 1848 Gen. Cavignac ruled in France as a dictator. The name came into common use after the World War to designate new rulers of Europe, who governed by decrees, while the constitutions were suspended. In olden time, as in Rome, only certain parts of the law were suspended; now all laws that do not suit the purposes of the dictator. Some of the recent ones have been Pilsudski in Poland, a very popular military idol; Panglos in Greece, by party strength, backed by the military; Mustafa Kemel (now Kemel Ataturk) in Turkey, but as a great reformer; Mussolini in Italy, through catching the popular fancy and by carrying forward difficult projects; Hitler in Germany, through appeals to national ideals and race prejudice. Both Germany and Spain, in new constitutions, provide for dictators in emergencies. In Russia the "dictatorship of the proletariat" is not a real dictatorship in the accepted sense. Bolivia, Cuba, and Latvia also illustrate tendencies toward dictatorships in time of stress.

DISARMAMENT. General disarmament was proposed at the time of the Congress of Vienna in 1815, and reductions were made in European military establishments. Conscription became almost universal, however, in 1870, and budgets for war equipment greatly increased. Two conferences proposed by the Czar of Russia in 1898 and 1907 resulted in some further progress of indefinite nature. Following the World War, the navies of the world were somewhat restricted by slowing up building programs, and by deciding not to replace some obsolete ships. The United States abandoned warcraft valued at over $200,000,000. Denmark sold her most powerful war-

ship in 1929, and curtailed military expenses by two-thirds. In Feb. 1922 a conference of powers at Washington, D. C., fixed a naval ratio of 5-5-3 as between Great Britain, United States, and Japan, the last having the smallest capital tonnage. Various other subjects received attention, but results have been disappointing. Striking examples of disarmament on international borders are agreements between Canada and the United States in 1818, between Norway and Sweden in 1905, and Argentina and Chile many years ago, not to fortify their boundaries. After the World War Germany, Austria, Hungary, and Bulgaria were compelled to reduce their military forces. Article 8 of the Covenant of the League of Nations calls for reduction in arms, but the League of Nations special commission, after exhaustive study, pronounced that disarmament, to be effective, must be general. Since 1930 the tendency has been to increase armaments all along the line.

DISSENTERS. In 1573 the name "dissidents" was applied in Poland to describe Protestants. In England the word was in common use in the next century for those bodies that refused to support the Church of England, mainly the Baptists, Presbyterians, and other independents. Later the Congregationalists and Methodists were considered as dissenters. The Toleration Act of 1688 mentions Protestant Dissenters; Roman Catholics, save in special instances, are not thought of as dissenters. Since 1850 the word "nonconformists" has largely replaced the older designation. During the period of the Commonwealth in England, the Scotch Covenanters often considered themselves not bound by the English form of service. When Charles I tried to introduce the *Book of Common Prayer* into Scotland, the Solemn League and Covenant was formed in 1643 to resist all encroachments on the Scotch forms of worship.

DOMINICAN REPUBLIC. Also known as Santo Domingo. This republic makes up the eastern two-thirds of the island of Santo Domingo, now called Hispaniola on United States maps, as it was in former times. Columbus probably discovered the island in 1492. From then until 1687 the Spanish made it their headquarters for conquest in the new world. Its history under the Spanish and then the French from 1687 to 1844 is that of Haiti, from which government (in the west part of the island) Santo Domingo separated. Changes in government, debts, and disaster have done much to keep the country backward. From 1905 to 1933 a customs receiver from the United States took charge of financial rehabilitation, following threats of European intervention. For several years before 1930, President Vasquez secured much progressive legislation, including a new constitution in 1929, but he was displaced by Trujillo after a bloodless revolution. On Sept. 3, 1900, the island was visited by a hurricane of terrible intensity, and this left all but 400 of 10,000 buildings in the city of Santo Domingo in ruins, with 2000 dead, 6000 injured, and 30,000 homeless.

DOMINIONS, BRITISH. See under *British Empire.*

DOOMSDAY BOOK. Also called Domesday. Results of a survey made by officers of William the Conqueror in England in 1085. A group of deputies visited each county, took testimony by units of hundreds, sworn to by 12 jurors, half Norman and half English. All counties save the northwest of England, not yet conquered, and Durham and Northumberland (omitted for some unknown reason) were accounted for. Some of the towns, like London and Winchester, are also not included. The final results, rearranged according to the classes of landholders, were written in two great volumes. The chief object was to fix the old and new values of the land for the purpose of establishing title and for taxation. The original was kept at Winchester until the time of Henry II, then at Westminster, and since at the Public Record Office, London. It was printed in 1773-1783, indexed in 1811, and supplemented in 1816 with the Exon Book, giving records of southwestern counties. In 1869 it was rebound. This book, though hard to understand, has proved a gold mine of information about early customs and places in England.

DORR'S REBELLION. Voting rights in Rhode Island in 1842 were held only by those who owned land worth at least $137, or a revenue of $7 a year. Thomas Wilson Dorr (1805-1854), who had served in the Legislature from 1833 to 1837, led a group which demanded reforms. Dorr was elected governor by the Suffragists, as his party was named; Samuel W. King was elected by the Landholders. Both were inaugurated, and civil war impended. Indeed, some acts of violence occurred. Dorr fled to Connecticut, but afterward returned voluntarily for trial. He was convicted in 1844 of treason, sentenced to death, but in the end served one year in prison, and then was freed by a general amnesty. In 1851 Rhode Island restored his civil rights, and in 1855 the Legislature declared his trial illegal, but the courts held otherwise. Dorr's Rebellion, however, brought several needed reforms in the government of the state.

DOUGLAS. Prominent Scotch family, beginning definitely with William of Douglas mentioned in charters in 1175 and 1213. Other early members were Sir Archibald, 1190 and 1232, first knight of the family, whose son, William, is mentioned in charters of 1240 and 1273; William, his son, who joined Wallace for a time in the wars against England. Sir James Douglas was the hero of 70 fights, all won but 13; he was slain in Andalusia in 1330 while on his way to the Holy Land, with the heart of his royal master of Scotland. James, his younger brother, defeated Edward Baliol, claimant for the throne, was made Regent of Scotland, but was killed at Halidon when invading England. His son became Earl of Mar, and the direct line ended with his son, James, who fell at Otterburn in 1388. Another line was represented by Archibald, who won estates in France, which went to his son in 1439. After the son was murdered, wars ensued during the next 20 years, at the end of which the earldom was forfeited. The Earls of Angus, Earls of Morton, and in recent times, the Marquis of Queensbury and the Earl of Selkirk are other collateral branches of the Douglas clan.

DRAFT RIOTS IN NEW YORK. Driven by the scarcity of recruits, in 1863 President Lincoln was authorized to draft able-bodied men between 20 and 45. Men could escape by paying $300 for a substitute. Many poor men resented this exemption merely on the ground of being able to buy freedom from service. On July 11 a riot broke out. Before it was quelled by the militia, numerous colored persons had been beaten and robbed, and a few killed; the recruiting office and an orphanage for negro children had been burned; and in all property worth $1,500,000 had been destroyed, together with nearly 1000 lives.

DRAKE, SIR FRANCIS (c. 1540-1596). This English privateer and admiral went on the ill-fated expedition of his relative, Sir John Hawkins, to the West Indies in 1567-68. Because of losses in money incurred by Drake on this voyage, he was commissioned as a privateer by Queen Elizabeth. He made three different trips to the Spanish Main in search of plunder: one in 1572 with three ships and 73 men; the second in 1577, when he took much booty on the west coast of South America, went on to Java, and finally returned by way of the Indian Ocean, being the first Englishman to go completely around the world; and his third voyage, 1585-86, with 21 ships, and on the return voyage he took booty from some of the towns along the coast of Spain. Drake served for three years in Ireland, ending in 1576. He was second in command with Lord Howard, when the Spanish Armada attacked England in 1588, and the following year made a reprisal voyage to the coast of Spain. He was Mayor of Plymouth, England, from 1581 to 1585. Drake died on board his ship near Nombre de Dios.

DREYFUS (drī'fus), **ALFRED** (1859-1935). A French artillery officer who was arrested in 1894 and charged with betraying secrets to the enemy. After being hastily convicted, he was sent to the Isle du Diable (Devil's Island) off the coast of Guiana, and here was treated with much harshness. Through the ceaseless efforts of Emile Zola, who was banished in consequence, Georges Clemenceau, and Col. M. G. Picquart, who was dismissed from office, the case was never allowed to rest. Finally, Col. Henry, an army officer, admitted forging one of the three documents used to convict Dreyfus. The army party continued to insist on his guilt. In 1906 the Supreme Court of France declared Dreyfus innocent. He was at once decorated with the cross of the Legion of Honor, restored to the army and raised to the rank of major, and after the World War a lieutenant colonel. His Legion of Honor was pinned on his breast as he stood precisely on the

spot where he had been when his captain's emblems were torn from his uniform years before.

DRUIDS. Pagan priests who exercised a great influence over the early inhabitants of Gaul, Briton, and Ireland. They appear to have directed the political, as well as religious affairs, of certain tribes. Tiberius and Claudius, Roman emperors, found the Druids particularly stubborn and hard to manage after the conquests of Gaul. They were forbidden to carry on their rites, and in some cases their groves, where they met usually in the open, were destroyed. The oak and the mistletoe were sacred in Druid ceremonies. Many of the priests seem to have been magicians and soothsayers. In Celtic lands stone tables called *dolmens* are found today. Some have fancied that these were altars used by the Druids, but this is not proved. Again, the great stones found erected in order at Carnac in Brittany, Stonehenge in southern England, and elsewhere, though often stated in books as Druid remains, are not clearly shown to be such.

DUBLIN. For many centuries the capital of all Ireland, and now of the Irish Free State. It is a city of unusual charm, with its very wide streets, numerous squares or open spaces, beautiful post-office and Nelson monument, 134 feet high, and many imposing churches. Some of the Protestant Churches are St. Patrick's Cathedral, founded in 1190, and Christ Church Cathedral, founded in 1038; among the Catholic, are St. Mary's, St. Saviour's, and St. Kevin's. Dublin is the seat of Trinity College, one of the most famous among universities. The name comes from Dubhlinn, meaning black pool, for a place in the river Liffey, which divides Dublin into two portions. St. Patrick, who was probably not a native Irishman, converted the king in 448. For two centuries ending in 1170 the Danes ruled almost continuously in Ireland, until dispossessed in the time of Henry II. Dublin was made the seat of a bishop in 1038, and of an archbishop in 1152. James II convened a parliament at Dublin in 1689. The city has been the object of several uprisings against English rule, such as in 1798 when Fitzgerald sought to seize the town and castle or fortification; in 1803 when the party of Emmet sought to gain control; and during the time of the Fenians, 1867, an organization designed to overthrow British rule and substitute a republic in Ireland.

DUELS. Military duels between army champions are ancient. In certain countries of Europe, notably in France and Germany, they were held in the middle ages to determine judicial guilt. In England and Scotland, trial by battle was sometimes invoked, as in the *Fair Maid of Perth*, Scott's novel. Between 1601 and 1609, over 2000 men died in duels in France alone. Louis XIII forbad them, and executed a noble who fought to test the new law; Louis XIV restored duels to favor. England tried in vain to suppress them. In the reign of George III, it is said, 172 were fought in Great Britain, 91 ending fatally. In 1808 Major Campbell was executed for killing Capt. Boyd in a duel. In the United States, a number were fought before 1850. Andrew Jackson killed Charles Dickinson in one of his encounters. Gen. M'Intosh killed Button Gwinnett, a signer of the Declaration of Independence. A great public revulsion against duelling arose when Aaron Burr killed Alexander Hamilton in 1804.

DUMA. Russian legislative assembly which met first in 1906, at which time the Czar promised that no law should be enforced without its consent. In theory this was supposed to end autocracy in Russia. The first three years witnessed conflicts between the Duma, ministry, and organized police. The fourth Duma was largely aristocratic. Direct voting was permitted in only five or six large cities; in fact, representation was in adverse proportion to number of people. Thus 70 million peasants chose only 1168 persons qualified to be electors of members of the Duma; while 200,000 of the landed classes were allowed to choose 2600 electors. The fourth Duma ended in 1912; the fifth was nearing the close of the regular five-year term, when the revolution broke out in 1917.

DUTCH INDIA COMPANIES. The Dutch organized the East India Company in 1602, the West India Company in 1621. These two rich island districts built up the Netherlands as a great world power in commerce. By 1641 the company had gained control of Ceylon and Malacca; in 1652, the Dutch settled at the Cape of Good Hope; and in 1667 they founded a business in Sumatra. In 1690 the company had 150 ships, effective war craft, and about 10,000 soldiers to protect its interests. Sometimes dividends ran as high as 40%. Later rivalries with France and England reduced the influence of the East India Company, which went out of active business in 1798. Today the interests of Holland are paramount in Java, Madura, Sumatra, and other districts of Malaysia. The Dutch West India Company was far less profitable to the merchants of Holland. This came into rivalry with England in the north, and with Spain and Portugal on the coast of South America, and with all three in the islands of the Caribbean. Battlements in Bahia, now part of Brazil, gained some footing. Today the Netherlands are represented in Surinam or Dutch Guiana and in Curacao, with six other small islands in the Caribbean.

EARLY, JUBAL ANDERSON (1816-1894). Eminent Confederate general, who was a graduate of West Point, served in the Seminole and Mexican Wars, and practiced law in Virginia from 1838 to 1861. He became a colonel at the beginning of the war, commanded a brigade at Bull Run and a division at Fredericksburg and Gettysburg. In 1864 Sheridan defeated him in several battles, and Custer at Waynesboro, after which Early was superseded. From 1865 to 1867 he lived in Canada. He returned to the practice of law, became president of the Southern Historical Society, and wrote numerous papers and one book on the Civil War.

EASTERN QUESTION. See under *Near East.*

ECUADOR. Native tradition tells of the kingdom of Quito, which was overthrown by the Caras from the western coast of South America in the tenth century. The Caras ruled until 1475, when the Incas displaced them and added Ecuador to the realm of Huayana Capac the Great. His sons fought each other, until one of them was killed, and Pizarro by treachery conquered the other. Then the vast territory of Ecuador was added to Peru and ruled by the Spaniards. Following the liberation of the South Americans from Spanish rule, Ecuador set up an independent government in 1822. The history of Ecuador since then has been even more stormy than that of other adjoining nations. Prof. Edwin W. Kemmerer, of Princeton, with a staff of experts, revised the financial system of Ecuador in 1926. Before that, in 1910, Gen. W. C. Gorgas, also on invitation of the natives, stamped out yellow fever in Guayaquil, the chief port. After a period of turbulence and dictatorships, Ecuador returned to constitutional government in 1928. Again in 1935 economic distress, fears of a Fascist dictatorship, suspension of freedom of the press, and the unseating of the president kept Ecuador at strife and uncertainty.

EDINBURGH. This picturesque city on hills near the Firth of Forth in Scotland was founded by King Edwin of Northumberland before 800. In the 11th century, the town became a royal residence, and here King David I established Holyrood Abbey. In its present form, the castle of Edinburgh dates from about 1350. For over three centuries Edinburgh was the center of Scottish history. Here in the 15th century the kings took refuge from their rebellious nobles, the capitol was fixed here in 1436, and in 1450 a wall was built around the Old Town. James II and James III granted liberal charters to Edinburgh, the last one in 1482. Here occurred the chief battles in the religious wars of the north; the chief scenes in the turbulent life of Mary Stuart, Queen of the Scots; the union with England in 1707; the establishment of the Free Church of Scotland in 1843, when the Scots seceded from the Established Church. King George V was crowned at Holyrood in 1911. Edinburgh lost its prominence as a capital after the union with England, but gained fame as the Athens of the North with the end of the 18th century when Walter Scott, Jeffrey, and many others made it a cultured center. Notable buildings are the Castle, where the crown regalia is kept to this day, the church of St. Giles, in its original form built in the 14th century, and restored in 1883; the house of John Knox, the religious reformer; the library of the Advocates; the Royal Academy, and National Gallery of Scotland.

EGYPT. Manetho, priest of Heliopolis, in the 3d century B. C. wrote a chronology of the early kings of Egypt, including 30 dynasties. Modern scholars date the founding of the first of these back to 3900, 4455, and 5004 B. C. In the early centuries we hear of irrigation, of the establishment of the ani-

mal worship, the building of many pyramids, the most notable being that of Khufu or Cheops, the rise of Memphis as capital the coming of the shepherd or Hyksos kings from the east to conquer Egypt (about 2000 B. C.), and finally Rameses and his successors in the 19th and later dynasties. Shashank (the Bible Shishak) invaded Israel with 12,000 chariots and 60,000 horsemen. From this time Egypt fought with neighboring nations,—Ethiopia, Assyria, Phenicia, Greece, Persia, and finally Alexander the Great in 332 B. C. Then followed a procession of unimportant monarchs, the best known being Cleopatra, from whom the Romans took Egypt in 31 B. C. In 395 it became part of the Eastern Roman Empire, in 641 fell into the power of Islamites, and then came disorder, luxury, and corruption. At last the Fatimi Caliphs conquered the land and built Cairo, but the line ended with the coming of the Kurds, whose general, called Saladin in English, fortified the city about 1175. He is chiefly known for his wars with the Crusaders. The last of his line established the Turkish bodyguard of the Mamalukes or white slaves. These usurped the throne in 1250 and ruled until 1517. They held their power by force of arms, but built many noble structures in Cairo, the chief glory of the modern city. Then followed three centuries of the Ottomans, with their laxity and lack of progress, until the French took Egypt in 1798, but the English restored it to Turkey in 1801. In 1805 an Albanian soldier obtained control, and his son Ibrahim, between 1820 and 1832, gained a foothold in Nubia, part of the Sudan, Morea, and Syria. His line ruled until 1881, when Arabi Pasha revolted, became dictator, and was at last subdued by the British. General Gordon was sent to quell another revolt in 1884, but was murdered at Khartum two days before a relief expedition reached that city. Great Britain in 1887 helped Egypt regain control over the Sudan, now administered jointly by them. In 1904 France recognized the interest of Britain in Egypt. Great Britain recognized the independence of Egypt in 1922, at which time Fuad I became king. King Fuad died in 1936, and was succeeded by his young son. His son, Ferouk, aged 16, was recalled from his schooling in England to take his place. The Nationalist party poled enough votes to put them in charge of the government in 1936.

ELIZABETHAN AGE. Modern England, as we know it today, developed with an amazing rapidity between 1550 and 1625. During the reign of Queen Elizabeth came the great English Renaissance. The Queen favored exploration, arts, literature, and all forms of learning; her policy was moderate, peaceful, and progressive. In spite of her hesitation as to whom she should marry, and her uncertain temper in her personal affairs, she wisely held the balance between factions, courtiers, and even ambassadors from foreign courts. Under Francis Bacon, experimental science, retarded by the scholasticism of the middle ages, received a great impetus. Elizabeth herself studied the classics, particularly Greek, which for some centuries had fallen into neglect. Some of the continental humanists, like Erasmus, had influenced England in the time of Henry VIII, and the Elizabethans favored the new learning at Oxford and Cambridge Universities. Italian, Spanish, and French literatures, as well as the Latin and Greek, were translated freely. Political writers like Machiavelli, Castiglione, and Sir Thomas More began to influence both domestic and foreign relations.

Englishmen like Sir Philip Sidney, Edmund Spenser, and George Cascoigne sought to preserve the best of British traditions in literature. Sidney and others of his opinion insisted that the English language was entirely suitable to be the medium of instruction and of a native literature for the people. Drake, Oxenham, Hawkins, Sir Humphrey Gilbert, and Raleigh were among the number who sought the cities of gold in America. Navigators also expected to find a short-cut through northern seas to the wealth of Cathay, as north China was called. Several companies were formed to foster exploring, settlement, and conquest of the natives of foreign lands. After the founding of the Virginia and Massachusetts settlements, emigration to this hemisphere increased by leaps and bounds. The medieval logic, philosophy, and religion were giving way to a fresher, more humane view of life and mankind. All in all no age was more alert to possibilities for learning, commerce, and literature.

EMANCIPATION PROCLAMATION. For some months before the summer of 1862, many urged President Lincoln to free the slaves in southern territory. He hesitated until some great victory might justify such a move. His chance came after the North won the battle of Antietam on Sept. 17. On Sept. 22, 1862 he announced that all slaves in territory then in rebellion should be considered free after Jan. 1, 1863. Territory in six parishes of Louisiana, the counties making up West Virginia, and seven counties in Virginia itself, besides the cities of New Orleans, Portsmouth, and Norfolk, were excepted. Freed slaves were enjoined not to commit acts of violence, and to accept reasonable wages. Former slaves might also enlist in the union armies. Lincoln had previously sought to get Congress to appropriate money to buy freedom of slaves in border states. His proclamation again affirmed his determination to preserve the Union at all costs. In the nature of the case, the proclamation did not actually free slaves from southern masters, save in territory controlled by the North; but it showed what would happen if the federals won the war.

EMBARGOES. Any prohibition by a government forbidding its people to ship munitions, agricultural products, or any commodity out of a certain area. Sometimes one nation forbids others from trading with its enemy when at war. Napoleon, for instance, forbad the United States to trade with England during the early years of the 19th century. The North, during the Civil War, asked Great Britain not to buy cotton of the South, and finally got this product declared contraband. Several nations in 1935 forbad their citizens to ship arms to either Italy or Ethiopia. President Roosevelt declared that any resident or firm shipping such articles should have no protection from the United States government. States recently have often forbidden admission of certain products from outside into their territory. Some states have established at times an embargo against shipments of green corn, because of the presence of the corn borer pest in other localities. During the World War both sides established embargoes, which they tried to make effective by naval blockades.

EMMET, ROBERT (1778-1803). An Irish patriot and orator, who retired from Trinity College, Dublin, at the height of his career, because he believed the authorities had no right to question a student on his political beliefs. Both he and his brother Thomas were interested in the United Irishmen, a patriotic group. After an interview with Napoleon in France in 1802, Robert Emmet returned to Ireland, gathered a force of about 100 men, with the object of storming Dublin Castle. Violence broke out, and the mob killed Lord Kilwarden and Col. Brown. Emmet rescued the daughter of Lord Kilwarden, fled to the mountains, and planned to escape either to the continent or to America. He lingered, however, and hoped his sweetheart, Sarah Curran, would consent to go with him. Emmet was caught, tried for treason, and hanged on Sept. 21, 1803. His brother, Thomas, in 1812 became attorney general of New York.

ENGLAND. Phenician accounts mention Britain before the coming of the Romans to conquer under Julius Caesar in 55 B. C. Traces of earlier inhabitants are evident, but not clearly interpreted. Claudius in 43 and Agricola in 78-81 of our era completed the subjugation of the Britons to the Roman yoke, which the Britons threw off in 410. The Romans left many fine roads, walled camps, and forts, but these were not strong enough to keep out the Picts and Scots from the north. So the Britons called the Angles, Saxons, and Jutes, tribes from north Germany, to their aid in the fifth century, but these strangers later crowded out the Britons into Wales, Cornwall, and the north of Britain. Northumbria, East Anglia, and Mercia were held by the Angles; Sussex, Essex, and Wessex by the Saxons; and Kent by the Jutes. Augustine introduced the Christian faith in the 7th century. Under the Saxon Egbert in 827, the country was united for the first time, and the Saxons ruled until 1017. These gave way to the Danes until 1042, when the Saxons again came into power for 24 years until William the Norman arrived in 1066. Alfred the Great (871-901) checked the Danes and conquered some of the surrounding tribes, making Wessex his stronghold.

William the Norman claimed the throne because he was a cousin of Edward the Confessor and presumably his heir. Harold rushed down from the north, where he had been fighting, but was defeated by William at Hastings on Oct. 14, 1066. The Nor-

mans gave England a new form of civil and church government, a type of feudalism adapted from that of the continent, and the Norman-French as the language of church and court. Henry I, 1154, began the Plantagenet line of kings; John granted a charter in 1215; Henry III recognized the idea of a parliament, fully organized in 1295 by his successor, Edward I, who subdued Wales and tried to secure Scotland. Edward III and his son, the Black Prince, carried on a war with France, which lasted intermittently 100 years.

Henry Bolingbroke became Henry IV, first of the Lancastrians, in 1399, through a popular revolution. Henry V and VI continued the strife across the Channel, the first with great success, but the latter suffered defeat after the French had been stirred to their best by Joan of Arc. Henry VI brought on the Wars of the Roses, and the reigns of three kings of the house of York, ending with Richard III, defeated and killed at Bosworth by Henry Tudor, who founded the new line of five Tudor kings as Henry VII. He united the warring factions by marrying a princess of the rival house, put the nobles in their place, and gained much prestige abroad. Henry VIII, his son, favored the Renaissance and founded the new Church of England. His three children, Edward, Mary, and Elizabeth followed him, Mary to attempt the restoration of the Catholic policy, and Elizabeth to advance England in every way at home and abroad. Mary's loss of Calais, 1557, terminated English claims to France, and her marriage with Philip of Spain led to the troubles between the two lands in the reign of Elizabeth, culminating in the victory over the Armada. Otherwise, Elizabeth enforced peace at home and respect abroad. Learning, literature, and especially explorations received a tremendous impetus.

James VI of Scotland, son of Elizabeth's rival, Mary Queen of Scots, now succeeded in 1603; but his troubles with Parliament left a legacy to his son Charles I, together with the imprudence of the latter, which cost Charles his throne and his life. The struggle between people and king over taxes, religious establishments, and prerogatives led directly to the Puritan revolution (1642) and the Commonwealth under Cromwell (1649-1660). Charles II, with his French manners and loose ideals, helped the Stuarts little, and James II completed their final downfall, when he fled in 1688, and William and Mary, his eldest daughter, took the throne.

Parliament was supreme; the people began to hope for a new age, which bore abundant fruitage in the reign of Anne (1702-14). England won great battles on the continent and in America; in 1707 Scotland was united with England. The ministry ruled during the times of George I and II, of the House of Hanover. George III in 1760 took back the royal powers, came into conflict with his American subjects, and England lost her most important colonies because of a stubborn policy. The long reign of Victoria (1837-1901) saw England confirmed as a world power, with a vast good will among her colonies, many of which were gradually given autonomy. (See article on *British Empire*). Edward VII proved a wise diplomatist at home and abroad, George V a man beloved by all his people, and Edward VIII well trained for his task of taking up the reins of government in 1935 on the death of his father. During the World War, England suffered hardships unknown to her people for generations, but at last maintained her place as stabilizer of many lands. See articles on *English Kings, Ireland, Scotland,* and the table of History for detailed events.

ENGLISH KINGS. No complete or reliable list can be made before the time of Egbert. The houses and kings representing each are as follows: *Anglo-Saxon Line:* Egbert (827-39), Ethelwulf (839-58), Ethelbald and Ethelbert, jointly (858-60), and latter alone to 866, Ethelred (866-71), Alfred the Great (871-901), Edward the Elder (901-25), Athelstan (925-40), Edmund (940-46), Edred (946-55), Edwy (955-58), Edgar (958-75), Edward, the Martyr (975-79), Ethelred, the Unready (979-1016), and Edmund, Ironside (1016), who fought against Canute and won many battles, but died before he could confirm his throne. *Danish Kings:* Canute (1017-35), Harold I (1035-40), Hardicanute (1040-42). *Saxons Restored:* Edward, the Confessor (1042-66), son of Ethelred the Unready, and Harold (1066), son of Earl Godwin, who ruled 40 weeks and one day, defeating his brother and the king of Norway at Stamford Bridge, when both were slain. Harold himself died in the battle of Hastings. *Norman Kings:* William I (1066-87), William II (1087-1100), Henry I (1100-35). *House of Blois:* Stephen (1135-54), son of a daughter of William the Norman and the Count of Blois, and a cousin of Henry I. *Plantagenet Kings:* Henry II (1154-89), who was the son of Matilda, daughter of Henry I, and of Geoffrey Plantagenet; Richard I (1189-99), John (1199-1216), Henry III (1216-72), Edward I (1272-1307), Edward II (1307-27), Edward III (1327-77), Richard II (1377-99). *Lancaster Kings:* Henry IV (1399-1413), who was the son of John of Gaunt, who persuaded Richard III in prison to abdicate; Henry V (1413-22), Henry VI (1422-61). *York Kings:* Edward IV (1461-1483), son of the Duke of York, succeeded after Henry VI was deposed; Edward V (1483), said to have been murdered by his uncle, Richard III (1483-85), who was slain at Bosworth, by the army of the Earl of Richmond, who became Henry VII.

Tudor Kings: Henry VII (1485-1509), lineal descendant through his mother, of the house of Lancaster, Henry VIII (1509-47), Edward VI (1547-53), Mary (1553-1558), Elizabeth (1558-1603). The last three were children of Henry VIII. *Stuart Kings:* James I (James VI of Scotland) (1603-25), son of Mary Queen of Scots, Charles I (1625-49) executed, Charles II (1649), Commonwealth under Cromwell and his son, Richard, to 1660; (Charles II restored, 1660-85), James II (1685-88), deposed. *Orange Kings:* William III and Mary II (1689-1702; 1689-94). *Stuart Line* again: Anne (1702-1714), second daughter of James II. *Hanover Kings:* George I (1714-1727), son of Sophia, granddaughter of James I, George II (1727-60), George III (1760-1820), George IV (1820-30), William IV (1830-37), Victoria (1837-1901). *Saxe-Coburg Kings:* Edward VII (1901-1910), name changed by George V (1910-1936) to *House of Windsor* on July 17, 1917, Edward VIII (1936) and George VI (1936——), Windsor Kings.

ENTENTE. Name used for Great Britain, Russia, and France as allied together during the World War. The name originated about 1840 from the phrase, *entente cordiale,* French for an amicable understanding, but not necessarily a formal alliance between nations. France and Great Britain came to an agreement in 1904 regarding Egypt and Morocco, France leaving Egypt to the control of England, and England, the control of Morocco to France. In 1907 Great Britain and Russia came to an agreement in regard to Persia and other parts of Asia. When the World War broke out, France and Russia were more firmly bound by definite military alliance. With Great Britain, they were often spoken of as the *Triple Entente.* Germany, Austria, and Italy were likewise bound in a Triple Alliance, until Italy broke away and joined the allies against the Central Powers in 1915. In 1920 Czechoslovakia, Jugoslavia, and Rumania entered into what many have called the *Little Entente,* the object being to maintain conditions in their region as provided for by post-war treaties. In 1929 the agreement was renewed.

EPHESUS. Famous city in Asia Minor, the seat of the worship of Diana or Artemis, to whom a very magnificent temple was dedicated in the 6th century B. C. This measured 164 by 342 feet, being classed as one of the seven wonders of the world. Ephesus was also the center of the late Greek philosophy and art. Next to Jerusalem and Antioch, it was a favorite Christian city, for a time the home of Paul, and once the seat of Timothy, an early bishop of the church. In 431 and 449 important church councils were held there. In 263 the Goths destroyed the temple of Diana, and the city fell into neglect. Recent excavations have shown the foundations for the temple, a theatre mentioned in *Acts xix,* 23, a stadium said to have been erected by Augustus, and several early Christian churches.

ERICSSON, JOHN (1803-1889). Swedish naval inventor, who lived in England from 1826 to 1839, and then in the United States. In 1890 his remains were carried to Sweden on the U. S. cruiser *Baltimore.* While in England, he invented a new type of screw propeller, which was adapted to the U. S. *Princeton,* 1839-41, the first war craft having a screw propeller below the water line. Some of his later inventions were a water meter, a device for measuring distance at sea, and a fire engine. He attempted to perfect an engine to utilize the rays of the sun. Ericsson is best remembered for his *Monitor,* described as a "cheese box on a raft," the

first iron-clad of the union navy in the Civil War, which defeated the *Merrimac* in 1862.

ERICSSON, LEIF. Hero of the Icelandic sagas, mentioned as the son of Eric the Red. He established a settlement in Greenland, visited the king of Norway, and was commissioned to bring Christianity to Greenland. On the way his boat was driven off course by gales, and he landed on a strange coast. One account represents him as exploring the places called Helluland, Markland, and Vinland. Much doubt exists as to the precise locations, which some believe to be Newfoundland, Nova Scotia, and part of New England; others believe them to be Labrador, Newfoundland, and Nova Scotia.

ERIE CANAL. This waterway across New York state was commenced in 1817, and the first boat left Buffalo for New York in 1825. Most of the emigrant travel to the West for the next twenty years went by way of the canal, the time taken being about three and a half days from Albany to Buffalo, a distance of 352 miles. From 1819 to 1882, when tolls were abolished, the net profit to the state was over $42,500,000. Much scandal resulted after 1862 over contracts for enlargement of the Erie Canal. Gov. Samuel J. Tilden, in 1872, did much to correct a number of abuses. Provision was made in 1903 for enlargement and deepening for boats of considerable size. The eventual cost was over $100,000,000. A yearly traffic of 20,000,000 tons was predicted, but the average has been about 3,000,000.

ERITREA. With Somaliland, one of the Italian colonies along the Red Sea in Africa. In 1870 Italy purchased Assab for a coaling station; later various strips of land nearby were acquired, all of which were united in 1890 to form Eritrea. From 1885 to 1896 intermittent fighting with Abyssinia kept the Italians from developing the country, the end being the disastrous defeat of Italy in 1896, one of the main causes of the war against Ethiopia (Abyssinia) in 1935. In 1900 and 1902 Italy, Great Britain, and Abyssinia fixed the boundaries of Eritrea. Italy gave up claims to all land south of the Mareb, Belesa, and Mina Rivers. In 1897 Kasala was given up to the Anglo-Egyptians. The inhabitants of Eritrea are mainly Arabs and Copts.

ESSEX, ROBERT DEVEREUX, EARL OF (1566-1601). While serving with his stepfather, the Earl of Leicester, in the war in Holland, Essex gained great fame at the battle of Zutphen in 1586. He rapidly won the favor of Queen Elizabeth, who sent him to serve with Henry IV of France against the Spaniards, though in 1589 she forced him to return from Drake's expedition against Portugal. When Elizabeth and Essex quarreled, Francis Bacon reconciled them. While serving as governor general of Ireland in 1598, he made an unauthorized truce with the rebel earl of Tyrone. For this and other offenses, he was sentenced to keep to his house in the country as if it were a prison. Essex appeared in London and raised a commotion because his patent on sweet wine had not been renewed. His old friend, Bacon, was obliged to prosecute him, the sentence being death. Essex was a man of spirit, erratic, but forgiving and always popular with numerous admirers.

ESTAING (aiz-tan'), **CHARLES HECTOR, COUNT D'** (1729-1794). French admiral, who served in India, where he was imprisoned by the British. In 1763 he was made lieutenant general, and in 1777 vice admiral in the French navy. The next year he brought a fleet to aid the Americans in their struggle against England. In 1789 he commanded the National Guard of France, and during the Revolution of 1793 helped Marie Antoinette with his testimony at her trial. One year later he fell a victim to the treachery and unreason of the times.

ESTONIA. Since 1918 an independent republic, made up of former parts of Russia, including some of Livonia, Pskow, and Petrograd. The inhabitants are mainly of Finnish-Urgrian stock. Russia granted freedom from all financial obligations to the old empire and gave Estonia 15,000,000 gold marks in 1920. Constitutions were adopted in 1920 and 1934, the last by an overwhelming popular referendum. The president has wide powers, almost absolute. Martial law was proclaimed in 1934 against Nazi, Fascist, and Communist propagandists. Estonia, Latvia, and Lithuania agreed to common action in matters of tariff and social policies. In 1935 existing political parties were abolished by decree, following a ban on the Workers (Communistic) Party in 1930.

ETHIOPIA OR ABYSSINIA. Native chronicles assert that the first king, Menelik, was a son of King Solomon and the Queen of Sheba. Little is known of actual history before the 4th century, when the Coptic form of Christianity was introduced, followed by three centuries of progress, then by reigns of usurpers until about 1300. Portuguese Jesuits were driven from the country in 1633; little communication with the outside world followed until 1850. The British overthrew King Theodore in 1868 because of his barbarism. King Menelik, who ruled from 1889 to 1913, crushed the Italian army at Adowa in 1896, a defeat that Italy never forgave. Lij Yasu was deposed in 1917, and Zaudita, daughter of Menelik succeeded him, with Ras Taffari as Regent, who provided for the gradual freeing of slaves in 1924. Ras Taffari became king in 1928, and emperor on the death of Zaudita in 1930, taking the name of Haile Selassie. After weeks of preparation and threats, while the League of Nations sought to prevent, Italy began a war on Ethiopia in 1935, under the pretext of wishing to civilize and modernize the country. Emperor Selassie fled to Europe in May 1936, and Italy proclaimed the annexation of Ethiopia.

EUGENE (Eu-Zhain'), **FRANCOIS** (1663-1736). Better known in his time as the Prince of Savoy. Because of the banishment of his mother by Louis XIV of France and the refusal of a commission to himself, Prince Eugène entered service under Leopold I of Hungary and Bohemia, and from that time became an enemy of his native land. Louis offered him great honors and estates if he would consent to serve with France, but all such inducements were refused. He became the most famous general of his age, serving as field marshal of Austria; for the Coalition against France in her claims in Italy, when he expelled France from Italy in 1706: and as head of the German army which aided the British at Blenheim. He defeated 180,000 Turks in 1706, captured Belgrade in 1717, and as late as 1735 once more took the field against France along the Rhine. He also spent much time in reading, in study, and in collecting art objects that were the admiration of his contemporaries.

EVANS, ROBLEY DUNGLISON (1846-1912). While commanding the United States *Yorktown* in Chilean waters when a mob killed some sailors in 1891, he earned the title of "Fighting Bob Evans." On his recommendation, steel was first used for American battleships, his own command, the *Indiana*, 1896, being the first of this type. During the war with Spain, the *Iowa*, of which he was captain, became the center of attack by the Spanish fleet off the coast of Cuba. He also served in Bering waters, as lighthouse inspector, 1882 to 1886, with the fleet in the Far East, 1904, and on a cruise around the world, 1906, from which he was forced by illness to retire when the fleet reached San Francisco. He gave up his command in 1908, receiving special thanks of Congress.

EWELL, RICHARD STODDART (1817-1872). He was a graduate of West Point in 1840, gained distinction in the battles near Mexico City in 1847, and in quelling the outbreak of the Apache Indians in 1857. He joined the Confederate army in 1861, became a lieutenant general and commanded a corps at Gettysburg, Winchester, the Wilderness campaign, and Spottsylvania. Ewell and his entire army were captured by Sheridan at Appomatox in 1865.

EXPLORATIONS, EARLY. The Greek Argonauts explored the shores around the Mediterranean, the Phenicians went as far as India long before the dawn of the Christian era. Herodotus says they settled along the coast of Africa, and crossing the Bay of Biscay, went to the tin mines in Cornwall. Hanno about 450 B. C. planted a colony near the present Sierra Leone; Hamilco went to Ireland. In 320 B. C. Pytheas, a navigator of Carthage, went as far as "Ultima Thule," supposed now to be north as far as the Shetland Isles, end of the ancient known world. Alexander's conquest gave some knowledge of the East to the Greeks. Early records were destroyed by invading hordes like the Tartars, but the Arabians saved all they could. Geographical science found a home at Bagdad when driven from other lands to the west. Some famous medieval travelers were Ibn Batuta, a Mohammedan (d. 1378); Marco Polo of Venice (d. 1324) who brought

marvelous tales back from the court of Cathay, where he was for years a resident; Henry of Portugal (d. 1460) gave all his money and talent for 40 years to explorations; and Columbus, John Cabot, Vespucci, Verrazano, between 1492 and 1524, visited the coast of the new world at various points. Diaz rounded Africa in 1488, Vasco da Gama went that way to India ten years later, and Magellan found that he could reach the spice islands by crossing the Pacific from the west. After his death in the Philippines, his crew completed the first circumnavigation of the world from Spanish ports. Cartier, LaSalle, Champlain, and Joliet explored the north Mississippi basin. Frobisher, Baffin, Hudson, and Sir Humphrey Gilbert were among those who sought the gold of the Orient by making a northwest passage around America. Drake circumnavigated the globe in 1577. Tasman and Van Dieman, Hollanders, in 1642 discovered Australia, Tasmania, New Zealand, and the Fiji Islands. Captain Cook discovered many islands while voyaging in the south seas, and circled the Antarctic continent. Early land explorers were Veronne in the Rocky Mountains in 1740; Hearne in the Arctic, 1771; Bruce, the headwaters of the Nile, 1768-72; Mackenzie the river that bears his name, 1789; Lewis and Clark, the American northwest, 1802-05; Humboldt in the West Indies, 1779-1804; Mungo Park, the Niger country, 1796; Billings, eastern Siberia, 1794; and Schlagentweit brothers crossed the Himalayas and Tibet, 1856-57.

EXPOSITIONS. Italy and other countries held small fairs in early ages. They were known in France about 620, in England in 886; city expositions in Paris, 1789, and New York, 1828. Before 1850 many towns of Europe held annual fairs to display their products, that at Leipzig being held three times a year. Paris had industrial expositions in 1798, 1801, 1803, and 1806, the last with 1422 exhibitors. Some important commercial expositions in the United States have been the Cotton States, Atlanta, 1895; Pan-American, Buffalo, 1901; Lewis and Clark, Portland, Oregon, 1905; Jamestown Tercentennary, 1907; Alaska-Yukon, Seattle, 1907; Panama-Pacific, San Francisco, 1915; Great Lakes, Cleveland, 1936. On a much larger scale, international expositions have been held at Crystal Palace, London, 1851, with 6,000,000 attendants; Paris in 1855, 1867, 1889, 1900, the last with a record attendance of 39,000,000; the Centennial of American Independence at Philadelphia, 1876, with 7,000,000; the Columbian at Chicago, 1893, with 21,000,000; British Empire, Wimbley, 1924-25, with 27,000,000; and the Century of Progress, Chicago, 1933, 1934, with over 39,000,000 and a financial profit. Some of these expositions have contributed permanent buildings to the city where they were held, such as Crystal Palace, London; the Field Museum, Chicago; Memorial Art Gallery, Philadelphia.

EXCLUSION ACTS, UNITED STATES. Before 1850 nations usually recognized the rights of the nationals of other lands to come to their shores. Various problems due to excessive influx of foreigners, economic necessity, and other causes now tend to restrict these privileges. As early as 1845 the United States refused to restrict immigration of persons of other races. The Chinese were first restricted in 1882. From 1840 to 1850 only 35 Chinese came to America; from 1850 to 1860, over 40,000 came, of whom 6,000 returned; in 1870 there were 62,376 in the country, though 67,000 had come in the last few years, of whom, however, 35,000 returned to China. Congress refused to do anything in 1868, but in 1876 both political parties had a Chinese restriction plank in their platforms. A committee in 1880 suggested restriction, which was diplomatically arranged with China in 1882. Chinese immigration was restricted for 20 years, but the time was extended in 1892, 1902, and later. After 1888 no Chinese who left this country could return. Between 1890 and 1920 the total in the United States declined from 107,000 to 61,000, and has never risen higher. San Francisco, 1906, forced Japanese children to attend a school for foreign children, mainly Chinese. Many protests resulted. In 1907 it was diplomatically agreed that Japanese immigration should be restricted by Japan. In 1924 residents of India and of Japan both were finally barred. Since then, both countries have sought to establish a quota basis, at least to save national pride, similar to that applied to immigration into the United States from other nations. When complete Filipino independence is finally established, it is expected that natives of the Islands also will be excluded. In all cases travelers, merchants, and students have special permits to live in the United States. In 1930 the total Japanese population was 139,000, mostly in the Pacific states.

FACTORY SYSTEM. Nothing has wrought greater changes in modern life than the growth of factories. Until 1760 in Great Britain and America, people earned their daily bread by working their land and by making articles in the home, or in the very small shop, for local consumption. Each town was largely independent of others, unless raw material had to be shipped from abroad or a distance, as from a warmer to a colder climate. Since the early 19th century, the domestic or home craft system has given way to the factory, or making articles in large establishments. Today raw material may be produced in Colorado, as in the case of wool, shipped to Chicago, finished, and made into garments, which are shipped back to Denver for people to buy there. In early New England, each home was usually self-subsisting,—even the clothes and shoes being made there. The shoe-maker travelled about, much as the teacher "boarded round." The family furnished the hides, which a local tannery often dressed for the maker of shoes and harnesses. Invention of machinery made Brockton, Lynn, and other towns centers of the shoe industry. This particular trade is now found also in St. Louis, Chicago, New York, and many other places. Manchester, Lowell, and New Bedford made up cotton goods, some of which are now manufactured in the South, near the source of raw supply. Much of the clothing is still made in homes, farmed out from the establishment in the city, under conditions called "sweating," which laws have sought to keep from tending toward domestic slavery. Our inventions like the spinning jenny, processes of making steel, and many other articles have concentrated industries in cities and special communities. Hence, the population is slowly shifting from the smaller towns and the country to such centers.

FAIRFAX, THOMAS (1692-1782). An English lord, son of the fifth Baron Fairfax, came of a distinguished family, which owned eleven counties in Virginia, some 6,000,000 acres. He came to Virginia in 1746, perhaps after disappointment in love. William, his brother, had been in America for several years, and had married Anne, daughter of Lawrence, brother of George Washington. Lord Fairfax engaged the young George Washington to survey some of his Virginia estates. From this time they were close friends. Though Fairfax was an ardent royalist, he was allowed to live unmolested during the Revolution on his estates near Winchester. Albert K. Fairfax, a lineal descendant, in 1908 was granted the title of 12th Baron Fairfax by the British House of Lords. Thomas Fairfax was 6th baron.

FANEUIL HALL. See *Historic Shrines.*

FANNING, EDMUND (1737-1818). Celebrated loyalist during the Revolution in America. He was a graduate of Yale in 1757, settled at Hillsboro, N. C., but was driven away by residents who accused him of partisanship as recorder of deeds. He gathered 460 loyalist volunteers for the "King's American Regiment," which fought the colonial forces in several skirmishes. Later he fled to Nova Scotia, where he became a councilor in 1783. From 1796 to 1805 Fanning served as Governor of Prince Edward Island.

FARNHAM, RALPH (1756-1861). The last survivor of the battle of Bunker Hill, and the first white settler at Acton, Maine. In 1860 residents of Boston honored him by a public concert. When he died the following season, he was aged 104 years, nine months, and 19 days.

FARRAGUT, DAVID GLASGOW (1801-1870). Naval hero for whom the U. S. Congress created two new ranks,—vice admiral in 1864 and admiral in 1866. He came of a family that fought in the Revolution, was adopted by Capt. David D. Porter, and was with him on the *Essex* in the battles with the British in the Pacific, and served with distinction in the Mexican War. In 1861 he moved from Norfolk, Virginia, to Hastings, New York, and offered his services to the North. He carried on with great credit several extremely hazardous exploits: running through the deadly fire from land batteries at New Orleans, April 24, 1862, to sink 13 Confederate gunboats and two ironclads; destroying an ironclad and four gunboats in Mobile Bay, in the

midst of enemy torpedoes, Aug. 5, 1864; running the Mississippi at Port Hudson in a similar fashion; braving fire rafts with his flagship, *Hartford,* badly damaged. He attained the rank of rear admiral in July 1862.

FASCISM. A policy and system developed in Italy, mainly under the leadership of Mussolini, after the World War. In the times of Roman consuls and the later emperors, the fasces were bundles of rods borne (with an ax) as the symbol of authority by lictors, or the personal guards of the rulers. Italian fascism proclaimed the purpose of ridding the land of communism and of magnifying patriotism. Pacific and anti-military organizations have been gradually suppressed. Territorial claims have been advanced, even to the war with Ethiopia. In 1926 fascism developed into a corporate state. In 1929 Mussolini and the Vatican agreed as to the powers of the Pope, but in 1931 fascist youth mobbed the rooms of the Catholic Action Society in Rome and closed 10,000 clubs with a Catholic membership of 50,000. Thirteen separate units were organized by fascism: men's, women's, "Young Italians," university group, and so on, including a fascist militia.

FAWKES, GUY (1570-1606). Robert Catesby engineered a plot to blow up James I and both houses of Parliament on Nov. 5, 1605. Thomas Winter, Thomas Percy, Sir Everard Digby, Francis Tresham, and a few others were drawn into the conspiracy. They found that a vault under the House of Lords, where the joint session was to be held, was about to be vacant. They secured this, and placed in it some 36 kegs of gunpowder. Fawkes, a man known as willing to undertake hazards, was engaged to touch off the powder. Though he heard that the plot had been reported, he stuck to his post in the vault, but was captured when he emerged the next day. He was tortured, confessed, was hanged and quartered. Some person never yet identified wrote a letter to Parliament revealing the plan.

FEDERALISTS. Whether the Union or the separate states should have major powers has often been discussed in America since 1785. Recently the discussion has flared up anew. Alexander Hamilton was the leader of the Federalists, a group who urged that the United States should have control over all save purely local matters in the single communities or in the states. Certain Essays were printed and became known as the *Federalist* in 1787 and 1788. John Jay and James Madison probably assisted Hamilton in the composition of these papers, which did much toward securing the adoption of the new Constitution. Out of these discussions, a new political party arose in 1789. From then to 1801 it was dominant, but after 1815 ceased to be important. Jefferson led the opposition. The Federalists secured such national legislation as the postal laws, internal revenue statutes, and the provisions for taxes on liquors and for a tariff.

FEUDALISM. European system of land holding and society between the 9th and 15th century. In the medieval period men looked to those above them for protection,—the peasant to the baron and the latter to the king. At last a regular ceremony was established called "homage and fealty," when the vassal took an oath to give service and fealty to his overlord, and the latter agreed to furnish men for defense of the monarch. After a time, kings gave certain immunities to the large landholders or barons, such as freedom from interference by tax-collectors, justices of the peace, or military leaders. From this the barons developed great power. Sometimes a holder of land gave the final ownership to the church or to some other body, but held the actual occupation during his lifetime. Gradually, the rights to hold land became hereditary, prophetic of modern absolute ownership in fee simple, or right to sell, will away, or otherwise dispose of it. Kings existed only because they were upheld by powerful lords or local viceroys, called counts in France, and in England, earls. Before the Norman Conquest these were firmly entrenched. The feudal tenants owed several duties to his lord: military service, court service (something like the modern jury), allowing the landlord to settle estates and manage affairs of orphans, and to select husbands or wives for their thanes. In France the last of the feudal system was destroyed by the Revolution of 1793. The Dutch patroon system in New Netherlands was a survival of the European feudalism, and led to the anti-rent riots. described elsewhere.

FIELD OF THE CLOTH OF GOLD. Name for the meeting place of Henry VIII of England and Francis I of France to discuss topics of mutual concern. It was so named because of the magnificence of the arrangements. A temporary castle was set up for Henry and his court, with 2800 tents for the rest of his enormous retinue. Cardinal Wolsey, for the king, opened the formal ceremonies by paying a state visit to the French monarch, after which Francis and Henry met midway between their two camps. The feats at arms, pageants, and other entertainments continued from June 7 to 24, 1520. Little came out of the conferences beyond the promotion of good-will. Henry also visited Charles V, a rival of Francis I, and Henry joined Charles some years later in his contests with France.

"FIFTY-FOUR FORTY OR FIGHT." See *Boundary Disputes.*

FINLAND. Formerly an autonomous duchy of Russia, Finland declared independence on Dec. 6, 1917, and earned her freedom with the help of German troops in 1918 when the Reds were defeated in two battles and driven into Russia. In 1932 an incipient rebellion was crushed by the arrest of the leaders. In 1931 the prohibition law, enacted in 1919, was repealed by a popular referendum. Finland has signed trade and arbitration treaties with various nations. In 1927 she was given a non-permanent seat on the council of the League of Nations. Among the small countries created after the World War, Finland seems the most stable politically.

FIUME. From the Peace Conference of 1919 to 1924, the boundary line between the new Jugoslavia and Italy was the subject of strife and controversy. Fiume had belonged to Hungary, and Dalmatia and other districts to Austria before the war. Italy claimed some of the territory because the inhabitants were mostly Italian. From Oct. 29, 1918 to Jan. 1924, Italian troops occupied Fiume, with a rupture of diplomatic relations in 1923. For over two years from Sept. 1919 Gabriele D'Annunzio, Italian poet and adventurer, held control in Fiume by a military coup, which neither the League of Nations nor Italy could prevent. In the final settlements, Italy gained Fiume, some islands in the Adriatic, and other bits of territory; Jugoslavia gained Dalmatia and seaport facilities.

FLAGS, UNITED STATES. Before the Revolution, a number of flags were displayed in the American colonies. Some of the first in New England were the blue field with white union quartered by a red cross, used as early as 1737. Two flags of somewhat similar design were carried in the battle of Bunker Hill. One of several pine tree flags was displayed at Harvard University in 1770, this being red with a green pine tree sewed upon it. Another design showed a serpent coiled about the base of the tree, and the legend, "Don't tread on Me," a phrase used on several early flags. Another flag from Bedford, Mass., was flown at Lexington and Concord on April 19, 1775. On Jan. 2, 1776, when Washington took command of the army at Cambridge, Mass., a flag was displayed that had 13 stripes (probably the first use of these), with the crosses of St. George and St. Andrew in the upper, left field. On June 14, 1777 the Continental Congress chose a white union on a blue field, with 13 alternative red and white stripes. In 1790 and 1792 stripes were added for Vermont and Kentucky, but the number was later reduced to the original 13. On Aug. 16, 1777 at Bennington, Vermont, a battle flag with a union of nine stripes, and with seven-pointed stars in an arch formation, was displayed. On Sept. 13, 1775 a flag was raised at Ft. Johnson, S. C., having a blue field, with a white crescent in the upper, inner corner. Others like this were used in the South. Before 1780 South Carolina had a rattlesnake flag, New York a white field with a beaver upon it, and Rhode Island a white with a blue anchor. The first flag having the thirteen stripes, in blue and silver, however, was that of the Philadelphia Light Horse in 1775. The Betsy Ross flag, said to have been the first made as authorized by Congress, June 14, 1777, had thirteen pointed stars in a circle on a blue field. It was made for the congressional committee, consisting of Gen. Washington, Robert Morris, and Col. George Ross, by Mrs. Elizabeth Ross, wife of the last-named, in Philadelphia. Mrs. Ross was given a contract to make American flags, and this was held by her daughter until 1857. In 1912 the present ar-

rangement of six rows of eight stars each was officially adopted.

FLANDERS. Powerful principality in the middle ages, made up of the provinces of East and West Flanders (now part of Belgium), some of Zealand (now in Holland), and the Nord district of France. Northmen settled there in the 9th century. Baldwin Bras de Fer (Iron-Arm), one of the first counts, married the widow of Ethelwulf of England, and so the district fell to him in 864. Henry II granted Ghent and other lands to Baldwin IV; Lorraine was acquired by Baldwin V. Baldwin IX, who died in 1206, established his empire at Constantinople. In 1384 Flanders was joined to Burgundy through the marriage of Margaret to Philip the Bold. This district formed an important part of the union of the states of the Netherlands. Flanders passed to the Habsburgs of Spain in 1477, but gradually shrank in size. In 1714 it fell to Austria; in 1795, along with Belgium, was incorporated with France. The Congress of Vienna, 1815, formed Belgium and Holland into the kingdom of the Netherlands, from which Belgium became independent in 1830, with neutrality guaranteed by the Powers.

FLODDEN FIELD. In Northumberland, the Earl of Surrey crushed the flower of Scotland on Sept. 9, 1513. The invaders were led by James IV, who was slain, together with many of the chief nobles, the archbishop of Andrews, and 8000 of the bravest soldiers. James allowed his army to be flanked and to be cut down by the English archers and cannon. The Scots were forced to fight at close quarters, until the personal command of the king was surrounded, and his bodyguard slain. Scott's *Marmion* gives a vivid, even though somewhat fanciful, account of this battle.

FOCH, FERDINAND (1851-1930). One of the marshals of France, became an international figure during the World War as generalissimo of all the allied armies against Germany, to which position he was appointed by the suggestion of both America and England. From 1870 to the time of the war, Foch fought against Prussia, became professor of strategy and tactics and later, 1910, commander of the war college of France. After he successfully withstood the German advance toward Calais, and won a decisive victory at Ypres, and laid some of the plans that aided Joffre at the Marne, Foch became known as a master tactician. He was placed in supreme command of all the allies on March 26, 1918, blocked the fifth German drive on July 18, and gradually forced the German Armies back toward the borders of France. After the World War Marshal Foch was placed in charge of the military preparations looking toward the enforcement of the guarantees made by Germany. On his visit to the United States in 1921 Marshal Foch was acclaimed in the principal cities.

FOOTE, ANDREW HULL (1806-1863). Famous American naval officer, who was with the squadron which made a world tour; cruised in the brig *Perry* along the African coast to help suppress the slave trade; and built the forts at Canton, China, when under command of Commodore Armstrong, and stormed and captured the shore defenses when his party was fired upon by natives. In the Civil War he took Fort Henry on Feb. 6, 1862, and was shot in trying to take Fort Donelson for Gen. Grant. He was forced to resign his command because of his wound, being advanced to the rank of rear admiral. While on his way to relieve Admiral Dupont at Charleston, S. C., he died on June 26, 1863.

FORT DEARBORN. On the present site of Chicago, a fort was built in 1804-05. Here on Aug. 15, 1812 the garrison of 67 men was evacuated by orders of Gen. William Hull. With some 30 of the settlers about the post, the party was being led by 500 Indians supposed to be friendly. The objective was Detroit. When but a short distance from the fort, they were ambushed by Indians, including some of their own escort, and 32 were killed, the rest being captured. On the following day the fort was destroyed by the redmen. It was rebuilt in 1816, evacuated in 1823, occupied again in 1828, and finally demolished in 1856. A replica was erected for the Century of Progress Exposition in 1933.

FORT DUQUESNE. About 1754 the English started to build a fort at the junction of the Allegheny and Monongahela Rivers in western Pennsylvania. When the French captured this, they named it Fort Duquesne. The first battle of the French and Indian War occurred in connection with the unwise and fatal attempt of Gen. Edward Braddock to take this point. Two years later, 1758, Gen. Forbes led 7000 men against this stronghold, but they were beaten off by the small garrison. The defenders blew up the fort, and escaped in boats down the Ohio River. Then the English took possession, and named the place Pittsburgh in honor of the English Prime Minister. Fort Pitt was soon established at this point.

FORT ERIE. Major Buck of the British force surrendered 170 men garrisoned there on July 3, 1813. On Aug. 14, 1814 the British bombarded the fort, but were driven away after they lost 221 killed, 174 wounded, and 186 prisoners. One month later the Americans in the fort made a sortie and destroyed the British batteries. After other losses, the British withdrew, and the fort was destroyed. It was situated on the Canadian side of the Niagara River opposite Buffalo.

FORT HENRY, FORT DONELSON. Fort Henry along the Mississippi River in Tennessee was captured by Com. A. H. Foote on Feb. 2, 1862. The Confederate garrison gathered at Fort Donelson, some 12 miles away. Gen. Grant, with 27,000 men, supported by Foote's flotilla, renewed the attack on Feb. 13; but, within two hours, all the boats of the North were disabled, with a loss of 54 men. Next, the Confederates tried to retreat toward Nashville, but Grant prevented this move, and about 2000 were killed and wounded on each side. While 2600 of the Confederates later got away by night, Gen. Buckner was left to hold the fort. When he invited Grant to a parley, the latter sent back his famous reply, "No terms except unconditional surrender can be accepted." Buckner then surrendered the fort, nearly 15,000 men, 40 guns, and great stores of ammunition.

FORT JAY. Important military post defending the harbor of New York. It is located on an island, was first occupied by the Dutch, then by the English, and in the Revolution by the Americans and British in turn. New York gave it to the national government in 1800 as a permanent fortification. In 1901 it was greatly improved, when the size was increased to 104 acres, and docks, warehouses, and quarters for men were greatly enlarged.

FORT SUMTER. This fort in the harbor of Charleston, S. C., was commenced in 1830, but remained incomplete in 1861. Major Robert Anderson assumed charge of this and Fort Moultrie nearby in 1860. When South Carolina seceded from the Union, Anderson moved his forces to Sumter because it was more secure. When a boat carrying provisions to the fort was fired upon, the North was greatly stirred, and Pres. Lincoln notified the governor of South Carolina that another attempt would be made to relieve the men at Sumter. When Gen. Beauregard demanded the surrender of the fort, Anderson delayed for orders from Washington. Firing on the fort began on the morning of April 12, and continued till afternoon of the next day. Then Anderson evacuated the garrison of 128 men. No persons were killed. During the war attempts to dislodge the Confederates were repulsed, until Sumter was evacuated on Feb. 17, 1865. The former commander, now Gen. Anderson, then hoisted over Sumter the same flag that he had lowered on April 13, 1861.

FRANCO-GERMAN WAR. Prince Leopold, who had been a candidate for the vacant throne of Spain, withdrew when France objected. Diplomatic correspondence published in the papers led to declaration of war by France on Prussia, July 19, 1870. Napoleon III of France supposed his army was ready, and that the southern German states would not support Prussia. In both he was mistaken. The French could raise only half as many as the 500,000 Germany had on the borders very soon. The French were pushed back, little by little, to the gates of Paris. Marshal McMahon of France was defeated near Woerth, and later at Metz. At the decisive battle of Sedan, McMahon was wounded, his successor lacked insight, and the day was lost. Napoleon III also surrendered his own force of 85,000. On Sept. 4 a republic was proclaimed. Leon Gambetta, an opponent of Napoleon, was made minister of defense, and for five months acted virtually as dictator of France. He tried to organize opposition to the Germans, and for a time seemed likely to succeed, but Belfort was taken, and Paris was finally bombed and starved into submission. France ceded Alsace and also much of Lorraine to Germany, except for the district about Belfort.

After an indemnity of a billion dollars was collected, the German troops were finally withdrawn in Sept. 1873.

FREDERICKSBURG, BATTLE OF. This was one of the most disastrous engagements for the Union in the Civil War. Near Fredericksburg, Va., on Dec. 13, 1862, Gen. A. E. Burnside, with about 120,000, attacked the army of Gen. R. E. Lee, numbering about 80,000. Lee occupied the heights along the Rappahannock, which was an impossible place to attack. Realizing this evidently, Burnside delayed the battle until at last he was forced to cross the river. Company after company of the northern men fell under the withering fire of the Confederates. By nightfall Burnside had lost 12,500 men, Lee not more than a third that number.

FREEDOM OF THE SEAS. From early times the sea has been always in dispute among those who seek advantages abroad. Rome, Venice, Genoa, Spain, and England at times have claimed to be masters of the sea. The United States fought three wars on this point,—the brief clash with France in 1798; that with England in 1812; and with Germany in 1917, all caused by interference with the ships of the country. Until the time of the great jurist, Grotius, and his book *Mare liberius*, 1609, the idea that the nation who could command the seas had a right to dictate was rather prevalent. Grotius ably disputes this notion. In later times, several world conferences have discussed matters of the freedom of the seas. In 1856 the Paris Conference declared four principles: 1, privateering and piracy were outlawed; 2, a neutral flag covers enemy's goods,—but not contraband of war; 3, neutral goods are not subject to capture; 4, blockades must be effective, or they need not be recognized by neutrals. This last rule prevents theoretical or mere "paper blockades." International law now recognizes the control of a nation as far as three miles from shore, and in some instances as far out as ten miles. Great Britain recognized the right of the United States to patrol the high seas as far from shore as ten miles in search of rum runners. Several nations declared blockades during the World War,—Great Britain around her shores; Germany in the North Sea; Turkey in the territory about the Dardanelles. Germany, by the necessity of war, asserted a right to use submarines in the open waters, one of the reasons why the United States entered the World War after some of her ships were sunk in the open ocean. For several decades English vessels expected a salute from the ships of other nations, a custom that brought about some conflicts at sea. Now one nation dips its flag when the ship of another is passing.

FRENCH AND INDIAN WAR. After 150 years of strife over colonies in the new world, France and Great Britain came to the final clinch between 1754 and 1760. During the same period, in Europe they were fighting the battles of the Seven Years' War. The policy of France in America was to keep the English east of Ohio by erecting a string of forts along the St. Lawrence, the Lakes, and the Ohio and Mississippi Rivers. The first clash occurred at the origin of the Ohio where Pittsburgh now stands. It finally spread out to include the Great Lakes, the region about Detroit, the Niagara River, the land route to Canada through northern New York, and other strategic points by the water routes. Great Britain gained few advantages during the first two years. When William Pitt became Prime Minister, however, things began to improve. He sent Amherst and Wolfe to take charge in America. The former captured Louisburg in July 1758; while Gen. Forbes, in command in the Ohio region, took Pittsburgh four months later, and so closed the Ohio to the French. Crown Point and Ticonderoga, in New York, fell in May 1759, and Fort Niagara to Lord Amherst in July, and so the French were blocked off from the lakes to the west and from the route to New York by way of Lake Champlain. Next, the campaign was carried into lower Canada. The English stormed Quebec in Sept. 1759, and Wolfe, their gallant commander, met death, and Montcalm, the French general, met defeat and death. When Montreal capitulated in 1560, the war in the colonies virtually ended, but peace was not declared until the war in Europe was concluded. Britain was left free to settle the territory to the Mississippi and down the Ohio River.

FRENCH, JOHN DENTON PINKSTONE (1852-1925). British field marshal in the World War. He commanded a regiment in the Sudan, 1889-93; distinguished himself as a commander of cavalry in the war in South Africa, notably at Kimberley and Pretoria. In 1907 he became a general, in 1913 a field marshal. From August 1914 to December 1915, he led in France the British forces, which bore the brunt of the efforts of the Germans to reach the north coast along the English Channel. He was made Viscount French and commander-in-chief of the United Kingdom. From May 1918 to 1921, he was lord lieutenant of Ireland, after which he was created an earl.

FRENCH REVOLUTION. Between 1789 and 1799, the old French order ended in a series of clashes between parties culminating in a reign of terror that amazed the outside world, and the expulsion of the Bourbon dynasty. The causes, some of long standing, were mainly the lack of confidence in the reigning house, resistance of the nobles to all extensions of democracy, the growing burdens of taxations, and the defeat of the French armies in America and Europe. The discontent came to a climax on June 17, 1789, when the National Assembly was organized. This was composed of nobles, clergy, and one-half from the "Third Estate," or the common people, whose leader was Gabriel Mirabeau, a noble who admired the English constitution. Mirabeau sought to preserve the monarchy, but with concessions to the people. Danton succeeded in 1791, and Robespierre from June 1793 until he was guillotined in the following year.

When the king gathered troops in Paris and dismissed Necker, minister of finance, in whom the people had confidence, on July 14, 1789 a mob stormed the Bastille, for centuries a prison-fortress and symbol of tyranny. Meantime, the business men of Paris had called together a National Guard. Feudal and estate privileges were abolished by the Constituent Assembly, chief legislative body, but this concession came too late. Outbreaks continued throughout France. On Oct. 5 a mob, composed mainly of hungry women, marched to the palace at Versailles. Lafayette and the National Guard rescued the royal family, who took refuge in the Tuileries for protection. The nobility had lost control. New Drafts of a constitution were drawn in 1790, 1791, 1793, 1795, and finally in 1799. The Jacobins, or Friends of the Constitution, exerted a powerful influence as a party; so did the Cordeliers, a club led by Danton himself. Church property was transferred to the state; laws as to royal and other inheritances were changed. On June 20, 1791 the royal party fled to the eastward; the anti-royalists at once were certain that the queen was conspiring with her brother, Leopold of Habsburg. War with Austria and Prussia followed. Violence between classes and parties increased.

The Girondists and the Mountain party, each named from districts in France, grew more powerful,—the first a radical, the Mountain a more conservative group. For a time conservatism held its own. On Aug. 10, 1792 the Tuileries was stormed, and in September political prisoners there were massacred. On Sept. 21 the monarchy was abolished, and on Jan. 21, 1793 the king was executed. On May 31 the Reign of Terror commenced. Danton had been a steadying influence; but under Robespierre, all restraint was brushed aside. Paris became a den of treachery; no man was safe; people were tried in the swiftest manner and executed on slightest pretexts. All Girondists were proscribed, and many went to their doom. The Girondists wanted a federal republic like the United States; the Mountain party wanted a more centralized government. Moderates like Lafayette went into hiding. After 1794 sanity began to return to France, for the fury had worked itself out. The fever of revolution began to subside, when both extreme parties were curbed, but another outbreak in 1795 caused the Mountain party to lose some of its most influential members. At last, Oct. 26, 1795 the Directory succeeded the Constituent Assembly, as the last legislative body had been called, and Napoleon Bonaparte began to shape the destinies of France.

FRIES REBELLION. Congress in July 1798 levied a direct tax upon the states, amounting to $2,000,000, of which sum $237,000 was the share of Pennsylvania. Several counties objected to these assessments, the chief ones being Montgomery, Leigh, Bucks, and Berks. This was sometimes called the Window Tax War, for a tax was levied on houses in proportion to the number of windows they con-

tained. John Fries gathered a party of German farmers who compelled the federal officers at Bethlehem to release 30 prisoners that had been arrested for refusing to pay this tax. President Adams called out the militia, which took some of the rioters to Philadelphia for trial. Fries was twice found guilty of treason, but he was pardoned by the president, April, 1800, and all others were given general amnesty.

FUGITIVE SLAVE LAW. During the colonial government, slaves that escaped their masters in one region and went into another colony were returned to their owners. When the Constitution was written, in article four, section two, provision was made for definite procedure in such cases. In 1793, and again in 1850, Congress made it possible for an owner of an escaped slave to have him arrested, taken before a local magistrate, and thus restored to his master. In 1857 the Supreme Court of the United States decided that Dred Scott, a slave, who had claimed freedom on the ground of residence for two years or more in free territory, was still legally a slave in Missouri, according to laws of that state. Both the Fugitive Slave Law and this decision greatly inflamed opponents of slavery. Escape of slaves to free soil increased. All these conditions helped precipitate the Civil War. See *Underground Railroad.*

FUNSTON, FRED (1865-1917). American soldier; born at New Carlisle, Ohio. After a connection as botanist with the Department of Agriculture (1891), he offered his services to the Cuban Junta (1894), and was there promoted lieutenant colonel for bravery; captured by the Spanish, condemned to death but set free; organized the Twentieth Kansas Volunteers (similar to "Rough Riders") and was made colonel; served in the Philippines (1898); made brigadier general (1899); relieved because of illness and returned home same year; returned to the Philippines (1901); captured Aguinaldo. During the San Francisco earthquake he took military charge of the city and did heroic work.

GADSDEN PURCHASE. After the Mexican war, boundary disputes arose regarding a strip of land north of the Gila River, and now part of New Mexico and Arizona. The Mexicans also presented claims for damages because of Indian raids into their territory in 1848 and 1853. In the latter year, James Gadsden, United States ambassador to Mexico negotiated a treaty with Gen. Santa Anna, which provided for the purchase by the United States of the strip of territory for $10,000,000. This was much needed for building the Southern Pacific Railway. All other claims by each government were cancelled. So displeasing was this bargain to the Mexicans that they banished Santa Anna. See sketch on page 345.

GALLIPOLI, CAMPAIGN AT. Wishing to get supplies to Russia, and to impress the Balkan states, the French and British joined in a campaign at Gallipoli peninsula in 1915. It was a complete failure. The French troops came from north Africa and elsewhere; the British mainly from Australia and New Zealand, and were called Anzacs. The British expedition got a bad start in that the ships had to put back to Egypt to reload before being allowed to land on the peninsula. The Turks were commanded by a German general, and they succeeded in keeping most of the force from making any initial progress. Battles between the British and Turkish troops occurred on May 1 and 6; between the French and Turks, on June 21 and 28. The Anzacs attacked near Suvla Bay on Aug. 6, and almost succeeded in gaining an important advantage, which was lost by delays and failure to join with the French at other points. In December and January the positions already won were abandoned, and the troops went back to their stations or were distributed among various fronts. The British lost about 100,000 killed, and fully that many more sent home because of sickness. The Turkish losses were nearly equal.

GARCIA (*gar-thee'ah*), **CALIXTO** (1836-1898). Cuban patriot, who left a law practice, became a brigadier general in 1868 in the war against Spain, and later succeeded Gómez as commander-in-chief. With 20 of his men he was surrounded by 500 Spaniards; he tried to kill himself, but was taken by the Spaniards and imprisoned in Spain. Again, in the war of liberation of 1880, he was captured and deported to Spain, where they kept him under guard for 15 years. In 1898 he escaped to Paris, then to New York, and finally took a ship to Cuba laden with supplies and munitions. After several victories, he led 4000 Cubans in the important battle of El Caney. Later the same year, he died in Washington, while with a commission to interview President McKinley.

GARIBALDI, GIUSEPPE (1807-1882). Italian patriot and liberator, who joined in the uprising in Genoa in 1834 as part of the Young Italy movement led by Mazzini. He was forced to flee to Brazil, where he married and fought against the emperor, and in 1842 against Rosas of Buenos Aires as an aid to Uruguay in the struggle for freedom. In 1849 he again fought in Italy, trying to help Mazzini, and gained great success in the war against Austria and France. Again forced to leave Italy, he worked for 18 months as a candlemaker on Staten Island, New York. In 1854 he again led troops in Italy, assisted Victor Emmanuel in his campaigns, but was forbidden to take Rome from the papal authority. He drove the Bourbons from Italy, resigned all honors in favor of the king, and went to Caprera. In June, 1862, Victor Emmanuel prevented him once more from taking Rome, but in 1866 he was in the Tyrol and the next year again escaped to Caprera, where his Red Shirts gathered again, but he was defeated by French and other forces. In 1870 he joined the French against Germany in the Vosges, winning some military success. His son fought in the World War, first with the French with his force of 14,000 men, and later with the Italians. On denouncing the Fascists, he was exiled.

GATES, HORATIO (1728-1806). This American general, born in England, came to America in 1755, served under Braddock in Pennsylvania, and took command of the army in Canada in succession to General Schuyler. He forced Burgoyne to surrender Saratoga in 1777, but Cornwallis defeated him badly in South Carolina. Gates was acquitted of misconduct of the campaign by an official commission. He lived for years in Virginia, until in 1790 he sold his estate, freed his slaves, and moved to New York City.

GENGHIS KHAN. See *Mongols.*

GENOA. Powerful city, and once a republic, in central Italy. Evidences of early Greek and Roman culture in prehistoric times have been unearthed on the site. The Saracens plundered Genoa in 936, but Pisa helped expell them, and drive them also from Corsica and Sardinia. Corsica then went to Genoa, and Sardinia to Pisa. For two centuries these cities fought each other, until Genoa won the great naval battle of 1284. One hundred years later the city was humbled by Venice. From 1499 to 1528, the French controlled Genoa, until the Republic was restored by Andrea Doria. During the time of Columbus, a native, Genoa was known for her able navigators. Genoa was forced to take the side of Napoleon and, in consequence, the city was captured by Austria and England in 1800. In 1815, the Congress of Vienna, against the wishes of the Genoese, gave the district into the power of Sardinia. Genoa was one of the states that united in 1870 to form modern Italy.

GERMANY. The Cimbri and Teutones defeated the Romans in 113 B. C., the earliest historical reference we have of the early inhabitants, who were probably allied to the Celts. Tribes like the Suevi, Catti, Cherusci, Batavi, and Alemanni, battled with the Romans at times until the third century of our era. Up to 843 these and their successors held their own, until the empire of Charles the Great (Charlemagne) was divided among three grandsons. The dynasty (known as the Carolingians) survived until 911, only Charles the Fat (876-887) succeeding in uniting the various duchies, the chief of which were Swabia, Bavaria, Franconia, Saxony, and Lorraine. Conrad of Franconia, besides checking the nobles in his own realm, kept within bounds the Danes, Slavs, and Huns that sought to gain a foothold there; Henry the Saxon (919-36) also won Lorraine. Otho I (936-73) conquered northern Italy, and was granted the title of Holy Roman Emperor by the Pope. Disunion followed in Germany, but Conrad the Franconian (1024-39) and his son, Henry III, extended the borders of the land to include parts of Burgundy and Hungary. Henry IV disrupted Germany through his quarrels with the Pope, and the Franconian dynasty ended with Henry V (1106-25). Frederick I (1152-90), known as Barbarossa (bar-

cause of his red beard) again brought the Germans into prominence throughout Europe.

After an interval of anarchy among the various petty princes, Rudolph next began a new line, the Habsburg monarchs. Four years later he defeated Ottokar of Bavaria, and so acquired the districts known as Austria, Carinthia, Styria, and Carniola. After five unimportant reigns, Charles IV (1347-78) was the first of the house of Luxemburg. He gave the people a constitution, fixed the manner of electing emperors to succeed him, and established order in the entire realm. His son, Wenceslas, however, proved a weak king, and the line ended with Sigismund (1410-37), another son of Charles IV. The Habsburgs again ascended the throne with Albert II of Austria (1438-39). For the next 150 years the Lutheran Reformation gave the reigning family much concern, for the Diet favored reform, and the Protestant princes increased in power. With the Counter Reformation, after the middle of the century, the Roman Catholic party prepared for the Thirty Years' War, which broke out in 1618. When this came to an end, Germany was left exhausted, poor, and in places almost depopulated. Prince Eugène opposed Louis XIV of France, who had come to the aid of the Habsburgs. Then followed the spectacular rise of Prussia, with Frederick William, Elector of Brandenburg (1640-88), as the active leader.

In 1701 Frederick William became king of Prussia, and Frederick the Great (1740-86) carried on the idea of national unity. Frederick opposed the Habsburgs, and the War of the Austrian Succession followed (1740-48). During the age of Napoleon Germany was much disturbed by political changes and efforts to defend the various provinces. The Congress of Vienna, 1815, set up a German Confederation. In 1848 a national parliament met at Frankfort, and the King of Prussia in 1849 became German Emperor. Disunion followed, and Austria and Prussia sought to revive the old diet. William I became king of Prussia in 1861, and in 1867, under the power of Otto Bismarck, the confederation was revived, with Bavaria, Baden, and Wurttemburg as new members. Bismarck dominated until William II, following the brief reign of Frederick III, came to rule in 1888. The imperialistic attitude of Germany led to a declaration of war by France in 1870, but the latter was soon beaten. In 1907 another war was imminent, but Great Britain, allying with France in the Morocco dispute, prevented the conflict, or rather delayed it to 1914. During the World War various Socialistic demonstrations, strikes, and other opposition to the Kaiser's policies developed, until in Nov. 1918 he abdicated and fled to Holland. The new German Reich came into being after the World War as a Republic, and so continued until Hitler's rise to dictatorship in 1934. See articles on *Thirty Years War, Austrian Succession, World War,* and biographies of the kings and others mentioned above.

GETTYSBURG, BATTLE OF. Having succeeded at Chancellorsville, in May of 1863, Gen. R. E. Lee of the southern armies decided to carry the battle into the North and crush all opposition. On July 1 the battle of Gettysburg, in Pennsylvania, began prematurely, when the northern commanders and men had not yet taken their final positions. Much of the action on the first day occurred on Seminary Ridge, north of town, in McPherson's Grove, and along the highways. By night the federal troops had been driven from most of their positions. Number engaged on July 1, under Lee, 17,000; under northern generals, 12,000. Gen. G. G. Mead arrived during the night, and by morning the union men were well placed in strategic positions, notably under Gens. Hancock and Howard. Geary, Sickles, and Slocum were the chief union brigade generals; Longstreet, Johnson, Hill, Ewell, and Heth, the Confederates under Lee. The northern line was in form of a fishing hook. Hill's attack on the union center failed; the Louisiana Tigers, under Johnson, were repulsed in hand-to-hand combat, with terrible slaughter; and the union lines, driven over the two chief hills, reformed and came back to original positions. By nightfall, the northern army was in full possession of the best points, and the Confederates were somewhat disorganized. On the third day, after a night council, the Confederates again aimed to crush the union center by using cavalry on both wings. Johnson's southern corps was routed after six hours of desperate fighting. From noon to 3 o'clock a terrific artillery duel prepared for the advance on the union strongholds. In a moment of calm, the gallant charge of Pickett's brigade of 15,000 men, supported by Heth's Confederate divisions, ended in almost complete disaster, when the union fire mowed down the ranks like grass before the scythe. Gen. Lee during the night commenced to withdraw his troops to the southward, leaving the union forces in command of the field, but with tremendous losses. Union casualties were 3072 killed, 14,497 wounded, 5434 captured or missing; Confederate, 2592 killed, 12,709 wounded, and 5150 captured or missing.

GHENT. Capital of the province of East Flanders in Belgium, noted for the cathedral of St. Bavon, begun in 941 and completed in 1554; a town-hall built in 1518-33; and a university founded in 1816. The history of Ghent began before 700. In 866 Baldwin, Count of Flanders, built a fortress here against the Northmen who swarmed to the shores about the North Sea. By 1400 the city could raise 20,000 warriors, contended with the dukes of Burgundy, but in 1540 was reduced to subjection by Charles V, a native of Ghent. For 20 years from 1794, Ghent was the capital of the district of the Scheldt, controlled by France. During 1914, while the Germans occupied the city, Ghent suffered much from allied attempts to regain it. Shortly before the end of the World War, the command of King Albert of Belgium, including the 37th and 91st American Divisions, reoccupied the city.

GIBRALTAR. Town and fortress on marble rock, 1438 feet high, and commanding the western entrance to the Mediterranean Sea. It is 23 miles across the channel from the African shore, naturally a part of the Spanish province of Andalusia, but a British possession since 1704. The Greeks called this point the Pillars of Hercules, and early man supposed the world terminated here. In 711 the Arabs built a fortress here, part of which still remains. Gibraltar passed to Castile in 1309, to the Moors again in 1333, and to Spain in 1462. Charles V fortified the rock about 1540. After helping the English capture Gibraltar in 1704, the Dutch withdrew all claim to permanent possession. From 1779 to 1782 the Spaniards blockaded this fortress, but lost 2000 men to 16 killed and 68 wounded of the British garrison. The residents were given autonomy in 1830. During the World War, British, French, and American ships used the waters about Gibraltar as a base.

GIRONDISTS. One of the political parties of the French Revolution, named because the early leaders came from the department of the Gironde. Louis XIV formed a Girondist ministry in 1792, but it soon dissolved. The Girondists hoped to save the life of the king, but their leader, Roland, became discredited, and the extremists under Robespierre came into power. Not one Girondist was a member of the French Committee of Safety when it was organized in 1793. Marat at last obtained the ear of the mob, and 40 Girondist deputies went to the guillotine during the Reign of Terror. See *French Revolution.*

GLADIATORS. Slaves, malefactors, prisoners of war, or other despised persons were placed in the gladiatorial arenas at Rome. The custom, taken by Rome from the Etruscans, prevailed from 250 B. C. to 500 A. D. Rulers, candidates for office, and sometimes private individuals sponsored the spectacles. Julius Caesar put on a show of 320 pairs; Titus and Trajan entertained for many days when men fought with each other and with beasts. Some of the early Christians died in the arena. The Roman crowds seem to have been callous to human suffering. If a gladiator fell, or lost his weapons, he turned to the emperor or the people for a sign. Thumbs pointed down meant death; concealed meant life. Either was awarded at the whim of the leaders of the crowd. Some later emperors sought to curtail this sport. Constantine in the eastern empire forbad such combats; Theodoric finally suppressed them altogether in 500.

GLASGOW. Next to London, the largest city in the United Kingdom and the chief industrial center in Scotland. Coal, iron, good transportation, and healthful surroundings make Glasgow the pride of commercial Scotland. Except for the erection of a little church there about 560, nothing is known of the early history until King David I, 1116, reestablished the church there. The bishop became an important person not only in the growth of Glasgow, but in all the realm. Wallace defeated the English at Glasgow in 1300, and was also captured there. The University of Glasgow dates from 1451; the

commercial growth from 1707, the time of the Union of Scotland and England. Glasgow became the center of the tobacco, sugar, and cotton trade of Scotland and north England.

GODWIN (d. 1053). A powerful earl of Wessex, ennobled by King Canute of Britain in 1020. He supported Hardicanute against Harold Harefoot for the crown in 1035. The latter was chosen, but Hardicanute reigned after him, from 1040 to 1042, and then Godwin secured the election of Edward the Confessor, who married his daughter in 1045. Godwin also secured titles for two sons and a nephew. He later fell from favor for opposing the Norman friends of Edward, particularly his choice for the see of Canterbury. When Edward asked him to punish some men of Dover, who had created a disturbance in the retinue of the French prince, Godwin refused, and he and all his family were outlawed. He returned to power for a year in 1052 when the English lords objected to the visit of William of Normandy at the English court.

GORDIAN KNOT. Once a peasant named Gordius, so the legends tell us, was chosen king of Phrygia, a land that trusted much in oracles. The chief oracle had declared that the first who rode up in a wagon should be declared king. This happened to be Gordius. Again, the oracle said that, whoever could untie a knot which Gordius used to fasten the yoke to the pole of the wagon, would become ruler of all Asia. Nobody succeeded. Alexander the Great, hearing the legend when he came to Gordium boldly severed the knot with his sword. Thus the modern expression "cutting the Gordian knot" means to accomplish something quickly and directly instead of with much time and effort.

GORDON, CHARLES GEORGE (1833-1885). Known as Chinese Gordon and Gordon Pasha. He served in the Crimea in the trenches, and in 1863 was asked by the emperor of China to subdue the Taiping rebels. The emperor gave him all honors that China can bestow on a foreigner, but Gordon refused the large sum of money offered him. From 1865 to 1872 he was an engineer for the Bulgarian government. He went in 1874 to assist the khedive of Egypt as Governor of the Equatorial Provinces near the upper Nile. The khedive made him a pasha and governor of the Sudan. Great Britain called upon Gordon in 1884 to quell a disturbance caused by Moslems in the Sudan. For ten months his small party was besieged at Khartum, while the British delayed to send relief. Finally, Gen. Wolseley arrived with an army within two days from Khartum. Ferig Pasha betrayed Gordon, who was killed by a mob, and the city fell on Jan. 26, 1885. Chinese Gordon is affectionately remembered in China and all the Far East, and wherever English is spoken.

GOTHS. Pliny and Tacitus, the ancient historians, speak of the Goths before the Christian era. By 300 A. D. they occupied much of the land between the Vistula River and the Baltic Sea. In the next century, they invaded Dacia, a Roman province, defeated and slew the emperor Decius, in 251, continued their plundering as far as the shores of Asia and north Africa, and in 272 were granted Dacia by the emperor Aurelian. *In the East, they were known as Ostrogoths (East Goths); in the west, as Visigoths.* Constantine held them in check in the east, but Valens, the Roman emperor, was slain in the battle of Adrianople, 378, after which the Goths overran much of southeastern Europe. Some of the Ostrogoths were conquered by the Huns. Attila led them against the Visigoths in what is now France, where they were slaughtered by thousands in the battle of Châlons in 451. Theodoric (476-526), their greatest king, obtained important concessions in the Eastern Roman Empire, of which he was consul in 484. He descended into Italy and defeated Odoacer, last king of Italy, in 493 and ruled there until 526. In 553 the Ostrogoths disappear from history. The Visigoths, under their famous king, Alaric, in 395, invaded Greece, in 402 appeared in Italy, and in 410 pillaged Rome. Then Athulf, Attila's successor, withdrew into Gaul and in 412 into Spain. Later rulers helped Rome against the Vandals and Alani. Euric (466-483) drew up a code of laws and introduced the arts of civilization. His successors could not hold out against the Franks, who confined the rule of the Visigoths to Spain, where their power was broken by the Saracens in 711.

GRANADA. Modern Granada is part of the old kingdom of the Moors, which became independent of the caliphate in 1236. Ten years later the king of Castile brought the district to account, and the Spanish conquered it in 1492, at which time Moorish authority ended in Spain. Granada has a cathedral dating from 1529, a university founded in 1531, and the tombs of Ferdinand and Isabella, the monarchs of Castile. The Alhambra, Moorish palace of great artistic beauty at Granada, is described in his book by Washington Irving, who also wrote the *Conquest of Granada* in 1829.

GRAND OLD PARTY. Familiar name for Republican Party. See under *Political Parties.*

GRASSE, FRANCOIS JOSEPH PAUL, COUNT DE (1722-1788). French noble who was sent as admiral of the new French Fleét in American waters, after he had won success in 1781 at Tobago. With 29 ships he reached the mouth of the James River off Virginia on August 30 to assist Rochambeau, blockaded the York and James, repulsed an attack of the British fleet under Graves, and prevented the relief of Cornwallis at Yorktown. Later he was defeated and captured off Santo Domingo by Admiral Rodney of the British fleet. The French court-martialed him for incompetence and carelessness, but he was acquitted in 1784.

GREAT BRITAIN. See articles on *England, Scotland, Ireland, Wales, Irish Free State,* and *British Empire.*

GREECE. Before 1000 B. C. ancient Greece was settled by the Dorians, a branch of the Aryan race, which also colonized Asia Minor. Other colonies, somewhat later, were founded in Macedonia, Thrace, Italy, Sicily, and the islands of the Mediterranean. These colonies insisted on being independent, but they fell easy prey to conquerors like Croessus and Cyrus the Great in the 6th century B. C. Attica and Sparta became most important centers of confederations in Greece, and Athens was able to beat off the Persians in 490 B. C. The Persians returned within five years to ravage Attica, but Themistocles had prepared a large fleet, which at last conquered the invaders in 480 at Salamis. Sparta then joined with Athens to complete the downfall of the Persians on land at Platea in 479. Next followed the golden age of Pericles, which was interrupted ten years later by the outbreak of the Peloponnesian War. Again, Athens was humbled because of lack of leadership, aid given her enemies once more by the Persians, and a disastrous campaign in Sicily. After being supreme for 25 years, Sparta was checked in 404 B. C. by a coalition of allies. Then in 370 Thebes gained the ascendency, but again a combination of Athens and Sparta routed the two able leaders, Pelopidas and Epaminondas in 362 B. C. The Macedonian empire under Philip by 336 B. C. had become master of Greece with the defeat of Athens; and his son, Alexander, in another 15 years had conquered much of Asia at the time of his death in 323 B. C. In 146 B. C. the Romans completed the eclipse of the glories of ancient Greece.

Little was heard of this country in the Middle Ages. At last the Turks ruled in Athens from 1453 to 1828. Then Greece became free with the help of England and other powers. The Treaty of Berlin, 1878, gave Greece more territory, which once more the Turks took away after the disastrous war in 1896, together with an indemnity of $15,000,000. The Balkan Wars 1912-13 gave to Greece Thessaly, parts of the Epirus, Macedonia, and Thrace. After 1910 M. Venizelos became the chief statesman of Greece. He at last forced King Constantine, brother-in-law of the German Kaiser, to abdicate in 1917, after which Greece joined the Allies. Conditions after the World War became much unsettled. Greece could not decide whether to remain a monarchy or become a republic. King Constantine returned in 1920, but again abdicated in 1922, when a Republic was declared. Greece lost a brief war with Turkey in 1922. Greece lost eastern Thrace, Smyrna, and other districts. Under the guidance of the League of Nations, 600,000 Greeks were exchanged with a similar number of Turkish nationals in Greece between 1918 and 1925. Constantine abdicated in 1922 for the second time, and George II, his son, succeeded for one year, when he too went into exile. In July 1935 a plebiscite netted the monarchists only seven seats in the national assembly, to over 285 for Tsaldaris and Kondylis, leaders of the popular party. Yet in November a second vote was strongly in favor of the return of George II, who at once desired to pardon all who opposed him. Kondylis objected, was removed as premier, and died early in 1936. Venizelos, who led an abortive re-

volt in 1935, also died in 1936, but called on his followers to support King George when he was restored. Greece, however, continued to show signs of unrest.

GREENBACKS. After the Civil War, the first U. S. bank-notes were called greenbacks, from the color of some of these. On March 10, 1862 the first of this series was issued, though demand notes had been given out in August 1861. Demand increased for the issuance of more paper money, and a political party advocating this arose in 1874. Some had previously advocated an issue of irredeemable paper currency. Candidates were nominated in 1876, 1880, 1884, but no one ever received more than a fraction of the popular vote, and no electoral vote at all. Many of the old Greenback voters later joined the Populist party, and some adopted the idea of "free silver" as advocated by William J. Bryan.

GREENE, NATHANIEL (1742-1786). American general, who enlisted as a private in 1774, after serving in the Rhode Island Legislature. He rose rapidly to the rank of major general in 1776, and won fame in the battles of Trenton, Princeton, Brandywine, and Monmouth. Greene was president of the board which condemned Major André, the British spy, and he succeeded Benedict Arnold in command at West Point. Though defeated at Guilford in North Carolina, he won back South Carolina and Georgia from the British, and virtually ended the war in the south by his victory at Eutaw Springs. Congress gave him a special medal; the Carolinas and Georgia granted him money and land. He settled on his estate near Savannah in 1785, but died of sunstroke the next summer.

GREENLAND. Eric the Red, a Norwegian, went in 982 from Iceland to find a land reported to the west. He remained three years, and called the land Greenland on his return to induce immigration. The following year, 986, he took a party there for settlement, which finally increased to about 3000 people. Leif Ericsson introduced Christianity in 1000, and a bishop went to Greenland in 1126, but after 1377 the bishops did not live there. Until 1661 Greenland was a republic, and then swore allegiance to Norway. When Denmark separated from Norway in 1814, control over Greenland, Iceland, and other islands went (by default of mention in the treaty) to Denmark. The early inhabitants seem to have died out before new settlement was made in Greenland in 1721. Communication with Norway was infrequent from 1500 to 1700. Until 1917 the control of Denmark applied only to the west coast, but after 1921 Norway objected when Denmark closed the shores to all but Danish vessels. In 1931 coal of fine grade was discovered in East Greenland. The United States, by virtue of the exploration of Admiral R. E. Peary, claimed part of the northwest coast, but gave up all claims in 1916 in connection with the purchase of the Virgin Islands from Denmark. The Danish king visited Greenland in 1921.

GREEN MOUNTAIN BOYS. Failing to conquer the stubborn colonists in the campaigns about Boston, the British in 1775 turned to a bold stroke of separating New England from the rest of the colonies by bringing an army from Canada down into New York by Lake Champlain. The men of New Hampshire organized as the Green Mountain Boys under Ethan Allen. This band captured Fort Ticonderoga on May 10, 1775. The cannon and munitions captured there were hauled across New England and used effectively at Dorchester Heights to keep the British from the shore. The Green Mountain Boys also proposed to keep New York from gaining the territory in dispute between that colony and what is now Vermont. They also held the approaches from Canada into New England.

GROUCHY (*groo-she'*), **EMMANUAL, MARQUIS DE** (1766-1847). One of Napoleon's most able generals. After campaigns in Savoy and elsewhere, he was appointed a brigadier general in 1794. His other successful campaigns before 1810 were at the Danube, Hohenlinden, Friedland, and Wagram. During the Bourbon restoration, his rank of marshal was taken from him, but he offered his services to Napoleon when the latter returned from Elba. He gave valuable assistance to Napoleon against Wellington and the Germans at Waterloo. Napoleon believed that Grouchy's failure to keep Blücher from helping the allies lost the battle for the French. Wellington, however, said this was untrue, and commended Grouchy. During the Second Restoration, Grouchy lived in Philadelphia for five years, since he was proscribed in France and his titles and estates were taken away. In 1819 his honors and lands were restored, and in 1830 Louis Philippe recognized him again as a marshal of France. Grouchy wrote much to defend his conduct in the campaign of 1815.

GUATEMALA. For three centuries Spain ruled in Central and South America, until the various provinces rebelled in 1821. Guatemala was a member of a confederation from 1824 to 1839. Since then the history of that land has been enlivened with the usual number of revolutions characteristic of Latin-Americans. Some of their ablest presidents have been Carrera, 1854 to 1863; Barrios, 1875 to 1885, when he was killed in a war with Nicaragua, Costa Rico, and Salvador; Manuel Cabrera, 1898 to 1920, all of whom were virtually dictators. The Guatemalan revolution of 1906 involved all Central America in war, but Mexico and the United States brought about peace in 1907. Four presidents were overthrown between 1920 and 1931, in which year 57 people were killed in street fighting. Guatemala joined the allies against Germany in the World War. Economic and political uncertainty have kept this country from the progress it should have made in the last century.

GUELPHS AND GHIBELLINES. Two parties or factions that kept Italy and much of Europe in a state of conflict for nearly two centuries before 1325. The name Guelph (perhaps from Welf) came from the German family that opposed the ruling house of Hohenstaufen. Henry the Lion, the most famous champion of the Guelphs in Germany, contended against Frederick Barbarossa, and lost much of his land in 1180. The word Ghibelline may have derived from a rallying cry used about 1140, when Conrad III, a Hohenstaufen, defeated Welf VI, uncle of Henry the Lion. Usually, the Ghibellines favored the emperors or kings in Italy; the Guelphs, the people or the church. Some of the small cities, and often the church, refused to support the parties of the nobles or kings. Sometimes towns took opposite sides, without any definite allegiance to kings or people. Florence, later Bologna and Milan, led the Guelphs; Arezzo, Pisa, and Verona favored their rivals. Italy was deeply involved because of these factional strifes. After the waning of the influence of the German emperors in Italy, the Pope in 1334 forbad the use of the words Guelph and Ghibelline.

GUILDS. Commercial or industrial associations in the middle ages, uncertain as to origin or early purposes. The name, originally spelled *gild*, appears in central Europe in 779, in England in the second half of the 9th century, in France and the Netherlands in the 11th, and in the northern countries between then and the 14th century. Early guilds for definite purposes were those of Cambridge to help members in case of feuds and murder; of Abbotsbury for religious observances; of Exeter for assistance of members in case of fires and also for religious salvation. They were fraternal in character, like the Anglo-Saxon organizations. In 1389 all guilds in England were required to report their purposes, amount of property, and other information. Many guilds gave help in old age, sickness, or poverty. Merchant guilds sprang up in England after the Norman Conquest, evidently in imitation of continental groups. Towns issued licences or charters to these groups allowing them to trade. At first members of the crafts seem to have belonged to the merchant guilds. Before 1250 separate associations for makers of goods grew up. These increased rapidly in the reign of Edward III. In the 15th century all of one craft gathered into an association for mutual protection. *Gild* was the name in north Germany, *Zunft* in south Germany, *métier* in France. One object was to guarantee purity and excellence of wares; another to secure a monopoly for members of the guild; sometimes, especially on the continent, to secure political rights, and later so in England. In the 14th century two new types appeared,—the merchants *guilds*, and the *journeymen*. Sometimes masters and journeymen were in conflict; sometimes, they aided each other. *Craft fraternities*, descendants of the old guilds, flourished in the 18th century. Indeed, they were not deprived of their rights by law until 1835. Though some have tried to connect the modern labor union with the history of the guilds, no real connection or transition from one to the other has been demonstrated. Yet, obviously, they have had ideals of the same general type.

GUILFORD COURT HOUSE. Here was fought one of the last important battles of the Revolution in 1781. Cornwallis defeated Gates at Camden, S. C., but somewhat earlier part of his force had been captured at King's Mountain. Nathaniel Greene, the new American commander in the South, had succeeded in dividing the British forces, part of which suffered defeat at Cowpens early in 1781. Greene drew Cornwallis across Carolina to Guilford Court House, where the Americans suffered a reverse, which proved a real tactical advantage, for Cornwallis could not afford to risk another battle, and so soon went back to Virginia. This stroke by Greene, known as a master of strategy, drove the British right into the region where the Americans, with their French allies, could defeat them at Yorktown, Oct. 19, 1781.

GUNPOWDER PLOT. See under *Guy Fawkes.*

HAGUE PEACE CONFERENCE. Nicholas II of Russia suggested a conference to consider international relations, and Holland invited the delegates to meet at the Hague. One hundred delegates from 21 nations of Europe, and from the United States, Mexico, China, Japan, Persia, and Siam met from May 18 to July 29, 1899. The principal result was the formation of a court to bring about arbitration of international disputes. This court has settled a number of questions that threatened to lead to war, such as the Casa Blanca disputes in Morocco and the fisheries off Newfoundland, both arbitrated in 1909. Agreements were made not to use explosives dropped from balloons, projectiles containing poison or nauseating gas, (not accepted by Great Britain and the United States), or bullets that flatten in the flesh. The second Hague Conference began on June 15 and adjourned October 18, 1907. Some 256 delegates assembled from 21 European nations, 19 from the new world, and four from Asia. During this session the corner-stone for the Peace Palace, a gift of Andrew Carnegie, was laid at the Hague. Declarations were made as to arbitration, naval warfare, rights of neutrals in time of war, use of force in collecting debts owed by other nations, and taking of prizes at sea. The World War prevented a third conference, scheduled for 1915, and also broke most of the declarations previously made. On Feb. 13, 1920, however, the League of Nations selected a committee, which submitted a report for a Permanent Court of International Justice at the Hague. With this and the League of Nations, much progress has been made in recent years. See articles on *World Court* and *League of Nations.*

HAIG, DOUGLAS (1861-1928). This British general, born in Scotland, was educated at Brasenose College, Oxford, and began his active campaigns in the Sudan in 1898. Before the World War, his other important commissions were in South Africa, 1899-1902, and India, 1903-06, 1909-12. He became a general in 1914, was in charge of the British First Army in Flanders, 1914-15, and from then to 1919 commanded the combined British forces on the western front. In the battle of Ypres, 1915, Haig was in charge of the largest army Britain ever assembled for a single contest. Some of his other important engagements were at Neuve Chapelle, Festubert, and Loos. He was created Earl Haig of Bemersyde in 1919, rewarded with decorations by all the allied nations, and granted large sums by the British to buy ancestral lands in Scotland. Following the war, he gave much time to his old comrades in arms, with whom he was immensely popular.

HAITI. This negro republic occupying the western third of the island of Hispaniola or Santo Domingo, was discovered by Columbus in 1492, settled by Spaniards, who imported slaves that eventually supplanted the native Indian population. France obtained the western half of the island in 1697, but in 1791 the blacks revolted and won their independence two years later. When both Spain and England came to the aid of France, Toussaint L'Overture, an able negro general, tried to hold the control for his race, but he was betrayed, captured, and died in a French prison. After years of warfare, Santo Domingo became independent in 1844, taking the eastern part of the island. In 1915 President Sam was murdered. In the resulting anarchy, the United States landed marines, which were withdrawn only in 1934. President Hoover in 1930 appointed a commission to investigate the island, the result of which was the withdrawal of America from participation in the government. In 1936 Haiti and the United States made definite trade agreements of mutual advantage.

HALE, NATHAN (1756-1776). Revolutionary patriot, who was educated at Yale and taught school in Connecticut, and on September 1, 1775 became a captain-lieutenant in the continental army. He entered the British lines on Long Island, and obtained, while disguised as a Dutch schoolmaster, essential information which Washington greatly needed. He was apprehended, recognized, and shot as a spy on Sept. 22, 1776. His last words were "I only regret that I have but one life to lose for my country."

HALLECK, HENRY WAGER (1815-1872). Eminent American general, who was a graduate of West Point in 1839, served in the Mexican War and in California, where he also practiced law, after which he returned to army service. As commander of the departments of Missouri and Mississippi and general-in-chief (July 1862 to March 1864), he did much to maintain discipline among the soldiers and to lay the foundations for the later great successes of Gen. Grant. He became chief of staff, and then, in turn, had charge of the department of the Pacific and that of the South until his death.

HAMPDEN, JOHN (1594-1643). English patriot, a nephew of Oliver Cromwell, and a leader of the parliamentary opposition to the acts of King Charles. In 1626 he helped prepare the evidence against Buckingham. In the following year he refused to pay a tax levied without authority by Charles. Hampden was imprisoned, but released when the king wanted to summon Parliament, which in 1629 was dissolved, and he returned to his country home. He was a popular hero in 1637 when he refused to pay another illegal tax called ship money. For this he was once more put into prison. Because of his prominence in both the Short and the Long Parliaments, Hampden was one of the five men whom Charles tried to arrest in the House of Commons in 1642. In the civil war that ensued, Hampden raised a regiment in his native Buckinghamshire. He was mortally wounded a little later while trying to hold in check a band of marauders under Prince Rupert.

HANCOCK, WINFIELD SCOTT (1824-1886). An American general and presidential candidate in 1880, who was a graduate of West Point and served in the Mexican and Civil Wars. He became a brigadier general in 1864, a major general in 1866. His chief distinction lies in his organization of the Army of the Potomac. Some of his great battles were at Antietam, Gettysburg (before General Mead arrived to take charge of the northern armies), Cold Harbor, and Spottsylvania. Under his command at Spottsylvania, the Union army captured and held what is known as the "bloody angle," which had been stubbornly maintained by the men under Lee. Hancock later commanded the department of Missouri, mainly in the campaign against Indians; then in Dakota; and finally once more in Missouri. He was the Democratic candidate for president in 1880.

HANNIBAL (247-183 B. C.). Famous general of Carthage in north Africa, the son of Hamilcar Barca, and a brother-in-law of Hasdrubal with whom he fought for seven years and whom he succeeded when Hasdrubal died in 221 B. C. Hannibal captured Saguntum after a siege of eight months, but Rome started the Second Punic War in consequence. In 218 B. C. Hannibal set out to carry the campaign to the gates of Rome. He crossed the Pyrenees from Spain, then the River Rhone, and finally the Alps in fifteen days, a remarkable feat for an army. Hannibal defeated a Roman army at Lake Trasimene, met the consuls Paulus and Varro, who had a force of 80,000, of whom 50,000 were left dead on the field and 20,000 were captured, while the Carthagenians lost only 5700. At the battle of Cannae fortune turned against Hannibal. His brother, Hasdrubal, came to his aid, but was defeated and slain by the Roman legions. Scipio at last scattered the forces of Hannibal at Zama, and Carthage then was at the mercy of Rome. At home Hannibal instituted various beneficial reforms, such as cutting down the public debt and ridding the city of corruption. When war again broke out between Rome and Carthage, Hannibal was serving with the king of Bithynia, for whom he gained an important naval victory. He took poison rather than fall into the hands of the Romans, who demanded that Bithynia release him to them.

HANSEATIC LEAGUE. In 1241 Hamburg and Lübeck in north Germany, joined to protect the highways between their cities. Other districts joined

them until, when the treaty of Stralsund was signed in 1370, the Hanseatic League consisted of 85 members. The chief objects were to maintain a trade monopoly, to promote commerce abroad, and to found new colonies. Before 1300 a gathering of merchants in London had organized a similar confederation. In the 16th century the Hanseatic League became so powerful as to be able to depose the Danish king, and to replace him and also the king of Sweden by nominees of their own sanction. Meanwhile, the merchants of Holland broke away and set up an organization of their own making. When the new route to Russia was discovered, the Hanseatic League lost many of its former advantages; the wars in Europe from 1618 to 1648 curtailed business still more. After this time only Lübeck, Hamburg, and Bremen remained in the League.

HABSBURGS. Name of a reigning family in Europe, so called from the old home at the Habsburg or Hapsburg Castle on the River Aar. The Habsburgs became dukes and kings of Austria in 1282, kings of Hungary from 1526, Holy Roman emperors, 1438-1806, kings of Spain, 1516-1700; and emperors of Austria from 1804 to 1918. In early decades the members of the family held their estates and power in common. In 1379, however, the territory was divided, and Albert III took Austria for his share; his brother, Leopold III, took Styria, Carinthia, and the Tyrol. Intermarriage with other ruling families secured for the Habsburgs the control over the Netherlands, Artois, and parts of what is now France, as well as part of Bohemia and Hungary. They also secured the crown of Spain in 1516 and Sardinia, Naples, and Sicily in the time of Charles V. Charles abdicated in 1557 in favor of his brother, Ferdinand. The latter's son, Philip, became king of Spain, the Netherlands, Naples, Sicily, Milan, and Sardinia. From this time the two branches of the Habsburgs ruled separately. When Charles II died in 1700, without male descendants, Spain passed to the Bourbon branch. Charles VI determined a regular order of succession in 1713, and his niece Maria Theresa, 1740, founded the Habsburg-Lorraine branch of the family. Francis II, dropped the obsolete title of Holy Roman Emperor in 1806, after becoming Emperor of Austria in 1804. His son, Ferdinand I, abdicated in 1848 in favor of Francis Joseph, who was reigning when the World War broke out. Maximilian, brother of the latter, was emperor of Mexico from 1863 to 1867, when he was arrested, courtmartialed, and shot. Altogether the Habsburgs exerted a powerful influence throughout Europe for four centuries. See *Rulers and Statesmen.*

HARTFORD, CONNECTICUT. Frequently called "the birthplace of American democracy." On Jan. 14, 1639 the men of Wethersfield, Windsor, and Hartford adopted *"the Fundamental Orders of Connecticut,"* said to have been the first constitution ever written by freemen while organizing a government. It was the basis of the early government of the colony of Connecticut, and some of the parts were suggested by the Bible. The mistaken ideas of the *Connecticut "Blue Laws,"* so called, came from the early government of various towns and districts in this colony; but, in no one place, or time where the infamous "laws" all ever in force. In 1624 the Dutch established a trading post on the site of Hartford. Joseph Hooker, Samuel Stone, Elder John White, and others brought some colonists from Cambridge (then called Newtown), Mass. in 1635. In 1654 the Dutch were expelled from the fort at Hartford. Thereafter, the English were in control of the colony. Hartford was the capital of Connecticut to 1701, shared this honor with New Haven from then to 1875, and then became sole legislative seat. The city was the center of an important literary movement just before 1800, when Joel Barlow, John Trumbull, Lemuel Hopkins, and others were called the Hartford Wits. More than 100 papers and periodicals were established at Hartford before 1920. A fire insurance company existed there in 1794, chartered in 1810. This and other companies in 1906 paid over $15,000,000 in claims because of the San Francisco earthquake and fire. See also *Charter Oak* and *Hartford Convention,* the latter under the administration of Pres. Madison.

HASDRUBAL. Three men of Carthage bore this name, the one best known being the brother of Hannibal, the great leader who fought Rome for years with amazing success. Hasdrubal, trying to assist his brother, defeated Scipio in Spain in 212 B. C., and then crossed into Italy, where he was beaten and slain at the battle of the Metaurus, described elsewhere. Another Hasdrubal was the son-in-law of Hamilcar, the founder of Cartagena; a third defended Carthage in 146 B. C. According to tradition, the emperor Nero ordered the head of Hasdrubal, brother of Hannibal, to be thrown into the camp of Hannibal in Italy.

HASTINGS, BATTLE OF. Six miles from Hastings at Battle in Sussex, England, William the Norman defeated and slew King Harold on Oct. 14, 1066. William, who had visited Edward the Confessor in England, claimed that the latter had promised the English crown to him, and that Harold had at first assented to this plan. When William invaded England, Harold was fighting the men of Norway in the north. He hastened to defend London and his kingdom. The English took their stand with infantry on an eminence, now called Battle Hill and marked by a monument, and the Normans were unable for some time to storm this position. By a ruse the English were drawn down from their advantage, and then slaughtered by the Normans, who had seemed to be retreating. The English fought with Danish battle-axes; the Normans, with full equipment, supported by cavalry. Thus the day was won by superior strategy and more suitable array.

HAVANA, CUBA. Also written *Habana,* the capital of Cuba and chief city of the West Indies, situated on one of the best harbors in the world, land locked and protected for 100 years by forts. Sebastian de Ocampo visited the Bay of Havana in 1508, and the present site was first occupied in 1519, after the name had been transferred from the south coast. Pirates sacked the city in 1538, 1555, and 1563. Drake tried to take it for England in 1568, and the Dutch attacked more than once in the next century, after the two forts, El Morro and La Punta, had been built by Spain. The English remained in control for one year after taking Havana in 1762. One structure in Havana, the fort erected by De Soto, dates from 1538, the public buildings from 1724, including the cathedral, where the remains of Columbus rested until they were taken to Spain in 1898. A new capitol was first occupied in 1928. The university, with about 4000 students, was founded in 1728. The newer districts of Havana are beautiful, picturesque, and known for extensive boulevards.

HAWAII. Discovered by Capt. James Cook, an English navigator, in 1778 and named by him the Sandwich Islands in honor of the Earl of Sandwich. Finding his way to the western coast of America blocked by ice, he returned in 1779 to winter at Hawaii, and there was killed by natives. Explorers and missionaries of the American Board did much to enlighten the natives, who prior to 1800 were hardly removed from the first stage of savagery. From 1782 to 1873 the Kamehameha kings ruled in a benevolent manner. In 1824 Kamehameha II and his queen visited England, but both died of measles in London. After a reign of 17 years, Kalakaua, who was a reactionary, gave way in 1891 to his sister, Liliuokalani. She married John O. Dominis, of Boston, Mass., whose influence in Hawaii created a favorable attitude toward the United States. When the queen began to fear American influence, she was deposed in 1894, after Pres. Cleveland had refused to consider annexing the islands. The Hawaiians, again under American influences, in 1898 cast their lot with the United States, the islands becoming a territory in 1900. Hawaii is ruled by a governor general, who must reside in the islands, and by a house and senate. United States army, navy, aviation, and radio stations are important in the defense of the Pacific coast and in the trade between the continent and Asia. Schofield Barracks and forts can accommodate 30,000 soldiers. In 1935 large appropriations were made by Congress for the further development of equipment and defenses in Hawaii.

HAWKINS, SIR JOHN (1532-1595). An English naval officer, said to have been the first Englishman to engage in the slave trade about 1562. He was knighted in 1588 for services in helping defeat the Spanish Armada. At Plymouth, his birthplace, he enlisted in the service of Francis Drake, whom he accompanied to the West Indies in 1594, but died at sea off Puorto Rico in the following year. Hawkins, with Drake, established a fund for retired seamen and known as "the chest of Chatham." He also established a hospital at Chatham in 1592.

HAY-PAUNCEFOTE TREATY. This pact superseded the Clayton-Bulwer Treaty of 1850, in which

Great Britain and the United States agreed to join in building a canal across the Isthmus of Panama. No definite beginning was made, however, until after the French failed in a similar plan. Following a scandal in the French Panama Canal project, in 1900, Lord Julian Pauncefote, British ambassador, and John Hay of the American Department of State agreed to allow the United States to construct a canal already surveyed and started by the French. It was to be free to all nations, and the districts along the borders were to be neutral. In 1904 the rights and equipment of the old French company were bought, and the canal was finished ten years later.

HEBREWS. Abraham is recognized by both Christians and Moslems as the patriarch of the Hebrew people. He came from Ur of the Chaldees into Canaan about 2000 B. C. Immigration of Semites from the Arabian deserts continued until about 1200. Meanwhile, another tribe of Hebrews had served under difficult conditions in Egypt in the time of Joseph and Moses when Rameses II (it is believed) was the pharaoh. He died, an aged man, about 1225 B. C. Moses led them in sight of the Promised Land, now thought to be Palestine, but he died and was buried on the Egypt side of the Jordan River. The Hebrews found many walled cities belonging to the Canaanites, who may have been of early Semitic stock. The Hebrews adopted the dress and much of the civilization of the people of Canaan. In the north of Palestine, they settled in towns; in the desert south, they continued to be nomads like the Arabians. By 1100 B. C. Egypt was declining, and Assyria not yet risen to great power. So the Hebrews grew and prospered, except for their quarrels with neighbors like the Philistines, who had come from Crete in the Mediterranean. All the early history of the Hebrews is found in *Exodus, Judges* (especially chapter 5), and *Joshua.* Samson was a popular idol then, as *Judges* 13 shows. About 970 Saul, through his prowess, gained the title of king, but the Philistines defeated him and he fell on his own sword and perished.

King David took possession of a strong fortress at Jerusalem, formerly held for 1000 years by the Canaanites, as records found recently in Egypt show. He kept the Philistines away, extended his influence far to the east, and set up a court known for its magnificence. Solomon, his son, began to rule about 960 B. C. He allied himself with Hiram, King of Tyre, became a great merchant like Hiram, and married a daughter of an Egyptian pharaoh. The splendid temple that he built cost so much that his subjects rebelled under his son, and the kingdom was divided into Israel and Judah,—Israel rich and Judah poor, but Jerusalem remained the capital. Israel began to worship the old strange gods instead of Yahveh or Jehovah. Prophets like Elijah arose and dared tell kings like Ahab of their sins; his followers slew the northern royal family and many priests of Baal, their chief god. Amos followed about 750 B. C., a century after Elijah, to denounce the luxury of the northern kingdom. He even told them of the coming of the Assyrians, who indeed invaded Israel in 722 B. C., and carried about 30,000 as captives to Babylon. Then Isaiah arose, denounced the hosts of Sennacherib, the invading king, and they were smitten by pestilence and the Hebrew army. One century later Ninevah, capital of the Assyrians, fell to the Chaldeans, who next in 586 B. C. destroyed Jerusalem and carried off many of the people to Babylon. Thus Nebuchadnezzar put an end to Judah, the southern kingdom. They were delivered by Cyrus, the Persian, who took Babylon in 539 B. C. For the later history of Israel and Judah after the exile, see the article entitled *Jews.*

HEJAZ OR HEDJAZ. Kingdom in Arabia along the Red Sea and important to all Mohammedans as the district in which Mecca and Medina are located. Arab tribes have failed to agree many times since 600 A. D. Some live in deserts and some in settlements; some are strict in their faith, and some are not. In the 19th century the Wahhibis, a rather fanatical sect of Islam, obtained the ascendence, but Egypt intervened, and later Arabia was ruled from Constantinople until after the World War. In 1908 a native chief Hussein or Husain ibn 'Ali assumed the title of Amir of Mecca. Through Col. T. E. Lawrence (Lawrence of Arabia), Great Britain succeeded in alienating much of western and southern Arabia from the rest of the tribes. Hussein was proclaimed king in 1916. In 1924 he made the mistake of assuming control over the religious affairs of the Arabs. Other tribes objected when he assumed the caliphate (religious headship), notably Ibn Saud (Abdul Aziz to his own people), king of Nejd. Hussein at last abdicated in favor of his son, Ali, in 1924. Before long Ibn Saud gained control, for he represented a stricter sect than did Hussein. In 1932 both kingdoms were combined as Saudi Arabia.

HEJIRA OR HEGIRA. This word in Arabic means *a going away, a flight.* Among the Islamites, the Hegira means the flight of Mohammed from Mecca to Medina on Sept. 13, 622 of the Christian era. War and persecution in his own tribe drove him to Medina, which he brought to his will by conquest. Omar, the second caliph or religious leader of Islam, designated the calendar to begin with the first day of the first month of the year of the Hegira. This was July 16, 622, the beginning of the Mohammedan calendar, which is 10 days, 21 hours, and nearly 15 seconds shorter than the Christian year. On March 24, 1936, the 1355th year of the Mohammedan era commenced.

HELLENISM. Name vaguely applied to the influence of Greek civilization and art on other nations. The Hellenes or Greeks never for long were unified into a nation or state like modern ones, but Athens and other cities had their own traits and their own imitators. When independence declined, Greek influence abroad rose to new heights. The Persians went back to Asia with Greek ideas and customs; the Phenicians, after some resisting, adopted Greek art; and the Balkans imitated the best Greek pottery. Alexandria in Egypt abandoned Hebrew culture for the Grecian language and literature. Even Sicily and parts of the Italian peninsula were hellenized, so that St. Paul wrote his *Epistle to the Romans* in the Greek language. Kingdoms in central Asia, like Bactria and Sogdiana, turned to the west for their inspiration. Even under Roman rule, Syria chose Greek literature, art, and general culture. In early Christian times, the cities that dotted the coast of Asia Minor were Greek in their tastes,—such as Ephesus, Smyrna, Pergamum, Antioch, Rhodes, and Cappadocia. Indeed early Christian philosophy bears the plain imprint of Greek ideals and thought.

HEPTARCHY. Name derived from two Greek words, meaning *seven* and *government or kingdoms.* Definitely the name was applied to the seven kingdoms of Kent, East Anglia, Sussex, Wessex, Northumbria, Mercia, and Essex, all of which made up Saxon England. They existed from the 5th to the 9th centuries, but not all at the same time. Hengist, the warrior called in to help king Vortigern, founded Kent in 457; old Sussex and other parts formed Sussex under Ella in 490; Hants, Wilts, Dorset, and Devon made up Wessex under Cerdic in 515; Essex and Middlesex made up East Saxony under Ercewin in 527; the north of England made up Northumberland under Ida in 547; Norfolk, Suffolk, and Cambridge went to form East Anglia under Uffa in 575; and the Midland counties founded Mercia under Cridda in 582. For a time each district had its own language and customs, parts of which are still preserved.

HERCULANEUM. Ancient city of Italy, at the northwestern base of Mt. Vesuvius, damaged by an earthquake in 63 and completely buried in 79 and later by volcanic eruptions from Vesuvius. It now lies below the modern towns of Portici and Resina at a depth of from 30 to 120 feet. Art relics, in beauty and value, far exceed those found in the nearby buried city of Pompeii. Costly marbles, exquisite bronze statues, and mural paintings of great interest are among the treasures found today in Herculaneum. Some of the great statues are those of Hermes, a Silenus, sleeping fauns, a bust taken for Plato, and two discus throwers. Among the paintings and monochromes are Theseus after slaying the Minotaur, Chiron teaching Achilles how to manage a harp, and Leto and Niobe. Much of the art of Herculaneum is now in the museum at Naples.

HERKIMER, NICHOLAS (c. 1728-1777). His father, Johan Herkimer, from the Palatinate (now part of Bavaria), settled along the Mohawk in central New York about 1725. The son became a colonel in the militia of New York in 1775, and brigadier general in 1776. When the British laid siege to Fort Stanwix in 1777, Herkimer was sent to relieve the garrison there. His men fell into an ambush at Oriskany, but they held their lines firm,

and the British were forced to retire into Canada. In the battle of Oriskany, Herkimer was mortally wounded. In 1884 a monument was erected on the spot where he fell.

HESSIANS. Soldiers from two districts in what is now called Hesse-Nassau, part of German Prussia. Frederick II of Hesse-Cassel hired out some 22,000 soldiers to Great Britain for about $15,000,000 to fight against the American colonists in the Revolution. These German mercenaries were called Hessians and suffered much ill-fame in America. They engaged in the battles of Long Island, Trenton, Brandywine, Guilford Court House, Yorktown, and some of lesser importance.

HINDENBURG, PAUL VON (1847-1934). Second president of the Republic of Germany, from May 1925 to his death, succeeding Frederick Ebert. He was born of a noble family in Posen, became a subaltern in 1866, served in the wars against Austria and France, and gained fame at Königgratz and Sedan. He was raised to major general in 1900, lieutenant general in 1903, and retired in 1911. In 1914 he was recalled to take command in East Prussia against the invading Russians, and there won the battles of Tannenberg and Masurian Lakes. During this campaign he and General Ludendorf became fast friends and worked together as few generals have in military strategy. Hindenburg defended his friend in later attacks after the World War. He published his memoirs in 1920. Against his wishes, he was called upon to become president of Germany in 1925. Though he failed to satisfy the national extremists, he won the confidence of the moderate parties and of the world at large.

HINDENBURG LINE. An elaborate system of trenches, concrete positions for machine guns and cannon, canals, and barbed-wire entanglements stretching from Lens to Aisne. Parallel to this ran a second line of defenses from Lille to Metz. During the second battle of Cambrai, in September 1918, the Canadians penetrated the line after desperate attempts. They used scaling ladders, rafts to cross canals, and with other ingenious devices took many artillery positions by complete surprise. Immense booty was captured. From one division of Germans, for instance, 4000 men and 70 guns were taken. American doughboys stormed the lines north of Bellinglise, cut through under fire, and penetrated so far that the Germans reported in Berlin that their lines had been completely broken down. In these operations, Australian troops rendered important aid to the Americans.

HIRAM, KING OF TYRE. According to II *Samuel* 5 and I *Chronicles* 14, Hiram or Hurom of Tyre, a city in Phenicia along the coast, was a powerful and rich monarch. He supplied King David with workmen and materials for the erection of a palace. In the age of Solomon, Hiram again sent some of his best artisans to help build the great Temple, as mentioned in I *Kings* 7 and II *Chronicles* 2.

HISTORIC SHRINES, UNITED STATES. No adequate list can be given of the many revered spots of America. Beginning with the Rock at Plymouth, which was moved back to its supposed original location along the shore in 1920, New England is dotted with ancient shrines. Some of them in Boston are the Old North Church, celebrated in Longfellow's poem, the home of Paul Revere, the old cemeteries on Copp's Hill, the original State House of Revolutionary times, and above all Faneuil Hall, where the patriots spoke their feelings and where their pictures now adorn the walls. The whole Boston area is dotted with reminders of historic events. Hartford has its old churches, New Haven the famous Green opposite Yale College, where one building remains as a reminder of early heroisms. New York City has its Trinity Church, and old burying ground, Fraunce's Tavern, where Washington bade farewell to his officers, the Van Cortlandt and Jumel Mansions, in the latter of which Aaron Burr once lived, the home of Edgar Allen Poe, the old Sub-Treasury building, and others. Philadelphia has its famous State House, Independence Hall, home of Betsy Ross, home where Jefferson wrote most of the Declaration of Independence, and home of Washington. Washington has the White House, Capitol, and of more recent times the sacred soil of Arlington across the Potomac in Virginia. Just below is Mount Vernon, home of Washington and his tomb, visited by thousands annually. Of monuments we have the one at Bunker Hill, Bennington, Vt., Washington in the national capital, Grant's Tomb in New York City, the home and tomb of Lincoln at Springfield, Ill., and the Pilgrim Monument at Provincetown, Mass., these being only a few of the many. St. Augustine, Florida, with the oldest building of historic value in the South; Williamsburg, Va., recently restored to former appearance; and the old quarter of New Orleans; Natchez, Miss.; Richmond, Va.,—are only some of the many cities that have quaint reminders of past glories.

HITTITES. Powerful people in Asia, who dominated about 1100 B. C. from the Euphrates to Lebanon. They fought the Hebrews at the time the latter came into Canaan; troubled Egypt from the 12th to the 20th dynasty. Seti I of Egypt, named "the avenger of broken treaties," attacked them; so did Rameses II, and 100 years later Rameses III carried the Hittite king to Egypt. Tiglath-pileser I, of Assyria, drove them out of his empire; and Sargon II, 400 years later in 711 B. C., took their capital at Carchemish, after which the Hittites declined.

HOBSON, RICHMOND PEARSON (1870-1937). United States naval engineer, congressman, and leader of reform, was born in Alabama, studied at Annapolis, and later in Europe in science. Hobson is best remembered for his daring exploit, during the Spanish-American War, of sinking the U. S. collier, *Merrimac*, across the harbor at Santiago, Cuba, so that the Spanish fleet, in trying to get out, was scattered and disabled. Before Hobson retired from the Navy in 1903, he superintended the raising of the sunken warships of Spain. From 1906 to 1915 he sat in the House of Representatives from an Alabama district. He later engaged in reform movements, particularly prohibition. In 1921 he founded the United States Alcohol Education Association, and in 1926 the World Conference on Narcotic Education.

HOFER, ANDREAS (1767-1810). Patriot of the Tyrol, who in 1796 led a party of sharpshooters against the French; in 1805 stood against Marshal Ney; and in 1809 summoned his countrymen to arms against Bavarian and French encroachments in the Tyrol. After the battle of Wagram in the same year, no provision was made for the peace of the Tyrol. When some 40,000 French again invaded the valleys, Hofer's volunteers cleared them out in eight days, taking possession of Innsbruck. Again, after the Peace of Vienna, no peace came to the Tyrol; but Hofer now was unable to resist the growing tide of Bavarians and French. He fled to the mountains, was betrayed, tried at Mantua by courtmartial, and on Feb. 20, 1810 was shot by order of Napoleon.

HOHENZOLLERNS. Princely family of Germany, named for a hill and castle at Zollern. Two early branches of the family were headed by Burkhard and Wezil or Werner, the latter of which ran out in 1194. The descendants of Burkhard ruled from 1200. His grandsons, Conrad and Frederick, divided the lands in 1227. Conrad founded the Franconian branch, and Frederick the Swabian, the former of which for many years was allied with the Holy Roman emperors. Frederick IV, turning from the Habsburgs, helped elect Louis IV as Holy Roman emperor in 1322. From then the Hohenzollerns rose gradually to power in central Europe. In 1701 the elector of Brandenburg united Prussia and Brandenburg as the kingdom of Prussia. His grandson, Frederick the Great, raised this kingdom to the rank of leader among the German states. At Versailles in 1871 the Prussian king became emperor of united Germany as Wilhelm I, and so ruled until 1888. He was succeeded by his son as Frederick III in 1888, and, later the same year, by Wilhelm II, who abdicated at the close of the World War (Nov. 9, 1918), after which he lived in Holland.

HOLY ALLIANCE. One of the most amazing documents of modern times was signed on Sept. 15, 1815 by Alexander I of Russia, Francis I of Austria, and Frederick-William III of Prussia. These sovereigns called on all rulers of Europe to join with them in "the bonds of true and indissoluble fraternity"; to regard themselves "toward their subjects and armies as fathers of families"; to base their conduct "on the sublime truths which the Holy Religion of our Saviour teaches"; and to remember that "the precepts of Justice, Christian Charity, and Peace . . . must have an immediate influence on the councils of Princes, and guide all their steps." All nations of Europe finally signed, except Great Britain, which approved the principle; the Pope, who declined on political grounds; and the Sultan of Turkey, who

was offended because the caliphate was not mentioned in the document. Whether the agreements were ever taken seriously has been questioned. At any rate, the tradition in Russia came down from Alexander I to Nicholas II, who in 1899 took steps leading to the Hague Conference.

HOLY ROMAN EMPIRE. As Charles the Great (Charlemagne) knelt in prayer in St. Peter's in Rome on Christmas day, 800, Pope Leo II put a crown upon his head and saluted him as Carolus Augustus, emperor of Rome. Thus was revived a dream of restoring the old Roman Empire of the west, which had perished with the last king of Italy, Odoacer, in 476. In the century before, Constantine had assumed spiritual as well as temporary powers. His lead was now followed, with the union of the Franks, Germans, and Italians in one vast empire, each with its own kings and princes. Again, in 962, Otto the Great assumed the title on authority of Pope John XII. From that time the Empire consisted of those lands and princes loosely bound together in recognizing the title. The emperors became so powerful in 1075 that Hildebrand, the Pope, was driven out of Rome, and Henry IV, the Holy Roman Emperor, set up a rival Pope, who in turn acknowledged Henry. By 1100, however, the Popes came back into their own, and so dominated until 1270. For a long time the Habsburgs of Austria bore the nominal title of Roman emperors, until Francis II resigned the honor in 1806, after which no successor was elected.

HOMESTEAD ACTS. In 1860 the Congress passed a homestead act, but President Buchanan vetoed it. In 1862 another was approved granting to each person over 21 a patent on 160 acres of land in the public domain when certain conditions were fulfilled. The grantee must live on the homestead for five years (reduced to three in 1912); or, after residing on the grant for six months, he could purchase it outright for $1.25 an acre. Under the Homestead Act of 1862, the first patent on land was taken near the present Beatrice, Nebraska. In 1872 and 1901, and after the World War, the homestead acts were extended to include more liberal provisions, with special consideration for soldiers and sailors. After 1909 a total of 640 acres could be taken for dry farming or ranching, for which purposes large tracts were necessary. Over 300,000,000 acres have been homesteaded.

HOWE, SIR WILLIAM (1729-1812). British general, who led the regulars at the battle of Breed's Hill, commonly known as Bunker Hill, at Charlestown, Mass., June 17, 1775. Howe had succeeded Gen. Gates in command of the British in America. Later, he won victories over the colonials on Long Island, captured New York City, occupied Philadelphia, and fought at Brandywine. He was recalled in 1778, subjected to an inquiry by Parliament, but was exonerated of incapacity and was made a general in 1793. Howe succeeded his brother in 1799 as Viscount Howe.

HUDSON, HENRY (d. 1611). English adventurer, who made four voyages to America in an attempt to discover a route to China. Under patronage of the Muscovy Company, in 1607 he reached the east of Greenland and followed the north coast to Spitzbergen (now called Svalbard) to beyond 80° North latitude, and on the return trip he found what is now Jan Mayen Island. In 1608, again for the Muscovy Company, he tried for a northwest passage between Spitzbergen and Novaya Zemlya, but the ice of Barents Sea checked his course. To appease a mutinous crew, he sailed southward to explore the coast according to a map made by his friend, John Smith, of the Virginia colony. He touched at Newfoundland, entered the Kennebeck River (now in Maine) for repairs, and at last sailed up a broad river as far as the site of the present Albany, New York. The river was given his name. Thus again he failed to find the route to Cathay or China. In 1610, on his fourth voyage, this one under English patronage, he spent three months exploring the region about Hudson Bay, wintered on James Bay, and in the spring again tried for the northwest passage. On June 22, 1611 his mutinous crew put Hudson and eight others ashore, including the ill and his small son. Nothing was ever heard of them. After some of the ringleaders were killed by Eskimos, and others perished by privations, the remnant of the crew arrived in England where they were imprisoned.

HUDSON'S BAY COMPANY. Corporation formed in 1670 for the purpose of obtaining furs from the Indians of North America for sale in England. The group was given absolute possession of much of the land about Hudson Bay. To 1713 this company had to contend with the French in Canada, and after 1763 with independent hunters and trappers who came into the northwest country. The Northwest Fur Company, a rival concern, was founded in 1783 at Montreal, but this joined with the Hudson's Bay Company in 1821. In 1838 further grants were confirmed or made anew to the proprietors. In 1869, when the Dominion of Canada was being organized, all the claims to territory were assigned to Great Britain for $1,500,000. The land was then annexed to Canada, save for some tracts reserved and later sold at great profit by the Company.

HUGUENOTS. Name for the Protestants of France after about 1560, said to have been at first a term of derision. From the time of Calvin and his Protestant movement at Geneva, the independent faith grew. Admiral Coligny and the Prince of Condé, younger brother of the king of Navarre, took the part of the Huguenots. Civil war broke out in 1563, and in 1569 Condé was assassinated. Coligny marched on Paris, and peace was concluded. On Aug. 24, 1572 came the massacre of St. Bartholomew, in which Coligny and others perished. Outbreaks occurred five or six times before 1621, after which the Huguenots were always promised concessions. Henry of Navarre became the Huguenot champion in 1584, and later succeeded to the throne when the king was assassinated. Henry signed the Edict of Nantes, by which religious freedom was promised. In 1685 Louis XIV revoked this decree, and over 400,000 left France for other lands. Again the French Revolution guaranteed freedom of worship to the Huguenots, but persecution by 1802 had reduced the number of churches from 751,—the number in 1626,—to 171, and pastors from 809 to 121. When church and state were separated in France in 1905, the question was at last settled. In all these years of persecution, the Huguenots had remained loyal to the French monarch, and merely insisted on worship in their own forms.

HUMANISM. One phase of the Renaissance in Europe, by which adherents stressed the elements of human forces, rather than supernatural or mystical, in religion and daily life. The humanists often broke away from medieval traditions of philosophy and theology, chiefly from the domination of authority or scholasticism. Many humanists sought inspiration in the older literatures, such as those of Greece and Italy. Today one form of humanism is called *hominism*, a term adopted by the philosopher Windelband. Protagoras said *homo mensura*, or man is the measure of all things. Some of the humanists adopted this as a motto. In the early 16th century, on the continent, the great Dutch Scholar, Erasmus, became the exponent of humanism; and for a time he taught in England. He found adherents in men like John Colet, Thomas Linacre, William Grocyn, and Thomas More. English colleges began to supplement the study of Aristotle with other readings in Greek philosophy and scholarship. The humanists were much interested in the correct printing and interpretation of the Bible.

HUNDRED YEARS' WAR. Series of wars from 1337 to 1453 between England and France. John (1199-1216) had lost nearly all the parts in France claimed by England. When Charles IV of France died in 1328, the crown went to Philip VI, though Edward of England appeared to have a better claim to succession. The French did not recognize succession through a feminine line, according to the old Salic Law barring all such. Edward claimed the crown, and in 1337 declared war on Philip VI, who had allied with the Scotch and had interfered with English interest in Flanders. No side gained any particular advantage, and a truce lasted for five years, from 1340. Then Edward again ravaged France, marched toward Paris, and won the great battle of Crécy. Again, the Black Prince of England crushed the French at Poitiers in 1356, and carried King John of France to England as a hostage. In 1415 the English again won at Agincourt, and all north of the Loire became English. In 1420 it was agreed that Henry V should be regent of France, for the French kings seemed unable to rule. When things looked the darkest for France, a young girl was having visions and hearing strange voices in her country home. This was Joan of Arc, who

at last aroused her countrymen, raised the siege of Orleans, and drove the English from the field in 1429. England never gained back the advantage then lost. At last in the reign of Queen Mary, Calais, the last British claim across the Channel, was evacuated to the French.

HUNGARY. For several centuries Hungary held in check the encroachments of the Mohammedans in Europe. Some of the important early kings were St. Stephen (997-1038), who set up the first monarchy of the Magyar and Ungri people, embraced Christianity, and did much to improve the land; King Andrew II, who in 1222 protected the people against encroachments upon their rights; Louis the Great, also king of Poland, who held back the Turks that had come after the Saxons, Mongols, and Tartars had tried to take the land; but King Sigismund was defeated by Bajazet, the sultan, in 1396. The great national hero of Hungary is John Hunyadi (Hunyadi Janos), who crushed the Turkish power, and his son, Matthias Corvinus (1458-1490) raised Hungary to its greatest glory in statecraft, art, and letters. Yet from 1526 to 1716, the Turks again were in the ascendency, until set free by Prince Eugène.

In 1558 Ferdinand, Archduke of Austria, became emperor of Hungary; and Leopold I (1657-1705) forced the Hungarians to protect themselves by asking aid of the Turks. Joseph II (1780-1790) sought to suppress all independent spirit among the Hungarians. National spirit smouldered in these years of misrule and oppression. At length, 1848, Louis Kossuth gained a large measure of independence for Hungary, except that Russia wished the Austrians to maintain control. In 1867 Francis Joseph I established the dual monarchy of Austria-Hungary, with each people having its own parliament, local laws, and national institutions. In 1918 an independent state was proclaimed, which became in turn a republic, briefly a Soviet state, a monarchy under a "regent" awaiting the election of a king. By request of Hungary the national finances were stabilized under control of the League of Nations between 1924 and 1926. Allied military control ended on March 29, 1927. The Treaty of the Trianon, 1920, reduced the area of Hungary by giving Transylvania to Rumania and Croatia and Slavonia to Yugo-Slavia.

HUNKERS. Name applied to a conservative faction of the Democratic party in New York and elsewhere in the political campaigns of 1844 and 1848. Their opponents, known as *Barnburners,* in 1848 allied with the Free Soil party in support of Martin Van Buren of New York, who was elected president. In large part, both factions united in 1852.

HUNS. Four groups of tribes of uncertain and nomadic life, one branch of whom invaded the Eastern Roman Empire from 372 to 453. About 200 B. C. one branch invaded China, and went southward, and some to the westward. India and Persia later contended with them. The Magyars, who came into Hungary in 882, may have been related to the Huns. The Huns were swarthy, broad of chest, and rude in manner and speech. In 451 their advance was finally stayed at the battle of Châlons. Meanwhile Belamir had forced the Ostrogoths to pay tribute, which Attila, fiercest of the Huns, compelled them to increase in 447. After the death of Attila about 453, his sons failed to hold their conquests. In Pannonia, in the last great battle, some 30,000 Huns were slain, including Attila's eldest son. Remnants of the Huns settled in Dobruja, Dacia, Pannonia, and South Russia. See articles on *Attila* and *Goths.*

HUNYADI, JANOS (c. 1387-1456). John Hunyadi in English. Hungarian patriot and statesman, who forced the Turks to restore the independence of Hungary. He served in the army of King Sigismund, in the Hussite war in 1420, and drove the Turks out of Semendria in 1437. After several victories, between 1441 and 1444, Hunyadi met defeat, and King Wladislaus III was slain. He compelled Frederick III of Germany in 1450 to return the young king, Ladislaus V, who had been detained in Germany. Hunyadi acted as regent for the king for eight years. In 1455 he equipped a fleet, and, though deserted by most of his countrymen, destroyed the Turkish navy, reclaimed Belgrade in a daring charge, and forced the Turks to leave Hungary alone, as it proved, for the next 70 years. Hunyadi Janos died of plague. He was a man of limited education, but his great honesty, unselfishness, bravery, and undying love for Hungary have endeared him to the people even to this day. See article on *Hungary.*

HUSSITE WAR. Following the death of John Huss of Bohemia in 1415, over 400 nobles formed a religious league that refused to recognize the authority of bishops and the Pope. King Wenceslas gave the Hussites concessions and allowed them many churches. His brother and successor, Sigismund, after his death in 1419 failed to gain the recognition of the Hussites, and a war broke out in 1420. The Hussites for eight years won victories and even carried their battles into foreign territory. In 1431 the Council of Basel was able to reconcile the king and his people, who acknowledged his authority. Yet the radical Hussites, known as Taborites, refused to agree to the peace made with the king and the church. In 1434 they were beaten in the battle near Bohmischbrod.

HYKSOS KINGS. This mysterious race of kings ruled in Egypt for about 500 years, or during the fifteenth to seventeenth dynasties. The Jewish historian, Josephus, thought they were Israelites. Manetho, an Egyptian chronicler of the early kings, mentions "six foreign Phenician kings"; 32 "Hellenic shepherd kings"; and several "shepherd or Theban kings." The Hyksos people had previously established an empire in Syria. In Egypt their chief cities were Avaris, Heliopolis, and likely Memphis. Otherwise, in other districts, they allowed the native kings and princes to rule. The Hyksos adopted Egyptian names, customs, and language. Finally, the Prince of Thebes raised a revolt against the Hyksos rulers, and after a long siege took Avaria, then their chief stronghold. The Hyksos people retired into Judea, and seem to have founded Jerusalem.

ICELAND. Voyagers from Scandinavia brought back reports from Iceland about 850, but earlier the Irish and others seem to have visited there. Prior to 950 three classes of settlers went to Iceland,—from Norway, from Dublin, and vikings looking for freedom from oppression. About 1100 Iceland had 50,000 inhabitants. In the thirteenth century, religious disputes led to civil wars, and finally to union with Norway in 1262, after the country had been a republic for 350 years. In 1388 Norway with Iceland was united to Denmark, and on the separation in 1814, Iceland remained with Denmark. In 1874 the king of Denmark gave Iceland a new constitution; in 1903 a national government, virtually independent; and in 1918 recognized the country as a monarchy, with crown for the time being merged with that of Denmark, with the additional provision that foreign affairs should be in control of Denmark until 1940. Citizens of Denmark and Iceland are recognized as having common privileges. Iceland has no army, no navy, no coast defenses, no deficit, and in 1934 no unemployment.

IKHNATON. The most progressive ruler of Egypt between the 10th and 15th centuries before the Christian era. He turned from the worship of many gods to adore the glowing disk of the sun, set up a new capital at Tel-el-Amarna, and changed his name from Amenhotep IV to Akhnaton, meaning sun's glory, and became chief priest of the shrine of Aton, or the sun. He married a beautiful young Syrian named Tii. The priests of the older cults opposed him, yet he held his own for 18 years against all reaction and attempts to unseat him. His reign apparently ended in 1358 B. C., during the time when the children of Israel were still in Egypt, and the empire of the pharaos began a definite decline in temporal power. King Tutankhamen, whose tomb was discovered in Egypt in 1922, was his father-in-law. Akhnaton is alleged to have been the first monotheist of Egypt, perhaps in ancient times, but his cult died out in the reaction after his death.

IMPEACHMENTS. Procedure in the United States and Great Britain is similar. In early days the House of Lords in England impeached persons in high offices. In 1376 the Commons first so requested an impeachment. Between 1621 and 1688, some 40 impeachments occurred. There was no other way of removing important officers until the ministry became responsible to Parliament. In 1681 the Lords of England impeached Edward Fitzharris, but the Commons refused this right, and won the point. In Great Britain the last impeachments were those of Warren Hastings (1788-95) and Lord Melville (1806). Other famous impeachments by the Com-

mons were Lord Chancellor Bacon (1621), the Duke of Buckingham (1626), Earl of Strafford (1640), and Bolingbroke (1715). In the United States the House of Representatives brings charges, which are tried by the Senate. Causes for impeachment are "treason, bribery, or other high crimes and misdemeanors." Conviction must be by a two-thirds vote. Conviction results in removal from office, without chance of pardon by the executive. Thirteen cases have been brought to date (1936), including President Andrew Johnson, who lacked one vote of being convicted (vote was 35 guilty, 19 not guilty); Samuel Chase, 1804, Associate Justice of the Supreme Court, acquitted; William Blount, Senator from Tennessee, expelled by Senate, then impeached by House, and Senate decided expulsion had removed him from jurisdiction; William W. Belknap, Secretary of War, 1876, acquitted; the rest being all judges of United States courts, with acquittal in three cases, conviction in four cases; proceedings abandoned, 1; resigned, 1. The last case (1936) resulted in the removal of a Florida judge from office.

IMPRESSMENT OF SEAMEN. In his attempts to stifle British commerce, Napolean, by his Berlin and Milan decrees, in 1806 and 1807, forbad any ship to enter an English port. Great Britain replied by forbidding any ship to enter a French port without first touching on a port in England. By these edicts commerce of the United States was greatly crippled. American captains offered high wages, and British seamen, not having employment, often took service on ships of the United States. Our nation was the first to insist upon the principle that a subject may change his allegiance from one nation to a new one at any time he sees fit. John Jay was sent to England and in 1794 concluded a treaty with Great Britain, some compromises of which the Senate refused to ratify. One agreement made by Jay was that England had the right to search American craft for renegade seamen and deserters from British ships. Captains, either over-zealous or taking advantage of the situation, often impressed naturalized American sailors or even men born in the United States. War was narrowly averted when the British *Leopard* fired on the American *Chesapeake* off Virginia in 1807. In the next years, Congress sought both to restrain and to punish England for these practices. Taking advantage of the situation, Napoleon repealed his Berlin and Milan decrees, and the United States followed by passing an act forbidding boats to land in England. These and other disputes, with some conflicts also at sea, led to a demand on the part of Henry Clay, John C. Calhoun, and other "western" men that war be declared. New England was somewhat opposed, for this region had much to lose in restraint of commerce, but war finally was declared in the administration of James Madison.

INCAS. Aboriginal Indians of Peru, who in the time of Columbus had attained a stage of high culture and civilization. They then ruled from what is now Ecuador to the River Maule in Chile. Later the name "Inca" was applied to the monarch, who had the power of life and death over his subjects, whom one historian says he could control even to their thoughts. Huayna Capac left two sons, Huascar and Atahualpa, who fought for control of the empire. Atahualpa, the victor, on his way to Cuzco, capital of the Incas, was attacked by Pizarro and the Spaniards, and later was treacherously put to death while on a visit to Pizarro to negotiate a peace. Three years later, 1536, his successor, Manco, who had escaped at first, was beaten in battle. After this the power of the Inca empire swiftly declined, while the Spaniards took advantage of their wealth, art, and high degree of attainment. The Incas had established an interesting form of state socialism, but this was also combined with religious and autocratic elements.

INDIA. Four separate periods are recognized in the history of this land of mystery and contrast. First, the period when the native Aryans were independent, ending in 1001; second, that of Mohammedan control, ending in 1757; third, that of British dominion over much of India; and, fourth, that of insistent demands for dominion status or even independence since the World War. Records begin with the birth of Buddha in 557 B. C. Alexander of Macedon in 327 B. C. was there, and a later king of India married a daughter of Selucus Nicator, the Greek emperor of the Persians, followed by the Gupta dynasty when art, literature, and commerce flourished. Then from 1001 to 1321 followed three powerful dynasties of Islam, and India reached heights of splendor, followed by the Tughlak kings. Then came Timur or Tamerlane the Great, and his followers of the Moguls, from 1526 to 1707. Babur ruled at Kabul for 22 years, invaded India in 1525, and his descendant, Shah Jehan, was the builder of the Taj Mahal, greatest of oriental monuments of architecture.

In 1739 the Persians sacked Delhi, carried off the celebrated peacock throne, fabulous in jeweled wealth, and India began to decline. Venetians, Genoese, Dutch, and others had carried on a flourishing trade on their way to the East Indies. Lord Clive won from the Moguls the best provinces, Bengal and Behar, in 1757; the East India Company dominated until, after the Sepoy Rebellion of 1857, much of India was ruled by governors sent from Great Britain, with some native states semi-independent and friendly. By 1918, after years of smouldering discontent, Mohammedans and Hindus (the latter led by Mohandas Gandhi, called Mahatma Gandhi by his followers) joined forces in a campaign of non-cooperation and non-military resistance. Reports and commissions, several "Congresses," notably those at Delhi in 1923, another in 1929, and the London conference on India in 1930-31, tended toward agreement and greater freedom for India. Border raids in 1930, religious riots in 1926 and minor ones at other times, and failure of the Indians themselves to unite on settled plans retarded nationalistic movements, while Great Britain came nearer offering autonomy or more.

INDIAN EMPIRE. No adequate description can be given here of that vast empire called India. Politically India is divided into 15 British provinces, some of which are as large as countries in Europe; a multitude of smaller or largest Indian states, in which the rule is by a prince or chief; and frontier districts like Baluchistan and Burma under British control. The chief provinces of British India are Assam, separated from Bengal in 1912, Bengal, Bihar and Orissa, Bombay, Burma, Central Provinces and Berar, Madras, Punjab, and the United Provinces (Agra and Oudh). Of the several hundred native Indian states or districts, the chief are Hyderabad, Mysore, Kashmir, Gwalior, and Baroda. On the northern and northwest frontier are several tribes in the confines of geographical India, but independent in their own affairs, such as Waziris, Afrida, and Mohmands, all nominally attached to the North-West Frontier Province. Nepal and Bhutan, though independent, have commercial relations with India.

British India is in charge of a cabinet secretary, the Indian Office, a Council on which there are three Indian members, and, resident in India, a governor general. Since 1920 there has also been a High Commissioner, with something like the status of an ambassador. Governors of the British states are appointed. Rulers of native states have different grades and degrees of independence. At the outbreak of the World War over 700 native princes and chiefs at once offered themselves and their resources to the British Empire. India is gradually being given greater and greater responsibility in home government, and the princes are held less and less in control by Great Britain. When England took over the government of much of India in 1858, the princes were called to new responsibilities. In 1899 Lord Curzon, the British governor general, spoke of the native rulers as his colleagues. Lord Minto in 1909 sought further to conciliate the princes of native states, with whom conferences were held in 1913, 1914, 1916, 1917, at which time 17 principles were formulated. In 1917 also succession to local rule in native states was also guaranteed without essential interference from British authorities. As proposed by the Maharaja of Bikaner, King George V in 1919 authorized an Indian chamber of princes, which was established in 1921, with the proposer as chairman. Mysore and other native states have set up something like a legislative assembly. The tendency since 1921 has been to unify the opinion in the states. Demand for dominion status continued and at times seemed all but attained. Thus India is a dual empire within the great British Empire, India being composed of the British and the native states.

INDIANS, AMERICAN. Columbus thought he had reached India when he first set foot on an island in the Caribbean; hence, the name Indian for all native tribes of both Americas. The word has no other significance. Ethnologists say they have all but proved the red man, who resembles the Mongolian, came from Asia to this continent over a

bridge to what is now Alaska, or across by sea in early times. In minor characteristics, language, and customs the Indians of the United States have been divided into sixty tribes. About one-half the Indians have lived east of the Mississippi, even though these made up only a tenth of the total number of tribes.

Geographical divisions include the New England states and to the southward, the southeastern, plains areas, southwest, California and northwest, north Pacific, and central Canadian, and with some overlappings. The Iroquois Confederacy, one of few political alliances, comprised the Mohawks, Oneidas, Onondagas, Cayugas, and Senecas, about 10,000 people only. Around them were 35 tribes of the Algonquins, such as lived in Michigan, Indiana, Ohio, Pennsylvania, and to the eastern coast of Virginia. Algonquins and Iroquois were hereditary enemies. To the southward were the Muskhogans, and across the Mississippi the Sioux tribes. The Iroquois dominated once from the St. Lawrence to the Mississippi and south to the Carolinas. The middle Indians best known are the Ojibwa, Potawatami, Sacs, Kickapoo, Ottawa, and other similar small units, noted for clan and ritualistic societies, one having four degrees or orders. The Cherokee, Chicasaw, Choctaw, and Seminoles of the southeast took on some customs of Indians in Mexico, with some arts of cloth and baskets. In the Southwest for centuries the wandering tribes have been hostile to the settled or pueblo dwellers like the Zuñis, Hopis, and Navahos, noted for their kivas, dances, and arts of peace. The nomads were represented best by the Apaches, a wild, warlike tribe.

INKERMAN, BATTLE OF. On a ridge near the eastern end of the harbor of Sebastopol, during the Crimean War, the Russians attempted to dislodge about 8000 British soldiers. The attacking party numbered about 42,000, with support of heavy artillery. Under General Bosquet, the French were to keep the Russian flank occupied, and for this reason they were unable to assist their allies at first. After holding out for over six hours against forces five times their number, some of the English Royal Guards, were relieved by the French, about 7000 in number, after which the Russians gave up the attack. The French lost 939 out of a total of 7000; the English some 2357 killed and wounded; and the Russians nearly 11,000.

INQUISITION. When certain sects after 1100 became troublesome to the church, the Inquisition was set up. In 1231 it was taken under the ecclesiastical law, and judges were often appointed from the Dominicans. Innocent IV, in 1252, provided for stern measures against heretics, and other popes followed with similar bulls. Though first introduced into Spain in 1237, not until Torquemada in the reign of Ferdinand and Isabella did it take on its sternest character in 1478. After 1500 courts were set up in Mexico, Peru, and other parts of the New World. In 1542 Pope Paul III established a Holy Office, or court of appeals in Rome to review cases of violation of church law. Before 1700 in Spain the severity of the Inquisition was greatly abated. Charles III forbad capital punishment without royal warrant, and after 1770 even royal sanction was required for an arrest. King Joseph Bonaparte abolished the Inquisition in Spain in 1808, but it came back with the Restoration, was suppressed in 1820 by the new constitution, and again was in part revived in 1825, to be ended in 1834. In Rome and the Papal States, the Inquisition seldom led to death of the offender. In England but one case is on record, that of the trials of the Templars.

INTERNATIONAL LAW. Relationships and obligations of nations to each other, in both war and peace, have been summed up in sets of principles called international law. Hugo Grotius gave the subject deep study and much impetus in 1625. Hundreds of treatises have appeared since then, all seeking to define the subject more clearly. In 1873 the Institute of International Law was founded, the leading American advocate being David Dudley Field. The Second Hague Conference established some regulations for conduct of nations in war. Following several initial conferences, the first for the codification of international law met at the Hague in 1930. Conflict of nationality, double nationality, and no nationality received considerable attention. A committee was appointed to form declarations as to various subjects for consideration at the next conference. In 1928 at Havana the sixth such conference for American States was held, followed by investigations by three committees appointed to consider codification of international law, private international law, and uniform legislation.

IONIANS. Inhabitants of twelve cities in Asia Minor around the Aegean Sea, perhaps founded by one of the four chief peoples of Greece before 500 B. C. Their language and customs resembled those of Attica. Known for their wealth, artistic culture, and also for their effeminacy, they were conquered by Croesus, king of Lydia (he of the great wealth) about 550 B. C. Next the Persians ruled them, as well as Lydia itself, and after a revolt about 500 King Darius made the Ionians increase their tribute to him. Athens freed them after the first Persian wars, but later they again became tribute to Persia until the time of Alexander the Great. The Homeric poems speak of the Ionians as in Attica, and Herodotus placed them in the northeast of the Peloponnese. In Roman times they formed part of the empire of the East.

IRELAND. Little is known of the Emerald Isle before 350, when the men from Ireland began to trouble the Romans in Britain and even as far as Gaul. St. Patrick, who was probably born in Scotland, escaped from slavery in Ireland about 430, went to Rome, and came back to try to Christianize the inhabitants. Before the year 600 monasteries flourished, the learning of Irish monks was known far and wide, and the arts reached a high stage of perfection. After 200 years of raids on the east coast, the Danes were driven off in 1014. Some of the English princes laid claim to Ireland as early as 1150. After his visit to Ireland in 1172, Henry II distributed some of the land to Norman nobles, and the struggle for the soil began to bother the Irish. By the time of Henry VII a considerable part of Ireland was in the hands of immigrants, many of whom had married Irish girls. In the early part of the 14th century, the Scottish champion, Robert Bruce, tried to expell the English from Ireland. During the Wars of the Roses, the Irish sided with the Yorkist faction. Henry VIII destroyed the Irish monasteries, and in 1451 assumed the title of king over Ireland, but the country was not yet subdued. During the reign of Elizabeth, the forces of the Earl of Tyrone (Red O'Neill) fought two great English armies, and much of the land was laid waste. James I confiscated many Irish estates, Cromwell sent over an army in 1649, and William III, in the Battle of the Boyne in 1690, defeated James, pretender to the throne. Patriots like Robert Emmet, in his abortive rebellion, Daniel O'Connell, with his eloquence, and even Gladstone, with his proposal to give home rule in Ireland in 1886, all tried to help the cause of the Irish people. John Redmond in 1900 and men like de Valera recently served to bring the cause to a focus. See *Irish Free State.*

IRELAND, LAND QUESTION IN. Before 1800 a system of *absentee landlordism* grew up in Ireland. Much of the land was owned by English families, who never lived in Ireland, and some never saw their estates there. Factors or agents wrung from the tenantry the highest possible rentals. It was almost impossible for tenants to buy land, or to pay for their improvements on the tenant farms. Army officers and others often obtained possession of land while on temporary duty in Ireland. In 1727 a tax was placed on those who owned the land, but did not live in Ireland. This helped somewhat to change conditions, but gave little relief. About 1850 demands increased for fair rents, free sale of land to tenants, fixity for tenure for those who could not buy outright. Most of these demands were realized in 1881. In 1885 another act was passed whereby money was lent to tenants to purchase land. By 1921 nearly two-thirds of the soil had passed to actual residents of Ireland, mostly to the actual tenants. Another troublesome question was that of tithes for the support of the Church of England. Most of the residents in the south of Ireland are Roman Catholics, but they had to pay, until 1868, for the support of the English Established Church. In 1868 this arrangement was abolished. Ireland suffered from two great periods of famine and other distress,—from 1845 to 1851, when over 1,000,000 emigrated to other countries; from 1877 to 1880, when internal strife, troubles with England, failures of crops, and congestion of population caused terrible suffering in some districts.

IRISH FREE STATE. On Dec. 6, 1921 a treaty was signed between Great Britain and the leaders in

the south of Ireland who had proclaimed a republic in 1919. One year later the Irish Free State Act made five-sixths of the island into a separate country with dominion status. Dublin is the largest city and the capital. Provinces making up the new Irish Free State are Leinster, Munster, Connaught, and part of Ulster. Six counties in the north declined to join with these, and continue as North Ireland, a part of Great Britain. Prof. Eamon de Valera, leader of the Fianna Fail or nationalist party, which has worked for a republic, became President of the Executive Council of the Irish Free State in 1932, succeeding William T. Cosgrove, who had served since 1922. When the new party in power refused to carry out certain terms as to land purchase in 1932, Great Britain placed a tariff against Irish goods, and this was followed by a similar one in Ireland, which brought protests from various parts of the British Empire. The Irish have made some attempt to revive the ancient Gaelic tongue as the official speech.

IROQUOIS. Highly developed group of Indians in New York state who had a confederation at first of five nations, the Mohawks, Oneidas, Onondagas, Cayugas, and Senecas, dwellers in the finger lake district. In 1715 they admitted the Tuscaroras. All the scores of other tribes in the north to the Mississippi were influenced by the Iroquois. After the Revolution and the settlement of the land by whites, they moved away,—the Mohawks to the shores of the Ontario and Erie in Canada; the Cayugas to different places; the Oneidas to the region about Green Bay, Wisconsin; the Senecas to western New York; but the Onondagas, in part, remained near the present Syracuse, where some descendants are found on their reservation today. Some Onondagas also went to Canada. Today the Iroquois number about 5000, one-fifth their number when the white man dispossessed them. Longfellow's *Hiawatha* describes the romantic side of Indian life.

ISLAM. Name used by the faithful for Mohammedanism, which was founded by the prophet Mohammed in the 7th century of our era. The Islamites recognize Adam, Moses, Noah, Abraham, Jesus, and Mohammed as greatest of 313 prophets. They believe in one God only, in angels, genii or good and evil spirits, in the resurrection, in certain fast days, in praying five times a day, with the face turned toward Mecca, and in warring against infidels of other faiths. They prohibit drinking of intoxicants, eating of swine or any animal killed by accident, eating, drinking, smoking, and all indulgences during daylight for one month a year. The Koran is their law and Bible, and the Caliph is the head of the faith. Formerly the caliphate was joined with the sultanate at Constantinople. Kemel Ataturk in 1924 allowed the caliphate to lapse. During and since the World War the Islamites of Arabia, Turkey, and other countries have somewhat drifted apart.

ISONZO, BATTLES OF THE. Five chief battles between the Italians and Austrians were fought in the vicinity of the Isonzo River, then in Austria, and now in northern Italy. The first battle, opening on June 5, 1915 gave Sagrado, Castelnuovo, and the bridgeheads there, to the Italians. The second battle in July resulted in other gains in the Carso Plateau. Repeated attacks from October to the end of 1915, after the third battle, left Gorizia, the objective, uncaptured. In the spring of 1916, Gen. Cardorna held the Austrian-German forces in check, and in August the fourth battle ended with Gorizia in charge of the Italian army. In May 1917, the Austrian front for ten miles was broken, and it seemed as if nothing could keep Trieste from falling. A vigorous counter-offense by the Austrians won back all the Italian gains. The Italian second army at Caporetto in October was terribly beaten. Italy had sacrificed 500,000 men in these various engagements. Nothing else was gained until the Austrian collapse in the early fall of 1918, which gave the territory to Italy.

ISRAEL. See articles on *Hebrews* and *Jews*.

ISSUS. Here near the sea in Asia Minor, Alexander the Great in 333 B. C. gained a great victory over the Persians led by Darius. The field of battle was surrounded by mountains and entered from three passes. Alexander allowed the Persians to outwit him by entering through one of these passes so as to endanger his communications. Thus he had to attack Darius. This he did by stretching out his front a mile and a half, resting his left wing on the sea shore and the right on the hills. He overwhelmed the enemy by rushing his men forward on a run, but exposed his right wing to danger, covering this by bringing up his reserves. Thus he overcame by knowing how to arrange his phalanxes for battle. Diodorus and Plutarch assert the Persians lost 110,000 men and Alexander but 450.

ITALY. Modern Italy resulted from attempts at various periods to bring the peninsula under one rule. When the empire of the West broke up in 476, Odoacer styled himself king of Italy, but he was slain by the Goths under Theodoric in 489. In turn, Teias, last of the Gothic kings, perished in 553, when the Lombards came into the north and ruled there until Pepin's son, Charlemagne, was crowned in 800. Until 1043 the Greeks held most of southern Italy. After 1000 the counts of Tuscany became dominant in the central provinces. Frederick Barbarosa came down from Swabia in 1154 and suppressed a new Roman republic. In 1220 Frederick II was crowned emperor of Italy, Sicily, Germany, Sardinia, Burgundy, and Jerusalem, but when Manfred, one of his successors, was slain in 1258, the Swabian line ended. For a long time the quarrels between Guelphs and Ghibellines kept much of the country in turmoil and frequent changes. Rudolf of the Habsburgs established the Pope as temporal sovereign over districts in central Italy. From 1300 on for two centuries, Naples, Milan, Florence, Venice, and the Pope divided much of Italy among them. The kingdom of Aragon and the Two Sicilies dominated in south Italy from 1435 for several decades. Various petty divisions and princes followed, until the coming of Napoleon to power in 1797. France was prominent in the north until 1512; Venice rose to power, ending in 1715; and the great noble families like the Medici were at last curbed.

Napoleon partitioned Italy, but the Congress of Vienna restored the conditions of 1804. In 1848 Mazzini came near achieving national unity, but Tuscany spoiled the plan by refusing to join with Rome. In the same way, Garibaldi subdued Naples, but little was accomplished. Finally Victor Emmanuel of Sardinia, assisted by Cavour, declared war on Austria in 1859, but the latter retained control of Venetia. The central provinces united in 1860, and in 1861 Victor Emmanuel was proclaimed king. In other campaigns, Garibaldi won Naples, with the papal states, and the first Italian Parliament met in 1861. Finally, in 1870 all objections terminated, and Victor Emmanuel was proclaimed at Rome as ruler of united Italy. He died in 1878, was succeeded by his son, Humbert I, assassinated in 1900, and succeeded by his son, Victor Emmanual III. After war with Turkey, Tripoli came under full sway of Italy in 1911. The Fascists and Mussolini came into power on Oct. 30, 1922. In 1929 Italy and the Pope signed a Lateran Treaty by which temporal power was restored to Vatican City and state. In 1936 Ethiopia was conquered and proclaimed Italian territory by Mussolini.

JACKSON, THOMAS JONATHAN (1824-1863). Better known as Stonewall Jackson, after the battle of Bull Run, when a Confederate general remarked that he stood like a stone wall in the midst of danger. He was a graduate of West Point, but resigned from the army in 1851 to become a professor at the Virginia Military Institute. He enlisted in the army of the South, became a major general in 1862, and lieutenant general a year later. Jackson forced back two federal armies in the Shenandoah Valley, relieved Richmond when the northern army was almost in sight of the city, virtually saved Lee from utter defeat at Antietam, and on May 1, 1863 drove Hooker's force away from Chancellorsville into the Wilderness. The next evening he was on the way back from an exploring party, when his group was mistaken for the enemy, fired upon, and Jackson received three wounds. Pneumonia followed, and he died eight days later, May 10, 1863. His skill in tactics, bravery under fire, and popularity among his men made his loss a great blow to the Confederacy.

JACOBINS. Members of a club or group, so named because they met in a Jacobin convent, during the French Revolution. The group was formed in 1789, was moderate at first, but gradually became more and more extreme in its demands, after the organization of hundreds of branches throughout France, and after it controlled the election of many members to the Assembly in 1791, which succeeded the National Assembly. It brought about the death of the king, the humiliation of the Girondists, and led to many of the deeds of the Reign of Terror in

1793. Marat, Danton, and Robespierre were the leaders in turn, but the Jacobins broke up after the death of Robespierre in 1794.

JACOBITES. This name was given after 1688 to the followers of the Stuart claimants to the throne, best known of whom was "Bonnie Prince Charlie." Most of the leaders were Scots, two of whom were executed after the battle of Preston in 1745, and five after the battle of Falkirk. The name comes from the Latin *Jacobus* meaning James. Little was done to restore James II after his exile to France in 1688, but his son, who would have been James III, commonly called the "Old Pretender," landed in England after the rebellion in the north in 1715, but he was sent back to France. "Bonnie Prince Charlie," or the "Young Pretender" in 1745 at first gained some victories, but the next season brought defeats, and doomed once for all the Stuart claims.

JAMESON'S RAID. Dr. Leander S. Jameson (1853-1917), was born in Scotland, but had gone to Kimberly in South Africa for his health. There he associated himself with Cecil Rhodes, builder of the empire for the South African Company. In 1895 he exceeded his authority, when he invaded the Transvaal with 600 men, who had been placed with him on the borders by request of Rhodes. After a few days Jameson surrendered to the Boers. President Paul Kruger turned him over to Great Britain for trial in London, where he was sentenced to 10 months in prison, cut short somewhat by illness. He returned to South Africa, fought against the Boers in 1899-1900, from 1904 to 1908 was premier of Cape Colony, and in 1911 was created a baronet. He was also director of several business enterprises.

JAPAN. History is somewhat obscure before the coming of Buddhism from Chosen (Korea) about 552. Certain traditions seem to show the Japanese are a mixed race, and the Ainus at present in the north represent early inhabitants. Buddhism was established by the government in 624 and continued as state religion until 1871. China greatly influenced Japan before 700. After 1000 much strife and change came about, and feudalism was firmly established, with barons in independent power. Iyeyasu defeated them in 1600, set up his seat at Yedo, and his successors ruled until 1868. In 1543 Portuguese traders visited Japan, but in 1624 all foreigners and especially Christianity were banned. Commodore Matthew C. Perry steamed into Urga in 1853 with a squadron of American ships. On March 31, 1854 the shôgun of Japan signed a treaty opening five ports after they had been closed to foreigners for 216 years. So began the modern period in Nippon, or land of the Rising Sun, as the Japanese call their country. In 1874 Japan punished pirates at Formosa, and in 1879 annexed Chee Loo Islands, despite the protest of China. Parliamentary government was established in 1891.

After defeating China in the war of 1894-95, Japan sought to take as her reward Port Arthur, Formosa, and a large indemnity, but Russia, Germany, and France prevented the retention of the first of these. Japan helped the allies in the siege of Peking in 1900, concluded a treaty with Great Britain in 1903, and overcame Russia in the war of 1904-05. Japan guaranteed the territorial integrity of China in 1907 and the *status quo* in Manchuria in 1910, but in the same year annexed Korea. During the World War Japan declared against the Central Powers, took Kiao-Chow, a German protectorate at Shantung, the Marshall and other islands, and assisted with her fleet in the Pacific and with her patrols in the Mediterranean. The League of Nations gave Japan a mandate over all former German territory north of the equator, and in 1920 restored Kiao-Chow to China.

The islands have been subject to earthquakes. Two very disastrous ones in modern times occurred in 1891, when over 10,000 met death, and another in 1923, followed by a tidal wave and a fire in Tokyo and Yokohama, largest of Japan's cities. Fifty square miles of territory were affected, 150,000 killed outright, 450,000 houses completely burned, with 150,000 more washed away or thrown down. Tokyo spent $375,000,000 in restoring the city, 75% of which had been completely wrecked. Japan suffers from congestion of her people, lack of arable lands, and burdensome expenses for military equipment. Seeking an outlet on the continent, Japan aided in the breaking away of Manchuria from China, and in 1933 declared the north province of Jehol part of the new Manchukuo. Discussions of these actions in the League of Nations led to the withdrawal of Japan. Some communistic activities have also given much concern to the government.

JAPANESE EXCLUSION. See *Exclusion Acts.*

JAVA. Before 500 little is known of this island. The faith of Islam was introduced about 1400, the Dutch obtained a foothold in 1610, and gradually extended this until by 1745 most of the northeast coast was controlled by merchant interests of Holland. In 1808 Bantam was joined to the Dutch holdings in Java, but the French and British objected. In 1811 Bantam went to the French, and from 1811 to 1817 all of Java was controlled by the English. Since then Dutch commercial interests have continued to reap wealth from the fertility and extensive resources of Java.

JAY TREATY. After several months of negotiations in England, John Jay signed a treaty on Nov. 19, 1794. At the close of the Revolution several subjects were left unsettled. The new American government had several complaints against Great Britain. The British garrisons had not been withdrawn from the northwestern frontiers along the Great Lakes; property destroyed in the Revolution and many slaves carried away by the army, had not been compensated for; and England still continued to interfere with American shipping on the high seas. The impressment of sailors was a major cause of the War of 1812. Jay secured several agreements from the British. Some of these were that England should evacuate the northwest borders on June 1, 1796, that commissioners later should settle boundary disputes, that United States might trade in the East Indies, but could carry only native products to the West Indies and take from there only similar articles, and at no time could American vessels carry sugar, molasses, coffee, cocoa, or cotton to any part of the world. Jay failed to secure any concessions as to rights of neutrals, as to slaves that had been carried out of the country, and as to searching American ships for deserters from the British vessels. The Senate of the United States, in special session, on June 24, 1795 ratified the treaty, save in regard to West Indian commerce. Loud protests arose in France and America, but in time the treaty provisions gained in favor. Jay was blamed more for what he failed to obtain than for the actual provisions of the treaty.

JELLICOE, JOHN RUSHWORTH (1859-1935). Created Viscount of Scapa after the World War. Admiral Jellicoe was in the Egyptian war in 1881, was wounded in the expedition to relieve Peking in 1900, and commanded the British Grand Fleet in the Battle of Jutland on May 31, 1916. He became First Sea Lord of the Admiralty in 1916, organized the anti-submarine division in 1917, and from 1920 to 1924 was Governor General of New Zealand. Lord Jellicoe was decorated by many nations, including the United States with the Distinguished Service Cross.

JERUSALEM. Little is known of this city before 300 B. C., after which the history is that of the Biblical narrative until near the Christian era. From the beginning to the Babylonian exile, some of the disturbances include the taking of the city after Joshua's rule, 1400 B. C., by David in 1046 B. C., the unsuccessful siege by Sennacherib in 701 B. C., the total destruction of the city in 586 B. C. under Zedekiah. After fifty years of exile, Cyrus allowed the Jews to return in 536 B. C., and for three generations they continued to assemble in Palestine. Then came the centuries of internal strife, and the rule by Persians, Macedonians, Syrians, Egyptians, and Romans until in 70 B. C. when Titus destroyed the city once more. (See under *Hebrews* for history of the people of early Israel). Until 614 of our era monasteries, churches, and other monuments were spread over the country in great profusion. Then the Persians destroyed about all of these, the most splendid of which was Constantine's Basilica. Next the Moslems ruled from 637 to 1099, during which period notable mosques adorned the city, and the few remaining worship places of the Christians were taken over or destroyed, including the Church of the Holy Sepulchre. The third period of Christian times, ended in 1244, after the Roman empire of the East had ruled and the Crusades had all failed to hold the city. From 1244 to 1917 again the Mohammedans occupied the land.

After 1858 a new city grew up outside the old walls to the northwest. Here many noble churches

and other buildings were erected. During the World War, General E. H. Allenby of the Egyptian Expeditional Forces defeated the Turks in the battle of Samaria in 1917, took the city of Jaffa, the seaport 54 miles from Jerusalem, and gradually worked his way inland. On Dec. 9, 1917 the mayor surrendered the city to the British. Jerusalem had been taken 17 times before in her history, but never, until Allenby came without the firing of a gun or the displacement of a stone in the ancient walls. See articles on The *Jews* and *Palestine*.

JEWS. When the Hebrews returned from the Babylonian captivity, they came to be called Jews. At different points, the Jews threatened to throw off the yoke of Rome, until in 135 A. D. the revolt under Bar-Cochba was put down with incredible inhumanity, the land was laid waste, and the Jews again were driven from their Holy City. Over 1000 cities and towns were destroyed, Jerusalem was closed to the faithful, and heathenism reigned where the word of God was once enlightenment, until the time of Constantine in 330. During the following centuries, the Jews in many lands suffered untold persecutions, but somehow they usually prospered in worldly fortune. Throughout most of Europe the Jews were alternately welcomed and later expelled from many countries. Lands when they were treated favorably were in Italy, Sicily, and Sardinia in the Middle Ages; in the city of Rome in most periods, while the Mother Church alternately favored and repressed them; in Moorish Spain, where they rose to wealth and influence, followed by terrible persecutions in other parts of the empire; in Poland from the middle of the 14th to the 16th century; in France after the era of Napoleon (1806); in Prussia from 1812 to recent days; in Denmark since 1814; in some districts of the near East; and in practically all British dominions, and in many countries outside Europe.

The Jews suffered most in the Byzantine empire; among the Franks in the 6th and 7th centuries; in the Rhineland at the time of the first Crusade (1096), when thousands were slain; in England, from whence they were expelled from 1290 to about 1655 under Cromwell; in parts of Spain, where the Inquisition (1478) was set up against them, and they were expelled from the kingdoms of Ferdinand and Isabella in 1492; from Portugal, 1496, from Navarre, 1498, from Naples finally in 1548, and from Milan in 1597; in the 17th and 18th centuries in Poland, after enjoying uncommon favor under Casimir the Great; and under Frederick the Great in Prussia (d. 1786) and in Germany after 1930. After the World War much was done to insure the Jews homes in Russia, Poland, and Rumania, and the Zionism movement aimed to settle them again in Palestine. Before 1928 some 35,000 families had been given homes in southeastern Russia and the Crimea. The Soviets gave $10,000,000, a sum matched by a like amount in America, half of this given by Julius Rosenwald. See article on *Zionism*, and *Palestine*.

JOFFRE, JOSEPH JACQUES CESAIRE (1852-1931). Marshal of France, studied military engineering at the Polytechnical School of France, 1868; left to fight in the Franco-Prussian War; and returned after the peace was signed. Lieutenant in 1872, captain in 1876, brigadier general in 1901. Served in Tongking, Dahomey, Madagascar campaigns, and organized the defenses of Formosa in 1911. At the outbreak of the World War, he was chief of the general staff of France. On the birthday of Lafayette, he ordered the French to halt their retreat and stand to face the Germans, in consequence of which the latter were thrown back at the Somme, and Paris was saved. He was general commander of the French armies from 1915 to 1917, when he came to the United States as a member of the French high commission. Marshal Joffre gained considerable distinction in mathematics. Member of the French Academy from 1918.

JOHNSTON, JOSEPH EGGLESTON (1807-1891). Distinguished Confederate general, known for wisdom and reliability, who fought in the Black Hawk and Seminole Wars, and in the battles around Mexico City in the War with Mexico, receiving two severe wounds and being advanced three degrees in rank for bravery. He resigned from the federal army in 1861, joined the southern cause, won the first notable victory at Bull Run (Manassas), and was severely wounded at Fair Oaks, May 31, 1862. He commanded the army in Mississippi, then that in Tennessee, and stood against Sherman in the campaigns in the Carolinas. For a brief time he was superseded by General Hood, but Lee restored him in Feb. 1865. After the surrender of Lee, President Davis authorized him to surrender on April 26, 1865. In 1874 he published a narrative of military operations of the Civil War; in 1887 he was elected to represent the Richmond, Va., district in Congress; and from 1887 to 1891 he was a commissioner of railways under President Cleveland.

JOLIET, LOUIS (1645-1700). Explorer of the region of the Mississippi River, who was born in Canada, and was commissioned by the French governor, Frontenac, to learn the general course of the Mississippi. Setting out with Father Marquette, and five others, he proceeded from Green Bay, Wis., in 1673, then up the Fox River, and portaged to the Wisconsin, and then on down the Mississippi, until they came to the mouth of the Arkansas. On the return Joliet covered the Illinois-Chicago portage route to Lake Michigan. Near Montreal his canoe was overturned, and some of his papers were lost, but he later wrote a short account from memory. He made one other voyage, this to Hudson Bay and Labrador in promotion of the fur trade.

JONES, JOHN PAUL (1747-1792). American naval hero, the son of John Paul, a Scotch gardener. From the age of 12 he followed the sea, first on a voyage to Virginia, then for a brief time as a midshipman in the British navy, and on a slave ship to Jamaica and Guinea. When he was 21 he left this trade in disgust, took a ship to England, and on the way, when both captain and mate died, brought the boat to harbor safely. The owners of this ship gave him a command on two voyages to Tobago, after which he made one for himself in his ship *Betsey*, which he had purchased. The crew mutinied, and he escaped to the United States, living in obscurity for a time. In 1775 he appeared under the name of John Paul Jones as senior lieutenant in the new Continental navy. He fitted out and commanded the *Alfred* on a voyage to the Bahama Islands, and in 1776 did convoy duty for ships entering New York. Then as captain he obtained a roving commission. In six weeks his ship, the *Providence*, captured six brigantines, one ship, one sloop, six schooners, and destroyed two others. Some of his other services were carrying news to the French people of the surrender of Burgoyne; a raid on the English coast; defeat of the British warship *Drake* near Belfast; and the memorable battle of his *Bon Homme Richard* (named in honor of Franklin's *Poor Richard*) with the British *Serapis*, but his ship sank the following day. He died in Paris, was buried in St. Louis Cemetery. In 1913 his dust was brought to Annapolis, Maryland, and interred in the chapel there.

JUTLAND, BATTLE OF. This greatest naval battle of the World War occurred on May 31, 1916. Admiral David Beatty, while cruising in the North Sea, sighted the advance guard of the German fleet off Jutland. He began firing at a range of some 20,000 yards, shortened later to 16,000. Somewhat later the Germans withdrew to 20,000 yards distance. Then the entire German battle fleet was seen behind a smoke screen coming to the defense of the first line of cruisers. Admiral Jellicoe was some two miles behind the squadron of Beatty with four cruisers of the *Queen Elizabeth* type and other craft. Beatty turned 16 points so that after that his ships were running for some time parallel to the German fleet and going in the same direction. Just before and at the turning, three British cruisers were sunk by mines, and one of the Germans was disabled by fire from the *Queen Elizabeth*. Beatty continued to delay closing in so that Jellicoe could have time to arrive. Visibility became poor, and night was coming on. Before Admiral Scheer withdrew the German fleet southward, the British were in touch with them twice again. For two hours later Beatty continued in the dusk. Trace of the Germans was lost, and they could not be located the next morning. The German fleet never again appeared in the North Sea, until they came out to surrender in 1918. The Germans at Jutland lost 11 of 110 ships engaged, and the British 14 out of 149. The loss in men was, for the Germans, 2863, and for the British, 6617.

KEARNY, PHILIP (1815-1862). An American soldier; born in New York City; graduating from Columbia in 1833, was appointed lieutenant of first dragoons (1837), and in 1839 was one of the three officers sent by the United States government to

Saumur Cavalry School; in 1839-1840 served as a French volunteer against the Algerians and Arabs; as a captain of cavalry he fought in the Mexican War (1846-1847). In 1859 he served with the French in Italy, receiving the cross of the Legion of Honor for his great bravery throughout this campaign. He reëntered the U. S. army in May, 1861, at the beginning of the Civil War, as a brigadier general of volunteers; took a conspicuous part in the Peninsular campaign and the second battle of Bull Run, and was killed while reconnoitering at Chantilly (September 1, 1862).

KEARSARGE-ALABAMA. During the Civil War, the federal government built at Portsmouth, N. H., a small warship, which, under Captain John A. Winslow, was sent to the coast of Europe to watch for Confederate privateers in 1862. The *Alabama* was sighted in the harbor of Cherbourg, France, and the *Kearsarge* was invited to a combat. Both boats moved into the English Channel, where on June 19, 1864, the *Alabama* was disabled, struck her colors, and many of the crew were drowned before they could be rescued. See article on *Alabama Claims.*

KELLERMAN, FRANCOIS CHRISTOPHE, DUKE OF VALMY (1735-1820). A French general born near Rothenburg, Bavaria. In 1752 entered the French army; served throughout the Seven Years' War, and in Polish expedition of 1771. He warmly espoused the cause of the French Revolution, and in 1792 was leader of the Army of the Centre. On September 20, 1792, repulsed the Prussians and delivered France in the famous victory of Valmy; afterwards commanded the Army of the Alps, but was imprisoned for a year on an alleged charge of treason against the republic, and was liberated only by the fall of Robespierre; created marshal of France (1804), and duke of Valmy (1809). After 1812 led the reserves in Germany, and at the restoration attached himself to the Bourbons; created a peer in 1814.

KERENSKY, ALEXANDER. (1881-), Russian moderate socialist leader, born in Siberia, and a member of the Duma in 1912 and 1917. As a lawyer, he always championed the cause of the poor and oppressed. After the revolution of 1917, he became minister of justice in the coalition cabinet, and in July was made premier. He sought to arouse a spirit to continue the war against the Central Powers, checked an uprising of General Kornilov, and counselled a moderate course. The older Russian military class opposed his efforts, and the newer Bolshevik party displaced him in November. Then he visited the capitals of several European countries and settled in Paris as a newspaper editor. Kerensky toured the United States in 1928.

KIDD, WILLIAM (?1650-1701). British navigator and pirate hunter, who assisted the American colonies in the French and Indian War. In 1691 New York City made him a present of $750. Later a London company sent him to Madagascar, a stronghold of French pirates. Word came back that Kidd himself had turned pirate. After two years he returned to the West Indies, having left his ship *Adventure* at Madagascar, and on July 1, 1699 Kidd arrived in Boston. He wrote to Governor Bellomont in New York, who had given him a commission in 1696, that he could justify all his acts. He also sent the governor some of his captured booty. Kidd was arrested, sent to England for trial, and was hanged on May 23, 1701. Fabulous stories of loot cached at different points doubtless grew out of the finding of some treasure on Gardiner's Island off the east end of Long Island. In 1911 Dalton published his *The Real Captain Kidd: A Vindication.*

KING GEORGE'S WAR. Part of the struggle in both Europe and America over colonial possessions and settlements. Following the War of the Austrian Succession, because Frederick the Great had taken some of the territory considered a part of Austria in the time of Maria Theresa, Great Britain and France began a struggle between themselves in 1744. In Louisburg, Nova Scotia, France had built a strong fortress at enormous cost. This was to protect the fisheries along the coast. In 1745 this was taken by American colonial troops under Sir William Pepperell, assisted by a fleet from Great Britain, and again in 1758 by a combined land and sea attack. Some minor frontier fights and naval engagements completed the war, so far as American colonists were involved. When peace came in Europe, the British gave back Louisburg in exchange for the city of Madras, India.

KING PHILIP'S WAR. For over forty years Massasoit, chief of the Wampanoag tribe of Indians, was a faithful ally of the Pilgrims of Plymouth Colony. His second son, Philip, succeeded his older brother and in 1661 renewed the treaties which both sides had kept scrupulously. Ten years later, influenced by the growing encroachments of the whites on Indian lands, he gathered some 10,000 warriors into an alliance. In 1675 King Philip and his braves destroyed thirteen towns and killed 600 white persons. As a reprisal, in December Governor Winslow gathered 1000 men, burned the fort of the Narragansetts, killed 600 warriors and 1000 women and children. In the following summer, Philip's squaw and son were captured, and later he was surprised and met his death.

KING WILLIAM'S WAR. So named because it followed after the British had rejected the claims of James II, and seated William and Mary on the throne in 1688. Louis XIV of France took up the cause of James. Meanwhile, French and English clashed in North America, and so began an intermittent struggle that lasted until after the final defeat of Napoleon in 1815. From Quebec the forts of France stretched down to the Great Lakes and then to Pittsburgh and across to the Illinois and Maumee Rivers. Sorties were made from these strongholds for such attacks as that at Schenectady, N. Y., in 1690, Deerfield, Mass., in 1704, with other raids into New Hampshire and Maine. The colonists sent Sir William Phipps northward to the strongholds of Nova Scotia (French Acadie), and he destroyed the fortifications at Port Royal, but failed to conquer Quebec, which was the gateway to the western positions. Next, the French replied with reprisals and outrages at York and Castine, Maine, and other points, culminating in the terrible massacre at Haverill, Mass., in 1697. The peace of Ryswick ended hostilities in Europe and temporarily in the colonies.

KITCHENER, HORATIO HERBERT, EARL KITCHENER (1850-1916). British field marshal, who commanded the Egyptian cavalry under Lord Wolseley (1882-84) during the expedition for the relief of Chinese Gordon at Khartum. He captured the city, and in 1898 was made governor of the Sudan and a British peer by Queen Victoria. In 1899 he was aid to Gen. Roberts in the South African campaign, after which he arranged the terms of peace. Parliament granted him a large purse, and King Edward made him a viscount. Later he occupied important posts in India and Egypt. When the World War broke out, Kitchener was recalled from Egypt and put in charge of all British forces. He found that Britain had but 200,000 men ready for foreign service. In 22 months he raised over 5,000,000 men and equipped them for the lines in France. While on a voyage to Russia, Kitchener and his staff were lost in the sinking of the cruiser *Hampshire*, which probably hit a mine on the evening of June 5, 1916.

KNOX, HENRY (1750-1806). American general and cabinet member, who was a close friend of Washington. He tried to prevent the clash between the British soldiers and the mob in the Boston Massacre; opened a bookstore in Boston in 1771, read much on military tactics, fought at Bunker Hill, and planned the defenses about Boston. For skillful service at Trenton, N. J., he was made a brigadier general and put in charge of the colonial artillery. He became a major general at the close of the Revolution. He was the founder and first secretary-general of the Society of the Cincinnati, composed of French and American officers of the Revolution, and now of their descendants. Under Washington he was first Secretary of War, 1785-94. He urged a national militia to be made up of all men from 18 to 60.

KOREA (CHOSEN). Both Chinese and Korean accounts place the founding of this country about 2333 B. C. by Dan Koon, whose dynasty continued for over 1000 years. In 108 B. C. Korea became part of the Chinese empire. Three centuries later culture of China was transmitted through Korea to Japan. In 913 Wang unified the country, naming it Korai; his successors ruled until 1392. Jenghis and Kublai Khan caused the Wang dynasty much trouble. Two centuries later the Japanese sent a large army into Korea, but China sent forces to oppose them, and six years of terrible slaughter followed, and the Manchus and Japan dominated for two centuries until 1790. Korea welcomed mission-

aries and made religion unrestricted at an early date. The Sino-Japanese War in 1894 was caused by troubles as to conflict of interests in Korea. On Oct. 8, 1895 troops, aided by Japanese, invaded the palace, killed the empress, and took the Korean emperor captive. He later escaped to the Russian legation for protection. Japan assumed the position of advisor in 1904, but guaranteed the integrity of the imperial family. In 1907 after appealing to the Hague Conference, the emperor resigned in favor of his son. Japan annexed Korea and changed the name to Chosen in 1910.

KOSCIUSKO, THADDEUS (1746-1817). Polish commander, who came to America in 1776, won fame at New York and Yorktown, was made a colonel, and in 1783 was thanked by Congress and presented with a pension and the privilege of citizenship. He took a leading part in Poland in the war that followed the announcement of a new constitution. In being essentially democratic and humanitarian much in advance of his day, he was opposed by the older Polish nobility. On March 24, 1794 he took an oath in the presence of hundreds of people that he would defend Poland against the Russian and Prussian allies. Failure of his subordinates, scarcity of men, and tactics of the enemies put Kosciusco at a great disadvantage. He was wounded, carried unconscious from the field, and taken a captive to Russia, where he was released two years later. In December, 1796, he came to America, and lived in Philadelphia for a year and a half. He refused a commission under Napoleon, settled near Paris, and at various times tried to obtain consideration for Poland. Alexander of Russia and the Congress of Vienna both failed to heed his pleas. Kosciusco was buried in the cathedral of Cracow.

KUBLAI KHAN (*koo-bli kahn*) (1216-1294). Emperor of China; founder of the twenty-third Chinese dynasty; became grand khan of the Mongols (1259). In 1260 he was invited by Si Tsong to aid in the expulsion of the Kin Tatar dynasty. In response Kublai invaded China and established his capital at Kambalu. Completed the conquest of southern China (1279), thus becoming master of the whole kingdom. He was a patron of literature and encouraged industry, agriculture, and commerce. He invited the pope to send Christian missionaries to China, but this was not done. Marco Polo spent 17 years at Kublai's court.

KU KLUX KLAN. From 1866 to 1896 a secret organization flourished in the United States, with the purpose of terrifying the negro. Members were not known in public, where they appeared wearing hoods, and much violence in consequence developed. In 1871 Congress enacted legislation which had the effect of curbing the Klan. In 1915 at Atlanta, Georgia, a similar form of Klan was organized, and by 1924 the membership was said to be 2,500,000, which in 1931 had declined to 700,000. Violence grew out of Klan activities in Texas, Oklahoma, western Pennsylvania, and in a few other places, but in Texas and Oregon the Klan wielded no little political power. Its revived form professed to curb non-Protestant and Negro influence.

KUT-EL-AMARA. While the British were campaigning against the Turks in Iraq during the World War, Kut-el-Amara was taken on Sept. 28, 1915, after a skirmish. After trying to dislodge the forces of General Charles Townshend, the Turks laid siege to the place, and for 143 days starved the British until, relief failing to arrive, they surrendered on April 29, 1916. Meanwhile, General Fenton J. Aylmer compelled the Turks to retire from one position after another, until on April 5, fresh troops arrived from the Gallipoli campaign, but the Turks again retired to a stronger position. General Frederick S. Maude, the new commander-in-chief, opened an assault in the middle of February, and on the 24th had so outflanked the Turks that the town of Kut-el-Amara again was in British hands. Thus the road was opened to the capture of Bagdad.

LABOR PARTY, ENGLISH. Politically a labor candidate in England was first nominated in 1857, but withdrawn before election time. In 1868 three candidates received small votes; in 1874 two were elected; two distinct labor candidates in 1892. Meanwhile, the Socialistic movement gained some headway, but no candidates were put forward. In 1883 the Fabian society was organized, and in 1889 a Scottish Labor Party, which in 1892 ran eight candidates. Liberal and Nationalist candidates were more successful, but Independent Labor broke away from any connection with them in 1893. In 1900 Keir Hardie, who had been elected as independent in 1892, won for the new Labor Party. By 1908, 42 seats were held by this group. The World War led to hesitation and indefinite plans during the time of the coalition government. In 1918 the Labor Party stood against Bolshevism, and in 1918, 61 candidates were seated; in 1922, 142; in 1923, 191. The Labor-Liberal combination defeated the Conservatives in Parliament on Jan. 21, 1924, and three days later a Labor government came into power, but was defeated on Oct. 8 by a combination of the two other groups in Parliament. From June 1929 to August 1931, the Laborites were again in power followed by a coalition cabinet. In a new general election, the Conservatives won most of the seats, and Stanley Baldwin again formed a cabinet, in which Labor and the Liberal Party were much in the minority. See *Trades Unions.*

LABOR UNIONS. See *Trades Unions.*

LADYSMITH, SIEGE OF. During the South African War, 1899-1902, the first important struggle was to hold Ladysmith against the Boers. Having suffered a defeat on Oct. 30, 1899, Sir George White, the commander, decided to hold the city. Sir Redvers Buller sent all his available troops to Natal for the relief, but on Dec. 15 in the battle of Colenso, on Jan. 24, 1900 at Spion Kop, and on Feb. 5 at Vaalkranz, he was unsuccessful in dislodging the Boers. Again attacking near Colenso, he at last worked his way to the city, which had suffered from famine, and once from a severe attack by the Boers on Jan 5, 1900, when the British lost heavily.

LAFAYETTE, MARIE JEAN PAUL, MARQUIS DE (1757-1834). French and American general, known for his democracy and friendship for all the oppressed, was left an orphan with magnificent estates at 13. He was a captain of dragoons when the colonists in America declared their independence. "At the first news of this quarrel," he wrote later, "my heart was enrolled in it." Silas Deane, the agent for America in France, promised him a commission as major general in 1776, but the king and his friends tried to keep Lafayette from going to America. He escaped from custody, joined his ship in Spain, and arrived in America when only 19. He saw the difficulty in claiming his commission, but Congress on July 31, 1777, accepted him and gave him "the rank and commission of major-general." From the start he and Washington became friends for life. He fought at Brandywine, at Monmouth, and was given a division to command. When England declared war on France, Lafayette secured permission to go back, where great enthusiasm awaited him. He returned to America in the summer of 1779, after being abroad for six months, and was given charge of operations in Virginia, where he was present at the surrender at Yorktown. Again he returned to France, became vice president of the National Assembly, and until 1792 took a prominent part in all legislation. In 1790 he refused the command of the National Guard of France. He was found to be out of sympathy with the Jacobins, fled to Liège, and was in prison for five years. In 1799 he returned to France. From July 1824 to September 1825 he visited the United States, was given $200,000 and a township of land. During the revolution of 1830, he again became prominent, this time as commander of the National Guard of France. His last speech urged consideration for the Polish refugees.

LAISSEZ-FAIRE (*lĕ-sā'-fâr*). From the French phrase *Laissez-nous faire* (in English, let alone), first used about 1680, in France a whole political philosophy developed. The idea expressed by Marquis d'Argerson in 1735, possibly sums up the attitude of many economists. He said, "to govern better, it is necessary to govern less." It was found then that, whenever government interfered, monopoly often resulted to individuals or groups, and the people suffered the effects. The doctrine came to mean, however, stabilization of prices, production of goods for the benefit of all concerned, maximum agreement between producer, worker, and consumer. *Laissez-faire*, as a principle, was considered the opposite of what is now called socialism, or government competition with private or individual agencies. Some of the later leaders in England were Bentham, John Stuart Mill; in France, Toqueville, Prevost, and their school of economists. Herbert Spencer strongly favored individualism as against collectivism,

In 1870 the movement reached its climax, after which the tendency was in the opposite direction.

LAKE CHAMPLAIN, BATTLE OF. (1) October 11, 13, 1776. The American fleet of 37 vessels commanded by Benedict Arnold encountered the British fleet of 38 well-equipped vessels under Captain Pringle, on Lake Champlain, near Plattsburg. When the fighting ceased at dark on October 11th, the badly damaged American boats broke through the British line and sailed for Crown Point. Carleton, with a squadron from Quebec, pursued the Americans, and on the 13th overtook them. Only six boats of the fleet escaped after these encounters with the British. (2) September 11, 1814. After General Prevost had been repulsed in his march toward Plattsburg, he led his troops toward Lake Champlain to support the British fleet. On September 11th the British squadron of 16 vessels commanded by Captain Downie met the American fleet of 14 vessels under Capt. Thomas Macdonough. After a severe fight of over two hours every British warship had surrendered.

LAKE DWELLINGS. From prehistoric times certain peoples have built their habitations upon platforms over lakes and streams. Such are now to be seen in the Orinoco and the Amazon in South America, in New Guinea and Borneo, and on the west and center of Africa. Herodotus describes some Peonian lake dwellings in Lake Prasias as early as 450 B. C. During the new stone age, many of them existed in Switzerland, Italy, Hungary, and Holland. Those in Switzerland are numerous and interesting. Foundations have been uncovered for 50 on Lake Neuchâtel, 32 on Lake Constance, and 24 on Lake Geneva. On Lake Geneva at Morges the drouth of 1921 exposed such an arrangement that is 1200 feet long by 150 broad. At Sutz, Switzerland, the settlement covered six acres, and was connected with shore by a gang-way. Some of these were reconstructed on the German side of Lake Constance in 1927, but whether they are historically accurate is not certain. In Scotland and Ireland, some of the chieftains built their defenses in fresh-water lakes as late as the 16th century. In Switzerland the dwellings were set up on piles, some of them on stone foundations, and some on beds of brush and trees going down to some depth. Doubtless they were designed to keep animals and enemies away, just the same as the moats filled with water around castles in the Middle Ages.

LAKE ERIE, BATTLE OF. Near the western shore of Lake Erie, at Put-in Bay on Sept. 10, 1813, the greatest naval battle of the War of 1812 was fought. The Americans had hastily built, at Erie, Pa., a fleet consisting of three brigs, five schooners, and a sloop, having 54 guns, and a crew of 490. The British under Commander Robert H. Barclay, had two ships of war, two brigs, a schooner, and a sloop, 63 guns, and 460 men and officers, all well disciplined. Master Commandant Oliver H. Perry, with the flagship *Lawrence,* was under concentrated fire from the enemy in the first phase of the engagement. When Perry shifted his flag to the *Niagara,* the battle became general. After a stubborn fight, Perry forced the British flagship and two others to surrender, but the rest tried to escape. These were overhauled, and Perry sent his celebrated telegram to General Harrison, his superior in command: "We have met the enemy, and they are ours." In killed and wounded, the American loss was 123, and the British, 135. By this victory the Americans were able later to take Detroit and to carry the war into upper Canada.

LAKE GEORGE, BATTLE OF. On Sept. 8, 1755, a body of English settlers in Massachusetts, Connecticut, and New Hampshire, led by General William Johnson, marched north to Lake George in New York, to capture it from the French. A large force of Canadian militia and Indians surprised the English and drove them in confusion toward the American camp on Lake George. The band of soldiers who were holding the camp opened fire and forced the French and their allies to retreat with heavy loss. In the evening the retreating Frenchmen were attacked by reinforcements from New Hampshire and completely routed.

LATERAN TREATY. Between Italy and Vatican —consisted of three parts, *Political Treaty, Concordat,* and *Financial Agreement,* signed February 11, 1929 by Mussolini and Papal Secretary of State, and by the King on May 27. Exchange of ratification took place June 9, 1929.

The Treaty: Since September 20, 1870, the Pontiffs have been in seclusion in protest against the position forced upon them by the seizure of Papal property throughout Italy by the House of Savoy. Treaty ends the controversy and ends the self-imposed imprisonment of the Pontiffs.

Concordat: Defines and regulates the position of the Church in Italy; provides freedom of action for both Church and State in their respective spheres. Settles the Roman Question, which arose in 1870, with the annexation of Rome to the Kingdom of Italy.

Financial Agreement: Act of justice and remuneration for the properties which passed without remuneration from the Church to the Italian State in 1870.

LA TOUR D'AUVERGNE, THEOPHILE MALO (1743-1800). French popular hero, who joined the army in 1767 and consistently refused promotion all his life. After a campaign in the Pryenees in 1795, his health compelled him to retire temporarily, and on the way home he was captured by the English, serving two years in prison. He settled at Passy, but in 1797 substituted for his friend, with the rank of captain, on the Rhine and in the following year in Switzerland. Carnot called him in 1800 "the first grenadier of France." On June 27, 1800 he was killed in action at Oberhausen in Bavaria. The French army went into mourning for three days. In 1889 he was removed to the Panthéon at Paris. Even to this day his name is kept on the roll of his company. On all occasions when the colors are on parade, his name is called, and someone replies *Mort au champ d'honneur* (Dead on the field of honor).

LATVIA. Since 1918 an independent state in the Baltic region of Europe, but dominated previously by four different governments. From 1158 to 1562 all of Latvia was ruled by the Teutonic Knights and their associates, though Lavonia, one of the two main parts of Latvia, was virtually independent from 1347 to 1494. During this era extensive wars were waged against Poland and Muscovy. Courland, the other large part of Latvia, was ruled by the house of Kettler from 1562 to 1795; while Poland ruled Livonia from 1562 to 1595, and then Sweden from 1629 to 1721. Then Latvia was absorbed in the empire of Russia. The movement for nationalism started about 1850. Karl Ulmanis, who lived for some years in Iowa, and was graduated in agriculture from the University of Nebraska in 1909, returned to his native Latvia, became premier in 1934, and in 1936 assumed the duties also of the presidency. He represents the Agrarian or Farm Party.

LAURENS, JOHN (1754-1782). Son of Henry Laurens, president of the Continental Congress (1777-78), and one of the peace commissioners after the Revolution. The son was educated in England, became Washington's confidential secretary, and was present at all the battles between Brandywine and Yorktown. He challenged and wounded Gen. Charles Lee in a duel because of the latter's disrespect toward Washington. As special envoy to the king of France, he secured aid of the French fleet, and so helped effect the defeat of Cornwallis at Yorktown. Before the peace was formally declared, Laurens was killed in a small skirmish. Washington said of him, "He had not a fault that I could discover, unless it were intrepidity bordering on rashness."

LAWRENCE, JAMES (1781-1813). Naval hero in the War of 1812. He spent five years on the Barbary Coast in the war against Tripoli and later. With Commodore Decatur he helped destroy the *Philadelphia* in the harbor of Tripoli. When war broke out in 1812, he was in command of the American frigate *Hornet,* and on Feb. 24, 1813, he captured the British *Peacock* with the loss of one man killed and two wounded. He was promoted and given the command as captain of the frigate *Chesapeake,* which on June 1, 1813 fought the *Shannon* off Boston. Lawrence was mortally wounded, but cried to his men, "Don't give up the Ship," which became a rallying cry in the United States Navy.

LAWRENCE, THOMAS EDWARD (1888-1935). Familiarly called "Lawrence of Arabia," during the World War, when he assisted the plan of Great Britain to unite the desert tribes against Turkey. He became a close adviser of the Emir Faisal, helped him arrange his successful raids, and the campaign against the city of Damascus. Among the desert tribes of Arabia he was welcomed in the name of his powerful native allies, as perhaps no man has been

in modern times. He refused rank and decorations more than once. During the Peace Conference he spoke for Faisal, later accompanied him on a British tour, and had no little to do with making him king of Iraq. Lawrence often felt, however, that Great Britain had not fully done her duty in allowing the French to obtain a mandate over Syria. Later he held posts in the government service, lived much in seclusion, served one year as a Fellow in Research at Oxford, and shunned the publicity his acts in Arabia had brought. He died in a motorcycle accident. His revision of the *Seven Pillars of Wisdom* was issued as *Revolt in the Desert* in 1927.

LEAGUE OF NATIONS. Early predecessors were the Consort of Powers in Europe, the Peace Conference at the Hague, and the Technical Union. During the World War committees were formed to deal with shipping, raw materials, foodstuffs, fuel, munitions, and several other subjects. For centuries need had been felt for an effective agency to prevent sudden wars between nations. The *Covenant* or agreement to form the League of Nations was made a part of the Treaty of Versailles, and as such became effective on Jan. 20, 1920. The stated purposes were (1) friendly settlement of disputes between nations, and (2) cooperation in matters of world importance. The question of means to prevent wars caused long and energetic debate, and considerable difference of opinion. In the operation of the League, this has been the greatest drawback to complete success.

Four main organs transact the business of the League itself. These are the *Assembly,* composed of all member nations; the *Council,* composed of delegates from Great Britain, France, Germany, Italy and Japan, with nine non-permanent members in addition; the *Secretariat,* composed of a Secretary-General and about 500 deputies and clerks constantly employed at Geneva in the League headquarters; the *International Labor Office,* which has done much toward stabilization of economic conditions throughout the world. Besides there are several permanent committees of the League. The Permanent Court of International Justice, formed and sponsored by the League, is now virtually an independent agency. Some of the standing committees are those on Communication, Health, Intellectual Cooperation, Codification of International Law, and Protection of Women and Children. The original plan called for a meeting of the Assembly once in three or four years; but the small nations, finding this their main chance for expression, have caused meetings to be held at least once yearly. The Council meets three or more times each year,—11 times in 1920 during organization. Necessarily, the Secretariat conducts important League business of continuous or permanent character. Statistics are gathered, notes exchanged between committees, and documents are filed, such as over 2300 treaties, some 2000 of which have been printed in two languages.

The League is housed in a palatial building at Geneva, for which John D. Rockefeller, Jr., contributed $2,000,000 for construction and library. In 1920 the League had 42 member nations; in 1930, 54; and in 1936 only 11 recognized nations were outside. Japan and Germany withdrew in 1933, to take effect in two years. Argentine withdrew in 1919, but returned in 1933. Soviet Russia was admitted in 1934. Brazil was once a member. The United States withheld adherence because of objections to the machinery and *Covenant* of the League.

Most beneficial results have been obtained by agencies that work in comparative obscurity, free from public notice. On the contrary, the failures have been matters of world-wide remark and concern. Both special and permanent committees have secured important international agreements on economic, financial, and social subjects. Trade in arms has been limited, so has the traffic in opium by a budget system, and the international traffic in women and children has been given careful study. International law is being rapidly codified, rights of minorities have been protected, and emergency relief in several disasters has been greatly facilitated. One of the spectacular successes was the financial rehabilitation of Austria, Hungary, Bulgaria, and Greece through League committees. Even non-members (especially the United States, which has served on important commissions) have often cooperated. Several cases involving non-member nations have been settled amicably. The Permanent Court handled 48 cases in the first 10 years, most of them satisfactorily to all parties in litigation; while the Council of Ambassadors treated 30 others, the majority without great friction or refusal to concur.

Some of the international disputes considered by the League have been between Sweden and Finland over the Aaland Islands, 1920; Albania and Greece, 1928, including questions as to Albanians in Greece; between Great Britain and Turkey over oil fields in Mosul, 1924; settlement of the old dispute between Bolivia and Chile over Tacna-Arika, 1921, and the stopping of the war between Bolivia and Paraguay, 1935. Brilliant successes were the exchange of 600,000 Greeks for an equal number of Turks in their respective territories, and the stopping of a war actually begun when Greece, 1925, invaded Bulgaria and killed some of the inhabitants. Conspicuous failures have been in the cases of the trouble between China and Japan, the formation of the new Manchukuo, and the Italo-Ethiopian war. In the latter case, though the nations did not think it worth while to interfere and precipitate another war in Europe, the League late in 1936 again seated two delegates from Ethiopia in the League Assembly over the energetic protest of Italy and threats once more to withdraw. See articles on *The Hague, Mandates, World Court.*

LEE, FITZHUGH (1835-1905). American general, who was born in Virginia, educated at West Point, and entered the United States cavalry. He joined the Confederates, became major general in 1863, and commanded cavalry divisions under Generals Stuart, Hampton, and R. E. Lee. He led the last attack of the Confederates at Farmville, Va., on April 9, 1865. For years he tried to reconcile the South to the outcome of the Civil War. He served as governor of Virginia from 1886 to 1890, and as consul general at Havana from 1896 to the outbreak of the Spanish-American War, when he again became a major general of volunteers. In 1899 he was military governor of Havana and Pinar del Rio. He was a grandson of Henry Lee, and a nephew of R. E. Lee, noted below.

LEE, HENRY (1756-1818). American soldier and statesman; born at Leesylvania, Va. Known as "Light Horse Harry" for his daring and activity in the Revolutionary War; noted especially for his capture of the British post at Paulus Hook, and his service with Gen. Greene's army in the south. Member of State Legislature, 1789-1791; Governor of Virginia, 1792-1795; commanded militia which quelled Whisky Insurrection in Pennsylvania (1794). Federalist representative in Congress (1799-1801), delivering there the funeral oration for Washington containing the famous words, "First in war, first in peace, first in the hearts of his countrymen." Father of General R. E. Lee.

LEE, ROBERT EDWARD (1807-1870). Distinguished American general and one of the great masters of tactics of all time. He came of a Virginia family which gave five members to some distinctive public service. He married Mary Custis, great granddaughter of Martha Washington, who inherited the famous estate of Arlington overlooking the Potomac and the city of Washington. Lee was graduated from West Point with great honors, became a lieutenant in the engineers, and served in the war with Mexico, being advanced to the rank of colonel. He fought against the Comanche Indians and was superintendent of West Point, 1852-55. He was sent from Arlington to arrange the capture of John Brown in 1859, a task quite displeasing to him. Lincoln offered him the command of the armies of the North, but Lee felt obliged to refuse. He had freed all the slaves on his estate, but thought the government had no right to force others to do so. When he entered the war for the South, he faced the task of raising a large force and of defending Richmond. With the aid of Generals J. E. Johnston and "Stonewall" Jackson, Lee drew the forces of the North away from Richmond, the Confederate capital. By similar tactics he later put the federals in awkward positions. At Gettysburg, however, Lee gained no particular advantage in his design to keep the war in northern territory. After Lee surrendered at Appomattox, he refused to capitalize on his experiences by writing of the Civil War. Instead, he accepted the presidency of Washington College at Lexington, Virginia, and here he died five years after the close of the conflict. The name of the college was changed to Washington and Lee University.

LEGION OF HONOR. Only knightly order of France, instituted by Napoleon in 1802, and since

then a general order of merit for civil and military distinction. Napoleon was grand master, with a council of seven administrative officers. Under these were 20 commanders, 30 officers, and 350 legionaires. Hospitals were maintained for the sick and infirm, and both foreigners and women were admitted from the start. In recent times Rosa Bonheur, the great painter, and Madame Curie, the codiscoverer of radium, have been admitted. Except for very extraordinary reasons, like some unusual civil or scientific achievement, one must give twenty years of service to be admitted to the lowest rank. He may progress to a higher one by further service. Salaries are granted in each of the ranks. The president of France is now grand master, and under him is a council, presided over by a grand chancellor. Now the number of members is five times that before the World War. In 1932 the numbers in the various ranks were—grand crosses, 80; grand officers, 468; commanders, 3560; officers, 21,743; chevaliers, 130,994.

LEIF ERICSSON. See under *Ericsson, Leif.*

LEIPZIG, BATTLE OF. Here Oct. 16-19, 1813, in desperate encounters, the allies of Russia, Prussia, Austria, and Sweden decisively defeated Napoleon. The allies had 325,000 men under Prince Schwartzenburg; Napoleon, commanding in person, had about 214,000. From the north of Leipzig, Blücher of Prussia was to advance against the French on the first day, and the rest were to proceed from the south, but hesitated for advantage or for some other cause not explained. In the afternoon of the first day, when the French were beating down the allies by a terrible cannonade, Czar Alexander saved the forces from defeat by withdrawing the Russian and Austrian reserves from Schwartzenburg. Instead of improving his positions, and profiting by an advantage, Napoleon sent a dispatch offering to treat with the emperor of Austria. Meanwhile Bernadotte of the Swedish troops came up to support the allies. After some 35,000 Saxons deserted Napoleon, he sat in a stupor for an hour on the night of Oct. 18, and then gave the command to retreat. By morning the allies found out what was happening, attacked the retreating French and drove hundreds of them into the river, which by this time lacked a bridge, and captured 20,000 more. This reverse for Napoleon began the decline of his fortunes which ended two years later at Waterloo.

LEMBERG (LWOW). Now a city in Poland, once the capital of Austrian Gallicia, the objective of various Russian plans in the World War. Generals Ruzsky and Brusiloff of Russia, after an energetic campaign against the Austrians, captured Lemberg in August 1914. In 1915, however, when Russia evacuated Przemysl, the Germans and Austrians were able to concentrate on Lemberg. On June 8 the Grand Duke Nicholas succeeded in forcing General Mackensen to retreat with a loss of 15,000 prisoners. Six days later, on a front of 40 miles, the Germans renewed the attack, forced the Russians to fall back, and so saved Austria. In this campaign Russia lost 250,000 men, tremendous stores of all varieties, and all the advantages of nearly a year of effort in the Lemberg area. On Nov. 23, 1918, the Poles declared their independence and captured Lemberg. In Oct. 1920 the city was transferred to Poland from the jurisdiction of the Ukraine. Then the name was changed to Lwow. Three American aviators who lost their lives in defending Lemberg as members of the Kosciuszko Squadron, were honored in 1931 by special ceremonies attended by the United States ambassador to Poland.

LEPANTO, BATTLE OF. Fought October 7, 1571, near the Curzolari Islands at the entrance to the Gulf of Patras, between the Turkish fleet and the combined fleets of Venice, Spain, and the papal states which formed the Holy League. It was caused by an effort of Sultan Selim II. to take Cyprus from Venice. The Christian fleet was victorious. The Turks lost 30,000 killed, wounded, and prisoners; the Christians, 3,000. The Turkish naval power in the Mediterranean was broken, though Cyprus was taken by a land force of Turks.

LEXINGTON, BATTLE OF. The first definite skirmish in the War of the Revolution in America. The people of Massachusetts had collected military and other stores at several points, including Concord. Hearing that a detachment under Capt. Smith was proceeding to take these, Paul Revere, William Dawes, and Samuel Prescott set out from Boston to spread the news at Lexington and Concord. Prescott reached Concord, but the other two were captured on the way. When the British "red coats" reached the square at Lexington, they fired on some of the natives who had gathered, and then passed on to Concord, from which they were compelled to retreat. Some troops under Lord Percy joined the British on their return, but the minute men swarmed in from all directions and took many effective shots at the British regulars. The British loss was 273, the American only 93. See *Concord.*

LIBERIA. Negro republic on the west coast of Africa, which was founded by the National Colonization Society of America. This was formed in 1816 and aimed to colonize Africa with Negroes from the United States. After a first attempt in 1820, a treaty was signed with native princes in 1821. In 1834 a town called Edina was settled, with financial aid from Edinburgh, Scotland. Liberia became a republic in 1847. In 1910 an allies committee representing United States, Great Britain, France, and Germany assumed charge of financial and other obligations, including boundaries. The constitution of Liberia is a model of the United States document. After Liberia entered the World War, the capital Monrovia (named for President James Monroe) was shelled by a German submarine in 1918. The republic is a member of the League of Nations. Charges that slavery or enforced labor existed in Liberia were investigated by an international committee in 1932, and various reforms were promised. The United States is represented on a commission designed to see that these are effected.

LIBERTY BELL. So called because it was rung to announce the signing of the Declaration of Independence on July 4, 1776, at Philadelphia. Thomas Lister of Whitechapel in London cast the bell in 1750, but it was twice recast because of brittleness, once in Philadelphia after its arrival there. It was hung in April 1753. While tolling for the funeral of Chief Justice John Marshall of the United States Supreme Court, the bell cracked on July 8, 1835. It has never been recast, and rests now in the Independence Hall, main floor.

LIBERTY PARTY. The first political organization formed to oppose slavery, 1839-1846. At Warsaw, N. Y., in 1839 James G. Birney and Francis J. LeMoyne were nominees. In 1841 Birney and Thomas Morris were nominated for the two chief offices for the 1844 campaign. The total vote in the election was only 62,300, but 15,000 of these came from the Whigs and secured the election of James K. Polk and the defeat of Henry Clay, the Whig candidate. Texas was annexed as an indirect result of the action of the Liberty Party, which in 1848 merged with the Free Soil group.

LIBRARIES, EARLY. Some early collections of clay tablets or other primitive forms of writing were those of Chaldea before 1700 B. C.; at Nippur, destroyed about 1782 B. C.; baked clay tablets in cuneiform symbols at Ninevah, 744 B. C.; library found in the tomb of Osymandias (Rameses II, 1300 B. C.); a public library at Athens, 540 B. C.; and one founded at Alexandria, Egypt, partly destroyed, in 47 B. C. The first real private library was that of Aristotle. Plutarch tells of a library of some 200,000 volumes at Pergamos from which name was derived the word *parchment;* first century B. C., the grammarian Tyrannion had a private collection of 30,000 scrolls; and a public library was set up in Rome in 39 B. C. During the Middle Ages, libraries existed in monasteries, where manuscripts were copied and many preserved for later times. The library of Christ Church, Cambridge, England, in 596 was the first in the British Isles. The great Bodleian of Oxford was established in 1602. In the United States the first library was at Henrico College, established in Virginia, 1621, but destroyed the next year. Harvard Library was founded in 1638.

LIMITATION OF ARMS CONFERENCE, popularly called the Disarmament Conference, called by President Harding, met in Washington from November to February, 1921-22. Though the ratification of plans for limiting armies fell through, other important results followed. Certain agreements were reached regarding the Pacific, the definition of Insular Possessions, American right in mandated territories, the integrity of China, and the customs of that country. Shantung was restored to China afterwards, and Japan was given supervision over the Island of Yap in the Pacific. Most important temporarily at least

of all these agreements was the limitation of naval ratios on the basis of 5, 5, 3. According to this, both Great Britain and the United States were allowed a tonnage of 525,000; Japan 315,000; France and Italy 175,000 each.

LITHUANIA. Little is known of this land or its people before Ringold and his son Mindovg (d. 1263), when wars were waged with their neighbors and the provinces were united. When Poland was divided (1772-1795), Russia acquired much of Lithuania, and the rest in 1814. From 1915 to 1918 control was by the Germans, who of late have been strong in Lithuania, but on Feb. 16, 1918 Lithuania declared independence, to which Russia agreed in 1920. Vilna, with a strip of land, was awarded to Poland by the League of Nations in 1923. Memel was taken from East Prussia, but German influence is strong, and the final outcome is in doubt.

LOCARNO TREATIES. In 1925 the great nations of Europe sent representatives to Locarno for a conference, out of which grew certain agreements:

1. Germany, France, Great Britain, Italy and Belgium agreed to respect the boundaries fixed by the Versailles Conference between France and Germany and Belgium and Germany.

2. Belgium, France and Germany agreed to settle any disputes among them peacefully, with the help of the League of Nations if necessary.

3. Germany, Poland, and Czechoslovakia agreed to arbitrate all political and other serious differences.

4. France, Poland, and Czechoslovakia agreed to join with each other if Germany should provoke another war.

LOMBARDS. Latin authors called them Longobardi. People of uncertain origin, whom the Romans defeated in 5 A. D., while they lived in the vicinity of the Elbe River in what is now Germany. Again the Romans defeated them along the Danube in 165. Little is known of them until after 400. About 500 they were in what is now lower Austria, at which time they threw off the yoke of the Heruli and killed their king Rudolf. Later under the emperor Justinian they settled in Noricum and Pannonia. In 568 they invaded Italy, making Pavia their capital, where their kingdom lasted for 200 years. Under their queen Theodelinda, who chose a native duke for her husband, the Lombards began to be assimilated by the Italians. Gregory the Great confirmed them in the Christian faith. The Lombard kingdom passed under control of the successors of Charlemagne, when Pavia was besieged, and their king Desiderius became a prisoner in 774.

LONDON. Not the chief city of Britain in early days, but gradually assumed importance after 1000. St. Albans and Colchester were capital centers in Roman times. After Boadicea sacked the city in 61, the Romans built a wall about London, a few remains of which are visible today as the earliest landmark extant. About 368 the Romans made it a place of administration. In 597 Augustine, sent by Pope Gregory to Christianize the Britons, established his seat at Canterbury, but a bishop resided in London in 604. London suffered much from the Danes in the 9th and 10th centuries. Norman influence entered with Edward the Confessor in 1042, and William the Norman became king of England in 1066, at which time a new era began. William built the Tower as a fortress, granted London a charter, and raised the city to shire importance. The Middle Ages saw the rise of the power of the mayor of London, who still has honors and dignities, which even the king himself must respect. A bridge was built over the Thames in early days, another in 1176, and the present one shortly after 1800. By 1600 within the old city proper there were some 100,000 people. Friars from the 13th century, trade guilds from the Middle Ages, and merchants of the Hanseatic League from 1157 influenced the growth of the city. The plague of 1666 carried off about 100,000, and the great fire that followed in 1667 burned over 1300 houses and 19 churches. Then London became a city of brick and stone and of wider streets, with better provisions for sanitation, lighting, and policing. St. Paul's, designed by Sir Christopher Wren, became the center of the new city, and many notable structures followed in quick succession. James II was the last king to attempt to curb the London citizens, who led in the call to William to become their monarch, just as they had in the time of King Stephen. Gas lights were introduced in 1807. With the growth of the railways, business houses, and the fashionable West End district, London rapidly in Victoria's reign became a center of world trade and statecraft. Now it is a great cosmopolitan center of the world.

LONG ISLAND, BATTLE OF. During the American Revolution, the British planned to capture Long Island, the City of New York, and keep the road to Canada open up the Hudson River. In 1776 Washington had marched to the vicinity of New York. General Howe came down from Halifax, and with other officers took Staten Island, and landed 1000 men from their ships, prepared to attack New York. Some 5000 Americans already occupied a fortified place at Brooklyn. On Aug. 27 the British closed in upon them in three divisions. The colonists lost 500 killed and wounded, and 1000 prisoners, while the British lost but 367. By night General Washington with his force arrived, but the British did not attack, and so Washington withdrew to Manhattan Island to protect the City of New York.

LONG PARLIAMENT. Following the three weeks of the Short Parliament, on Nov. 3, 1640 the Long Parliament began its session. This body repealed various acts of its predecessor, tried and executed Strafford and Laud, abolished the Star Chamber, prohibited taxation without consent of parliament, and insured the session against premature dissolution by the authorities. Later Colonel Pride "purged" the Parliament of 96 members distasteful to the army. The remainder, known as the Rump Parliament, continued until Richard Cromwell proved he was not the man to succeed his father. Some 90 out of the original 150 continued to sit until General Lambert again turned them out. Once more they returned, but, having provided for a general election, the Long Parliament dissolved itself on March 16, 1660.

LONGSTREET, JAMES (1821-1904). Confederate general, who served with distinction in the Mexican War, was severely wounded at Chapultepec in 1847, and was brevetted major. After serving in Texas until 1858, when he became paymaster, he resigned in 1861, and entered the Confederate army as a brigadier general. He served gallantly in the first battle of Bull Run, in the Northern Army of Virginia, at Gettysburg, and at Richmond, where he was wounded. He was United States Minister to Turkey, 1880-1881, and Railroad Commissioner from 1898 to 1904.

LORENZO, THE MAGNIFICENT. See *Medici*.

LOUISBURG. (1) June 16, 1745. After a siege of six weeks, during King George's War, the English colonies in America captured Louisburg, on the east coast of Cape Breton Island, from the French. In 1748, by the treaty of Aix-la-Chapelle, Louisburg was restored to the French. (2) In 1758, during the French and Indian War, Louisburg was again besieged by the British, and after a few weeks of bombardment was obliged to capitulate.

LUCULLUS, LUCIUS LICINIUS (*c.* 110-56 B. C.). Roman general and patron of the arts, was with Sulla in Greece and Asia in 88. While Sulla attacked Athens, he drove Mithridates from the Mediterranean by his great victory at Tenedos. After ruling in Cilicia, he went against Tigranes in Armenia to whose protection Mithridates had fled. In 70 Lucullus set out to punish Tigranes, laid siege to his new capital city in 69, and dispersed the inhabitants. Later failures in the campaign in Asia Minor led to his replacement by Pompey. After a triumph at home, he retired to his study and the enjoyment of his immense fortune. He had a large library, wrote a history in Greek, and is one of the speakers in Cicero's *Academica*.

LUDENDORFF, ERICH (1865-1937). German general, who was born near Posen, and early entered the army. In 1913 his proposal for an immense war budget was passed by the Reichstag, except that three extra military divisions were not included as proposed. He took the citidel at Liége early in the World War, next went to the eastern front, where he became chief of staff and won victories at Tannenburg and elsewhere, and then returned to organize the 1918 offensive on the western front. After the war his popularity declined, partly because he favored the return of the old regime, even the monarchy perhaps.

LUNDY'S LANE. On July 25, 1814, a battle was fought on Lundy's Lane, near the Niagara Falls, between the British army led by Drummond and the

Americans under Brown. The fighting began at sunset and continued until midnight. The British were driven from their position and their artillery captured. They tried repeatedly to regain their guns but failed, and finally about midnight both armies retired from the field. Also known as the Battle of Bridgewater, or Niagara.

LUXEMBURG. A grand duchy between France, Belgium, and Prussia, the first territory to be invaded by the Germans in the World War on Aug. 2, 1914. Grand Duchess Marie-Adelaide protested in vain. In 1918 the United States soldiers were invited to restore order in the territory, and when they were withdrawn the grand duchess abdicated. After a few days as a republic, a plebicite decided that the people wished to remain as before, and Charlotte, a sister of Marie-Adelaide, became grand duchess. Luxemburg was admitted in 1920 to the League of Nations. In 1924 five chambers for artisans, traders, farmers, employees, and workers were set up, and these have power to propose laws to the chamber of deputies. After 1924 customs affairs were merged with those of Belgium.

LYCURGUS. A Spartan lawgiver who lived in the ninth century B. C. and was the son of Eunomus. He introduced a constitution and established a new social order in Sparta inuring the people to hardships and developing a nation of warriors (884 B. C.). He exacted a promise from the people not to change any of his laws until his return from a pretended visit, then went away from Sparta forever. His institutions were abandoned by the Spartans in 188 B. C.

MACCABEES. Antiochus Epiphanes, king of Syria, attempted to replace the Jewish worship by Greek rites. An aged priest, Mattathias Maccabeus, refused to sacrifice in the foreign manner, killed a Jew who was planning to carry out the royal decree, and fled to the mountains. He collected a force and began a war of liberation. He died late the same year, 168 B. C., leaving the task to his five sons. Judeus overthrew several Syrian generals, and even the regent himself, who in 162 promised the Jews religious freedom. The land prospered under Judeus Maccabeus, who now determined to free the Jews from all foreign domination. He and three brothers in turn were sacrificed in the struggle. Simon's third son, John Hyrcanus, established prosperity and peace during the rest of his brief life. Aristobulus, son of John Hyrcanus, lived but a year as king, and several weak leaders followed, until Mark Antony put an end to the dynasty in 37 B. C.

McCLELLAN, GEORGE BRINTON (1826-1885). United States general, who was brevetted captain in the Mexican War for bravery, became a major general in charge of the Army of the Potomac, and in 1862 commander-in-chief of the Northern armies. He spent a winter getting ready for a campaign, was successful in some minor battles, but was superseded by Halleck because of delays in his plans. When General Pope suffered defeat in the second battle of Bull Run, McClellan was again put in charge of the armies. Having pursued Lee into Maryland, he fought the battle of Antietam, which was either a draw or a Federal victory, but dissatisfaction again caused him to be displaced, this time by General Burnside. Lincoln and the Secretary of War always insisted that McClellan did not follow any energetic plan. In 1864 the Democrats nominated him to run against Lincoln. He was chief engineer of docks in the City of New York, 1870-1872, and governor of New Jersey, 1877-1881. He defended his campaigns of the Civil War in *McClellan's Own Story*. His son, of the same name, was mayor of New York 1904-1909, and afterwards professor at Princeton.

MACDONOUGH (*măk-dŏn'-ō*), **THOMAS** (1783-1825). He was the son of an officer in the Revolution and in 1800 joined the Navy. For several years he was on patrol duty in the Mediterranean, and helped in the bombardment of Tripoli. In 1812 he was ordered to protect the Great Lakes between United States and Canada, especially Lake Champlain. Here on Sept. 11, 1814 he defeated a flotilla of British craft under command of Capt. George Downie, and so saved Vermont and New York from further annoyances. The British had 16 ships carrying 92 guns, the Americans 14 carrying 86 guns. Both Vermont and New York rewarded him, and Congress gave him a gold medal.

MACEDONIA. Now divided between Greece, Yugoslavia, and Bulgaria, but before the World War dominated by Bulgaria and Turkey. After the death of Philip of Macedon, the district became part of the Eastern Roman Empire in 146 B. C. Various invasions had few permanent results, until the Slavs came in the 5th century, even then the coasts remained largely Greek. Macedonia was part of the first Bulgarian empire in 892, independent in 963, then again under Bulgaria, and in 1014 became part of Byzantium. The kingdom of Thessalonica dominated from 1204 to 1230, then the Bulgars again, in part, and in part Byzantium. In 1371 the Turks became powerful, with other races coming in from time to time, especially the Bulgars. In recent decades Turkey was warned to institute reforms, down to the War of 1912-13, when part of Macedonia went to Bulgaria, Greece, and Serbia. In 1919 Greece and Yugoslavia received territory at the cost of Bulgaria, including western Thrace awarded to Greece.

MACKENSEN (*măk'ĕn-zĕn*) **AUGUST VON** (1849-). German military leader, was born in Haus Leipnitz, Saxony; entered the army in 1869; served as lieutenant of reserve during the Franco-Prussian War, 1870-71; promoted to general staff, 1882. During the World War, in 1916, he was one of the leaders in the victorious campaigns against the Russians; was made field marshal and commanded the Teutonic armies which defeated Serbia and Rumania. Was a prisoner of the French for several months after the Armistice. Became one of the popular military idols of Germany, prominent in the Nationalist Party.

MacMAHON, MARIE EDME PATRICE MAURICE (1808-1893). He commanded the forces that stormed the Malakoff in 1855 in the Crimean War, gained fame in Algeria, in the Italian campaign, and was made governor of Algeria in 1864. For pushing ahead and saving the day in the battle of Magenta (1859), when 55,000 French and Sardinians defeated 75,000 Austrians, he was made Duke of Magenta and a marshal of France. In the Franco-German War, he fought at Worth, at Sedan was dangerously wounded, and was interned at Wiesbaden. In 1871 he suppressed the Communist insurrection and carried forth the second siege of Paris. On the resignation of President Thiers, 1873, he became second president of France by an almost unanimous vote. In the struggles of the next few years between the Republican party and the others, MacMahon continued to hold the confidence of the majority party, until the Republicans sought the removal of officials opposed to them. Then MacMahon resigned on Jan. 30, 1879. He was descended from an Irish family which took refuge in France along with James II of England.

MAGNA CHARTA, THE. The Great Charter, said by Hallam to be the "keystone of English liberty," was granted by King John to the Barons at Runnymede (1215). The charter contains 63 clauses, and is partly remedial and partly "declaratory of the principal grounds of the fundamental laws of England." Its principal provisions are: (1) Security for personal freedom: "No free man shall be taken or imprisoned or dispossessed or outlawed . . . save by the judgment of his peers or by the law of the land"; (2) feudal obligations defined and limited; (3) law courts to be held at fixed places, assize courts established, and justice no longer to be sold, denied, or delayed; (4) no extraordinary taxation without consent; (5) one standard of weights and measures; (6) independence of the Church provided for. King John signed under compulsion after hesitating four days. He sought to avoid carrying out some of the provisions. At the time of his death on Oct. 19, 1216, he was preparing to engage French mercenaries to fight against the barons of England. The Magna Charta was reaffirmed 32 times by succeeding kings. Its original draft has become lost, but four early copies are preserved, one in Lincoln Cathedral (the most perfect), one at Salisbury, and two in the British Museum. The text found in the Revised Statutes of England is that of the time of Edward I, 1297.

MAMELUKES. The word in Arabia means white slaves purchased in the open market or taken in war. About 1250, the grand-nephew of Saladin, Ayyub, then ruling in Egypt, imported Turkish slaves from Asia Minor and used them as royal guards. After the death of the sultan, the Mamelukes elected an emperor from their own number, and ruled until 1517 when the Ottoman Turks gained control of Egypt. Selim I, Turkish emperor, to conciliate the Mamelukes, made some of them beys (governors) of

twenty-four military provinces. They became virtually independent after 1700. Napoleon defeated them in the battle of the Pyramids on July 21, 1798, and drove many of them into Nubia. Other massacres of the Mamelukes occurred at Cairo in 1805, and in all Egypt in 1811, the last through the treachery of Mehemet Ali. By 1820 few were left in the entire country. These people were remarkable for their skill in organization, strategy in war, and patronage of arts and letters.

MANCHUKUO. In 1932 three eastern provinces of China,—Fengtien, Kirin, and Heilungkiang,—which had been known as Manchuria, withdrew from the empire and set up an independent government, first as a republic, then as a monarchy. Henry Pu-Yi, who was deposed as emperor of China in 1912, became in 1934 the new ruler under the name of Kang Teh. The new government was called Manchuchuo or Manchukuo, or, in the native language, Ta Manchu Tikuo, meaning great empire of the Manchu. Racially the Manchus are related to the men of north China, and to some Indian strains on the North American continent, suggesting some early migration to what is now Alaska and Canada. The Manchus took China after 1500 and ruled there until 1912. Russian influence in this area began about 1600, and in 1858, again in 1860, some territory north of the Amur River went to Russia. Encroachments of Japan in the Liaotung peninsula and about Port Arthur were the causes of the war between Russia and Japan in 1904. In 1915 Japan secured a long-term lease to railway concessions in Manchuria, but later the Soviets for a time checked the ambitions of Nippon. In 1935 Manchukuo purchased the Russian interest in the lines of the Chinese Eastern Railway within the borders of the new state, the cost of nearly $50,000,000 being guaranteed by Japan. Chinese were appointed to all important positions, but with a Japanese adviser back of every official. On the claim that Manchukuo was in danger from the north provinces of China, Japan overran Jehol in 1933 and added this territory to Manchukuo. Again, 1935, Chehar, another province, was established as a demilitarized zone.

MANDATES. According to Roman Law, these mean gratuitous agencies; a task undertaken without hope or promise of reward or payment. Article 22 of the Covenant of the League of Nations establishes mandates over certain areas. These could not be annexed by a victor nation, nor could they go back to the old sovereignty. In cases tried before, as to Samoa and New Hebrides, for instance, other plans had failed. Hence, Gen. Jan Smuts of South Africa proposed the plan adopted for the mandates under the League, which has thus far been scrupulous to supervise the conditions of the mandated territories, even to the extent of carefully auditing accounts submitted by nations holding the mandates. Something of this general nature was tried in Lebanon (1860), Samoa (1887), Crete (1898), Manchuria (1905), and Morocco (1906).

The Lausanne Conference in 1923 gave mandates over former German and Turkish possessions as stated below. *Class A,* virtually independent districts,—Iraq, Palestine, including the transjordan country, to Great Britain; Syria and Greater Lebanon to France. *Class B,* needing much supervision, —Togoland to Great Britain and part to France, as also the Cameroons; Tanganyika to Great Britain; Ruanda-Urundi to Belgium. In 1929 Great Britain proposed that Iraq be made an independent state, and the plan was approved in 1932, when the mandate ceased. *Class C,* territory needing some protection,—West Samoa to New Zealand; Nauru (phosphate island) to Great Britain, Australia, and New Zealand jointly; New Guinea, to Australia; Pacific islands, to Australia; North Pacific islands to Japan. See article on *British Empire.*

MANGIN, CHARLES EMMANUEL (1866-1925). French military man, who spent 22 years in Africa, became a general of brigade in 1913, engaging in several operations in the Black Continent, which he described vividly in his *La Force Noire.* During the World War he held important commands, throwing the enemy back before Douaumont and Vaux, practically checked the Germans at Campiegne, and helped break the lines south of the Aisne. Later he commanded the army of occupation on the Rhine, was a member of the Supreme Council of War, and president of the Council for National Defense.

MANILA BAY. Decisive battle of the world (1898). A victory of superb audacity by the American Pacific fleet under Admiral Dewey over the Spanish fleet under Admiral Montojo. On paper the fleets were nearly equal; in individuality and efficiency as wide apart as the poles. Dewey daringly drove in past the forts and torpedoes, relying on Spanish inefficiency; fought the Spaniards until every vessel went down fighting, and, without losing an American ship, annihilated Spanish rule in the Pacific, bringing the Philippines under the rule of United States. Opposed by a land force of 10,000 Americans, the city of Manila surrendered August 13.

MARAT (*mah-rah*), **JEAN PAUL** (1744-1793). French author, revolutionist, and denouncer of the Girondists. Previous to 1788 he wrote several medical, scientific, and philosophical works, including *Philosophical Essay on Man* and *The Chains of Slavery.* After receiving a medical degree from Edinburgh, he enjoyed a huge practice in Paris. After various attacks on persons in power in his newspaper *The Friend of the People,* he had to flee to London in 1790. Later in Paris he was compelled to hide in obscure haunts, sewers, and cellars to escape the police. In 1793 he denounced the Girondists, the chief party then in power, but was acquitted after they had him brought to trial. This move lost the Girondists their hold on Paris. Gaining access to his lodging by a ruse, Charlotte Corday stabbed him to death on July 13. She thought her mission was to save France.

MARATHON. Plain about 24 miles northeast of Athens, where one of the great battles of the world was fought. It was a struggle between the civilizations of the east and the west; liberty and progress against the backward standards of the orientals of ancient times. If the Persians had won at Marathon, the whole history of Europe might have been quite different. Darius, king of Persia, ordered his generals to "enslave Athens and Eretria and bring the slaves into his presence." So Herodotus testifies. After Eretria fell the Athenians dispatched a runner, Pheidippides, to Sparta for help. Miltiades, acting under Callimachus, marched out from Athens to delay the enemy and to wait for the Spartans and the Plateans. The former arrived too late, but Platea furnished 1000 to add to the 9000 from Athens. Callimachus decided to attack, the date being Sept. 21, 490 B. C. The Greeks thinned out their line to equal that of the Persians, and to strengthen the right where Callimachus was, and the left where the Plateans stood their ground. The Greeks met the attack on a run, and the center was thrown back, allowing the wings to come in and roll up the Persian flanks, after which the Greeks caught the center lines of the enemy. The Greeks pursued the retreating Persians to the water-edge, fired seven of their galleys, and here suffered their chief loss, the death of Callimachus. The Greeks lost 192 men slain; the Persians 6400. Despite this, the invaders tried to attack Athens by water, but Miltiades marched at night across the hills, and in the morning the Persians withdrew when they saw the conquerors on the heights above the city, together with the hosts of Sparta, then just arrived.

MARCELLUS, MARCUS CLAUDIUS (c. 268-208 B. C.). Roman general, who was five times consul, and was called the "sword of Rome." With Cornelius Scipio he defeated the Gauls and slew their chief, during his first consulship in 222 B. C. In 216 B. C. he prevented some of the towns from falling into the hands of Hannibal, and took Syracuse in Sicily after a siege of two years, while devices made by the mathematician Archimedes held him at bay. Later he took Salapia in Apulia, which had gone over to Hannibal, fought with the Carthagenians near Venusia, and during his fifth consulship was killed by ambush while reconnoitering. Highly praised by the historian Livy.

MARENGO, BATTLE OF. Between this place and Alessandria, Italy, Napoleon gained a great victory over the Austrian army under Baron Melas on June 14, 1800. Two days before, unable to locate the Austrians, Napoleon had sent out detachments to look for the enemy. While the French were thus weakened in numbers, the Austrians appeared from the fortress at Alessandria, drew up their cavalry in a favorable spot north of Marengo, and after several hours had about defeated Napoleon with heavy casualties. Late in the afternoon, one of the scouting divisions returned, the lines were solidly formed, and all moved forward together. The Austrian loss was 9500 to 4000 of the French. All Italy south of the Mincio was surrendered to Napoleon.

MARION, FRANCIS (1732-1795). American soldier; born at Winyah, near Georgetown, S. C. Took part in the defense of Fort Moultrie, and participated in the unsuccessful attack on Savannah (1779). Governor Rutledge made him brigadier general of the state forces in South Carolina. Sat in the South Carolina Legislature (1782-1790), and was a member of the Constitutional Convention (1790).

MARIUS, GAIUS (155-86 B. C.). Of obscure origin, he rose to the rank of commander of the armies of Rome, and was seven times consul. He tried to curb the power of the nobles, who kept him from office until after he married the aunt of Julius Caesar. He fought in the war against Jugurtha, came home to be elected consul, and raised a large army from those who had no property. With the quaestor Sulla, he conquered Numidia, but later quarreled with his colleague. After his fifth election as consul, he associated with demagogues, and was forced to leave Rome for Asia, where he hoped to wage a war against Mithridates. Later he joined Cinna, took Rome, and put to death scores of the patricians. Three weeks after being again elected consul he died of fever.

MARLBOROUGH, JOHN CHURCHILL, DUKE OF (1650-1722). English commander; born at Ashe in the Parish of Musbury, Devonshire. Was made a colonel of foot in the English army (1678); commanded English forces in Ireland (1689); and through court influence, and unquestioned ability rose rapidly to high rank. Aroused much suspicion after the coronation of William III. (1689) by supporting alternately both William and James II. In the war of the Spanish succession Marlborough and Prince Eugène led the allied forces which won victories at Blenheim (1704), Ramillies (1706), Oudenarde (1708), and Malplaquet (1709).

MARMONT, AUGUST FREDERICK LOUIS VIESSE DE (1774-1852). French marshal and Duke of Ragusa, who fought with Napoleon at Lodi, in Egypt, and at Marengo in 1800, after which he became general of a division. He pursued the enemy in 1809 after the battle of Wagram, and after winning the battle of Znaim was made a marshal. For 15 months he kept Wellington from carrying out his plans, but was defeated at Salamanca in 1812. After several battles, he decided that resistance was useless, and so he concluded a truce with the allies, the result being the abdication of Napoleon. In 1830 he assisted in the attempt to suppress the Revolution, but failed, lost support of the people completely, and afterward lived abroad.

MARNE, BATTLES OF THE. On Sept. 4, 1918, when the German advance had reached a point dangerously near Paris, General Foch ordered the Allies to make a stand at all costs. Unexpectedly, the next day the battle began when the French VI Army contacted part of the forces left in position by General von Kluck. During that night the Germans withdrew to a position several miles in the rear. The battle continued until Sept. 9, with the I, II, and III German Armies retreating at the end. The IV and V Armies remained several days longer. In the battle along the Ourq, on the Paris front, the VI French and German I Army came into conflict, and then General Galliéni ordered all Paris taxicabs to transport soldiers to the front. Meanwhile, at first the British found in front of them only German cavalry, and the V French Army only cavalry. Various shifts were made by the Germans, until on Sept. 9 the II Army was withdrawn, and then the British advanced, while later the German I and III Armies were forced back. The German IV and V, already just entering the battle, were obliged to follow. Thus, when the Germans retreated, the first great battle of the Marne ended with decided advantage to the Allies, for Paris was saved, and new spirit of resistance entered into the forces of the defenders.

At the end of the World War, the second great battle of the Marne involved the best German troops, 800,000, commanded by the Crown Prince in person, on a front of 60 miles. The Germans aimed to capture Rheims again, and force the French out of the Champagne sectors. Here, on the first day of the battle, July 15, the Americans entered the lines in numbers at Château-Thierry. The French under General Gourand held their lines, with terrible cost to the Germans, with the 42. American Division forming part of the defense. After July 17 the Allies took the offensive, and the Germans were gradually forced backward toward the Belgian frontiers.

MARSTON MOOR, BATTLE OF. Here on July 2, 1644 seven miles west of York, England, the Royalists under Prince Rupert were decisively beaten by the Parliamentary and Scottish forces under the earl of Manchester, Lord Fairfax, and Lord Leven. The Royalists numbered about 18,000, and the Parliamentarians some 27,000. During the day spasmodic firing continued, with neither army, which faced each other, advancing. Prince Rupert and other Royalists withdrew, thinking no battle would result until morning, but the forces of Cromwell attacked at five o'clock, and took the government troops off guard. The Royalist cavalry, known for never being defeated, could not hold out, but Rupert brought up fresh reserves. The king's forces penetrated the Scotch line held by Lord Leven, who personally withdrew, but Fairfax, Cromwell, and Leslie scattered the royal horsemen, and at last the forces of Rupert were nearly surrounded. By fall of darkness, the Royalist army was scattered and crushed. Rupert escaped with 6000 men, but the northern army of the king was never powerful again.

MASON AND DIXON'S LINE. The boundary line between the states of Maryland and Pennsylvania as run by two distinguished English surveyors, Charles Mason and Jeremiah Dixon, in the years 1763-1767. The line settled a dispute between the two states over their respective boundaries as described in their charters. Before the Civil War, the phrase, "Mason and Dixon's Line" was used to indicate the dividing line between the free and slave states, and at present the term continues to be used to designate the dividing line between the South and North. A re-survey of the line was authorized by Pennsylvania and Maryland in 1849, and again in 1900. Under the Missouri Compromise of 1820, the line was said to extend westward in the Louisiana Purchase, except for an adjustment in Missouri.

MAURICE, COUNT OF NASSAU (1567-1625). Second son of William the Silent, who was assassinated in 1584. Maurice was made stadholder of Holland and Zeeland, two provinces that had been paying his expenses at the University of Leipzig, but he took little part in public affairs until after he was made a prince in 1586. Johan van Oldenbarneveldt, 1587, became chief statesman of the Netherlands, and so continued for over 30 years, while Prince Maurice commanded the army. They worked together in securing the independence of united Netherlands from Spain, defended Ostend for three years, and became master of military tactics. In 1609 the Spaniards were compelled to sign a truce, but Maurice opposed this, and from then on he and Oldenbarneveldt fell on opposite sides of questions of state and religion. Maurice had a part in illegally condemning Oldenbarneveldt to death. He never prospered after that. On the death of his elder brother in 1618, he became prince of Orange.

MAYFLOWER. Ship in which the Pilgrims left England for the New World. It was of about 180 tons burden, and was accompanied from Southampton, England, by the *Speedwell* which had to put back after two trials at sea. Of the original 120 passengers on both ships, 102 of these came on the *Mayflower* alone. The *Mayflower* left Plymouth finally on Sept. 6, arrived off Provincetown Harbor, Mass., about Nov. 11, and there the members on board signed a compact to govern their affairs on land. William Bradford with a small party explored the coast, and finally chose Plymouth, where they landed on Dec. 11 (Dec. 21 in our present calendar), 1620. During the first winter half of the colonists died of exposure, famine and scurvy. In 1894 a General Society of Mayflower Descendants was formed to which any person over 18 who can prove descent from a *Mayflower* passenger is eligible. Various states have also their own local branches. See *Plymouth Colony* and *Peregrine White*.

MAZZINI (*mat-zé-nee*), **GIUSEPPE** (1808-1872). An Italian patriot, educated for the law, and imprisoned because he joined the Carbonari, a society designed to secure Italian unity. Then he was released for want of evidence, cast his lot with the Young Italy group, and for several years lived at Marseilles and London. In 1848 he returned to Italy, was a member of the brief Tuscan independent government, and later of the assembly at Rome after the revolt there. For a time in 1849 he was one of the triumvirate who ruled the city, but the French put an end to dreams of Roman freedom. Mazzini returned to London, continued to agitate, and helped plan the insurrections in Mantua, 1852,

Milan, 1853, and in Genoa, Leghorn, and Naples in 1857. Having returned to Italy, he was sentenced to death; and, in protest, Messina several times elected him to Parliament, but he refused to take his seat. The death sentence was withdrawn in 1866. He encouraged Victor Emmanuel and Garibaldi, and in 1870 was imprisoned for two months in Sicily. In his last days he endeavored to unite Italian workmen for their own good. When Italian unity was achieved, the attitude toward Mazzini changed, and Parliament unanimously expressed national sorrow when he died in 1872. He was buried at Pisa, and later removed to Genoa, his birthplace.

MEADE, GEORGE GORDON (1815-1872). Distinguished American general, born of American parentage at Cadiz, Spain, educated at West Point, and spent his life after 1835 in the army, except for the years 1836 to 1842, when he engaged in railway construction as an engineer. He gained special distinction in the Mexican War, became a brigadier general of volunteers in 1861 in command of troops from Pennsylvania. He was severely wounded but recovered in time to engage in the second battle of Bull Run. For great skill in command, he was made a major general of volunteers after the battle of Chancellorsville, and on the eve of Gettysburg superseded Hooker. For stemming the tide of the Confederates, he was made a brigadier general in the Federal army, and later a major general on recommendation of Grant, who gave him important duties. After the war he commanded various army posts.

MECCA. Ancient city of Arabia, and since 1926 the religious capital of Saudi Arabia, or the kingdom of Hedjaz and Nejd. The great Hegira is the flight of Mohammed from Mecca in 622, but he returned and conquered the city in 627. After changing allegiance several times following invasions, Mecca was ruled by the Egyptians and Turks from 930, until the Arabian Wahhabis conquered the city in 1803. Hussein-ibn-Ali was grand sherif, and real ruler of Mecca, when independence was proclaimed in 1916. On March 7, 1917, he proclaimed himself King of Hedjaz to the Faithful. Mecca retains her ancient character of a sacred shrine, still visited by from 50,000 to 100,000 pilgrims yearly. The great center of interest is the Grand Mosque, with its court capable of holding 35,000 persons at once. Within this enclosure is the sacred Kaaba, which was a heathen shrine long before the time of Mohammed. At one corner, high enough for kissing, is the talismanic Black Stone, venerated by all true Islamites. There is also a holy Southern Stone, which all faithful touch as they go by in procession. Another enclosure, according to tradition, contains the graves of Hagar and Ishmael.

MEDICI, THE. See *Rulers* and *Statesmen*.

MEDINA. Next to Mecca the most sacred city of Islam, since this city contains the tomb of Mohammed and was his residence during the period of his flight or Hegira from Mecca (622-627). In succession Medina was ruled by the caliphs, by native emirs, Egyptians, Turks, and from 1804 to 1912, by a native tribe, the Wahhabis. Until 1916 the entire territory was in control of Constantinople. In 1912 Ibn Saud, a powerful native emir, began to dominate. During the World War, Emir Faisal besieged Medina, but the Turks made a sortie, and a bloody battle was fought on the plains outside. Then they retreated into the sacred enclosure, declaring that they would destroy the tomb of Mohammed before they would surrender. By the peace treaty, however, on Jan. 1, 1919, Medina was delivered over to King Hussein of the Hedjaz, and Turkish sovereignty ceased. The chief building of Medina is the Prophet's Mosque, within which is the tomb of Mohammed, said to be placed on the spot where the founder of Islam fell. None save Mohammedans are admitted to the sacred shrine.

MERRIMAC, THE. See *Monitor*.

METAURUS. Decisive battle of the world, in which Hasdrubal, brother of Hannibal, was defeated by Caius Nero and Marcus Livius (207 B. C.). Along the shores of the Adriatic, near Rimini, Hannibal's brother led his varied host from the Pyrenees, Rhone, Alps, and Po, to help the great Carthaginian crush the growing power of the Roman Empire, and make Punic power supreme. Rome stood at bay for eight years, Hannibal finally waiting the arrival of Hasdrubal's reinforcements. The consular army of Livius harassed Hasdrubal, who proposed to Hannibal to unite the two armies in South Umbria and swing round against Rome an overwhelming force. The Consul Nero made a marvelous forced march, reinforced Livius, caught Hasdrubal in disorganized retreat, defeated him, sending his head to Hannibal as news of the catastrophe. Thus he saved Imperial Rome and broke the power of Hannibal.

MEXICAN WAR. Texas became independent in 1835, and asked to join the United States in 1836, but annexation was delayed until Dec. 29, 1845. Mexico claimed the boundaries were at the Nueces River, but the United States said the Rio Grande. Gen. Zachary Taylor was sent into northern Mexico in the hope that the country would submit. Gen. Santa Anna opposed him at Buena Vista on Feb. 22 and 23, 1847. Gen. Winfield Scott next planned a campaign from Vera Cruz to Mexico City. The former was captured after a siege of three weeks; Santa Anna was defeated at Cerro Gordo, and Taylor entered Mexico City on Sept. 13, 1847, and the Peace of Guadalupe-Hidalgo followed on Feb. 2, 1848. Meanwhile Gen. Philip Kearney had captured the territory from Texas to the Pacific, and the American fleet had blockaded the cities of both coasts. The United States paid Mexico $15,000,000 for the new territory besides Texas, and also assumed certain claims held against Mexico by Americans because of border raids.

MEXICO. The Toltecs settled in Mexico about 700, but fled to the southward when a pestilence and famine threatened to destroy the entire race in the 11th century. Next the Aztecs became influential. Both are represented by some descendants today. Mexico City dates from the 12th century, the original name being Tenochtitlan, meaning cactus on a stone. In 1521 Cortes, the Spanish conqueror, subdued Mexico City and much of the land, after which the town was rebuilt more securely. By 1540 all territory from Mexico to Vancouver Island (now in Canada) was named New Spain and was under one rule. By 1810 some 57 viceroys had governed in turn in Mexico. Then a priest named Hidalgo revolted. In 1822 Gen. Iturbide set himself up as president, but the next year Santa Anna banished him to Italy under a pension. Iturbide returned in 1823, stirred up a small insurrection, and was shot. Texas broke away from Mexico in 1835. After this disorder and civil war continued, until in 1862 the nations of Europe sent over a force. France placed Maximilian of Austria on the throne as emperor, but he was deposed and shot in 1867. Juarez again became the leader, until in 1872 began the administration of Porfirio Diaz, which continued until 1911, when Diaz was compelled to retire while serving his eighth term as president. Francisco Madeiro, who followed Diaz, was killed in 1913. Then under four presidents peace reigned until 1926. Succeeding presidents, notably Portes Gill, and Cardenas struggled with the question of a new distribution of the land to the peasants and curbing the power of the church in Mexico. Under the new constitution of 1917, Mexico has 28 states united into a federal republic, together with a federal district, and two territories.

MIDDLE AGES. A term vaguely applied to the centuries from 500 to about 1500. Some date the beginning at the fall of Odoacer, Roman emperor, in 476, and the ending, at the fall of Constantinople in 1453. Others place the last limit at the discovery of America, or the Renaissance, or the reign of Henry VIII in England, or the rise of the new Scholasticism. The Middle Ages were characterized by a desire to conserve the past, to follow established authority in both state and church. Civil government and science both received set-backs, though Charles the Great (Charlemagne) fostered both. Even after the Roman empire died out, the system of its success was adopted in the church and newer nations. The German tribes continued to push westward, and the Mohammedans into southeastern Europe and into Spain. Offsetting these were the Crusades, the rise of modern nations like the English, Franks, and Spanish. Feudalism reached its height and rapidly began to decline. When the church assumed more power, schools and systems of thinking underwent remarkable changes, but scholastic thought became rigid and uncompromising. Cities began to grow more numerous, people more independent and progressive, and democratic institutions at last gathered strength. So the Middle Ages were fruitful, even though progress was somewhat retarded.

MIGRATIONS. Climate and commerce have brought about migrations of tribes and nations. The

Teutons went into Gallia when the sea destroyed their homes in Jutland. Many of them crossed to Britain after the Romans lost their hold there in 449. Vikings went from Norway to Iceland and Greenland, then fairly warm, before 1100. Later the Eskimos came down from the north and replaced them in Greenland. Many say that the American Indians came across Bering Strait to America. Some think the regions around the Baltic once supported the people who were driven southward by the cold, and some settled in Greece. The Celtic peoples spread over Europe and much of western Asia in early times. Likewise the Teutonic tribes pushed into Italy, and also to the westward. The Huns came from the southeast, perhaps from central Asia. Last of all, the Lombards completed the Germanic migrations into Italy. Under Alaric the Visigoths or eastern Goths found a home in southern Gaul and in Spain. The Moors from northern Africa long occupied parts of the Spanish peninsula. Other tribes that invaded Europe from Asia were the Bulgars, Huns, and Scythians.

When central and eastern Asia became dry and arid, the tribes moved westward. Of such were the Kassites who invaded Babylonia, the Hyksos who invaded Egypt, with their goods, and brought the horse with them, the Hebrews who went to Egypt in times of famine. Into Syria came the Arameans from the north, and the Hittites from the south. The domestic animals were carried from central Asia westward. It is said by some that the Philistines came into western Asia from Crete. Many other early migrations took place before the settlement of America, and the great moving of peoples by recent emigration. The trek of the Boers in south Africa is one example of modern migrations by large groups, as in ancient times.

MILES, NELSON APPLETON (1839-1925). American general, who served in the army of the North at Antietam, Fredericksburg, and Chancellorsville, where he was wounded severely. He returned to duty in 1864, and for gallantry in the battle of the Wilderness was made brigadier general. After the war he rose by successive promotions to commanding general of army in 1895. In 1900 he was made lieutenant general. He won great success in putting down Indian uprisings, such as the Cheyenne, Kiowa, and Commanche in 1875, the Sioux of Montana, 1876, and the Apaches under Geronomo in 1877. Miles also commanded the troops sent to Chicago in 1894 to quell the railway riots. During the war with Spain, he was in general charge of the campaign, his own part being confined to Puerto Rico.

MILTIADES (d. c. 488 B. C.). Athenian general, who was sent to the Chersonese of Thrace and helped subdue the Scythians. When the Persians appeared in Greece, he was one of the ten generals chosen to defend the country. By his advice the ruler Callimachus decided to withstand the Persians at Marathon. Then he sailed with a fleet of 70 ships to retake the Aegean Sea for Athens. After laying siege to Paros for almost a month, for some unknown reason he gave up the attempt, being wounded meanwhile trying to leap a fence. On his return home, he was impeached and fined. Some accounts say he remained in prison, not being able to pay his fine, which was raised by his son Cimon, after Miltiades had died of the hurt received at Paros.

MINUTE MEN. Popular name for the militia of the New England states at the time of the American Revolution. They were men who had been taught the mere rudiments of handling a gun, but were ready to grab a musket and go forth on a minute's notice. Late in 1774 in Massachusetts they were enrolled by an act of the congress of the province. Even before the beginning of the War, in Boston alone they numbered some 15,000. When Paul Revere and his companions set out to warn the countrymen on the road from Boston to Concord, these minute men provided the first resistance to the British regular troops or "redcoats." The men did not fight in regular order or line of battle, but from behind fences, stones, or any barrier at hand. Thus they were able to withstand even the King's picked soldiers.

MITHRADATIC WARS. Three struggles between 88 and 64 B. C. between the Romans and Mithradates VI of Pontus. They begain when the Romans objected to the aspirations of Mithradates, and particularly to his driving out the young king of Bithynia. Mithradates gained a number of great victories, but the Greeks in his conquered cities turned against him. Then the Romans under Sulla compelled him to make peace, to give back all territory conquered, and to pay a huge fine of 2000 talents. In the second war, Lucullus of Rome drove him into Armenia to the court of his son-in-law, Tigranes. Lucullus was succeeded by Pompey, when his men mutinied, and Pompey defeated both Mithradates and Tigranes in battle. In the third campaign, Mithradates won temporary success, but his men revolted; he tried to kill himself, and at last ordered his bodyguard to slay him. Though he was a great linguist, patron of the arts, and a statesman, he was cruel, and some of his unnatural deeds shocked the ancient world.

MOBILE BAY, BATTLE OF. During the Civil War, Mobile in Alabama was blockaded by northern ships, but trading vessels managed to break through. On August 5, 1864 Admiral David Farragut planned to take the forts and capture the city. He entered Mobile Bay with four monitors and fourteen small wooden vessels; but his ship, the *Tecumseh*, was soon destroyed by a torpedo explosion. The others forced their way past, captured one ironclad, destroyed a gunboat, beached another, and silenced the forts. A few days later the city fell into his hands.

MOGUL (MOHGUL) EMPIRE. Named for that branch of the Mongols which controlled India from 1525 to after the coming of the British. Babur, the young king of Kabul, first of the Moguls, subdued Delhi, Agra, and much of the Mohammedan area. Within five years before his death in 1530 he held sway from the Oxus to the borders of Bengal. His grandson ruled over more India than any man before him. This was the famous Akbar, who is even better known for three things: his wise system for renting of land, for giving the feudal native rulers a liberal share in local government, and for establishing a new religion, composed of parts of several older, established ones. Thus he satisfied all classes. His son ruled from 1605 to 1627 moved the capital from Agra to Lahore, and received the first English ambassador. Next came Shah Jehan, who beautified the city of Delhi, erected the famous peacock throne studded with jewels, and created that marvel of all Indian architecture, the Taj Mahal, where his favorite wife (for whom he built it), and he himself are entombed. Aurungzebe, his third son, supplanted three brothers, and even put his father under restraint at Agra, while he ruled in his stead at Delhi. He dominated much of India for 49 years, ending in 1707. For some time he fought against the Mahrattas, finally conquering them, or at least taking Bijapur and Golconda. The next ten rulers left little to record save their own names. In 1739, however, Nadir Shah of Persia, last great Mohammedan conqueror of India, sacked Delhi, and carried away treasures worth millions. He in turn held in check the proud Mahrattas and other native chiefs. Following him nothing particular can be said before the English came in 1857.

MOLLY MAGUIRES. About 1842 in Ireland some men, dressed up in women's clothes, intimidated landlord's agents and process servers coming to evict tenants. They were given the nickname of Molly Maguires. From 1854 to 1875 in the hard coal regions of eastern Pennsylvania, the miners were much troubled by a small, secret group, which took the Irish name, though it is doubted that they had any connection with the Molly Maguires in Ireland. They apparently sought to protect themselves against Welsh, English, and German miners. Much violence and several deaths resulted under mysterious circumstances. Later it was found that the Molly Maguires always reported their wishes to outside parties, who came and carried out the acts of violence. Thus no miner in any place could be convicted of local outrages. At last, a Pinkerton detective was summoned. He joined one of the lodges, learned the secrets, even became secretary of a criminal gang, and revealed his findings. This and other evidence led to the conviction in 1876-77 of many members of the Molly Maguires, with several executions. Little trouble occurred after that.

MOLTKE (*mol't-ka*), **HELMUTH VON** (1800-1891). German count, field marshal, and great military strategist, who was born in Mecklenburg-Schwerin. For nine years he was carefully educated in military studies, and then served on the general staff, being made a captain in 1835. In that year he was allowed to go to Asia to help organize the Turkish Army. As

chief of the general army staff at Berlin, he reorganized the Prussian military system, being largely responsible for its great efficiency between 1858 and 1888. Wars with Denmark, Austria, and France were carried to a profitable conclusion. Moltke and Bismarck laid the foundations for the modern German empire. He was made a field marshal in 1871, given a large grant of money, and retired from the service in 1888, though he held an advisory position until his death. Moltke was known as "The Silent," being a man of singular modesty and good nature. He was also a voluminous author of biography, fiction, history, and letters.

MONACO. Tiny country of about 370 acres along the Mediterranean and otherwise surrounded by France, noted chiefly for Monte Carlo, with its gaming tables, from which most of the revenue of Monaco is derived. For over nine centuries after 968 Monaco was the property of the Grimaldi family, and was ruled by princes as absolute monarchs. Since 1911 it has been a constitutional monarchy, and Louis II is prince, assisted by a council of state and an assembly of 12 members.

MONASTICISM. Also called *Monachism.* Long before Christ some form of monasticism was known among the Hindus, among the followers of Buddha, among the Greeks in the Orphic brotherhood, and among the Jews in the Essenes. Early in the Christian ages men and women abstained from marriage, meat, liquors, common amusements, and devoted themselves to prayer and service for the unfortunate. Egypt was a favorite haven for religious refugees from the Roman world. One curious early form of monachism was that of the Stylites, men who sat high on pillars to keep from the contaminations of the world. St. Anthony of Thebes (251-350) retired to the desert, with a number of his disciples, and one of his admirers founded a monastery on an island in the Nile, where a definite set of rules was formulated, first on record for monasteries. St. Basil established a system in Greece which exists today in modified form. Athanasius founded monasteries in northern Italy, St. Augustine in Africa, St. Martin of Tours among the Gauls. At the beginning of the 6th century, it was St. Benedict that gave monasticism to western Europe in its modern forms. Irish monks very early lived at Iona and Lindisfarne, where St. Columba was the pattern monk. Later the Cistercians advocated going back (about 1100) to the original rules of Benedict. The Augustinians became prominent about 1050.

Two special orders followed the Crusades: Knights of St. John, Knights Templars, and Teutonic Knights; and second the ransom orders, designated to free Christians from the power of Islam. Then grew up the four orders of the mendicants,—the Franciscans, 1210; the Dominicans, 1215; Carmelites, 1245; Augustinians, 1256. Various new congregations followed in the 13th and 14th centuries. Among the modern orders are Jesuits, founded in 1540; the Passionists, 1725; the Redemptorists, 1749, the last two fostering missions and retreats; the Christian Brothers, 1679, devoted to primary education. The Oratorians and French Oratory are orders of a temporary or secular nature, vows being taken for short periods. The Sisters of Charity, 1633, are similar for women. Joseph II in Austria curbed the monasteries in 1780; the Revolution dispersed many of them in France; Henry VIII broke up many in England after 1500; in Portugal and Spain they were mainly dissolved in 1835, in Italy in 1876, in Prussia in 1871. Modern nations having complete religious freedom, like the United States, have been favored by founders of monasteries.

MONGOLS. From earliest history the Mongols have lived in central Asia, in what is now called Mongolia and nearby lands. Their great emperor, Ghengis Khan, between 1206 and 1227 conquered much of Asia. He willed to his son Ogotai the territory between Irtish and Lake Baikal; his son Jagatai, the land from Bokhara, Gobi, and that region to the westward; to his son Tuli, the land south of Baikal; and to his three grandsons, the country drained by the Ural, Oxus, and Jaxartes. Ogotai became emperor of China in 1234, ending the Sung dynasty there. The grandsons occupied much of Russia, and what is now central Europe, in 1241, and conquered Georgia and Armenia. Tuli's son took Bagdad, displaced the caliphate, and extended his borders into Syria. Kublai Khan, another son of Tuli, set up a line of emperors in China in 1275, and ruled until 1368, when the Chinese expelled them. In 1475 the Turks regained some of the Crimea, and in 1840 the Russians broke the Mongol yoke. Ivan the Terrible of Russia took Kazan in 1552, and Astrakhan two years later. As the Mongol empire declined in the west, it flourished even more in the east. For the Mongol (usually called Mogul) empire in India, see the article on *Moguls.* See also *Tatars.*

MONITOR AND MERRIMAC. Early in the Civil War the federal forces abandoned the navy yard at Gosport in the Elizabeth River in Virginia. At the time they sank a number of ships, including the *Merrimac.* In 1862 the Confederates raised this ship and made her into an ironclad. Though officially renamed the *Virginia,* the old designation still clung to the warship. After disabling two Northern ships, the *Merrimac* was attacked by the *Monitor,* which had been constructed under plans of Capt. John Ericsson. The *Monitor* consisted of a round, heavily iron-protected superstructure, resting on a flat and low-lying base; she was often called "a cheese box on a raft." After a duel lasting four hours, the *Merrimac* withdrew in a somewhat disabled condition. See article on *John Ericsson.*

MONMOUTH, BATTLE OF. When the British, commanded by General Sir Henry Clinton, were withdrawing from Philadelphia and attempting to reach Sandy Hook, New Jersey, Washington asked General Charles Lee to attack their rear at Monmouth Court House, now called Freehold. Washington promised to support him with the main army, should this be needed. Lee spent the time in elaborate preparations, and, when the British came up unexpectedly, Lee asked part of his men to withdraw, and the rest followed in what became a general retreat. Washington came up, rallied the colonial forces, and a battle ensued. Cornwallis withdrew the British forces during the night. Losses were, Americans 362; British, 416. Over 100 men died from exhaustion and the heat of the day, June 28, 1778.

MONROE DOCTRINE. See under administration of President Monroe.

MONS, BATTLE OF. At the town of Mons in Belgium, the British Expeditionary Forces in 1914 entered their first battle of the World War. The plan was for them to hold part of the line, with the French territorial troops on the left and the Fifth French Army on the right. They became separated, however, and some of the territorials failed to arrive. General French, having only 50,000 men, was forced to fall back when the French retreated on his right. Later the British troops stood firm in the defense of Paris in connection with the first battle of the Marne. On Nov. 11, 1918 Mons was the last town captured by the British in the war.

MONTCALM, LOUIS JOSEPH, MARQUIS DE (1712-1759). Eminent French general, who for years served in Italy and Germany, and then in 1756 took charge of the French army in Canada. Within two years he captured Fort Ontario where Oswego now stands, and Fort William Henry on Lake George. Then in 1758, with only 3600 Canadians, he defended Fort Ticonderoga against an attack of 15,000 British under General Abercromby. Lack of equipment forced the French to fall back to Quebec, where General Wolfe began a siege on July 31, 1759. After six weeks the British scaled the Heights of Abraham to get at the city, and then Montcalm risked a battle. Wolfe died in the moment of his great success in taking the city, and Montcalm, mortally wounded in trying to rally his scattered men, died the following day. Both commanders were greatly admired by their associates and their soldiers. See Francis Parkman's *Montcalm and Wolfe;* also *French and Indian War.*

MONTEZUMA. The name of two of the last Aztec emperors of Mexico. Montezuma I extended the territory and built notable public works. Montezuma II, who succeeded his uncle, Ahuitzoll, in 1502, was the last of the great Aztec rulers. He enlarged his domains by wars with Tlaxcala, Guatemala, and even Nicaragua. When Cortez appeared in 1519, Montezuma II sent out an embassy to welcome him and to promise friendship. The Spaniards held him virtually a prisoner at Mexico City. When the Aztecs at last revolted, Montezuma from the roof of his palace commanded them to cease their attacks on the invaders. His countrymen turned upon him, and he died from his wounds three days later. The Aztecs refused to honor him with the usual cere-

monials for their emperors. Montezuma had feared the ancient prophecy that the first king of their lynasty would return from the east when the line was to perish.

MONTFORT, SIMON DE (1200 ?-1265). Earl of Leicester, having come from France in 1229, settled on his English estates, and married the king's sister. At times he quarreled with Henry. Montfort went on a crusade in 1240, declined to act as regent of France in 1253, and tried to shield the king from the growing storm in England. When Henry revoked the reforms secured in the Provisions of Oxford, Montfort took the side of the barons. On being asked to arbitrate the disputes, Louis IX of France decided that Henry's promise was void. This precipitated a civil war. Montfort's party defeated the royal forces at Lewes in 1264, and took the king and other nobles prisoners. The subsequent policy of Montfort proved unpopular, and he was defeated at the battle of Evesham in 1265, at which time he was slain.

MONTGOMERY, RICHARD (1736-1775). An Irish-American soldier, who was born in County Dublin and educated at Trinity College. From 1756 to 1772 he served in the British army, attaining the rank of captain in 1761. He served in New York in 1772, and in 1775 became brigadier general in the colonial army. Montgomery succeeded General Schuyler in command of the forces in Canada, and made an assault on Quebec on the last day of 1775. At the first charge he was mortally wounded. The garrison of Quebec interred him with honors of war, Congress erected a monument in St. Paul's churchyard in New York City, and there he was reinterred in 1818.

MONTREAL. Principal city of Canada. Jacques Cartier (1535) ascended the St. Lawrence and found the Indian village, Hochelaga, at the foot of a mountain, which he named Mount Royal. When Champlain visited the spot (1603), the village had been destroyed. He established eight trading posts there (1611). The permanent settlement was founded (1642) through the missionary zeal of Jerome le Royer de la Dauversiere, a French nobleman, and Jean Jacques Olier, a French priest, by whom the island of Montreal was purchased when it was named Ville-Marie de Montreal. They founded religious communities (1) to teach nuns, (2) convert the Indians, and (3) train hospital nuns. De Maisonneuve was appointed governor. For many years the city was engaged in wars with the Iroquois. Aid from France broke the power of the red men (1665). It became the center of fur trade, receiving the name "Mother of Cities" (1672). The English from New York unsuccessfully attacked it (1690), but (1760) captured it as well as the whole of Canada. The Americans led by Montgomery took possession of it (1775), but in 1776 were forced to abandon the city and leave Canada. In the War of 1812, Montreal was threatened, but her forces checked all advances.

From 1844 to 1847, Montreal was the capital of Canada. After a mob burned the parliament buildings, the government moved to Quebec, and later to Ottowa. Notable buildings in Montreal are the seminary of St. Sulpice, dating from French times, the great church of Notre Dame, the nunnery of the Grey Friars (founded by a Canadian lady), St. Mary's College, and McGill University.

MONTROSE, JAMES GRAHAM (1612-1650). Scotch noble and soldier, born at Old Montrose, a graduate of St. Andrews University, and a traveler in Europe. Several times he took the side of the National Covenant, but at last joined the forces of King Charles I, who appointed him royal general in Scotland in 1644 and created him Marquis of Montrose. Though he won six battles for the king, he was unable to gain support of the Lowlands. After a defeat at Philiphaugh on Sept. 13, 1745, his army faded away. Montrose escaped, got aid abroad, and in 1649 again entered Scotland, but was defeated and executed the next year.

MOORE, SIR JOHN (1761-1809). Frequently called the greatest trainer that the British army has ever known. He was gifted with insight as to character, and much of the success of Wellington is due to the men that Moore trained in his various campaigns. He was born in Scotland, entered the army at an early age, served in America, and was in Parliament from 1783 to 1787, when he entered the army again as a major. After service in the Mediterranean, he was sent to the West Indies, was in Ireland during the rebellion of 1798, then in Holland. On Oct. 2, 1799 in Holland he was wounded for the fourth time, and from then to his death was with the 52d. British regiment. He served and was wounded in Egypt, assisted Gustavus IV of Sweden against Russia, France, and Denmark, and then went to Portugal, after the Swedish king had made unreasonable demands upon him. As an ally of Spain against Napoleon, in the Peninsular War, Moore conducted the masterly retreat to Corunna, which ended with his great success in the battle of Jan. 16, 1809. He was fatally wounded, lived to recommend his friends, and to ask that he be interred in the ramparts of Corunna.

MOORS. Term for tribes in northern Africa, who at first allied with the Vandals from central Europe, and then were conquered by the Arabs in the 8th century. The Moors appeared in Spain after 1000, and built a kingdom on the ruins of the old caliphate of Cordova. The Almohades sect flourished in Africa and in some districts of Spain until 1212. Later they joined in founding the kingdom of Granada, which rose to heights of power and grandeur. In 1492 they yielded to Ferdinand and Isabella; some became Christians, and some pirates on the Mediterranean. The remnant left in Spain came to be called Moriscos. Philip II gave them few privileges, though they had been peaceful and industrious for many years, and in 1568 the Moriscos revolted. They were repressed with great cruelty, and driven into Africa in 1609. See *Caliphate, Cordova,* and *Spain.*

MORAVIA. Early tribes of Moravia were the Boii (Celtic peoples), the Quadi, and the Avars, who came about 567. Next the Slavonian settlers took the name Moraviana from the river Morava, and after 800 they were incorporated in the greater German confederation. Christianity was introduced from the East about 860, and within ten years the Roman influence predominated. Moravia was devastated in 908 after an unsuccessful rebellion, and finally in 1029 became part of Bohemia, and along with other districts fell under Habsburg domination in 1526. In 1849 it was separated from Bohemia to form a crown land in itself. After the World War Moravia became an important province of Czechoslovakia, in 1927, with more or less autonomous rule.

MORGAN, JOHN HUNT (1825-1864). Confederate soldier, who had fought in the Mexican War, and now known for his raids into northern territory. Gen. Braxton Bragg, his commanding officer, authorized him to raid in Kentucky, but Morgan crossed the Ohio, July 1863, with about 2500 men. After a skirmish with Federals, in which he lost 600 men, he was at last captured at New Lisbon. He had killed 38 civilians and destroyed $50,000 worth of property. Morgan was confined in the penitentiary at Columbus, from which he escaped on Nov. 27, returned to service in the South, and was shot at Greeneville, Tenn., Sept. 4, 1864.

MORMONS. Religious sect founded by Joseph Smith and a few followers after he claimed to have found some golden plates in 1827, on which was inscribed the Book of Mormon. He published a translation from the plates, as he said, in 1830, and started the sect at Fayette, New York, later perfected in Ohio, where the membership rose to about 3000. A year later they moved to Missouri, then in 1838 founded Nauvoo, Ill., on the Mississippi River. Smith became mayor of the town, which he tried to close to outsiders. He was arrested, lodged in the jail at Carthage, Ill., and was taken out by a mob. In the confusion Smith and others were shot. The main opposition was caused by his doctrine of plural marriages, first announced in 1852. His son, also named Joseph Smith, refused to sanction polygmy, reorganized the church, and remained its head from 1860 to 1914. This is called the Reorganized Church of Jesus Christ of Latter-Day Saints, with headquarters at Independence, Mo. After the death of the elder Smith, Young gathered about 200 Mormons together, took them to Iowa, and at last to Utah, where 148 settled on government lands, developed a strong business and church organization which became politically powerful. The Mormons in Utah and adjacent states are ruled by twelve elders, who hold office indefinitely. Plural marriages continued until both the church and nation forbad them in 1890. The Mormons of the west in 1930 were said to number about 660,000; the Reorganized branch, about 105,000.

MOROCCO. Little is known of this region before the fifth century, when the Vandals came, followed in turn by the Arabs about 650, the Moorish empire about 800, and then five centuries of progress until in 1300 the Moors claimed dominion to Egypt on the east and into Spain on the north. Modern Morocco is inhabited by four distinct peoples: an early tribe, the Berbers, now mainly in the mountains; the Arabs, on the lower lands; the Moors, a mixture of Berbers and Arabs; the black slaves of former times and now their descendants. After a succession of dynasties, Filali and his successors ruled from 1546 to present days. Much uncertainty has made Morocco an international problem. By 1904 Great Britain had recognized the interests of France there, but Germany continued to press her claims until after the World War. The Algeciras Conference in 1906 tried to reconcile the conflicting interests of Spain, Italy, France, and Germany. Then followed years of conflict between the French and the tribesmen, and between the Spanish and the Riffian mountaineers. Meanwhile native rulers continued, but under supervision of France and Spain. Mulai Hafid deposed his brother, Abd-el-aziz in 1908, and in turn gave way to another brother, Mular Tusef, in 1912. Between 1902 and 1925 France maintained order largely because of the skill of the resident general, Lyautey, who saved Morocco for France twice, conciliated some of the tribes, withstood German and native propaganda, and assisted Spain (which had been badly beaten in 1923) to put down a rebellion of Abd-el-Krim in 1925-26. Mulai Mohammed succeeded his father in 1927. Tangier is an international zone across from Gibraltar.

MOSCOW. Mentioned before 1156 as a village, the home of a prince, whose successors gradually extended their sway, until Ivan III claimed to be ruler of all Russia. The Tatars burned Moscow in 1237 and 1293, a fire destroyed much of the city in 1547, and again the Tatars wrought havoc in 1571 and 1591. Other fires destroyed great portions of the city in 1739, 1748, 1753, and in 1812 when Napoleon occupied Moscow. The French remained there from Sept. 13 to Oct. 19, and then followed the tragic retreat of 80,000 French, more than 30,000 of whom perished of cold and hunger along the march. Moscow was a magnificent city until the capital was removed, 1703, to St. Petersburg, when a gradual decline began. On an eminence in the city, a great fortress called the Kremlin contained the royal palaces, cathedral of the Annunciation, the Archangel cathedral, with tombs of the tsars, several other great churches, government buildings, and homes for the nobles. When the government was established there again in 1918, the Soviets turned most of these to public uses, and just outside, in the Red Square, erected the magnificent tomb of Nicolai Lenin. Other churches became museums, while still other buildings were turned into exhibition galleries for all the industrial history of recent years. From 1917 to 1920 privations in Moscow reduced the population from about 2,000,000 to 800,000, but it is now back to the former figure. Some skyscrapers have been erected, sanitation much improved, transportation improved by means of a subway, and industry greatly quickened.

MOSUL. Formerly a Turkish vilayet, now part of the kingdom of Iraq, and corresponding in part to the ancient Assyrian territory. During the World War, Great Britain and Russia sought to control the countries between the Black Sea and the Persian Gulf. Mosul was the objective of the British under General Maude, coming up the Tigris from Bagdad in 1916, and of the Russians coming from Persia and the west. After the withdrawal of the Russians and the death of General Maude, the British continued with the difficult task of freeing parts of Asia from the Turkish rule. Just before the Armistice in 1918, the British under General Marshall reached a point near Mosul, and later the troops went much beyond. By the final settlement the rich oil fields in Mosul went to the new Iraq, but the Turks were to share in the royalties for 25 years, and receive compensation for certain public works of the Turkish government.

MOUND BUILDERS. Early inhabitants of North America, chiefly in the Ohio and Mississippi valleys. These persons were once thought to be a prehistoric race, whom the Indians exterminated. Now they are said to have been early aboriginal tribes, probably ancestors of the many tribes of this region when the white man came to America. They made many artistic objects of stone, bone, and beaten metal, but did not know the art of refining or smelting iron. Hence they are said to belong to the Stone Age. Some of their mounds are round, some square, and some the shape of numerous animals. In Ohio, where the mounds are very numerous and varied, altar mounds are observed, showing the effects of fires, around which numerous articles are found. In Adams County, Ohio, the most extensive mound is in form of a serpent, with jaws 75 feet wide, body 30 feet across, and length over 1300 feet. The tail is coiled three times. In Wisconsin gigantic birds, reptiles, and mammals are carved in the landscape, many of them most distinctly outlined. Some of the forms are cut or sunk in the earth. Nearby are found thousands of burial mounds and some objects. In Tennessee burial places made of slabs of stone erected on edge are rather numerous. In an upper layer burials were made in a reclining posture; in the lower layer, bones are piled together, after having been scraped. That these were different types of people and grades of civilization appears from the remains themselves.

MOUNT VERNON. Ancestral estate of the Washington family in Virginia, 15 miles south of Washington, D. C., along the Potomac. It was the home of John Washington, original of the family in America, and passed, in succession, to George Washington in 1761, from the widow of his half-brother Lawrence. Part of the present manor-house was built in 1743, but this was enlarged in 1784-85, when Washington had two wings built, together with servants' quarters and other outbuildings. He also laid out the grounds and arranged for a tomb, where he and Mrs. Washington, and some 30 of their relatives are now resting. From the Washingtons the estate went to his nephew, Bushrod, and then to a nephew of the latter, who provided in his will that a son might sell it to the government. It was accordingly offered for $100,000, but Congress refused the purchase. Edward Everett succeeded in raising much of the final price agreed upon, double the offer to the government, and the Mount Vernon Ladies Association assumed control, promising to keep it as a national shrine forever. Much of the original furniture of the Washingtons is still at Mount Vernon.

MUGWUMPS. The name comes from the Algonkian Indian dialect and means "big chiefs." In his version of the Bible for Indian tribes of New England, Rev. John Eliot wrote it *Mugguomp*, and translated the word "leader" or "duke." In the political campaign of 1884, certain Republicans, interested in governmental reforms, notably in the civil service, turned from the nominee of their party (James G. Blaine) and supported Grover Cleveland, the nominee of the Democrats. In derision they were called mugwumps, meaning persons who assume leadership or set themselves up as superior to party affiliations.

MUNICH. On the site said to have been used by monks (*München*, hence the name of the city), Munich was founded about 962. The city was captured by Gustavus Adolphus of Sweden, 1632; by the Austrians, 1704, 1741, and 1743; and by the French, 1800. For a long time Munich has been noted for its various practical arts and for the brewing of excellent beer. Some of the notable structures are the Bavarian National Museum and St. Peter's Church, founded in 1294; the university, moved here in 1826 from Lundshut, but founded in Ingolstadt in 1472; and the German Museum of Natural and Technical Sciences, largest in the world, founded in 1925; and an art gallery devoted to modern masterpieces.

MURAT, JOACHIM (1771-1815). This son of an innkeeper, intended for the priesthood, chose the army instead. Napoleon made him a division general in 1799, set him up as king of the Two Sicilies in 1808, but Murat was able to hold only Naples. He led an expedition against Russia, crushed the Austrians at Dresden in 1813, but with some of the other generals was badly beaten at Leipzig. When Napoleon returned from his first exile, Murat once more made war on Austria, but reverses overtook him in 1815. Then he tried to reclaim his old kingdom of Naples, but was arrested, tried by courtmartial, and executed.

MUSCLE SHOALS. Name for a dip in the Tennessee River where it enters and leaves Alabama, with a descent of 132 feet in 37 miles, capable of producing much water-power. Schemes to utilize

this date back to the time of President Monroe. A canal was built there in 1836, but proved unproductive, as did also a new project in 1875. During the World War, the need for more nitrates led the administration to start building of a colossal dam and accessories suitable for making this, and also for generating power from the water thus impounded. One plant was completed in 1919. Until Pres. Hoover appointed a commission of three to continue the construction of the project, little real accomplishment was made after the World War period. Hoover designed to take the project out of politics, where it had always been. In 1933 a new dam was started, and also on the Clinch river near Nashville a third project known as Norris dam. The object of the last is mainly to store water; of the original Wilson, and the second (named Wheeler) Dam to make nitrates and electric power. The capacity, as now planned, will be about 360,000 horse power for the Muscle Shoals developments. The Supreme Court, 1936, confirmed the right to utilize the power of falling water for generating power. Meanwhile, the Alabama Power Company has completed a steam-plant 80 miles below Muscle Shoals, and this is capable of generating, it is claimed, 320,000 horse power.

MYCENAE. Ancient city of Argolis in Greece, where Heinrich Schliemann in 1876 began extensive researches. He unearthed treasures of rare beauty by digging down in the acropolis of the ancient city. Nothing like these evidences of the story of men have been found elsewhere in Europe. Beginning above ground with the Lion Gate of Mycenae, Schliemann found three levels of civilization. The lowest contains evidences of the Bronze Age of mankind. The second, just above this, contains the royal tombs, columned entrance to the royal palace, and many smaller structures, some of which as yet are not fully explored. The uppermost level at Mycenae contains evidences of a civilization that ran parallel to the 18th dynasty in Egypt. The last race restored the earlier palace, erected some structures for the use of the court, and built the beehive burial mounds for which Mycenae is noted, together with a magnificent structure called the Treasury of Atreus, the Tomb of the Genii, and others carved out of solid rock. Rodenwald between 1912 and 1914 studied some of the elaborate frescoes of the palace, and Wace later explored many of the tombs. In extent and beauty, these discoveries rival those found in the tomb of King Tutankemen in Egypt. See article on *Crete*.

NANA SAHIB (c. 1820-1860). An adopted son of Biji Rao, who surrendered to Great Britain certain rights in India on condition that he should receive a pension of 80,000 pounds yearly. When the British declined to continue this to Nana Sahib, after the death of his foster father, Nana became an implacable enemy. Yet he professed friendship, but was responsible for the massacre of women and children at Cawnpore in 1857. He escaped into Natal two years later, and is supposed to have died there.

NANTES, EDICT OF. The Protestants of France, in April 1598, were granted religious liberties by Henry IV. They were also to share in civil benefits, and a council was set up to adjust any differences between the state church and Protestants. Paris reluctantly approved this act in 1599, and other districts followed suit, Rouen being the last in 1609. When the power of the Protestant lords promised to become a menace to the ruling class, Cardinal Richelieu curbed them in 1628. Louis XIV revoked the Edict of Nantes in 1685, after which time the Protestants lost much of their liberty.

NAPIER, SIR CHARLES JAMES (1782-1853). English general who served in the rebellion in Ireland in 1798; commanded the 50th infantry in the campaign at Corunna, Spain, where he was taken prisoner by the French; and then went to the United States with an expedition in 1813. He took command of British forces in India in 1841, went to Sind in 1842 and remained there for five years. With only 2800 men, Napier attacked the Baluchi at Hyderabad, and won an amazing victory against 30,000 of these wild tribesmen. This feat was duplicated at Miani. After a visit to England, he returned to India to find the Sikh War ended. He was appointed governor of conquered territory, but disagreed with others and with the East India Company. As a result he resigned and retired. He is given credit of forseeing the later outbreak of 1857, known as the Sepoy Rebellion of India.

NAVARINO, BATTLE OF. When Greece was fighting for her independence from Turkey in 1827, the allied countries of Great Britain, Russia, and France asked for an armistice. Greece accepted the terms in August, but Turkey refused these the next month. Ibrahim Pasha came from Egypt with a fleet and army to assist the Turks, but he informed the allies that he was withdrawing because of their protest. Instead, the commander of the allied fleet found the Turkish and Egyptian warships assembled in a semi-circle formation in the Bay of Navarino off Greece. When the Egyptians fired on a patrol boat, the engagement became general. The allied heavy firing sank many enemy craft, and some were set on fire by their crews, so that three-fourths were lost. The allied casualties were 177 killed, 519 disabled; the loss of the Turks and Egyptians was never reported.

NEAR EASTERN QUESTION. All the countries in the southeast of Europe have been in ferment for over a hundred years. Various political alignments have failed to satisfy racial and national aspirations. The Slavs outside of Russia have often been the pawns of ambitious politicians. Russia, Turkey, and Austria have contended for mastery over small and discordant groups speaking different languages. The Czechs, Hungarians, Croats, Slovenians, and Ruthenians, in the old Austro-Hungarian dual empire were often at odds on racial and national questions. Likewise, the Bohemians, Poles, and others could not well get along with the German elements in Austria. To the east the Bulgars, Greeks, Rumanians, Macedonians, Turks, and Russians jostled each other in the same territory. Men of the same race and speech have claimed that they should have separate national boundaries, but much overlapping gave rise to numerous feuds, intrigues, and wars. Some of the specific questions may be mentioned. Crete struggled for independence from Turkey or annexation to Greece, achieved in 1913. The desire of Greece to found a modern empire around the eastern Mediterranean was checked once more after the World War. Whether the Black Sea should be open or closed to nations not bordering on it, and whether the Dardanelles should be fortified by Turkey; the attempts of both Germany and Austria to keep Russia from expanding to the westward; and of various powers to confine Russia to her borders as recognized in 1778 were additional worries for Near East nations. The removal of the Turkish government from Constantinople to Asia Minor; the establishment of something like order in Armenia, Georgia, and the Ukraine; founding of a Jewish state in Palestine; the exchange of 600,000 Greek nationals for a similar number of Turks; and modern democratic movements in all the Near East have caused at least temporary stability.

NELSON, HORATIO (1758-1805). The most famous of British admirals, who joined the navy in 1770, and served in 1793 in the Mediterranean, where he lost an eye in the siege of Corsica. In 1797 he helped defeat the Spaniards off Cape St. Vincent, was that same year made a knight and rear admiral. For his success in defeating the French fleet at the Battle of the Nile in Aboukir Bay, he was created Baron Nelson in 1798. On April 2 off Copenhagen he defeated the Danish navy, and was then made a viscount. After the short Peace of Amiens, in May 1803 he took command in the Mediterranean. Napoleon planned to invade England while the French fleets protected his crossing the Channel. Nelson chased the main fleet to the West Indies and back again, and so prevented the plan from being carried out. Fearing dismissal if he did not stand for action, the French admiral, Villeneuve, came out of his refuge in Cadiz harbor, and the battle of Trafalgar occurred on Oct. 21, 1805. Little was left of French prestige on the sea after this battle, but Nelson was mortally wounded. His last words were, "Thank God, I have done my duty." Nelson was buried in St. Paul's Cathedral in London. A magnificent monument was erected in 1849 in Trafalgar Square to commemorate his victory.

NETHERLANDS. Once this name was applied to all the territory now known as Holland, Belgium, and the northeast districts of France. Julius Caesar found the Belgian tribes hard to conquer; so did all the petty kings down to Charlemagne. In 843 the district east of the Scheldt went to Lothaire.

In the 9th century the Northmen gained a foothold for a brief time only. The feudal lords, Burgundian kings, and the Habsburgs (the last after 1477) continued to rule all or part of the Netherlands. Charles V of Spain joined the Netherlands to the conquests of that kingdom, but the inhabitants revolted and were put down with uncommon brutality by the Duke of Alva from 1568 to 1573. (See article on *William the Silent.*) In 1579 the union of Utrecht was formed. In 1881 the Netherlands claimed their independence, which Spain, after various attempts to hold these districts, finally acknowledged in 1648.

Meanwhile, the Dutch had become masters of the sea, which the British contested in two wars between 1652 and 1667, followed by a war on land in which both France and Great Britain joined against the Netherlands. When King William, who had married Mary of York, came to the British throne in 1688, the English and Dutch began to be firm allies, and, after the peace of Utrecht in 1713, the Netherlands entered upon her greatest commercial period. In 1806 Napoleon placed Louis Bonaparte on the throne of Holland, but the house of Orange was restored in 1810 when the two parts,—north and south provinces,—became the kingdom of the Netherlands. In 1830, however, the southern portion was set off as Belgium, the neutrality being guaranteed by the powers and respected until Germany invaded the land in 1914. In 1848 a new constitution was granted; in 1868 Luxembourg was set off as a duchy; in 1872 Britain and Holland came to an understanding as to their conflict of interests in the East Indies; in 1887 the franchise was further extended to the people of Holland, and three years later the long reign of Queen Wilhelmina began. The Netherlands protected the borders during the World War by maintaining a standing army of 300,000 along the boundary lines.

NEUTRALITY IN WAR. Until after the Middle Ages, the idea of abstention from conflicts of neighbors was a vague conception. Usually the strong nations or the church authorities saw to it that princes and states not concerned in quarrels should stay out. In the 16th century one prince was sometimes asked to act as *neutre* or guardian of property during conflicts. Neutrality with reference to commerce on the high seas has now become a fixed concept. Washington, in 1793, declared that it is the duty of a neutral state to prevent acts that would injure one of the parties to a war. In 1770 and 1780 Russia and neighboring nations had advocated armed neutrality,—the use of an army or ships to enforce embargoes or other restraints. During the World War, Holland and other nations stationed armies along neutral borders to keep belligerents away. Soldiers who crossed neutral borders were interned for the rest of the war.

Jefferson said that England might starve France, but had no right to expect the United States to help accomplish this. The Declaration of Paris, 1856, defined the rights of neutral nations, and outlawed privateering. The Hague Conference, 1899 and 1907, considered the subject at length and established some elaborate rulings. All these were violated during the World War. The Declaration of Paris ruled that a neutral, in seeking to run a blockade, could lose ship and cargo if caught. In 1917 the British Orders in Council decreed that a ship, bound for a port of enemies of the allies, must stop first at an English port or else be liable to seizure. By earlier decisions, as early as 1799, a ship must not put off cargo at a neutral port, this cargo then to be sent to an enemy port either by sea or by land. The World War raised the question as to whether strict neutrality is practical or even to be attempted.

NEW BRUNSWICK. One of the original three provinces forming the Dominion of Canada in 1867, the others being Ontario and Quebec. The French first settled on the Bay of Chaleurs in 1639, but this district, with Nova Scotia, became English in 1654, then French again in 1667, and at last was ceded to Great Britain in 1713 by the Treaty of Utrecht. Scotch agriculturists settled there in 1764, and in 1783 about 5000 loyalists came up from the United States, following the granting of independence to the American colonies. Nova Scotia and New Brunswick were separated in 1784, the government being by an assembly and a council, the latter not responsible to the people. In 1847-48 responsible government was established after considerable agitation. The capital of New Brunswick is Fredericton, called St. Anne from 1740 to 1786.

NEWFOUNDLAND. Though claimed for England by Sir Humphrey Gilbert in 1583, this island, now a separate colonial dominion of the British Empire, was settled rather tardily. In 1650 but 350 families were permanently resident there, but the waters swarmed with whaling and fishing craft. The Treaty of Utrecht gave France the right to dry and cure fish on the north and west coasts. Newfoundland had about 80,000 people in 1814. Representative government began in 1832, and the administration was fully organized in 1858. Canada, France, Britain, and the United States began early to compete for fishing privileges in the waters of the north Atlantic. Fishermen from Denmark, Norway, Sweden, and Iceland also frequented these waters. In 1783, 1818, 1854, 1885, 1910, and 1927 fishing rights were considered by international groups. The Hague Tribunal in 1910 limited United States rights to the district outside of a three-mile limit from Newfoundland shores. In 1927 the long dispute between the Dominions of Canada and Newfoundland was settled when the latter was given a definite boundary and also control of the vast district known as Labrador on the mainland to the northwest. By this decision the territory of greater Newfoundland was increased three fold. Newfoundland proper is about five-sixths as large as England. Owing to financial difficulties, Newfoundland, with consent of the dominion parliament, in 1933 reverted temporarily to the status of a crown colony of Great Britain, to be ruled by a commission of six, three from the mother country and three local representatives.

NEW ORLEANS. La Nouvelle Orleans was founded about 1718 by the French governor of Louisiana, Jean Baptiste Le Moyne, Sieur de Bienville. In 1722 it became the seat of the colony. Before 1740 the Capuchin monks, Ursuline nuns, and French Jesuits were well established. After the French and Indian War, all territory east of the Mississippi went to England, and Louisiana to Spain, but in 1765 the Spanish governor was driven out, when he attempted to claim the city. In 1769 the Spanish took full possession, relinquished again to France in 1802. Meanwhile, the Cabildo or town hall had been built and given to the city by Governor Rojas in 1795; a cathedral had been erected; and the Ursuline nunnery repaired. Between 1803 and 1810 the population almost doubled. In 1836 the area was divided into three parts, but these were united again in 1852. Much trouble resulted between the old creole population and the Americans who came after 1802. New Orleans became the center of southern trade with the West Indies, as well as the port of commerce of the lower Mississippi. It suffered much during the War of 1812 and the Civil War, from fires and hurricanes before 1800, and from yellow fever in 1853-55. The old French quarter is of great interest to visitors, with the many interesting old halls, balconies, the apartments erected by Baroness Pontalba in 1857, the home prepared for Napoleon, but never occupied by him, and the various civic structures already mentioned. Until 1880 New Orleans was the capital of Louisiana.

NEW ORLEANS, BATTLE OF. Along the Mississippi, south of New Orleans, Gen. Andrew Jackson fought two battles with the British in Dec. 1814 and Jan. 1815. The first proved indecisive. Two weeks later Gen. Pakenham took half his British force up the river toward New Orleans. Here the Americans poured into their ranks a deadly cross fire, killing or wounding 2600, including Gen. Pakenham himself, who was fatally shot. The American loss was eight killed and 13 wounded. Peace had been signed, however, at Ghent in Belgium fifteen days before the battle. News of the peace and of the defeat of the British by Jackson reached Washington about the same time.

NEW ZEALAND. This British dominion in the south seas is made up of three large islands and some smaller ones that were settled before 1500 by natives of Polynesia. Abel Jensen Tasman sighted the islands in 1644, but Capt. James Cook was the first European to land on the shores in 1769. He claimed them for Britain, and the English declined his "annexation," but the Union Jack was raised there in 1840. Missionaries, who first landed in New Zealand in 1814, by 1835 had made some headway. The aboriginal Maoris until 1870 caused much disturbance. The discovery of gold in 1853, growth of wool production, expansion of credit and banking facilities caused periods of great prosperity. Panics

in 1879 and 1921, however, caused considerable distress. Political conditions have been rather stable, and the government has enacted many progressive measures. The conservatives ruled for 12 years, then the liberals for 20, and the former again from 1912 to 1930, when a coalition government came into office.

NEY, MICHEL (1769-1815). Faithful general of Napoleon, who rose from a subordinate position, between 1788 to 1799, to be general of a brigade. He fought in the Swiss campaign, at Hohenlinden, and at Elchingen, where his signal victory gained the title of duke of Elchingen. His next great successes were at Ulm and at Friedland, after which Napoleon pronounced him "the bravest of the brave." He was created prince of Moskowa after the battle of Borodino in Russia. During the retreat from Moscow, in the dead of winter, Ney marched with his men and was the last to cross the border. Napoleon called him rather tardily to command a division in the final battle of Waterloo. Ney then wavered in his devotion to the Bourbon cause. He went out to welcome Napoleon on his escape from the first exile, when he was supposed to command a force against the fallen hero. For this Ney was arrested, tried, and shot on the morning of Dec. 7, 1815.

NICARAGUA. Before 1821 this country of Central America was part of the Spanish possessions, being a part of Guatemala. From 1821 to 1913 many periods of disorder, dictatorships, and political uncertainty followed until a constitution finally set up a republic. In the early days of independence, León and Granada, the two chief cities, often were in conflict, and sometimes actually at war. In 1858 William Walker, an American, landed with a force of 66 men and joined the army of León. Four years later he was executed. Germany blockaded some of the ports in 1875, and England one of them in 1895. From 1893 to 1909, Zelaya, of the liberal party, ruled as a dictator. From 1912 to 1925 American marines guarded the United States legation. Chamorro, who failed to gain the presidency in 1924, revolted, and in 1926 troops from the United States were again landed. They supervised the elections in 1928, when Gen. Jose M. Moncada was chosen president, and again in 1932 when Gen. Juan B. Sacasa won the election. From 1929 to Feb. 1933, Gen. Sandino, a bandit leader, caused much trouble and anxiety, until he made his peace with the new government under Sacasa. One year later he was killed in a skirmish with the national guard. Managua, capital of Nicaragua, was nearly destroyed by an earthquake and fire in 1931.

NICEA, COUNCILS OF. Nicea in Asia Minor was the seat of two councils of great importance in the history of the Christian church. One of these in 323 considered the Arian controversy. The Arians, led by Arius of Alexandria asserted that, if Christ were the son of God, then he could not have existed at a previous time. Constantine raised the question at the Council of Nicea, the doctrine was declared heretical, and Arius was banished to Illyria. Then the Council proceeded to formulate all the beliefs of the ancient church, taking them from various creeds like that of Constantinople and Jerusalem. In 787 the Empress Irene called a second council at Nicea, this time to decide on the orthodox opinion as to images. The second council was attended by 375 bishops; the first by 318.

NILE, BATTLE OF THE. Here in Abukir Bay, at the mouth of the Nile, a naval battle was fought on Aug. 1, 1798. After Austria ceased to support England against Napoleon, the French went to Egypt to annoy Great Britain in any manner possible. Jarvis and Nelson, the English admirals, sought the French fleet for some time. Shortly after Nelson had visited Alexandria, the French arrived; and Nelson returned after he had taken on provisions at Syracuse with the aid of the Neapolitans. He divided his ships into two lines,—one for the landward side of the enemy, the other for the seaward. The battle began about dusk, and by ten the French flagship was blown up. Other ships in turn were cornered, save for two battleships and two frigates, which the British later destroyed. DeBrueys, the French admiral, was killed in the battle of the Nile. By his great victory Nelson gained control of the Mediterranean for England, and the cabinet was able to form other alliances, which eventually defeated Napoleon on land and sea.

NINEVAH. Once a magnificent capital of the Assyrian empire, on the Tigris River, opposite the modern Mosul, and under the present town of Kouyunjik. The ancient city, three miles long and wedge shaped, had fifteen gates. Excavations have uncovered the great palace of Ashur-banipal, on the n rth; south of this the temple of Nabu; then a great rectangle, part of a temple possibly; and farther south and east the palace of Sennacherib. The palace contained many exquisite works of art, mainly the bas-reliefs. Hammurabi restored the ancient temple of Istar, and Shalmaneser I, also about 1300 B. C., a thousand years later. In 612 B. C. the Medes stormed Ninevah and destroyed the glory of the ancient city.

NIPPUR. This ancient sacred town of Mesopotamia, of Sumerian origin, has left us a complete record in clay tablets. One of these shows the dimensions of the city, and also of the enclosure within the walls, like the imperial city within Peking in modern ages. The temple was the center of veneration, being restored several times, mainly by Ashurbanipal in the 7th century. South of Nippur about six miles, extensive archives have been found in the form of clay tablets. One very large mound, 200 feet wide and 300 from north to south, and 40 feet high, remains to be excavated, and here important further discoveries are expected.

NOMADS. Pastoral tribes who have no settled habitations, but roam about in search of food, or of pastures for their animals. Nomads are of two kinds, —those like some Arab tribes who remain within one political area or district, and those who, like the gypsies, go into the lands of other peoples. Of the first class, the Bedouins have long been well known. Some Arabian nomadic tribes have settled down in permanent towns, but they are exceptions. The Mongols of Asia were nomads of high culture in early centuries; so were the Basques of Spain and France, a mysterious people, thought by some to be descendants of inhabitants of some lost Atlantic island. The bushmen of Africa and Australia and black tribes like the Hottentots are examples of present primitive nomadic tribes. Tradition mentions the ten lost tribes of Israel as nomadic, but merged with other peoples, so that their identity became lost.

NORMANDY. An ancient district in northern France, conquered by Clovis in 506, and afterward allied with Neustria under the Merovingian kings. In 911 Charles the Simple allowed wanderers from the north to settle in his domains, and the district came to be known as Normandy, or land of the Northmen or Normans. Previous invaders of the same tribes had been beaten off after they had ascended the rivers to where Paris now is. Richard I, grandson of the leader Hrolf (or Rollo) who came in 911, gradually gained a foothold against the overlords of the district. One of his successors was the well-known William I who conquered England in 1066. William's son, Robert, in 1077 took Normandy from his father; but a successor, Henry I of England, in 1106 gained it back. With Henry I the male line expired; but Henry II, son of his daughter, Matilda, ruled both England and Normandy. From 1204 to 1415, however, Normandy was again independent, save for a brief time under Edward III of England. The British again ruled Normandy from 1415 to 1449. See article on *Northmen* just below.

NORTHMEN. Also called Norsemen or Vikings. These terms are general for the seafarers of Norway, Sweden, and Denmark between 800 and 1200. While they were pushing into the corners of the known world, some of their race at home were subduing the petty chiefs and founding modern nations. We hear first of Norsemen in Briton in 787; in Normandy (see article just above) in 837; in Ireland in 795; and as established residents in England after 866. Though Alfred the Great kept them in check, Ethelred II found the Norsemen hard to handle. So a general massacre in Britain was arranged. After this the Danes sent four harrying expeditions, and in 1013 Sweyn, king of Denmark, conquered England shortly before his death. In 1042 they gave way to the Saxons, who in turn welcomed William the Norman in 1066. Louis III of the West Franks held the Norsemen in abeyance, and so did some of the petty Germanic princes, but by 900 they had penetrated as far inland as Switzerland. Even before this they had gone to Spain, Italy, Portugal, and northern Africa, plundering and ruling for a brief time. Before 1000 they had settled in the isles north and

west of Scotland, in Ireland, Iceland, and perhaps had touched on the shores of the western hemisphere. Unlike the Romans, however, they failed in civil government.

NORWAY. Before the dawn of history, the Finns and the Teutons occupied Norway. Harold of the Fairhair (Harald Haarfagr) gathered the petty kingdoms into a union before his death about 930. By 1050 Christianity had gained a foothold. In 1028 Canute of Denmark drove out the Norwegian Olaf, and slew him in a later revolt about 1030, but five years later Olaf's son overthrew the foreign invaders, and native kings ruled until 1319. Meanwhile, Norse sailors had established themselves in Iceland, Greenland, the north of Scotland, and elsewhere. In 1397 Denmark, Sweden, and Norway united under the influence of Margaret, Queen of Norway. For 400 years this union continued until the Napoleonic wars disrupted Europe. In 1814 Denmark ceded Norway to Sweden, but the Norwegians set up an independent government, with a Danish prince as king. The governments refused to recognize this readjustment. Then Charles XIII of Sweden was elected king also of Norway. So the dual monarchy continued till, in 1905, the union was dissolved by mutual consent, at which time Prince Charles of Denmark became king of Norway as Haakon VII. The chief nations of Europe guaranteed the independence of Norway. During the World War, Norway suffered much from destruction of her shipping, but the country remained neutral. From 1261 Norway claimed the right to Svalbard (Spitzbergen), but this was not admitted by other nations of Europe, United States, and Japan until 1921, and by Russia finally in 1924. The Norwegian flag was raised there on Aug. 14, 1925.

OATES, TITUS (1649-1705). He was an English investigator, who professed to have unearthed a plot against the life of King Charles II in 1678. Charles never credited Oates, but the latter kept bringing forth evidence, and at last accused Coleman, secretary of the Duchess of York. The privy council soon exposed Oates, but he shortly afterward charged the queen with treason and her physician with wishing to poison the king. In the period many Jesuits and Roman Catholics suffered from the ensuing persecutions. Oates was sued for a considerable sum by Prince Charles, was imprisoned in default of payment of damages, and later convicted of perjury in the reign of James II. He was severely flogged, and served three and a half years in prison. After the Revolution of 1688, he was pardoned, given a small pension, and spent his remaining years in other schemes. He became a Baptist in 1698, but in 1701 was expelled for monetary irregularity.

O'CONNELL, DANIEL (1775-1847). Irish patriot, known in his time as "The Liberator," who came of a race of hardy Irishmen opposed to the disabilities placed on Catholics. In 1798 he was called to the bar, and no man of his day excelled him when examining witnesses. Gradually he felt obliged to engage in politics, and in 1828 was elected member for Clare, but he knew in advance his inability to serve because he could not take the proper oaths. This disability was removed in 1829, and he was elected in 1830. From this time to 1845 he labored for Catholic emancipation, secured a tremendous following, until the government of Peel (Oct. 1843) had O'Connell and others placed in jail. He was sentenced and fined, but the House of Lords refused to agree, and so he was released. His health was broken during his imprisonment awaiting trial, and his following dwindled away. On May 15, 1847 he died at Genoa on his way to Rome for his health.

OCTAVIA (c. 70-11 B. C.). Noble Roman lady of great beauty and character, who was the daughter of Caius Octavius, and sister of the emperor Augustus Caesar. She married Gaius Marcellus, a consistent enemy of Julius Caesar. After the death of her husband in 41, she married Marcus Antoninus for the purpose of keeping peace among the rulers of Rome. Though her efforts were successful for a time, in 36 Antony went off to the Parthian War and resumed his friendship with Cleopatra, the queen of Egypt. Octavia tried in vain to reconcile him, and even sent him troops and money to prosecute his campaigns, but he divorced her in 32. After the death of Antony, Octavia not only brought up their children, but also those of Antony and Cleopatra.

OLD IRONSIDES. See the frigate *Constitution*.

OLYMPIAD. Poetic and athletic reckoning of the dates of events in Greece from 776 B. C. to 394 A. D. Since the olympic athletic games were held every four years, time was recorded in periods of fours. The first victor was Corebus in 776, and often or usually the periods were named for the victor in the sports, especially in running. Timeus of Sicily first arranged chronology into olympic periods, attaching the names of winners to most of them; and other historians like Polybius, Didorus Siculus, and Dionysius followed. The games themselves were abolished in 394 by Theodosius the Great. To transform olympiads into regular years (or the ordinary chronology of Greece in business), take the number of the olympiad, multiply this by four, and subtract the product from 776, which process will give the date B. C. of an event. Any date falling after the middle of the summer makes it necessary to subtract one from the total, for the Attic new year and the games both fell in midsummer. Beginning with a race at Athens in 1896, and with certain events at the St. Louis Exposition in 1900, the ancient olympic games have been revived. The meet in London in 1908 was the first representative competition attended by contestants from many nations.

OPIUM WAR. When the Chinese tried to restrict the importation of opium from India, Great Britain declared war in 1840. Two years later the Chinese submitted by signing the treaty of Nanking, which provided for the opening of ports of China to trade, for a considerable indemnity, and for ceding the port of Hong Kong to Great Britain. In 1911 both nations entered into an agreement to curb the growing of opium. China was to reduce the cultivation of opium as Great Britain diminished the importation into China from India. This agreement culminated in 1917 when the terms were fully carried out, and both growth and importation ceased. When political conditions in China became uncertain, the trade was resumed, and after the World War one function of the League of Nations was to regulate the opium traffic.

ORDINANCE OF 1787. Following the Revolutionary War, certain officers expected the new nation to grant them parcels of land in western territory. In 1786 an Ohio Company was organized in Boston to take charge of land west of New York, should a patent be granted. They offered to Congress to purchase this land, and the Ordinance of 1787 provided for this purpose. All the district south of the Great Lakes and as far as the Ohio River, and west from Pennsylvania to the Mississippi was to included. Not more than five states were to be made out of this Northwest Territory, as it was then named. When the inhabitants in a district reached 60,000, then a government could be formed; and provision was made for transacting regular business when the number came to be 5000. On April 7, 1788 the settlement of the new land began at Marietta, Ohio under the direction of Generals Rufus Putnam, Tupper, Varnum, and other Revolutionary officers. In three months a temporary government was set up with General Arthur St. Clair, who had been president of the Continental Congress, as the first resident governor. Thus the region was opened to settlement in what is now the states of Ohio, Indiana, Illinois, Michigan, Wisconsin, and a portion of Minnesota.

ORLEANS. Decisive battle of the world (1429) due to the French refusing to accept the Treaty of Troyes, which provided the French crown should descend to the heirs of King Henry V. of England, and that the two countries should be forever under one king. The last stand for monarchial independence was made at Orleans; besieged by the duke of Bedford, who held the Tourelles, a fortified position commanding Orleans. A peasant girl named Joan of Arc (Jeanne d'Arc) appeared claiming Divine authority to lead the French and deliver the country from the English. The French stormed and captured Tourelles; losing ammunition and supplies the English retreated, and the monarchial independence of France was assured. Later Joan of Arc was captured by the Burgundians, sold to the English, and burned as a witch at Rouen.

ORLEANS, LOUIS-PHILIPPE JOSEPH, DUKE OF (1747-93). Fifth duke of Orleans, who espoused liberal ideas, and adopted the name of *Philippe Egalité* (Equality). He was the leader of the 47 nobles who withdrew from their own class and joined the common people or *tiers etat* (third estate) during

the early days of the French Revolution. He sympathized with the American Revolution, joined the Mountain Party composed of those who favored democratic ideas, and voted for the death of Louis XIV. In 1793 he was accused of royalist sympathies, was tried, and went to the guillotine. His son, Louis Philippe, became king of France in 1830.

OSTEND MANIFESTO. A dispatch signed at Ostend, Belgium, in October, 1854, by James Buchanan, John Y. Mason, and Pierre Soulé, all United States ministers in Europe, declaring the advisability of the sale of Cuba by Spain to the United States and declaring that the United States would be justified in taking it by force in the event of the refusal of Spain to sell it. The declaration was not approved by any party in the United States, though the meeting of ministers was under the direction of President Pierce.

OSTROGOTHS. See article on *Goths*.

OTTAWA. Capital of the Dominion of Canada since 1858, a city of Carleton County at the Rideau Falls, which Champlain described in his account of his visit for June, 1613. From then to 1800 the site was on the fur route to the northwest, but no settlement was attempted. Philemon Hull of Woburn, Mass., in 1800 built a cabin on the north side of the portage by the falls, and in 1820 Nicholas Sparks cleared some land now in the center of Ottawa. Colonel John By was sent to build a canal from Kingston to Lake Ontario, at a cost of $2,500,000. It was little used for strategic purposes as originally designed. The city grew rapidly, was named Ottawa (instead of Bytown) in 1854, became the seat of government in 1858, and held the first general parliament in 1865.

PADUA. Important cathedral and art center in Venetia in northern Italy. Of considerable political importance in the days of the small Italian republics. Padua was ravaged by the Goths and Huns in 452. Native princes began to rule in 1100, and the university, founded in 1222, was famous throughout Europe. In 1405 the republic of Venice annexed the city and district of Padua, and so it remained until 1797, when the French took charge. From 1814 to 1866 Padua was under the sway of Austria. In 1545 Padua founded the oldest botanical garden of any size in Europe. Important artistic buildings are the churches of St. Anthony, dedicated to the patron saint of the city, and the Annunziata, which was decorated by Giotto. Fra Lippo Lippi, the celebrated artist, lived here for a time, as did Donatello, a great sculptor, and Mantagna, leader of a school of painters.

PALESTINE. Since Palestine has never been a united nation, this term has more of a geographical than a political significance. Being on the direct route of travel from Europe to Asia, this district was often overrun by conquering armies. Babylonia dominated from the 16th century B. C. until Egypt was able to expel the Hyksos or shepherd kings, and then extended the empire of the pharaos to the eastward about 1450 B. C. Two centuries later, the Israelites and Philistines contended for possession of Palestine. About 1030 B. C. a dual kingdom was set up, but about 933 B. C., this again divided into Israel and Judah. Israel was subdued by Assyria about 722, and Judah by Babylon once more in 586 B. C., when thousands of captives were carried to the lands about the Euphrates and the Tigris. Nehemiah and Ezra, two prophets of the Jews, flourished during the captivity; they were allowed to bring back a remnant of the Jewish people and to rebuild Jerusalem.

Then followed, in turn, the conquest of Alexander the Great of Macedon, once more the Egyptians, then the Seleucid empire beginning with Antiochus III in 223 B. C., and at last Roman rule from 63 B. C. for a little over a century. In 70 A. D. Jerusalem was destroyed once more. From then to 1918 there was a succession of Latin, Egyptian, and Turkish dominion in Palestine. (See article on *Crusades*.) In 1918 the armies of Great Britain, in the battle of Samaria and others, drove the Turks out, and the League of Nations gave the British a mandate over the region in 1922. Constant troubles culminating in serious riots in 1936 have followed between the Arab and Jewish interests, which for many years have clashed in the entire region of the Near East. The Arabs resented the attempts of Zionists and others to refound a Jewish state in Asia Minor. See articles on *Hebrews*, *Jews*, *Jerusalem*, and *Zionism*.

PALMYRA. Ancient oasis city in Syria, 145 miles northeast of Damascus, once rich and powerful, now hardly more than a conglomeration of huts. Following campaigns by Mark Antony in 41 B. C., the Romans ruled in this region for four centuries. For rebellion Trajan almost razed the city to the ground, but Hadrian rebuilt it and gave it his own name. Under Odenatus, and his queen Zenobia later, Palmyra became virtually independent and governed much territory. After a conquest, a subsequent rebellion, and a long siege in 272, Aurelian, emperor of Rome, put many of the citizens to death. Palmyra never after that regained her former glories. Today the site is noted for its magnificent ruins, chiefly tombs of great architectural skill and uncommon beauty.

PANAMA. This republic on an isthmus of the same name between the Americas was settled at Porto Bello in 1502 by Columbus. From there Balboa set out on his travels, ending in the discovery of the Pacific from a high peak to the westward on the isthmus. After the revolution of 1821 freed the South American countries from the rule of Spain, Panama was a part of the dominion of Colombia. Because of geographical and political differences, Panama became autonomous from 1855 to 1885. Finally, late in 1903, the isthmus cut away entirely from Colombia. A treaty for building the canal across Panama followed soon. This agreement was modified in later years. In 1935 the United States declared herself no longer responsible for stability in Panama.

PANAMA CANAL. Between 1515 and 1525 surveys were made for a canal across the Isthmus of Panama. Nothing definite was done until 1875, when a French company obtained a concession. Under the leadership of Ferdinand de Lesseps, in 1879 a congress of 135 delegates met in Paris, and decided that a water-level canal was best. In 1880 de Lesseps acquired the rights granted in 1878. Lack of money and sanitary difficulties, such as prevalence of yellow fever, prevented actual digging until 1885. A United States commission advised a canal across Nicaragua. When the French company fell into difficulties and bankruptcy, the machinery and rights were purchased in 1901 by the United States. American interests thereby acquired a strip five miles wide on either side of the canal, together with rights to policing, sanitation, and other arrangements. Panama was to receive $40,000,000, in yearly payments after nine years, and $10,000,000 in cash. Colombia presented a bill for damages because of the secession of Panama, and in 1924 $25,000,000 was paid by the United States. Actual construction started in 1907, and boats were able to go through on Aug. 14, 1914; but slides and other troubles delayed the official opening until 1920. The total cost up to June 30, 1934 was $543,744,707. Revenues for the year ending June 30, 1935 were $15,540,723 net, which was $771,618 short of paying the interest charges on the investment.

PAN-AMERICAN UNION. Since 1826 six conferences of republics in the new world have been held. Simon Bolivar called the first, but the resolutions enacted there were never ratified. In 1856 Peru, Chile, and Ecuador agreed to promote a union, but also showed hostility to the United States because of the filibustering of William Walker, an American citizen. Conferences were held in 1864, 1878, 1888-89, out of which last grew the Pan-American Union, which has maintained an office in Washington, D. C., since 1890, the present name being adopted in 1928. In 1910 Andrew Carnegie gave three-fourths of the $1,000,000 needed to build a home for the office in Washington. Conferences in 1906, 1910, and especially in 1928 made considerable progress, since they came to agreements on arbitration, collection of international debts, patent rights, sanitation, and commercial cooperation. Various special conferences have also been organized, such as one on science in 1908, education in 1918, commerce in 1919, sanitation in 1920, and law in 1928. The Union maintains a large library of books and important maps of the western world, publishes monthly bulletins, and often special ones like those on agriculture, hygiene, finance, and child welfare.

PAPACY. By 400 of our Christian calendar, the Bishop of Rome had become the acknowledged head of the church in the west. Leo I (440-61) strengthened the claims of the papacy at the Council of Chalcedon in 451. Gregory the Great (590-604), confirmed the temporal power when he dealt with

the Franks in their struggle against the Lombards. Leo III crowned Charlemagne as emperor of the Romans when he knelt in prayer in St. Peter's in Rome on Christmas Day in 800. In the next two centuries, however, the power of the Popes declined. When Hildebrand came to the papal throne in 1073, he instituted ecclesiastical and moral reforms. Innocent III (1198-1216) was powerful enough to compel John Lackland, the king of England, to accept the Pope's nominee as archbishop of Canterbury and to acknowledge supremacy of Rome. Almost two centuries later, Philip IV of France won his contention with Boniface VIII (1294-1303), who claimed the right to tax the land in France. Then followed the exile of the Popes at Avignon, France, from 1309 to 1376, and afterward the schism at which time often two Popes claimed exclusive right to authority. After the Council of Constance, new vigor and reforms led to greater authority throughout Europe. In the 17th century France gave the Popes no end of trouble. In the 19th century two able Pontiffs, Pius IX (1846-1878) and Leo XIII (1878-1903) increased the influence of the church. The Vatican Council of 1870 formulated the doctrine of papal infallibility; but the formation of the Italian kingdom in that year terminated the temporal power of the papacy until 1929. See article on the *Papal States*.

PAPAL STATES. This phrase was applied to the dominions of the Pope in central Italy. Beginning with a gift of land by Pepin in 754, the holdings of the Holy See increased to include much of the territory north of Rome, such as Avignon, Bologna, and Ferrara. Most of this was comprised in Napoleon's short-lived Kingdom of Italy. In 1801 and 1814 the papal lands were restored to the church, until they were again united with other districts to form modern Italy in 1870. In protest for the loss of his temporal power, the Pope remained in the Vatican area, until in 1929 an agreement was reached with Mussolini, according to which the Pope again was acknowledged head of Vatican State. After this the Pontiff could travel outside the Vatican grounds, and since then he has spent his summers at Castel Gandolfo, about 15 miles from Rome. Vatican City covers 13 acres, St. Peter's, the Vatican Palace, the great Museum, and other structures. In 1935 the civil and legal systems were revised.

PARAGUAY. Sebastian Cabot built a fort in what is now Paraguay in 1527, and before long the native Indians had been absorbed or reduced to peonage. In 1542 the Jesuits came and all but ruled the land for over 200 years, until they were expelled in 1769. After gaining independence from Spain, Paraguay was ruled by different members of the Francia family until the last one was killed in battle in 1870. Brazil, Uruguay, and Argentina (which once had been part of the general district including Paraguay) made war and almost exterminated the Paraguayans between 1865 and 1870. The population fell from about 1,340,000 to 28,700 men, 106,000 women over 15, and 86,000 children in 1870. The Constitution granted in 1870 has been revised several times in minor respects. Numerous revolutions and changes in governments prevented much progress from 1875 to 1895. For upwards of 100 years, Bolivia and Paraguay have disputed over the boundary line of the Gran Chaco, a district of some importance. Col. Franco secured control of the government by a *coup d'etat* in 1936. See article on *Bolivia*.

PARIS. First mentioned by Caesar as Lutetia, but later named Paris because of the Parisii, who lived on the island which formed the main city for some time. Later the quarter on the right bank of the Seine was named the Ville, and the University district was called the Latin Quarter, it being on the left bank. Paris joined the Armorican League in 410, but was taken by Clovis, who made it his capital and built there a great church after his conversion. After years of decline, save for the reign of Dagobert (628-38), Pepin in 751 was allowed by Pope Zachary to assume the title of king. In the reign of Charlemagne (768-814), Paris became a place of commerce, guilds, and hospitality. Raids by the Norsemen began in 845, when much of the city was burned, and they were bought off at last by a present of 7000 pounds of silver. Other periods of invasion began in 876, 885, and the next year, when Charles the Fat again paid them to desist. King Eudes defeated these Vikings in 892, and from then on Paris was overlooked, but the districts north of the city were often afterwards plundered by roving bands.

In 987 Paris became the permanent capital of the district under Hugh Capet, who founded a line of kings that ruled until the Revolution of 1793. Under Robert the Pious (996-1031), many great buildings sprang up; under Henri I (1031-60) St. Martin des Champs, which had been greatly damaged by the Norsemen, was rebuilt into a magnificent church; under Louis VI (1108-37), the city was much expanded; and under Philip Augustus (1180-1226) and his successor Louis IX (1226-70), called the Saint, such structures were completed as the choir of Notre Dame, the Louvre as a chateau with a moat, the Sorbonne of the University, and a wall about the city eight feet thick, with 24 gates, and 500 towers. Paris was then the intellectual center of the world. Some of the main events of the next three centuries were the rise of the common people (tiers etát), the English invasions and further fortification of the city, enlargement of the Louvre and making it into a palace rather than a fortress, foundation of the royal library, introduction of printing in 1470, the massacre of St. Bartholomew in 1572, building of the Tuileries palace and the Hotel de Ville.

The chief political periods were those of Charles V (1364-1380) and of the Medici after 1550. Other structures were the new bridges in 1614 and 1621, for the first time built of stone, and the national library and other structures under Louis XIV (1638-1715), a reign remarkable for its length and evidences of progress. Little was done to beautify or modernize the city until about 1806 in the time of Napoleon. New streets, additions and improvements of many buildings, such as the Louvre, many public monuments, boulevards, museums, galleries, new buildings for the University of Paris, parks,. and government buildings are signs of progress under the Napoleons and the early Republics. Paris for over a century has been the mecca for art lovers. Little damage was done to the public buildings by air-raids in the World War. Some 266 people were killed and 603 wounded in these aerial attacks.

PARLIAMENT. As an outgrowth of the early *witenagemot* of old English times, the British Parliament has become "Mother" to most of those representative legislative assemblies of modern nations. The early councils under the Anglo-Saxon kings were replaced by William the Norman with a *curia regis* or body of officers of church and state, with others as he chose to summon. Until after King John was forced to grant the Magna Carta, Parliament was largely judicial. When both barons and commons (mainly the people of London and vicinity) rose together against the royal authority, even two years before the great charter, John had to recognize at St. Albans an advisory body. Simon de Montfort, the great baron and known as Earl of Leicester, in 1265 summoned two from each shire and two from each of 21 cities,—the first parliament like modern ones. In 1295, Edward I convened men from five groups:—higher clergy, lower clergy, nobility, knights, and burgesses. By 1332 these parties had become two,—nobility and higher clergy (even then called House of Lords), and another body or house, composed of knights and burgesses, also called a House of Commons.

After 1600 the idea of hereditary membership of the House of Lords was firmly established, and so remained until in the 19th century attempts were made to designate members for life only, and some were then created with that stipulation. (See article on *Parliament* in department of *Government* in this book.) During the reign of Henry VIII and others before Elizabeth, the houses had little influence, but by 1600 they were relatively powerful, and in 1688 it was decreed that the crown was responsible to Parliament. In 1707 the parliaments of England and Scotland were united, and that of Ireland in 1801 joined the "union." Sixteen lords from Scotland were added to the House of Lords, and 45 (later 70) to the House of Commons. Likewise in 1801, 28 Irish peers (elected for life) entered the House of Lords, and 100 (later 103) entered the Commons. Scotch lords were elected for short terms. In 1921 the total membership of the House of Commons was 670, but this was reduced to 613 when the Irish Free State was established, 13 members continuing in the united parliament from Northern Ireland. In 1832 the Reform Bill abolished 56 boroughs having less than 2000 inhabitants, and added nearly 500,000 new voters. About this time the old Tories became known as Conservatives, and the Whigs as Liberals, terms still in vogue. Secret

ballot was established in 1872. The franchise was extended to more voters in 1884, 1911, 1918, and 1928. In 1918 women were allowed to vote if they were at least 30 years old, men if 19, without property qualification. The first woman to sit in Parliament was Vicountess Astor (who was born in America) in 1919.

PASSION PLAY. During the Middle Ages passion plays were enacted in Provence, North Italy, France, Spain, Portugal, and England. In several countries of Latin America, they are still to be seen, some of them being produced by Indians. In the 18th century many of these productions were forbidden by law, save chiefly the one long famous at Oberammergau, a village 64 miles from Munich in Bavaria, Germany. This play was first enacted in 1633 as a thanksgiving for relief from the scourge of the Black Death. It was repeated every ten years from 1634 to 1674, then on decimal years, save an omission in 1870 on account of the Franco-Prussian War, and postponement of the acting from 1920 to 1922. The oldest text, written probably by monks, dates from 1662; the music was written in 1814 by the parish schoolmaster. Over 700 characters take part, including orchestra of 50 and chorus of 46. Actors are trained to live their parts off the stage. Anton Lang, who played the Christ in 1900, 1910, and 1922, is perhaps the most celebrated of modern actors in the Oberammergau drama. The main scenes concern the last week of the life of Christ; tableaux between each two of the 18 acts, however, show Old Testament stories, like the Sacrifice of Isaac. Some attempts in America have been made to imitate this celebrated play; but the one in Bavaria remains not only the oldest but the most revered of all such performances. The residents of the village make toys and pottery, crucifixes, and other religious symbols for export to many lands.

PATRICIANS AND PLEBEIANS. Names of the two political and social classes of ancient Rome. The patricians were from the old native families; the plebeians included freemen. The plebeian class grew by a process of evolution, according to some historians, including native-born but perhaps poor men, aliens or slaves who had been freed, and finally conquered people, who rose to power and got too strong for the old Roman families. For a long time only the patricians had voting and political rights, but the others clamored and fought for recognition. Servius Tullius imposed duties on the plebeians, enrolled them in the army, and gave them some voice in debating and governing. When the republic was established, the plebeians had been unable to marry patricians, and to hold offices of any authority, but could be taxed, serve in the army, and be responsible for duties, such as voting. In 494 B. C. the class organized into a solid group, and proceeded to obtain rights like that of marriage with patricians, membership in the senate, and other honors or offices. In time the *plebs* (as they came to be called) restricted the rights of the patricians, whom they greatly outnumbered. The old families were content to be shut out of offices, so long as their rank and reputation as patricians were guaranteed.

PATROONS. Under the Dutch of New York, then New Netherlands, the patroons were proprietors of manors or estates of immense size along the Hudson granted by the government. Families like the Schuylers, the Van Rensselaers, long enjoyed special privileges. This type of feudalism continued under the English from 1664 to 1775, while the descendants in the male lines were granted the property from generation to generation. After the great estates were broken up, the original proprietors (or their descendants) still tried to collect the rents. Such attempts led to riots in 1839, and the Anti-Rent Convention of 1845, after which the privileges were allowed to lapse.

PAUSANIAS (5th century B. C.). A Spartan general and ruler, who was a nephew of Leonidas and commander of the Greeks in the battle of Platea in 479 B. C. He defeated the Persian hosts, and the leader, Mardonius, was slain. Two years later, Pausanias led the fleet and land force that captured Byzantium; but he was driven from there by the Athenian general, Cimon. Then he conspired with the Persian commander, Xerxes, on condition that he was to rule Greece under Persian authority. When the plot was revealed in Greece, Pausanias fled to the temple of Athene. The Athenians blocked up the door with stones, and he was allowed to starve to death.

PEIPING (PEKING). Name restored to Peiping in 1928 as in ancient times. Capital of the empire of China from 1267 to 1368, and from 1421 to 1928. Near the site of the modern city, the Chou Dynasty about 1200 B. C. established a provincial capital called Ch'i. About 221 B. C. the Han Dynasty destroyed this place, and built instead Yuchow. In 986 A. D. the name was Nan-Ching, and a huge wall was built around the city. In 1122 part of the so-called Golden Horde of Tartars made this one of their three capitals, this being named Chung-Tu or Middle City. During the great Mogul empire, chiefly under Kublai Khan, Chung-Tu was rebuilt on a very magnificent scale. Here was the center of learning of the Orient. Marco Polo, of Venice, lived here under patronage of Kublai for about 20 years; the Pope sent an ambassador; and later the Jesuits obtained a foothold. Then shifts of political fortunes gave that region of China to the Mongols, and the name was changed to Khanbalig, meaning city of the great Khan, or in native Chinese Ta-tu, or Great Capital. During part of this time, the city of Nanking (meaning Southern Capital) was more important and was the main center of government. Meanwhile, the name of the northern capital had again been changed to Peiping, or City of the Great Peace. Here the third Ming emperor in 1421 set up his government, and called the city Peking, meaning Northern Capital.

So, with the changes in name, we get a cross-section of the history, and the significance of the different dynasties in China. The north never has been safe from incursions from other nations, such as the Tartars, Tatars, Mongols, and Manchus. When the Manchus conquered China in 1644, they moved the capital of their empire from Mukden to Peking, and there they remained until the revolution of 1911 expelled that dynasty, a republic was set up, and Dr. Sun Yat-sen became first president of China. Once more in 1928, the Nationalists under General Chiang Kai Shek moved the seat of government to Nanking. Since that time Peking has suffered from neglect and declined in influence. In the last decades the city was greatly modernized, and an extensive foreign quarter sprang up. Peiping is noted for its various great buildings and monuments to the past, such as the imperial buildings within the Inner or Forbidden City, which in itself is enclosed within the old Tartar or Imperial quarters, the Legations of foreign powers, the Lama Temple, Hall of Classics, and Temple of Confucius.

PELOPONNESIAN WAR. Between 431 and 404 B. C., Athens and Sparta led different groups contending for supremacy in Greece. Athens was democratic, but had a strong opposing party; Sparta was almost entirely aristocratic, and ruled by a few men. The first stage of the war ended in 421, at which time the conservatives at Athens gained control, and under Nicias made a truce with Sparta. Meanwhile, a great plague had carried off thousands of inhabitants, including the great leader, Pericles. Both parties waited to get their breath. Next, Athens led a league against Sparta, but suffered a check in the battle of Mantinea in 418. Planning to annoy their rivals, the Spartans next sent an ill-fated expedition against Syracuse in Sicily. Alcibiades, an unprincipled but rather popular youth, was one of the leaders; Nicias was another. The fleet against Syracuse consisted of 134 ships. Alcibiades was recalled on the charge of impiety, and Licias lost heart in the struggle, which had been against his advice in the beginning. Athens was beaten in a sea fight, most of the ships were burned, and the army tried to escape by a forced march on land, but the entire force was cut to pieces, and the general of the land forces, Demosthenes, was killed. Yet Athens refused to give up the struggle against her rivals. Alciabiades was recalled, and some land successes followed, but the Spartan admiral gained a great victory at Aegespotami in 405 B. C. Meanwhile Alcibiades had gone over to Sparta and the aristocrats. Athens was reduced to subjection, the Spartans entered the citadel, and under their authority the city was ruled by the Thirty Tyrants, while all who opposed were driven from the city.

PENINSULAR WAR. Portugal resisted the schemes of Napoleon to control all of Europe. He made a secret treaty with Spain in October 1807, by which Portugal was to be divided. The French seized the capital of Portugal, and the royal family

then fled to Brazil. Internal trouble in Spain followed, and so Napoleon finally gave the throne to his brother, Joseph Bonaparte. Then the Spanish declared in favor of Ferdinand VII. Portugal and Spain joined with England in a campaign which began in 1807 and ended in 1814. Napoleon in person led the French army into Spain, after having made a peace with Russia, and entered Madrid on Dec. 4, 1808. On Jan. 16, 1809 the English won a battle at Corunna, Napoleon having returned to France, but the able British leader, Sir John Moore, died of wounds. Some of the later engagements were fought at Talavera (1809), Busaco (1810), Barossa (1811), Badajoz (1811), Saguntum (1811), Salamanca (1812), Vittoria (1813), after which Joseph Bonaparte returned in haste to France. Following the defeat at Toulouse in 1814, the French were gradually forced to capitulate. The French marshal, Soult, showed great ability, but superior forces and better generalship of Arthur Wellesley, Duke of Wellington, finally forced the French to give up their attempts to dominate Portugal.

PENN, WILLIAM (1644-1718). An English Quaker; the founder of the colony of Pennsylvania. Born in London; son of Admiral Sir William Penn; the son received the grant of land in North America in payment of a sum of money lent to the crown by his father; his object was to establish a home where his co-religionists might worship in peace; came to America and founded the city of Philadelphia (1682); signed a treaty with the Indians which remained unbroken (1683); on the accession of William III. to the throne of England (1688), the government of Pennsylvania was taken from Penn, but was restored finally. Penn returned to England, and to his life of preaching; his Quaker agent, Scott, mismanaged affairs, and involved him in debt and financial ruin.

PERMANENT COURT OF INTERNATIONAL JUSTICE. See articles on *World Court* and the *Hague.*

PERRY, MATTHEW CALBRAITH (1794-1858). After serving in different grades of the United States Navy, he was made a captain in 1837, then the highest rank in the service. In 1838-9 he commanded the *Fulton II*, the first steam vessel. Having received the honorary rank of commodore, he went to Africa to suppress the slave trade, under provisions of the Webster-Ashburton Treaty. With six warships, in 1846 he captured some towns on the Mexican coast, separated Yucatan from Mexico, and, after bombardment of the town, landed forces at Vera Cruz. President Fillmore authorized him to take about 300 men on a cruise of the Pacific. On July 14, 1853 he went ashore in Japan, met some commissioners who had been appointed to receive him, and requested that the ports of Japan be opened to American vessels. By agreement he returned on Feb. 14, 1854 for the reply, concluded a treaty after some hesitation on the part of the natives, and this was ratified finally Feb. 21 of the following year. The treaty provided that Simoda and Hakodate should be open to receive American ships, that Americans should be allowed to buy provisions there, that Japan should assist shipwrecked vessels and sailors, and that any privileges granted later to other nations would also be given the United States.

PERRY, OLIVER HAZARD (1785-1819). An American naval officer; born at South Kingston, R. I.; entered the navy (1799); served in the war against Tripoli; commissioned lieutenant and commanded a flotilla (1807); at the outbreak of the War of 1812 he commanded at Sackett's Harbor under Commodore Chauncey; made captain and master-commandant to superintend the construction of a fleet (1813); won a victory from the British on Lake Erie (September 10, 1813), which battle gave the Americans control over the lake. Perry served with Decatur's squadron in the Mediterranean; dispatched to the West Indies to protect American commerce; he died of yellow fever at Trinidad; was buried with military honors but the body was removed to Rhode Island and reinterred.

PERSEPOLIS. Once known as "the glory of the East," Persepolis or Persia City was the capital of the great conquerors Darius, Xerxes, and Artaxerxes. Though not always a royal residence as Babylon, Susa, Ecbatna were, this place had a royal treasury and the tombs of kings. Alexander the Great found here immense treasures, to which he helped himself, but he seems to have spared the city, though an ancient story mentions that he fired the great palace with his own hand in connection with a revel. Istakhr, later at the same place or near, was a stronghold and seat of authority, which resisted the conquests of Islam, but by 900 had sunk to a place of little importance. The glory of Persepolis is its great collection of ruins. Some of these are the Forty Pillars, immense and of superb construction; three sepulchres hewn out of the solid rock and richly ornamented; four others eight miles away, cut out of rock and high over the valley; the ruins of the palace destroyed by Alexander; and the ruins of several colossal structures built of dark-gray marble on a high terrace.

PERSHING, JOHN JOSEPH (1860-). American commander-in-chief in the World War, was born in Missouri, educated at Kirksville Normal School and at West Point, where he was graduated in 1886. He served in several Indian campaigns, in the war in Cuba, in the Philippines at two different times, was military observer in the army of General Kuroki for six months in 1905 during the Russian-Japanese War. He commanded the eighth brigade at the Presidio, San Francisco, and here his wife and three daughters were burned to death August 27th, 1915. On duty temporarily on the Mexican border in 1916, he was sent into Mexico in pursuit of Villa. As commander of the American forces in Europe, he placed the United States Army at the services of General Foch as allied generalissimo. In June, 1918, part of General Pershing's men began to drive back the Germans and won the offense at Château Thierry and Belleau Wood, followed by the victory at Soissons during the next month. In the middle of September the American troops captured the St. Mihiel salient, fought the battles of the Argonne and the Meuse in October, and by November 7 had pushed on as far as Sedan, when the preparations for the armistice commenced. On September 4, 1919, the Senate confirmed Pershing as "General of the Armies of the United States," and from July, 1921, to his retirement in 1924, he was chief of staff.

PERSIA OR IRAN. From ancient times Persia has been the home of Aryan stocks, but little is known in detail of history there until the Medes paid tribute to Assyria about 836 B. C. By 550 B. C., in the time of Cyrus, the Medes, Persians, Parthians, and Bactrians united for common protection. Cyrus dominated much of Asia, from the Euphrates to the Mediterranean, and died fighting in 528 B. C. After two weak rulers, Darius established order, pushed his borders to what is modern Russia, and sought to humble the Greeks. His hosts met defeat at Marathon, and his son, Xerxes, in 480 B. C. was utterly routed in the naval battle of Salamis. Alexander found Persia an easy conquest, and the Parthians for three centuries ruled after him.

In 228 of the Christian era, the Sassaniad dynasty restored much of the glory of ancient Persia. After winning the battle of Navahad in 639, the Mohammedans set up a caliphate at Bagdad, but dissensions prevented national union. Next, the Moguls came in 1226, with Genghis Khan; the Tatars a century later with Timur or Tamerlane; then the Uzbeks some 16 years later; and the Safavis from 1499 to 1736. The fringes of the Persian empire fell away during this last period. Georgia went to Russia in 1802, and Armenia broke away in 1828. Great Britain fought to quiet the restless and fierce tribes in 1837 and 1857, while Persia still had visions of the return of ancient splendors. Finally, in 1907 Russia and England agreed as to their respective spheres of influence in Persia. When Mohammed Ali, the shah or king, 1906, granted a constitution, Iran ceased to be an absolute monarchy. For the first time a national legislature was authorized. Internal turmoil for 20 years ended with the deposition of Shah Ahmed Mirza (1898-1930) in 1924, the abolition of the Kajar dynasty in 1925, and the establishment of Mirza Pahlevi as hereditary shah in 1926. When a British oil concession along the Persian gulf, richest oil field in the world, was cancelled in 1932, the resulting controversy was settled by the League of Nations. On March 22, 1935 the government changed the name of Persia to Iran, thus restoring its ancient title.

PERU. Long before Pizarro came in 1531 to disturb their peace, the Incas for five centuries had been building a government in what is now Peru. This government resembled some modern republics. The successors of the ancient Incas finally joined the

revolutionary movements in South America in 1821. Gen. San Martin of the Argentine assisted the Peruvians in winning their complete freedom in the battle of Ayucucho in 1824. The north part of the country was then organized and called Bolivia in honor of Gen. Simon Bolivar. Uncertainty followed for many years, save in the terms of Ramon Castilla, lasting 10 years, at two different times. Pres. Balta in 1868 began an era of reckless spending, but his successor, Don Manuel Pardo, tried his best to overcome the fatal effects. Following disputes of long standing, Bolivia and Peru were involved in war with Chile in 1879, after which in 1882, the valuable nitrate district of Tarapaca was ceded to Chile. Other districts, called Tacna and Arica, were given to the control of Chile for 10 years, to be followed by a plebiscite. Conditions delayed the voting. In 1929, the United States brought about a peaceful settlement through arbitration. Arica remained with Chile, but the Peruvian flag was at last hoisted over Tacna on Aug. 29. The presidents of Peru, 1915 to 1933, were Dr. José Pardo, to 1919; Augusto B. Laguia, to 1930; Luis Sancho Cerro, to April 30, 1933, when he was assassinated. A new constitution was granted in 1933 and Gen. O. R. Benavides became president.

PETAIN, HENRI PHILLIPE (1856-). French general, widely known on account of his lectures at the Ecole de Guerre. At the outbreak of the World War he was a colonel of infantry. Was promoted general in the French Army in 1914 by reason of his masterly command of the French retreat from Charleroi to the Marne. At Artois, May, 1915, Petain's corps took Carency, breaking the German front. When the Germans carried the outer works of Verdun February 21-24, 1916, Petain was chosen to defend the fortress. He successfully resisted the Germans in the most costly series of attacks ever made on a single position. During the Allied offensive in 1918, Petain was commander-in-chief of the French armies. On the occupation of Metz in 1918 was made a marshal of France.

PETERSBURG. Though the North had lost heavily in the battle of the Wilderness, Gen. U. S. Grant saw that Richmond, capital of the Confederacy, must be taken at all costs. Petersburg had to be captured first, and the city was besieged from June 15, 1864 to March 29, 1865. An attack in June cost the federal army of Gen. W. F. Smith and others some 9000 men. After an explosion of a mine that was disastrous to the Confederates, a new attack on them was made in July, costing the North 4000 more men. After other assaults along the lines, Gen. Phil Sheridan was sent to oppose Gen. Early in the Shenandoah Valley. Gen. Johnston had to withdraw to combat the destructive tactics of the Northern general, W. T. Sherman, in Mississippi and Georgia. These conditions forced Lee to fall back and prepare to evacuate Richmond. With his army reduced from 55,000 men to scarcely half that number, Lee felt obliged to surrender on April 2, 1865. Thus the Petersburg campaign was the last important stand of the Confederate forces.

PHILADELPHIA. Philadelphia cherishes the ancient shrines where the American Union was formed, such as Old Independence Hall, once the statehouse of Pennsylvania, planned by Alexander Hamilton, the first home of the Supreme Court; next door to Independence Hall, another building where the first Congress sat; the house where Betsey Ross made an American flag; the grave of Franklin; and the historic mansion known as Cliveden, on the battlefield of Germantown. For other features of the city, see the article on *Fifteen Largest Cities*.

PHILIPPINES. Magellan made this archipelago known to Europe in 1521. Hindu and Chinese culture existed there centuries before. The Spanish brought the islands into subjection in 1565, except the district of the Moros or native Mohammedans, so named from the Spanish word *Moro* or Moor. In 1577 Sir Francis Drake touched at the islands; and the following year Cavendish tried to capture the ship-base at Iloilo. The Portuguese, before 1600; the Dutch in 1597; the British in 1572 and 1809 established commercial relations with the Filipinos, and several skirmishes with the natives occurred meanwhile. Feeling for independence from Spain grew until in 1896 a revolution was headed by Emilio Aguinaldo, an able native chieftain with foreign experience and education. In 1897 a truce with Spain was followed early the next year by the war between the United States and Spain. On May 1 Admiral Dewey destroyed the Spanish fleet in Manila Bay, and in August General Merritt captured the city of Manila. The Treaty of Paris (1898) ceded the islands to the United States, and compensation was made to the Spanish friars for their interests there. Aguinaldo declared allegiance to the United States in March 1901, and the insurrection ended in 1902. The natives had proclaimed their freedom on June 12, 1898, setting up a temporary republic with Aguinaldo as first president.

From the Treaty of Paris until 1935 the United States exercised control through a governor general of the Philippines. Much progress in sanitation, education, and government was made during these years. Congress passed over President Hoover's veto a modified independence measure in 1932, but the Filipinos rejected this. One more favorable to the islands was enacted in 1934, and on May 1, the 36th anniversary of Dewey's victory, this was accepted by the Filipino Assembly. On Nov. 15, 1935, Frank Murphy retired as governor general, and the new commonwealth of the Philippines came into being with Manuel Quezon as president. After ten years of this transitional government, the islands are to be completely independent.

PHILISTINES. Early vigorous people, now thought to have migrated from Crete to the land between Joppa and the Egyptian desert south of Gaza. The Greek word Palestine is a form akin to Philistine. Little is known of these people save what is found in the *Bible* in Joshua, Samuel, Judges, and Kings, where various references are confusing. It seems that Samuel, Saul, and David at different times fought them (Sam. vii. 13, xiv. 47; II Sam. viii. 1). In 1116 B. C. Samuel defeated them at Mizpah; in 1087, Saul and his sons defeated them at Mishmash; and David slew their champion, Goliath, about 1063. Saul and his sons were killed in the battle against the Philistines about 1033 at Mt. Gilboa, but after David's time, in spite of frequent uprisings, they never became formidable. They paid tribute to Assyria in 802 B. C., and four of their five cities were vassals; then Egypt kept them in subjection; and finally Persia made the district about Gaza an important seat of provincial empire.

PHENICIA. Save for a few stray inscriptions, the *Bible* is once again our chief source of information about this district, until historical records begin with the Babylonian conquest in 1780 B. C. During the 18th dynasty in Egypt, Phenicia was a tributary, but about 1380 B. C. again became independent. After the Cretans no longer ruled the eastern Mediterranean, Phenicia extended her commerce to all the shores of the known world to the west. Sailors from there also settled at various spots along the coasts, such as Carthage, all of Spain, Sicily, Malta, and Sardinia. Under Hiram I, Tyre became the dominant Phenician state, in the time of David and Solomon. With Sidon and other smaller places, Tyre fell under domination of Assyria, but Sidon was destroyed after a rebellion in 678 B. C. Alexander the Great burned Tyre in 332 B. C. After other spoliations, in 65 B. C. Phenicia became a mere part of the colony of the Romans along the eastern Mediterranean.

PHOCION (fo-she-on) (402-317 B. C.). Athenian statesman and leader, the pupil of Plato and later friend of Zenocrates. He won fame at Naxos in 376 B. C., helped subdue a rebellion in Cyprus, and held the Athenians from taking too bold moves against Macedon as Demosthenes and other popular leaders advised. He secured lenient terms from Philip of Macedon after the disaster at Cheronea in 338 B. C. Without seeking the honor, Phocion was elected general forty-five times. Yet in 318 B. C., when the democracy was restored, he was deposed from office, brought to trial, and shouted down by the mob without an adequate hearing. He was put to death by drinking the hemlock. Within a short time the populace demanded public honors and a monument for him.

PILSUDSKI, JOSEF (1867-1935). General, first marshal, and president of Poland, who was born near Vilna, and early became an advocate for Polish liberty. He was banished to Siberia (1887-1892), joined the Social Democratic Party, and commanded the first Polish Legion against Russia in the Austrian campaign in the World War. From November 1918 to December 1922 he was dictator of Poland, being helped by the army, and again from May 1926 was in charge of the government for two years more, after which he took a place in the new cabinet of

President Bartel. Though his viewpoint was almost always that of a military man, he knew when to stop in his powers as virtual dictator of Poland, and so he held his influence for years.

PISA. An ancient city of Tuscany, founded about the sixth century B. C. It is first mentioned by Livy as Julia Pisana. In the fifth century B. C. it was subject to Rome, but was an independent community under the Carolingians. Sardinia was wrested from the Saracens by Pisa, with the aid of Genoa, in 1025. Pisa was a commercial and naval rival of Venice and Genoa; and in the twelfth and thirteenth centuries was at the height of her greatness. This came to an end when Genoa defeated the Pisan fleet off Meloria, in 1284. In 1399 the city was taken by the Milanese, and was sold to France six years later. Pisa became independent under the protection of Charles VIII. of France in 1494, but came under the rule of Florence again in 1509. From this time it began to decline and its history is a part of that of the Florentine State, and of Tuscany. Ecclesiastical councils were held at Pisa in 1134, 1409, and 1511. In 1600 Pisa had only about 15,000 inhabitants, where in the height of its greatness it had numbered 150,000. Some of the magnificent buildings of Pisa are the Gothic cathedral (1063-1118); the Campanile or bell-tower, eight stories high and leaning 16 feet from the perpendicular; and the University, with the church of St. John. Galileo was a native of Pisa.

PITTSBURGH LANDING, BATTLE OF. See under *Shiloh.*

PIZARRO, FRANCISCO (c. 1475-1541). Conqueror of Peru, who was born at Trujillo in Spain, received a scanty education, and went to the New World before 1510. He was with Balboa when the Pacific was discovered, and conceived the idea of conquering the rich lands to the southward. With a soldier and a priest he made an alliance, explored the coast alone with a few men as far south as 9°, and finally interested Spain in the idea of conquering the Incas of Peru. With his brother, Hernando, and a force of three ships, 180 men, and 27 horses, he sailed from Panama in Jan. 1531. By treachery he conquered the Incas, made them pay an immense ransom (now estimated at $17,000,000), sent part of this to Spain, and made the young Manco nominal ruler at Cuzco. In 1535 he founded Lima as a new capital. Two years later the Peruvians rebelled, but Pizarro's associate, the soldier, Diego de Almagro, defeated them. He and Pizarro quarreled, fought, and Almagro was beheaded. In 1541 his followers assassinated Pizarro. See article on *Peru.*

PLAGUE, BUBONIC. See under *Black Death.*

PLANTAGENETS. More correctly the Angevin house, which ruled in England from Henry II (1154) to the death of Richard III (1485). The male line became totally extinct in 1499. Geoffrey, Count of Anjou, married Maud (Matilda), the daughter of the late king Henry I. He used as a badge a sprig of the plantin or broom plant (*planta genet*). From this his nickname of Plantagenet arose. Previous to this time men were identified by adding the name of their birthplace or of some other place to their given names. Thus Edward I was called Edward Longshanks, and a brother was called Crouchback. The Angevin or Plantagenet kings are Henry II, Richard I, John, Henry III, Edward I, Edward III, Richard II, Henry IV, Henry VI, Edward IV, Edward V, and Richard III. Relatives of this noble house founded both the Lancaster and York families. See individual names in *Biography* section.

PLATEA. This city in western Beotia, six miles from Thebes, in early days allied with Athens and became a rival of Thebes and other Greek towns. When the Persians came in 490 B. C., Platea sent a force of 1000 men to assist Athens at the battle of Marathon. Ten years later the Thebans incited Xerxes, the Persian general, to attack Thebes, which was razed to the ground. Here again in 479 B. C. the Persian Mardonius was conquered by Athens and her allies, and Greece was forever freed from threats of invasion from the east. Platea was rebuilt, and great prosperity followed for 50 years, when wars again laid waste the district in 427 B. C. Again the town was rebuilt, but in 373 B. C. was once more razed by the Thebans, and finally restored by the Macedonians.

POITIERS. A town in western France famous for its antiquities but mainly because of the famous battle (1356) in the Hundred Years' War when the English under Edward the Black Prince defeated John, King of France. The French army outnumbered the English over five to one; they opened the battle with a furious charge of the mailclad men at arms, and only the marvelous work of the English longbowmen saved them from being ridden down and cut to pieces. The arrows shot, and the bows used by the English were fully twice as long as those in use by any other country; hence "the cloth yard shaft" as a term for the arrow. King John was taken prisoner.

POLAND. Since 1918 a republic composed of parts formerly of Russia, Prussia, and Austria-Hungary. After three partitions in 1772, 1793, and 1795, with further adjustments in 1815 by the Congress of Vienna, Poland lost her national identity until after the World War. The history of this country at various periods is one of great honor and progress. Poland gained independence under Mieczyslaw in 960, and under Boleslas (992-1025) pushed the boundaries beyond the Oder, Carpathians, and Dneister. Casimir the Great (1333-70) joined the Hanseatic League, the most powerful commercial body of that age. Sigismund I (1505-48), under whom Poland dominated central Europe, was at last forced to grant his subjects a constitution, and his son joined Lithuania to the Polish kingdom. John Casimir, however, in 1668 was forced to abdicate, when Russia, Sweden, Brandenburg, and the Cossaks attacked Poland. Eight years before this, Livonia had been granted to Sweden, and land beyond the Dneiper, to Russia.

After two partitions of the country, the Poles revolted in 1794, defeated the Russians and expelled the Prussians; but Austria sent an army, which helped the enemies of Kosciusco, the brave Polish general, to defeat and capture him. After the third partition, Poland ceased to be a separate kingdom. Following further disorders and revolts, Russia in 1832 incorporated Poland in the empire of the tsars. Despite several attempts to break away before the World War, none succeeded until Russia herself offered complete autonomy, but the Central Powers made a higher bid of complete national independence. Poland was, therefore, proclaimed an independent monarchy in 1916, and later chose to be a republic. Josef Pilsudski, general of the army, became a dictator, but knew just where to stop in his control over the people. He was ably assisted by the great pianist, Ignace Jan Paderewski, who went from the United States to Poland in 1918, became leader of the Conservative Party, and Premier and Minister of Foreign Affairs, from Jan. to Dec., 1919. For a country with such a stormy past, Poland has been remarkably quiet since 1920.

POLITICAL PARTIES, UNITED STATES. When the Constitution of the new nation was being ratified, those in favor of the central plan or concentration of government were called Federalists, those who opposed, Anti-Federalists. In the time of Jefferson, the latter came to be known as Republicans, Democratic-Republicans, and finally Democrats, a name still held by those who in theory (if not always in practice) have favored states rights and a strict construction of the Constitution. John Adams as a Federalist was President from 1797 to 1801, but in 1820-24 this party died, and the Democrats held office until 1841, when for one term Harrison and Tyler as Whigs were presidents, being succeeded until 1861 by the Democrats once more. With the advent of Abraham Lincoln, the Northern Whigs came to be called Republicans. This party continued in power until 1933 except for the two terms of Grover Cleveland, and two of Woodrow Wilson. See also under terms of the Presidents.

POMPEII. Ancient town on the Sarnus in the district of Naples in Italy. It was settled about 600 B. C., and by the beginning of the Christian era was a favorable residence place for wealthy Romans. On Feb. 5, 63 B. C., a severe earthquake damaged much of the city, and on Aug. 24, 79, Pompeii, Herculaneum, and other towns were completely buried in showers of dust and stones from Mount Vesuvius. About 2000 people were killed out of some 20,000. Others returned afterward and removed some of the treasures. The very site became lost until 1594, when some men, in making an underground aqueduct, discovered some remains. In 1763 excavations began, and in 1861 the Italian government took over the work on the plan of G. Fiorelli. Many interesting objects have been unearthed, and the

chief buildings are shown much as they were in original form. Some are the great amphitheatre seating some 20,000; the forum with paved footway and statues; and an exquisite Doric temple. Among the art objects are bronze statuettes, mural paintings, and mosaics of uncommon beauty, many of which are now in the museum at Naples. The domestic life of the time is completely revealed. Some of the inhabitants, in trying to escape, were crusted over with ashes in such a way as to be completely outlined in forms, from which casts have been made.

PORTER, DAVID DIXON (1813-1891). American naval officer, the son of Capt. David Porter, who at one time commanded the Mexican navy. Three brothers and a cousin were also in the United States navy. In the Mexican War he commanded the *Spitfire* at the bombardment of Vera Cruz, and in 1856 made trips to the Mediterranean to bring camels for service in the army in the southwest. During the Civil War he was sent to the relief of Ft. Pickens at Pensacola, and to blockade the Mississippi. In the expedition against New Orleans, commanded by his foster-brother, David G. Farragut, Porter was in charge of a mortar flotilla, which helped silence the forts in the harbor, and in the siege of Vicksburg he performed a similar service, for which Congress thanked him. In 1864 he tried to silence the fire of Fort Fisher, but the general on land refused to assault the works. On Jan. 15, 1865, in command of the largest fleet assembled at a single point during the Civil War, he helped take this fort. From 1865 to 1869 he was in charge at Annapolis, making important changes, including the introduction of athletics. He succeeded Farragut as admiral in 1870, the highest grade of the Navy.

PORTUGAL. In early centuries, the Iberian peninsula was divided into three main portions, one of which, corresponding somewhat to modern Portugal, was long known as Lusitania. Ferdinand of Castile obtained Portugal in the 11th century. Alfonso I, of his line, in 1143 made Portugal wholly independent; and a century later, Alfonso III, added the southern province to make the area about what Portugal has today. Alfonso I captured Lisbon in 1147, with the aid of Crusaders from England. John II tamed the feudal barons before the end of his reign in 1495. After the discovery of Brazil in 1500, Portugal entered upon a great period of colonial expansion. Progress later was halted by internal troubles with Jews and by emigration to the New World. In 1581 Philip II of Spain annexed Portugal to his own realm. After rebellions by Portuguese nobles, Spain finally again admitted independence of Portugal in 1668. In 1807 the regent of Portugal, John VI (reigning instead of his insane mother), fled to Brazil with his court. When France attempted to place the brother of Napoleon on the throne, Portugal objected, and the Peninsular War followed, in which England and Spain assisted to expel the French. King John left control in the hands of the English, but a revolt in 1820 brought him back to Portugal, where he signed a liberal constitution, and granted Brazil independence, with his son, Pedro, as emperor. Pedro IV resigned in favor of his daughter, a child of seven, whose uncle proclaimed himself king in 1828, but Pedro forced him to give up his pretensions in 1834, when the constitution of 1826 was reaffirmed. After a time of uncertainty, the brothers, Pedro V and Luiz I, between 1853 and 1889 restored Portugal to order and progress. Then Carlos succeeded, but he and the crown prince were assassinated in 1908. Then the second son, Manoel, reigned for two years, when he was deposed and went into exile in England. Since 1911 Portugal has been a republic, with frequent changes in ministry. In the World War, she sent troops to East Africa and France to aid the allies.

PRAGUE (PRAHHA). Prague is the capital of Bohemia and of Czechoslovakia, and is full of interesting memorials of former ages. Some of the interesting buildings are the Royal Palace, containing 440 rooms, set on a high hill, and extant from the 14th century; the Cathedral of St. Vitus, where the royal tombs are; the Tyn Church, containing the tomb of Tycho Brahe; and the University, founded in the 14th century, where John Huss was rector in 1402. Prague was founded by Germans about 1100, and has suffered much from wars, notably in the time of the Hussites; in the Thirty Years' War, when Frederick V. lost his crown; in 1744 when Frederick the Great took the city and when the royalists bombarded the town in 1848. The Prussians entered the city without bloodshed in 1866, after which a treaty was signed with Austria. From about 1800 the inhabitants of Bohemia began to look forward to national unity and independence, a dream realized at the close of the World War, when at Prague in the senate house the downfall of the Habsburgs was proclaimed.

PRIDE'S PURGE. During the Civil War between the forces of the British king and those of Parliament, events culminated in December, 1648. Thomas Pride, one of the Revolutionary generals, stationed himself at the entrance to the House of Commons on Dec. 6, and prevented from entering those Presbyterians and Royalist members who might side with King Charles I. About 100 members were thus excluded by this method, familiarly known as Pride's Purge. Thus rid of opposing members, the Commons proceeded to bring Charles to trial, Pride being one of the judges who signed his death warrant.

PRIVATEERS. In 1243 Henry III of England asserted his right to annoy shipping in France because he still claimed territory across the Channel. In 1295, England still claimed the district of Bayonne in France. Mariners of that region were then commissioned to prey on the commerce of Portugal because of alleged damage to English shipping. All early commissions by governments to private persons to prey on commerce were supposedly in the nature of reprisals for injuries. (See *Cinque Ports*). Drake, Hawkins, and others were licensed by Elizabeth's ministers, but Spain called them pirates. The French navy was crushed at La Hogue in 1692. From then to 1697 French privateers took 4200 prizes. Privateering was regarded somewhat as sniping or ambush warfare is on land. During the Revolution 1150 American privateers took 600 prizes; in the second war with England, 500 took 1350 prizes. Britain herself took numerous ones. In America, however, there was little real profit, compared with the expense and hazards involved, and 200 ships of the 500 licensed took none at all. Sweden and the United Provinces abolished privateering in 1675. The Declaration of Paris, 1856, abandoned the practice, but Spain, Mexico, and the United States did not agree. President Lincoln, during the Civil War, was given power to commission privateers, but did not exercise it. Pres. Davis of the Confederacy issued some licenses, and a few were tried for piracy in the federal or northern courts. Official ships of the navy were not considered privateers. See article on *Buccaneers* or *Pirates* and *Alabama Claims*.

PROGRESSIVE PARTY. This name was taken by two different third-party groups in 1912 and 1924 in the United States. Following opposition among certain members of Congress in 1910 to the rigid rules of procedure of the House, and the conservative tendencies of President Taft, objection to his renomination culminated in the withdrawal of Theodore Roosevelt and his delegates from the Republican Convention in 1912. Later Roosevelt was nominated on a Progressive or Bull Moose platform, and in fact poled more votes than did Mr. Taft. In consequence Woodrow Wilson, the Democratic nominee, was elected. Farmer, labor, and socialistic influences in 1924 caused the nomination of Senator R. M. LaFollette of Wisconsin on a platform called Progressive. He carried only his own state, but drew enough votes to secure election of Coolidge, the Republican nominee. See article on *Political Parties*.

PROHIBITION. Maine passed a prohibitory law against liquors in 1846, and Massachusetts, Rhode Island, and Vermont in 1852, though later repealed. Before 1900 Kansas, Iowa, and the Dakotas had tried similar legislation. Between 1907 and 1915, most of the Southern states followed suit, as did Arizona, Colorado, and Washington all in 1914. Only three states—Pennsylvania, New Jersey, and Nevada—had no restricting laws by 1915. In 1916 Michigan, Montana, South Dakota, Nebraska, and Utah joined the other states, making the total then 24, with an estimated population of over 30,000,000 people in prohibition areas. On Nov. 1, 1917 Congress forbad the manufacture of all intoxicants save beer and wine. On Dec. 17 the House voted 282 to 128 to submit the question to the states, and the Senate agreed by a rising vote the following day. On Jan. 16, 1919 the necessary 36 states ratified the XVIII Amendment to the Constitution. Eventually all ratified save Connecticut and Rhode Island. Congress passed the enforcement law proposed by Rep. Andrew J. Volstead of Minnesota in 1919, and later over the veto of President Wilson. By a

unanimous decision, the Supreme Court upheld the XVIII Amendment on June 7, 1920. Opposition intensified after 1925, with these results, Nevada in 1926 by vote expressed sentiment against the enforcement of the Volstead Act; Illinois advised modification in the same year; Montana refused to continue state cooperation in 1928; and Wisconsin and New York in 1929 weakened the enforcement laws. Growing out of this agitation, and out of the campaign promises of F. D. Roosevelt, the XVIII Amendment was finally repealed by 36 or more states on Dec. 5, 1933.

PRUSSIA. The Borussi or Prussians appear in history in the 10th century. Bishop Adalbert of Prague was put to death in 997 when he tried to convert them to Christianity. About 1018 Boleslas of Poland compelled some of them to be baptised, and two centuries later the Teutonic Knights completed the Christianizing of the country. The Knights elected Albert of Anspack as their grand-master in 1511. Thereafter, the rise of Prussia to power was rapid, except during the Thirty Years' War, when Prussia was the prey of various armies. Frederick-William, known as the Great Elector (1640-88) left the country in a high state of prosperity, continued by his successors Frederick and Frederick-William I (1713-40), who became the first independent king of Prussia. Frederick II (1740-86) accepted his opportunity to make the kingdom a great power, and his nephew, Frederick-William II (1786-97) profited by the partitions of Poland. Following the revolutions in Europe, and the downfall of Napoleon, Frederick-William III (1797-1840) completely reorganized the state, which continued a more or less absolute government, though some progress was made toward democracy under Frederick-William IV (1840-61). His brother, William I (1861-88), acted as regent during the last three years of his reign, and succeeded, ten years later, as the ruler of the new German empire. Wars with Austria and France, added to the astuteness of his chancellor, Bismarck, did much to enhance the prestige of the new Germany. From then Prussia and the German empire have a common history.

PULASKI, CASIMIR (1748-1779). Polish count and general in the American Revolution, who was born in Podolia, served under his father, and became general of the Polish patriots. He was exiled, came to America about 1772, and volunteered to serve under Washington in 1777. During that year and the next he saw considerable fighting, and at the battle of Brandywine won the title of brigade general from Congress, being placed in charge of cavalry. He defended Charleston, S. C., against the British attacks in May 1779. Later he was wounded at Savannah and died two days later.

PULTOWA. Decisive battle of the world (1709). Sweden was an important member of the German Empire. New Russia was just founded by Peter the Great. Charles XII. dethroned the sovereign of Poland and desired the overthrow of the embryo Russia before it gathered strength. He invaded it with 80,000 picked soldiers; declined overtures of peace, and steadily advanced. The Russians, numbering 100,000, disciplined with constant fighting, were besieged by the Swedes in Pultowa, which commanded the passes to Moscow. The Swedes assaulted; carried several redoubts, but numbers told the usual story; the hitherto invincible Swedes were defeated and the nation crushed. Since then Russia has acquired immense territory, advancing her frontier line nearly 900 miles nearer to Vienna, Berlin, Dresden, Munich, and Paris; 450 miles nearer Constantinople, and within a few miles of the capital of Sweden. Until this time, Sweden had stood in the way of Russian expansion to the westward, but from now on nothing could prevent her from pushing onward in all directions.

PUNIC WARS. Three wars between Rome and Carthage in the 3d and 2nd centuries B. C. Both forces had been summoned in 264 B. C. to aid some refugees held at Syracuse. Carthage arrived first, but Rome insisted on bringing in her army, and a struggle ensued between Syracuse and Carthage and Rome. Little advantage for Rome occurred until 242, when a fleet of 200 ships drove Carthage from the Mediterranean, after which Sicily and other lands were ceded to Rome, with a huge indemnity. The second war (218-201) followed attempts of Carthage under Hamilcar, and then by his son and son-in-law (Hasdrubal and Hannibal) to gain a foothold in Spain. In the conflict Hannibal crossed the Alps and for several years occupied more and more territory near Rome. At the Mataurus, the warriors of Carthage were humbled by the legions of Rome. By 203 B. C. the survivors had left Italy, and by 206 they were all expelled from Spain and Sicily. Rome exacted an enormous tribute, and the younger Scipio fought Carthage again on African soil. In the third Punic War (149-146 B. C.) the proud city in Africa was totally destroyed, and the Romans named the territory the Province of Africa.

PUORTO RICO. Formerly owned by Spain, ceded to the United States after the war in 1898, and now ruled by a governor general appointed by the president and by a native legislative assembly. New spelling of name, by inserting the *u*, was adopted by Congress on May 17, 1932. Columbus discovered and named the island in 1493, and Ponce de Leon began settlement there in 1510. Puorto Rico is the fourth largest of the Greater Antilles group. Gen. Nelson A. Miles took possession for the United States after a short campaign during the Spanish-American War. Congress established civil government in the island in 1900. One delegate is sent to the House of Representatives at Washington. Unlike other territories, Puorto Rico enacts its own tax laws and retains all revenues. On Sept. 13, 1898 a hurricane of unprecedented fury left 400,000 homeless, 200 dead, and property worth $85,000,000 in ruins. The island Legislature in 1934 petitioned for statehood. Much unrest has kept the inhabitants in uncertainty.

PUTNAM, ISRAEL (1718-1790). An American general; born at Danvers, Mass.; took part in the battle of Lake George, and was captain of a company at Crown Point (1755); went on the West India campaign (1762); commanded a regiment during Pontiac's War; was a leader in Stamp Act resistance in Connecticut; raised troops and was a prominent leader at the battle of Bunker Hill (1775); commanded at the battle of Long Island (1776); in charge of defense of Philadelphia; given a command in the highlands of the Hudson.

PYRAMIDS. Huge structures found in several parts of the world, the most famous being in Egypt at Gizeh and in Mexico and Central America. The largest in Egypt are those of Khufu or Cheops, Khafra, and Menkaura. The first of these was originally 481 feet high, 756 feet square, and covered nearly 13 acres. How the immense stones were put into place is a mystery. Herodotus tells us that this pyramid took 100,000 men twenty years to build. The barracks of the workmen of Khafra are still extant and seem capable of housing about 4000. The three great monuments date from about 4500 B. C. Besides the usual subterranean chamber, the pyramid of Khufu has upper rooms, one for the king, one for the queen, the grand gallery leading to these being blocked up with stones. The pyramid of Khafra, for the lowest 16 courses, had a granite case around it. The sarcophagus, unlike the others, was richly decorated, but this was lost at sea on the way to England in 1838. Some other pyramidal structures in Egypt are those at Abusir, some small ones at Thebes; in Ethiopia are some late ones at Gebel Barkal. In Assyria some square pyramids have been discovered, these not rising to an apex, and some of them being recessed. Certain Maya remains in Yucatan resemble pyramid forms with temples at the top. Mexico has other similar structures, and some have been located in South America.

QUEBEC. Visited by Jacques Cartier, who found there in 1535 an Indian settlement called Stadacona. After two frustrated attempts to plant a settlement, Champlain left a few colonists in July 1608. In 1629 it had but few families, who catered to a floating population of monks, traders, and settlers. Sir David Kirke captured the village in that year, but it again fell to France in 1632 by the treaty of St. Germain, and Quebec became the capital of New France in 1663. It was also the capital of Canada in 1763-1841, 1851-55, 1859-65. Frontenac, the French governor, succeeded in beating off an English force from New England sent by Sir William Phipps in 1690. In 1711 another expedition sent against the city was wrecked in the gulf of St. Lawrence. Finally, James Wolfe, a young general 33 years old, in 1759 led an expedition against Quebec, his 8000 men being conveyed there by an English fleet, while General Amherst was supposed to make an attack by land. Wolfe at night surprised and defeated the garrison (Sept. 12) by landing some 1200 from boats up the river while the main fleet deceived the French below by feigning a landing there. Four days later Quebec

surrendered, and so has remained English territory since then, but the French people and language still predominate.

Today Quebec consists of an upper and a lower town, the latter being the ancient settlement. Nothing remains of the old French fortifications, but a citadel and walled enclosure of about 40 acres dating from 1832. Between 1865 and 1871 three forts were built on the river, but they are neither armed nor manned at present. On the Plains of Abraham, where Wolfe fought and died, as did the French general Montcalm, a national park has been constituted, while in the Governor's Garden a monument is erected to both brave generals. Some notable buildings in Quebec are the Notre Dame church in the lower town, built in 1688; the Anglican cathedral, 1804; Laval University, founded in 1663; the hotel, Château Frontenac, erected by Canadian Pacific Railroad; the Ursuline Convent, dating from 1641, with interesting relics, including the skull of Montcalm; and the parliament buildings, built in 1878-1892.

QUEBEC ACT. One of the methods of humiliating the American colonies before the Revolution was the Quebec Act, approved in 1774, by which Great Britain extended the bounds of Canada to include much of what was known as the Northwest Territory. This included the present states between the Ohio and Mississippi Rivers, as well as all of Canada from modern Quebec to the Great Lakes. By this means the French were prevented from joining the colonists against Britain. French civil law was then established, and remains to this day in Quebec proper, and the inhabitants were permitted "the religion of the Church of Rome." English criminal law prevailed, and a governor and council administered the new territory. To this day the French in Canada rely on this Act as a guarantee of their rights.

QUEEN ANNE'S WAR. Shortly after the death of William III in England, war between Great Britain and France broke out again in 1702, and the struggle for possession of colonies in America was renewed. On this continent the struggle came to be known as Queen Anne's War. Acadia was captured by the English, and renamed Nova Scotia. Again New England suffered from Indian raids planned in the north. In retaliation, the British harried the coasts of Acadia in 1704, and three times tried to take Port Royal, finally succeeding in 1710, but the expedition against Quebec was a failure. By the Peace of Utrecht (1713) Great Britain received Newfoundland and Nova Scotia, but fishing rights were retained by the French in Newfoundland waters.

RAILWAYS. Tram cars drawn by men or horses were used for mines as early as the 17th century. In 1764 American Indians drew by cable some cars laden with supplies over the portage at Niagara Falls. Following unsuccessful attempts in England, George Stephenson perfected a railway engine in 1814. On Sept. 27, 1825 the first passengers were carried on the Stockton and Darlington Railway in England. Some earlier lines were not used for passenger service. In 1829 the Carbondale and Honesdale line in Pennsylvania used the *Stourbridge Lion*, a locomotive imported from England. First railways in other countries were in Germany from Nuremberg to Furth, 1835; in Canada, at St. Johns, Quebec, 1837; in India, the East Indian from Calcutta to Delhi, 1854; in Africa in Natal, 1860; in Australasia, near Melbourne, Australia, 1854. In the United States, the Charleston and Hamburg Railway, South Carolina, 1829, was the first road for public transportation by locomotive power. In many places tracks of wood, stone, or iron had been used for drawing cars or trams or ore, stone, wood, and the like. In 1795 an incline plane was used for transporting brick. Lieper in Delaware County, Pa., experimented with track roads in 1809. Other early ones were Fallings Creek, Va., 1810; Bear Creek, Pa., 1818; Nashua, N. H., 1825; Quincy, Mass., 1826. In July 1830 the largest early railway put in operation was from Albany to Schenectady, N. Y., carrying as many as 300 persons a day. Railway mileage in 1840 was 2700; 1850, 8700; 1860, 30,000; 1880, 95,000; 1900, 193,000; 1920, 252,900; 1934, 243,857.

Railway equipment has kept pace with increases in mileage. In engines some of the developments have been the vertical tubular boiler in 1831; four-wheeled swiveling truck, 1832; camel-back engine, 1848; first passenger Mogul, 1875; first of Mallet type of engine, 1904; first three-cylinder compound, about 1925, carrying a boiler pressure of 350 pounds; more efficient fire-box type, 1924; oil-burning locomotives before 1925; and now the diesel engine for the modern stream-lined, aluminum, light-weight, fast trains, efficient and economical, 1934.

Railway coaches in 1840 weighed about three tons and were 15 feet long; today, the all-steel coach is 65 feet long and weighs from 125,000 to 150,000 pounds; the pullman car, about 155,000; the dining car, 180,000. The first coaches accommodated from six to ten persons each; recent ones, about 80. Freight cars weigh from 35,000 to 50,000 pounds, and carry from 30 to 50 tons of cargo. The Mallet type of locomotive weighs over 600,000 pounds, cost $300,000 each, and with a tractile power of 150,000 pounds, can pull a train a mile long. Some inventions of railway equipment were the semaphore signal, 1841; sleeping cars, 1863; use of four axles in cars, 1874; first electric-operated signal, 1871; first automatic train control system, Boston Elevated Railway, 1899. The automatic air-brake was used first in 1869; interlocking block signal, 1906; use of single train dispatcher for a whole district, 1927. Air conditioning of trains, streamlining of locomotives, roller bearings in all cars, lighter but tougher materials for cars, and turbine engines are recent accomplishments in railroading.

RAMILLIES, BATTLE OF. In an important battle of the War of the Spanish Succession, Great Britain and Holland defeated the French at Ramillies on May 23, 1706. Marshal Villeroi, the French commander, allowed his army to be outwitted by the allies in drawing up the lines of battle. The Duke of Marlborough, general of the allies, fought in the ranks with his men, was unhorsed, but directed in person the attack on the French right wing, which was rolled back upon the left by the British cavalry. The French were pursued in a disastrous retreat as far as Louvain, twenty miles away. The French losses were about 15,000; the allied, mainly Dutch, less than one third that number. This battle decided the question as to whether the Bourbons were to rule both Spain and France.

REFORMATION. In 1190 Joachim of Calabria preached the "Eternal Gospel," as his doctrines were termed, and in the next century various new missionary orders in the Roman church were established, the best known of them being that of St. Francis of Assisi. The Great Schism of the church led to claims of rival popes, the seat being at Avignon, France, from 1303 to 1376. Humanistic learning and the revival of interest in pagan culture in general made deep impressions on Italy, Germany, France, and England. Men like Erasmus, Colet, Sir Thomas Moore, d'Etaples, and Reuchlin laid the foundations for Luther and other reformers. Erasmus made a Greek edition of the Bible in 1516, and Reuchlin edited the original Hebrew Scriptures.

In 1517 Luther formulated his *Ninety-Five Theses*, and Germany began to resist the dominance of the Latin races in church government. Within fifty years, Sweden, Denmark, and other lands declared for the new Protestantism; in 1581 the United Provinces turned against both Spain and the Pope. Francis I of France late in his reign, and Henry II following him, suppressed growing tendencies to revolt from the established authorities. The Huguenots were massacred in 1572, but the Edict of Nantes gave religious freedom in France in 1598, which was revoked again in 1685. In 1519 Luther, Zwingli, and others fomented a revolt in Switzerland; in 1531 Geneva also threw off the rule of the dukes of Savoy. Wyclif in England attacked the granting of indulgences and other customs shortly after 1400, and he translated parts of the Bible for the common men to read. In 1532 Henry VIII broke with the Pope because the latter refused to recognize the granting of a divorce to Henry from Catharine of Aragon. Early in the reign of Elizabeth, the break with Rome became more definite, with the forming of the Thirty-Nine Articles of Faith, the constitution of the Church of England, and Pope Pius excommunicated the Queen in 1570. These are some of the events which led to the formation of modern Protestantism in Europe.

REFORM, ELECTORAL. Shortly after 1700 demands for the franchise were made by many in Great Britain who were shut out by antiquated election laws. By 1800 the abuses had greatly increased. Large industrial cities like Manchester and Birmingham were not represented in the House of Commons, whereas Old Sarum, with only seven voters, and Dunwich, half in the water, with but fourteen, each sent two members. In 1793 it was estimated that, in a population of 8,500,000, 11,000 voters sent 257

members to Parliament, while the rest had no votes at all. Some 90 county members were sent by 130,000 voters, while only 84,000 sent 421. Paupers, Nonconformists, Romanists, Jews, Quakers, and agnostics had no voting rights. During four stages of the movement for reform, men like Walpole, Bolingbroke, the Younger Pitt, and Cartright denounced the system by which the "rotten boroughs" could control the Parliament, while thousands had no franchise at all. About 1800, men like Sir Francis Burdett, Bentham, Coke of Holkam, and later Lord Russell, and Gray, leader of the Whigs, demanded rights for the newer cities, the counties, many disfranchised people even of wealth, and countless ones who paid no "rates" or taxes. It remained for a Charing Cross tailor, Francis Place, to arouse the people to action. Following the demands, petitions, bills in Parliament, and much stump speaking, in 1828 Nonconformists were allowed the franchise, in 1829 the Roman Catholics, and in 1832 the system of "rotten boroughs" was greatly amended, and a bloodless social revolution gave the people of England, for the first time, a democratic share in voting for their members of Parliament.

REGICIDES. During the Restoration in England, 29 of those who had condemned and executed King Charles I in 1649, were tried and sentenced to death. Only ten were actually hanged. Men already dead were also condemned, the effect being to confiscate their estates and humiliate their descendants. Cromwell, Ireton, and Bradshaw, three leaders of the Commonwealth against the royalists, were also exhumed, their remains hanged, and then buried at the foot of the scaffold. About 20 of the regicides escaped to other countries, the last survivor being probably Edmund Ludlow, who died in Switzerland, in 1692. Two or possibly three fled to New Haven, Connecticut, where they hid for a time nearby in a cave known to this day as Regicides Cave. Two went under the names of Goffe and Whalley, and streets are named for them in New Haven. Three regicides were captured abroad and executed.

REGULUS, MARCUS ATILIUS (2nd century B. C.). Roman general during the wars with Carthage, one of the commanders in the naval battle at Ecnomus. When the other consul—Regulus was serving his second term—withdrew, he carried on the war against odds, and in 255 B. C. was captured. Tradition says he remained in custody five years, then went to Rome on parole to arrange peace or exchange prisoners. Instead, he urged the Senate to carry on the campaign. According to agreement, he returned to Carthage, and there suffered torture and death. Some later historians find this story doubtful, thinking it was invented or else exaggerated to attest to Roman bravery.

RENAISSANCE. Also written *Renascence,* meaning literally *new birth.* This term is applied to the revival of learning in Europe, dating from Petrarch (1304-74), who perfected the modern Italian language, and from Boccaccio of the same period, who introduced realistic prose tales and made a classical dictionary. Remarkable interest in old literature and art developed. After the fall of Constantinople in 1453, Greek learning diffused through Europe. Events like the invention of printing, making of paper for books by new methods, discoveries in all parts of the world, and the work of scientists like Copernicus and Galileo did much to promote this *Revival of Learning,* another term for the Renaissance. When Rome was sacked in 1527, the center of the new influence transferred to France, Germany, and England. Biblical study and the Reformation ensued in Germany; Wyclif and Chaucer led the making of a new English language. After France invaded Naples in 1495, scholars became interested in studying the art and literature of Mediterranean lands, while Ronsard and his fellows ushered in the age of great classic poetry in French. See also articles on *Humanism* and on *Reformation.*

REVERE, PAUL (1735-1818). Knowing that the British were to march from Charleston to seize the stores of the colonists at Concord, Revere set out on his "midnight ride" of April 18-19, 1775, described rather inaccurately by Longfellow's poem. His horse was taken from him by the British, but he proceeded on foot, and either he or two companions warned the patriots at Lexington and beyond. He went to Philadelphia, and came back with the secret of making powder, for which he set up a mill at Canton, Mass. He later became lieutenant colonel of artillery, and commanded the fort in Boston Harbor, and was a member of the Penobscot expedition. Revere made copper spikes for ships, worked in gold and silver, and did much cartooning and engraving. As grand master of the Masons in Boston, he laid the corner stone of the new State House in 1795.

RHODESIA. District settled in very ancient times by Bushmen of Africa, and before them by a prehistoric race not unlike the Neanderthal primitive man. Before history begins, this was an important gold mining region, possibly later also in Phenician times. Controlled by the Bantu race, it was named Monomotapa in the 16th century. In 1629 the gold rights were conveyed to Portugal. Inspired by a dream of empire by Cecil Rhodes, the British South African Company was organized in 1889. Two years later agreement was made with Portugal as to British interests in Rhodesia,—the name itself dating from 1895. Here Cecil Rhodes built a great empire. The district was transferred to the British government in 1924, is called South Rhodesia, and is now a crown colony with many privileges. North Rhodesia, territory north of the Zambezi, rather sparsely settled and twice as large as Southern Rhodesia, is governed by an appointee of the crown, who delegates authority to various native chiefs. Following agitation for uniting these two districts, a commission from England reported in 1929 that the interests of North Rhodesia are bound to those of the southern district, but union at present could not be accomplished.

RICHMOND. This city, now the capital of Virginia and once of the Confederacy, was founded in 1733 by Col. William Evelyn Byrd, the ancestor of Gov. Harry F. and Admiral Richard E. Byrd. Colonists from Jamestown founded a post there in 1609, but this failed to survive. Richmond replaced Williamsburg as capital in 1779. The town was partly burned by British under Benedict Arnold in 1781, became a city the following year, and was the object of attack by northern armies in the Civil War in 15 battles in the surrounding region and some score of skirmishes. When Petersburg fell on April 2, 1865, Richmond was evacuated by the Confederates, who set fire to the business district, bridges, military stores, and tobacco warehouses. Before the fire could be extinguished by the armies of the North, one-third of the city was burned. The state capital building there was completed in 1792, and was the scene of the trial of Aaron Burr (1807), and of the Secession Convention in 1861. Houdon's famous statue of Washington is there. Other historic buildings are old St. John's Episcopal Church, where Patrick Henry exclaimed at the close of his oration, "Give me liberty or give me death;" the home of Pres. Jefferson Davis of the Confederacy, now a museum; the home of Chief Justice John Marshall; the Poe shrine; and various educational foundations.

RIEL, LOUIS (1844 or 1847-1885). Canadian Indian and Irish half-breed or Metis, but in blood mostly French, who started two insurrections against the dominion authorities. For two years from July 1866 he lived in Minnesota, and, returning to his birthplace at St. Boniface, became leader of those half-breeds who objected to the acquiring by the provincial authorities of the rights of the Hudson Bay Company. He captured the headquarters of Fort Garry (now Winnipeg), became provisional president, and prevented the new governor from taking office. When his forces put to death Thomas Scott, an Orangeman, in 1870, the dominion sent Col. Garnet Wolseley against him, and Riel escaped. He was twice elected to the dominion Parliament, but evidently never served, being outlawed on Feb. 10, 1875. In 1877-78 he was a patient in the Beauport asylum, in 1879 to 1884 lived in Montana, and again led the Metis in their struggle for rights, but on May 15, 1885 surrendered, was tried, and executed at Regina. His fate, which he met with courage, stirred up many demonstrations of sympathy.

RIENZI, COLA DI (about 1313-1354). A popular leader of Rome. He took a stand against the nobles for the murder of his brother. He took the title of consul of orphans, widows, and the poor. In 1347 he drove the aristocratic senators from Rome and took the title of tribune of liberty, peace, and justice. He summoned 200 deputies from the Italian states to take measures for the improvement of the condition of Italy. They met in 1347. He made some impolitic moves and fell from power. Later he was imprisoned. Then he entered a monastery. He made a second attempt to regain his power and was successful. His disposition had changed and after seven months' rule he was murdered in a rebellion of the people in 1354.

RIO DE JANEIRO. Name of a state and city of Brazil, the latter on the Bay of Rio, which extends inland for 17 miles. With mountains extending into the city itself, and with 15 miles of coast line and several boulevards, this city is one of the most beautiful in the world. The site was discovered on Jan. 1, 1502, and so named Rio de Janeiro (River of January). The French, who settled there in 1555, were driven out by Portuguese five years later. The Dutch took possession for a short time in 1640. Rio twenty years later became head of the southern districts, and in 1762 chief city of all Brazil. When the court of Portugal, during disturbances at home, took refuge there in 1808, the city entered upon a period of great prosperity. When the king of Portugal returned home in 1821, his son was left as regent, but in one year, independence was proclaimed with the son as Dom Pedro I, first emperor, and Rio as first capital. Disorders in 1889 led to declaration of Brazil as a republic. In 1891 and 1893-94 other disorders occurred,—in the second instance, six months of intermittent bombardment that took many lives. Notable older buildings are the city palace, Merchants' Exchange, national printing office; newer ones, the Municipal Theatre, 1904, cost nearly $10,000,000, though seating but 1700 persons, and the National Library, founded in 1808.

ROBERTS, SIR FREDERICK SLEIGH (1832-1914). British general, created first Earl Roberts of Kandahar, who was born at Cawnpore in India. He served at Delhi in the Indian War (1857-8), in the relief of Agra and Cawnpore, and in the siege of Lucknow, receiving the Victoria Cross. In Oct. 1879 he defeated the Afghans and took Kabul. In 1880 he made a long march to relieve Kandahar on Aug. 31, after which he held various army posts until the South African War in 1899, when he was put in charge of the forces in the Transvaal. He relieved Kimberley, defeated the Boers under Cronje, took Bloemfontein, and later Pretoria, after which the Orange Free State and the Transvaal became part of the domains of the British in South Africa. Roberts advocated the creation of a citizen army in Great Britain, founded the Society of Pilgrims, and during the World War served on a mission in France, where he died. To all his soldiers he was affectionately known as "Bobs."

ROCHAMBEAU (*ro-shom-bo'*), **JEAN BAPTISTE** (1725-1807). French count, patriot, and general, who was born in the Vendôme, entered the army in 1742, and won fame at Minorca (1756). With a French army, he was sent to assist the American colonies and served in the final campaign at Yorktown, Va. Congress formally expressed thanks to Rochambeau. In 1902 at Washington Pres. Theodore Roosevelt unveiled a statue of him, the gift of the French nation. Rochambeau returned to France in 1783, became governor of Artois and Picardy, and for a time commanded the Northern Army in the Revolution. In 1792 he retired because of the excesses of the mob. Imprisoned during the Reign of Terror, he escaped by the fall of Robespierre in 1794. Napoleon restored him to his estates and honors.

ROMANOFFS. Name of the rulers of Russia from 1613 to 1917. The first was Michael Romanoff, whose father was ineligible, having become a monk, though in 1616 he was elected patriarch of the church, and signed all state documents from then until 1633. Romanoff history falls into three main periods: first, to 1698 when Peter the Great, after a tour abroad, instituted many reforms; second, to 1810 and the death of Paul I, following great development in St. Petersburg; to 1917 and the end of the dynasty with the death of Nicholas II and his family. From early times the clergy and nobles exercised great influence in Russia. During 30 of the first 70 years of Romanoff rule, wars were waged against Sweden and Poland. Beginning with Catherine the Great, 1762, most of the later rulers tried to help their subjects, but conditions and forces at court prevented any particular progress toward democracy. Peter and Catharine extended the borders of the empire; Peter II, III, and Paul, with others, left little impress on the nation. Despite great economic prosperity, Russia still clung to autocratic methods until, in 1861, Alexander II abolished serfdom; Nicholas II, after the disastrous war with Japan, promised reforms and established the Duma, but still the masses did not share in the government. On March 15, 1917 Nicholas II abdicated, and his family was killed on July 16, 1918 at Ekaterinburg in the Ural region.

ROME. Alban shepherds occupied the district known later as Rome in the Bronze Age before the dawn of history. Romulus, the mythical founder, was said to have come to Rome in 753 B. C. In historical ages Rome was a republic for 50 years, with little expansion, and then for 70 years extended along the Mediterranean and conquered the neighboring tribes. Further expansions occurred in the war against Tarentum, 280 B. C.; in the final destruction of Carthage, 146; and later extensions of the empire into Asia and Africa. Internal conflicts, however, followed, some of which were the Social War, dating from 90 B. C., when the subject tribes claimed voting rights and sought to organize an Italian state of their own; the following Civil War between Marius and Sulla, ending only when the former died, and Sulla ravaged Italy and slew many at home, after which he retired from his dictatorship.

Sulla restored the constitution and tried to make the senate supreme, but a wave of democracy followed, led by Caesar and by Cicero, the latter leader of the moderate party. Pompey and Crassus (richest man in Rome) now formed an alliance, the one putting down a revolt in Spain, and Crassus subduing the revolt of Spartacus and other slaves. Pompey defeated Mithridates in the east, freed the seas from pirates, and set up an eastern empire in Asia, at the same time subduing a tumult among the Jews. Catiline's conspiracy was suppressed, and Caesar, Crassus, and Pompey formed the first triumvirate to rule Rome. The empire was extended to the Euphrates, Spain was subjected once more, and Caesar conquered Africa, Gaul, and other outlying districts, until on March 15, 44 B. C. he was killed by conspirators. Mark Antony, Lepidus, and Octavian formed the second triumvirate, and a general slaughter followed, including 300 senators and Cicero. Antony was awarded the East, Octavian, Italy, and Lepidus, Africa. Lepidus was soon eliminated, and Octavian declared war on Antony and Cleopatra, with whom Antony was enamored, and in the battle of Actium in 31, Octavian gained complete control of the Roman empire.

He assumed the title of Augustus, allowed himself to be worshiped as a god, and began an era of fifty years of peace, ending in personal misfortune and gloom. In 14 A. D. Tiberius followed him, and then a long succession of emperors, a few good, many incompetent, some mere beasts. Some of the worst were Nero, Caligula, Domitian, and Commodus, son of Marcus Aurelius. The noblest later Roman emperors were Vespasian, Trajan, Marcus Aurelius, Caracalla, and finally, in 323, Constantine the Great, who removed the capital to Byzantium (later called Constantinople). He kept the barbarians in check, but they burst over the barriers in 378, when the Goths defeated the emperor Valens, and at last when Alaric sacked Rome, Attila led the Huns into western Europe, and Odoacer began to rule in 476.

ROTTEN BOROUGHS. See *Reform, Election.*

RUMANIA. Dacia became a Roman province in 106 and prospered long after the conquerors left in 274. Between 500 and 1200 various bands of Goths, Tartars, Huns, Bulgarians, and Magyars overran the country. About 1300 Walachia and Moldavia took on separate characteristics. The former at some brief periods, as from 1330 to 1344 and from 1593 to 1601, was independent, and at other times under either Hungarian or Turkish rule until 1861. Native princes ruled in Moldavia under the authority of Poland or Russia, but Stephen the Great (1458-1504), national hero, defeated the Poles, Hungarians, and Walachians in battles. Turkey granted these provinces certain privileges in 1821, but Russia prevented any real development, until after the Treaty of Paris in 1856 and that of Berlin in 1878. Walachia and Moldavia held separate assemblies in 1858, but had a common group to reconcile rights and justice between them.

The assemblies elected as ruler Prince Alexander John Cuza in 1859, who became king in 1861, but was deposed five years later, and was followed by Prince Charles (Carol) of a minor Hohenzollern house. In 1869 Charles married Elizabeth of Nieuwied, long known to us as the author of stories under the name of Carmen Sylva. Ferdinand I succeeded Charles in 1914, dying in 1927, after which his grandson, the boy Michael, ruled under a regency for three years. In 1930 his father, Carol, who had renounced his royal claims in 1925, returned from Paris and was proclaimed king. Rumania, after much hesitation, joined the allies in the World War, was overrun by enemies, lost 800,000 men, and made

peace in May 1918. By post-war treaties she doubled her territory, mainly by additions of Transylvania, most of Bukowina, and part of the Banat of Temesvar.

RUSSIA. Historians date Russia from the brothers, Rurik, Sineus, and Truvor, called in from Scandinavia in 862, to help the natives against the Finns and Lithuanians. Vladimir (980-1015) extended the boundaries, embraced the Greek Church, built Kiev and other towns, and favored education. The Mongols swept over the land from Asia in 1224, but withdrew for 13 years, and in 1239-40 ravaged much of Russia and entered both Poland and Hungary, being checked in Moravia. With the decline of Mongol power in the west, and the defeat of the Tatars after they had taken Moscow in 1381, their invasions ended, and Ivan III (1462-1505) assumed the title of "Ruler of all Russia." The land was completely freed in 1480. Ivan III, his son Basil, and his grandson, Ivan the Terrible, ruled for 122 years. Feodor (1584-98), the next in line, last of the house of Rurik, died childless, and a period of misrule and uncertainty followed, ending with the choosing of Michael of the house of Romanoff, who ruled from 1613 to 1645. (*See Romanoffs.*) Michael put down the Don Cossacks, made peace with Poland and with Gustavus Adolphus of Sweden. Michael's son, Alexei, allowed reform under the patriarch in the church, checked the ambitions of Turkey in Little Russia, and then followed years of prosperity until after the Napoleonic wars. Russia became the center of learning, literature, and power in eastern Europe. Alexander II (1855-81) at first instituted several reforms, including freedom to 20,000,000 serfs, snuffed out the claims of Poland to independence (1868), sold Alaska to the United States, acquired power in Turkestan, won a war against Turkey (1878), and from then dominated in southeastern Europe. Nihilism sprang up in demands for more liberties, officials were murdered, repression succeeded, and Alexander was killed by revolutionists in 1881. His son of the same name was more reactionary still, and when Nicholas II came to the throne in 1894, Russia was almost an absolute autocracy. The history from then on till 1917 is a succession of plots, repressions, court favorites, the disastrous war with Japan (1904-05), and growth of Socialism, terminating in the Bolshevik revolution in 1918.

Russia mobilized 13 corps on the Austrian border on July 25, 1914, refused to answer the demands of Germany for their withdrawal, and so precipitated declarations of war by Germany on Aug. 1 and Austria on Aug. 6. The armies of Grand Duke Nicholas invaded East Prussia and Galicia, won notable victories, but were forced back. The Bolshevik gaining control signed away rights to Finland, Estonia, Livonia, Poland, Courland, Ukrania, Bessarabia, and part of Transylvania at the peace of Brest-Litovsk, March 3, 1918. Russia had suffered terrible losses, was goaded by internal disorders, inefficiency of the ruling class, and the rise of the Socialists. Various later attempts to maintain the Romanoff dynasty ended in abdication of Nicholas on March 15, 1917 and his assassination July 16, 1918, the brief Kerensky regime, and the attempts of older groups to keep the people back. See *Soviet Union,* also *Rulers and Statesmen.*

SAAR BASIN. Small area north of Lorraine, 738 square miles, with 770,000 inhabitants, noted for its coal fields. Before the World War the Saar was a part of Germany, but Article 45 of the Versailles Treaty gave it to France for exploitation for 15 years, ending in 1935, when a plebiscite was to determine whether it should continue to be administered by a committee of the League of Nations, revert to Germany, or become part of France. On Jan. 15, 1935, the people of the district voted to ally with Germany once more, and the formal transfer was made peacefully in March. Germany agreed to pay France an indemnity of 900,000,000 francs and 11,000,000 tons of coal to compensate for destruction of French coal mines during the World War, this in addition to the proceeds during French exploitation. In 1933 the output of coal was about 10,500,000 metric tons.

ST. BARTHOLOMEW, MASSACRE OF. Catherine de' Medici, fearful of the growing influence of the Protestants of France, attempted to have Admiral Coligny assassinated. Failing in this, she persuaded the king that safety required the extermination of the Huguenots. Some credit for this must be given to the political feud between the House of Guise and the House of Condé, two powerful noble families. Catherine had the support in her plan of Henry of Guise, the Dukes of Anjou and Nevers, and other catholic leaders. The general massacre began in Paris at daybreak on Sunday, Aug. 24, 1572, St. Bartholomew's Day, and continued unrestrained until Sept. 17, and in some of the provincial districts to Oct. 3. Some of the provincial authorities refused to countenance the atrocities, among them being those of Picardy, Dijon, and Normandy. Estimates of those killed run from a few thousand to fifty by the historian Hotman.

ST. CLAIR, ARTHUR (1734-1818). American general, of Scotch birth, who served in the British army at Louisburg and Quebec in the Canadian campaigns against the French, and then (1764) settled in Pennsylvania. He joined the Americans as a colonel (1775), was in charge at Ticonderoga (1777), and became ranking general of the army in 1791, having been appointed governor of the Northwest Territory in 1789. He commanded a force against the Miami Indians in 1791, and 630 were killed and 280 wounded of the original 1400, but General St. Clair was exonerated from blame as commander. He resigned his command, however, in 1792 and his governorship in 1802. As president of the Continental Congress in 1777, St. Clair had much to do with guiding the early destinies of the American nation.

ST. LOUIS. This chief city of the middle Mississippi Valley was settled in 1764 as the headquarters of New Orleans merchants in trading with the Indians. Pierre Leclede chose the site, Auguste Choteau built the first houses, and the place was known for years as Leclede's village or as Plainville. The French continued to protect the inhabitants for six years after the territory was ceded to Spain in 1762. When the United States acquired the Louisiana Territory in 1803, St. Louis had but 180 houses; when the state was admitted to the union in 1821, it had 5600 inhabitants, in the main of French extraction, but with liberal sprinklings of men from Kentucky, Virginia, and New England. Later the Irish and Germans began to come in numbers. Four fur trading companies operated by 1822, and St. Louis became the eastern terminus of trade, commerce, and exploration. From here the various expeditions set out for the great northwest, the packtrains were organized for the mountains and the plains, and the first railways made a start after 1850. Abolition sentiment always had been strong, there being only 1200 slaves in St. Louis in 1860, most of them serving as domestics. During the war, the city was a stronghold for the North, and the center of relief and of refugees, some 40,000 of whom were cared for in St. Louis. From 1860 to 1890 St. Louis became the center of a remarkable interest in German philosophy. After 1870 the development has been mainly literary, commercial, and artistic. In 1904 the Louisiana Purchase Exposition was viewed by over 19,000,000 persons. See Principal Cities.

ST. MIHIEL. On Sept. 25, 1914 the Germans captured St. Mihiel, 20 miles from Verdun, department of the Meuse in France. They strongly fortified a salient there, and little was done to dislodge them until Sept. 12, 1918, when General Pershing's American forces, assisted by the French, took the position, with a loss of about 7000. Some 14,000 German prisoners and 400 guns were captured. This was the first independent action by United States troops. The salient was 30 miles wide at the base, 25 on the south side, and 14 on the north, the town of St. Mihiel being at the apex. Liggett's 1st corps and Dickman's 4th operated on the south, having Blondet's 2nd French Colonial Corps on their left, with the 35th and 91st Americans in reserve, and the 80th and 33d as general reserve. After a preliminary bombardment of four hours on a 12-mile front, the advance was made, and in 27 hours each flank met at Vigneulles, completing the straightening of the sector.

ST. PAUL. About 1800 an Indian village sprang up where St. Paul now stands, the region being called in Indian, *Innijiska* or White Rock. Father Louis Hennepin visited the site in 1680, La Salle in 1682, and in 1766 Jonathan Carver of Connecticut and his heirs claimed the Indians gave him a grant of the land there. President Jefferson sent Zebulon M. Pike to take possession in 1805, giving the Indians 60 gallons of whiskey and some trinkets; later Congress added $2000 in money. The first steamboat touched there in 1823, and in 1840 the town had

200 settlers. Father Lucien Gaultier in 1841 dedicated a log chapel there to St. Paul; hence the later name of the settlement. When the territory was organized in 1849, the small village was designated and remained the capital of Minnesota. The city is now governed by a commission of six, has extensive flour mills, and with Minneapolis is the distributing center of the region.

SALIC LAW. This term is variously applied to a collection of penal codes that came down from the Salian Franks, sometimes called Salians, one of the numerous early Germanic tribes. Many forms and manuscripts exist, even the earliest, which has 65 chapters, being a revision of originals now lost. Charlemagne had a fourth version made in 70 chapters, with stress on some old provisions and some new ones added. Some versions show influences of early Christianity. Some glosses, like the Malberg, are no longer intelligible because of the language in which they are written. Numerous literary works, like Shakespeare's *Henry V*, intimate that the Salic law forbad women to rule among the Franks. The Salian laws that we now have made no such statements, but they do state that daughters cannot inherit land. Since the inheritance of land was usually connected with ruling, it was later said that the Salic Laws forbad female monarchs. The subject was discussed in regard to daughters of Louis X and Philip V. It was proposed by some to exclude Marie Theresa from the throne of Austria because of these ancient Salic provisions. Likewise Philip VI and Edward III of England disputed as to the application of Salic Law, as then supposed, regarding the Spanish and English claims to what is now France.

SALVADOR, EL. The smallest, most thickly populated, republic of Central America, with the best harbor, undeveloped resources save gold and silver, and coffee the chief product. From the Spanish conquest in 1525, until the liberation of Mexico and Central America in 1821, El Salvador was part of the large district known as Guatemala. For some years, until 1839, the country belonged to the Central American Federation. Since then El Salvador has had a number of changes in government characteristic of American Latin republics. The district is much subject to earthquakes, severe damage being done in the capital city, San Salvador, in 1917, and 1919. On Dec. 4, 1931, Gen. Martinez, then vice president, drove out his elected superior, Araujo. The United States and other governments refused to recognize him, and El Salvador denounced the Treaty of 1923, which provided for such contingencies, and Costa Rica, Nicaragua, Honduras, and Guatemala followed suit in 1934.

SAMARIA. Ancient capital of Israel, chief city of the Palestine area, but now only an inferior village called Sebastiyeh. From the time of the founder, Omri, king of Israel, the Biblical history is recorded in I *Kings* xvi and xx and II *Kings* vi, vii. Assyria humbled Samaria in 722 B. C., Alexander the Great subdued the inhabitants in 331 B. C., but Herod restored it to grandeur. Samaria has interesting remains, such as a temple, hippodrome, a church built by Crusaders, and the reputed tombs of Elisha, Obadiah, and John the Baptist. In 1908-10 the Harvard University explorations unearthed Omri's palace, and a number of Hebrew texts from the 9th century B. C. In 1931 various remains of Roman times were traced, including a forum, stadium, senate house, and a palace.

SAMNITE WARS. Three series of conflicts, from 325 to 290 B. C., between Rome and the Italian tribes near her known as the Samnites. Rome lost heavily, including the disastrous defeat at Caudine Forks in the second conflict. Once the Romans were forced "under the yoke," a symbol of submission, most galling to their pride. They colonized neighboring districts, and finally crushed the allies in the battle of Sentinum in 295 B. C. The Samnites were at times assisted by Gauls and Etruscans. From this time, for two hundred years, Rome ruled supreme in the central and southern districts of Italy.

SAMOA. Fourteen islands about 2000 miles south of Hawaii in the Pacific. Since 1900 all islands east of 171° west longitude have belonged to the United States, the rest to Germany, until taken by new Zealand in 1914, and now administered by that nation under mandate of the League of Nations. Tutuila, Tau, and the Manua group, with a total area of 60 sq. miles, belong to the United States, and Pago Pago harbor is the best in the south Pacific. Bougainville visited the islands in 1768, and in honor of native boatmen Samoa was called the Navigator Islands. Christianity was introduced in 1830. Because of disturbances that developed over succession to the throne, from 1868 to 1899, Great Britain, Germany, and the United States took a hand in the government, and in 1899 agreement was made to cede the islands to Germany and the United States. The United States has a powerful radio station at Tutuila, the governor of which administers the affairs of American Samoa, but each of three districts is managed by a native under his direction. Samoa is celebrated as the last home of British author, Robert Louis Stevenson, 1889 to his death in 1894.

SAN FRANCISCO. With Seattle and Los Angeles, San Francisco shares the honors of the Pacific Coast for size and industry. In 1769 the name San Francisco de Assisi was given to the bay there, including the beautiful Golden Gate, the pride of the central pacific ports. Here the monks, Palou and Cambon, set up a mission in 1776; a village called Dolores flourished about the station in 1834; and a trading village sprang up at Yerba Buena, three miles north, in 1836. When the United States took possession in 1846, only 450 people lived at the point, the name being changed to the present one. Within a year after the discovery of gold in 1848, the city had 10,000 inhabitants. Great fires swept away most of the wooden structures in the first three years. The great earthquake and fire of 1906 laid one-third of San Francisco in ruins, including most of the business district, with a loss of over $200,000,000, 452 deaths, and 250,000 persons homeless. The Panama-Pacific Exposition in 1915 revealed the history and wealth of the American nations. San Francisco has many beautiful parks, fine public buildings, and an interesting foreign quarter known as Chinatown. The new bridge from the city across Yerba Buena Island to Oakland is the largest of its type yet attempted, the cost being about $80,000,000.

SAN MARINO. Smallest republic in the world, 32 square miles, about 14 miles from Rimini, Italy, and known for its crags, narrow and steep streets, three citadels, and independence from early times. Protected by Italy, customs and social life follow the Italian. Named for the abbot San Marino, who lived about 885. San Marino kept out of the factions and wars of the Middle Ages, save that it sided with the Ghibellines, and was briefly punished by the Pope, 1247-49. It resisted designs of Caesar Borgia in 1503, Cardinal Alberoni in 1739, and of others, such as Maletesta in earlier times. Napoleon left San Marino alone. In 1906, 1920, and 1921 changes were made in election laws, making the republic more democratic. Presidents are elected for six months only. Stone, wine, and postage stamps, the latter changed frequently, are chief exports. San Marino has always refused to set up a gaming table like those of Monte Carlo.

SAN MARTIN, JOSE DE (1778-1850). More credit is due to him than to any other for the freeing of the Argentine, Chile, and Peru from Spanish domination. He was born in Uruguay, educated in military tactics at Madrid, enlisted to help Argentina in 1812, commanded an army against the Spanish in upper Peru in 1814, but withdrew to help Chile. In this he was assisted by Argentines, and by Bernardo O'Higgins, son of the governor of Chile, whom he left in charge of the south portion while San Martin himself turned to conquer the north (1818) and Peru (1821). Difficulties arose from internal discords, threats of royalists, and followers of General Bolivar, and so San Martin resigned his protectorate over Peru, and later lived in Europe in poverty till his death. His companion, O'Higgins, likewise withdrew when the independence of Chile was assured.

SANTIAGO. During the war between the United States and Spain, Santiago in Cuba, second largest city of the island, was subject to attacks by Americans on July 1-3, 1898. The Spanish fleet, commanded by Admiral Cervera, took refuge in the harbor, where it was blockaded by Admiral W. T. Sampson, while General W. R. Shafter invested the city by land. Santiago de Cuba was taken after decisive charges at El Caney and San Juan Hill by the forces of General H. W. Lawton, assisted by the Rough Riders under Cols. Leonard Wood and Theodore Roosevelt. On July 3, when the Spanish fleet attempted to steam out of the harbor, the American battleships, commanded by Sampson, with Admiral W. S. Schley second in command, engaged the fleet and destroyed or beached them all. Following the defeat of the Spanish at Manila on May 1, by

Admiral George Dewey, and the successful campaign of General N. A. Miles in Puerto Rico, Spain was willing to accept terms of peace, according to which (by the treaty at Paris, Dec. 10, 1898) the Philippines, Guam, Puerto Rico, and all other Spanish West Indian claims were ceded to the United States on payment of $20,000,000.

SARACENS. This name, loosely employed, designated the Mohammedans of Syria and Palestine in the time of the Crusades, or the Arabs generally, or the northern tribes of Africa that conquered parts of Europe. Within a hundred years of the flight or Hegira of Mohammed, (622), the Saracens founded a great empire. The first successors of Mohammed, the califs, Abu-Bekr and Omar, dominated in Syria, Persia, Egypt, and adjacent lands. The Saracens began to cross into Spain before 709, then into Gaul, where they were checked by Charles Martel in 732. By 878 they had mastered Sicily, and later obtained a foothold in Burgundy. The beginning of the decline of the Saracenic power dates from the separation of the western part of the empire, with the capital at Cordova, Spain.

SARATOGA, BATTLES OF. Two engagements that turned the tide of the Revolution in favor of the colonists. Suffering from undue confidence, the British felt that their initial success would soon decide the war in their favor. On Sept. 19, 1777, 4000 British engaged 3000 colonials at Freeman's Farm. Little advantage was gained by either side. On Oct. 7 Gen. Burgoyne attacked the Americans positions on Bemis Heights, but was forced to withdraw. The British next entrenched at Saratoga, but were surrounded by the Americans and compelled to surrender to Gen. Gates. At Bemis Heights the American commanders were Gens. Poore, Morgan, and Benedict Arnold.

SARDINIA. Next to Sicily, the largest island in the Mediterranean, settled by men of Carthage, but taken by Rome in 238 B. C. After the break-up of the Roman empire, Sardinia was overrun by Vandals, Goths, and Saracens, until the 11th century when Pisa and Genoa sought to dislodge the invaders. Acting on the authority of the Pope, the king of Aragon ruled Sardinia until 1713, after which Austria controlled for a few years until the island was traded with the House of Savoy for Sicily. Charles Emmanuel III (1730-73) brought prosperity during his long reign. Feudalism was abolished in 1836, Sardinia and Piedmont were united in 1848, and Victor Emmanuel I, King of Sardinia, became ruler of united Italy in 1861.

SAVANNAH. This city of Georgia, first settlement in the state, was founded by James E. Oglethorpe in 1733. John Wesley and his brother, Charles, came in 1733, followed by George Whitefield, another celebrated English preacher. Whitefield founded the Bethesda orphanage, ten miles south of Savannah, the oldest foundation of this kind in America. He also founded Christ Church, of which John Wesley was the third rector, and here he founded the first Sunday School in America. Savannah has been the scene of many notable gatherings: the first legislature of Georgia, 1755; first Provincial Congress, 1775; convention that framed the first state constitution, 1776-77; the secession convention of the state in 1861. It was the capital until 1778, chartered as a city in 1789, and the objective of Sherman's march to the sea in 1864. Among the many historic buildings in Savannah are the Hermitage manor and plantation outbuildings; Wormsloe, still occupied by descendants of Capt. Noble Jones, who obtained the land by patent signed by George II; Mulberry Grove, the estate given by Congress to Gen. Nathaniel Greene, where Eli Whitney invented the cotton gin while a guest there in 1793.

SAXONY. This name is variously applied to three regions of the old German empire. They are the present republic of Saxony, the old Grand Duchy of that name (now part of Thuringia), and a province in Prussia. Saxony was governed by dukes from early times to 1356, when Rudolph II was made elector. The house of Wettin, in two branches, ruled until 1806, when Saxony became a kingdom. Saxony took no part at first in the Thirty Years' War, but the elector turned Protestant in 1631. Frederick the Great invaded Saxony and drove the elector, Frederick Augustus II into Poland, where he was elected the king. Frederick Augustus III finally sided with Napoleon in 1806. In the war between Germany and Austria, Saxony helped the latter, but joined the North German Confederation in 1870. In the war with France, Saxony helped Prussia. Following the abdication of the king, a republic was proclaimed on Nov. 9, 1918.

SCAN'DERBEG, PRINCE, or BEY ALEXANDER (1403-1468). A famous patriot chief of Albania. His real name was George Castriota; delivered as a hostage to Amurath II. (1413), and was brought up in Islamism; became master of the town of Croia (1443); vanquished the Turks and banished them from Epirus, accomplishing this task in twenty-two pitched battles; at his death the people, lacking a mainstay, allowed the Turks to gain control of the country.

SCHLESWIG-HOLSTEIN. For a long time Schleswig was regarded as predominantly Danish, and Holstein as German in people and customs. From 1460 until 1848, the former was a duchy of Denmark, but never closely united with that country. When Frederick VII in 1848 proposed to incorporate Schleswig in the Danish kingdom, there was a revolt, and Prussian troops drove out the Danish army. In 1864 the Danes were compelled by Prussia to make humiliating terms of peace. Schleswig was to go to Germany, Holstein to Austria, but, after some disagreements, the Seven Weeks' War followed, and then both districts were taken by Germany. So conditions remained until after the World War. The Versailles Treaty provided for a plebiscite in Schleswig. The northern part voted strongly to join with Denmark, and the southern, to unite with Germany. In 1920 the old Schleswig area became the South Jutland Province of Denmark.

SCHLEY, WINFIELD SCOTT (1839-1911). An American naval officer, who was graduated from Annapolis in 1860, fought in the Civil War, held a number of posts, and in 1884 was sent on a third expedition to find Lieut. A. W. Greely and men marooned in the Arctic. He located them near Cape Sable. After being given the rank of commodore, he was sent in 1898 to Cuban waters with a fleet headed by his flagship, the *Brooklyn*. Later W. T. Sampson, acting as rear admiral, was given chief command of the fleet then off Santiago de Cuba. While Sampson was absent, the Spanish ships attempted to emerge from the harbor, where they had been blockaded. As next in command, Schley conducted the battle, in which the Spanish were totally defeated. Schley was advanced six points in rank, and in 1899 was made a rear admiral. Meanwhile, the department proposed to raise Sampson to a higher grade, and a bitter controversy resulted. Schley retired in 1901, and asked for a court of inquiry, which censured him for delay and carelessness in maneuvering during the battle.

SCOTLAND. Caledonia or Scotland for centuries was inhabited mainly by Picts, who spoke Celtic, and also by Britons in the southeast. Just before 500, the Scots came up from Ireland, and by 800 the Saxons and Scandinavians had obtained a foothold. In 844 Kenneth Macalpin became king of the Scots and Picts, and then followed struggles with the invading Northmen. Duncan became ruler of the land, but in 1040 was slain by his own general, Macbeth, who had some valid claims to the throne, but who apparently was in league with the Norwegians. Malcolm slew Macbeth in 1057, married Margaret of England, and brought about several civil and ecclesiastical reforms. Malcolm and his eldest son were killed in a raid on northern England, but Alexander, Edgar, and David, three sons of this couple, ruled in turn. David (1124-53) married an English lady, after spending some time at the court, gained some new territory, invaded Northumbria, and later aided Henry II in his first attempt to gain the English throne. David's grandson and heir, Malcolm IV (1153-65) lost these gains; William the Lion, his brother, lost more ground and did homage to England.

Then followed a century of peace and prosperity, broken after the death of Alexander III in 1286 by the feud over the rival claims of John Baliol and Robert Bruce to the throne. Edward of England interfered, claiming feudal rights, and decided in favor of Baliol. This stirred up war, in which William Wallace beat the invading army at Stirling in 1297, but the English won at Falkirk. Robert Bruce threw off the English yoke at Bannockburn in 1314, Wallace having been executed in 1305. In the next 200 years, Scotland suffered from uncertainty, regencies during the minority of several children, struggles with English kings, and intrigues with

France. Finally, James IV married Margaret of England in 1503 and so cleared the way for the union of the two crowns under James VI (James I of England) his great-grandson in 1603. During the preceding reign of Elizabeth, the claims of Mary of Scotland, caused no end of anxiety on both sides of the Tweed. James VI of Scotland, Mary's son, took hold of government in England with a firm hand, but Charles I alienated the Scotch in religious matters, finding much opposition by the Covenanters. Finally, in 1707 the Act of Union settled once for all whether England and Scotland would have one monarch or two. Only the Jacobite rebellion in 1745, troubles over distribution of Scotch lands, and religious discords threatened to break this union.

SCOTT, WINFIELD (1786-1866). An American general; born near Petersburg, Va.; appointed captain of light artillery (1808); served in the War of 1812; fought at the battle of Chippewa, and Lundy's Lane, where he was twice wounded; prepared a manual of military tactics, which was the first to be issued in the U. S.; appointed commander-in-chief of the army (1841); served in the Mexican War (1847), winning the battles of Cerro Gordo, Contreras, and Churubusco, together with the decisive battles of Molino del Rey and Chapultepec; nominated as Whig candidate for the presidency, but was unsuccessful. Office of lieutenant general was conferred by brevet on General Scott.

SEA POWER. War vessels date from earliest times, for the people of Carthage, Persia, and Phenicia had navies. So did the Greeks as early as the 7th century B. C., when the Corinthians fought their colony of Corcyra in 664. The Peloponnesian War also caused Athens to proceed against Sicily with a fleet of 122 ships; and the Persians used a navy in their attacks on Greece in 490. Early ships rammed each other with pointed prows, later they threw missiles from deck to deck, and finally they fought alongside each other. The Moors used swift-sailing galleys, both single and in squadrons, and the Norsemen were the despair of many coasts from the western shores of the Atlantic to the Black Sea.

England became a great naval power with the destruction of the Armada in 1588. Spain, Portugal, Holland, and Britain long vied for command of distant shores through powerful seamanship. The defeat of the Dutch off Zuyder Zee in 1797 gave Britain considerable advantage on the ocean. Indeed, merchants all over the trading world from 1300 on spoke of England as "mistress of the seas," but this term meant ability to keep the waters free from pirates. For a long time before 1800, salutes were fired by ships of other nations when they approached or passed English vessels, a custom abandoned after 1805, but still existing in another form,—the dipping of the flag when boats meet. In 1354 Peter of Aragon encased some of his ships in leather, and in 1530 the Spanish *Santa-Anna* was covered with lead. Robert Fulton, 1814, made a steam warship. After shells were first used in 1854, all the nations turned to devising heavy armor, such as the iron-clad of the French in 1859, and Ericsson's *Monitor* in 1861 in the Civil War. Since then there has been a constant race to devise armor capable of resisting the increasingly effective modern shells, mines, and torpedoes.

SEBASTOPOL (October, 1854-September 11, 1855). During the Crimean War, Sebastopol, a Russian port on the Black Sea, was the scene of a long siege by the allied forces. The city was surrounded by new fortresses and the harbor closed by sunken ships of war. Attacks upon the city were made repeatedly, and finally, in 1855, after a three weeks' bombardment, the Russians evacuated the city, which was then occupied by the allies. On May 1, 1918 the Germans took Sebastopol and established a dictatorship over the Ukraine. Here on Nov. 26 the allied squadron took charge of the German submarines, in accordance with provisions of the Armistice.

SECESSION. Various states at times have claimed the inherent right to withdraw from voluntary unions. In the Philadelphia Convention, 1787, Elbridge Gerry exclaimed that "a secession would take place" unless a compromise was made among the delegates. Talk of the right to withdraw from the United States was heard after 1790, and particularly in 1803 when Louisiana was purchased of France. Again, when the state of Louisiana was proposed for admission in 1811, the talk flared up once more. In 1814 delegates from New England met at Hartford, Conn., to consider grievances growing out of the War of 1812. Certain resolutions were passed, and proposals made for securing states their rights, but whether open secession was advocated seems in dispute. South Carolina in 1832 had a Union Party, which advocated secession, instead of nullification, and in 1847 John C. Calhoun thought of getting the slave states to agree on some united action. From then on, those in the South argued that states could withdraw, since the Constitution did not forbid this, and since states had certain rights reserved to them. During the agitation over the Kansas-Nebraska Bill, the same threats were heard. Secession was finally proposed by state conventions in 1861, this action being one immediate cause of the Civil War.

SEDAN. Town in northern France where a decisive battle was fought in the Franco-Prussian War of 1870. On July 15 the French emperor, Napoleon III, had rashly declared war on the Germans. The armies of France proved unprepared, and by the end of August were hard pressed. They took refuge at Sedan on Aug. 31, rested that day, and prepared for the German attack on the morrow. General MacMahon was in charge, but was wounded, and in the confusion of old and new orders from rival commanders, the French lost the advantage. By a series of movements about the town, Moltke for the Germans forced the concentration of the French within a circle of 16 miles. Finding themselves hemmed in on all sides, the French pushed the Bavarians out of two villages, but the Prussian corps stood ready to fill in any resulting gaps. Wimpffen, for the French, at last signed an unconditional surrender, provided that the officers could retain their swords. In all the French loss was 17,000; the German, 9000. The French surrendered 82,000 captives, 558 guns, and tremendous stores of supplies. This battle really decided the war, the downfall of Napoleon III, and the rise of the French republic.

SEPOY MUTINY. In May 1857 the sepoys or native soldiers in India rebelled at Delhi because some of their number had been imprisoned because they refused to use greased cartridges. Their religion forbad them to touch or taste grease. Delhi was taken, many people were massacred, and Nana Sahib forced General Wheeler in June to surrender Cawnpore. Safe conduct to Allahabad was guaranteed, but all the men were at once slaughtered, and the women and children likewise when relief was brought from Allahabad by General Havelock. Lucknow almost a month later was saved, so was Delhi in September, and by June of the following year the rebellion was checked, but British losses in these operations were heavy.

SEVEN WEEKS' WAR. Chancellor Bismarck of Prussia planned the union of the German states, with Prussia dominant. According to the scheme, Austria was to be forced out of the Confederation. These attempts brought on a brief war in 1866, when Prussia swept into Bohemia, and defeated Austria on July 3 at Sadowa. The Italian allies of Prussia, however, suffered defeats on land and sea. The eight south German states, which had assisted Austria, were forced to admit the hegemony of Prussia, after which the North German State was founded in 1867, the beginnings of modern Germany.

SEVEN YEARS' WAR. This general conflict (1756-1763) in central Europe, paralleled by the struggle for supremacy in America between France and Great Britain, broke out when Frederick the Great of Prussia laid claims to Silesia. Maria Theresa had been occupied when Frederick had fought two other wars, but now she prepared to resist. Before she could act, however, Prussia had taken Dresden, but defeat followed at Kolin, 1757. By the end of the year, Frederick was again master of Silesia. The fourth campaign, 1759, brought heavy losses to Frederick, for Russia had joined with Austria, and Saxony broke away from Frederick. Both Sweden and France were now in the conflict, but Peter III of Russia reversed the policy of Empress Elizabeth, and persuaded Sweden to withdraw. Later France also gave way, made a treaty with Prussia and with England, and Maria Theresa was left alone, with Frederick permanently in control in Silesia.

SHAYS' REBELLION. Economic distress following the Revolution caused much suffering in Massachusetts. Daniel Shays (1747-1825), who had resigned as captain in the war in 1780, led a group which demanded the issuance of large amounts of

paper money, reduction of taxes, and abolition of the Court of Common Pleas. Mobs prevented the courts from sitting at Northampton, Worcester, Great Barrington, and Concord. General Shepard with 600 troops, failed to control a mob of like size, which prevented the Supreme Court from meeting at Springfield. Gov. Bowdoin ordered out 4400 men under command of Gen. Benjamin Lincoln. When Shays marched a force of 2000 into Springfield on Jan. 25, 1787, bent on capturing the arsenal, he was confronted by Shepard with 1200 soldiers. The mob dispersed, Shays escaped to Vermont, and fourteen of the leaders were condemned to die. The Legislature passed an act of amnesty, and in the end only one man was convicted. Shays was pardoned in June 1788, and settled at Sparta, N. Y.

SHERIDAN, PHILIP HENRY (1831-1888). American military man, who was graduated at West Point in 1853, served in Oregon against the Indians, became a colonel in 1862, and a major general the next year. He fought in many battles in Tennessee, 18 actions in Virginia, such as the Wilderness and Spotsylvania; defeated Gen. J. E. B. Stuart; and finally helped force Lee to evacuate Petersburg and withdraw from the capital at Richmond. Sheridan's famous ride, celebrated in T. B. Read's poem, from Winchester to Cedar Creek, 1864, saved his army from impending defeat. Following the war he was military governor in the department of Missouri; in 1870 was a guest of the king of Prussia in viewing operations during the Franco-Prussian War; and in 1883 became general of the United States armies. Sheridan was brusque and rigid in discipline, but so fair and kind to his men that he was greatly beloved.

SHERMAN, WILLIAM TECUMSEH (1820-1891). He was born in Ohio, a graduate of West Point in 1840; distinguished himself in the war with Mexico; and engaged in business between 1853 and 1861. He entered the Civil War as a brigadier general, fought at Bull Run, in Kentucky and Tennessee, and gained fame at Shiloh and Corinth. He greatly assisted Grant in the operations leading to the relief of Chattanooga and Knoxville, and in 1864 made a raid across the state of Mississippi. With 100,000 men he set out in June from Chattanooga, laid waste a path through Georgia under heavy opposition, and captured Atlanta and Savannah. Turning northward again, he fought his way through the Carolinas, defeated General Johnston, who had been recalled to confront Sherman, and forced Johnston to follow Lee in offering to surrender. He was made a lieutenant general in 1866, and succeeded Grant as general-in-chief when the latter became president. After holding this highest army rank for 15 years, he withdrew in favor of Gen. Phil Sheridan.

SHILOH, BATTLE OF. Also called Pittsburgh Landing. This second great battle of the Civil War was fought in April 1862 two miles from the river landing and eight southwest of Savannah, Tenn. With the army of the North, Grant had succeeded in ascending the Tennessee River to this point, a hazardous feat. Before some of the Union army under Don Carlos Buell could arrive, however, the Confederates began the attack. They were led by Gens. A. S. Johnston and P. G. T. Beauregard, the total strength being about 40,000. After a disastrous day for the northern soldiers, Grant at last rallied his men, opened better communications, and awaited the coming of Buell from across the river by ferry. Late in the first day, when the Confederates sent some divisions in advance, these were dispersed, and Gen. Johnston was killed. Buell and Gen. Lew Wallace joined Grant's men during the night with 25,000 fresh troops. In the morning the Confederates withdrew toward Corinth. Casualities on both sides were about equal, 10,000 men.

SIAM. Independent kingdom in southeast Asia, which began to flourish before 1400 with the founding of the capital at Ayuthia. In 1759 the Burmese took the city and in 1767 gained control of the entire country. A Burmese king ruled for a few years, until an adventurer from China took Bangkok, then the new capital, set himself up as king, but in 1782 was killed by one of his generals. The general, Yuat Fa, established a dynasty, which rules to this day. In 1820 trade was established with the West; in 1826 a treaty was made with Great Britain. Siam became a member of the League of Nations, and was guaranteed full sovereignty in 1927, when the consular courts were abandoned and new tariffs were effective. Following a bloodless revolution in 1932, this ancient absolute monarchy began a series of reforms, in which the king concurred, but he abdicated in 1934 when the right to pardon criminals was taken from him, and the crown passed to his nephew, 11 years old and at school in Switzerland.

SIBERIA. Vast thinly-settled territory in Asia, now a part of the Soviet system of associated governments, and from 1579 nominally part of the Russian domains of the czars. When the empire extended to the Amur in 1651, Russia came in contact with the Manchus, followed by a treaty with China in 1689, the first made by the latter with a western nation. Russia gave up all claims to the district of the middle and lower Amur, but in 1860 secured land by treaty between the Ussuri and the sea, founding Vladivostok then, which became the chief naval station on the Pacific. During the war with Japan, Port Arthur was lost to Siberian Russia, and Vladivostok again became the chief port. Japan and the United States acted for the allies in 1918 in trying to secure a stable government in Siberia. This attempt and the government of Admiral Kolchak, opposing the Soviets, failed to give permanent relief, and the Bolsheviks were in power late in 1919. By 1925 all the Japanese troops had been withdrawn from Siberia. When the Far Eastern Republic, set up in 1920, gave way to the Moscow authorities in 1922, the Russian empire once more stretched to the Pacific in Asia. Siberia for many years was the home of convicts and political offenders sent from the western part of Russia, a system abolished during the World War, but not entirely eliminated afterward.

SICILY. Largest island in the Mediterranean, a land of varied and colorful history. Though first settled by men from the Italian peninsula, by 580 B. C. Greek immigrants predominated, and Syracuse became a famous city. About 540 B. C. the men of Carthage began to settle on the island, but Gelon of Syracuse routed an invading army and put Hamilcar, the Carthagenian general, to death in 480 B. C. In 410 Dionysius of Syracuse again defeated the invaders from Africa. Rome ruled Sicily from 210 B. C. until 440, when the Vandals took possession. Sicily fell to the Eastern Empire in 535; to the Saracens in 965; to the Normans in 1090; and to Roger II in 1127. The Normans continued to 1194; then the Hohenstaufens until 1266, when Charles of Anjou took control, but the inhabitants revolted in 1282 in the massacre known as "Sicilian Vespers," and then Pedro II of Aragon became their king. For years Sicily was joined with Naples in the Kingdom of the Two Sicilies, but in 1713 the island went reluctantly to the duke of Savoy, who traded it later with Austria for Sardinia. The Spanish Bourbons ruled from 1735 to 1860, then Garibaldi favored the cause of Victor Emmanuel, and in the next year the kingdom of Italy was founded, when Victor Emmanuel annexed Sicily.

SIMS, WILLIAM SOWDEN (1858-1936). A native of Canada, Sims attended the United States Naval Academy and attracted considerable notice through his studies in naval gunnery. During the World War he was made an admiral in command of the American fleet in European waters, in which difficult task he won high commendation. Because he was out of sympathy with the management of the navy during the World War, he declined the decoration voted him by Congress. In 1919 he made to Congress severe criticisms of navy methods and discipline. From 1919 to 1922 he was in charge of the United States War College. With Burton J. Hendrick he wrote (1920) *The Victory at Sea*, a book that won the Pulitzer prize as the best of the year on United States history.

SIX NATIONS. See *Iroquois*.

SLAVERY. In ancient times war captives were forced into slavery; in both Greece and Rome persons sold themselves into servitude. Laws protected slaves from cruelty, death, or exploitation. In 1442 Henry of Portugal started what became a virtual monopoly of kidnapping slaves or buying them from Moorish merchants. The Spanish almost exterminated some Indian tribes through slavery. Mohammedanism allowed slavery, but commanded kind treatment. Spain set up a definite trade in 1517, England in 1553, France in 1624, and other countries followed. Slaves were brought to Jamestown, Va., in 1619 for limited service. Massachusetts legalized servitude in 1641, Connecticut, 1650, Virginia, 1661. After 1788 laws protected slaves in sickness, old age, poverty, marriage, and other civil rights. The United States

Congress abolished the trade in slaves in 1808; in 1815 Great Britain tried to get the Powers to agree to suppress the practice. In 1842 the Ashburton treaty provided a patrol for the African coast to keep slave traders away. The French abolished slavery in 1848, the Dutch in 1863, Hayti in 1791, Brazil in 1888, Ethiopia liberated 2,000,000 in 1931, Liberia agreed to abolish slavery in 1930, and Portugal joined with 19 other nations in signing the League of Nations Covenant abolishing slavery in African dominions. Washington, Jefferson, Jay, and others spoke against slavery; many in the South liberated their slaves long before 1860. By 1840 New England and most of the other northern states had abolished domestic slavery. Quakers early opposed it; so did the Presbyterians in 1787. In 1800 there were about 900,000 in bondage in the United States; in 1860 the number in the South was about 4,000,000.

SOCIALISM. Robert Owen in England and others advocated some form of Socialism long before Karl Marx (1818-1883) set up a system that many modern socialists have followed in their theories. Socialists usually oppose violent and revolutionary means, preferring education and voluntary cooperation. They oppose Communism in its extreme form. Both groups profess to follow Marx. Before the World War pacific socialism had many adherents, the greatest strength being in Germany in 1912, when 110 members of the Reichstag were elected by 4,000,000 voters. Eugene V. Debs, in the same year, polled 900,000 votes in the United States. During the World War the socialists became much divided. After minor gatherings at various times, at last 424 delegates gathered at Hamburg, Germany, in 1923 to represent opinion in 30 countries and some 43 distinct social groups. Some of the common aims agreed upon were to support the movement for an eight-hour day in industry, to support the League of Nations, and to continue hostility toward the Russian experiments. In 1920 the Socialists of the United States had disavowed Bolshevik influence, and the party polled a million votes. After supporting La-Follette in 1924, they turned to Norman Thomas in 1928 and 1932, when they polled at first 300,000 votes, and in 1932 some 885,000. In 1928 in Germany the Socialists elected 152 deputies; Communists only 52. Twice in England the Labor Party elected Ramsay McDonald, but no very radical legislation followed.

SOMME, BATTLES OF THE. The armies of the Germans, French and English, before July 1, 1916, had collected huge stores of ammunition and constructed elaborate systems of trenches and cement placements for guns. After bombardment for seven days, the French and British advanced on July 1. Within a week they took much of the German front line defences, but on July 18 the Germans regained much of the territory by a counter stroke. Within a month or less, the British lost about 180,000. The next great move of the Germans was to plan the so-called Hindenburg line for use in case of retreat. On Sept. 15 the allies first put tanks into action. By November they had captured 28,000 Germans and 800 guns, but their losses were staggering. In these operations, now known as the first Battle of the Somme, the British lost over 500,000 in killed, wounded, captured, and missing; the Germans probably as many, though the reported number at first was somewhat less. In 1917 the Germans fell back to the Hindenburg line. In the second Battle of the Somme, commencing on March 21, 1918, Ludendorff, began an expected attack, against which some 800,000 allied troops had been concentrated. The British under Gen. Gough were forced back three distinct times, and the allied lines showed signs of breaking. A hasty allied council decided to entrust the supreme command to one man, Marshal Foch of France. On March 30, the allies commenced to force the Germans back, and another chance to take Paris was lost. It was the narrowest escape for the allies and the last German push on a grand scale, the last great bid for victory. In the group of engagements known as the second Battle of the Somme, the British loss was about 200,000, and the German 180,000. The Germans brought down 224 airplanes, the allies 838.

SOUTH AFRICAN UNION. This dominion of the British Empire was formed in 1909 by a union of the Cape of Good Hope, the Transvaal, Natal, and Orange Free State. Southern Rhodesia, invited to join the union, in 1923 decided to remain separate. The first three union prime ministers were Gens. Botha, Smuts, and Hertzog, all of whom had fought Britain in the South African War. During the World War, General Botha put down a rebellion, being forced to defeat and capture his old colleague, Gen. DeWet. Botha also took the field against the German African colonies. In addition the Union of South Africa sent 11,000 native soldiers and 10,000 Kaffir laborers to the fields of France. Under mandate from the League of Nations, the Union administers what was formerly the German colony of South-West Africa.

SOUTH SEA BUBBLE. Notorious speculative scheme of a company that promised in 1711 to extinguish the British floating debt of some $50,000,000. The plan was to secure a monopoly of trade in South America and other regions under parliamentary grant, for which the company would pay $3,000,000 yearly. Stock was issued to those who held government annuities or loans to the British state. In 1717 the company gave the government $25,000,000, and in 1720 the organizers promised to take charge of all the debt, which had then reached $150,000,000. For every $500 paid in by shareholders, the value went to $5000 at last. The original promoters then sold out at a huge profit, the crash followed in 1720, thousands lost their savings, and only one-third was saved for the shareholders. The company continued to the 19th century. Several members of the party in power were implicated, some removed from office, a few tried, but almost nobody was punished further. The Mississippi Scheme or Bubble was started in France in 1717, with objects similar to that of the South Sea enterprise. The company designed to develop Louisiana and Mississippi River commerce. The crash came much in the same way, and hundreds were ruined. These are only samples of the fantastic schemes that have taken the money of credulous and simple persons.

SOVIET REPUBLICS, UNION OF SOCIALIST. Organization of many autonomous districts and separate republics, taking the place of old Russia before 1917. The total land area is one-seventh of the earth. The various divisions are these: Russian Socialist Federative Soviet Republic, capital at Moscow, with 14 regions and 11 autonomous republics; White Russia, capital at Minsk; Ukraine, capital Kharkov; Transcaucasia, capital Tiflis; with three large and three minor republics; Uzbek, capital Tashkent; Turkoman, capital Askhabad; Tajikistan, capital Stalinabad. These are administered in a broad way from Moscow, according to Soviet or Bolshevik ideas of state socialism, often called Communism. The chief features have been the division of land among the peasants, which recently tends to take the form of great collective farms, domination of industrial units by local committees, and suppression of all groups save the proletariat. Recently in Soviet Russia there is a notable tendency to allow privileges for the middle class or bourgeoisie, who have been specially scorned in the past.

Since the abdication of Czar Nicholas II on March 15, 1917, many changes in the social, political, and industrial Russia have made this ancient land a familiar subject for dispute by outsiders. Prince Lvov and Alexander Kerensky tried to hold the old Russia together and true to her allegiance to the allies in the World War. Disintegration followed, Russia withdrew from the war, and the Kerensky attempts proved too weak to become permanent. When the Bolsheviki took charge in November, 1917, Nicolai Lenin and Leon Trotsky were dominant figures. Later differences developed between those like Trotsky who demanded extreme measures and some of those who took moderate ground. The royal family was put to death in 1918. Lenin died in 1924, and Trotsky was finally exiled in 1929. Latvia, Lithuania, and some smaller districts had broken away after the World War.

In 1924 a new constitution was proclaimed, and the following year Joseph Stalin became the chief leader. Much complaint followed some of the extreme measures of the Soviets to preserve their industrial and social systems. Bolshevism became almost a state religion in place of the older faiths, while churches were closed, their land was nationalized, and the priests were stripped of much of their authority. State planning replaced other forms of business, most of the industries were gradually collectivised and the whole population was sent to school.—10,000,000 adults each year, mostly for the first time. Of a total of 25,000,000 workers, 19,000,000 joined labor unions. Plans of industry were rushed forward, and all production speeded up. Some 50 power plants were built, a new railway across Siberia was commenced, and the mileage in

1935 in all Russia was 45% over that of 1913. Other signs since 1930 are a definite swing toward democracy and a defensive treaty with France, which caused much comment.

SPAIN. Carthage, Rome, the Suevi, Vandals, and Visigoths, between 238 B. C. and the time when Castile became powerful in the 10th century, contributed little to the permanency of what is now Spain. In 1085 Christianity began to obtain general recognition. Ten years later Portugal set up an independent government. When Isabella of Castile married Ferdinand of Aragon in 1469, the two kingdoms were united. In 1491 the Moors were expelled from Granada; in 1513 Ferdinand won Navarre. Following the voyages of Columbus, Spain entered into an era of colonial and political expansion. At last this was checked in 1588 by the defeat of the Armada, which sought to humble Britain. Nine years before, Philip II had lost the Spanish possessions in the Netherlands. When the Austrian dynasty ended in 1700, Spain was left still further weakened, and then in 1712 Sardinia, Minorca, and Gibraltar fell away from the empire. Spain continued barely to hold her own until after 1800. When Napoleon attempted to place his brother, Jerome Bonaparte, on the throne, Great Britain and Portugal assisted in checking the encroachments of France.

The Spanish possessions in the Americas in 1821 asserted their independence, leaving only Cuba, Puerto Rico, the Philippines, and some other smaller areas of the once powerful colonial empire. Spain for over a century has been troubled by discords among the peoples of her own districts. Catalonia was always restless, and in 1931 even proclaimed the formation of a republic, which was short lived. Troubles with both Germany and France over spheres of influence in Morocco once or twice almost led to war. Cuba, Puerto Rico, and the Philippines, with some smaller islands, were lost after the insurrections of 1896-98. During the World War, Spain managed to maintain neutrality, with some degree of progress. This era was followed, however, by continued unrest because of discords among the various provinces, the rise of a strong socialistic movement, and the growing unpopularity of the reigning house. No party was able to gain a majority in the government for any length of time. After various changes in ministry, Primo de Rivera, from 1923 to 1931, served as a dictator with the support of the army. King Alfonso XIII abdicated in 1931, a republic was proclaimed, with Niceto Zamora as president until his death in 1936. Catalonia was granted autonomy within the republic. Meanwhile, the government drifted more and more toward state socialism, until in 1936 a disastrous civil war broke out.

SPANISH ARMADA. See *Armada.*

SPARTACUS. Rome suffered three times from slave revolts between 134 and 70 B. C. The first in Sicily lasted for two years, and several Roman armies were defeated. In the second, also in Sicily, in 102 B. C. the consul speedily checked the movement. In the third, about 73 B. C., known as the Gladiators' War, Spartacus a Thracian who had served in the army, broke from the camp where he was being trained as a gladiator. He fled to Mt. Vesuvius, and in a few months had 90,000 under his banner. These slaves defeated the army of both consuls. Differences arose as to whether they should cross the Alps, one part was beaten in the north of Italy, and the rest under Spartacus were cut off in retreat, when he was slain fighting valiantly. Spartacus is known for his valor, ability, and humanity in the treatment of others.

SQUATTER SOVEREIGNTY. The Mexican War raised the issue of whether new territory should be slave or free as to New Mexico and California. In the campaign of 1848 the Whigs nominated General Zachary Taylor, who was a slave-holder in Louisiana; the Democrats put up Governor Lewis Cass of Michigan, a mild opponent of slavery. In the campaign Cass stressed the idea of "popular sovereignty," or as it soon was called, "squatter sovereignty." Cass said that residents in each new territory or state should be allowed to decide for themselves. When the question of Kansas and Nebraska came up in 1854, settlers flocked from Missouri into the new territory, on the theory that they could determine by "squatting" or taking up land that the district should be slave territory.

STAR CHAMBER. High court organized in 1487 by Henry VII, but the name itself goes back to Edward III, and is said to have come from decorations on the ceiling at Westminster Palace, where the court met. At first it consisted of the Chancellor, Treasurer, Keeper of the Privy Seal, a bishop, a temporal lord, and the chief justices. Later its composition and functions changed from time to time. Under the Tudors it was an effective law court, dealing mainly with landowners and nobles. Under Charles I it became an instrument for exacting fines, taxes for the lean treasury, and for punishing all sorts of offenses. Torture was frequently used to make accused persons talk. The Long Parliament abolished the Star Chamber in 1641.

STEUBEN, FREDERICK WILLIAM, BARON VON (1730-1794). German-American military leader, who was born in Prussia, served in many battles of the Seven Years' War, and became aide to Frederick the Great. In 1777 he offered his services to the American colonies, did much to train the soldiers at Valley Forge, and saved the day at Monmouth, when he rallied the retreating forces of Gen. Charles Lee. His book on army regulations, prepared for the United States armies in 1779, proved of great benefit in further training. He was a member of the court-martial that condemned Major John André as a British spy, commanded the colonial forces in Virginia, and took part in the final operations at Yorktown. After the war he lived at Steubenville, N. Y. Several states gave him land, Congress awarded him a sword, and later a pension of $2400.

STONEHENGE. On Salisbury Plain, Wiltshire, England stand several huge stones set on end, some of them having a stone across like a lintel. These date from prehistoric times, probably from the Bronze Age of man. No Roman, Saxon, Celtic, or Danish records mention them in early historical periods. Two outer circles of stones, which at first were about 100 feet in diameter, have two horseshoe lines within, and beyond these is a flat marble slab 18 feet long. The entire arrangement suggests some connection with the northeast. Among the legends and theories are those that this was a Druid temple, a Danish monument of some sort, or a Saxon tomb. Excavations between 1920 and 1926 unearthed many "postholes," some possibly older than Stonehenge itself, and in some were found human bones. Near Carnac in France is a similar, but much more extensive set of stones, 1991 in number, arranged in parallel rows, but with circular ones at the ends. Stonehenge was made a national monument in 1918.

STONY POINT. This spot on the Hudson River in Rockland County, New York, was fortified early in the Revolution by the Americans. General Sir Henry Clinton captured the fort on May 31, 1779. General Anthony Wayne, with a force of 1200 colonials, on July 16, surprised the British garrison and captured Stony Point. The Americans lost 15 killed, 83 wounded; the British lost 63 killed, many wounded, and 543 prisoners. The Americans removed the equipment of the fort, but the British occupied the place later. Stony Point is now a state park.

STRATHCONA AND MOUNT ROYAL, DONALD ALEXANDER SMITH, BARON (1820-1914). He was a native of Scotland, served with the Hudson's Bay Company in Labrador and on Hudson Bay, and became resident governor in 1868. Smith became a great railway and empire builder. His standing in the western territory prompted the Canadian government to send him to quiet the half-breeds there after Riel's rebellion. In 1870 he sat in the Manitoba assembly, in 1871 was a commissioner of the North-West, and in 1872 a council member at Winnipeg. Having bought a railway line, he completed connections from east to west. He served in the Dominion Parliament in 1896, after which Canada sent him to be high commissioner in London. He became a peer in 1897. During the war in South Africa he equipped 600 horses and sent them to assist in the war against the Boers. Lord Strathcona did as much as any other man to promote good feeling between Canada and the rest of the British Empire.

STUART, JAMES EWELL BROWN (1833-1864). A valiant cavalry leader of the South in the Civil War; known to his friends as "Jeb" Stuart. He gained fame for his courage and ability at Bull Run, Antietam, Gettysburg, and the Wilderness. Stuart helped save the Confederates at Fredericksburg, took command when Stonewall Jackson fell at Chancellorsville, and made a determined stand at Yellow Tavern against Gen. Phil Sheridan, but was mortally wounded.

STUART KINGS. For the Stuarts who ruled in England see James I, James II, James, the Young Pretender, Charles I and II in section of *Rulers and Statesmen.*

STURDEE, FREDERICK CHARLES DOVETON (1859-1925). British admiral, whose fleet attacked and destroyed a German fleet off the Falkland Islands on Dec. 8, 1914. He entered the navy in 1871, and became successively commander in 1893, captain in 1899, rear admiral in 1908, admiral in 1917, and admiral of the fleet in 1921. His chief service was in Egypt, Samoa, in the Mediterranean, and the English Channel in 1907. During the World War he was made chief of staff in 1914, commander in the South Atlantic and Pacific, and commanded the 4th battle squadron in the battle of Jutland. In 1916 he was created a baronet. In the battle of Falkland, six British cruisers sank two armored cruisers, two light cruisers, supply ships, while one German light cruiser escaped. British casualties were 6 killed, 19 wounded; the German, all the crews save 212 men rescued by the British lifeboats. See also *Falkland Islands.*

SULLA, LUCIUS CORNELIUS (138-79 B. C.) He named himself Felix. A Roman general of the patrician class, who captured Jugurtha in the campaign against him in 106 B. C., being a member of the cavalry under Marius. The latter became jealous of Sulla because of successes in the campaigns against the Teutons and in the social war. Civil War resulted, Marius fled to Africa, but returning while Sulla was absent, he killed many Romans. Sulla came back after the Mithradatic War and was appointed dictator. Though Marius had died, it took several years to subdue his party.

SUMERIANS. Little was known about these early people until Sir Henry Rawlinson and others after 1850 obtained the key to the reading of clay tablets found in the library of Ashurbanipal of Assyria. The characters are wedge-shaped and were made by denting soft clay with a stick, and then by heating the tablets to preserve them. About 350 signs were used, making a most complex alphabet, the symbols being wedge-shaped, hence called *cuneiform,* from the Latin word meaning *wedge.* The Sumerians flourished about 3500 B. C., being far ahead of their neighbors of Egypt in the great pyramid ages. The chief Sumerian remains are found in central Asia. They were not a Semitic people, but resembled more nearly the modern Hindu, engaged in war on a large scale, but seem inferior in arts, save in writing. Their language and literature lasted until after 1500 B. C., though as a people they were overrun by tribes of the east, mainly Semitic, long before this time. Their houses were made of sun-dried bricks, and several layers of these are unearthed by excavations in Babylonia. Unlike the Egyptians and other early peoples, they seem to have left no very large monuments. The men went clean-shaven, cut the hair close, sometimes shaving it as did the Egyptians, but wore no wigs. Many excellent clay portraits of individuals have been found.

SUPREME COURT. Article III, sections 1 and 2 of the Constitution of the United States specifies that the judicial system shall consist of a Supreme Court and "such inferior courts as the Congress may from time to time ordain and establish." The states at an early date, however, insisted that the Supreme Court should not be allowed to try cases between a state and an individual, but could hear suits between states. The Eleventh Amendment to the Constitution so provided. The first general judiciary act, Sept. 24, 1789, provided that the Supreme Court should consist of a chief justice and five associate justices. In 1807 the number was increased to six, in 1837 to eight, and in 1863 to nine. Congress attempted to reduce the number in 1866, but a reversal of opinion fixed the number at one chief justice and eight associates, before the 1866 act could take effect.

In the famous early case of Marbury v. Madison, Chief Justice Marshall declared that it is the duty of the Court to declare acts unconstitutional when Congress has overstepped some part of the Constitution in legislating. Though this idea, on the whole, has met with public favor, nine or ten decisions have caused much comment because they were by close vote of the court, most of them disputed because of a five to four vote of the nine members. The Dred Scott case in 1855, one of the split decisions, did much to precipitate the Civil War. Several recent decisions, notably the five to four decree in the Gold Clause case, have also led to further discussion as to whether Congress or the Court should determine what agrees with the Constitution, or what is best for the people of the country.

SUSA. Known in the Bible as Shushan, this ancient city was the capital of Elam, until taken by Ashurbanipal about 660 B. C., then of the Persian empire under Darius and his dynasty, and then the seat of the oriental empire of Alexander the Great, 331 B. C. Several detailed references occur in ancient literature, such as a full account of the conquests of Ashurbanipal and Alexander. Since 1850 excavations have unearthed a citadel, the palace of Darius, many beautiful inscriptions, much artistic tiling, some of it now in the Louvre at Paris. In 1901 the Code of Laws of Hammurabi was located, the most enlightening ancient statutes that we have. Pottery from the Neolithic age was located about 25 meters under the surface; higher up, vases made by the wheel of the potter, Greek objects, coins, and many other art creations. Mohammedan tradition mentions the tomb of Daniel, the Hebrew prophet, at Susa, but this is not yet clearly identified. Susa flourished until about 1300 in our era.

SWEDEN. After 1300 the Goths in the south and the Swedes in other portions of modern Sweden, united to form one country. Previous to this the Yngling and Folkung lines had ruled, and Christianity got a foothold before 900. In 1397 Denmark and Sweden were loosely united, but, after several struggles, Gustavus Vasa drove the Danes out and became king in 1523. His line was made hereditary, but in 1600 Charles IX replaced Sigismund, who was king of Poland and after 1592, of Sweden. During these years Protestant influence replaced that of the Jesuits. Gustavus Adolphus, son of Charles, made Sweden a world power, but his daughter, Christina, in 1654 resigned the crown to her cousin, Charles X, who defeated his Polish rival and finally expelled the Danes. In 1660, Charles XI made an agreement with his Polish cousins, but gave up Livonia and Estonia. Then Charles XII waged wars with Denmark, Poland, and Russia, but left no direct heir, and his sister and her husband, Frederick of Hesse, were given the crown. In 1814 Sweden acquired Norway, and the French Bernadotte was declared heir in 1810, succeeding Charles in 1818. From this time until of late, Sweden exercised little influence in European politics, but became known for pacific aims and great internal prosperity. Norway broke off in 1905 by a peaceful separation. Sweden became neutral in the World War, suffered much from loss of shipping, and in 1918 occupied the Aaland Islands, the inhabitants of which in 1917 had requested alliance with Sweden rather than with Finland. After the World War, Sweden agreed to dismantle her forts in the Islands, and the League of Nations gave them to Finland, thus settling a dispute of long standing.

SWISS CONFEDERATION. Julius Caesar fought the Helvetii in 58 B. C., and Augustus subdued them in 15 B. C. In 450 the Burgundians and Alemanni conquered Helvetia, as Switzerland was then known, dividing the country into two parts, with the Alemanni east of the River Aar. Rudolph of Habsburg gained the throne in 1273, but the cantons of Uri, Schwyz, and Unterwalden joined with Zurich and expelled the Habsburgs in 1315. Austria was fully expelled in 1388, and Aargan was taken from Austria in 1415. The Swiss overcame Charles the Bold of Burgundy in 1476, and Maximilian in 1499 in six hard battles. In 1513 the Confederation had 13 cantons; in 1798 a republic was formed; in 1803, Napoleon aided the Swiss and six cantons were added; in 1815, the number became, as at present, 22. The Congress of Vienna in 1815 guaranteed the neutrality of the Swiss, and Valais, Neuchâtel, and Geneva were added from French territory to the Confederation. During the World War, Switzerland remained steadfastly neutral, despite efforts to get her to take sides. With the establishment of the League of Nations at Geneva, much prestige came to Switzerland.

SYRACUSE. Founded by Corinthian settlers in the 8th century B. C., Syracuse by the middle of the 5th century was widely known. For about 50 years dating from 467 B. C., Syracuse was a free democracy. Meanwhile, Athens had miserably failed in attempts to conquer Sicily, when other Greek tribes sent armies to assist Syracuse in one of the campaigns of the Peloponnesian War. The forces of Athens were cut down on land, and their ships almost totally wrecked off the shores. If Greece had won in this conflict, the western civilization for centuries

might have been Grecian, rather than Roman. When the Romans at last took Syracuse in 212 B. C., little impression was made, the city declined, and never again became a great power in the Mediterranean. After the Saracens took Syracuse in 878, the city rapidly disintegrated.

SYRIA. Since 1920 a state of Asia under mandate of France and formerly a Turkish province after 1840. Syria suffered from numerous conquests by ancient empires, some of them being Assyria in the 8th century B. C.; Persia, two centuries later; Alexander the Great, 334 B. C.; next the Selucid empire; and finally the Romans under Pompey in 64 B. C. When the Roman world split into halves, Syria remained part of the Byzantine or Eastern Empire until the Arabs came in 636. Then Syria fell to the Egyptians, after the Mohammedans had managed to hold out against the Crusades. During most of these changes, the land suffered little, but after the Mongols came in 1260, decline was pronounced, and from 1516 to 1840, Syria was in control of the Ottoman Turks. In the 19th century the Druses massacred great numbers of native Christians and others in Syria. On Oct. 1, 1918, Gen. Allenby, of the British army in Asia, captured Damascus, and by the end of the month had control of the entire country, including the railway to Bagdad. By the Treaty of Sevres, 1920, France was awarded a mandate over Syria by the Supreme Council of the League of Nations.

TAMERLANE. See under *Timur*.

TAMMANY HALL. Political organization in the City of New York, named for an Indian chief, and dating from 1789. Helped secure the vice presidency for Aaron Burr, 1801; was incorporated as a charitable society in 1805; and has always done much relief and social work among the poor of New York. The first Hall of the Society was built in 1811, second in 1867, and the present one in 1929. Affairs of the organization are managed by a small committee, the chairman of whom has been called a "boss." One of these, William M. Tweed, accused of tremendous frauds, was exposed in 1871, tried, and died in prison, while suits against him were pending to force the return to the City of $6,000,000 from the "Tweed ring." In 1886 Richard Croker became boss, and Tammany came back into its old-time vigor. The power of Tammany is gained by an elaborate organization of committees, ward workers, and an effective central control; second, by appealing to voters through charity, aid in obtaining jobs, medical and legal assistance for the unfortunate, and other methods.

TANNENBERG, BATTLE OF. During the last week of August, 1914, a Russian army of 230,000 was defeated with great loss by 130,000 Germans under command of Gens. Ludendorff and Hindenburg, the latter of whom had been recalled from retirement to conduct the main campaign. The Russians allowed themselves to be led on by the enemy, which seemed to be retreating. Samsonov, in active charge, had only two weeks before arrived from sick leave in the Caucasus. He was unfamiliar with the ground, the communications were bad, the men in need of food and shelter. Besides, the wireless messages and orders had been intercepted by the Germans. The Russian center fought valiantly, the XV corps bearing the brunt of the German attack, while the Russian wings gave little help. About 2000 men from this and the XIII succeeded in escaping. The Russians had 132 battalions, 96 squadrons, 620 guns (only 13 of them heavy), while the Germans had 155 battalions, 48 squadrons, and 818 guns, 128 of them heavy. The Russian losses were about 70,000 killed and wounded, 90,000 prisoners, and 200 guns.

TEMPERANCE SOCIETIES. Agitation to curtail the use of strong drink began before 1800. In the House of Lords an energetic speech was made in 1743, and the novelist Smollett, by ridicule, hot and invective, spoke against excessive drinking, quoting the sign on the public inn, "Drunk for 1d., dead drunk for 2d." At New Ross, Ireland, in 1829 the first temperance society was formed. From 1821 to 1850 the Foreign Temperance Society agitated in many parts of the world. Father Theobald Matthew, an Irishman, swept the country by storm, gained 4,000,000 converts, and then went to England and America, where he had a large following. Consumption of drink in Ireland fell off one-half during his campaigns. John B. Gough, from 1840, became a flaming crusader in the United States. In 1842 the New York Temperance Society had 4,000,000 adherents. In 1850 the Independent Order of Good Templars was organized at Utica, N. Y., and then in hundreds of communities.

The **Women's Christian Temperance Union** was founded in 1870, the World W. C. T. U. in 1883, and the Anti-Saloon League in 1895, growing out of a movement in Oberlin, Ohio, and elsewhere. The League did much to secure local option in various states, and finally national prohibition. Both the League and the W. C. T. U. have led in temperance propaganda, use of radio, pictures, drama, and other aids. In 1926 there were in the United Kingdom and Irish Free State, some 49 national societies; in the United States, 15; in Australia, 12; Holland and Sweden, six each. As early as 1642 Maryland passed a law against drunkenness. Indiana had local option in 1842, by which various small districts can vote as to whether they desire license or not as to liquors. In 1900 one-third of the United States was under local option; in 1911, 33 states had some provisions for it. See *Eighteenth Amendment*.

TEUTONIC KNIGHTS. During the siege of Acre in 1190, a brotherhood of German knights was organized by Crusaders in Palestine. Pope Clement recognized the order in 1191, and seven years later the plan was changed to a knighthood with political aspirations. Having withdrawn from Palestine, the Knights made war on the heathen Prussians in the Baltic regions of Europe, subdued them, and forced Christianity on their subjects, after wars lasting for fifty years until 1283. They gained control of Livonia and Courland, waged wars with Lithuania for territory, and finally after 1300 extended their possessions to Danzig and Pomerania. At Tannenberg the Polish king, Ladislas, 1410, defeated the Knights in battle, and from then on their power began to decline. Napoleon suppressed the organization in the Prussian region, but it was revived in Austria twenty-five years later.

THAMES, BATTLE OF THE. In 1813 the British crossed into Ohio from Canada, took Fort Meigs, but were beaten at Fort Stephenson. Then Perry cleared the lakes of hostile craft in his battle of Lake Erie, and the Americans again crossed into Canada, where they pursued the retreating British commanded by Gen. Proctor. On Oct. 13, 1813 the British and Indians, the latter under chief Tecumseh, halted to meet the Americans commanded by Gen. Harrison. The American cavalry soon broke the lines, most of the British withdrew, and the Indians fought stubbornly. Tecumseh was slain, the alliance between Indians and British was terminated, and American losses of the year 1812 were compensated.

THEBES. Magnificent city of ancient Egypt, 300 miles south of Cairo, on both banks of the Nile. Between 1600 and 1100 B. C. it was the capital, replacing Memphis, during the XI to the XVIII dynasty. The temple of Karnak, some of the royal tombs, and other monuments date much farther back. Recent interest has centered in the Valley of Tombs near Thebes, where in 1922 the magnificent collection of objects in the tomb of Tutankhamen (ruled 1360-1350 B. C.) was discovered. At present the site of Thebes is occupied by houses of natives who act as guides to the neighboring ruins, such as Karnak, Luxor, the tombs, palaces, and other extant remains. Amenophis III built three new temples and connected two with the older one at Karnak by the avenue of sphinxes. These remains now cover three miles square. Ikhnaton, son of this emperor, withdrew to Amarna, and set up a new monotheistic worship of the sun, to replace the old gods of ancient Egypt. After 20 years a new dynasty of Seti I and Remeses II added greater splendor to Thebes. With the rise of other cities after Remeses, moving of the capital of Egypt from place to place, and changing ideals of the pharaohs, the ancient capital began to lose favor. In 668 the Assyrians carried off many treasures, and Augustus almost destroyed Thebes. Despite the ravages of ages, the burning of some of the buildings to make lime, and characteristic oriental neglect, Thebes today has the most extensive area of magnificent ruins to be found anywhere in the world.

THEMISTOCLES (c. 514-449 B. C.). An Athenian leader, who advocated a large navy, opposed Aristides the Just, and for ten years ruled almost unopposed. When Xerxes of Persia came with a great army and powerful fleet, the Athenian commander remained timid and inactive. Themistocles

let the word go to the Persians that Greece should be attacked at once, or the ships would get out of the harbor. Xerxes immediately began the battle, which was a complete victory for the Grecians, and Themistocles greatly increased his personal fame. He rebuilt the ruins left by the invasion, fortified anew the harbor of the Pireaus, reduced the tax on foreigners, and so attracted many from other lands, and all the time kept Sparta guessing as to his moves. In the end the Athenians began to distrust him and finally ostracised him, after which he fled to Argos, then to Corcyra, and at last to Asia, where he died.

THERMOPYLAE. Name of a narrow pass between the northern and southern parts of Greece, the name meaning, literally, *hot gates*, because of the hot springs in the pass, which is two miles at its widest and narrows at the center to a few yards. Here an immense force of Persians, commanded by Xerxes, encamped and sent word to Sparta that the Greeks should withdraw and let them through the pass. Leonidas of Sparta sent word for the Persians to come and take Thermopylae. He had but 300 men of his own, some freedmen, and allies, amounting in all to about 10,000 men. An attacking party was beaten off, then Xerxes sent his 10,000 "immortals" against the pass, but these, and later the whole army were held off for two days. The Persians bribed a Greek to show them a way around, and so they came upon the rear of the Spartan guard. Leonidas, seeing the case was hopeless, dismissed his allies, save that 700 Thebans chose to remain with him. They were cut down by the arrows of the Persians. Winning the battle gained the Persians little, and they learned then that the Greeks were no mean foes. Antiochus III of Syria, in 191 B. C., suffered utter defeat there. Brennus and his Gauls in 279 B. C. gained a victory at Thermopylae by using much the same methods as those of Xerxes.

THIRTY YEARS' WAR. Austria, some of the Catholic princes of Germany, and Spain carried on a series of wars against various opponents from 1618 to 1648. Four different struggles may be described. First, Frederick, Elector Palatine, who had been made king of Bohemia, was driven out of the lower provinces of the Palatinate. Second, Christian IV of Denmark, coming to the aid of German Protestants, was obliged to conclude a disastrous peace. Third, Gustavus Adolphus of Sweden conquered Pomerania and Mecklenburg, and won the important battle of Lutzen (1632), but he was killed, and the Protestant cause received a check under his successor. Fourth, Sweden again came to the help of France against the Habsburgs. After several years of diplomatic exchanges, the Peace of Westphalia at last frustrated all attempts of Austria and Spain to restore their religion in Germany and to make Germany part of the Habsburg state in central Europe.

TICONDEROGA. In 1755 the French built a fort at the outlet of Lake George, 100 miles north of Albany, New York. Three years later this was attacked by the British and colonials, but was saved, though the French abandoned it and Crown Point the following year. Both of these forts were enlarged and improved by the British at a great cost. In 1775 only 50 men were stationed at Fort Ticonderoga, and Ethan Allen, with some of his Green Mountain boys, captured the fort during a surprise attack. Gen. John Burgoyne again took charge for the British in 1777, and the fort was newly garrisoned in 1780, but after the close of the Revolution was allowed to fall into neglect. Ticonderoga now contains an interesting collection of colonial relics.

TILLY, JOHANN TSERKLAES, COUNT VON (1559-1632). Military genius, born in Brabant, general in the Thirty Years' War of the Catholic army, and successor in 1630 to Wallenstein as commander-in-chief of all the forces of Germany. His early successes include the defeat of Baden at Wimpfen in 1622; of Christian of Brunswick at Hochst in 1622 and at Stadtlohn in 1623, after which he was created a count of the empire. Next, he humiliated the king of Denmark at Lutter in 1626, and with Wallenstein compelled the Danes to make peace at Lubeck. Tilly now entered upon a period of ill success; for Gustavus Adolphus routed his army in 1631, after which the Swedes and allies drove Tilly into Bavaria, and made him cross the river under heavy fire, during which he was fatally wounded.

TIMUR (1336-1405). Also known as Timur-i-Leng, which in English is Tamerlane or the Timur who is Lame. Though like his father at first a studious reader of the *Koran*, he turned to the military life at 22 and became the most renowned conqueror of his generation. By 1369 he had crushed all opposition from native princes and had assumed the throne at Samarcand. Within the next twenty years, he had subdued to his will much of Persia, Georgia, and neighboring lands. When more than 60, on hearing of civil commotion in India, Timur went thither with a great horde of followers. With the help of a grandson, he took the various cities and states until he came to Delhi, where it is said he put about 100,000 to the sword, and so gained the notoriety of being one of the great butchers of all time. In April 1399 he was back in his capital, with a tremendous store of booty. Turning to the west, he captured Bagdad, Aleppo, and Damascus on the way to conquer the Turks and Egyptians. At Angora in 1402 he deposed the sultan Beyezid I, and carried him along as an exhibit on his march. He died while planning a raid on China. The empire of Timur stretched from the Volga to the Persian gulf, and from the Hellespont to the Ganges. Marlowe made him the hero of his early tragedy.

TIPPECANOE. During the settlement of Indiana Territory, the Indians made a raid on the new stockade at Terre Haute. William Henry Harrison, with a force of about 800, went to a point on the Tippecanoe River, now about six miles north of Lafayette, Ind. Here the Prophet, a brother of the chief Tecumseh, was inciting the Indians against the new settlers. Led by three chiefs, the red men attacked Harrison's camp on Nov. 7, 1811, but were beaten off after a desperate fight of two hours. The Americans lost about 180 men; the Indian loss was unknown, but Harrison thought they had about 6000 braves in the battle, with many casualties. The results of this conflict helped drive the Indians to side with the British in the campaign of 1812.

TIRPITZ, ALFRED VON (1849-1930). Entered the navy in 1865. Became admiral in 1911. After 1897 his work was mainly administrative until he resigned his command and all honors in 1916. Through his efforts, the development of the German navy was largely due. He decried any measures that would antagonize other nations, and in 1914 did not heartily favor war. After Germany entered the conflict, he favored a decisive naval battle, but others overruled him. After the World War he entered the Reichstag as deputy of the German National Party. He favored the Dawes Plan, but spoke against the Pact of Locarno.

TOLTECS. Obscure people said by the Aztecs to be the founders of culture and the arts in Mexico, where they flourished from 900 to 1100. Their great national hero was Quetzalcoatl. According to the Aztec and Mayan legends, the Toltecs lived near the ruins now extant at Tula, also at Cholula, and in the vicinity of Mexico City to the northwest. Some believe these early people came from the north, and in turn were displaced and driven into what is now Guatemala by other tribes from the north.

TORIES. Popular name for the Loyalists, or those who sided with the mother country at the time of the Revolution. The Loyalists came from the office-holding class, ministers and other professionals, landed proprietors, wealthy merchants in cities, and natural conservatives. John Adams estimated the Tories in the original colonies at one million, or a third of the total population. New York had the greatest number of all the colonies, led by the "DeLancey party" or "Episcopalian party," as they were then called. Over 23,000 troops from New York fought on the British side. The "Loyal Greens" and "Tory Rangers" served under Gen. St. Ledger in the Burgoyne campaign, and some of them in the Cherry Valley and Wyoming massacres, but Gen. Sullivan at Newtown (now Elmira) checked the Tory enlistments by his victory. Severe restrictions on Tories were passed by all the colonial legislatures, some of which were not removed until after the second war with Great Britain. In many instances, property was confiscated, and over 60,000 Loyalists went into exile between 1775 to 1787, most of them to Canada, where Ontario and New Brunswick were settled in part by them. In

Canada they were known as United Empire Loyalists. When the various states delayed recognition and compensation to the Tories for property destroyed or confiscated, Great Britain held possession of the forts in the Northwest Territory until 1796. Eventually, the British government paid about $30,000,000 to satisfy the claims for property damages.

TORONTO. Provincial capital of Ontario and second largest city in Canada, Toronto is a beautiful residence, school, and official city. In Indian the name Toronto means "a place of meeting." Long before the white men came, Indians gathered there for their pow-wows. French traders settled there in 1749, but the British soon arrived, and in 1793 the French destroyed their fort at this point. In 1794 Simcoe, the governor of the province of Upper Canada, moved the official residence to Toronto, giving it a new name, York, honoring the second son of George III. In 1812 the government buildings were burned, and the town pillaged, but in 1834 Toronto had 10,000 people and was made a city. The present parliament buildings are impressively set in a large park in the center of Toronto, and near are the University, which is famous for its researches in health and medicine, other colleges, hospitals, and fine residences.

TOURNAMENTS. Geoffroi de Preulli, a French baron, killed in 1066, is said to have invented tournaments. These were exercises, friendly in nature, but imitating the arts of war, such as attack, defense, attempts to unhorse an opponent, or to cause him to retreat. Both the Council of the Lateran in the 12th century and Henry II in England forbad tournaments. Yet they flourished on a grand scale in England in the reign of Richard I, who granted licences to hold them. Many went from England to witness the tournament on the continent. Jousters or professional knights went from place to place. Edward I, while still a prince, led 80 knights in a tournament on the continent. Part of coronation and wedding ceremonies were sports in the lists. In 1292 laws were enacted making the conduct of tournaments more careful, but many met death or serious injury in these sports. After 1500 when Henry II of France died from a hurt in a tournament, the sport fell into neglect. Later tournaments became pageants, exercises in sword play, mock encounters by clowns, or other diversions. In 1839, at Eglinton Castle, Ayrshire, a tournament was held in imitation of the ancient manner, as described in Disraeli's *Endymion.*

TOURS, BATTLE OF. Here at the capital of Touraine, Charles Martel in 732 checked the advance of the Moors into northern Europe. In 711 these Arabians poured over the Mediterranean into Spain and ended the Visigoth kingdom; then they captured Narbonne across the Pyrenees in 720; and proceeded into Gaul as a source of further plunder. For a time the invaders took advantage of a conflict between Martel and the duke of Toulouse, while they plundered along their way from Bordeaux toward Orleans. At Tours, Charles met the Arabs with a large army, drawn up in a solid frontal formation. The Moors could make no progress against this "immovable wall." By night the Arab chieftain had been killed, and by morning, when the Franks again sought to renew the battle, nothing was found in the tents where the invaders had camped. With troubles in Africa that arose about this time, this battle ended the threats of Moorish conquest in what is now modern France.

TRADES UNIONS. The earliest union of workers in this country seems to have been the society of journeymen shipwrights in New York in 1803. Others followed, such as the carpenters, 1806; tailors, 1806; printers, 1817; and shipwrights in Boston, 1822. These were local crafts unions, organizations in single trades only. By 1836 crafts had 300,000 union men. These early organizations were social, charitable, and some secret societies; some aimed to keep secrets or monopolies of their trades. After 1850 combinations of local unions began, such as the typographers, 1850; stonecutters, 1853; moulders, 1859. In 1866 the National Labor Union was organized; in 1869, the Knights of Labor. These and others gave way to the American Federation of Labor in 1881, the most important amalgamation of unions today. Robert Owen's *Free Inquiry,* 1825, stimulated ideas of union and labor cooperation. Miners unions were admitted in 1887. About 15% of all workers are members of some general union today. Many plants have shop or individual company unions; most of these are unaffiliated with other groups.

The A. F. of L. comprises five industrial departments, loosely bound together by common aims, but all having much autonomy in their trades or crafts. From 1910 to 1930 membership increased from 1,560,000 to over 3,400,000. Local unions in 1921, 36,250; in 1930, 29,226. Samuel Gompers for many years was president of the Federation, he being followed by William Green. The Pan-American Federation of Labor, formed in 1922, has 20 national groups in 14 American countries, with United States and Mexico leading. Three large international organizations exist in Europe,—one at Amsterdam, with 14,000,000 members; one at Utrecht of Christian Trades Unions, with 200,000 members; and the Russian International, founded, 1924, having central office at Moscow, with 13,000,000 members.

TRAFALGAR, BATTLE OF. Napoleon had intended to try to invade England, but the failure of his fleet in the Atlantic caused him instead to send his army against Austria. The French admiral, having been beaten off the West Indies, retired to the harbor of Cadiz, and seemed reluctant to come out. At last Napoleon ordered him to go through the Mediterranean to support the campaign on land in Austria. Nelson had posted his smaller ships near the shore to watch the harbor, while he took the main fleet out to sea over 40 miles, and there stood ready. Of the 27 British warships in action, Nelson's subordinate admiral, Collingwood, was given control of 15. When the French and Spanish fleet came out of the harbor, Nelson's line of battle was too far off to be seen, while Nelson kept himself informed through signals from his ships along the shore. When the allied commanders found a much larger number opposed to them than they had dreamed were near, they realized it was too late to change their plans. Collingwood was able to engage the last 12 ships of the allies, and Nelson to sail through the line of enemy ships, raking them as he crossed the course. Twenty of the allies ships, 60% of the entire fleet, were captured, with a great loss of life. Nelson himself, in the moment of victory, died of a wound from a musket bullet.

TRANSJORDANIA. An Arab state constituted under the mandate for Palestine given to Great Britain after the World War. The country has a legislative assembly of 22, a king, who in 1935 was Abdullah, second son of former King Husein of Hejaz and brother of King Feisal of Iraq. In 1924 Hejaz (now called Saudi Arabia) transferred three districts to the Transjordan, and in 1933 the governments of the two countries agreed on a mutual scheme of defense of their borders against raids from neighboring tribesmen. The Transjordan is largely desert, except for a few portions, contains about 16,000 square miles, and a population of about 300,000 mostly nomad Arabs, including 30,000 Arab Christians.

TRANSVAAL. Since 1909 one of the parts of the South African Union, which before 1900 was known as the South African Republic. Descendants of the early Dutch colonists in Cape Colony in 1836 made a "great trek," which took them across the land that later was set up as the Orange Free State, into the promised country beyond the Vaal River. After financial difficulties in the Transvaal, England annexed the territory in 1877, but the native Dutch or Boers revolted in 1880, were defeated at Majuba Hill the next year, and again given self-government that season. In 1884 the discovery of gold in the Transvaal brought a horde of adventurers, mining men, and other foreigners, but restrictions and heavy taxes were put on these "Uitlanders." Finally, in 1895 Dr. Jemeson made a raid into the Transvaal, the design being to free the newer settlers from Boer domination. The South African War followed in 1899, after which both the Transvaal and Orange Free State became part of the British domains. In 1906 Transvaal again was given self-government, and in 1909, with Orange Free State, Natal, and Cape Colony, was formed into the Union of South Africa, a British dominion. See *South African Union.*

TRENT AFFAIR. Capt. Charles Wilkes of the United States boat *San Jacinto,* 1861, stopped the British mail steamer *Trent* on the high seas and forced the captain to deliver two senators, Mason and Slidel, who had been commissioned by the Confederate States to negotiate in France. These

men were taken to Fort Warren in Boston harbor for imprisonment. On demand of the British minister at Washington, they were released, and apologies were made by the northern government. Both President Lincoln and Secretary Seward agreed that taking two men from a neutral boat was indefensible; especially so in this case, for the *Trent* was bound from Havana to St. Thomas in the West Indies.

TRIPLE ALLIANCE. In former times the name for an alliance between England, Holland, and Sweden (1668) for the purposes of saving the Spanish Netherlands, now parts of Holland, from the designs of Louis XIV. Other triple alliances, in recent periods, are probably even better known. Some of these are (1) an agreement formed by Britain, France, and Holland against Spain (1717); (2) one between Britain, Russia, and Austria in the time of revolutions in Europe (1795), mainly to protect themselves against France; (3) one between Germany, Austria, and Italy for mutual defense and progress. This last was made about 1883, was renewed from time to time, and in theory was effective when the World War broke out. Italy refused to assist Austria, saying that the latter was not attacked, but instead was an aggressor in the war, and at last Italy joined the allies against Germany and Russia. During this period, France and Russia had an agreement for mutual protection; and with England, these two countries formed the Triple Entente, opposed to the Alliance, and these two arrangements were supposed to keep the "balance of power" and secure the peace of Europe. In most cases, the texts of treaties covering these alliances have never been published in authentic forms.

TRIPOLI. Also called Tripolitania. Since 1912 this district in northern Africa, formerly a Turkish vilayet, has been controlled by Italy. The Phoenicians early founded three cities in the territory west of Cyrenaica along the eastern Mediterranean. Carthage, Greece, Egypt, and Rome successively ruled this district. After 400, numerous changes in sovereignty occurred, with the Vandals, then the Arabs after 600, Tunisia, the Normans of Sicily in 1146, independent from 1321 to 1401 (except for 1354-69), and from 1526 to 1553 by the Knights of St. John, when the Turkish princes took charge. For years the pirates of Tripoli were bombarded by the powers of Europe, even after 1714 when Tripoli became almost independent, merely paying tribute to Constantinople. In May 1801 the United States refused longer to pay an annual levy of some $83,000 to insure freedom from molestation of commerce in the Mediterranean. The Americans sent over a fleet, which blockaded the ports of Tripoli. The frigate *Philadelphia* with her commander and crew were impressed into virtual slavery. In 1805 the pasha gave up his demands, but received a tribute of $60,000 for the release of the American prisoners. In 1815, after further piracies, the Tripolitans were brought to account by Bainbridge and Decatur of the U. S. Navy. (See articles on *Decatur* and *John Paul Jones*.) In 1835 the Turks again took Tripoli, but in 1881 the French occupied Tunisia, and Italy, after a war in 1911, assumed control of Tripoli, which finally in 1928 was firmly established.

TUDORS. Owen Tudor, a Welshman, was the father of five children, the eldest son being Edmund (b. about 1430), who became Earl of Richmond in 1453, and in 1455 married Lady Margaret, daughter of John Beaufort, the duke of Somerset. A child, born three months after his death, became Henry VII. The other four Tudor monarchs were Henry VIII and Edward, Mary, and Elizabeth, his three children. The Tudor dynasty began to rule in 1485, and became extinct in 1603, when the crown passed to James VI of Scotland, of the house of Stuart, who became James I of England. For individual Tudor monarchs, see *Biography* section.

TURKEY. The Ottoman Turks appeared in western affairs in 1227, and Orkhan (1326-1359) first made the Turks a power, and exacted tribute from neighboring Christian states. Amurath I (1359-1389) took possession of the Balkan peninsula, but the great Timur's Mongol hordes were too much for Sultan Bayezid (Bajazet) in 1402. Amurath II (1421-1451) conquered the Hungarians and Macedonia, and his son Mohammed II in 1453 took Constantinople and thus ended the eastern Roman or the Byzantine empire. Three years later he besieged Belgrade, but the city was saved by the heroic John Hunyadi. Serbia and Bosnia fell to the Turks a few years after this. Belgrade at last capitulated in 1521 under Suleyman the Magnificent (1520-1566), under whom the empire attained its high point of splendor. The fleet of Venice, Spain, and the Pope at Lepanto, 1571, dealt the Ottoman power a severe blow, and the decline of Turkey was halted only for a time by the capture of Bagdad by Murad IV (1623-1640). After internal troubles, Turkey suffered another great check when Charles of Lorraine and John Sobieski of Poland routed the armies of the sultan near Vienna in 1682. Further incidents in the political decline of Turkey are these: Loss of Buda to Austria in 1686; end of rule in Hungary, Transylvania, and Podolia in 1718; loss of the Crimea and other districts to Russia in 1774; loss of Greece in 1828; troubles with Balkan districts as to treatment of subject peoples, from 1856 to the World War; rise of Russian influence in eastern Europe; the Young Turk movement, which deposed Abdul Hamid in 1908; the loss of Tripoli after the disastrous war with Italy in 1911; and finally the war of the Balkan allies, which stripped Turkey of her land in Europe, save for Istanbul, Adrianople, and some surrounding districts.

During the World War Turkey at last sided with her former enemies, and came off with a crushing defeat. Though the nominal head of the church proclaimed a Holy War, the Arabian Mohammedans refused to follow, joined the allies against Turkey, wrested control from the Ottomans, and set up a new religious government of their own. By the treaty of 1920, Turkey lost Thrace, Smyrna, Cyprus and other islands, Egypt, Armenia, Mesopotamia, Syria, Palestine, and the Hejaz (now Saudi Arabia). When Mustafa Kemel Pasha (Kemel Ataturk) gained control in 1923, the capital became Angora in Asia Minor, the caliphate was abolished in Turkey, women were given rights like those in western nations, the Mohammedan law was changed for Roman and Swiss, and the western alphabet was adopted, along with the Gregorian calendar. Other signs of the modernizing of Turkey were the refusal to establish a state religion in 1928 and admission to the League of Nations in 1932.

TYLER, WAT (d. 1381). Leader of a workers' rebellion in England. Distress following the Black Death led both the craftsmen in towns and the peasants on farms to seek relief from taxes and other restrictions. In 1379 and 1381 a poll tax was imposed, and in May of 1381 riots broke out at various points. A mob in Kent chose Wat or Walter Tyler leader, seized the castle of Rochester, entered Canterbury, sacked the palace of the Archbishop, and then went on toward London. They burned the prison in Southwark, London, beheaded three "traitors," and rifled the residence of the archbishop at Lambeth. In a parley with Richard II, a boy of 14, the peasants demanded abolition of feudal services, taxes, and restrictions on labor. These demands were granted. The mob returned to the Tower in London, dragged out the Archbishop and Sir Robert Hales and put them to death on Tower Hill. London was plundered, and many were killed. Then the citizens rose up in defense. At another conference with Tyler, fresh demands were made and agreed to, but Tyler became abusive, and the mayor and a squire of the king killed him on the spot. This broke up the rebellion. Parliament in 1381 revoked the promises made by Richard, and little came of the movement.

TYRE. Famous ancient city of Phenicia, now in Great Lebanon, a mandate of France since 1920. The old city was largely on an island, to which a causeway had been built, and was an impregnable fortress. The name appears in the Tell el Amarna letters of the 14th century, and is mentioned along with Sidon in the Scriptures. Hiram, king of Tyre, visited and assisted Solomon in building the Temple. Both Assyria and Babylon tried to take the city. Shalmaneser, defeated in a sea attack, laid siege to Tyre for five years, and died before he took the town. Ashurbanipal in 664 B. C. took the city by storm, but Nebuchadrezzer for 13 years besieged it without success. The Seleucids took Tyre in 198 B. C., and the Romans in 68. St. Paul spent a week there on one of his journeys. In Roman times, it was the center of commerce and of the celebrated dye called "Tyrian purple"; also producer of some of the first silks known in western Asia. The Mohammedans took Syria, including Tyre, in the 7th

century, and the Crusaders made it an important part of their kingdom of Jerusalem.

UKRAINE. Ruthenians immigrated into the Ukraine from Poland and Lithuania, set up semi-independent communities, became known as Cossacks, and in 1667 came under sovereignty of Russia. Other portions were absorbed into Russia after the second division of Poland in 1793. By the middle of the 19th century, movements for national unity attained some strength. In the spring of 1917 a separate government was set up at Kiev, with the election of a *rada* or council. The Bolsheviks later objected, disorder followed, Germany and Austria sent forces to get food and to set up a government, after which Ukraine joined the West Ukraine republic. Two other governments followed, the White Russians tried to force the Bolsheviks out of the district, and finally in 1921 the Ukraine republic was recognized by Russia. Treaties were signed with various powers, in 1923 the Union of Socialistic Soviet republics came into being, with Ukraine a member, and in 1924 a Moldavian republic, as part of the Ukraine, was organized.

UNDERGROUND RAILROAD. This term came from the fact of the euphemistic use of railway terms like *lines, stations, freight, conductors* to apply to the elaborate system of getting slaves from the South to freedom in Canada. Branches ran from Kentucky and Virginia through Ohio, from Maryland across Pennsylvania and New York and New England. Anti-slavery advocates along the way gave shelter, food, and often transportation to negroes seeking escape from the rigors of the Fugitive Slave Law. Thomas Garrett and other Quakers of Pennsylvania, it is asserted, so helped 2700 slaves to escape to Canada. Old Harriet Tubman, a negress known as "General" to John Brown and as "Moses" to the slaves, went to the South, and helped some 200 or 300 to get away. Levi Coffin, who had lived in North Carolina, afterward moving to New Garden, Ohio, later to Cincinnati, was one of the "presidents" of the underground railway. Much of the work was carried on with the connivance, sometimes the assistance, of local officials; the *trains* ran mostly at night. Authorities tell us that between 25,000 and 100,000 negro slaves escaped to freedom by means of such assistance.

UNION LABOR. See *Trades Unions*.

UNION OF SOCIALISTIC SOVIET REPUBLICS. See *Soviets*.

URUGUAY. Between 1512 and 1625, various attempts by Spain to subdue the brave Charruas Indians of the Plata in South America, met with complete failure. When Philip III sent the Jesuits there, the missionaries succeeded where the military leaders had made no headway. At last in 1726 the Spanish set up a government at Buenos Aires, and in 1777 they drove out the Portuguese. After being ruled by Brazil and Buenos Aires after 1814, in 1828 Uruguay became independent, though Brazil claimed border lands until 1913. Struggles between leaders, factions, and with foreign powers prevented much progress until after 1880. Uruguay adopted a very progressive constitution in 1930, to replace that of 1830, with later revisions.

VALLEY FORGE. Village some 24 miles northwest of Philadelphia, where Washington and his army spent the winter of 1777-78. After the failure of the campaign in New Jersey, the troops were disheartened, greatly in need of supplies, and hardly fit for service. Baron Steuben, however, was able to reorganize the military discipline, and to make headway in all forms of military tactics. Yet the authorities in Washington failed to issue requisite supplies, and Washington himself almost gave up the struggle. At the time he wrote: "We have this day no less than 2875 men in camp unfit for duty because they are barefooted or otherwise naked. . . . Numbers are still obliged to sit all night by fires." On June 18, 1778, the army broke camp, recaptured Philadelphia from the British, and started on the second campaign in New Jersey. In 1893 Valley Forge became a state park.

VANDALS. Teutonic people who came from northeastern Germany and helped terminate the Roman empire. Under Aurelian, 271 A. D., the Vandals occupied one wing of the imperial army; and under Constantine I, eastern emperor, the Vandals settled in Pannonia about 330. This restless people two generations later began to swarm into Gaul, and then across the Pyrennes into Andalusia (from *Vandalusia*). Boniface, count of Africa, allowed them to come across the Mediterranean about 429, and here they mastered Carthage, and much of the northern shore. They plundered the neighboring lands, and Gaiseric or Genseric became the master of Rome in 455. He and his son Hunneric expelled the Christian bishops, but one of his successors, Hilderic (523-531), contrary to the promise he made the Vandals, restored them to their sees. Hilderic was cast into prison by his cousin, Gelimir, who usurped the throne, and sent his brother to conquer Sardinia. While the army was absent from Carthage, the eastern Roman empire sent Belisarius to Africa, 533, who defeated Gelimir, and ate the dinner the servants had prepared for Gelimir in his own palace. Gelimir graced the triumphal procession of Belisiarius at Constantinople, worn out and probably insane from his troubles, while he laughed and reviled his conqueror.

VATICAN CITY, STATE OF. For many centuries the Popes held territories called the Papal States in central Italy, but the last of these were incorporated into the new kingdom of Italy in 1871. Sovereignty of the Pope was thereby confined to the Vatican, other parts of Rome, and a villa some miles away; the Pope was guaranteed a grant annually of over $600,000 but this was never claimed or collected. Following negotiations long pending, the Italian government ratified the Lateran Treaty between the Vatican and Mussolini that was made Feb. 11, 1929. By this 108 acres were set up as Vatican City and State, with independence, but not necessarily political prestige, guaranteed. In 1935 the civil government of the Vatican was reorganized. Vatican City includes St. Peter's Church, the Museum (covering over 13 acres), the Palace and Vatican gardens, and neighboring buildings, but 13 others in different parts of Rome are included. Castle Ganfalco, 15 miles from Rome, is also Vatican property, and here the Pope established his summer residence in 1934.

VENEZUELA. In 1498, on his third voyage, Columbus touched on the shores of what is now Venezuela, the first of the South American mainland sighted by him. The Spanish ruled until the revolution of 1811, out of which the present Colombia, Venezuela, and Ecuador were organized into the Republic of Colombia, with the liberator, Gen. Simon Bolivar, as President. Venezuela belonged to this unit from 1819 to 1830 when a peaceful separation from Colombia occurred, though the bounds were not finally fixed until 1923. Gen. Paes ruled the country for 19 years, until driven out in 1845. Venezuela has seen turbulent periods, changes in the Constitution, and other troubles at home and abroad. For years the question of a strong central government, or a loose federation of states, was a dominant issue, until in 1864 a federal republic was constituted. For nearly 29 years, beginning in 1869, Antonio G. Blanco held chief sway, either as president or else the power behind the government. In 1895 Pres. Cleveland hinted to Congress that he might ask a declaration of war against Great Britain if a boundary dispute with Venezuela was not settled by Britain. Satisfactory abritration followed in 1899, as did another in 1907, when nearly $700,000 were awarded to France, Germany, and Italy because of acts during the term of Pres. Castro, 1900 to 1908. For 25 years Gen. Juan V. Gomez was president or majority leader. In 1929 he declined election, but in 1931 came back into power after the death of Pres. Perez. His administration spent over $80,000,000 for internal improvements. After his death in 1935, political uncertainty ensued.

VENICE. Known as the "Queen of the Adriatic," this Italian city on islands elected a doge in 697 to be supreme in church and state. For many years Genoa and Venice contended for supremacy in commerce, which at the end of the third war went to Venice when the rival fleet was beaten in 1579. After a long war with Milan, in 1454 the city was recognized as arbiter of Italian states. Next wars with Turkey and France added greater prestige, followed by an oligarchy and the start of the decline of Venice. Following another war with Turkey, Venice lost the Morea and Candia in 1718. In 1797 Napoleon picked a quarrel with the city, which offered little resistance, and from then to 1866 was in control either of France or Austria. In 1848 Daniele Manin led a revolt against Austria and became president of Venice, but in 1849 was forced

to flee. Manin and others in Paris, however, agitated in favor of a united Italy, which was at last accomplished in 1866.

VERDUN. Fortress city in eastern France attacked by the Germans in 1916. Bombarding the French positions from Malancourt to Abancourt, with terrific ferocity, the Germans later stormed Haumont Wood and Herbebois, while the French fell back to carefully prepared positions. For over a month the operations continued, leaving the French unbeaten in the end. During May the Germans attacked Le Mort Homme, Hill 304, the key to the defenses west of the Meuse River, these being finally reduced to submission. The great battle raged around Fort Vaux, which the French most ably defended, until the whole landscape was battered almost beyond recognition. In June the German offense continued, but whole divisions had to be withdrawn to check the British offensive on the Somme. The French commander, Gen. Nivelle, started a sudden counter stroke, which pushed the Germans back, and lost their hope of breaking the allies lines about Verdun. In October the Germans gave up Fort Vaux, and by the end of the year, the French were back about where the struggle started in February. The French admitted a loss of 350,000 men, and the Germans at least 330,000, with no great gains by either side.

VERSAILLES, TREATY OF. Following the efforts of Woodrow Wilson to end the World War, which at last bore fruit in the Armistice on November 11, 1918, diplomatists of the nations agreed to meet in France for a conference in January, 1919. The first session was held in Paris on January 18, when George Clemenceau explained the nature of the problems to be discussed at the conference of Versailles. Three types of governments were represented,—the large nations with general interests, some small nations with special interests, and all others that had severed diplomatic relations with Germany. The first class was given five delegates each; a few of the smaller ones, three, the rest of them, two, and all others concerned, one each. It was a diplomatic, not a parliamentary gathering, and no special constitution or mode of procedure was established. Though numerous difficulties followed no question ever rose as to the mode of procedure or the authority of the Versailles Conference.

Some of the main considerations were efforts to form an association of nations to take the place of the balance of power and old alliances in Europe; the question of punishment and reparations that Germany should pay; international labor questions; control over seaports; and economic cooperation among friendly nations. Deliberations were usually related to three great movements: a revolt against the old doctrine of a balance of power among nations; a horror of the awful havoc wrought by the war; and a zeal to form a league of governments. President Wilson had enunciated 14 "Points" for the ending of hostilities. In a broad way the statesmen at Versailles seemed to approve of these early in the Peace Conference.

Yet in practice it was hard to get away from national ambitions of long standing. Wilson was often looked upon as an impractical dreamer or a meddler in affairs beyond his own national borders or a professor who did not understand European diplomacy and ideals. At various points old rivalries, ambitions, and personalities clashed and all but wrecked the conference. Once President Wilson brought action by hinting that he was returning to America at once. The Italian delegation actually withdrew for weeks, and Japan assumed an offish attitude very early. In both France and America attempts were made to scuttle the plans for the League of Nations after they had been formulated and promulgated. France wanted the coal lands of the Saar Valley; Italy, after resigning claims to Croatia, came back with demands for Fiume, and the poet D'Annunzio actually gained possession with a force of Italians at his call; Japan wanted a hold in Shantung, which had been reclaimed by her from German interests; and all the concerned powers wanted slices of the German colonies. In the end France allowed a postponement of the claims to the Saar, which by plebiscite finally went back to Germany. Other demands were relaxed or compensated for, and mandates for former German and Turkish territory were arranged instead of partition. See articles on League of Nations, Mandates, World War.

VICKSBURG. During the Civil War, General Grant spent much time in 1862 and 1863 planning the capture of Vicksburg, Miss., a stronghold that commanded navigation on the Mississippi. After repeated failures, Grant called for more troops from the North. With careful preparations in advance, cutting off every means of escape from the area, he bombarded Vicksburg from Federal ships for six weeks. Much damage resulted from exploding shells. At last the inhabitants were worn out from anxiety, lack of food, and poor sanitation. On July 3, 1863 the Confederates capitulated. The northern forces took 37,000 prisoners, 172 cannon, and about 60,000 muskets.

VIENNA, CONGRESS OF. Gathering of kings and diplomatists at Vienna from Sept. 1814 to June 1815, to rearrange the affairs of Europe after the downfall of Napoleon. Czar Alexander of Russia, a liberal and democratic man, among the kings, led in the discussions. The emperor of Austria, kings of Prussia, Denmark, Bavaria, and many princes of smaller states also joined in the Congress. Of the ministers there, Prince Metternich of Austria and Talleyrand of France were also outstanding, along with Castlereagh and Wellington of England, Humboldt of Prussia, and Nesselrode of Russia. Some of the main results were these: union of Holland and Belgium as a buffer state; union of Norway and Sweden under Bernadotte, a general of Napoleon; guarantee of the neutrality of Switzerland; award of most of Warsaw to Russia, west Prussia, Posen, and part of Saxony, to Germany, territory recently lost given back to Austria, with other awards to make up for the loss of Belgium, and Cape Colony, Ceylon, Mauritius, and Malta to England. The Congress condemned the slave trade, and provided for freedom for navigation of streams between states or crossing several countries. Though the Congress failed in some respects, the same as the Peace Conference in 1919 at Versailles, the peace of Europe was maintained for about 50 years by these arrangements.

VIMY RIDGE. Important position north of the River Sharpe and 10 miles from Arras, France; of great strategic value because it overlooks the country about Lens, Douay, and far beyond past Lille into the Low Countries. The French captured the position from the Germans, and also Hill 140 in 1915; but counter attacks drove them back two miles upon Neuville. In 1916 the British twice captured Vimy, but lost it again in desperate encounters. In the third battle of Arras, described elsewhere, in April 1917, the Canadians took Vimy in forty minutes under the cover of an artillery barrage. One week before this, the United States had declared war against the central powers. In consequence of our joining the allies, though no Americans had entered officially as yet, William Clancy of Texas (who was with the British infantry) carried the Stars and Stripes in the battle of Vimy Ridge.

WALDENSES. Pater Waldo of Lyons, France, in 1170 sold off all his goods, gave the proceeds to the poor, and went out as a preacher of voluntary poverty. He translated the Scriptures into Provençal, sought to explain them according to primitive doctrines of Christianity, and soon gathered numerous followers in the valleys of Piedmont. In later times they came to be known as Vaudois. Pope Alexander III favored their doctrine of poverty, but forbade them to preach without permission of local bishops. Waldo replied that he must follow the command of God, and Lucius III excommunicated him in 1184. By 1250 the chief doctrines were that oaths were forbidden by the Bible, that the state has no right to put people to death, and that any layman could consecrate the sacrament. They gradually broke with the church, suffering in consequence bitter persecution. Little settlements spread out, kept to themselves, and refused all offers of reconciliation. In 1487 a force sent against them was dispersed in a fog with great slaughter. Charles II of Piedmont offered the Waldenses some protection. They joined the later protestant movements in both France and Italy. In 1650 a new persecution reduced their numbers by a horrible massacre, against which Cromwell of England protested, and John Milton wrote his famous sonnet. Subsequent campaigns against them in their mountain valleys never succeeded in wholly crushing their spirit.

WALES. Since 1536 this land to the west has been administered as part of England, and forms with England, Scotland, and Ireland, the United Kingdom of Great Britain and North Ireland. The earliest inhabitants, thought to be of non-Caucasian race, were succeeded by the Brythonic Celts or Cymri. The Saxon invasion drove many of the latter stock

from England proper into Wales. Before this time, when the Romans came to Britain, the Welsh seem to have been a mixture of Iberians, the primitive stock, and later Celts. King Harold in 1064 began the final subjugation of Wales, completed by the Norman kings, who erected castles on the borders and gave feudal chiefs of the west much control over the Welsh. From 1136 to 1284, all the kings had trouble keeping the Welsh loyalty. Lewellan, Prince of North Wales, after years of hesitation, rebelled and perished in 1282, as did his successor, David. Edward I, in 1301, gave his son, who had been born in Wales, the title of Prince of Wales, which has since then been given to the eldest son of a reigning king or to the heir apparent to the British crown. When Henry IV took the English throne in 1399, troubles in Scotland kept him busy for two or three years, during which the Welsh, led by Owen Glendower, revolted. Henry invaded Wales several times. When Wales was incorporated with England in 1536, the Welsh received all rights and honors of English subjects.

WALLACE, WILLIAM (c. 1270-1305). National hero of Scotland, born in Renfrewshire, who gathered a force against the English, after he had been outlawed. Many prominent men joined his cause, but all except Sir Andrew Moray deserted, when the English sent Sir Henry Percy and Sir Robert Clifford against the rebels. In the north of Scotland, Wallace soon collected a large force, took most of the points held by the English north of the Forth, and laid siege against Dundee. When a force came into Scotland, Wallace quickly led his men to Stirling, where he guarded the passage of the Forth. After a fruitless parley, the English advanced across the bridge over the Forth, but Wallace fell on them when hardly half had crossed, killed many, and the rest were drowned in trying to flee. The Scots passed over the ford, pursued the troops that had not yet crossed, and drove them to Berwick. Wallace next organized a raid into northern England, was chosen guardian of Scotland, and did much to bring order in the North. Edward I defeated him at Falkirk in 1298, after which Wallace may have been in France to obtain aid, but he was excepted from pardon by the English. On Aug. 5, 1305 he was captured near Glasgow, taken to England, hastily tried, condemned, and executed the same day in a most barbaric manner.

WARREN, JOSEPH. American patriot, born in Boston, and educated at Harvard and in Boston to be a doctor. When the British passed the Stamp Act, Warren joined with John and Samuel Adams and others in organizing a popular party in Massachusetts. The result was the famous Suffolk Resolves, as they were called, drafted by Warren, and calling on the people to resist British aggression by force if need arose. Warren sat in the first three provincial congresses (1774-75), became president of the third, and was on the committee of public safety. He was appointed a major general, but three days later acted as a volunteer in the Battle of Bunker Hill (June 17, 1775), before his official commission had been received, and was wounded fatally on that day.

WARSAW. No town in Europe has suffered more changes of political control than has Warsaw. Mentioned in authentic history first in 1224, the town was until 1526 the seat of the counts of Mezovia, then was annexed to Poland, with Warsaw later as capital of the union of Poland and Lithuania. Some of the subsequent changes were—taken for a year by Sweden in 1665; by the Poles again until Charles of Sweden assumed charge in 1702; again free the following year; taken by the Russians in 1764, who put Poniatowski on the throne; taken by Russians again, 1794; by Napoleon, 1806; capital of duchy of Warsaw, 1807; taken by Austria in 1809; then free again, until Russia returned in 1813; taken by a revolution in 1831; 1915 occupied by the Germans; and since 1918 free once more. After the disorders of 1831, 1863, 1905-06, restrictions, banishments, executions, and needless bloodshed caused the Poles to look forward to freedom from Russian domination. Even after the World War, Poland and Warsaw were scenes of much disorder and uncertainty of allegiance. Warsaw is noted for its great botanical gardens, magnificent library (these two parts of the University of Warsaw), a remarkable theater building, erected in 1767-88, royal castle dating to early days, notable picture galleries and museums, and many fine villas.

WARWICK, RICHARD NEVILLE (1428-1471). Earl of Warwick and called "the king-maker," was born Richard Neville, married the daughter of Richard Beauchamp, Earl of Warwick, who brought him a title and estates. After becoming a member of the king's council in 1453, he gained much fame as champion of the Yorkists against the house of Lancaster in the civil wars. After the Lancastrians won two important victories, Warwick met Edward of York in Oxfordshire, had him brought to London, and proclaimed him king in place of Henry VI. After the battle of Towton, Warwick and his party continued powerful for four years, but, when the king married secretly instead of accepting the French match proposed, Warwick began to lose his hold on Edward IV. Because of further slights from Edward, Warwick entered into secret negotiations with the Lancastrian Queen, Margaret of Anjou, who had fled to France. With the duke of Clarence, brother to the king, Warwick returned to England in secret, restored Henry VI, and ruled for him for the next six months. The Lancastrians, however, did not relish this restoration. In March 1471, when Edward returned from France, they rallied to his support, fought the forces of Warwick at Barnet, and Warwick was slain. One of his daughters, after his death, married the duke of Gloucester, who later ruled as Richard III.

WATERLOO. Here at a small village some 12 miles south of Brussels, Wellington, commander of the allies against Napoleon, chose to take a stand to prevent the French from capturing the Belgian capital. The French had about 125,000 men, commanded by Marshal Ney, Gen. Grouchy, and Napoleon himself, taking the left, right, and center respectively. The Prussian allies under Blücher included about 120,000 Prussians; Wellington had a mixed force of over 90,000. Napoleon's plan was to beat the allied forces before they could concentrate and help each other. In this he utterly failed. Blücher fell back toward Wavre. Napoleon sent Grouchy with 30,000 to pursue him, a move that was most costly. Wellington stood his ground for battle on June 18, 1815, having halted from a retreat. For nine hours the British and allies were subjected to a terrific artillery, infantry, and cavalry attack. Late in the afternoon, the allies were pushing the French slowly backward, when the Prussians under Blücher arrived in time to render effective aid. Some of the reasons for the defeat of Napoleon were these: his bad choice of commanders under him; failure of his cavalry against a solid square of British and allied infantry; able support of Wellington by the Prussian forces under Pirch and Zieten; failure of Napoleon's Old Guard, which were finally driven back in a disorderly retreat. The French lost some 40,000 men and most of their artillery; Wellington about 15,000, and the Prussians, 7,000; the Dutch fewer. Some 45,000 dead and wounded were heaped on a field not more than three miles square. Napoleon later blamed Grouchy for the defeat, but his own plans, according to military authorities, fell far short of his former skill in strategy.

WELLINGTON, ARTHUR WELESLEY, FIRST DUKE OF (1769-1852). In 1798 he changed his name from Wesley. He saw service in Holland and India, having joined the forces in 1787, but failed to gain any special notice before 1803. For several months in 1807, he acted as Irish Secretary, then helped drive the Danes out of Zealand, and returned to his post in Ireland. In July 1808 he went to Portugal for the so-called Peninsular Campaign, and defeated the French at once in two battles. From then to 1814 he gained brilliant successes against all the men and generals sent out by Napoleon against him, for which he was made a field marshal, Marquis of Duoro, and given a present of about $2,000,000. Later he was created a duke. After the return of Napoleon from Elba, the army of the British and Prussians in Belgium was placed in charge of Wellington and Blücher. Waterloo followed and sealed the fate of Napoleon forever. In August 1827 he became prime minister, helped secure Catholic emancipation, but failed to recognize the importance of the Reform Bill offered in 1830. His government fell and he became so unpopular that a mob hooted him in the street. When William IV again urged him to form a government, he had Peel appointed prime minister and served for him for three months until Peel returned from Italy. Wellington then and later was foreign secretary. In 1842 he was designated as commander of the army for life.

WEST POINT. Familiar name for the United States Miliary Academy at West Point, 28 miles north of the City of New York along the Hudson River. It was a strategic post during the Revolution, and here Kosciusco, the Polish patriot, helped erect defenses and train the soldiers. Washington urged that a school for military training be established here. In a reservation of about 2000 acres, increased in 1875, the first school was started in 1790, but suspended when the building burned in 1795. West Point was again established in 1801, reorganized in 1812, and placed on something like its present footing in 1817 when Major Thayer of the Engineering Corps became superintendent. New buildings have been erected some 180 feet above the river, in a position to command a view of the Hudson for miles up and downstream.

WHIGS. Along with the name Tory, a term of reproach at first, Whig came from *Whiggamore*, a name for Presbyterians in rural Scotland. Hence, it meant no more than a Scots rebel; whereas Tory came from a word for robber, and was used of the Irish chieftains. At first the Tories were supposed to favor restoration of a Catholic king. Later Tories supported the king and tradition; the Whigs favored more democratic and popular government. In 1832, during the days following the passing of the Reform Bill in England, the names ceased to have any particular significance. In time Whigs became Liberals, while Tories were considered to be Conservatives. In the Colonies, the Whigs were those who opposed British rule; the Tories, those who favored the mother land. In 1839 the Whigs, then the remnant of the old National Republicans, elected Harrison for president, with Tyler for vice president, but the latter embittered the Whigs after Harrison's death because of his opposition to the national bank. Taylor was elected on a Whig platform in 1848. In the intervening election, Clay was nominated by the Whigs on a platform of national regulation of currency, tariff for revenue, single term for president, and other progressive ideas. By 1854 the Whigs as a party died out, being followed by the Republicans, after the disputes over the Kansas-Nebraska Bill.

WHITE, PEREGRINE (1620-1704). First native born child of European parents of proved ancestry in New England. His birth occurred on the *Mayflower* while she lay at anchor in Cape Cod harbor in Nov. 1620. Plymouth Colony gave him 200 acres of land near the present Marshfield, Mass., and he received other grants later, and considerable property from the family of Sarah Bassett, his wife. William White, father of Peregrine, died at Plymouth in the first winter, and Susannah Fuller, his widow, married Edward Winslow, who later became governor. She was the first widow, the first bride, wife of one governor, and mother of another of Plymouth Colony, since her son, Josiah Winslow, was the first native-born governor. The Winslows lived at Green Harbor, now near Marshfield, and here Peregrine White spent much of his life. He was active in the contests with the Indians, held some minor offices, and was known as a capable man. Resolved White, his elder brother, who was born in Leyden, Holland, in 1614, married into the notable Vassall family, and late in life settled near his brother, Peregrine. The White burial plot at Marshfield is a few hundred feet from that of Daniel Webster.

WILLIAMS, ROGER (c. 1604-1684). Pioneer in America of religious toleration and founder of the colony of Rhode Island. Williams was of Welsh ancestry, probably born in London, and was a graduate of Pembroke College, Cambridge. He refused to settle as a minister, came to Boston, then taught and preached at Salem, for two years at Plymouth, and then again at Salem. In July 1635 the Massachusetts Court tried Williams (for his opinions on civil affairs, not theology), and banished him from the colony. He delayed, escaped arrest by fleeing to Plymouth, and finally went to what is now Providence, and established a settlement. Williams bought land of the Indians, became a Baptist, but withdrew in a few months to become a "Seeker" or Independent. He obtained a charter for Rhode Island in 1644, was president (or governor), 1654-57, and assistant at other times. In 1654 he went to England to obtain an improved charter, and here knew Cromwell, Milton, and other Puritan leaders. Williams wrote some vigorous controversial pamphlets.

WILLIAMSBURG, VIRGINIA. City in Virginia of many historic associations, situated between the James and York Rivers, 45 miles southeast of Richmond. Founded in 1632 as Middle Plantations, this village became the state capital from 1699 to 1779. Here in 1693 William and Mary College was founded, second oldest after Harvard in the United States. Bruton parish church, finished in 1717, and restored in 1907, is the oldest church building in the country in continuous use. The powder house dating from 1714, the court house, 1769, the houses where Washington had his headquarters, are all preserved and restored. Here in 1736, the *Virginia Gazette* was established, first newspaper in the South. Patrick Henry made his speech against the Stamp Act, 1776, and the Convention declared for independence, in Williamsburg. Following plans of Rev. W. A. R. Goodwin, old Bruton church was restored, and a fund was raised (to which John D. Rockefeller Jr. gave $5,000,000) for restoring over 100 buildings to their original forms, for removing about 100 modern structures, and for making old Williamsburg a shrine of colonial relics. Phi Beta Kappa, national scholastic honor fraternity, was founded in 1776 at William and Mary College.

WILSON, HENRY BRAID (1861-). Naval officer, after graduating from the U. S. Naval Academy in 1881 became an ensign and rose to the rank of rear admiral in 1917, vice admiral in 1918, and admiral 1919. During the Spanish-American War, he was on the Bancroft; on duty in the Bureau of Navigation from 1904 to 1908; commanded the Chester, 1908-10; assistant in charge of Bureau of Navigation, 1910-11; commanded the North Dakota, 1911-13, the Pennsylvania, 1916-17, commander of the Patrol Force of the Atlantic Fleet, 1917-1918; commander of the U. S. Naval Forces in France, 1918 and of the Atlantic Fleet, 1919. Admiral Wilson was Superintendent of the Naval Academy, Annapolis, from July 5th, 1921 to his retirement from active duty in February, 1925.

WOLFE, JAMES (1727-1759). British army man who led in the capture of Quebec from the French in 1759. He entered the British army at 15, soon distinguished himself, and from 1749 to 1757 served in Scotland and then was with the expedition against Rochefort. Under Lord Amherst he served as a brigadier at Cape Breton, the first attack on Quebec, and in the siege of Louisburg. The British ministry chose him to renew the attempt to capture Quebec, for which purpose he collected some 9000 men at Louisburg in April 1759. The expedition was safely conveyed to Quebec by Admiral Saunders in June. The first assault failed. Wolfe, on advice from his officers, then chose to land a small force down stream, while a large party proceeded to land above the city. So, while Montcalm, the French commander, sent his men to forestall the landing party below Quebec, the larger force carried the day with little effort. Just as the French lines were falling back, Wolfe died of a wound from a musket ball. Montcalm the next day was also killed. The two commanders were buried with all honors of war, and a monument was erected to their memory at Quebec.

WOOD, LEONARD (1860-1927). In 1886 Wood became assistant sugeon general of the United States army. Acting as colonel, with Theodore Roosevelt as lieutenant colonel, he organized the first U. S. volunteer cavalry, commonly known as the Rough Riders, and saw service in Cuba in the battles about Santiago, of which city he served as military governor, and later governor of Cuba (1899-1902). In 1903 he became major general of the regular army, after which he served in the Philippines until 1908. In the following year he became chief of staff of the army, commanded the department of the East during the World War, and did much to train various detachments of soldiers. From 1917 he was governor of the Philippines, where he instituted many reforms and economies in administration.

WOMAN SUFFRAGE. Out of the anti-slavery movement in both America and England, the cry of "votes for women" arose. The ladies complained that they could not vote, speak in meetings, or take any part in the deliberations on important social matters. In 1840 women delegates were refused seats in a convention in England. Eight years later, Elizabeth Cady Stanton, Susan B. Anthony, and Lucretia Mott, called a convention at Seneca Falls, N. Y. and this initiated the definite movement for suffrage for women. The World War hastened the advance of this movement; for in 1914 only four

European governments allowed women to vote at all; in 1918 Austria, Canada, Czechoslovakia, Denmark, Finland, Germany, Holland, Hungary, Iceland, Ireland, Norway, Poland, Serbia, Sweden, and Great Britain had given women rights to vote in all or in some elections. Other countries followed suit in their constitutions after the World War. In 1928 complete franchise was granted women in the United Kingdom; in 1931 Spain gave them the vote; and in Europe only France and Switzerland held back. On Aug. 18, 1920, the Secretary of State at Washington proclaimed then in effect the XIX amendment to the Constitution granting suffrage to women. Only three states refused to concur—Alabama, Maryland, Virginia.

WORLD COURT. This is the more familiar name for the Permanent Court of International Justice, organized under Article 14 of the Covenant of the League of Nations, and established in the Carnegie Peace Palace at the Hague, Holland. The first session was held there on Feb. 15, 1922, with J. C. Loder of Holland as the presiding judge. Though the United States has never adhered to the provisions of the Court, three citizens have been appointed judges,—John Bassett Moore, who served until 1928, Charles Evans Hughes, who resigned to become Chief Justice of the United States Supreme Court, and Frank B. Kellogg, formerly Secretary of State. Judges are chosen for nine years, with a definite scheme of rotation, and in 1931 the number was raised from nine to 15. About 50 nations have signed the agreements for a Court, which provides for both voluntary and compulsory jurisdictions. Modifications were made to make it easier for the United States to join, and Presidents Hoover and Roosevelt so advised. On Jan. 29, 1935, the United States Senate voted in favor of adherence, 52 to 36, but the resolution failed for want of a two-thirds majority as required.

Cases are submitted to the World Court in several manners, mainly by one party to a dispute, by agreement of both, by the Council of the League of Nations, and by a third party or more. Judgments, advisory opinions, and orders are issued by the justices. In the first nine years, during 18 sessions, there were 16 judgments and also 16 other decisions. As a case submitted by the nations might be cited the litigation before the Court as to the steamship *Wimbleton*, which the Germans refused passage through the Kiel Canal, because it was a British ship loaded with munitions from a French company for use in Poland. Britain, France, Italy, and Japan, with Poland later, brought suit as to the rights of Germany to take such action. An example of an agreement of opinion of the Court was that of the arrest by Turkey of an officer of a French mail-ship which had collided with a Turkish collier. The World Court advised that Turkey had jurisdiction, which was disputed by France. Such decisions have already been taken, in several instances, with the same force as official judgments. An example of a court order concerns the confiscation of a German-owned nitrate factory in Poland. The parties to the dispute filed an agreement with the Court, and an order was issued terminating the litigation. The League Council has originated cases like those as to German colonists in Polish territory, whose rights were infringed, the status of the City of Danzig; and the boundary of the Mosul oil fields in Asia. Third parties have originated suits like those as to the exchange of Greek and Turkish populations; the status of the International Labor Office as defined by the Versailles Treaty; and the nationality of residents in Tunis and Morocco. See articles on *Hague* and *League of Nations*.

WYOMING MASSACRE. The fertile Wyoming Valley now in Luzerne Co., Pa., according to conflicting Indian grants, was claimed by Connecticut and Pennsylvania. In 1771 the British king confirmed the grant to the original Connecticut Company given the rights by the Indians in 1754. After a local disturbance in 1775, some Tories were expelled from the township set up in 1773. These, with about 300 British and 700 Indians, returned, and were about to storm a fort where the inhabitants had taken refuge. Some 400 of the defenders of the valley attacked the invading party on July 3, 1778. Two-thirds of the attacking party were killed or captured, and about 100 women perished in trying to reach the nearest settlement. Congress awarded the land to Pennsylvania in 1782, and the state accepted the grant in 1788.

XENOPHON (*c.* 430-*c.* 355 B. C.) Known in literature as the author of the *Anabasis* and of histories, but in his time better regarded as the man who led the retreat of the 10,000 Greeks on their return from central Asia after serving in the Persian wars. Though he went with the Greek mercenaries as an historian, on the death of the leader, Proxenus, the Greeks called on him to be their general in the hazardous trip across mountains and through hostile countries. The journey of 1500 miles was accomplished in five months, with little loss of life, and the band reached Scutari opposite Byzantium in 399. Three years later Xenophon was one of the leaders in the expedition of Aegesilaus, king of Sparta, against the allies of Athens, Corinth, and Thebes. Athens lifted the ban of exile against Xenophon, but he did not return, and evidently spent his last years at Corinth.

XERXES (485-465 B. C.) Great Persian king, whose father Darius left to him the task of punishing the Greeks for aid they had given in the Ionian campaign against Darius. He collected a prodigious army, built a canal across Mt. Athos to get at the Greeks better, and stretched two bridges of boats across the Hellespont, a mile in extent, for his hosts to cross. Leonidas of Sparta, with a small band of allies, withstood the Persian hordes at the pass of Thermopylae, but Xerxes at last conquered and annihilated them through treachery of a Greek. Xerxes burned Athens, won some other successes on land and sea, but at last was humbled in the naval battle at Salamis in 480. Then he withdrew into Asia, leaving some of his army under command of Mardonius, who was beaten in the battle of Platea in 479. Little is known of the last years of Xerxes; some say he was assassinated in the midst of court intrigues.

X Y Z CORRESPONDENCE. During the days of the Directory in France, hundreds of American merchant vessels were stopped and searched on the high seas. At last President Adams sent three commissioners to negotiate a settlement in France. These men were C. C. Pinckney, John Marshall, and Elbridge Gerry. When the French commissioners demanded a large loan from the United States, the Americans refused and eventually returned home. Their report to Congress aroused such resentment that hostilities actually began on the sea. The three French negotiators were designated under the letters X, Y, and Z in the report to Congress; hence the term X Y Z Correspondence. When Napoleon came to power in 1800, the matter was peacefully adjusted.

YORKTOWN. Scene in Virginia of the last real battle of the Revolution, and the surrender of Lord Cornwallis, British commander. With about 1500 men the British had returned from the Carolinas, where Gen. Greene had checked them at every turn. Cornwallis attempted to prevent the union of the forces of Gen. Lafayette and Anthony Wayne. Washington, then in the north, held a conference with his advisors, including the French, at Wethersfield, Conn. As a result it was decided to concentrate the attack on the British about Williamsburg, Virginia. Meanwhile, the large French fleet under Admiral De Grasse proceeded to the Chesapeake. The two British fleets—one had come from the West Indies—were defeated by the French. Washington hastened to transport his forces to Virginia, and Cornwallis withdrew from Williamsburg to Yorktown. The American allies numbered about 16,000. They entrenched in two lines before Yorktown; and Cornwallis tried to escape, but a storm prevented his crossing the York River. He offered to surrender on Oct. 17, 1781, and two days later his whole army of 7073 men laid down their arms. The British lost 156 killed and 326 wounded; the Americans, 85 killed and 109 wounded.

YPRES. German troops occupied this city in Belgium on Oct. 3, 1914, but the allies retook it ten days later, and held on throughout the World War. Yet the city was battered into ruins, including the magnificent Cloth Hall, completed in 1342; the Gothic cathedral, dating from the 13th century; the town hall, with rare paintings; and the church of St. Peter, dating from the 11th century. The remnants of the Cloth Hall are now preserved as a memorial, but the Cathedral has been rebuilt. The first battle of Ypres, lasting for 27 days from Oct. 19, 1914, cost the allies 100,000 men, and the Germans even more, but the allied line held at the end, after losses and gains at intervals on both sides.

On April 22, 1915, the second battle of Ypres opened with the first use of chlorine gas, while the colored French colonials gave way, and the Canadians took their places. The Germans pushed the allied line back and back toward Ypres, but at last a method was found to counteract the gas, and the Canadians saved the lines for the allies armies. The third battle of Ypres, fought in the mud, August to November 1917, ended with gains by the allies, but with losses far greater than the small results warranted. The fourth battle of Ypres, from April 7, 1918, netted the Germans many advantages, but failed at last to flatten out the salient about Ypres, while Gen. Haig, for the British, asked the lines to hold, no matter what happened. All four battles, without significant results for either side, at least prevented the Germans from a general advance.

YUAN SHIH-K'AI (1859-1916). First president of China and the last of the elder regime of the old empire. Yuan belonged to the landed gentry, served in Korea, opposed Japan, and built up an efficient army. He assisted in the events which removed the emperor from the throne when the latter sought to subdue the empress dowager in 1898. In return he was made governor of Shantung, held his province firm during the Boxer uprising, became viceroy of Chihli, and rose to great power while he raised and trained six divisions of troops. Prince Chun, after the death of the former emperor, had Yuan deprived of office, but the revolution of 1911 saw him again in power, while he sought to preserve the monarchy. The southern revolutionists, led by Sun-Yat-Sen, encouraged him to become a candidate for the presidency of the new China. He assumed office on March 12, 1911, one month after the abdication of the Manchus who had ruled China for many centuries. In 1913 Sun-Yat-Sen and others tried to dethrone him, but the Canton revolution was short-lived. While Japan was making demands upon China, in 1915 the adherents of Yuan gradually fomented sentiment for restoration of the monarchy. The provinces voted concurrence, and Yuan prepared to ascend the throne on Feb. 9, 1916. Japan, Great Britain, and Russia secured a postponement of the plans, and several provinces rose in insurrection. In April Yuan gave up to a cabinet most of his powers, and so ended the old order in China on June 6, 1916 when Yuan died.

YUGOSLAVIA. This new kingdom in Europe was created on Dec. 29, 1918 out of the old Serbia, Montenegro, Bosnia, Herzegovina, Croatia, Slavonia, and some other small districts that once belonged to the empire of Austria Hungary. Until 1929 it was officially called the Kingdom of the Serbs, Croats, and Slovenes. Croatia and Slovenia declared independence when Austria-Hungary broke up in November 1918. Representatives from Bosnia and Herzegovina were admitted to the National Council, and later Serbia joined with the new government. Thus the dream of years for a Slav state was at last realized. Italy refused consent, however, until the city and district about Fiumé were given to her. Croatia from the start felt that the Serbs obtained too great control in the government. The dispute came to a head in June 1928, when five Croat deputies were shot down in the national assembly, two of them being fatally hurt. King Alexander I, who was crowned in 1918, abolished the parliament early in 1929, suspended the constitution, and in 1930 the 33 provinces of the kingdom were divided into nine banats or large divisions and the federal district of Belgrade. He ended his dictatorship on Sept. 3, 1931, with the promulgation of a new constitution, setting up two houses of parliament to replace the single one, universal privileges and voting, freedom of the press and courts, and more autonomy for the local units or banats. Though given more voice in affairs, Croatia still demanded a separate parliament for local legislation. King Alexander was assassinated in 1934, and his son Peter, a lad of 11, began to rule through a regency of three named in Alexander's will.

YUKON (Gold Fields). Gold was found on the Yukon as early as 1862, but it was not until 1886 that the discovery of rich gold placers along the upper Yukon at Forty Mile Creek, followed by further explorations in the other streams of the Yukon basin, led to productive workings. In 1896 a rich placer claim was located on a tributary of the Klondike river, which joins the Yukon just above the American boundary. By 1898 there had been an immigration of between 30,000 and 40,000 people. No such stampede of miners has occurred since the migration of the "Forty-Niners" to California. Dawson, the capital of the Yukon territory, in 1901 had over 27,000 inhabitants; in 1921, it had but 4200. As gold production in the region declined, the residents turned more to raising rye, barley, and various garden crops in the short summer.

ZIONIST MOVEMENT. When the persecutions of the Jews in Russia increased after 1880, suggestion was made that they emigrate to Palestine. In 1898, some 25 colonies had been established there, and in 1915, the number was 40. In 1886 Dr. Theodore Herzl proposed that Palestine be purchased of Turkey, and an autonomous state be created. So began the Zionist movement. The first Congress at Basel in 1897 announced that the purpose was to establish, by legal means, and by purchase, a home for Jews in Palestine. In 1914 the Jewish population in that land was about 100,000, but commenced to decline. The British in 1917 favored a Jewish state, and the Zionist Congress held at London in 1920 again made plans for settlement of Palestine with refugees from other districts. Both the San Remo conference in 1922 and the League of Nations also sanctioned the movement. On Sept. 29, 1923 the British obtained a mandate over Palestine. Immigration declined after 1930 when announcement was made that little arable land remained available. Yet several Jewish towns, like Tel Aviv, which grew from 46,000 in 1931 to about 85,000 in 1934, continued to increase.

ZISKA, JOHN (1360-1424). Bohemian leader of the Hussites in their struggles for religious liberty. Ziska served against the Poles with the Teutonic Knights at Tannenberg in 1410, with the English against the French at Agincourt in 1515, and joined the popular party against Emperor Sigismund of Germany. The Protestants captured Prague in 1421, erected fortresses, the main one being on Mount Tabor, hence the name Taborites for the followers of Ziska, and during the same year defeated Sigismund in twelve major battles, with only one loss. In 1422 the Hussites drove into Moravia the second army of the Germans under Sigismund; again at Aussia they gained a great success in 1423. During these campaigns Ziska was totally blind. Sigismund granted religious toleration in 1423, but did not gain complete control in Bohemia until 1436.

ZUYDER ZEE. Once a great fresh-water lake in Holland, until the North Sea gradually broke through between 1219 and 1287. Portions have been reclaimed from time to time. The area in 1920 was about 2000 square miles—44 miles long by 20 wide—and the water ranged from 12 to 19 feet deep. Plans laid in 1918 for draining much of the area, perhaps fully half, in 1924 were started by the building of a small dam. A much larger one is planned at a cost of about $40,000,000. The entire project, taking over 25 years to complete, includes a proposed outlay of nearly $200,000,000.

ZWIN'GLI, ULRICH (1484-1531). Swiss reformer, who was born at Wildhaus in St. Gall, and was educated at Bern, Vienna, and Basel. In 1506 he became parish priest at Glarus, six years later became chaplain to some mercenaries on foreign service, but objected to this, and settled at Zürich in 1518. Two years later he issued an appreciation of Luther, after which his religious and political influence was great. He prevented the canton from joining with France in 1521, secured the adoption of Reformation idea at Zürich, debated in public against other churchmen, and led in opposing the German Protestant Party. In the war of Zürich and Berne against the papal cantons, Zwin'gli joined, but perished in the battle of Cappel in 1531, when the reformed cantons were defeated. His main difference with Luther was over the Lord's Supper, which Zwin'gli insisted was not a repetition in each celebration of the sacrifice of Christ, but instead a memorial that this sacrifice was made once for all. He also broke more sharply with the old medieval church. On the spot where he fell is a boulder monument, inscribed with part of his last words: "They may kill the body, but not the soul."

THE IMPORTANT WARS OF HISTORY.

NOTE.— The first named of the contestants, the battles won by them, and the generals connected with that side are put in **bold face.**

Name and Dates, B. C.	Contestants.	Cause or Pretext for War.	Notable Battles and Incidents of War.	Leaders.	Results and Treaties.
Trojan, 1193-1184.	**Greeks,** Trojans.	Greeks avenge the carrying off of Helen by Paris.	**Siege of Troy.**	**Agamemnon,** Hector.	Troy captured and destroyed.
st Messe-an, 743-724.	**Spartans,** Messenians.	Spartans covet the rich land of the neighboring Messenians.	**Siege of Ithome.**	Aristodemus.	Messenians became tributary to Sparta and part of their land confiscated.
cond Mes-ian, 645-628.	**Spartans,** Messenians.	Messenians revolt from Spartan oppression.	**Ira, Zancle.** (See Messina.)	Aristomenes.	Messenians who had not fled to Sicily or elsewhere became Helots.
st Sacred or Holy, 600-590.	**Amphictyonic League,** Cirrhæans.	People of the city of Cirrha on Bay of Corinth covet the wealth of Delphi.	**Siege of Cirrha** and **Crisa.**	**Clisthenes.**	Greek cities, for the first time joined in effective league, save Delphi from spoliation. Cirrha is consecrated to Delphi.
ersian-Gre-n, 500-479. First Per-n Expedi-n, 493.)	**Persians,** Macedonians, Thracians.	Darius seeks to avenge burning of Sardis by Greeks when aiding revolt of Ionic Greek cities (500-494).	Persians are harassed on land by Thracians and lose 300 ships by storm off Mt. Athos.	**Mardonius.**	Expedition returns to Persia getting no farther than Thrace.
. Second rsian Ex-ition, 490.)	**Persians,** Greeks.	Previous failure.	**Naxos, Eretria,** Marathon (490).	**Datis, Artaphernes,** Miltiades (Athens).	Complete victory for the Athenians and retreat of Persians to Asia Minor.
I. Third sian Ex-ition, 481-)	**Persians,** Greeks.	Persians desire to avenge former defeat.	**Thermopylæ, Artemisium** (naval). **Athens burned,** Salamis (naval).	**Xerxes,** Leonidas (Sparta). **Achæmenes,** Eurybiades. Themistocles. Aristides.	After defeat at Salamis, Xerxes with part of his army retreated to Persia.
. Fourth rsian Ex-ition, 479.)	**Greater part of Xerxes' army** with allies from **Thessaly, Bœotia, Phocis,** and **Argos,** Athenians, Platæans. Thespians, and Spartans.	Desperate effort of Persians to overcome Greeks.	**Athens** laid waste, Platæa, Mycale (naval).	**Mardonius, Artabazus.** Pausanius (Sparta). Aristides. **Mardonius,** Leotychidas.	This ended Persian invasions and all Persian attempts to subjugate Greece.
rd Messe-n, 464-456.	**Helots of Messenian descent,** Spartans.	Confusion following earthquake gave Helots courage to revolt.	**Ithome** besieged.		Messenians capitulated. In this war Sparta implores and then returns Athenian aid, whereupon Athens allies herself to Argos, the rival of Sparta.
ponnesian 431-404. rst Period, 431-421.)	**Sparta and Allies,** Athens and Allies.	Sparta and her allies were jealous of Athens' growing power and influence; also discontent among some of the Athenian subject states.	Attica invaded, The plague there. Potidæa. Naval battles near Corinth. Siege of Mitylene. **Siege of Platæa.** Sphacteria. **Delium.** Amphipolis.	Phormio. **Archidamus, Agis,** Cleippides. **Brasidas.** Demosthenes. Hippocrates. Cleon.	Peace of Nicias (421) recognized Athens' supremacy over many Hellenic cities; Sparta had freed none from Athenian tyranny.
cond Pe-d or De-an War, 413-404.)	**Sparta,** Athens.	Sparta invades Attica weakened by great defeat of both her army and navy at Syracuse (413).	**Decelea occupied and Attica ravaged.** Many of Athens' subject states revolt. Abydos (naval). Cyzicus. **Notium** (naval). Arginusæ (naval). **Ægospotami. Athens.**	**Agis,** Alcibiades serves Athens, Sparta, and Athens in turn. **Mindarus,** Thrasybulus. **Callicratides,** Conon. **Lysander.**	The decisive victory of the Spartans at Ægospotami left the Athenians with all their resources exhausted; the Lacedæmonians tore down the walls of Piræus and Athens. Sparta was now supreme in Greece.
ond Sa-d, 355-346.	**Thebans, Locrians, Thessalians,** and **Macedonians,** Phocians.	Phocians seize and plunder Delphi because of fine imposed by Amphictyonic Council.		**Philip of Macedon,** Onomarchus. Phalæcus.	Thebans invite the aid of Philip against the Phocians and he becomes a member of the Amphictyonic Council.
ird Holy, 339-338.	**Thebans, Athenians,** Macedonians.	Philip is intrusted by the League with the punishment of Amphissa, whereupon he seized Elatea.	Chæronea.	Philip of Macedon.	By the battle of Chæronea Philip gains such an ascendency that henceforth Greece is under control of Macedonia.
Samnite, 343-266, t Samnite, 343-341	**Romans,** Samnites.	The Sidici invite aid of Romans against the Samnites, who ravage their land.	**Mount Gaurus. Suessula.**	**Marcus Valerius Corvus. P. Decius Mus.**	By a treaty of peace Rome received Capua, the Samnites, Teanum.

Name and Dates, B. C.	Contestants.	Cause or Pretext for War.	Notable Battles and Incidents of War.	Leaders.	Results and Treaties.
Greco-Persian, 334-330.	**Macedonians.** Persians.	Alexander, son of Philip, desires to carry out his father's plans to conquer Persia.	**Granicus** (334), **Issus** (333), **Arbela** (331).	**Alexander the Great,** Darius, Memnon.	Persian Empire conquered, marks the height of Macedonia power.
Second or Great Samnite, 326-304.	**Romans,** Samnites.	Encroachments of the Romans on the Liris.	Caudine Forks, **Capua,** **Vadimonian Lake, Bovianum.**	Gavius Pontius, **Q. Fabius Rullianus,** **P. Decius Mus.**	The Samnites beg for pea and are considered on an equali with Rome.
Third Samnite, 298-290.	**Romans,** Samnites.	War of Rome with Etruscans and Gauls tempts the Samnites, strengthened by league with Lucanians, to open hostilities.	**Sentinum,**	**Q. Fabius Rullianus,** **P. Decius Mus,** Pontius.	Romans become supreme power in Italy.
First Punic, 264-241.	**Romans,** Sicily, Carthage.	Some Campanian mercenaries, having seized Messana in Sicily, appeal to Rome for aid. It is a cause for Rome to give vent to her jealousy of Carthage.	**Agrigentum,** **Mylæ** (naval), **Ecnomus,** Tunes, **Panormus,** Drepanum (naval), **Ægatian Islands** (naval).	**C. Duilius,** **M. Atilius Regulus,** Hamilcar, **C. Lutatius Catulus,** Hanno.	Carthaginians evacuated Sici and paid a war indemnity.
Second Punic, 218-201.	**Rome,** Carthage.	Quarrel in Spain over encroachments of Carthage.	Ticinus, Trebia, Trasimene, Cannæ, **Nola,** **Syracuse,** **Capua,** **Metaurus** (207), **Zama** (202).	Hannibal, **Tiberius Sempronius Longus,** Nepos, **Marcellus,** **Flaccus,** **Fabius,** Hasdrubal, Nero, **Scipio.**	Hannibal, the "greatest gener in history," was worn out by t patience and loyalty of Ital Carthage forced to pay tribu and relinquish Spain. Her fle was burned and she agreed n to go to war without Rome's pe mission.
The Four Macedonian or Greco-Roman, 214-146.	**Romans,** Greeks.	Philip, a king of Macedon, is allied with Carthage.	**Cynoscephalæ,** **Pydna.**	**T. Quinctius Flamininus,** Philip of Macedon, Perseus, **L. Æmilius Paullus.**	Greece became a Roman pro ince.
Third Punic, 149-146.	**Rome,** Carthage.	War of Carthage with Massinissa, the pretext for Rome to open hostilities.	**Siege of Carthage.**	**Scipio Æmilianus Africanus.**	Carthage razed to the grou and most of her territory becar the Roman province of Africa.
Jugurthine, 111-105.	**Rome,** Numidia.	The rule of Jugurtha is displeasing to Rome.	**Muthul,** **Cirta.**	**Q. Metellus,** **Caius Marius,** Jugurtha.	Numidia, the strongest sta in Africa since Carthage, broug to complete subjection to Rom
Marsian or Social, 91-88.	**Rome,** Italian allies particularly the Marsians.	Italian socii resent that Rome makes laws for all Italy.	Massacre at Asculum, **Nola,** **Bovianum,** **Cannæ.**	**C. Marius,** **Sulla.**	Roman franchise extended all residents of Italy.
First Roman Civil War, 88-82.	**Sulla (optimates),** Marius (democrats).	The revolutionary laws of Sulpicius concerning voting which had been passed by means of violence.	**Sacriportus,** Reactionary Reign of Terror in Rome.	**Sulla,** **Pompey,** Marius, Carbo.	Sulla, backed by his army, h himself appointed dictator f an unlimited time.
Mithridatic, 88-64. (First, 88-84.) (Second, 83-81.) (Third, 74-64.)	**Rome,** Pontus and Armenia.	Mithridates IV. resents Roman interference and dictation.	Siege of Rhodes. Massacre of Roman citizens. **Chæronea,** **Orchomenus,** **Cabira,** **Tigranocerta,** **Lycos.**	**Sulla,** **Lucullus,** **Pompey,** Mithridates (Pontus), Tigranes (Armenia).	Rome extended her conque by overthrowing her most f midable opponent in the East.
Gladiatorial and Third Servile, 73-71.	**Romans,** Gladiators, and dissatisfied Italians.	Uprising of about 70 gladiators at Capua is joined by many discontented Italians.	Mt. Vesuvius, Mutina, **Mt. Calamatius.**	Spartacus, **Crassus,** **Pompey.**	This revolt, indicative of gr discontent, unsettled the foun tion of the empire and was down with difficulty.
Gallic, 58-51.	**Romans,** Gauls.	Rome desires to widen her conquests.	**Siege of Avaricum.** **Siege of Alesia.**	**Cæsar,** **P. Crassus,** Ariovistus, Cassivelaunus, Ambiorix, Vercingetorix.	Conquest of Gaul complet Britain subjected.
Second Roman Civil, 49-31. (First Period, 49-45.)	Followers of **Cæsar** (democrats), and Pompey and his sons (republican aristocrats).	The Republic had long been doomed and the struggle between strong men for the mastery was inevitable.	**Pharsalus,** **Thapsus** (Africa).	**Cæsar,** Pompey, Brutus, Scipio, Cato.	In 45 Cæsar caused himself to appointed dictator for life (si 49 he had been imperator), i he was a democratic monar The battle of Actium (31) ma the end of the Roman repu and the beginning of the emp
(Second Period, 44-30.)	Followers of **Octavius** and Antony.		**Mutina,** Philippi, **Actium.**	Cnæus and Sextus Pompeius. **Octavianus,** Antony.	

ames and ates, A. D.	Contestants.	Cause or Pretext for War.	Notable Battles and Incidents of War.	Leaders.	Results and Treaties.
wish-Ro-an, 66-70.	**Romans,** Jews.	Civil dissensions and Jewish revolt against Rome.	**Siege of Jerusalem.**	**Titus.**	Jerusalem and her temple destroyed.
ian 86-90. 101-102. 105-107.	**Rome,** Dacia.	Rome desires to extend her conquests.	**Tapæ.**	**Domitian, Trajan,** Decebalus.	This was the high-water mark of Roman conquest and possessions.
asions and quests of rthern es, 375-800. of Tribes: est Goths or ligoths, ndals, evi, ani, lic Franks Merovin-ans, rgundians, erulian andals, st Goths or strogoths, amanni, puarian ranks, tes, xons, gles, uringians, ngobards Lombards.	**Barbaric Tribes,** People of the Old Roman Empire.	Pressed from behind by the Mongolian Huns (who cross the Volga in 375), the Teutons encroach upon the Roman empire.	**Adrianople,** 378, (West Goths). **First Invasion of Italy,** 401 (West Goths). The Burgundians settle on the middle Rhine, 406-413. Salian Franks begin to occupy northern Gaul, 407. **Vandals invade Spain,** 409. **Sack of Rome,** 410 (West Goths). West Gothic kingdom of Tolosa (Toulouse), 415-507. Vandals settle in Africa, 429-534. **Carthage,** 439 (Vandals).	Valens. **Alaric** (West Goth), Stilicho (Western Empire). **Walja** (West Goth). **Genseric** (Vandal).	The direct result of the invasions of the barbarian hordes was the long period of assimilation and education of the invaders, called the Middle Ages. Of all the many kingdoms the Frankish was the only one to endure, and the year 800 marks the height of the extent and power of Charlemagne's empire.
		England invaded by Jutes, Angles, and Saxons, 449. Huns and East Goths ravage Gaul, 451. Battle near Châlons, 451.		**Hengist** and **Horsa** (Saxons). Attila (Hun), **Aetius.**	
		Huns destroy Aquileia, and Venice founded, 452. Rome plundered by Vandals, 455. Herulians gain ascendency in Rome. "The Fall of the Roman Empire," 476. Battle of Soissons, 486.		Leo, Bishop of Rome. **Odovakar.** **Clovis** or **Chlodwig** (Salic Frank), Syagrius.	
		Kingdom of Franks under Merovingians, 486-751. Clovis conquers the Alamanni and becomes Catholic Christian, 496. East Gothic kingdom in Italy, 493-555.		**Theodoric the Great** (East Goth).	
		West Goths settle in Spain, 507-711. Eastern Roman Empire destroys Vandal power in Africa, 533-534. Battle of Taginæ in Italy, 552.		**Belisarius,** Vitiges, **Narses,** Totila.	
		Lombard kingdom in Italy, 568-774. Battle of Deorham in England, 577.		Ceawlin (West Saxon).	
		Suevi settle in Spain, now Portugal, 585. Carolingian line established in Frankish kingdom, 751. Charlemagne destroys Langobard kingdom, 773-774; war with Saxons, 772-804; Spain, 778; Northmen, 788; Avars, 791-799. Charlemagne crowned Emperor of the West by Leo III., Christmas Day, 800.		**Pipin.** **Charlemagne.**	
racen or nammedan, 634-1492.	**Arabian, Saracens, Moors,** Syria, Persia, Egypt, North Africa, Turkey, Spain, **France, Sicily.**	Desire of Saracens to found an empire similar to the ancient Roman empire and make the world Mohammedan.	**Ajnadin, Damascus, Yermouk** (Syria), **Jerusalem** (637), **Cadesia** (Persia), **Nehavend** (Persia), **Alexandria** (Egypt), **Carthage,** Constantinople, **Xeres, Granada, Toledo, Seville, Bordeaux,** Tours (732), Jerusalem (1099). **Constantinople** (1453). Alhama, **Granada** (1492).	**Omar** (634-644), **Abi Wakkas,** Isdigerd, **Amru, Othman** (644-656), **Musa, Tarik, Ambessa,** Eudo, **Abd-er Rahman,** Charles Martel, Old (both Christian and Moslem sides), Constantine XIII., **Mohammed II.,** **Abdallah,** Ferdinand.	The Saracens have three times keenly affected European history. (1) In their attempted conquest and conversion of Europe (710-1492), which was defeated at the battle of Tours, 732; (2) the conquest of Jerusalem by the Seljuk Turks, 1076, which led to the crusades, and (3) the capture of Constantinople and the closing of the Bosporus, which led to the Great Period of World Exploration.

Names and Dates, A. D.	Contestants.	Cause or Pretext for War.	Notable Battles and Incidents of War.	Leaders.	Results and Treaties.
Norman conquest, 1066.	**Normans,** Saxons.	The invaders, being stronger, desire to rule.	**Hastings** (1066).	**William of Normandy,** Harold of Wessex.	The power of the king strengthened and feudalism introduced
Crusades First movement, 1096-1099.	**European Christians,** Turks and Moslems.	Fired by the enthusiasm of Peter the Hermit and Pope Urban II., the Christians of Europe decide to rescue the tomb of Christ from the Infidels.	**Nicæa,** **Jerusalem.**	**Peter the Hermit, Walter the Penniless, Godfrey de Bouillon.**	Jerusalem is conquered and Latin kingdom of Jerusalem founded.
Second movement, 1147-1149.		Jerusalem is threatened and St. Bernard preaches another crusade.	Crusaders reach Jerusalem. Siege of Damascus.	Conrad III. (Germany), Louis VII. (France), King Roger (Naples).	Petty personal disagreements the leaders bring the Second C sade to naught.
Third movement, 1189-1192.		The capture of Jerusalem by Saladin.	**Acre.** Richard imprisoned by Henry VI.	**Richard I.** (England), **Frederick Barbarossa** (Germany), **Philip Augustus** (France), Saladin.	By treaty it was stipula that Latin Christians should v the tomb of Christ without molestation.
Fourth movement, 1196-1197.		German barons and their followers start on a crusade.	**Jaffa,** Thoron.	Saphadin.	Forces become demoralized return home.
Fifth movement, 1202-1204.		Plight of Crusaders in Jerusalem appeals to Innocent III.	**Zara,** **Constantinople.**	**Boniface, Marquis of Montferrat.** Dandolo (Venice).	Influenced by Venetians the C saders first take Zara and t capture Constantinople. The pedition breaks up.
Children's crusade, 1212.		Fanatic preachers persuade 50,000 French and German children to go on a Crusade.		**Nicholas,** a fanatic preacher.	Only about a tenth return ho the others perish in Europe or sold into slavery by French m chants.
Sixth movement, 1217-1229.		Hungarian, German, and Italian nobles take the cross.	**Damietta.**	**Andrew, king of Hungary, Frederick II.**	Jerusalem taken by Frederi who becomes king of Jerusal The advantage speedily lost.
Seventh movement, 1248-1254.		Louis IX. and his countrymen start on a Crusade via Egypt.	**Damietta,** Mansourah.	**St. Louis of France.**	Defeated in battle, stricken w disease, and outgeneraled, Cru ders are obliged to surrender.
Last undertakings, 1270-1271.			**Tunis,** **Nazareth.**	**St. Louis** and **Philip III.** (France), **Prince Edward** (England).	Results of the Crusades we increased power of the chur personal power of princes, the of many independent commu ties, who bought their freed from their crusading overlo intellectual growth, and devel ment of commerce.
Hundred Years', 1339-1453.	**France,** England.	Edward III. of England asserts his claim to French throne.	**Crécy,** **Calais,** **Poitiers,** Peace of Bretigny. Navarrete, Limoges, Agincourt, Rouen, Treaty of Troyes. **Orleans** (1429). **Patay,** Paris, Castillon.	Edward III., Edward, the Black Prince, **Du Guesclin.** Henry V., **Joan of Arc, Charles VII.,**	England could gain but not k her advantages. When Charles VII. entered P (1437), the war was virtually en and England had lost all footh in France, except Calais.
Austro-Swiss, 1386-1388.	**Austria,** Swiss Confederation.	Austria was the oppressor of the Swiss.	Sempach, Näfels.	**Leopold II., Leopold III.,** Winkelried.	Switzerland shows power wh finally gains her independence
Hussite, 1419-1436.	**Supporters of the Pope,** Austrian Hussites or Utraquists.	The condemnation of John Huss, the reformer.	Revolt in Prague. First Crusaders against Bohemia repulsed. Crusade of German Electors repulsed. Deutsch-Brod, Thauss, Council of Basel. **Boehmisch-Brod.**	**Emperor Sigismund,** Ziska, Procopius the Great, **Frederick of Brandenburg, Albert of Austria.**	By military prowess, the Hu lites obtained religious toleran from the Pope.
War of the Roses, 1455-1485.	**Yorkists** (White Rose), Lancastrians (Red Rose).	The feebleness of Henry VI. encourages the duke of York, descendant of Edward III., to aspire to the throne.	**St. Albans,** **Bloreheath,** **Northampton,** Wakefield, St. Albans, Edward of York crowned. **Towton,** **Barnet,** **Tewkesbury.**	**Richard** and **Edward, Dukes of York,** **Earl of Warwick** (later a Lancastrian), Henry VI., Queen Margaret.	House of York, in person of ward IV., supplants the Hous Lancaster on the English thr

James and ates, A. D.	Contestants.	Cause or Pretext for War.	Notable Battles and Incidents of War.	Leaders.	Results and Treaties.
nch Civil ar or wars religion or rs of the guenots, 1562-1598.	**Catholics,** Huguenots.	Massacre of Huguenots at Vassy was a signal for uprising.	Orleans, **Massacres of Huguenots, Dreux,** Edict of Amboise. St. Denis (indecisive). **Jarnac, Moncontour,** Peace of St. Germain-en-Laye. **Massacre of St. Bartholomew** (1572), Ivry, **Siege of Paris,** Siege of Rouen.	Condé. Coligny. **Duke of Guise, Henry III., Duke of Anjou,** Henry of Navarre (afterwards Henry IV.). **Duke of Parma** (Spain). **Mayenne.**	The hostilities ended in 1593 by the abjuration of Protestantism by Henry IV., but it was followed in 1598 by the Edict of Nantes, which granted civil liberty and greater religious freedom to Protestants.
anish-Netherlands, 1568-8.	**"Beggars"** or **"Gueux"** opposed to religious intolerance of Roman Church and tyranny of Spain.	The hatred of the Inquisition and the despotic measures of Philip II. of Spain led to open revolt.	Riots of Image Breakers. Council of Blood. Whole population of Netherlands condemned to death by Inquisition. Jemmingen, **Brille, Mons.** Massacres at Mechlin, Zutphen, and Naarden. Haarlem, **Alkmaar. Naval engagement on Zuyderzee. Middelburg.** Mookerheyde. Mutiny of Spanish troops. Armada (1588) (English allies), Maestricht, Ghent, Antwerp, Nieuport.	**Egmont, William of Orange,** Duke of Alva. **Louis of Nassau.** Bossu, **Dirkson.** Louis de Requesens, Don John of Austria, Alexander Farnese (duke of Parma), **Maurice of Nassau.**	By Pacification of Ghent, 1576, Catholic and Protestant provinces in the Netherlands were united. In 1579 by the union of Utrecht the seven northern provinces proclaimed their independence. The deaths of Parma, 1592, and Philip, 1598, led to twelve years' truce, 1609-1621, and in 1648 the Republic, by the Peace of Westphalia, obtains a recognition of its independence from Philip IV. of Spain. This war marks the beginning of Spain's downfall.
irty Years', 1618-1648.	**German Protestants** and their allies, **England, Holland, Denmark, Sweden** and **France,** Catholic Imperial Germans and their allies, Spain, Italy, Bavaria, and Saxony.	Ferdinand, because of his anti-Catholic record, is deposed from kingship of Bohemia and Frederick V. elected. The cause of religion arouses political sympathy in many countries so that at last almost every nation in Europe is actively involved on one side or another.	White Hill, Wimpfen, Höchst, Stadtlohn, Dessau, **Lutter am Barenberge, Stralsund,** Magdeburg, **Leipzig** (Breitenfeld), **Luetzen,** Nördlingen, **Jankowitz, Dutlingen,** Freiburg, Philipsburg, **Prague.**	Ferdinand, Maximilian, **Frederick, Mansfeld,** Tilly, Spinola, Wallenstein, **Gustavus Adolphus** (Sweden), **Oxenstiern,** King of Hungary, **Valette,** Baner (Sweden), **Bernhard** (Saxe Weimar), **Torstenson** (Sweden), **Conde** (France). Turenne, **Merci.**	This religious, civil, and foreign war, the most destructive in modern history, was ended by the Peace of Westphalia, 1648, by which Alsace went to France, Switzerland was separated from the empire, the Palatinate was divided
il War in gland or the eat Rebel-n, 1642-1648.	**Royal Party** in England, Ireland, Wales, and Scotland. Parliamentary party in England and Scotland.	The grievances against the Crown, especially the charge of treason against the Five Members, culminate in open hostility.	**Edgehill,** Siege of Gloucester, Newbury (1st), Marston Moor, Naseby, Bristol, Preston.	Earl of Essex, **Earl of Lindsey, Prince Rupert,** Cromwell, Sir Thos. Fairfax.	The ultimate result was the replacement of a constitutional monarchy for the feudal monarchy represented in Charles I.
edish-Russ-n or North-, 1700-1721.	**Sweden,** Russia and her allies, Denmark, Saxony, Poland.	Russia determines to get possession of harbors on the Baltic.	**Narva,** Pultowa (1709).	**Charles XII.,** Peter the Great.	The decisive victory of Pultowa 1709, determined that Russia, not Sweden, was to be master of northern Europe. By the peace of Nystadt (1721), Sweden ceded to Russia large territories.
anish suc-ssion; in America, een Anne's r, 1702-1713.	**England, United Provinces, Austria, Portugal, Denmark, Germany, Savoy** (after 1703). France, Spain, Bavaria, Spanish-Netherlands.	Charles II., contrary to the "partition treaty of some of the powers," at his death, bequeathes his domain to Philip, Duke of Anjou (1700). The Grand Alliance choose Charles, son of Leopold of Austria, heir to the throne of France instead of Philip, who is next by birth.	**Vigo Bay, Gibraltar,** Höchstädt, **Blenheim** (1704), **Barcelona,** Almansa, **Ramillies, Turin, Oudenarde, Malplaquet, Nova Scotia,** Denain.	**Duke of Ormond,** Rooke (England), **Duke of Marlborough,** Villeroy, Marshal Tessé, **Prince Eugene** (Savoy), Vendôme, Villars (France).	The peaces of Utrecht (1713), and Rastadt (1714) warranted the separation of the Spanish and French thrones and acknowledged the Protestant House of Hanover as the ruling family in England: large territories in America were given to England, and Austria took possession of Spanish-Netherlands.

Names and Dates, A. D.	Contestants.	Cause or Pretext for War.	Notable Battles and Incidents of War.	Leaders.	Results and Treaties.
Austrian Succession, 1740-1748	**Austria, Hungary, Bohemia, England, Holland, Saxony,** Prussia, France, Bavaria, Spain.	At the death of Charles VI. of Austria the right to the throne of his daughter, Maria Theresa, is contested by three, chiefly by Frederick the Great of Prussia, who favored the succession of Charles Albert, Elector of Bavaria.	Mollwitz, Czaslau, Chotusitz, Treaty of Breslau, **Dettingen,** Prague, Fontenoy, Hohenfriedberg, Soor, Kesseldorf, Peace at Dresden,	Frederick the Great (Prussia), Schwerin, **Khevenhuller, Prince Charles of Lorraine, Prince Lobkowitz,** Broglio, **George II.** (England).	The treaty of Aix-la-Cha (1748) awarded Silesia to Fr ick, recognized the electio Francis of Austria as emp and the Pragmatic Successio
Third Silesian or the Seven Years'; in America, the French and Indian, 1756-1763.	**Prussia, England,** Saxony, Austria (The Empire), Sweden, Russia, France, Spain,	Russia and Saxony desiring to divide Prussia drive her to an alliance with England, of whom all European countries are jealous because of her success at sea and in colonizing.	**Lobositz, Prague,** Kollin, Hastenbeck, Gross-Jägerndorf, **Rossbach, Leuthen, Zorndorf,** Hochkirch, **Minden,** Kunersdorf, Maxen, **Quebec** (America), **Liegnitz, Torgau, Burkersdorf, Freiburg.**	**Frederick the Great, Schwerin,** Prince Charles (Lorraine), **Duke of Cumberland,** Daun (Austria), Fermor (Russia), Ferdinand (Brunswick), Maguire, Broglio, Loudon.	By the Peace of Huberts (1763), Austria and Prussia torially remain the same America becomes English r than French. Prussia, by the g of Frederick, had stepped int front rank of European natio
American Revolutionary, 1775-1783.	**English Colonies in America, France,** England.	The colonies revolt against England because of oppressive taxation and infringements upon what they considered their rights of government.	(See WARS OF U. S. and DICTIONARY OF HISTORY.)	(See WARS OF U. S. and DICTIONARY OF HISTORY.)	The British colonies, by representatives at Paris, Franklin, and Adams, ma treaty of peace by which t dependence of the United S was recognized.
French Revolution, 1789-1794	**The Revolutionists,** The Royalists, aided by the Coalition.	The destructive spirit of the 18th century, unequal taxation and division of land, the terrible public debt and deficit. The people consider the old system in state and church a system of abuses, not founded on reason.	Storm of the **Bastille,** Storm of the **Tuileries,** Massacre in Paris called the **Jail Delivery,** Reign of Terror (1793-1794), Atrocities in **Lyons,** Execution of **Girondists.**	**Lafayette,** Louis XVI., Marie Antoinette, **Danton, Marat, Robespierre.**	Feudalism was destroyed people being admitted to a s in the government, which a triumph for liberalism in ernment.
France and the Coalitions, 1792-1815. After 1804 the Napoleonic Wars. The First Coalition, 1792-1797.	**France,** Austria, Prussia, England, Holland, Spain, The Empire, Sardinia,	French reforms frowned upon by the conservative monarchs of Europe. After the appearance of Napoleon in 1793 it was his ambition to spread throughout Europe the liberal ideas gained in the French Revolution and to make France, the head state of Europe, and himself the ruler of Europe.	**Valmy** (1792), **Jemappes,** Mainz, **Lyons. Fleurus, Kaiserslautern,** Amberg, Würzburg, **Millesimo, Mondovi, Lodi,** Siege of **Mantua,** Peace of Campo-Formio (1797).	Duke of Brunswick, **Dumouriez, Kellerman, Carnot, Jourdan,** Hoche, Coburg, **Pichegru, Moreau, Bonaparte,** Charles of Austria.	France was able to protect self and her reforms from pean greed and interference then Europe, in her turn, was to protect herself from Napol greed and interference, and poleon's dream of becomin peror of Europe. By the tre Vienna, 1814-1815, the Austria Prussian monarchies were stored; Austria received Venice, Milan, and the Tyrol German Conference and Confederation were establi the great part of Warsaw fe Russia as the kingdom of Po
Bonaparte's Egyptian expedition, 1798-1799.	**France,** England, Holland, Spain.		Battle of the **Pyramids,** Battle of the Nile (naval), **Abukir.**	Nelson.	
Second Coalition, 1799-1801.	**France,** Russia, Austria, England, Portugal, Naples, Ottoman Porte.		Novi **Marengo,** **Hohenlinden,** Peaces of Lunéville and Amiens (1801).	**Joubert,** Suvaroff, **Napoleon,** Melas, **Moreau,** Archduke John.	
Third Coalition, 1805.	**France,** England, Russia, Austria, Sweden.		Trafalgar, **Austerlitz,** Peace of Pressburg between France and Austria.	Nelson, **Napoleon,** Alexander I., Kutusoff.	
Fourth War (with Prussia and Russia), 1806-1807.	**France,** Russia, Prussia.		**Jena** and **Auerstadt,** Eylau (indecisive), **Friedland,** Peace of Tilsit (1807).	Duke of Brunswick (Prussia).	
"Peninsular War," 1808-1814.	**France,** Great Britain in Spain and Portugal.		**Corunna, Saragossa,** Talavera, Albuera, Salamanca, Vitoria, Toulouse.	**Joseph,** Wellington, **Massena, Soult, Jourdan.**	
Fifth War (with Austria), 1809.	**France,** Austria.		Aspern and Essling, **Wagram,** Peace of Vienna (1809).	Archduke Charles, **Napoleon, Eugene.**	

Names and Dates, A. D.	Contestants.	Cause or Pretext for War.	Notable Battles and Incidents of War.	Leaders.	Results and Treaties.
ixth War vith Russia, 1812.	**Napoleon's army** (which included Frenchmen, Italians, Swiss, Dutch, and Poles), Russians.		**Borodino, Moshaisk,** Burning of Moscow, Retreat from Moscow.	**Napoleon, Schwarzenberg, York, Macdonald,** Barclay de Tolly.	
eat War of Liberation, 1813-1815.	**France,** The allies, including Austria.		**Gross-Gorschen, Bautzen and Wurschen,** Congress of Prague. **Dresden,** Dennewitz, Leipzig or "Battle of the Nations," Vitoria, La Rothière, Laon, Allies enter Paris. Peace of Paris and Congress of Vienna. **Ligny,** Waterloo (1815).	**Napoleon,** Frederic William III., Bernadotte. Schwarzenberg, Blücher, Alexander I., Francis I., **Ney,** Bülow, Tauenzein. **Wellington.**	
ar of 1812, 1812-1814.	**United States,** Great Britain.	The impressment of American seamen.	(See WARS OF U. S. and DICTIONARY OF HISTORY.)	(See WARS OF U. S. and DICTIONARY OF HISTORY.)	The Peace at Ghent Dec. 24, 1814, ignored all questions which led to the war, but settled the important question of the northern boundary of the United States.
ar of Greek Independence, 1821-29.	**Greece, England, Russia, France,** Turkey.	The secret society for promulgating Greek independence, called the Hetairia, considers the interregnum after the death of the hospodar of Wallachia as an opportune time to revolt.	Chios besieged and 20,000 massacred, **Thermopylae, Navarino, Missolonghi.**	**Canaris, Theodore Vladimiruko, Marco Bozzaris,** Ibrahim Pasha, Codrington (England), Byron (England).	By the treaty of Adrianople, 1829, Turkey acknowledged the independence of Greece.
eJuly Revolution, July 27-1830.	**Parisian Revolutionists,** French government.	Three ordinances: declaring recent elections illegal; restricting suffrage to rich landowners; suspending the liberty of the press.	**Barricade fights, Hotel de Ville, Louvre.**	**La Fayette,** Marmont.	Charles X. forced to flee; a provisional government was established; and "the charter henceforth was to be a reality."
volution in Poland, 1830-1832.	**Poland,** Russia.	The autocratic government contrary to the constitution. Revolt of 18 students.	Grochow, **Wawre, Dembe Wielski,** Ostrolenka, Warsaw.	Constantine, **Chlopicki, Radzivil,** Diebitch, **Skrzynecki, Krukowiecki,** Paskevitch.	The Organic Statute of Feb. 26, 1832, deprived Poland of its constitution and it became a Russian province with a separate administration.
Mexican, 1846-1848.	**United States,** Mexico.	The annexation of Texas, and trouble over boundary.	(See WARS OF U. S. and DICTIONARY OF HISTORY.)	(See WARS OF U. S. and DICTIONARY OF HISTORY.)	By treaty of Guadalupe Hidalgo Mexico gave up claim to Texas, about 522,955 sq. miles in New Mexico and Upper California, establishing present boundary line.
bruary Revolution in ris, 1848.	**Parisian Revolutionists,** Imperialists.	Socialistic societies unite with National Guard in revolt because of government's reactionary policy.	**Barricade fights, Massacres** by laborers.	**Louis Blanc.**	Louis Philippe abdicated and the republic for the second time established.
Crimean, 1854-1856.	**Russia,** Western Powers and Turkey.	Nicholas I. of Russia covets Turkey.	**Sinope** (naval), Silistria, Alma, Sebastopol, **Balaklava,** Inkerman, **Malakhoff, Kars.**	**Paskevitch, Liprandi, Mentchikoff, Gortchakoff,** Pelissier (France), Raglan, Simpson (England).	By Peace of Paris, March 30, 1856, Russia ceded the mouth of the Danube, renounced the protectorate of Christians in Turkey, restored Kars, and promised not to establish arsenals on the Black Sea or maintain there a larger navy than Turkey. Sebastopol was restored. Thus the integrity of Turkey was maintained.
poy Mutiny, 1857.	**English,** Sepoys.	Dissatisfaction among the conquered high caste of India. A rumor that English cartridges were greased with fat of pigs, an unclean animal to Mohammedans and Hindus.	Mutiny of Sepoys at Meerut, **Delhi,** Cawnpur, Siege of **Lucknow.**	**Nicholson, Havelock, Campbell,** Bahádur Sháh.	The rule of the East India Company was ended and the government of India transferred to the Crown.
nification of aly, 1859-1861.	**Sardinia** backed by **France** and **England. Austria,** from 1860. **Sardinia.** Two Sicilies, France. Papacy.	Cavour desired Sardinia to be the savior of Italy and forced a war with Austria.	**Magenta, Solferino,** Treaty of Zürich, 1859. Excommunication of king and people of Sardinia. **Palermo** revolted against Francis II. **Genoa** uprising, **Milazzo, Messina, Castelfidardo, Gaeta.**	**Cavour, Victor Emmanuel II.** (Sardinia), Francis II. (Two Sicilies), **Napoleon III.** (France), **Garibaldi, Fanti, Cialdini,** Lamoricière.	Austria's hands being tied by France and England she was compelled to give up her claims (except to Venice) and by conquest Victor Emmanuel becomes in 1861 "King of Italy." Profiting by Prussian victories in 1866, Italy comes into control of Venice and in 1871 of Rome.

Name and Dates, A. D.	Contestants.	Cause or Pretext for War.	Notable Battles and Incidents of War.	Leaders.	Results and Treaties.
American Civil War, 1861-1865.	**The Northern States,** The Southern States.	The fear of eleven Southern States, that the right to keep slaves was in jeopardy, causes them to secede from the Union with the other states, a movement not countenanced in the North.	(See WARS OF U. S. and DICTIONARY OF HISTORY.)	(See WARS OF U. S. and DICTIONARY OF HISTORY.)	Slavery was abolished and t integrity of the Union preserv
Austro-Prussian or Seven Weeks, 1866.	**Allies of Prussia,** including **Italy,** Allies of Austria.	The desire of the German people for greater unity found pretext in a quarrel about the North Albingian duchies.	In Bohemia: Trautenau, Münchengrätz, **Soor, Koniggratz** or **Sadowa, Prague.** In the west: **Langensalza, Aschaffenburg.** In Italy: Custozza, Lissa (naval).	**Frederick Charles** (Prussia), Von Gablentz, **Von Moltke, William I.,** Benedek, Charles (Bavaria), **Victor Emmanuel,** Albert.	By the peace of Prague, Au 23, 1866, the Austrian emper consented to a reorganizati of the German confederati without Austria; Austria ced to Prussia Schleswig-Holste and paid a large war indemnit
Franco-Prussian, 1870-1871.	**France,** Prussia.	The desire of France to have the Rhine the western boundary of Germany; French jealousy of German growth because of the Austro-Prussian War; the election of the prince of Hohenzollern to the throne of Spain.	Wörth, Spicheren, Colombey-Nouilly, Vionville, Gravelotte and St. Privat, Siege of Metz, Strassburg, Sedan, Proclamation of Third French Republic, 1870, Siege of Paris, Rome, Orleans, Le Mans, Capitulation of Paris.	**MacMahon, DeFailly, Bazaine, Ladmirault,** Steinmetz, Frederick Charles (Mainz), Frederick William (Mannheim), William I., Von Moltke. **Napoleon III.**	By the peaces of Versaill and Frankfort on the Main, 18 the results of the war were (the destruction of the milita power of France; (2) the acq sition of a secure military bou ary for Germany on the west; the political unity of the Germ nation; (4) the acquisition Germany of Alsace and Lorrai
Turco-Russian, 1877-1878.	**Russia, Servia, Roumania,** Turkey.	A revolt in Bulgaria was bloodily suppressed so that Russia assumes the role of the protector of Christians in Turkey.	**Passage of Danube, Shipka Pass, Plevna, Storm of Kars.**	**Grand Duke Nicholas,** Suleiman Pasha, Osman Pasha, **Gurko, Grand Duke Michael, Alexander II., Radetzki, Skobeleff,** Mukhtar Pasha, **Totleben.**	By peace of San Stefan March 3, 1878, Turkey recogniz the independence of Montenegr Servia, and Roumania; Bulga was to have a separate admi istration but remain subject Turkey; the Porte was to intr duce reforms in his remaini European possessions; Russ obtains large indemnity and ps of Armenia and also Bessarab
Chinese-Japanese, 1894-1895.	**Japan,** China.	Japan, declaring Korea independent, objects to China's suppressing Korean insurrection.	**Yalu River** (naval), **Port Arthur, Weihaiwei, Niuchuang.**	**Ito,** Ting, **Yamagata, Oyama, Nogi.**	By treaty of Shimonosel April 17, 1895, China recogniz the independence of Kore ceded Formosa and the Pesc dores, and paid to Japan $18 000,000 indemnity.
Spanish-American, 1898.	**United States,** Spain.	The United States interferes in the inhuman suppression by Spain of the Cuban rebellion by recognizing the independence of the people of Cuba.		By treaty of peace signed at Paris, Dec. 10, 18 Spain retired from Cuba and ceded to the Unit States Porto Rico, Guam, and the Philippines, rece ing $20,000,000 for the last.	
South African or Boer, 1899-1902.	**Great Britain,** Transvaal, Orange Free State.	Great Britain demands political rights for uitlanders or foreigners residing in the Transvaal.	**Siege of Ladysmith,** Colenso, Spion Kop, Vaal Krantz, Magersfontein, **Paardeberg.**	**Sir Geo. White, Buller, Methuen,** Cronje, **Gatacre, Roberts, Kitchener, French,** Botha, De Wet, Delarey.	Boers submitted in May 1902, and renounced their ind pendence. The conquered stat became the crown colonies Orange River and Transvaal.
Russo-Japanese, 1904-1905.	**Japan, Korea,** Russia.	The encroachments of Russians in Manchuria and their possession of Port Arthur arouse the Japanese.	Naval battles off **Port Arthur** and **Chemulpo, Kiu-lien-cheng, Kinchow** and **Nanshan Hill,** Vladivostok, Fengwang-cheng, Kinchow, **Ai-pien-men, Aiko River, Nanshan, Yinkow, Liaoyang,** Lone Tree Hill, **Port Arthur surrenders. Mukden, Sea of Japan** (naval).	**Togo, Kuroki,** Kuropatkin, Alexieff, Makaroff, Stoessel, Zassulitch **Oku, Nodzu, Oyamu,** Stakelberg, **Nogi,** Linievitch. {**Togo,** {Rozhestvensky.	By the treaty of Portsmout Sept. 5, 1905, by mutual conce sions Japan became paramou in Korea and the Liaotung P ninsula; Manchuria was to returned to China; Japan was control the Chinese Eastern Ra road south of Kunshien, and ov part of the island of Sakhal Japan secured a position as world power.

OUTLINE OF AMERICAN WARS.

The French-English Wars in America.

MOTIVE: The struggle for supremacy in Europe, continued by colonists in America.

WAR.	DATE.	INCIDENTS.	LEADERS.* English.	LEADERS.* French.	RESULTS.
ing William's War. 1689-1697.	Feb. 8, 1690	Schenectady	Colonists	Iberville	Treaty of Ryswick: each party held same territory as before. French held Quebec. "Five Nations" destroyed.
	Mar., 1690-1697	Massacres in New England	Colonists	**Frontenac**	
	April, 1690 1693-1697	Siege of Quebec	Phips	**Frontenac**	
		Attack on "Five Nations"	Indians	**Frontenac**	
ueen Anne's War. 1702-1713.	Feb. 29, 1704	Deerfield Massacre	Colonists	**Indians**	Treaty of Utrecht; France ceded to England Hudson Bay and its borders, Acadia, and Newfoundland.
	Aug. 29, 1708	Haverhill Massacre	Colonists	Indians	
	1710	Conquest of Nova Scotia	**English**	French	
ing George's War. 1744-1748.	June 16, 1745	Capture of Louisburg	**Pepperell**		Treaty of Aix-la-Chapelle: Louisburg restored to France.
rench and Indian War. 1754-1763.	July 4, 1754	Surrender of Fort Necessity	Washington	**Villiers**	Peace of Paris, 1763; France gave to England, Canada and all her possessions east of the Mississippi; to Spain, New Orleans and all her possessions west of the Mississippi. This war showed the colonists the need of union.
	July 9, 1755	Expedition against Fort Duquesne	Braddock	**Dumas**	
	June 16, 17, 1755	Deportation of Acadians			
CAUSE: Rival aims to territory eyond the Allegha- es: formation of hio Company. War declared 1756.	July 26, 1758	Capture of Louisburg	**Amherst**	Montcalm	
	Nov. 25, 1758	Capture of Fort Duquesne	**Forbes** Amherst	French	
	July 25, 26, 1759	Capture of Crown Pt. and Niagara	**Johnson**	D'Aubry	
	July 26, 1759	Ticonderoga	**Amherst**	French	
	Sept. 13, 1759	Capture of Quebec	**Wolfe**	Montcalm	

1775-1783. The Revolutionary War.

A STRUGGLE BETWEEN HOSTILE PRINCIPLES: 1763-July 4, 1776, for the rights of Englishmen; 1776-1783, for the rights of men.

CAMPAIGNS.	DATE.	BATTLES.	AMERICAN FORCES. Leaders.*	Eng'ed.	Lost.	BRITISH FORCES. Leaders.*	Eng'ed.	Lost.	RESULTS.
	1775								
or control f Boston.	Apr. 19	Lexington and Concord	Parker		93	**Smith**	1,700	273	
	June 17	Bunker Hill	Warren, Prescott	3,000	450	**Howe**	4,500	1,050	
	1776 Mar. 17	Dorchester Heights	**Washington**			Howe			Evacuation of Boston.
nvasion of anada.	1775 May 10	Ticonderoga	**Ethan Allen**	83		Delaplace	48		Capture and dispersal of invaders
	Nov. 12	Montreal	**Montgomery**			Carleton			
	Dec. 31	Quebec	Arnold	900	160	**Carleton**	1,200	20	Fruitless siege.
ttack on harlest'n.	1776 June 28	Ft. Moultrie	**Moultrie**	400	32	Clinton	4,000	225	British driven from So. Carolina.
or control f Hudson.	Aug. 27	Long Island	Sullivan, Putnam	10,000	2,000	**Howe**	20,000	400	Americans driven across Hudson.
	Sept. 15	Harlem Heights	Washington	12,000	15	**Howe**	25,000	22	British hold New
	Oct. 28	White Plains	Washington	1,500	90	**Howe**	4,000	300	York City.
o control ew Jersey	Nov. 16	Ft. Washington	Magaw	3,000	2,600	**Howe**	5,000	700	
	Dec. 25	Trenton	**Washington**	2,400	9	Rahl	1,000	1,000	Evacuation of New Jersey.
	1777 Jan. 3	Princeton	**Washington**	3,000	100	Mawhood	1,800	400	Americans control New York.
econd at- empt to ontrol the udson	July 6	Ticonderoga	St. Clair	1,000	500	**Burgoyne**	8,400		
	Aug. 6	Oriskany	**Herkimer**	800	400	St. Leger	1,200		
	Aug. 16	Bennington	**Stark**	2,000	200	Baum	1,200	1,134	
nd divide olonies.	Aug. 22	Ft. Stanwix	**Arnold**	400	150	St. Leger	200	?	
	Sept. 19	Bemis Heights or Stillwater	**Lincoln**	2,500	350	Burgoyne	6,000	600	
	Oct. 7	Bemis Heights	**Gates**	8,000	350	Burgoyne	5,000	57	British surr'nder.
ttack on hiladel- hia.	Oct. 17	Saratoga	**Gates, Arnold**	8,000	350	Burgoyne	6,000	5,791	Aid from France.
	Sept. 11	Brandywine	Washington	11,000	1,300	**Howe**	18,000	500	British winter in
etreat om Phila- elphia.	Oct. 4	Germantown	Washington	11,000	1,073	Howe	15,000	500	Philadelphia.
	1778 June 28	Monmouth	**Washington**	12,000	227	Clinton	11,000	700	British return to New York.
ndian assacres.	July 4	Wyoming	Zeb. Butler	400	400	**Butler**	1,000	222	
n the	Nov. 11	Cherry Valley	Zeb. Butler			**Brant**			
est.	July 4	Kaskaskia	**Clark**			Indians			Americans control the Northwest
	1779 Feb. 14	Vincennes	**Clark**			Hamilton			
or control f the outh by ritish.	1778 Dec. 29	Savannah	R. Howe	900	553	**Campbell**	2,000	26	British control all but Charleston
	1779 Feb. 24	Kettle Creek	**Pickens**			Boyd			
	Oct. 9	Savannah	Lincoln	4,500		Provost	2,900		
o control udson.	July 15	Stony Point	**Wayne**	1,200	166	Clinton	600	36	Stopped ravages in Connecticut.
n the sea.	Sept. 23	Bon Homme Richard-Serapis	**J. Paul Jones**		49			49	
gainst the ndians.	Aug. 29	Elmira	**Sullivan**		8	Johnson, Brant		12	Power of "Six Nations" broken.
or control f South.	1780 May 12	Charleston	Lincoln	3,700	265	**Clinton**	9,000	265	British in possession of South.
	Aug. 16	Camden	Gates	3,000	1,000	**Cornwallis**	2,000	225	
	Oct. 7	King's Mountain	**Shelby, Sevier**	900	28	Ferguson	1,100	460	
	1781								
ritish in- asion of orth arolina.	Jan. 17	Cowpens	**Morgan**	900	70	Tarleton	1,100	320	British forced to retire towards the coast.
	Mar. 15	Guilford Court House	Greene	4,400	1,300	**Cornwallis**	2,400	258	
	April 25	Hobkirk's Hill	Greene	1,200	266	**Rawdon**	900	142	
	June 18	Ninety-Six	**Greene**	1,000	150	Cruger	550	386	Americans in control of South.
	Sept. 8	Eutaw Springs	Greene	2,000	547	Rawdon	2,800	800	
nvasion of irginia.	Oct. 19	Siege of Yorktown	**Washington, Rochambeau De Grasse**	16,000	300	Cornwallis	8,000	550	Surrender of Cornwallis.

Final treaty of peace signed Sept. 25, 1783, secured independence in America and reform in England. The United States extended from the Atlantic to the Mississippi from Florida to Canada.

Names of victors in bold face.

1801-1805. Wars with the Barbary States. 1815-1816.

CAUSE: Continued piratical attacks upon American merchant vessels in the Mediterranean and on the Atlantic; captives sold as slaves; vast sums paid as bribes.

COUNTRY.	DATE.	VESSELS.	COMMANDERS.	RESULTS.
War with Tripoli, 1801-1805.	July, 1801	President	Dale	Captured Tripolitan cruiser.
	Aug. 24, 1803	Philadelphia	Bainbridge	Vessel captured; crew enslaved.
	Feb. 16, 1804	Enterprise	Decatur	Burned the Philadelphia.
	Aug. 3-Sept. 3, 1804	Constitution	Preble	Blockaded ports. Bombarded Tripoli.
With Algiers, 1815-1816.	May, 1815	Guerrière	Decatur	Captured Algerian vessels. Secured treaties from all the Barbary States

Treaty with Tripoli June 3, 1805; United States paid $60,000; prisoners exchanged. Ended trouble with Tripoli.

War of 1812. The Second War of Independence.

CAUSES: Commercial injuries; impressment of seamen; Indian hostilities incited by British agents.

CAMPAIGNS.	DATES.	BATTLES.	AMERICAN FORCES.			BRITISH FORCES.			RESULTS.
			Leaders.	Eng'ed.	Loss.	Leaders.	Eng'ed.	Loss.	
	1812								
Invasion of Canada.	Aug. 15	Fort Dearborn	Heald	57		**Indians**	1,327		Captured b
	Aug. 16	Detroit	Hull	2,500	2,500	**Brock**	1,300		British and surre
On the Frontier.	Oct. 13	Queenston Heights	Van Rensselaer	1,200	990	**Brock**		130	der to British. Americans los
	1813								Michigan Terr
In the Northwest.	Jan. 22	River Raisin	Winchester	800	400	**Proctor**	1,500		tory; British an
	May 5	Fort Meigs	**Harrison**	1,200	800	Proctor	2,000		Indian allianc
To recapture Detroit	May 29	Sackett's Harbor	**Brown**	1,000	167	Prevost	1,200	261	broken; American
	Sept. 10	Battle of Lake Erie	**Perry**	9 ves. 54 guns	60	Barclay	6 ves. 63 guns	527	regained territor and secured som
	Oct. 5	The Thames	**Harrison**	5,000	45	Proctor	2,000	644	of upper Canada
	1814								
On the Niagara Frontier.	July 5	Chippewa	**Brown**	1,900	328	Riall	2,100	200	Americans r
	July 25	Lundy's Lane	**Brown**	2,600	860	Drummond	4,500	878	treated.
	Aug. 15	Fort Erie	**Ripley**	2,500	510	Drummond	5,000	905	Retreat q
	Sept. 11	Lake Champlain	**McDonough**	14 ves. 86 guns		Downie	16 ves. 92 guns		British.
	Sept. 11	Plattsburg	**Macomb**	3,000	110	Prevost	12,000	200	
Capture Washington.	Aug. 24	Bladensburg	Winder	3,500	76	**Ross**	5,000	500	Abandonment o
	Sept. 13	Fort McHenry	**Armistead**	3,000	28	Ross	4,000	2,100	Washington.
To secure New Orleans.	1815 Jan. 8	New Orleans	**Jackson**	5,000	21	Pakenham	20,000	2,600	The British wit draw.

Treaty of Ghent concluded Dec. 24, 1814; settled no question causing the war, but gave the U. S. independence of Europe.

ON THE SEA.	DATES.	VESSELS.		COMMANDERS.				RESULTS.
		American.	English.	American.	Loss.	English.	Loss.	
Off Newfoundland.	Aug. 13, 1812	Essex	Alert	**Porter**		Langharne		
Off Massachusetts Bay.	Aug. 19	Constitution	Guerrière	**Hull**	7	Dacres	78	British bloc
Off North Carolina.	Oct. 18	Wasp	Frolic	**Jones**	5	Whingates	62	aded Atlant
Off Canary Islands.	Oct. 25	United States	Maced'nian	**Decatur**	5	Carden	94	coast; privatee
Off San Salvador.	Dec. 29	Constitution	Java	**Bainbridge**	35	Lambert	161	ing increased.
Off Demerara.	Feb. 24, 1813	Hornet	Peacock	**Lawrence**	5	Peake	38	
Off Massachusetts coast.	June 1	Chesapeake	Shannon	Lawrence	146	**Broke**	83	
In British Channel.	Aug. 14	Argus	Pelican	Allen	23	**Maples**	7	
Off coast of Maine.	Sept. 5	Enterprise	Boxer	**Burrows**	2	Blyth	21	Respect fo
At Valparaiso	Mar. 28, 1814	Essex	Phœbe / Cherub	Porter	125	**Hilgar** / **Tucker**	15	American seame fully established.
In British Channel.	June 28	Wasp	Reindeer	**Blakeley**	11	Manney	67	
Off Africa.	Sept. 1	Wasp	Avon	**Blakeley**	3	Arbuthnot	42	
Off Madeira.	Feb. 20, 1815	Constitution	Cyane / Levant	**Stewart**	14	Falcon / Douglas	77	

The Mexican War. 1846-1847.

CAUSES: Admission of Texas; dispute over Texan boundary; greed for territory; extension of slavery area.

CAMPAIGNS.	DATES.	BATTLES.	AMERICAN FORCES.			MEXICAN FORCES.			RESULTS.
			Leaders.	Eng'ed.	Loss.	Leaders.	Eng'ed.	Loss.	
	1846								
To hold the Rio Gr'nde.	May 8	Palo Alto	**Taylor**	2,300	46	Arista	6,000	229	Declaration
	May 9	Resaca de la Palma	**Taylor**	2,000	122	Arista	5,000	388	war.
Invasion of Mexico	Aug. 18	Santa Fé	**Kearny**						
	Sept. 24	Monterey	**Taylor**	6,600		Ampudia	10,000		
and New Mexico.	1847 Feb. 23	Buena Vista	**Taylor**	4,700	723	Santa Anna	17,000	1,809	Americans inv
Vera Cruz to City of Mexico.	Apr. 18	Cerro Gordo	**Scott**	8,500	431	Santa Anna	12,000	600	riably successful
	Aug. 20	Contreras	**Twiggs**	4,000	60	Valencia	7,000	2,900	
	Aug. 20	Churubusco	**Pillow**	3,000	1,000	SantaAnna	25,000	4,000	City of Mexi
	Sept. 8	Molino del Rey	**Worth**	3,500	899	Santa Anna	14,000	3,000	surrendered Se
	Sept. 13	Chapultepec	**Pillow**	7,200	787	Bravo	25,000	3,000	14, 1847.

Treaty of Guadalupe Hidalgo, Feb. 2, 1848. The United States gained all territory north of Rio Grande and Gila rivers. Mexico was paid more than $18,000,000.

1861-1865. The Civil War.

Causes: Sectional differences between the North and South; in interpretation of Constitution; in systems of labor; in industries and a want of intercourse between the people.

Campaigns.	Dates.	Battles.	Union Forces.			Confederate Forces.			Results.
			Leaders.	Eng'ed.	Loss.	Leaders.	Eng'ed.	Loss.	
To secure seceded and doubtful states.	April 12, 1861	Fort Sumter	Anderson	80	5	**Beauregard**	7,000	4	Call for troops.
	June 10, "	Big Bethel, Va	Pierce	3,000	68	**Magruder**	2,200	5	Seceded states held by Confederates; doubtful states by Federals.
	June 17, "	Boonville, Mo	**Lyon**	1,500	56	Marmaduke	2,000	8-150	
	July 11, "	Rich Mountain, W. Va	**Rosecrans**	7,000	46	Pegram	5,000	440	
	July 21, "	1st Bull Run (Manassas)	McDowell	18,000	2,708	**Beauregard**	27,000	1,752	
	Aug. 10, "	Wilson's Creek, Mo	Lyon	5,500	1,235	**McCulloch**	12,000	1,095	
	Sept. 10, "	Carnifex Ferry, W. Va	**Rosecrans**	4,500	118	Floyd	5,000		Federal forces driven back to Washington.
	Oct. 21, "	Ball's Bluff, Va	Baker	2,100	944	**Evans**	5,000	302	
	Nov. 7, "	Belmont, Mo	**Grant**	2,850	485	Polk	7,000	642	
To open the Mississippi.	Feb. 6, 1862	Fort Henry	**Grant, Foote**		62	Tilghman		66 g'ns	Confederates driven out of western Kentucky.
	Feb. 16, "	Fort Donelson	**Grant, Foote**	15,000	2,331	Buckner	20,000	15,067	
	Mar. 5, 6, "	Pea Ridge	**Curtis**	12,000	1,312	Van Dorn	35,000	5,200	
	Mar. 13, "	New Madrid	**Pope**	20,000	557	Gantt, Stuart	9,000	500	Mississippi opened south to Tennessee and northern Mississippi.
	Apr. 6, 7, "	Shiloh or Pittsburg Ldg.	**Grant** **Buell**	65,000	13,573	A.S.Johnston Beauregard	45,000	14,687	
	April 7, "	Island No. 10	**Foote, Pope**	12,000	51	Makall	7,000	7,000	
	April 24, "	New Orleans	**Farragut** **Butler**	46 ves. 14,000	205	Hollins Mitchell	10,000	4 g'bts 63	Mississippi opened north to Port Hudson.
	Sept. 19, "	Iuka	**Rosecrans**	17,000	790	Price	23,000	1,638	
	Oct. 3-5, "	Corinth	**Rosecrans**	19,000	2,359	Van Dorn	38,000	4,718	
Peninsular: Federals. To capture Richmond.	May 5, "	Williamsburg	Hooker		2,200	**Longstreet**	25,000	2,000	
	May 24, "	Winchester	Banks	5,000	904	**T. J. Jackson**	18,000	400	
	May 31, "	Seven Pines—Fair Oaks.	McClellan	11,000	5,739	**J.E.Johnston**	35,000	6,697	
Confeds., To capture Wash'tn.	June 1, "	Seven Days' Battles	McClellan	95,000	15,249	**Lee**	91,000	20,450	Federals successful in West; Confederates, in East.
	June 26-30, "	Malvern Hill	**McClellan**	80,000	1,000	Hill	80,000	3,000	
	July 1, "	Cedar Mountain	Pope	7,000	1,400	**T. J. Jackson**	20,000	2,500	
	Aug. 9, "	2d Bull Run, Va	Pope	32,000	14,500	**Lee**	25,000	9,500	
	Aug. 30, "	South Mountain	**Franklin**	30,000	2,325	Lee	30,000	4,343	
Lee's invasion of the North.	Sept. 14, "	Antietam, Md	**McClellan**	70,164	12,469	Lee	40,000	13,533	Bloodiest battle of war.
	Sept. 16, "	Fredericksburg, Va	Burnside	100,000	12,841	**Lee**	90,000	4,330	
Kentucky.	Dec. 13, "	Perryville, Ky	McCook	13,000	4,055	**Bragg**	33,000	4,500	Confederates capture stores.
Blockade.	Oct. 8, "	Monitor-Merrimac	**Worden**		1	Buchanan		2	
In East Tennessee.	Mar. 9, "	Murfreesboro, Tenn	**Rosecrans**	43,000	10,309	Bragg	62,000	18,060	
	Jan. 3, 1863	Chickamauga, Ga	Rosecrans	55,000	15,851	**Bragg**	70,000	17,000	
	Sept. 19-21, "	Chattanooga, Tenn	**Grant**	80,000	5,815	Bragg	45,000	6,687	
	Nov. 23, "	Lookout Mountain	**Hooker**	10,000	4,000	Bragg		10,000	Confederates driven out of Tennessee.
	" 24, "	Missionary Ridge	**Sherman**			Bragg			
	" 25, "	Siege of Knoxville	**Burnside**	20,000	900	Longstreet	20,000	2,000	
	Nov.17-Dec. 5	Siege of Charleston	Dupont		21	**Beauregard**	45,000	3	Unsuccessful.
Blockade.	April 27, 1863		Hunter						
To open the Mississippi.	April 16, "	Bombardment of Vicksburg	**Farragut** **Porter**	15 ves.	1 gunboat	Pemberton			
	May 18 to July 4, "	Siege of Vicksburg	**Grant**	34,000	3,712	Pemberton	60,000		
	May 27 to July 8, "	Siege of Fort Hudson	**Farragut** **Banks**	15 ves.	700	Gardner	6,000	6,000	Mississippi open ed.
Adv'nce on Richmond.	May 1, "	Chancellorsville	Hooker	90,000	17,197	**Lee**	90,000	13,019	Turning point of war.
	June 13, "	Winchester, Va	**Milroy**	6,500	1,800	Ewell	18,000	850	
Lee's 2d invasion.	July 1-3, "	Gettysburg, Penn	**Meade**	90,000	23,003	Lee	80,000	20,451	Greatest battle.
	May 5-7, 1864	Wilderness	Grant, Meade	150,000	15,387	Lee	130,000	11,400	Largest Union army.
	8-18, "	Spottsylvania	**Grant, Meade**	135,000	20,000	Lee	105,000	12,000	
	June 1-3, "	Cold Harbor	Grant, Meade	125,000	9,948	**Lee**	100,000	8,500	Confeds. retreat toward Richmond.
	June 15-19 "	Siege of Petersb'g begun	**Grant, Meade**	140,000	15,000	Lee	100,000	10,000	
Adv'nce on Wash'gton.	Sept. 19, "	Winchester, Va	**Sheridan**	40,000	3,500	Early	15,000	3,611	Federals control Shenandoah val.; ends adv. or Wash
	Sept. 22, "	Fisher's Hill, Va	**Sheridan**	33,000		Early	11,500		
	Oct. 19, "	Cedar Creek	**Sheridan**	30,000	5,300	Early	30,000	4,100	
Sherman's "March to the Sea."	May 15, "	Resaca, Ga	**Sherman**	100,000	1,000	Johnston	55,000	1,000	
	May 28, "	Dallas, Ga	Sherman	40,000	2,400	Longstreet	20,000	3,000	
	June 27, "	Kenesaw Mountain, Ga	Sherman	100,000	3,000	**Johnston**	60,000	630	
	July 22-Sep. 2	Siege of Atlanta	**Sherman**	100,000	3,641	Hood	40,000	8,500	City surrenders.
Counter attack, Tenn.	Nov. 30, 1864	Franklin	**Schofield**	25,000	1,222	Hood	50,000	8,000	Hood's army destroyed.
	Dec. 15, 16, "	Nashville	**Thomas**	50,000	3,000	Hood	44,000	5,000	
	Dec. 25, "	Savannah	**Sherman**	60,000	150	Hardee	15,000	380	Cut Confederacy in two.
In the West. Naval operations.	Sept. 27, "	Pilot Knob	**Ewing**		600	Price	20,000	1,500	Last military operations in West. Trouble with Eng.
	Oct. 22, "	Independence	**Ewing**	8,000		Price	20,000		
	June 19, "	Alabama-Kearsarge	**Winslow**			Semmes			
	Aug. 5, "	Mobile Bay	**Granger**	5,000	335	Page			Opening of coast.
			Farragut	18 ves.		Buchanan	2,500	26	
	Jan. 15, 1865	Fort Fisher, N. C	**Terry**	9,200	955	Hoke	2,200	2,083	
			Porter	73 ves.					
Sherman's Advance North.	Feb 17, "	Columbia occupied	**Sherman**	75,000					Cut off retreat from Richmond.
	Feb. 18, "	Charleston occupied	**Sherman** **Gillmore**	75,000	100	Beauregard Hardee	35,000	60	
	Mar. 14, "	Kinston, N. C	**Cox**	12,000	500	Bragg	12,000	775	
	Mar. 16, "	Averysboro, N. C	**Slocum**	60,000	678	Hardee	20,000	865	
	Mar. 19, "	Bentonsville, N. C	**Sherman**	65,000	2,300	J.E.Johnston	45,000	2,343	
Operations in Virginia about Richmond.	Feb. 27, "	Waynesboro, Va	**Sheridan**	8,000	69	Early	1,800	1,352	
	Mar. 25, "	Fort Steedman	**Meade**	40,000	1,646	Gordon	67,000	5,000	
	April 1, "	Five Forks, Va	**Sheridan**	100,000	7,000	Lee	50,000	15,000	
	" 2, "	Petersburg taken	**Grant**	70,000	8,000	Lee	42,000	9,000	
	" 6, "	Sailor's Creek	**Sheridan**	80,000	1,170	Lee	30,000	10,000	
	" 9, "	Appomattox	**Grant**	100,000	500	Lee	27,000	26,000	Lee surrenders.
	" 26, "	At Raleigh	**Sherman**	85,000		Johnston	45,000	30,000	Johnston surrenders; end of war.

Results: Slavery abolished forever; the Union preserved: nearly 1,000,000 men killed; cost nearly $8,000,000,000.

1898. Spanish-American War.

Cause: Sympathy for the Cubans; interference with United States trade interests in Cuba; destruction of the Maine; demand by United States that Spain give up Cuba.

Campaigns.	Dates.	Battles.	American Forces.			Spanish Forces.			Results.
			Leaders.	Eng'ed.	Loss.	Leaders.	Eng'ed.	Loss.	
	1898								
	May 1	Manila Bay	Dewey	9 ves.		Montojo	10 ves.	616	Heavy loss to Spanish.
Blockade of Cuban ports.	July 3	Santiago de Cuba	Sampson Schley	7 ves.	12	Cervera	6 ves.	2,050	Ships destroyed; men captured.
Land expedition against Santiago.	July 1-3	El Caney	Lawton	4,500	240	Toral	12,000	1,401	Surrender of Santiago July 17, 23,-500 men.
		San Juan Hill	Garcia	5,000					
	July 25 to Aug. 12	Porto Rico	Miles	17,000	3				Island was surrendered.
	Aug. 13	Manila	Merritt	20,000	17		11,000	All.	City surrendered; war ended.

Result: Spain gave up Cuba, ceded Porto Rico, Guam, and the Philippines to the United States, for which $20,000,000 was paid. United all parts of the country. Trouble with Philippine insurrectionists continued till July, 1899.

Indian Wars.

Cause: Dissatisfaction with white men's occupation of land.

War.	Dates.	Battles.	Leaders.		Results.
			Americans.	Indians.	
Pequot.	1637	Stonington, Conn.	Mason		Destruction of Pequot tribe.
Algonquin.	1643	In New Netherlands			Nearly destroyed New Amsterdam.
King Philip's.	1675-1678	In New England		King Philip	600 colonists killed; 13 towns destroyed.
Five Nations	1689	In Canada	Frontenac		Indians finally driven farther west-
with	1690	Schenectady, N. Y.	Frontenac		ward.
French.	1690-1697	In New England			
Tuscarora.	1711-1715	In North Carolina			Tribe nearly destroyed.
Pontiac's.	1763	In Northwest		Pontiac	War stopped temporarily.
Tories and Indians.	July, 1778	Wyoming Valley, Pa.	Sullivan		Destroyed Six Nations.
For control of	1790	Fort Wayne	Gen. Harmar		
western land.	1791	Wabash	St. Clair		Indians finally moved farther west.
	1794	Toledo	Wayne		
Tecumseh and	1811	Tippecanoe	Harrison	"The Prophet"	Ended union of British and Indians
British.	1813	Of the Thames	Harrison	Tecumseh	Tecumseh killed.
Creek.	1814	Horseshoe Bend, Ala.	Jackson	Red Eagle	Creeks moved west.
First Seminole.	1816-1818	Pensacola, Fla.	Jackson	Osceola	Stopped trouble temporarily.
Black Hawk.	1832	Bad Axe River	Dodge	Black Hawk	
Second Seminole.	1835-1843	In Florida	Jessup	Osceola	Capture of Osceola.
Sioux.	1862	Minnesota, Iowa	Sibley		Sioux expelled from Minnesota.
Modoc.	1872-1873	Lost River	Canby, Davis	Captain Jack	Indians returned to reservations.
Sioux.	1876	Little Big Horn	Custer	Sitting Bull	Massacre of Custer's forces.
Sioux.	1890	Wounded Knee	Miles	Sitting Bull	Ended trouble.

Canadian Wars.

Wars.	Dates.	Incidents.	Leaders.		Results.
French Colonists with Iroquois, 1609-1624.	1609	Crown Point	Champlain		Created hostility lasting 150 years.
	1610	Richelieu River	Champlain		
	1613	St. Saueur	Argal		
	1613	Port Royal	Argal		
English with French. March, 1627–April, 1629.	1628	Port Royal	Kirke		Canada, Cape Breton, and Acadia restored to France, 1632.
	1628	Gulf of St. Lawrence	Kirke	Roquemont	
	1629	Quebec	Kirke	Champlain	
	1629	Louisburg		Daniel	
French Colonists with Iroquois. 1633-1645. 1652-1654. 1661-1666.	1644	Montreal	Maisonneuve		Extermination of Hurons. Destruction of mission.
	1645	Fort La Tour	Charnisay		
	1652	Three Rivers	Duplessis	Indians	
	1652	Montreal	Classe		
	1654	Port Royal	Sedgwick		
	1660	Long Sault	Doulac	Indians	Whole garrison destroyed.
	1666	Mohawk Valley	De Courcelles		Stopped trouble for a time.
1687-1700.	1687	Seneca Country	Denonville		In 1701, treaty with Iroquois
	1690	Schenectady	Frontenac		at Montreal ended hostility.
	1696	Lake Onondaga	Frontenac		

SECOND WORLD WAR

Before the economic systems of the nations had recovered from the shocks of the depression that became rather world-wide after 1929, the clouds of a new threat of war began to gather over Europe. The power of Hitler in Germany and neighboring lands caused grave apprehension throughout the entire world. While Japan waged an undeclared war in China, Germany made an agreement with Japan as to mutual interests in the Orient, the effect of which was to increase the tension in Europe. Great Britain looked with increased suspicion on professions that the Japanese interest was merely benevolent and only an attempt to stabilize political and economic affairs in Asia.

Italy's swift incorporation of little Albania within the new Roman empire, for a time a threat for all Europe, led to no grave consequences, except perhaps to put the Balkan states again on their guard. Meanwhile, the several agreements between Mussolini and Hitler led to what both of them boasted as a new Berlin-Rome Axis around which affairs in Europe promised to revolve in their interest. The end of war in Spain, without spreading that conflict to regions outside, again left all nations with a chance to prepare for their next moves in the struggle to keep the peace of Europe. All loudly proclaimed their interest and devotion on the side of peace and harmony.

The main causes of a new war resembled those which led to the first World War in 1914. Some of the chief ones are these:

1. Rival imperialisms. Since the civilian population of Germany suffered little on their own soil from military events between 1914 and 1919, the loss of colonies became galling to the people. The idea grew upon them that they had been tricked and perhaps deserted finally by their own government. This idea was fostered and developed by the National Socialist or Nazi Party and was the source of their increasing power. Great Britain felt at last that Germany might be aiming for a new trial of strength. France felt nervous about her own eastern borders, and finally constructed an impregnable series of fortresses along the borders of Germany, most of them underground, known as the Maginot Line. The methods used in the absorption of Austria, and the betrayal of Czecho-Slovakia after the "Munich appeasement" again pointed the way toward which Germany was headed. Hitler's promise that he would make no more territorial demands may have delayed the impending storm for a little time. The willingness of Chamberlain's government in England to continue a so-called policy of appeasement also gave Germany a longer time to race her preparations at top speed with the intention of a new trial for domination in central Europe. France, meanwhile, was not idle in regard to new plans and preparations.

2. Trade rivalry between Germany and England, always a cause of friction, was not as great in 1939 as in 1914. Germany had been trying to gain new markets in South America. Before the war, Hitler himself declared to his people that "Germany must export or die." One objective, therefore, of his government must be to brush aside trade and commercial barriers to give Germany more of a free hand in world commerce. This was her policy of "Lebensrhum." For a long time Germany had looked toward the oil fields of Rumania, and Hitler's own declarations in his *Mein Kampf* included the plan to gain territory in the Ukraine, the rich granary of southwestern Russia. For this reason and others, Germany and Russia for some years had not been on good terms.

3. Another chief cause of the new conflict was the failure of the coöperative action provided by the League of Nations to supplant the old diplomacy and alliances that led to the first World War. Between 1914 and 1938 alignments had shifted and boundaries continued to be subjects of concern at many points. Border incidents occurred only too frequently. Slovakia felt somewhat submerged in the union with other districts in Czecho-Slovakia under the able leadership of the late President T. G. Masaryk. The break-up of the old Austrian empire caused other dislocations and pressures of people created by the Versailles Treaty under the Wilson Ethnological or Nationalistic Policy. Indeed, the small areas occupied by groups with nationalistic insistence have caused the great proportion of European wars for centuries. Russia always looked with secret longing toward the Baltic lands lost to her after the World War.

Poland for twenty years lived in constant fear of a new movement to make a fourth partition of her lands. Though a presidency in form, the government had been a virtual military dictatorship, not always of the benevolent sort. Military standing was strengthened. Pressure came from Russians in her eastern districts and on her borders; from the anomalous Danzig Free State, set up on her borders and interfering with her access to the seacoast. Therefore, after 1920, Poland built Gydnia, a new port of some scope and importance, free from the League of Nations' rule as was the case in Danzig.

4. Another immediate cause was the organization of huge standing armies ready to go at the word of command. Thus the tensity increased. One nation accused the other of mobilizing, as Germany did Poland after the forces of the Reich were well placed and some had even commenced to move toward their objectives. The armies of Russia and Finland stood almost in sight of each other some days in advance of actual hostilities. So were the forces of France at her eastern gates. Reports of calling men to the colors in the Balkans were frequent. Insults to soldiers by foreign civilians were reported and some "atrocities," none of them probably well proved or authenticated. Belgium and Holland were alert, hoping not to be caught undefended as Belgium was in part in 1914.

So the stage was set for a new war on September 1, 1939. On that day forces of Germany moved into Poland. For many days in advance all interested parties had prepared and sought to shift the blame for the final break in negotiations. The Allies waited two days to give Germany a chance to withdraw from Poland. Since May it had been known in Berlin that Britain would sup-

port Poland and France if the former were attacked. Hitler at times showed signs of uncertainty. In his last six conferences with the British ambassador, between August 23 and 30, he revealed different characteristics and seemed to grow more irritable and insistent. In one of these talks Hitler declared he was an artist anyway, not a statesman, and, after he had settled the case with Poland, wanted to settle down. He asked Britain to negotiate after Poland had been taken in hand.

Toward the last, Hitler brought forth 16 proposals as to the dispute with Poland over Danzig and other subjects. These seem to have reached Poland too late, though they had been broadcast. When the British envoy called to see the text the German foreign minister read it "at top speed," and then declared it was too late. At least one of the German officials earlier had admitted that Hitler could not be held to reason. It was finally demanded that Poland must send an envoy with power to negotiate within one day.

What happened at this point is in dispute. Britain insists that the Poles agreed to negotiate, but it was impossible to accede to terms before they had been given or explained at all. No time was left to negotiate farther. The British say that Hitler then seemed bent on war at all costs. He had been willing before to hold back his forces if his demands should be met without question, not otherwise. The Poles were said to be an inferior, lawless, quarrelsome people, and the army was ready. So why not punish them for the border incidents then said to be taking place? Danzig must be incorporated into the Reich; Memel had already been taken since the Munich Conference, when Hitler solemnly declared that he had no more ambitions for territory in Europe.

Before the invasion of Poland, the German press for weeks had built up a series of inflammatory reports of arrogance and encroachments of the Polish people. Hitler announced the war after aviators had begun to bomb Polish towns on September 1. Neutrals had reported the free city of Danzig to be calm, the Germans that it was a hotbed of revolt, and so they took over this area at once. On September 3, England and France declared war against the Reich.

Germany at once launched a campaign on south, west, and north fronts. Airplanes and motorized units rushed to combat with an intensity hitherto unknown in warfare. The careful plans of the Hitler forces closed in on the Poles, until little was left for them except a circle about Warsaw. Towns and civilian points suffered from indiscriminate bombings. The capital was scarred, blasted, and in many quarters left a heap of ruins. Hitler declared the Poles to be subdued on September 23, but mopping-up continued for a number of days. The invaders lost an admitted total of 50,000, but probably the number is far too small, for Polish aviators and trained troops had subjected certain points to withering fire for some days. The Poles might have continued to resist, except that Russia, on September 17, sent a force across the eastern border, and was rewarded with a large slice of territory in the settlement with Poland.

Britain and France could send little effective aid, being unable to reach the center of the conflict. The Polish government finally took refuge, first in Rumania, and at last in Paris. There a new government was also set up for Czechoslovakia in exile on October 4. President Lebrun promised that Austria, Poland, Czechoslovakia, and any other oppressed peoples would eventually be freed of German domination.

Russia continued to boast of peaceful intentions right up to the day of her invasion into Poland. She continued aggressive tactics and threats on all her western neighbors. Pacts were made with Estonia, Latvia, and Lithuania allowing Russia military advantages, the establishment of bases, and other concessions which virtually extinguished the sovereignty of these little countries. Vilna was taken from Poland and restored to the Liths, who held it until after the first World War, but Russia gained new grants for herself through this move. The various agreements may have been made with the sanction of Germany.

On August 24, Herr von Ribbentrop representing Germany brought Russia into a commercial agreement, with possibly other understandings that were not then or later made public. All moves were made so secretly that not even Japan, Germany's eastern ally, was warned of them. The Russian agreement caused such a commotion in Tokio that the cabinet resigned, and a temporary move was made to appease the democracies, notably England and the United States, while the campaign of Japan lagged in China.

The game of diplomacy, threats, and propaganda continued, until it was termed "the war of nerves." Great Britain and France wooed Italy. For a time Mussolini professed complete neutrality, and some German sympathizers were eased out of the Fascist cabinet. Rumania agreed to sell oil to Germany, but deliveries were slow, sabotage was charged, and at last Hitler moved into that land "to protect it." King Carol was afterward forced to abdicate and to flee, and a new regime, favorable to the third Reich, was meanwhile set up at Bucharest. Turkey signed an agreement with Britain and France, and refused to be won by any threats or promises of gain for abandoning neutrality. King Carol had intimated to Russia, when the great bear was having trouble with Finland, that no concessions of territory in Bessarabia would be granted short of war. Eventually, however, Russia got more than her demands.

Russo-Finnish War. In 1939 the Finnish delegation left Russia after days of fruitless negotiations. The demands were for Finland to give up three islands in the Gulf of Finland too near to the Russian naval base at Kronstadt and to Leningrad; a strip of land in return for part of Soviet Karelia; demilitarization of the Finnish eastern border; port privileges at Hanko; and land near Petsamo in the north, to give Russia access to nickel deposits and to Swedish iron supplies. The Finns were willing to grant the demands in modified form. Russia broke off suddenly on November 30, rained bombs on Finnish towns, and started troops across the frontier. The Finns at last countered and between December 14 and January 7 destroyed three whole Russian divisions. Until February 1 Russian troops and equipment were both rather poor. Even when trained men and great quantities of modern weapons arrived, the Russian losses were appalling. Yet their superior numbers by March 1 were beating down stubborn resistance at several points.

The eastern forts began to give way, and the Finns had to fall back to save their lives and materials. About 50,000 inhabitants along the eastern border left their homes, and many never returned to them. On March 11 the Allies offered aid if Finland requested it. Two days later, however, the brave Finns gave in to save their land and people from further assaults and destruction.

Admitted losses of the Finns were 15,700 killed and about that many missing, with 26,800 wounded, in a total army of about 230,000. Russia never admitted any reliable figures, but neutrals placed the losses at 200,000 killed, fully that many wounded. Finland claimed the loss of 794 Russian planes, and 361 of their own. The country lost about 9,500 square miles to Russia in the peace settlements, and about 8% of wood pulp lands, the chief Finnish resource. The total national debt, after the war, rose to about $122,500,000, which is about 70% of what Finland owed in 1931.

Sentiment particularly in America had favored little Finland. Here was a nation of fewer than 4,000,000 inhabitants and an army of fewer than 400,000 daring to withstand a force of 2,000,000 or more and a people of 150,000,000. In the midst of the conflict with Russia, the usual amount of $3,000,000 was tendered by Finland as the semi-annual payment on the first World War loan, but was loaned back for supplies.

Invasion of Norway. Vague rumors kept coming as to where the Germans intended to strike next. Some said that neutrality of nations to the north would be respected; others doubted any German promises. On April 7, 1940, rumors of new movements were confirmed. Within a few days it was admitted that Denmark had given way without resistance. On April 9, Oslo found German troops there in force. Two Reich warships were sunk by Norwegian efforts. Later reports claimed that at least 60,000 Germans suffered death or wounds in attempting to gain a foothold along the eastern, southern, and western coasts of Norway. Mechanized troops pushed through the country. British aid at Narvick and other ports had to be withdrawn, owing to difficulty as to transportation and supplies. At least seven warships of size were destroyed by the British at Narvick, and also some submarines, with loss of two British cruisers and two sub-sea craft. In turn, Britain seized the Faroe Islands north of Scotland and later established bases in Iceland, belonging to Denmark, which declared itself free of the mother country as to action in the war. Though the British withdrew with losses, the Reich paid dear in this campaign and gained no great advantage in being able to use Norway as a base. The British kept close watch and prevented the establishment of effective air bases. When the campaign in Norway was over, the Germans were said to have suffered huge losses to their shipping, convoys, and even to the submarine strength.

The War at Sea. By the time the British withdrew from Norway, according to the French premier, the Reich had lost about one-third of the active ships in the North Sea and adjacent waters. Some 309 ships of Germany had been interned in neutral ports,—over one-third their total merchant strength before the war began. It was asserted that some 40 to 60 of the German submarines had been lost, but building proceeded rapidly. Fewer British merchant ships were being sunk. On November 13, 1940, the British Admiralty gave these as losses for the first year of the war: Great Britain, 405 ships of total tonnage of 1,611,842; allied, 103 of 474,816; neutral, 253 of 769,212 tons; loss of life, 3,327, with 1,100 prisoners, and 15,635 seamen and passengers saved. Enemy losses were placed at 261 of a tonnage of "about 1,269,000 tons."

Controversy raged as to whether any aircraft could sink a modern battleship. The Reich repeatedly claimed such a fact, while the British usually came back with a flat or modified denial. It was even claimed two large battleships, announced as sunk in German reports, had been repaired and were again in service. The first major sea casualty of the war was the loss of the passenger ship, *Athena,* destroyed by a torpedo or mine on September 4, 1939, with a great loss of life. Within a month sinking or serious damage had come to the huge British airplane carrier, *Courageous;* to the *Royal Oak,* a large battleship, said to have been sunk at its base in Scapa Flow during a daring raid by the Germans; and to the *Iron Duke,* a principal training ship. On November 23, 1939, the *Rawalpindi,* huge armed merchantman, was destroyed by a German raider.

In December, 1939, a most spectacular sea fight occurred off the shores of South America. Three British cruisers, the *Exeter, Ajax,* and *Achilles* engaged the German *Graf Spee* in a running sea fight. Badly damaged, and with a large loss in crew, the latter sought shelter in the harbor of Montevideo, Uruguay. Repairs could not be completed in three days as required, so the *Graf Spee* put out to sea and was sunk and burned to the water's edge (it is said under direct orders from Hitler). The captain later committed suicide, while the rescued crew was interned in Argentina. The *Exeter,* badly damaged, had to be reconditioned. Details of the escape of the *Graf Spee* were broadcast from Montevideo as well as part of the battle as it occurred,—the first radio broadcast of such a fight.

While trying to escape from Mexico, the German liner *Columbus* was pursued by an enemy destroyer. As a result, she was scuttled off the eastern coast of the United States by her own crew,—a fate which numerous other German boats have also suffered. The giant luxury liner *Bremen* left New York three days before war was declared, sought refuge at Murmansk in northern Russia, and finally stole home on December 12. In March, 1941, she was burned while in her home port.

After the fall of France, the greatest worry of England was the disposition of the French fleet. Most of it was in the Mediterranean Sea, at African bases. The fleet was not surrendered by France to Germany. England demanded either its surrender or immobilization on short notice. The forces based at Alexandria in the Eastern Mediterranean were immobilized under English guns. No reply being received from the Western bases, the English fleet moved in and largely destroyed the French fleet, thereby removing it as a possible menace in Hitler's hands.

German strategy, on both land and sea, was that of the quick thrust and escape before effective attack could be made. Small, fleet cruisers

that came to be known as "pocket battleships" were built and inflicted considerable damage to the British merchant marine. Of such type was the *Graf Spee*. Heavier, slow British units, however, were able to pound them unmercifully when within striking range. British strategy was that of a tight blockade. Again, as in the first World War, a convoy system was organized, but there were necessarily many losses through submarine attacks. Many Reich claims were made from time to time. Early in 1941 the British asserted that the Germans already had claimed the sinking or fatal damage to more craft, of certain classes, than the Royal Navy had possessed at any time. Still Britannia continued to rule the waves. Reich reports of sinkings of merchant ships often seemed to double the actual numbers destroyed. As late as April 1, 1941, the British claimed to be much stronger, relatively speaking, in ships than at the start of World War II.

The Royal Navy had been active on all seas, and battles had taken place off South America, in the Indian Ocean, at Dakar off the coast of Africa, in the Mediterranean (two or three at the shores of Italy), in the harbor of Alexandria, Egypt, and elsewhere. The British slipped into the vicinity of Genoa and hurled shells upon the city; in the eastern waters, they had several times showed Italy they were on the alert. Many German merchant boats and war craft of all sizes went down. However, the most important naval battle up to April 1, 1941 occurred the last of March in the Ionian sea, resulting in the virtual elimination of Italy as a naval power. Rescued survivors showed that Germans were now on Italian ships. This notable victory occurred without a single British casualty in ships or lives.

Meanwhile, at times Britain suffered tremendous loss of shipping. Hitler announced that a new air, submarine, and cruiser attack would be launched on March 15, 1941. Within a few days of that date, British shipping suffered severe blows. The Royal Admiralty announced that two pocket battleships were at large in the Atlantic, perhaps near the shores of America, while in the Indian Ocean and in the Mediterranean ships went down.

The Western Front. Hitler promised a *blitzkrieg* or lightning attack on England by his air fleet. All Britain down to the young babies in their perambulators were equipped with gas masks. For weeks and weeks only minor raids occurred, while both forces made themselves ready. Tons of pamphlets were released. Britain tried to wean the German people away from allegiance to Hitler. Royal aviators pounded away at the Kiel canal, naval bases, and definite military centers. The war of words was bitter and hectic. Churchill radioed that Hitler was a "cornered maniac." A German, said by some to be Hitler himself, flung back the taunt, "We are too good to bleed to death so that London and the Jews can shake hands."

Day after day reports on the western front indicated only minor raids, or no particular activity. Both sides waited for something, not quite apparent. Some began to exclaim that this was a "phony war," not taken seriously at all by either side. Up to January 1, 1940—the first four months of the war—the British lost on the continent 200 men; in the same time in 1914, hundreds of thousands had been slaughtered in France. In February of 1915, the Allies alone lost 240,000 along the Somme. In gaining Verdun the Germans lost over 278,000. The newspapers looked for great onslaughts and trench warfare again as in 1915. At last all realized that the style of war had been completely changed.

Both France and Germany had built lines considered impregnable to attack. The French Maginot Line was equipped with clever devices to ward off an enemy according to tactics expected to be applied by the Germans. Meanwhile, the French were allowed to invade small portions of German soil, and to make progress between Luxembourg and the River Rhine. In the Saar, along the Moselle, and at several towns like Saarbrucken and Sierck, the raiders gained spoils and advantages. The whole world wondered what Hitler would command next. Would he attack the Maginot Line directly? Or would he try to beat around the end, especially at the north where it terminated in Belgium, leaving part of that country and Holland a path for invasion? Several dress rehearsals were staged. The Germans were said to have from 30 to 75 divisions massed back of their own Siegfried Line. The Polish war lasted less than 30 days. Then the huge forces turned westward and began to prepare for a real strike. Belgium and Holland trembled and their monarchs pleaded for peace, while their people maintained as strict a neutrality as they knew how to keep.

France was profoundly shaken by the fall of Poland and the invasion of Norway. Premier Daladier was finally forced out of office on March 20, 1940. Paul Reynaud took his place while the attack on Norway was in progress.

On May 10 the fury struck in complete force. The invaders chose some of the easiest routes into Holland and Belgium on the way to France, while the defending legions were spread out from the North Sea to the Swiss border. Methods then unknown were revealed,—the use of parachute troops to gain a foothold, heavy motorized units, flame throwers, and some claimed a secret kind of gas. The attack did not fall on northern Belgium as the French thought. After going in the direction of the Channel ports, the invaders turned south and west, followed the river courses, got across bridges before these could be blown up, beat down any opposition from infantry, and rolled on at some points almost unmolested. The French could not hold. They had been thinking in terms of warfare in 1915. Forts at Liége were taken in three days in 1940, which had held out for months in 1914. Everything was on the same scale. On May 24, the German advance reached Boulogne and Calais, and the British and French contingents in Flanders were thrust eastward and in grave peril. When King Leopold surrendered the whole Belgian army on May 28, the British were in a desperate position. It was too late now to reform the lines completely, as the withdrawal of the Belgians necessitated. Nothing remained but retreat to the Channel. While the French and some English units kept the Germans in check for several days, 335,000 men were ferried across the sea to Britain in every conceivable kind of boat, steamer, craft, and anything that could be kept afloat. Meanwhile, the Royal Air Forces shuttled back and forth over the convoys, keeping the German air forces away in large part. This super-

human feat of rescue helped counterbalance the complete collapse of the French campaigns.

The Germans swept south and west and entered Paris without great local opposition. On June 10, Mussolini led Italy into war, with his characteristic boasts of invincibility of the Roman legions, and the restoration of Italy to her pristine glories. On June 20, France was forced into an humiliating armistice in Compeigne Forest, where the delegation met the Germans in the same spot and same railway car that sheltered Marshal Foch on November 11, 1918. Hostilities ended on June 26. By the terms of the armistice (for no definite peace could be made) France was divided into two parts, "Occupied and Unoccupied" France. German troops occupied France from the Swiss border, northwest to the south of Paris, the city being in the occupied part, then to the Atlantic Ocean, and a strip south along the coast to Spain. In this way, Germany occupied all the coastal region for bases in her continuation of the war against England. Meanwhile, Marshal Henri Petain had become premier of France and the government was established at Vichy.

As time went on the French became hard pressed in their narrowed provinces at home. The government of Marshal Petain threatened to use the remainder of the French navy to convoy food ships to France, if Britain refused to relax the blockade. Constant pressure by Germany, aided by despairing Frenchmen and German sympathizers at home, made the Vichy government almost powerless to resist. Shortly after the armistice with Germany on May 26, 1940, General Charles De Gaulle set up in England a "free French" movement, aided by a provisional government there. Marshal Weygand, who had replaced Gamelin, returned to guard the French interests in Asia, mainly in Syria, the position of which as a mandated territory remained obscure. After a hurried trip to Vichy in March, 1941, Weygand announced that the French colonies would be defended. Since some of them in Africa already had joined with Britain in the campaign against Italy there, the force of Weygand's remark was somewhat questionable. Rumors circulated that the real objective of Hitler was to gain access to the oil of Asia through Greece, Turkey, and Syria.

The African Campaigns. When Italy joined the Axis partnership in June of 1940, something seemed coming to them in fulfilment of the dreams of empire in northern Africa. Italy was in no shape to support extensive campaigns either by money or by men, though she had modern equipment for about 100,000 soldiers. In planes and submarines Mussolini seemed at first to have some chance of making the Mediterranean his sea. Yet the navy avoided conflict with the Royal navy, and in several encounters much damage was done to Italian cruisers and prestige as well. Off Alexandria, Egypt, nearer home in the Adriatic, in the eastern areas, and in the vicinity of Spain, British naval units gave a good account of themselves. Meanwhile, the Italians were allowed to enter some little distance into Egypt, while General Wavell and his staff made preparations for the empire forces. The Italians seemed trying to reach the Suez Canal. When the British finally struck, the invaders were quickly driven back, and by a succession of forced marches into Libya, the entire territory in the east was cleared of soldiers. At the same time, free French forces made long marches from the Sudan to join the British against Somaliland and Eritrea. By the end of March, 1941, Italian resistance had been broken, and the "Babel Army," composed of various units of African natives, French territorials, British, Ethiopians, Indians, Australians, and others, had taken Italian Somaliland, and by April 6, 1941, had retaken Addis Ababa, completing the fall of Mussolini's African Empire. These victories released additional troops for the Balkan front which was now ablaze.

The War in the Air. Occasional raids were carried out before the stage of the war which eliminated France as an active force. Hundreds of thousands of children were sent to the country in August, 1939. Within the next six or nine months most of them had returned. The people of London began to become careless as to their gas masks. The "battle of England" began in earnest on August 1, 1940, when immense waves of German bombers surged over the Portsmouth naval area, Thames estuary, and parts of London, leaving unprecedented havoc behind them. The R. A. F. replied in kind, but kept to the main military and naval objectives for a time. In mass daylight raids, the Germans sent over as many as 1,000 planes, but their loss was terrific, when as many as 137 planes were downed in a single day. Mass formations gave place to single flights and to small operations from different angles and at different heights at once. For 58 nights London was pounded by the German aircraft. Later industrial centers like Liverpool, Coventry, Plymouth, and other strategic points were strafed, while Scotland and Wales were not spared,—nor were some non-military objectives. New types of incendiary and explosive bombs were dropped in numbers. Many buildings crumpled up and fell like flimsy houses of cardboard. British business tried to carry on as usual. On October 21, after suffering for 45 consecutive days from German fury, the Royal Air Force launched two heavy attacks on Berlin. Hitler's propaganda agents had led the people to believe that Britain could do little damage in the capital. On the same night, after refraining for two months, the R. A. F. launched vicious assaults on certain Italian military cities. It became evident, however, in time that neither side could wear down the other by air raids alone. Naval experts, as usual, were still claiming that eventually the war would be won at sea. On October 7, 1940, military observers estimated that 6,500 German planes had been destroyed, and 13,000 aviators had been killed. On October 21, 1940 and March 22, 1941, the British Minister of Aircraft Production declared that the English had more aircraft than ever before, and that they were gaining in numbers and in size and efficiency of the planes.

The African Front. Hitler's 1941 New Year speech promised "the greatest victory in our history." Mussolini was likewise elated by successes in Africa, after he had joined the Axis partnership. Already Poland, Denmark, Norway, the Netherlands, Belgium, Luxemburg, and France had passed under the Hitler yoke. The British answered the Axis, however, by taking Bardia in Africa, and then pushing on to El

Agheila, through the places later made familiar to us by the surging of battle across the sands of Libya. The Italians quickly lost 150,000 men and huge stores of arms and equipment to a British army under General Wavell numbering about 40,000. By April General Rommel had gathered another great force, and the British were pushed back. Meanwhile, the Italians had been driven out of East Africa. On April 6, they evacuated Addis Abbaba, and a month later Haile Selassie was again on his throne in Ethiopia. During November and December, British tanks and planes again gained the initiative, but Rommel, the fox, escaped a trap once more.

The Balkan Campaigns. Likewise the tide of battle surged back and forth in the Balkans. The task of Mussolini was to take Albania, Yugoslavia, and Greece while Hitler was busy elsewhere. At first his legions gained some territory. Demands were made on the Greeks in the fall of 1940, most being rejected. Invasion followed on October 28. Instead of meeting another bewildered and unprepared nation, Mussolini found the Greeks too much for him, with a strong, virile, well-disciplined force. Athens had prepared in secret and had even allowed the Axis to get wrong reports from there. Likewise the Serbs proved rather tough, but the Croats were ready for infiltration and partnership with the Axis. Hitler was compelled to send immense forces to lay waste Yugoslavia and burn the city of Belgrade. The main armies capitulated in twelve days, but bands in the mountains carried on a guerrilla campaign which is said to have kept several German divisions occupied. These hardy Serbs were still reported in action at the end of the next year. German mechanized panzer troops swept through Greece until, on April 28, 1941, the swastika flew over the Acropolis at Athens. Meanwhile, British soldiers had been withdrawn from the campaigns in middle Asia to assist the Hellenic armies. They came too late and too poorly equipped. Finally, a large force of parachute Nazis landed in Crete and forced the British and Allies out. Allied losses were heavy in a second evacuation like that at Dunkerque when France fell the year before. As yet Mussolini had not been able to make the Mediterranean "our sea," as he had called it in a speech. The British naval units patrolled the entire length from Alexandria to Gibraltar, and on March 28 defeated an Italian force at Cape Matapan. Gibraltar still held after various nuisance raids, for which the British retaliated by bombing Genoa from the sea. Submarines and aircraft also took their liberal toll from the Italians. In the months to come the British stronghold at Malta survived the greatest expenditure of bombs and planes ever thrown recklessly against a similar target.

The eastern Balkans had been seething with rumors and agents. King Carol of Rumania left his son on the throne and fled the country. Britain broke with Bulgaria when Nazi agents overran the land in civilian garb. Russia was displeased and drew nearer to Greece and Serbia. Germany had tried to place a puppet government at Belgrade, but the forces of young King Peter had come out ahead. These events had led to the invasion of Yugoslavia after the typical Nazi campaign of propaganda as to border and other incidents. The Croats were glad to side against their partners, the Serbs, in Yugoslavia. Italy and Bulgaria were allowed by Hitler to retain bits of conquered borderlands.

Events in Asia. One of Hitler's designs seemed to be to threaten the middle East and India; another to capture the Suez Canal and keep British commerce from this short route to the far East. In these and other designs, Great Britain and Russia were well able to thwart most of his plans. German infiltration reached a serious limit. Rashid Ali in Iraq attempted a coup in favor of the Axis; the British retaliated by capturing an important airfield, and the movement collapsed, while Rashid fled. Hitler was also too busy dropping parachute troops in Crete, in taking some of the small islands, and in keeping the Balkans in what he had been calling his "new order in Europe."

Tension between Vichy and Britain increased. What should be done as to the French possessions in Africa and Asia? Syria seemed threatened when German planes landed there on the way eastward. Vichy admitted they had not resisted properly. Some of the Free French forces assisted the British in a half-hearted campaign which ended with the fall of Damascus on June 21 and an armistice on July 12. British and Russian diplomacy at last roused Iran and Afghanistan to reject the blandishments of Nazi agents, and to declare themselves unwilling to join the Axis band.

The Battles at Sea. As the third year of the war began on September 1, 1941, the British seemed stronger at sea, despite huge losses. In two years 260 vessels had gone down, including two battleships of major class, two carriers, nine cruisers, 51 destroyers, 29 submarines, 14 armed merchant cruisers. Convoys had lost few ships compared with the great numbers shuttling back and forth across the Atlantic. The Italian navy was cut down considerably, and the rest seemed unable to accomplish anything vital. In two years 7,000,000 tons of allied shipping had been destroyed, with a million more for neutrals. To August 1, 1941, estimates include 1,078 British, 334 allied, and 326 neutral craft of all classes. On October 1, the Associated Press showed reports of over 2,000 vessels, 2½ daily, from 31 nations. Lives of 18,000 had been lost, with over 9,000 persons missing. France had lost half her merchant marine, and Sweden a total of 118 ships. German losses were concealed and unknown.

On May 24, the roving German heavy battleships *Bismarck* and *Prince Eugen* sank the immense British *Hood* between Greenland and Iceland. Warships rushed to the kill from all directions, and two days later the *Bismarck* was torpedoed and destroyed with loss of life comparable to that of the *Hood*. *Prince Eugen* and other German cruisers took refuge along the French shores, escaped once or twice under British fire and losses, and did some later damage, but were confined mainly to ports in France, Germany, and Norway. Underwater boats continued a great menace all over the seas, notably on the shores of the Americas in 1942. By the beginning of 1943, the British admiralty an-

nounced that all naval losses had been replaced, and indeed the British were better off than in 1939. The Nazi submarine continued, however, as a real and terrible menace to ocean shipping, though at times, in 1941 and later, operations were not especially troublesome. Convoys were getting through to Britain, and especially by the north route to Russia, despite tremendous odds of weather and submarines. The same is true of operations of the United Nations in the Pacific, so far as convoys were concerned. By May 1943, it was felt that the North Atlantic convoy route had become so well protected that most U. S. ships were released for Pacific duty.

Likewise aerial attacks on Britain claimed a huge total of lives and no end of damage, estimated at nearly half a billion in England alone. By October 1, 1941, the Germans were thought to have lost 16,000 planes with 19,000 pilots; the British 3,100 planes and 6,500 dead. By the middle of 1942 British output of materials seems to have passed that of Germany, notably in aircraft.

Russian Fronts. Both sides had been doing their utmost to interest Russia. Hitler and Stalin met to exchange views. The strange arrival from Germany of Rudolph Hess in Scotland on May 12 stirred Britain to greater watchfulness. Hess was sent to sound out the British, to buy them off against Russia, or for some other unknown purpose. Churchill continued to warn Stalin, who perhaps was not so phlegmatic as some of the experts fancied. By June, Hitler had the Balkans well in hand, and affairs in Africa were not causing so much attention. Something had to be done, and he pondered and consulted his "intuition." On June 21, 1941, he struck without warning and the usual border incident propaganda on a great scale.

Hitler no doubt expected a quick conquest. Events in the next five months seemed to favor such a view. The Russian borders were not well protected, nor the great flatlands on the way to Moscow and other great centers. Then, too, the Russian military machine had not reached high gear, but immense stores of material and men had been collected within the interior and across the Ural mountains. Perhaps Hitler did not count on these. The Germans penetrated some 355 miles in two weeks. The end of the autumn found Kiev and Odessa, two of the main objectives, already in German hands. Rostov had fallen on November 23. By December 1, 1941, the Germans were knocking at the doors of both Leningrad and Moscow. Soldiers fully expected to spend the winter in warm apartments of Leningrad and Moscow. Instead they met the fiercest blasts the steppes had seen in many years. Norwegians were ordered to provide blankets for the Nazi invaders, halted between the Volga and the Don, and in the North.

By the middle of December, 1941, the hoards had covered a part of Russia equal almost to their own Germany. Yet it was no push-over. Some think the Russians lured their foes farther and farther from their natural bases of supplies, while the Soviets retired, leaving a scorched earth behind. Hitler stormed and boasted. In the invader's time-table Stalingrad was to fall in three weeks. Yet the Russians stiffened their lines suddenly. Further, they had a nasty habit of killing off the Germans behind the main lines, of other sly tactics, of resisting with unparalleled ferocity, in which women and sometimes even children joined. Hitler had asked for total war, but he seemed surprised when Stalin gave it to him. In the southern sector stretching into the Caucasus, some better luck came to the Nazis. No doubt they needed the rich flow of oil beyond, but only the Maikop fields were taken. Indeed, the campaigns everywhere appeared to halt just short of their great objectives.

So the history of the incredible resistance of the Russian people stretches across the months of 1942. Nobody had dreamed that even Russia could bring forth such masses of men, and certainly not of materials and skilled technicians. Leningrad never really fell, although fighting desolated many of the city streets and factories, while men grappled there and even in doorways and buildings. Fifteen months after the proud boasts that this favorite city must fall within the first month, over 200,000 Germans had paid the ultimate price for the madness of the man they called their leader. Now only a starving remnant was either giving up or being killed off day by day.

With strength and tenacity almost beyond imagination, the great hoards of reinforcements came from the east. During the winter of 1942–1943 the invaders had been shoved back about a third of the way toward the German borders, losing all the advance made in the campaign of 1942. An advance of 150 miles west of Stalingrad left thousands pocketed and with help falling far short. The Germans were gradually being beaten back in the Caucasus and Rostov was retaken for the second time. About December, 1941, the Soviets estimated their killed at 490,000, and the Germans at two or three times that number at least. Hitler propagandists issued fantastic figures of Russian casualties.

Global War. The treachery of Japan on December 7, 1941, with the attack on Pearl Harbor, Hawaii, began a truly global war, which quickly spread to all continents and the seven seas. Japan and the United States for some time had been negotiating about affairs in the far Pacific. The Nipponese had received tremendous stores of oil and metals from America. At last they sent a special envoy to Washington to compose some differences with the Roosevelt government. American proposals of November 27 remained unanswered, while a personal appeal went to the Japanese emperor from the White House. The very hour when Japanese envoys appeared to talk with the Secretary of State was the time when their countrymen attacked in Hawaii.

It soon appeared that the United States had suffered a terrible defeat at Pearl Harbor,—which indeed proved the worst in our history. On the first anniversary, complete details were officially released. The great battleship *Arizona* was a total loss. Four others, three destroyers, one target ship, a mine layer, had been put out of commission. Within the year, however, the *Pennsylvania*, *Maryland*, *Tennessee*, and the cruisers *Helena*, *Honolulu*, and *Raleigh*, with a seaplane tender, repair ship, floating dock, and smaller craft had again been placed in service. We lost 117 planes, 2,343 men, with another 860

still missing, and also 396 wounded, but most of the latter group had already reported again for duty. The Nipponese lost about 50 aircraft and three small submarines. Indignation in America forced a sudden shift in command in both Navy and Army, and a resolution to prosecute the war to any length and with all possible costs. Within one year, the Japanese had lost a total of not fewer than 505 ships, to 78 for the United States. Between August 7 and November 15, 1942, naval losses were 111 to only 28 for the Americans. These figures generally neglect damage to our shipping.

Like their Axis partners in Europe, the Japanese intended to conquer by some deft and sudden attacks over a wide area in the lands about them. The Philippine Islands soon felt the weight of their total might, and after staggering losses in men, boats, and equipment the Japanese took control. Native Filipino troops, led by General MacArthur performed feats of unbelievable daring and endurance, fighting side by side with too small an American force. At last they were driven to refuge in the fortress of Corregidor, and there were defeated largely by hunger and lack of adequate ammunition. On May 2 and 3 they gave up the struggle, save some few who remained in the hills and on other islands, to help the natives in their guerrilla tactics. Their fate was an enemy prison camp. On March 31, 1942, MacArthur had escaped to Australia where later he became head of the Allied forces in the Southwest Pacific.

Swiftly meanwhile the Japanese had forced their way into Thailand, Burma, Malaya, including the British stronghold of Singapore, the islands of the Netherlands East Indies, and some possessions of other peoples. One main objective was Australia, and the Nipponese established themselves on adjacent islands like New Guinea, Guadalcanal, and others of and near the Solomon group. The British had made a fatal mistake of neglecting to defend Malaya from land attack through the upper jungles.

Allied Successes. The United Nations had few successes before May, 1942. Then came the naval battles of Coral Sea, Midway, and the Solomons. American marines landed at Guadalcanal and in New Guinea and displaced the Nipponese, who suffered terrible losses while trying to land troops and supplies four times in the fall of 1942. By count they lost nearly 12,000 in the operations on Guadalcanal Island. When the Burma Road was closed, the United States provided a commander and force of pilots for Chinese defense. Supplies were also sent in by different means and routes. The year 1942 gave the Japanese some set-backs, and no great victories in China. In five years Japanese losses were estimated at 2,500,000, while China admitted a toll of over twice that number. At Midway Island, in the Aleutians, and New Guinea in 1943 the Japanese suffered impressive set-backs.

North African Front. In the closing weeks of 1942, North Africa furnished the chief excitement, outside of the Russian campaigns. Rommel was chased from Egypt across Libya, and to the very borders of Tripoli. His losses were between 75 and 100 thousand. Italians bore the brunt of attack by land and sea elsewhere from the United forces. Dakar and the rest of French Africa came over to the side of the Allies. Admiral Darlan came into political power in North Africa for the French, but later was killed by an assassin. After weeks of secret and minute planning, the British and Americans landed a great force at Casablanca and other African ports. About 850 ships were used in this undertaking, greatest of its kind in history. After a brief but stubborn resistance, the French gave way, and soon were cooperating with the Americans and British. Political fortunes of that region were still doubtful the early months of 1943. However, the first part of 1943 saw the historic Casablanca conference, the hemming in of the Axis in the tip of Tunisia, and the fall of Bizerte and Tunis.

FIRST WORLD WAR

After Germany defeated France in the Franco-Prussian War and took two provinces, Alsace and Lorraine, uneasiness in Europe gradually increased until the World War broke out in 1914. A conflict had been openly predicted in various capitals for several years. On June 28, 1914, the Austrian archduke, Francis Ferdinand, heir to the throne of Austria-Hungary, was killed by a Bosnian student in Sarajevo. Austria soon professed to believe that the attack had been planned with the connivance of Serbian officials or nationals. On July 28 an ultimatum was dispatched to Serbia, making several strong demands, all of which were granted, save two, the granting of which would have been a virtual surrender by Serbia of national standing. England, Russia, and other nations sought to avoid or at least to postpone the conflict; or to keep it within central Europe. Austria refused all conciliation offered by Serbia, while Germany stood ready to abet and assist in event of actual war. Russia intimated that an army would be mobilized the instant that Austrian troops crossed into Serbian territory. Germany warned that mobilization would bring from her a declaration of war, but Russia proceeded with the plans. Too late Austria, at the suggestion of Germany, sought to delay the outbreak of hostilities. On July 31, Russia commanded a general mobilization, and Germany sent an ultimatum to desist, giving but 12 hours for a reply. The answer was a hastening of Russian plans. On August 1, in consequence, Germany and Russia were at war, three days after the official declaration by Austria against Serbia. Also on August 1, Germany demanded of Belgium the free passage of armies across her lands into France. Belgium refused, and on the next day Germany had men in France at Cirey, but did not declare war on France until the following day, August 3. Early on Aug. 4 troops also penetrated into Belgium, whose neutrality Great Britain had guaranteed many years before, and at midnight that day England declared war against Germany.

By October 7, 1917 altogether 27 nations had broken off diplomatic relationship with Germany and her allies, but six of these sent no men into actual conflict. Germany and Austria, called the Central Powers, were joined by Turkey on Nov. 3, 1914 (after Russia had declared war on Turkey), and by Bulgaria on Oct. 14, 1915, after a declaration against Serbia. Though Italy had been a member, with the Central Powers, of the old Triple Entente, she declared neutrality at the start of the World War. Yet on May 24, 1915, Italy cast her lot with the Entente against her former allies. After suffering unprovoked attacks on merchant vessels at sea, particularly by German submarines, the United States finally declared war on Germany on April 6, 1917. The first American soldier regularly enrolled in a United States force in Europe to be killed in action was Corporal James B. Gresham, on Nov. 3, 1917, at Artois, France. He is buried in Evansville, Ind. After much hesitation and internal conflict of opinion, both Greece and Rumania joined the Entente Allies. The countries actually engaged in the conflict were Germany, Austria-Hungary, Turkey, and Bulgaria against Great Britain, Canada, India, Australia, New Zealand, South Africa, France, Russia, Belgium, Serbia, Montenegro, Japan, Italy, Rumania, Portugal, Greece, and the United States.

The duration of the war was four years, three months, and 14 days, ending on Nov. 11, 1918 at 11 A. M. Russia, however, gave up on Dec. 16, 1917; Rumania on May 6, 1918; Bulgaria, Sept. 19, 1918; Turkey, Oct. 30, 1918; Austria-Hungary, Nov. 4, 1918; leaving Germany alone in the conflict. On Jan. 18, 1919, the peace conference began at Versailles, France. Germany agreed to the terms on June 28, precisely five years to a day after the assassination of Archduke Francis Ferdinand in Bosnia. Peace was made with Austria by the Treaty of St. Germain, Sept. 10, 1919; with Bulgaria, by the Treaty of Neuilly on Nov. 27, 1919; with Hungary, by the Treaty of the Grand Trianon, June 4, 1920; and with Turkey by the Treaty of Sevres, Aug. 10, 1920.

Battle Fronts. Today it is next to impossible to conceive the magnitude of the operations during the World War on land and sea. We usually think only in terms of the Western Front. Fighting, however, began immediately on three great fronts,—the Franco-Belgian or Western; the Eastern along the borders between Russia and Austria, Germany, and what is now Poland and some smaller states; the Southern, or along the borders between Austria and Serbia and Montenegro. When Italy joined the Allies in May of 1915, another great front was established on the bounds of Austria and Italy and adjacent territory; later the same year, when Bulgaria joined the Central Powers, another system of operations occurred along the Greek front, north of the city of Salonika. Other regions of combat were along the boundaries of Rumania, Hungary, and Bulgaria, after August of 1916. The operations against Turkey were conducted, for the most part, in Asia Minor, chiefly in Palestine, and in Mesopotamia, now Iraq, along the Tigris and Euphrates Rivers. Allied offenses against German colonies reached considerable magnitude, especially in East Africa, even to the date of the Armistice. Naval operations or bombardments occurred in the North Sea, the Baltic, Mediterranean, the Black Sea, the Dardanelles, off the coast of Chile, near the Falkland Islands, the Cocos Islands, and the mouth of the Rufiji River in German East Africa. Though aircraft was used in scouting and service elsewhere, the main activities were on the Western and other European fronts, with German raids on Paris and other enemy cities and on London and the English coast elsewhere.

The Western Front. Only the most important movements and battles may be treated in a short narrative of the World War. Germany was prepared for large-scale operations with a well-drilled army of 35 corps, 4 cavalry corps, and 25 Landwehr brigades made up of reserves who had already served in the field, all being

divided into seven armies. By the middle of the first great offensive, these were distributed along the front from the coast of Holland to Switzerland. Belgium made a gallant defense, but had only six divisions to oppose the superb German war machine, which was sent through territory supposed to be neutral, rather than directly through France, where the borders were strongly fortified. Belgian fortresses, which some supposed impregnable, soon gave way, that of Liége on August 5, after a terrific bombardment, though some held out for 10 days longer. In spite of inability to hold their fortresses, or their lines in one position, Belgium slowed up the German armies until the French and British could readjust their inadequate military defenses. France provided an initial force of 22 army corps, with 7 cavalry divisions, arranged in five armies that were shifted to meet the points of the heaviest German attacks. Great Britain provided, early in the conflict, six infantry divisions and one of cavalry which detrained on French soil near Maubeuge.

The Belgians, receiving no support from their allies, were forced back on Antwerp. On Aug. 20, the Germans entered Brussels and also appeared before Namur, the last great fortress along the Meuse River before entering France. Launching an offensive in Alsace on Aug. 8, the French under Gen. Pau were halted and again checked on the 19th. Likewise, 19 divisions of the 1st and 2nd French armies were checked in the Battle of the Frontiers at Morhang-Sarrebourg on Aug. 20. France found, as Belgium had, that the German howitzers and other war inventions swept resistance before them. Both sides paused for changes in plans and to take breath, the Germans because their advance had been too rapid, and the French because their miscalculations had put them much on the defensive. The whole line of the Allies fell back, and while the French shifted plans, they became aware of the vastness of the German sweep, and grimly settled down for more determined resistance. Meanwhile, the British took the brunt of the German attack at Mons, where their flanks came near being enveloped. Near Charleroi also, the German attack was terrific, with tremendous losses on both sides.

The German armies pursued the French and British across the Somme River, but by so doing drove them into more strategic positions. General Joffre, the allied commander, at last saw his opportunity. Following the tactics used with devastating effects in 1870 in the Battle of Sedan, the Germans began a premature circling movement with Paris as the main objective. Joffre swung back his center and left wing, with Verdun as a pivot, and the battle of the Marne gave the Allies their first great hope, while Paris was saved by the quick action of its defender, General Gallieni. (See *Battle of the Marne* elsewhere.) Before the Germans could take full advantage of their success at Mons, Charleroi, La Cateau, and in the fall of the Belgian fortresses, the Allies made a quick counterstroke, forcing their enemy to narrow their plans and make revisions in tactics which lost them the chance for Paris. Meanwhile, they had also weakened their lines at some points on Aug. 25, by sending four divisions to the Eastern Front. After the allied stand at the Marne, following the memorable command of Joffre, "They shall not pass," the Germans retreated beyond the Aisne, where they recovered quickly and began to entrench themselves.

Then followed a series of battles, such as those at the Aisne, the Somme, and at Arras, the results of which were indecisive. The Germans rushed toward the northwest coast, but gained no particular advantage in being nearer England, and not as near Paris as before the Marne engagement. On Oct. 10 Antwerp fell to the German armies, which swept on to Zeebrugge, Ostend, and Ghent. Next followed a series of battles in the region of the Yser River, chief of which, the battle of Flanders, brought the Allies some success, after most sanguinary fighting. From Oct. 31 to Nov. 11, the British gained an important advantage in the battle of Ypres. Germany failed to reach her chief objective, the capture of Calais and Dunkirk, and the Allies held them for the rest of the war in that sector.

Several attempts were made by each side to turn the enemy's western flanks. Trench warfare became a settled mode, since all realized now that open warfare, with modern guns trained on lines of battle, was altogether too costly. Airplanes were used in some engagements to direct the firing of artillerymen who could not detect the position of the enemy otherwise. The stalemate existing as 1915 began continued practically unchanged during all the year. Great battles were fought, incredible numbers of men were sacrificed, but neither side could pierce the opposition lines nor get around them. The Allies made numerous attacks at many points in the solid German front. They sought to keep Germany from sending more men against Russia on the Eastern borders. Falkenhayn, the new German commander on the Western Front, decided at last to fight to a finish there. While the entry of the Turks on the side of the Central Powers hampered allied plans, the final decision was only delayed, while Great Britain sent forces into Asia.

General H. H. Kitchener had collected a huge army of British volunteers, as yet untrained, but later to be of first importance in the third and fourth years of the death struggle. In March the British made an intense bombardment of a 2000-yard front for 35 minutes, followed by laying down a curtain of fire farther back to prevent Germany from bringing up reenforcements. Though taken somewhat by surprise, the Germans were able to collect their battalions because of a long delay in ordering the British advance. In the end the British suffered staggering losses in this offensive, known usually as the battle of Neuve Chapelle. The arrival of the Indian Corps, the 1st Canadian Division, and other territorials raised the British forces to 13 divisions and 5 cavalry divisions. On April 22 chlorine gas was first used by Germany at Ypres, but the leaders failed to take advantage of the consternation produced in the French, Canadian, and other sectors where a four-mile gap was made in the holding lines. The later stubborn resistance by the Canadians won for them the plaudits of the world. Further operations in the spring

and summer of 1915 consisted of various attacks by General Foch of France between Lens and Arras, which netted some territory at staggering cost in men. Haig's first British army likewise attacked at Aubers Ridge, but gained little, yet the attempt was renewed on May 15-27 at Festubert, south of Neuve Chapelle. Up to June 18, the French lost over 100,000 men in their sectors at Lens and Arras, and the push was then abandoned. Then the confident Germans sent more men to the Eastern Front. On Sept. 25 another French and British movement began in Champagne, also at Artois, in the Lens area. Despite the unfavorable opinion by Haig of success, his army was persuaded to attack at Loos. Slight gains were made in most of these offensives, but at a total allied cost of 242,000, compared with 140,000 of the Germans. Up to this time the British had been short of munitions. In May shifts had been made in the British Cabinet, which admitted Lloyd George as Minister of Munitions, and became a coalition ministry. By the end of 1915, 36 divisions had arrived in France, from various parts of the British Empire.

Declaration of a submarine blockade of England by Germany, retaliatory orders by the British ministry, the sinking of the *Lusitania* with a loss of 1195 lives, including 122 Americans, eventually lost for Germany, along with other acts of unrestrained warfare, the sympathy of many nations, and at last caused the United States to enter the war.

Great events on the Western Front in 1916 were the investment of Verdun by Germany in February; the naval battle off Jutland on May 31, followed at once by the third battle of Ypres on land, the loss of the British cruiser *Hampshire* (probably sunk by a mine) with General Kitchener and his staff, and nearly all the crew, in June; and another battle at the Somme in July.

While the theatre of war had shifted to the Eastern Front late in 1915, the allies on the Western Front were able to get their bearings. At a council at Joffre's headquarters in December, including delegates from Russia and Japan, it was decided to open a general offensive at the Somme in the summer of 1916. The Allies had developed a rather effective agency, the blockade of German ports from all directions save the Baltic, and now Germany, in her turn, began to feel the shortage of the sinews of war. The German High Command decided on a series of short pushes, with carefully planned objectives. For the allied nations, General Joffre had requested some of the men and supplies at Verdun, because he thought the forts no longer effective barriers. At this strongly fortified city, the new German offensive began as a surprise on Feb. 21, 1916, in command of the German crown prince. Eventually, the terrain in and about Verdun was battered almost out of recognition. At last General Pétain was sent to that region to learn the true intentions of the enemy. On March 6 the Germans pushed their campaign to the west bank of the Meuse River. Until July 1, they continued to hurl men and huge stores of ammunition upon the forts of Verdun, with appalling losses, admitted by the French to be 340,000 of their men, and probably some less for Germany.

Temporary gains in these advances were all won back by an allied drive in November; so that, by 1916, more territory was actually in French and English possession than in 1915. Meanwhile, the British and French launched somewhat prematurely their Somme offensive on July 1. In this campaign the English tanks were first employed with much success, and they proved afterward a weapon that Germany could not conquer. By the close of 1916, the Allies were superior in aircraft, artillery, and munitions. Realizing that the German plans had not netted any great benefits, the German Chancellor in December put out a vague bid for peace, which President Woodrow Wilson asked him in vain to make definite. Little came out of the situation except a strengthening of the morale of the allied armies.

Despite the increase in the sinews of war, disquieting events confronted the Allies early in 1917. French man-power began to show signs of running low. Italy, since joining the Allies on May 24, 1915, had gained no successes in the campaign against Austria, and Russia showed tendencies to disunion and internal strife. Germany now declared a complete blockade, even against neutral shipping in the North Sea and eastern Mediterranean. Two days later, however, on Feb. 3, the United States severed diplomatic relations with Germany, and at last, on April 6, declared war. General Joffre had retired from the supreme French command of the armies in favor of General Nivelle, who had proved an able strategist at Verdun, but he was destined soon to fail in a major endeavor. The allied forces now numbered about 4,000,000 men, and Germany had but 2,500,000. General Ludendorff, now dominant on the Western Front, ordered the Germans to devastate much of the occupied territory, and to make a retreat to a new series of entrenchments known to the Germans as the Siegfried Line, but to the Allies as the Hindenburg Line, because of the influence of Gen. Paul Hindenburg.

Fighting was resumed on a large scale around Arras, while the British and Canadians, by brilliant charges, captured Vimy Ridge, long an object of attack by both sides. Some French troops began to be restless, and General Nivelle gave way to General Pétain, while Foch was recalled to become chief-of-staff for France. By swift and sudden movements, unheralded as before by artillery preparations, the French took the Chemin des Dames and other positions in October, while the British captured Cambrai during the next month. In this last campaign 350 tanks were used most effectively. On June 26, 1917 American men went into training in France. Italy, however, suffered a crushing defeat at Caporette on Oct. 24. The Austrians then swept on as far as the Piave River on Nov. 9. Late in 1917 Russia virtually withdrew from energetic campaigning. Meanwhile Jerusalem had been captured, the campaign in Mesopotamia proceeded favorably to the Allies,

and in South Africa the Germans were being beaten.

When 1918 began, the Germans, because of the fall of Russia, were able to transfer troops freely to the Western Front. In March of the previous year, Allied divisions numbered 179 to only 129 of the Germans. Eleven months later Germany had 177 divisions, with 30 more at hand, while the Allies could command but 173. Since November of 1917, there had been an allied Supreme War Council constantly in session at Versailles. Thus, almost too late, the Entente nations organized their plans on something like a united scale. During 1917 the Germans had depended on their submarines to choke off allied commerce, and the tale of losses sustained on the seas, month by month, shows how near this campaign came to success.

Once more in March and April, turning to land again for ultimate hope of victory, the Germans launched a terrific offensive on the Somme. Their plan was to drive a wedge between the British and French. General Pershing offered the American troops for use where need should arise. General Foch of France became head of all the allied armies. So great was the progress made at Lys, that General Haig, for the British, commanded that "every position must be held to the last man," with no retirement, as if they were fighting with their backs to a wall. To save their strength, however, the British fell back to a line that extended from Bixschopte to Zonnebecke, not so different from the one they held four years previously for the first battle of Ypres. Again, the Germans also attacked furiously at the Aisne and the Marne. Near Montdidier on May 28, however, the American 1st Division went into battle, and by July over 1,000,000 men had left the United States for France. In June the Germans attacked once more in the Campiègne, but suffered incredible havoc in a ghastly failure. During this month American marines crossed the Marne, and also captured Belleau Wood. On July 15 the Germans were again along the Marne, at a loss of 100,000 men in three days. This virtually ended their last great bid for victory.

General Foch now assumed the offensive. The Americans and French went into action again from Soissons to Château-Thierry, on a front of 28 miles, aided by a huge army of tanks. They captured 35,000 of the enemy and threw the main lines back across the Marne. Foch again struck between Amiens and Montdidier, using the French 1st and British 4th army, and the Germans here suffered their greatest defeat to that time. General Mangin, aided by Americans, struck between Noyon and Soissons, and the United States men on Aug. 30 captured Juvigny. Next came the penetration of the famous Hindenberg line by Horne's British troops, while General Pershing, for the first time, was allowed to organize a complete American army, which on Sept. 16, at St. Mihiel captured 16,000 prisoners and 450 guns. Ten days later the Americans assisted in the Meuse-Argonne operations, the largest battle in which they had appeared. The German communications were cut, and defeat was now assured for them. Byng and Horne, with British and American men, won a battle near St. Quentin and entered Cambrai. On Oct. 9 at Le Cateau, the British advanced, and eventually penetrated the German lines for nine miles on a 30-mile front. Late in September, the rejuvenated Belgian army, under King Albert, joined the offensive. The Pope had made a plea for peace, and President Wilson had offered to negotiate. Terms were given the Germans by General Foch on Nov. 8, accepted on the 10th, and the Armistice began on Nov. 11, 1918. By this time the allied forces had driven the Germans far back toward their own borders. Meanwhile, some of the ships of the German fleet mutinied at Kiel, the German Kaiser fled on Nov. 8, and a new Republican form of government was proclaimed to represent the people.

The Eastern Front. Though Russia deserted the allies cause finally on Dec. 16, 1917, she had been of little aid during that year, even though the provisional government under Kerensky tried to carry out most of the pledges made by the czarist government. During the first three months of the World War, Russia gained some notable victories in both the Austrian and the Polish campaigns. Though the Austrians defeated them in Poland at Krasnick, on Sept. 2, Russia won a great victory at Lemberg, which lost most of Galicia to Austria and on Sept. 22 began to bombard Przemysl. They had already penetrated East Prussia, as far as Konigsberg on Aug. 20. Germany now called Paul Hindenburg from retirement, who administered a thorough beating to Russia at Tannenberg and again at the Masurian Lakes, but Russia won some success in the battles of Niemen and Augustowo. In the following month, Oct. 1914, the Germans began an offensive against Warsaw, and so helped to protect Austria, even though the Polish campaign was not very fruitful. In Feb. 1915, Hindenburg, who had been called to assist on the Western Front, again attacked the Russians in East Prussian trenches. Przemysl fell to Russia in March, but Mackensen battered in the Russian front and drove the enemy to the San River in May. Russian gains were largely lost, notably at Przemysl and Lemberg. By August the entire line had been forced back from the Baltic to Rumania.

During 1915 the Russian armies suffered from inefficiency and mismanagement. In the spring of 1916, troops of the Central Powers were drawn off to fight Serbia, to attack Verdun, and start a campaign against Italy. Then the Russians again advanced westward, broke the Austrian line, took Lush, Brody, and the Bukowina in part. Then troops were taken away to assist Rumania, who entered the war on the side of the Entente. In 1917 the Russians made no particular headway, for their spirit was broken, and the Kerensky government and Gen. Brusiloff, their great general, could do little. Little by little the armies broke up, the Germans captured Riga, and might have advanced, if they wished, on Petrograd itself. Russia signed the Treaty of Brest-Litovsk with the Central Powers on March 3, 1918. Some Czecho-Slovakian soldiers, who had

fought in Russian armies, now tried to escape by going east to Vladivostock, but the Bolsheviki opposed this move. An allied force, in which the United States participated, went to the rescue in Siberia and also tried to conserve the great stores of war material at Vladivostock in July of 1918.

Italian Front. Because the Austrian forces were occupied in the Russian, Polish, and East Prussian campaigns, Italy met with little opposition in the Trentino, the district about the Trent in Tyrol. The Italian army crossed the Isonzo River, and by 1916 had closed the northern frontier. An Austrian attack, however, with heavy bombardment, in the Trentino in May 1916, shattered the Italian defenses. Later the Italians gained some success near Gorizia. In the spring of 1917, operations between Plava and Gorizia became a see-saw campaign between the rival armies. In August the engineers of Italy conceived a daring plan of diverting the waters of the Isonzo at night, while they constructed bridges for the army to cross; in the daytime the river was turned back into its natural course. By Aug. 18 the whole force was able to cross, and by Nov. 1 had taken some strong positions, although failing to capture Monte San Daniele. In October, the Austrians gained great headway in a countermove and administered a stinging defeat upon Italy in the decisive battle of Caporetto. The British and French now rushed to the aid of their ally, General Cadorno was superseded by General Diaz, and by spring Italian resistance had strengthened. In June of 1918, the new command started a counter-drive to offset some Austrian gains. During the summer, Marshal Foch determined it was time to strike. On Oct. 24, aided by five British and French divisions and by the American 332d infantry, he crushed all resistance of the Austrians in battles that became routs for the defeated. An armistice became effective on Nov. 4.

Balkan Front. Including the Rumanian and Turkish fronts in Europe, considerable fighting occurred in southeastern lands. On August 16, 1914 Serbia thoroughly defeated the Austrians who had crossed the borders, expecting a quick and easy conquest. In December the tables were turned when Belgrade fell to the enemy, though the capital was regained for a time by Serbia, two weeks later. Montenegro had joined her neighbor nation at the beginning of the conflict. When the Bulgarians entered the war, Serbia was humiliated with the aid of German and Austrian troops and military strategists. Bulgaria did not love Austria-Hungary, but she hated Serbia for depriving her of some of the fruits in the Second Balkan War. Venizelos, prime minister of Greece, wished to enter the war on the side of the Entente, but the court and the pro-German king were able to thwart the wishes of the Greek people. When King Constantine abdicated, Greece came to the aid of the Allies on July 2, 1917, against Bulgaria and Germany. Under the influence of the Central Powers, Turkey declared war on November 11, 1914 against the Allies and against Rumania on August 29, 1916. This shifted the theatre of some operations into Asia; for Turkey hoped that the Islamic states would join in the holy war which she proclaimed. On the contrary, the Moslems of Africa, Arabia, Egypt, and India favored Great Britain and France and rendered no little aid. Eventually, the leadership of Islam passed from Turkey to the Arabian chiefs.

Rumania cast her lot with the Allies on August 27, 1916 by declaring war on Austria, an act necessarily considered hostile by the other nations supporting Germany. When Bulgaria declared for Austria and Germany on Sept. 1, 1916, Rumania suffered much in consequence. General Mackensen of Germany crossed into the Dobrudja, drove Rumanian troops out of Transylvania, and finally from Wallachia, while Rumanians held only Moldavia of the territory she coveted. Russia after 1916 afforded little of the help that had been promised. Lack of munitions and of leadership forced Rumania to follow Russia in December, 1917 in suing for peace. Toward the close of the World War, Rumania again prepared to resume hostilities, but her army appeared in no battles.

Urged by the threats of Turkey, the Anglo-French fleet and an allied army sought in 1915 to capture the Dardanelles. Then followed the ill-starred campaign in the Gallipoli Peninsula. Here the Anzacs (the troops from Australia and New Zealand) won universal admiration by their heroism and persistence. Between the end of April and December, the British alone lost 100,000 men, with about the same number incapacitated by disease, in a campaign that netted no definite benefits, except to keep some of the Turks busy meanwhile. Some of the allied forces were sent into Asia, but most went to Saloniki in Greece, and did much toward preventing Greece from siding with Germany.

Results in Asia and Africa. Turkey lost heavily in the World War. The main military operations outside Gallipoli centered in Armenia, Palestine, Mesopotamia, and Egypt, all of which were finally cut off from the influence of Turkey. In 1915 Russia penetrated as far as Erzerum, today the capital of a Turkish vilayet, and the sultan sent some troops into Russian territory. Little came of these expeditions. Meanwhile, Russia unsuccessfully attempted to rid Persia of Turkish influence, though her armies in 1916 got as far as Lake Van. Great Britain sent an army up the Tigris River, in the hope of taking Bagdad, but General Townshend was besieged at Kut, forced to surrender with all his army there (10,000 men on April 29, 1916) after holding out for 143 days, and Townshend became a Turkish prisoner. A new force, composed in large part of Indians, captured Bagdad in March of 1917. After nearly a year of preparation, including the making of a railway and water line across the Sinai Peninsula, the British gradually drove out the Turks from Palestine and captured Jerusalem on Dec. 10, 1917. This city of Christianity, after about 700 years, now was again in Christian hands. Meanwhile, Great Britain had gained the confidence of the Arabian tribes, which severed all connection with Turkey as a military and especially as a religious

leader of Islam. So completely was the sultan humiliated in Asia that he sued for an armistice, which became effective on Oct. 31, 1918. Thus indirectly the Allies accomplished what had been the objective of the ghastly failure that overtook them at Gallipoli. Four new nations were organized, including independent Egypt, Iraq, the Hedjaz, and Palestine under British mandate.

German colonies lost during the World War were Togoland, the Pacific islands, where resistance was almost negligible. In Southwest Africa, however, forces from British South Africa required seven months to conquer the German colonies. In the Cameroons, French, British, and Belgian companies from nearby lands, began a land and naval program (using small river boats) in 1914, and in 1916 the last of the German forces were driven into the Spanish Guinea. Resistance in German East Africa was even more stubborn, requiring at first local troops, then in 1915 more from India, and at last reenforcements from South Africa under General Smuts. Afterward native soldiers carried on the campaign under great hardships. General Vorbeck, the able German commander, was permitted by terms of the Armistice to make an honorable surrender three days after firing ceased in Europe. Kiaochow, on the south side of the Shantung Peninsula, ceded for 99 years by China in 1898 to Germany, was taken by Japanese forces, assisted by the British, after a campaign lasting from Oct. 16 to Nov. 7, 1914. China was again given sovereignty by a Sino-Japanese treaty in 1922.

Naval and Air Engagements. Except for the effective aid by the submarines or U-boats the German navy accomplished little during the World War, save by some spectacular raiding. Allied navies were able to keep open the lanes of travel. In spite of some losses, troops were carried in comfort and safety from all parts of the world to the battle fronts of Europe, Asia, and Africa. More and more the Central Powers realized the force of the allied blockade, first as to munitions only, then as to raw materials for war, and finally as to foodstuffs. During the early months of 1918, a huge mine barrage was laid in part of the North Sea, and in May this was continued by an American mining squadron. This was a tremendous help in choking off the German submarine campaign, which all but crippled British shipping. On April 22-23 a gallant attempt was made to block the canals at Ostend and elsewhere to prevent the U-boats from coming into the open waters. In response to the effective allied control of the seas, Germany issued decrees for a "paper blockade"; that is, a declaration that the North Sea was a war zone, into which no ship of any nation should enter. Not even German submarines, however, could enforce such a decree, which was contrary to international law, unless it could be actually enforced.

Naval Engagements. Several major naval battles occurred, but they fall into insignificance in comparison with the stupendous land operations on several fronts. On May 31, 1916, the heaviest battle on the seas was fought off Jutland, when the British squadrons caught up with the entire German battle fleet, and, after a battle in three phases, drove them back into their harbor under shelter of darkness. The Germans lost 11 out of 110 craft of all sizes, with 2,863 men; the British lost 14 out of 149 ships, with 6,617 men and officers. On Aug. 16, 1916 once again some of the German High Seas fleet came out, sank two British cruisers, but in turn suffered a loss of two submarines. Never after that did the German major warships emerge into open waters, until they came out to surrender as required by terms of the Armistice. Earlier battles were those in the Bight of Heligoland on Aug. 28, 1914, when three German cruisers were sunk, and a British flagship was damaged; and at Dogger Bank, on Jan. 14, 1915, when the Germans lost one cruiser, and the British flagship was badly damaged. Naval operations in the Dardanelles campaign, 1915, like the land, resulted in disaster for the British and French; for, out of 16 ships engaged, six were disabled, with the loss of complete crews in the two cases, and a French submarine was destroyed, while only one Turkish ship was wrecked. One great loss to England was the loss by a mine of the cruiser *Hampshire,* June 5, 1916, with Gen. H. H. Kitchener (Lord Kitchener of Khartoum) and his staff, and all the crew. The first warship to be sunk by a submarine was the British light cruiser *Pathfinder* by the U21 on Sept. 5, 1914. The U9 late in the same month sank three armored warships within an hour with a loss of 1400 men. The *Lusitania,* largest passenger vessel sunk, on May 7, 1915, caused a world-wide wave of horror. Before America entered the World War, 226 of her citizens had died because of submarine attacks. For a time the Germans boasted that the submarine would stop the sending of United States troops to Europe; and for a time also it looked as if they would make good their boast. Altogether 278 undersea boats were destroyed in the World War, of which 205 were German, a record that shows the effectiveness of the allied plans when they were at last completely put in operation. German raider ships for a time caused much uneasiness and considerable loss. The *Moewe* escaped from the British blockade in December of 1916, and in several months sank 27 British merchant vessels. The cruisers *Goeben* and *Breslau* bombarded some seaports in Algeria in August of 1914, and were afterwards sold to the Turks. Much submarine activity, notably on the part of the Allies, occurred in the Adriatic Sea, but few craft were lost. In the Baltic the Russians held back a German fleet on July 2, 1915. Turks bombed Russian ports along the Black Sea, and Russia sank some of the sultan's ships in turn. Most spectacular were the raids of the cruisers *Emden* and *Königsberg.* The former sank or captured some 30 vessels before she was sunk off the Cocos Islands; the latter, after doing much damage, was sunk by British monitors off German East Africa. Outside of European waters, the greatest naval engagement was fought off Chile on Nov. 1, 1914, at which time

three British cruisers went down, with considerable loss of life. One month later a British squadron completely destroyed the German ships. In both cases the defeated admiral went down with his flagship.

Aircraft played an increasingly important role as the war progressed. The first British air squadrons flew from Dover to France on Aug. 13, 1914. They were unprovided with machine guns and bombing racks. From the first airplanes were used to sight enemy movements; and on Aug. 23 the news of the concentration of Germans for a great drive permitted the British troops to fall back to better positions. Before the battle of the Marne, similar warning was given by aviators. On the previous day, one German plane was chased from the vicinity of the Maubeuge airdrome, and two days later, Aug. 24, the first German machine was forced to land in Allied territory. In January of 1915 the Germans made airraids on Dunkirk; and, on the 22nd, 13 machines in formation dropped bombs on the docks there. In May the Fokker monoplane was modified to permit firing of a machine gun between revolving blades of the airplane, a great surprise for the Allied aviators. On Feb. 21, 1916 the French began to fly over enemy lines to prevent German planes from flying over allied positions. The British opened the battle of the Somme by airplane bombing attacks. In 1917 the Handley Page airplane was first able to cope with German superior forces, and on June 6, 1918, an independent allied air force was organized to bomb munition caches back of the main German lines. On a smaller scale such raids had been made some time earlier. Airplanes of the British navy patroled the English Channel when troop ships were crossing. Navy planes also bombed the Zeppelin bases at Cologne and elsewhere. From 1915 on, planes were able to rise from the deck of the British *Vindex* and other craft. The Germans bombed London and Paris from the air, the coasts of England, France, and Belgium, killed many people at church in Paris, but nothing else was gained save frightening and killing defenseless civilians. The German long-range gun, called Big Bertha in France, accomplished only a similar result. When the United States entered the World War, she had but 55 inadequate aircraft. The Allies supplied 3800 planes for American use, helped to train aviators in Europe and on this side, while a great number of volunteers from America fought in British and French air units. Finally, the United States was represented on four fronts by 1200 pilots and by 1000 observers in balloons and airships. America shipped to Europe 1885 of one type of airplane, but the greatest aid was the development of the Liberty motor, of which 4435 were shipped to France for use of United States pilots and 1025 for the Allies.

SUBSISTENCE SENT OVERSEAS TO THE ARMY OF THE U. S.

Bacon	147,956,223 pounds
Beef (frozen)	250,584,692 pounds
Beef (tinned)	140,843,476 pounds
Flour	542,874,797 pounds
Tobacco	27,449,645 pounds
Cigarettes	2,439,260,097 single
Sugar	160,180,225 pounds
Butter	16,200,797 pounds
Tomatoes	100,081,789 pounds
Coffee	39,135,167 pounds
Milk	42,922,743 pounds
Beans	39,646,677 pounds
Candy	7,895,053 pounds
Rice	25,466,547 pounds
Prunes	15,748,931 pounds
Salt	13,707,276 pounds
Oatmeal	4,661,732 pounds
Peas	4,689,425 pounds
Peaches	2,415,182 pounds
Cornmeal	16,074,678 pounds
Hard bread	27,978,830 pounds
Total cost of subsistence	$327,059,997

THE UNITED STATES IN THE GREAT WAR.

Total strength of the army Nov. 11, 1918	3,703,273
Number of fighting men in Europe	1,949,316
Supplies sent to Europe for the army.	4,897,660 tons
Rounds of artillery ammunition	9,066,420
Rifle and machine-gun ammunition (rounds)	1,629,300,000
Rifles	1,800,000
Pistols and revolvers	615,000
Machine guns	49,350
Grenades	1,745,000
Blankets	19,419,000
Coats	7,294,000
Overcoats	7,748,000
Shirts	22,198,000
Shoes	26,423,000
Stockings	89,871,000
Undershirts	69,764,000

CASUALTIES IN THE ARMY OF THE U. S.

Dead, from all causes	105,284
Killed in action	67,813
Wounded	191,000
Taken prisoner	4,912

MONEY COST OF THE GREAT WAR (ESTIMATED).

United States	$32,080,266,968
Great Britain	44,029,011,868
France	25,812,782,800
Germany	40,150,000,000
Austria-Hungary	20,622,960,000
Russia	22,593,950,000
Italy	12,313,998,000
Belgium	1,154,467,914
Serbia	399,400,000
Rumania	1,600,000,000
Canada	1,665,576,032
Australia	1,523,208,040
Greece	270,000,000
Japan	40,000,000
Turkey	1,430,000,000
Bulgaria	815,200,000

Explanation: The enormous expenditures of the U. S. are due to the fact that this country was compelled to build its military organization from practically nothing. Also, prices of everything in the U. S. reached their peak in 1917 and 1918. The war debt of the Central Powers was wiped out by the disappearance of the German mark, the Austrian kronen, and the Russian ruble as money. The decline of the currency of all other European states enabled these states to repay some of their indebtedness in cheap money. Thus, maintaining the dollar at par was in one sense a costly thing for the U. S.
Attention must be called to the fact that this table merely represents the actual expenditures for war, and does not include losses resulting from the destruction of property. The disarrangement of business due to war conditions can never be more than approximated.

Total cost estimated variously from $208,305,000,000 (low) to $330,000,000,000.

COLONIAL HISTORY

Today we wonder why Europeans were so long in finding the western hemisphere. The reasons are varied and interesting. Until population began to increase faster than the available supplies of food and other products, men were content to remain within narrow areas. Again, the knowledge of other lands was usually vague and forbidding. Even Ptolemy, the greatest Egyptian scientist of the second century of our era, thought that the Indian Ocean was an inland sea, that Africa somehow was attached to China, and that the western ocean offered difficulties beyond the skill of navigators. The great Roger Bacon in England, as late as 1275, knew hardly more of geography than a pupil in the fifth grade does today. Further, the imaginations of men filled the seas with hideous monsters, the distant continents with fierce cannibals, and the stretches beyond Africa with the Great Sea of Darkness, mysterious, hazardous, terrifying. Later the urge for land, for adventure, and inevitably for treasure—in terms of the gold and precious stones of fancy—forced men out of their reluctance to brave unknown oceans.

North America may have been visited by a Buddhist monk, who left a report that he, about 499, saw a spacious land far to the east from his native India. His description fits Mexico, and possibly explains the presence of the cypress trees in California, where they are not native. Eric the Red founded colonies in Greenland in 985; his son, Leif Ericsson, sailed westward to what he called Vinland, variously identified in recent times as Nova Scotia, Labrador, or the coasts of New England.

Knowledge of Asia was nearly as indefinite as knowledge of America until after 1200, when a monk of Naples wrote the first authentic account of the court of the Great Khan of Tartary. Two brothers of Venice, the Polos, with their famous nephew, Marco, spent some years at the court of Kublai Khan of China, and one or more of them went to Cipango or Japan before returning to Europe by way of India.

By 1300 the navigators of Italian cities, Spain, and Portugal sought new riches abroad, lands for exploitation, and opportunities to spread the Christian faith in opposition to Islam. Portugal opened a large trade with England. By 1400 under Prince Henry of Portugal, extensive trade flourished with the north African coasts. His men in 1415 took Ceuta from the Moors, set themselves up at Sagres, and pushed down the western shores toward the equator. This was the beginning of the Portuguese colonial empire. After 1430 the Portuguese had a monopoly of the African slave trade until Spain and England took it up. In 1455 the Cape Verde Islands were discovered, in 1486 Diaz rounded the Cape of Good Hope, and in 1498 Vasco da Gama crossed the Indian Ocean to Calicut.

Following the Crusades also a flourishing caravan trade sprang up between Europe and Asia. Ocean trade challenged this, and by 1515 the commercial domination of Venice in the east began swiftly to decline. Men still longed to find a cheaper and shorter way to the wealth of the Indias and of Cathay, as China was long known. By 1460 sailors had visited the farthest islands of the Azores, one-third the distance across the Atlantic. It was inevitable that they should very soon penetrate farther.

Discovery of America. So the stage was all prepared for a man like Columbus,—a man of energy, persistence, and great faith. He was familiar with the chief books on navigation, three of which he mastered in detail. These were the *General History and Geography* of Sylvius, the *Imago Mundi* of d'Ailly, and the *Travels* of Marco Polo. Within eight years after Vasco da Gama found the ocean route to India, Columbus at last set sail from Spain for the western voyage. Whether his main motive was to locate a new route to India, or to follow vague traditions as to western lands, is not entirely clear. That he had tried to obtain a commission in Portugal seems proved. That Isabella of Spain also hesitated seems certain, but she finally sponsored his expedition, after Columbus actually had started for the court of France and had sent his brother to England.

Columbus and his friends contributed an eighth of the expense for the voyage, while Luis de Santangel lent the treasury of Castile the share which Isabella and Ferdinand had promised, the total cost being about $100,000.

The fleet of Columbus consisted of the *Santa Maria, Pinta,* and *Niña,* with a crew of 100 men. They embarked from Palos, Spain, on August 3, 1492, touched at the Canaries for supplies, and by sailing due west in good weather arrived at an island on October 12. Columbus named it San Salvador, the name now being Watling. On this and his three subsequent voyages, Columbus explored much of the coast of what is now Central America, one point near the Orionoco, and Cuba. Some assert that he believed, at least for a time, that Cuba was Cipango or Japan. La Costa, his pilot, about 1500 issued a map which looks like some of the ancient ones of eastern Asia about Japan, but he used no names for the coasts, a fact which may indicate that he was in doubt. Until further explorations in the 16th century, it is probable that most Europeans believed that the lands touched upon by Columbus and later explorers were groups of islands. (For further details of Columbus, see article on him in dictionary of Biography under *Scientists.*)

Within a generation the interests of several nations were in conflict in the new world. Columbus claimed the territory for Spain under the terms of his commission, which failed to mention India. For over a century the pope gave grants of lands in America to those who would promise to spread the faith among the aborigines. In 1494 Spain and Portugal entered into an agreement, which determined much of future history. By drawing a line in the Atlantic, certain spheres for conquest and settlement were assigned, and Portugal at last claimed Brazil under this agreement. One object of the Magellan voyage to the Pacific around South America was to see if the Spice Islands fell within the areas which the popes had granted to Spain. The Philippines went to Spain in 1750, but the Dutch, English, and French always objected to agreements between

Portugal and Spain and to all arbitrary grants. To oppose claims to lands in the east, the Dutch East India Company was organized in 1602.

Spain in the New World. Columbus left 44 of his crew in Haiti or Española, as he named the island, but the native Indians soon killed them. On a later voyage he settled over 200 colonists there. Very soon settlements sprang up in the West Indies, and also on the continent. Economic conditions in Europe were bad, and class rivalries drove many to seek wealth of a new home in America.

Juan Ponce de Leon, then governor of Cuba, in 1512, discovered and named Florida, but the Indians killed him on his second visit nine years later. No permanent settlement was planted until the founding of St. Augustine, in 1565, said to be the oldest town in continental United States. Balboa, a bankrupt Spanish noble, sought treasure in Panama, crossed the isthmus, and discovered the Pacific in 1513. Then followed a long succession of treasure hunters. Among the earliest was Pizarro, unscrupulous and cruel, who captured the Inca of Peru, put him to death, and carried off much of the wealth the natives had collected during centuries. Cortez, in 1519, took the ruler of Mexico, Montezuma, but the Spaniards sent a governor to supersede him in civil affairs. Narvaez left 600 men in Florida, but only one was left to escape with the tale of failure. De Soto in 1539 came with a fleet of nine ships, and 1000 men, with complete equipment, wandered from Florida westward and discovered the Mississippi above the delta, penetrated into Texas, but later died and was buried by his men near the Father of Waters. Coronado, another adventurer, came from his governorship at Campostella, Mexico, to seek the "seven cities of Cibola," in what is now New Mexico, but found only some Indian villages, which he destroyed, without locating the famed "palaces of ivory" which he sought. Before the close of the 16th century, Spain had sent more than 150,000 men to America, and they had tried to plant about 200 settlements.

California was visited by the men of Coronado about 1541, by Cabrillo, and Ferrelo two years later, by Vizcaino in 1602, and by others. The Jesuits came to Lower California in 1697, but not to Upper California before 1745. San Diego was visited and San Francisco Bay discovered in 1769. Then the Franciscans founded 21 missions in California, many of which prospered for 50 years. They furnished settlements to the southward with many products, such as wool and fruits. Upper California was constituted a separate province in 1804, remained loyal to Spain during the revolutions of 1811 in Central and South America, and was given representation in the Mexican congress in 1813. From this time the missions began to be secularized. Governors came and went, some of them being expelled by angry natives.

French Explorations. Verazzano, born near Florence, Italy, was commissioned by Francis I of France, and in 1524 skirted much of the coast from North Carolina to New England. He claimed all of this vast region in the name of France, a chief cause of the century of conflict with English settlers. Francis I sent Jacques Cartier on two voyages in 1534 and 1535, who explored the coast of Newfoundland, and went up the St. Lawrence to Hochelaga, the Indian site of Montreal. In 1541 both he and the Sieur de Roberval, a French knight, tried to make settlements in New France. Cartier soon returned, but Roberval went as far as the modern Quebec, yet failed to locate the "diamants" and "golde ore" he desired. Reduced to starvation, the survivors returned to France in 1451. So ended the first French attempts to gain a foothold in America.

Twenty years later Huguenot refugees from France, under patronage of Admiral Coligny, came to an island near the present Beaufort, North Carolina. Their commander left them there, and the remnant tried to work their way across the Atlantic in a small boat. After they had eaten one of their number, and some had died of hunger and thirst, the remainder were rescued by an English ship. Two years later, April of 1564, the same commander established a colony on the St. John's River in Florida. Nearly all were massacred by the Spanish. The few who returned to France obtained no help from the government, and the Chevalier De Gourges, at his own expense, sent an expedition of revenge, in 1568, and joining with the Indians of Florida nearly exterminated the Spanish colony.

Not until 1603 did France gain a foothold in what is now Canada. Meanwhile, a settlement on Sable Island on the Bay of Fundy, after five years, gave up. So also the fur trading post at Tadoussac on the lower St. Lawrence. Other ventures afterward prospered, of which the chief were some of the posts established by Samuel de Champlain, who had come out in 1603, with the expedition of De Monts. Champlain founded Quebec in 1609, where only eight of the original 28 settlers survived a year. He assisted the Algonquins and Hurons on an expedition against their enemies, the Iroquois of New York. On this journey he found the lake that now bears his name. His move against the southern Indians proved a great embarrassment later to France, for the Iroquois took the side of the English in the struggle with France. Champlain made other voyages down the Canadian rivers, and his associate, Nicolet, went as far as Sault Ste. Marie. No trace, however, was found of the great river which they thought emptied into the Pacific.

The era of Jesuit missions, from 1625, is one of great heroism, fortitude, and faithfulness almost without parallel in the new world. The fathers toiled in heat and cold, among unresponsive Indians, and without hope of reward in this world. Some of those who should be better known were, Le Jeune, who established the parent mission at Quebec in 1642; Maisonneuve, a layman, who helped a Jesuit and 37 settlers establish Montreal in the faith in 1642; Alouez, who in 1665, placed the mission which later flourished under Marquette near the western end of Lake Superior. Laval in 1659 became first resident bishop in Canada.

Better known were Joliet and Marquette who journeyed down the Fox and Wisconsin Rivers and across to the Mississippi, thence down to

the junction with the Arkansas, and across by the Illinois and Chicago Rivers once more to Lake Michigan. Marquette labored among the Illinois Indians, and died near the site of Ludington, Michigan, on his return journey to Quebec.

La Salle, another intrepid French explorer, erected forts at Niagara Falls, where Peoria now is, and at the mouth of the St. Joseph River. His men explored both the upper and lower courses of the Mississippi. La Salle himself saw the mouth of the river, and in 1684 came back from France with 400 settlers. They missed the entrance to the Mississippi delta, went on along the Texas coast, then inland, and back toward the east, where La Salle was killed by some of his party near the mouth of the Brazos River. The final results of the explorations, and of the religious colonies planted by the Recollet and the Jesuit priests, was the claim of France to Canada, the regions about the Great Lakes, and that vast inland empire later known as the Louisiana territory. (See index for articles on Cartier, La Salle, Marquette.)

English Explorations. England was only slightly behind Portugal, Spain, and France in laying claim to territory in the new world. Like these other countries, the English called upon another Italian to direct their searches in North America. He was John Cabot, a native of Genoa, but a citizen of Venice. With a single ship and but 18 men, Cabot set out from Bristol, England, in 1497. He reached Newfoundland, explored the coast as far south as Maine, like the rest, sought a passage to Cathay, and returned the next season to England, with a complete report, specimens of what he thought golden ore, and a claim to the entire region in the name of England. After 1502 fishing expeditions followed his course to Newfoundland.

In 1553 some London merchants organized the Muscovy Company, which soon sent Willoughby and Chancellor to find a northeast passage to the orient. Willoughby perished, Chancellor continued north of Russia, and finally on land came to Moscow, where he opened trade. The Eastland and Lavant companies later had posts in the Baltic and Mediterranean basins.

Then followed the age of the Elizabethan sea-dogs. William Hawkins visited the coast of South America. In 1502 his son, John, brought the first slaves in an English ship from Africa, and so established a trade that broke the Portuguese monopoly. Ten years later Francis Drake, a nephew of Hawkins, began to make reprisals on Spanish ships and settlements. (See Privateers in index.) In 1577 Drake captured some Portuguese and Spanish galleons off the African coast, then crossed the south Atlantic, where one of his ships got through the Straits of Magellan. He continued up the western coast, plundering as convenient, refitted the ship in San Francisco Bay and claimed this coast for England under the name of New Albion. Then he sailed eastward across the Pacific, the Indian Ocean around Africa, and so completed the circuit of the globe. Since Magellan himself had been killed in the Philippines, Drake was the first navigator to circumnavigate the world.

After years of agitation, Martin Frobisher at last secured the aid of a member of the Muscovy Company. Two of his vessels reached Labrador in 1577, coasted along Baffin Land, and entered the bay now called by his name. Two other expeditions failed to locate the gold they sought, but the Queen meanwhile had allowed the Company of Cathay to be formed to hold all lands that might be discovered. In 1578, however, Sir Humphrey Gilbert, half-brother of Walter Raleigh, obtained a six-year monopoly of treasure and trade in America. His first fleet was twice dispersed by storms. His second, 1583, reached Newfoundland, with five ships, the largest of only 200 tons, and the smallest a speck of 10. Compare these, if you like, with the *Normandie* or *Queen Mary* today, huge palaces of 80,000 tons. Near the Azores, Gilbert and all the crew of his ship, the *Squirrel,* were lost. His dying remark is said to have been, "It is as near to heaven by water as by land." John Davis, sponsored by Raleigh and others, made voyages and explored the south shores of Greenland, discovered the strait that bears his name, but failed to locate the route to the Pacific. For other voyages to find the northwest passage, see article on *Arctic Explorations.*

Early English Attempts at Colonization. Gilbert found the north latitudes too bleak for planting a colony in what is now Newfoundland. Raleigh (late in life he spelled his name Ralegh) in 1584 received a patent to explore, conquer, and settle men in the Americas. England now thought of competing with Spain in colonization as well as in commerce. Of Raleigh's three expeditions, the first was commanded by Amadas and Barlow in 1584. After visiting the Canaries and the West Indies, this group landed at Roanoke Island, claimed all the coast in the name of the queen, calling it Virginia. In the following year Grenville took out the colonists, but in 1586, a supply ship returning to Pamlico Sound found that Sir Francis Drake had rescued them some months before. In 1587, with John White as governor, an expedition of about 160 men and women, formed a settlement on Chesapeake Bay. White was obliged to return to England on business for the colony, leaving 89 men, 17 women, and two children (one of them, Virginia Dare, his grandchild) to maintain the post. When he returned in April of 1790, no trace of the colonists was found,—a mystery not yet explained, and perhaps never will be unless by access to Spanish archives.

Raleigh himself next turned attention to the fabled city of Manoa, supposed to be a rich Indian kingdom along the upper courses of the Orinoco and Amazon Rivers. In 1594 the region was explored vaguely by men under his patronage. In the following year he came with an expedition, ascended the Orinoco some distance, but was taken ill, and did not leave the ship. His son was killed by hostile natives, supplies ran low, and the city of Manoa faded into the distance. Raleigh thus failed to redeem his promise (he virtually bet his life against fate), and the rest of his days were spent in restraint.

Incitements to Immigration. Before peace was finally concluded with Spain in 1604, the English made no lasting settlements in Asia, Africa, or the Americas. The day of permanent colonies was at hand, however, and the mere voyage after spoil or treasure was to be abandoned. Little arable land remained for sale in England, while tenants complained of their high rentals, and landlords of their poor returns. Men began to find that the towns lacked means of livelihood. Commercial companies began to flourish with the object of getting men somehow to the new world. Even preachers in the pulpit urged their flocks to emigrate to America, where, as one of them said, could be found "whatsoever commodity England lacketh." Somehow the actual settlers did not find it so easy even to subsist, to say nothing of having what home before had not provided.

Richard Lane, governor of the ill-starred colony at Roanoke, wrote to Hakluyt, author of the *Principall Navigations,* that the new land was "the goodliest and most Pleasant Territorie in the whole world." The sad history of Roanoke and of many other early colonies seems to belie this advertisement. Yet Hakluyt himself, in his monumental book, acted as advance-agent for early American colonization. Various schemes were afoot to provide free or reduced transportation either for men without money, or for those who found the laws of church and state too strict for them. Many of the early references to America show a curious mingling of the pecuniary motives with the religious. With the investment of new capital by the merchant "adventurers" in England, real progress began.

Other Exploratory Voyages. After the Gunpowder Plot in 1605, certain prominent Roman Catholics sought to found a colony in Virginia. George Weymouth, a skilled captain, who already had been with an expedition to find a northwest passage, crossed by the route to the Azores, thence to Nantucket and on to Maine because unfavorable winds prevented them from going south to the Virginia shores. He remained a month, exploring and studying the conditions for settlement, and took back to England five natives, as described in Rosier's *Relation* by a member of the party. Plans to found a seignory, with Weymouth as "lord paramount" in Virginia, never came to anything. Resulting from these and other plans, in 1606, two Virginia Companies (one for London and another for Plymouth) were incorporated, laying claim to all territory between 34° and 45° north latitude,—from Cape Fear River to Maine. The London or South Virginia Company was to settle land as far north as the Hudson River; the Plymouth, or North Virginia, from there to about where Bangor, Maine, is now located. The sponsors were Sir John Popham and Sir Ferdinando Gorges.

In August of 1606 the Plymouth Company sent out *Richard of Plymouth,* with Henry Challons as commander, to make "farther discovery of the coasts." Going to the south, contrary to orders, the crew was captured by the Spanish near Puorto Rico, and most of them went to the galleys. Another ship that same year reached the coast of Maine. In 1607 George Popham commanding the *Gift of God* and Raleigh Gilbert the *Mary and John,* joined each other in the Kennebec River in Maine on August 7; entered the Sagadahoc; heard a sermon by the chaplain; and actually started a colony by erecting a fort, storehouse, church, and some fifteen dwellings. Half the original settlers returned on the *Gift of God* later that season, the winter was most severe, some of the buildings burned, and the inhabitants were "temerous" as Gorges wrote, and, when the *Mary and John* came back the next year, all insisted on returning to England. So ended the venture. It was, however, a forerunner of the coming of the Pilgrims to Plymouth in 1620.

Colonial Grants. Men like Cabot, Gilbert, and Raleigh received general patents from the crown. James I in 1606 chartered the London or Virginia Company and the Plymouth, the latter of which failed to make any permanent settlement in America. Colonies were either chartered or proprietary. *Charters* were given to individuals, companies, or corporations that sent out emigrants, and for a time ruled the affairs of the colony, either directly, or by a deputy or governor. Virginia, Plymouth, and Massachusetts Bay were chartered to the London Company. Within 20 years Plymouth bought out the original company in London, and then received a definite grant. Until after 1660, local government was left largely to the companies or the colonists themselves, with some friction between America and England at times. Proprietary colonies were grants to individuals or families, as in New Jersey, Maryland, and Pennsylvania. In Maryland land was leased, in New York rented, and in Pennsylvania sold. New Hampshire and New York were for a time royal English provinces; so were the Carolinas. Rhode Island and Connecticut were each made up of four units, partly grants from Massachusetts and partly from the English crown. New Haven was a theocracy, or religious establishment.

Virginia, "The Old Dominion." Three ships from England, bearing 144 emigrants, sighted the Virginia capes on April 26, 1607, four months before the settlement at Sagadahoc, now Popham Beach, Maine. The new colonists were to remain English, to yield one-fifth of the metals to the crown, to seek a way to the "South Sea," to establish the Episcopal Church, and to hold their goods in common for five years. On May 13 the 105 survivors founded the first permanent colony of the English in America on the James River, thirty miles from the mouth. Only 38 remained when new supplies arrived in January.

New men and goods arrived in October, buildings were repaired, and John Smith obtained something like an orderly government. Indians at first were not hostile, but made frightful attacks in 1622 and 1644 on the planters of the James and neighboring valleys. When the London "adventurers" (those who had sponsored and paid for the expedition) found that Virginia did not pay them, the company turned the government over to the crown. When Lord De la Warr appeared as governor in 1610, Jamestown had 50 to 60 houses within a stockade, one church erected by Smith, and a strong

fort. Men were divided into companies of 15 each, after they had learned that they must earn their bread, crops were regularly planted, and Sir George Somers was sent to Bermuda to get some supplies not obtained in England. Within a few months, however, 150 colonists died, and Lord De la Warr, who had been a good governor, was driven to England by his own illness.

For the next 30 years Virginia survived many changes and trials. The colonists frequently quarreled, discipline at times was too relaxed, the Indians proved a menace when the settlers encroached on their lands and shot their game, and the government at home knew too little about conditions to be of much service.

Tobacco became a staple and a problem in the colony. John Rolfe is given credit for teaching the settlers the lesson of cultivation as he obtained it from the Indians. Before 1620 the king made tobacco a crown monopoly, while planting was forbidden, in England, and importation was curtailed. From 1623 to 1627 the London Company was allowed to import tobacco on payment of a duty of nine pence a pound. Except for the building of ships and homes, making of farm implements, and household necessities, there was little manufacturing in the colony. Conditions improved after 1630, when Governor Harvey encouraged the planting of other crops than tobacco, and when new settlers, real artisans, women and children arrived from England. Establishment of individual holding of lands, and aids to planters in form of seeds and livestock, did much to put Virginia on a self-sustaining basis.

First Representative Government in America. For the first two years affairs in Virginia were managed by a local council of 13 persons, they to elect their own president. At first John Smith was excluded, because of alleged mutiny on the way to America, but he was admitted later and assumed leadership. In 1609 the sponsors in London objected, a new charter was granted with 56 incorporators and 659 stockholders, but the government was vested in a council, which could send to Virginia any governor it chose. The governor was to have absolute authority, and Dale, deputy to Lord De la Warr, proved a stern autocrat. In 1612 the Bermudas also were granted to the new London or Virginia Company, but George Somers two years later bought the rights and organized a company, which at last in 1684 was condemned of irregularities, and Bermuda became a royal colony. The third charter of 1612 gave much of the management to the stockholders in London, and one share of stock was valued at 12 pounds and 10 shillings. In 1624 the charter was annulled.

House of Burgesses. In 1619 Sir George Yeardley took office as governor of Virginia. Before he came from London, a plan for a democratic government had been formed, perhaps at the suggestion of Sir Edwin Sandys prominent in the council of the Company. Yeardley was commissioned to assemble once a year two members from each "corporation" (borough or separate division of Virginia) to carry into action "those things as might best tend to their good." Restrictions and tasks imposed by deputy governor Dale were to lightened. Dale had made the colonists work like slaves. Thus began the famous Virginia House of Burgesses, first representative assembly in America, similar to the House of Commons. The House could originate bills, act as a court in reviewing decisions of county courts, but the governor and council had the power to veto. This mode of government remained essentially unchanged until the end of the colonial period. Except for women, children, and indentured servants under 17, all persons seem to have been allowed the franchise. During the same year the first 20 negroes were brought in for domestic and other service.

Growth of Virginia. Between 1606 and 1630 about 5650 persons came to Virginia. Previous to 1619 there were few women in the colony, but soon several ships brought over a large number, who married the planters, each of whom paid 120 pounds of tobacco for transportation of his bride to America. In the last years of the Virginia Company, a considerable number of poor children, indentured servants, and some felons came from England. Large estates began to grow up from the early years at Jamestown. In 1622 the Indians massacred 350 inhabitants. Sickness and famine often cut down the numbers. Of the 1800 who came between 1606 and 1618, only 600 were living there in the latter year. Over 1200 died between that time and 1624. By 1648, however, the population had grown to about 15,000. In 1625 some 19 settlements existed, the largest being Elizabeth City with 257 people, while Jamestown had but 33 houses and 175 inhabitants.

Virginia after 1641. By the end of the first period of her history, Virginia was made up of planters, quite a few representatives of noble families, some men from the English universities, and a large portion of indentured persons and servants. Virginia took the side of the cavaliers during the Commonwealth in England. Sir William Berkeley, who became governor in 1641, surrendered to a fleet sent over by Cromwell in 1652. With the English Restoration, Berkeley returned to his post, soon began a series of repressions, the franchise was limited to freeholders, taxes became burdensome and the king in 1669 and 1773 granted parts of Virginia to individual favorites. During Bacon's rebellion, caused by these and other acts, civil war ensued, and Jamestown was burned, when the governor refused permission for Bacon to lead his men against some hostile Indians. Berkeley exceeded his authority in hanging many former soldiers of Bacon, who died during his campaign, and the governor was called to England. Lord Howard, who was governor in 1684, sought to curb the House of Burgesses in several ways; the king again exacted a tax on tobacco; closed some of the ports; and another rebellion was brewing when James II fled from his throne, and a new era began.

The colony again prospered. William and Mary College, second in the United States, was founded in 1693. Williamsburg became the capital in 1700, in which year the population of Virginia had grown to 70,000, of whom more than a fourth were slaves. The Toleration Act

of 1699 permitted all religious bodies to establish churches. Scotch and Germans came in numbers before the Revolution, while Virginia claimed the southern and western portions of what is now Pennsylvania. George Washington, a young son of the state, was active in the French and Indian War. Virginia continued to grow, despite attempts of royal governors to curb the freedom of the common people, until before the Revolution the opposition and patriotism of the Virginians rose to such a high level that they were on the point of declaring their independence.

Beginnings of Massachusetts. While the Virginia pioneers were becoming established in their homes on the James River, in 1607 and 1608 a small band of zealots fled from England to Leyden, Holland. These were the Pilgrims, a group of separatists, who declined longer to worship according to the forms of the Church of England. Many of them in Nottinghamshire, Lincolnshire, and Yorkshire had been persecuted, even fined and imprisoned. William Brewster, Jr., one of the leaders, had been in government service at Scrooby, England, a center of Pilgrim influence. Now these men and women of simple faith and limited means worked at their trades in Leyden, but they feared the time would come when the secular freedom of the town, a foreign tongue, and other influences might affect their children.

Doubtless they had heard of the Virginia enterprise. They must also have been aware that certain Walloons of Leyden contemplated going to Virginia, but that the company did not welcome them there. Instead, in 1624, these Walloons of Holland founded a colony at New Amsterdam along the Hudson. Captain John Smith who had returned from Virginia, brought back a favorable report, concerning the northern coasts, and did much to counteract the failure of the Maine colony at Sagadahoc. Brewster, John Robinson, pastor of the Pilgrims, and others knew prominent men in England. Chief of these was Sir Edwin Sandys himself, whose brother had been one of the acquaintances of Brewster at Scrooby. Deacon John Carver and Robert Cushman attempted to secure a patent in 1617, but seven "articles" proposed by the Pilgrims for religious and civil government caused long delays. Finally, in 1620, they obtained rights under an old grant that had been given to John Pierce and Thomas Weston for emigration to Virginia. Since this did not apply to New England, in 1621 a new grant was obtained by a joint stock company. Doubtless the terms were similar to those of other patents, except that the Pilgrims had two bodies of adventurers, one in London and one in America. Each immigrant was to have 100 acres, and stock valued at 10 pounds, for which he was to pay in services and profits within seven years. During this time goods and affairs at Plymouth were managed in common.

In Holland they had secured the *Speedwell*, a frail craft of only 60 tons, which proved unseaworthy, after two attempts that delayed the expedition from late July to September. The company from Leyden was met first at Southampton by the *Mayflower*, a square-rigged, double-decked sailing vessel of 180 tons, commanded by Captain Thomas Jones, an experienced seaman. They left the harbor of Plymouth on September 16, 1620, and arrived in Cape Cod Bay, New England, on December 11 (December 21 in the new style calendar.) Besides a crew of about 48 officers and men, the *Mayflower* on her first trip carried 101 persons, of whom 35 were separatists from Leyden and 66 from London and Southampton. There were 56 adults, 20 boys, 11 girls, and nine servants. There were also five adult men, not separatists, including Miles Standish and John Alden, the latter engaged as a cooper. Six of the children (only two of whom reached maturity), were not related in any way to the passengers.

Only three or four of the crew, and but one passenger, died during the voyage of three months, a remarkable record for such enterprises. One child, Oceanus Hopkins, was born at sea, and Peregrine White, as the ship lay at anchor in Cape Cod Bay. Yet during the first winter, which was not severe, no fewer than 44 died, the most of them probably from scurvy because of lack of fresh food. Half the crew also perished. Rude habitations were erected along Leyden Street, while the whole company lived on the *Mayflower*, each house being occupied as it was completed. Samuel Fuller was the Pilgrim physician and Dr. Giles Heale the surgeon until he returned in April on the *Mayflower*. Some of the other ships that brought colonists before 1630 were the *Fortune, Charity, Ann, Little James, Handmaid,* and again the *Mayflower*. John Smith said the population in 1624 was 124; in 1630 it was about 300; and 1637, 549.

Early Government. The Pilgrims sent a party near the present Provincetown to explore the land and find a supply of water. Today a monument commemorates this first landing in New England. Before finally deciding on a spot for their town, some 45 male passengers gathered in the cabin of the *Mayflower* and drew up an interesting "compact." Later this was used as model for most of the new settlements stretching from Cape Cod to the Golden Gate. The text of this compact follows:

"In the name of God, Amen. We whose names are here underwritten, the loyal subjects of our dread sovereign, King James, by the grace of God, of Great Britain, France, and Ireland, etc., having undertaken for the glory of God, and advancement of the Christian faith, and honor of our king and country, a voyage to plant the first colony in the northern parts of Virginia, do, by these presents, solemnly and mutually, in the presence of God and one another, covenant and combine ourselves together into a civic body politic for our better ordering and preservation; and in furtherance of the ends aforesaid and by virtue hereof do enact, constitute and frame just and equal laws, ordinances, acts, constitutions, and offices from time to time, as shall be thought most meet and convenient for the general good of the colony; unto which we all promise due submission and obedience. In witness whereof we have hereunto subscribed our names at Cape Cod, the 11th of November in the year of the reign of our sovereign lord, King James, of England, France,

and Ireland, the eighteenth, and of Scotland the fifty-fourth anno domini 1620."

As arranged in two double rows, the names of the original signers are as follows:

John Carver, Edward Winslow, Isaac Allerton, John Alden, Christopher Martin, William White, John Howland, Edward Tilley, Francis Cooke, Thomas Tinker, Edward Fuller, Francis Eaton, John Crafton, Moses Fletcher, Degory Priest, Gilbert Winslow, Peter Brown, George Soule, Richard Gardiner, Thomas English.

William Bradford, William Brewster, Samuel Fuller, William Mullins, Richard Warren, Stephen Hopkins, John Tilley, Thomas Rogers, John Rigdale, John Turner, James Chilton, John Billington, John Goodman, Thomas Williams, Edmund Margeson, Richard Britterige, Richard Clark, John Atherton, Edward Doty, and Edward Leister.

John Carver was forthwith appointed governor, but he died the following April. After him William Bradford was governor until 1656, except for nine years when others were associated with him. Miles Standish, the captain or military leader, headed a committee that reported in favor of Plymouth as a landing place. Tradition from an aged man in later years informs us that the Pilgrims stepped from their shallop upon a rock of granite in Plymouth Harbor. Later this was removed farther inland, but in 1920 was restored by the Colonial Dames to its original location at the water's edge. William Brewster preached to the congregation, but was unable to administer the sacraments, for he was not an ordained clergyman.

From Bradford's Journal we owe much information as to the religious and social status of the Pilgrims, but outward historical events have to be furnished from other sources.

Numerous problems soon arose. First of all, the company in London sent over Rev. John Lyford, a Church of England man, but the separatists of Plymouth would not tolerate him. He was tried and expelled, and later was at Nantasket, Cape Ann, and Virginia. Then from 1624 to 1628, and again from 1654 to 1669, Plymouth had no established minister. Baptisms were usually dispensed with, and marriages were performed by the civil magistrates. In 1624 each man of the colony was given an acre of land, the town limits were extended, and from time to time in later years grants were made to individuals as need arose.

As in the case of the Virginia plantations, the London sponsors, who had invested their money in the enterprise, complained that financial returns were inadequate. Between the governors on this side and the officers in London and elsewhere, some disagreements arose. It became evident that this double management could not succeed. Miles Standish, therefore, was sent to England in 1625 to arrange a settlement with the original venturers. It was agreed in 1626 that the Plymouth colonists should pay £1800, with a third more for debts contracted, to the London Company. Legally, from this time Plymouth was free from financial management by those across the Atlantic. Yet their agent got them deeper in debt before he was dismissed in 1631. Eight men assumed the total sum, provided they might have a monopoly for six years, of trade with the Indians and with the Dutch who meanwhile had settled in New Amsterdam. In 1648 some £400 remained unpaid, and Winslow and Prence sold their homes, Alden and Standish about 300 acres of land, and Bradford a farm to make up the remaining sum. Altogether the merchant adventurers in London profited at the expense of Plymouth.

Thus the colonists bought their commercial freedom. Whether they were independent in religious and civic affairs still was disputed. A more definite charter in 1630 provided something like grants of land. Bradford ruled strongly, but not too arbitrarily, while new immigrants often caused trouble. As early as 1623 some of the later colonists proved so "bad," says Bradford in his *History*, that Plymouth was "faine to be at charge to send them home again the next year." Some early Massachusetts men proved so frivolous as to be exiled, as Hawthorne whimsically describes in his *Maypole of Merry Mount*. Plymouth assumed rights to punish all sorts of offenses, until question arose as to whether they could exact the death penalty, when John Billington was shown to be "guilty of wilful murder" for shooting a young man who had ventured to poach on his hunting grounds. Billington's lawyer contended that the case must go to England, but Bradford and others decided at last otherwise, and Billington was hanged in an impressive public ceremony.

By 1630 new towns were springing up. Early colonists like the Winslows and the Whites were granted lands as needed at Green Harbor, and Miles Standish an attractive shore tract at Duxbury, where he was for years a magistrate, and where his imposing memorial now stands overlooking the bay. Duxbury and Scituate were peopled in 1636, Sandwich in 1638, Yarmouth, 1639, and Taunton, 1640. The colony began a larger corporate life in 1643 when representatives met from ten towns for council. By 1671 it became a full-fledged commonwealth. Twenty years later Plymouth was combined with Massachusetts Bay and other settlements to form a new commonwealth.

Massachusetts Bay Colony. Schemes for taking possession of land in America flourished after the success of Plymouth became known. The fisheries about Newfoundland attracted three or four settlements, one sponsored by men of Bristol, and another by an eccentric Welshman, Sir William Vaughn, who spent two or three years there, and wrote in America two curious books. His *Golden Fleece* is a zealous defense of fishing. In 1624 Edward Winslow obtained in England a patent, which later proved worthless, to much of Cape Ann. Already a Council for New England, one mover of which was Sir F. Gorges, was inviting towns to encourage settlement in America. Thomas Weston, an old friend of the Pilgrims, in 1622 brought over some 50 to 60 new recruits, who were cared for at Plymouth, and then moved on to what is now Weymouth, the first settlement in the Bay colony. Captain Wollaston and a group tarried briefly in the present town of Braintree, and then went on to Virginia. In

1622 and 1623 Gorges and the Council obtained five new patents, but the schemes of Gorges came to little. Thomas Morton, an adventurer and man of the world, followed Wollaston, changed the name from Mount Wollaston to Merriemount, and set up a May pole, which the shocked Pilgrims uprooted as they scattered the forty companions of Morton.

Robert Gorges and Rev. William Morrell failed, after two years, to continue a colony where Weston had abandoned his settlement. Small groups and individuals, however, gained a foothold. Rev. William Blaxton, a graduate of Emmanual College, Cambridge, England, "a good Episcopalian," was the first inhabitant of Boston, but he withdrew in 1635 because of Puritan intolerance. Thomas Walford and his wife settled where Charlestown now is located. Samuel Maverick was the earliest inhabitant of what is now Chelsea. John Balch in 1624 went to Cape Ann and then to Salem. John Bursley and a few others remained at Weymouth, and so founded the claim of second permanent settlement in New England for that town. By 1625 probably 50 or more settlers were scattered about eastern Massachusetts, outside the posts of the two main colonies.

Meanwhile the men of Dorchester, England, led by their rector, Rev. John White, finally obtained rights in the Bay colony. Ships came in 1623, 1624, and 1625, leaving 14 men to winter on Cape Ann in the first, and 32 more, in the second year. Plymouth claimed this area, but Roger Conant, brother of one of the English sponsors, became governor, and took the remnant of the settlement to Salem, where they helped found that ancient town at Naumkeag, now Beverly.

White and others, with remarkable courage and faith, organized the New England Company, an unincorporated group of 90 members, not all Puritans, but impelled by religious motives. On June 20, 1628, the ship *Abigail* left Weymouth, England, with about 40 and generous supplies aboard. The colonists reached Naumkeag on September 6, and the Conant party of about 30 joined them. John Endicott, though having no authority as governor, was elected leader. He ruled with a stern, but not necessarily cruel, hand for several years, his sole zeal being the interests of the colonists and their settlements. One of his first acts was to disperse the remnants of the revellers at Merrymount, but Standish of Plymouth had already driven Morton to England. By newer grants, in 1629 and 1632, the Massachusetts Company absorbed the other interests, obtained more definite grants of land, some of this at the expense of Plymouth, which always had a vague status.

Influential persons began to come, several of them men of wealth and higher education. In 1629 five ships brought recruits and new supplies, one of them being the *Mayflower*. Religious leadership vested in Skelton, the minister at Salem, and the teacher Higginson, both of whom had been censured in England for nonconformist views. Dr. Samuel Fuller, beloved doctor of Plymouth, came to them and explained the separatist principles. Massachusetts Bay at last decided not to separate from the mother church, but to become as independent of the king's government as circumstances would allow. Plymouth, on the other hand, cut off entirely from the Church of England, but remained entirely loyal to the king. While the Puritans wished to change the form of worship, and to make it less formal, they sought to maintain what they considered the essential spirit of the older church. As time went on, differences between separatists (or the Pilgrims) and the Puritans became fewer and fewer. Out of these principles grew the Congregational establishment of New England. Just as Plymouth at first would not tolerate an Episcopalian service there, Massachusetts Bay, in turn, persecuted the Quakers, Baptists, and all forms of worship not sanctioned by Puritans.

Besides Weymouth, Dorchester, Salem, and Boston, villages soon sprang up in the Boston area, such as Charlestown, Roxbury, Cambridge, Watertown, Muddy River (now Brookline), and Lynn. Concord was settled partly by persons from Plymouth. Among the many notable men who commenced to emigrate to Massachusetts Bay colony were John Winthrop, who came in 1630, and Roger Williams, founder of Rhode Island, who came the next year. In a terrible epidemic in 1630 nearly a fourth of Endicott's followers had perished. The large party that came with Winthrop found affairs in grave necessity. Yet the further Puritan persecutions in the mother land in 1633 and later brought many shiploads of new recruits. By 1634 the population about Boston was nearly 4000, and in 1642 probably not fewer than 17,000 or 18,000.

Early Government of Massachusetts. Men like Conant, Endicott, and others ruled briefly by virtue of their connection with the Company of New England or the Massachusetts Bay Company, the two which sent out the early colonists. Between 1629 and 1633 over 15 other patents to parts of Northern New England were issued, but still the question of legal status was not settled. The king's ministers held off because of the Puritans. Gorges of the Council of New England was active, in and out of season, in his efforts to foster new settlements. With dissensions, and cross purposes, among the governors of the company in England, Morton (he who had been twice driven from Merrymount) proved a skilful lawyer, and did the Puritans much damage at court. At last in 1635 sixteen members of the Council decided to resign their charter, and two years later the documents of the Massachusetts Bay Company were ordered to be returned to England.

Meanwhile, the charter had been in America, and whether it was ever surrendered is doubtful. Winthrop had come in 1630 with the stipulation that management of the Bay Company be transferred to this side of the Atlantic. He was the first officially appointed governor, and was chosen 12 times in annual meetings until he died in 1649. His wisdom, faith, and fortune went to assist the colony, and his conservatism and good will saved the government several times from shipwreck. In 1634 and again in 1645 he led the colonists in preparing,—at first even in fortifying the shores,—against coercion that England threatened. The king again demanded

the charter to be returned in 1638. The Civil War in England, and the passing away of some of the original sponsors of the settlements, served to give the New England towns greater freedom and authority. Late in 1641 a Body of Liberties, so called, defined the rights of citizens, and provided a legal code, with the common law of England as supreme. At first nobody could become a freeman, or citizen having full rights, unless he belonged to a church. Witchcraft, idolatry, blasphemy, and treason were among the ten offenses punishable by death, a number quite moderate compared with those so included in England.

More definitely the government consisted of a governor, his deputy, assistants, and freemen of "the company," while only 12 members were eligible to the general court. The assistants acted much as the English justices of the peace. Winthrop and his associates reluctantly granted rights of freemen to 109 men who first applied to the first general court in 1630. Democracy at first was not part of the program, but distances between towns, independent spirit of the settlers, and other causes soon made each settlement virtually independent in economic, political, and religious affairs. Thus grew up the New England town or, as we think now, township government, made up of a group of houses, with outlying lands for pasturage and further expansion of settlement, farming, and other purposes. Along with the local government in Virginia, the New England town, with its town meeting, became the backbone of democracy in the new world, and eventually the force which broke the power of foreign domination.

After the first few years of indiscriminate settlements, provision was made for assigning 36 square miles for each new township. This tract was sold to a group of original proprietors, who occupied the land directly, or more often sold it or let it in small parcels to real settlers. New arrivals were freemen, but usually not proprietors of the land, save by barter of some sort. The meeting house and school, for which certain plots were set off, became the center of the life of the town.

Trouble arose very soon between the governor and his assistants and the various towns. For instance, a tax was levied for fortifying Newtown, the modern Cambridge. Complaints arose, and the general court decided that two representatives from each town should advise the central government. After two freemen from each town demanded larger rights in 1634, a representative system was organized. Though each town was thus represented, voting at home was confined to a limited number of freemen and church members. In 1635 the district of New England was redistributed by the crown, and New Hampshire, Maine, and other independent units grew out of this authority.

Massachusetts, along with other parts of New England, continued to develop gradually up to the time of the Revolution. Frontiers were pushed west to the center of the state about 1700, and to the western borders and a bit beyond by 1800. Religious dissensions, restrictions by the Puritan oligarchy, and formation of new sects caused much trouble. Ann Hutchinson and Roger Williams were driven to found settlements that later became Rhode Island. In 1644 laws against Baptists were passed. In 1656 to 1662 Quakers were repressed, and four of them put to death. King Philip's War, and other border raids by Indians, kept frontier settlements in constant terror. During the French and Indian War, Massachusetts contributed generously in men and supplies, sharing in such expeditions as those against Oswego, Acadia, Crown Point, and Louisburg.

Relations with England at times were sorely strained. Joseph Dudley, a native son, became provisional governor in 1686, but very soon Sir Edmund Andros came over from England to rule New York and all New England. When the Revolution of 1688 gave Britain a new government, a mild revolt in Boston, and especially in Connecticut, drove Andros out. (See article on the *Charter Oak*.) The Writs of Assistance, a form of search warrant, instituted by England in 1756 gave rise to much opposition, which rose to a climax in the impassioned speech of James Otis before a court in Massachusetts in 1765. Other humiliating measures, such as the Stamp Act in 1765, quartering of troops in Boston, in 1770, the obnoxious tax on tea, and acts designed to close Boston to foreign commerce, all were tinder for the fire which broke out at Lexington and Concord. Virginia, and other colonies, were also ready, and so the Revolution began.

New Hampshire. Interest in fisheries in the north became the impetus for colonizing schemes, the first of which at Sagadahoc has already been described. The original Plymouth Colony claimed the coasts of what is now Maine and even beyond. Sir Ferdinando Gorges, always a prime mover in schemes to people New England, had a vague title to this region as early as 1623. Trading posts sprang up at Kittery, Richmond Island, near Casco Bay, and fishing stations at several other coast points. Gorges hoped to make the capital the post of Bristol, a farming locality, where he had a house erected in 1630. Having abandoned hopes of getting concessions for the New England Council, after 1635 he turned to ask a direct grant from the king, which he secured in 1639. From then to his death in 1647, he allowed commissioners to keep order in Maine.

In his new grant Captain John Mason was an associate of Gorges. He obtained the western part of the grant, now New Hampshire, where posts had been established at Portsmouth, Dover, Exeter, and others. Struggles broke out between Puritans and more liberal settlers, and in 1641 a boundary dispute arose, which was not settled for many years. Massachusetts claimed all the southern part of the land, and the Mason heirs, after numerous petitions for relief, at last in 1679 set up New Hampshire as a separate government. Because of failure to attract settlers and maintain a government, Maine became part of Massachusetts in 1653. From 1686 to 1689 New Hampshire was part of the Dominion of New England under Andros. In 1692, after a temporary union with Massachusetts, the Mason heirs organized a provincial administration. From 1699 to 1741 the two

colonies had the same royal governor, but otherwise were separate.

New York Colony. Verrazano discovered the bay and harbor of New York in 1524, Gomez probably saw this region the next year, and later French vessels ascended the Hudson to trade with Indians. Hudson sailed up the river in 1609, and Champlain was in northern New York that summer, but no attempt was made to colonize. The Dutch claimed rights along the Hudson through the Dutch East India Company. After a profitable voyage to deal with the Indians in 1610, the Dutch became active in planning a settlement. In 1614 Captain Adrian Block rounded Long Island, discovered the island bearing his name, and that same year the New Netherlands Company was formed. In 1615 a trading post was established within the limits of the modern Albany, and a few huts were set up on Manhattan Island. In 1624, after the West India Company had been formed, the first permanent colonists, 30 families, mostly Walloons from Leyden, Holland, came with their governor, Cornelis Jacobson May. When Peter Minuit, director general or governor, bought the island of Manhattan from the Indians for the equivalent of $24 in 1626, 300 or 400 settlers were already in New Netherlands, including a flourishing post at Albany.

The Patroon System. Minuit ruled until 1632. Meanwhile, a feudal system of land holding, amounting to ownership, was authorized. Any settler could have 6 miles on one side of a river or stream, or 8 on either side, extending back an indefinite distance, provided that he establish 50 settlers on the land within four years. Old families today like the Van Rensselaers (who held a large tract near Albany), the Schuylers, and the Roosevelts date from days of the *patroons* as the Dutch landlords were called. (See article on *Anti-Rent War.*)

After four years of a ruinous tenure by Governor Wouter van Twiler (1633–1637), under William Kieft, the new director-general, the company gave freedom of trade to all, and so ceased the original monopoly. Trouble with Indians in 1641 laid most of the smaller settlements waste. Restrictions against manufactures in New England and Virginia brought new settlers. Peter Stuyvesant, a popular governor, found difficulties, as Kieft had before him, to keep the English from encroaching from the east, and the Swedes from their settlements along the Delaware. In nine years (1655–1664) the population increased from 2000 to 10,000.

English Occupation of New Netherlands. By various claims, the English always disputed the Dutch right to lands in the Hudson valley. In 1653 the Dutch built a wall (hence the name Wall Street) across the island at the northern limit of settlement. Minuit in 1626 had erected a fortification called the Battery on the southern tip of the island. Charles II, 1664, placed all the land between the Connecticut and the Delaware Rivers, including all of Long Island, previously divided between New Amsterdam and Connecticut, into one grant, and gave this to his brother James as patron. Colonel Richard Nicolls was sent as conqueror and governor. The inhabitants then numbered 1500. Though the Dutch were displaced before their colony obtained much prominence, they left their imprint on names, customs, and in some respects the laws of New York. From August 1673 to February 1674, the Dutch again ruled in New York, after their fleet of 23 ships had taken possession during the war with England. Then they surrendered all claim, by the peace of Westminster, to their New Netherlands forever.

Political Progress in New York. Under the West India Company, a director-general ruled at New Amsterdam, assisted by a council having all powers subject to review by the directors of the company in Amsterdam. Minuit set up forts and built a warship of 1800 tons and 30 guns. Fur trade was reserved to the company, but the patroons could trade along the Atlantic coast. Colonists on the patroon estates were exempt from taxes for the first 10 years. Under Wouter van Twiller the Dutch Reformed Church became the established form of worship.

Democratic government began in 1641 when Kieft called in some men to advise as to whether to make war on the Indians, who had killed some fur traders. After delay, in 1642, the new committee informed Kieft they were agreeable if he would command the expedition. Stuyvesant chose a council of nine, but they angered him by their demands, and the citizens appealed to Holland for a municipal government on Manhattan Island. An appointive council was provided for. In 1664, however, two delegates from each settlement, 24 in all, made up the first provincial assembly. In 1675 Governor Edmund Andros established at Albany a council to treat with the Indians, a body which did much to protect the colony. Troubles with Andros led to appointment of a new governor, Colonel Thomas Dongan, who called an assembly in 1683. At this time a charter of liberties was drawn up, some provisions being religious freedom, trial by jury, a vote for every freeholder, and abolition of martial law.

In 1688 the king consolidated New York, New Jersey, and all New England into an administrative district with Andros in charge. The coming of William and Mary to the throne, however, encouraged the colonists in America to imprison Andros in 1689.

Affairs in New York took a curious turn, however, when a German merchant named Jacob Leister set himself up as virtual governor, obtained a large following, and in 1690 called delegates together from Massachusetts, Plymouth, Connecticut, and Maryland to meet in New York to consider a common defense against the Indians. This was the first attempt at union of the colonies of America for a mutual benefit. When Colonel Henry Sloughter, the new governor, arrived from England, Leister refused to give up the fort. He was finally captured, after some bloodshed, was tried, and executed. For many years afterward, inhabitants often took sides politically as to their opinions of these proceedings. Sloughter, 1691, restored the assembly which the king had abolished in 1686. From then on the political history of New York is that of the increase in rights of the people.

Before the Revolution districts along the Hudson filled with settlers, who also pushed out along the Mohawk. Save for Long Island, and

a few scattered habitations west of Albany along the postroad, all else was a great untouched wilderness. The Indians along the frontier were kept friendly by presents, the kindly offices of men like Philip Schuyler, and by hatred of the Iroquois for the French in Canada.

The Freedom of the Press. William Bradford in 1725 had founded the first newspaper, a semi-official organ called the *New York Weekly Gazette*. Eight years later, John Peter Zenger (1697–1746) established a rival paper, which often criticised the acts of the government. In November 1734, Zenger was arrested for libel. After his first lawyers were disqualified, Alexander Hamilton agreed to defend Zenger without a fee. A quick acquittal by the jury did much to establish the freedom of the press in America.

New Jersey. Some of the first group of Walloons that came to New Amsterdam in 1623 pushed southward and founded a colony on the eastern bank of the Delaware, where they built Fort Nassau near the present Gloucester. Across on the west bank about 50 Swedish families located, the first persons in what is now Delaware. Another early Dutch trading post was at the present Hoboken.

The English king, however, thought this territory to be his by discovery and grant. In 1664, Charles II gave all the district between the Hudson and the Delaware to his brother James. The English took possession of the Dutch settlement on the Delaware. Then the territory went to Lord John Berkeley and Sir George Carteret, with a cousin of the latter the first governor in East New Jersey. In 1674 Charles II confirmed this grant to Carteret, shortly after Berkeley had sold for $5000 his rights to the western half. It was bought by two Quakers, who finally disposed of their rights to William Penn and his friends.

Influx of Quakers into the region began at once. By 1681 nearly 1400 had come to the colony, the chief point being Burlington. From the outset the government was liberal, with a board of commissioners elected by the proprietors and the people together. Jury trials and right of petition were granted, and capital punishment was forbidden. In 1682 the rights of Carteret also passed to the Penn associates.

Following troubles between the owners and their grantees, in 1702 both parts of New Jersey were constituted a royal province. By this time there were 10,000 settlers along the rivers and the coastlines.

Disputes developed later between the proprietors of the land and their tenants, and between the people as a whole and the government of England. The Puritans of West Jersey at times could not agree with the Quakers of the Eastern part. Finally, Lewis Morris in 1738 obtained once more an independent local government for all of the colony. The last of the governors before the Revolution was William, son of Benjamin Franklin, who proved such a bitter Tory that the Congress removed him in 1776. He died in England in 1813.

Colonial Delaware. Hudson for the Dutch first explored the Delaware Bay in 1609, Lord De la Warr perhaps also in the next season, and Cornelius Hendrickson in 1615. In 1631 the Dutch West India Company left a few persons where the present Lewes is located, but the Indians soon dispersed the colony. Seven years later Peter Minuit of New Netherlands bought some of the land of the Indians and placed a few people where Wilmington is now. Swedish immigrants arrived in 1643 near Chester, and at two or three other points, including the mouth of the Schuylkill River. In 1651 Governor Stuyvesant of New Netherlands erected a fort where New Castle is today, but three years later a new party of Swedes drove the garrison out. In retaliation Stuyvesant sent a fleet in 1655 and captured the fort and also the one at Wilmington. New Sweden then passed under control of the Dutch from Manhattan Island, but part of Delaware was sold to the city of Amsterdam in 1656. In 1663 the rest of Delaware county went to Amsterdam, all Delaware then to the English when Charles II gave the land to his brother, the duke of York, later James II. Soon the northern boundary was determined by drawing an arc with New Castle as a center, accounting for the curve today between Delaware and Pennsylvania.

In August 1680, three years before final title had come to him, the duke of York leased all of Delaware to William Penn for 10,000 years. So much dissension arose, however, that in 1691 Penn chose a deputy governor for the "lower counties," as Delaware was called. In 1704 they obtained their own legislature, in 1710 a separate council, but the governor of Pennsylvania remained the chief executive until 1776. In 1767 a boundary dispute with Maryland, of many years standing, was finally settled. In the Revolution, Delaware furnished two regiments for the Continental Army. When a state constitution was adopted, one unique feature was a privy council in addition to the regular officers and departments, which arrangement gave the new governor little power of his own. Delaware sent five delegates to the Annapolis Convention in 1786, and was the first state (December 7, 1787) to ratify the Federal Constitution.

Maryland. George Calvert, the first Lord Baltimore (c. 1580–1632) tried to settle Newfoundland in 1620, where three years later the king gave him a charter for a colony, called Avalon. A personal visit in 1627 convinced him that the climate was unsuited. About this time he became a Roman Catholic. In 1629 he proceeded to Virginia, where he was very coldly received as he tried to set up a habitation south of the James River. In 1632, however, he obtained a patent to all land and rights to the territory between the Potomac and the 40th parallel, but he died before the Great Seal was placed on his charter, which was issued to his eldest son, Cecil. Late in the following March, about 300 laborers and domestics, with 20 gentlemen, arrived in two small ships to found an establishment on the promontory between the Potomac and the Chesapeake Bay. Leonard Calvert, brother of the original grantee, came as governor.

Maryland like Delaware suffered much from disputes over territory and boundaries. William Claiborne, secretary of the governor of Virginia, in 1631 had placed some colonists on Kent Island, which he had bought from the In-

dians. Kent Island appeared clearly within the territory given by the duke of York to the Calverts, but it was also within what was the original Virginia grant. Leonard Calvert and Claiborne, the latter supported by Virginia, carried on a feud for several years, during which much blood was spilled. Pennsylvania also encroached on the north and west borders of Maryland. The duke of York also transferred to William Penn the land known as Delaware, which was in the province of Maryland as originally granted by him to the Calverts. The question was what Penn's charter meant in granting him all to the "beginning of the forty-second degree of Northern Latitude." Likewise Calvert's patent gave him all to the same parallel on the north. It was not until 1767 that the question was finally settled by asking two English surveyors, Mason and Dixon, to establish a correct line, which they fixed at 39° 43' 26.3". In 1692 the crown set up a government in Maryland, but a Protestant became heir to the colony in 1715, when the lands were restored to Calvert descendants, and Roman Catholics were disfranchised.

Freedom in Maryland. Though the early Calverts were Catholics, they insisted that absolute religious toleration should be granted to all in Maryland. Protestant colonists were encouraged. In 1649, however, when the Puritan element became rather strong, Calvert changed the original stipulation so that only trinitarians should be protected. The original charter also granted Calvert the sole right of initiating legislation, but in 1638 he gave up this privilege, a very early example of granting local self-government in America. After 1650 the legislative body was divided into two houses, one of which was composed of freemen, whose consent was necessary before a bill might become a law. Charles Calvert, governor in 1670, tried to restrict the ballot to all who had a freehold of 50 acres or property worth at least £40. By this time the tradition of freedom was so established that bitter opposition arose, which continued in 1715 when another Calvert tried to establish the principle that only those English statutes applied to Maryland as specifically related to British colonies. At the time of the French and Indian War in America, the legislative houses of Maryland were deadlocked, and in the end rendered the English little help.

Once more at the time of the Revolution, those in Maryland opposed all government, even the Continental Congress. Delegates were instructed not to vote for independence, and Maryland held out almost to the last minute. Property and other qualifications were established in the new state constitution of 1776. In 1810 these were again removed. Negroes were given the ballot in 1802. Maryland also refused to sign the Articles of Confederation until all states that claimed western territory should give up their rights.

With the exceptions noted, Maryland remained a proprietary colony until the time of the Revolution. In the Calvert family, between 1725 and 1771, there were seven Lord Baltimores. Frederick Calvert, the last of them, left no heir to inherit his lands and titles.

Pennsylvania. Settlements were made in what is now Pennsylvania nearly 40 years before William Penn laid out his grant there. In 1643 the Swedes appeared near the present Chester, then called New Gothenburg, but 13 years later the Dutch took control after they had captured the forts in Delaware and Maryland. In 1664 the English gained possession. By this time Quakers persecuted in England found their way into all the colonies of America. George Fox, founder of the sect, in 1671, made a tour of inspection of the Quaker settlements from the Barbadoes to Rhode Island.

Yet what the Quakers desired was a colony of their own, where they could be free to settle and govern. William Penn, son of an English admiral, proposed that the English king grant him land in the new world to compensate for a debt of £16,000 owed his late father. His charter was granted on March 4, 1681, but the language gave rise to disputes with New York, on the North and Delaware and Maryland on the south. Penn claimed all to the 43° parallel, but New York insisted that the boundary was the 42°, a dispute settled a century later. The one with Maryland was settled likewise in 1767. Eventually, the duke of York gave Penn a quit-claim deed including the territory of Delaware, so that Pennsylvania could have an outlet to the sea. Trouble arose at later times with Connecticut over settlements in the northwestern counties, which were claimed by Connecticut and peopled by emigrants from there. A committee appointed by the Continental Congress to arbitrate the dispute awarded this land to Pennsylvania in 1782. (See *Wyoming Massacre.*) Ten years later the national government sold the state a three-cornered strip so that an outlet could be obtained to the Great Lakes, and Erie grew up as the chief port. Likewise, Virginia in 1784 allowed the southern border of Pennsylvania to run along the Mason and Dixon line, and so abandoned all claim to a considerable tract extending even as far as the present Pittsburgh.

Religious Refuge. When Penn obtained his charter, about 1000 persons already resided in the eastern area, mostly Swedes, Dutch, Finns, and some Quakers. Absolute religious freedom attracted many sects from Europe to escape persecutions in states where one established church only was tolerated. Welsh Quakers settled in what are now Montgomery and Delaware Counties. Pastorious led his German Mennonites in 1682 to Germantown, where a flourishing community sprang up, a seat of several early American industries. People of Lutheran and Reformed churches settled in the fertile districts stretching from Easton down to the Cumberland valley. Moravians came to Nazareth and Bethlehem. Finally, the Scotch-Irish Presbyterians came into the Wyoming valley, and later the Methodists into several counties before and after the Revolution.

Penn died in 1718, and his second wife in 1733, after which the proprietorship descended to John, Thomas, and Richard Penn, their children. William Penn, son by a first marriage, was governor of the state at the outset of the Revolution.

Save for some bickerings between the proprie-

tors and the people, peace ruled in Pennsylvania for many years. In 1683 Penn made his "Great Treaty" with the Indians, and the colony was free from the usual strife with the redmen. Voltaire called this "the only treaty never sworn to and never broken." As the land filled up with settlers after 1700, the French were building their ring of forts along the lakes and down the rivers, in an attempt to prevent England from gaining a foothold west of the Allegheny Mountains. Virginia sent George Washington to make a counter move by building a fort where Pittsburgh now stands. Washington defeated the combined force of French and Indians at Mountain Meadows, but had to surrender Fort Necessity. These events led to the ill-fated expedition of General Edward Braddock, described elsewhere. In 1763 the Indians captured forts at Presque Isle and Venango, and white settlers of the band known as "Paxton's Boys" killed some Conestoga Indians. Apart from this warfare, threats from some backwoodsmen, led by the Paxtons, who marched on Philadelphia, and a border struggle between settlers in the Wyoming valley, Pennsylvania knew peace for many years. During the life of Penn, and for years afterward, no strife arose.

Indeed at the time of the Revolution, the Quakers and others in Pennsylvania were reluctant to join the other colonies. With the waning of Quaker influence, however, and the election of Whigs like John Dickinson, Thomas Mifflin, and Joseph Reed, it was decided to cast the lot of the colony with Virginia, Massachusetts, and the rest. In 1776 the Penn heirs were paid some £120,000 for their rights. Penn himself had spent much time in England, where he died. Today some of his descendants reside in Luzerne County and in Philadelphia, the city he planned and named.

Connecticut. Settlement of Connecticut and Rhode Island grew out of religious controversies. Massachusetts Bay colony was intolerant toward sects like the Quakers, Baptists, or even members of the Church of England. The rigid Puritan doctrine culminated in the strange delusion at Salem in 1681. Old women, unfortunates, and even prominent persons at last in Salem were accused by hysterical or lying girls of bewitching them. Before the fanaticism abated, some 32 had been killed, one by being pressed to death in a way resembling the horrible tortures of the Middle Ages.

Migrations to Connecticut. The Earl of Warwick held the original patent from the Council of New England to Connecticut. He sold it in 1631 to Lords Saye and Brooke, and four years later they sent some settlers under John Winthrop, Jr., who erected a fort at the mouth of the Connecticut River, not far from the present Saybrook. In 1633, however, the Dutch had erected a fortification at Hartford. Not long afterward men from Plymouth set up a trading post about ten miles up the Connecticut. Within two years, however, more than 800 persons migrated from Dorchester, Cambridge, Watertown, and Roxbury, to the river valley. In June, 1636, Rev. Thomas Hooker and Elder John White let an extensive caravan from Cambridge, where they had felt repressed in their religious experiences. Meanwhile, the Pequot Indians had killed a Virginia sea-captain, and Governor Winthrop of Massachusetts demanded tribute, but his agent sent for this was murdered at Block Island. In 1637 the Pequots raided Wethersfield, but the settlers gathered and very soon all but exterminated the tribe.

Now that Connecticut was free from the danger of Indians, the Rev. John Davenport and Theophilus Eaton began the New Haven colony as a theocracy. Only church members could vote, and the laws were based on those of Moses. Very soon New Haven, Guilford, Milford, and Stamford were so governed. In 1640 settlers from New Haven obtained title to Long Island and began a colony at Southold. Men from Massachusetts tried to settle opposite Manhattan, but the Dutch drove them to Southampton far out on the island.

Saybrook, which did not gain rapidly, was united to Connecticut in 1644, when the proprietor, George Fenwick, sold his rights to the settlements along the river. In 1662 a royal charter united the colonies at Hartford and New Haven.

Early Government. The three colonies now making up Connecticut show considerable diversity in government. Saybrook was Puritan, but not very different in organization from earlier New England settlements. In 1638 the settlements along the river, Connecticut colony proper, framed the Fundamental Orders, based on the laws of Massachusetts. No particular mention was made, however, of any control by the English crown. This omission is said by some to constitute the first effort in the American colonies to break away from any domination from across the Atlantic. Like Plymouth, but quite unlike the Bay colony, Connecticut made religion no test for citizenship. Yet union of church and state was assumed. In 1659 the general court, organized under the Fundamental Orders, declared that one must own property worth thirty pounds in order to qualify for suffrage. New Haven colony, on the other hand, was a theocracy, requiring a definite religious test, and basing laws on the scriptures. Some of the 45 "Blue Laws" of New Haven, however, were taken from Massachusetts and other early enactments. Conspiracy against the ruling powers was a capital offense; so was adultery. Sabbath observance was strictly enjoined, and persons harboring Quakers were subject to heavy fines. Trial by jury was forbidden. Such is the contrast between Connecticut colony and New Haven colony before 1650.

When the three colonies,—Saybrook, New Haven, and Connecticut,—were united in 1665, a new and more liberal charter was granted. Hartford was fixed as the capital, but shared the honor with New Haven from 1701 to 1873. Laws passed by the general court were not subject to any veto by the English crown or any deputy. Connecticut thus until the Revolution looked only to the charters for authority. After 1657 baptised persons could vote, and after 1708 religious bodies were free to build their churches, though later friction developed between the government and some of the sects.

Connecticut supported Massachusetts in the strife over the Stamp Act, prepared for war in 1774, appropriated money to send a force com-

manded by Ethan Allen to the northern border, furnished about half the men Washington had in 1776, and made the old charter of 1662 into a state document in 1776. Representation to the national Congress was proposed by Connecticut as a compromise measure. The colony suffered from boundary disputes with Massachusetts, Rhode Island, and New Amsterdam. To compensate for various losses of territory, a section known as Western Reserve was given in what is now Ohio. The boundary between New York and Connecticut at one point was not settled finally until 1881. See article on *Charter Oak*.

Roger Williams and Rhode Island. In 1631 a brilliant recent graduate of Cambridge University, England, came to Massachusetts Bay colony. He had ideas of his own, found it inconvenient to remain in Boston, and settled in Salem, where he taught and sometimes preached. The general court, however, refused him ordination. Williams said that church and state should not be united, that the Indians should be compensated for their land, and that one should not adhere to the established church or take any oaths he did not sanction. Salem was punished for harboring him, and even Plymouth found him a liability. In October 1635 he was tried before magistrates and banished. Intending to go to the region of Narragansett Bay in the spring, he remained behind, and finally was driven to Plymouth, from where he went to the Indians at Narragansett. In June of 1636 he founded Providence, which soon became the refuge of many persons seeking a religious haven.

Mrs. Anne Hutchinson in 1638 was also banished from Boston, where she stirred up a terrible controversy in the church of Rev. John Cotton, who favored her, as did Governor Harry Vane. She was opposed by the John Winthrop party which declared that she was posing as a prophet. When Vane lost the election in 1627, her chief support fell away. Mrs. Hutchinson went to Providence, thence to the island of Aquidneck, afterward named Rhode Island, where she, her husband, and about 16 others formed a government, with William Coddington as chief magistrate. With a rapidly increasing group, they established the towns of Portsmouth and Newport. Samuel Gordon, leaving Providence, founded Warwick in 1643.

Portsmouth and Newport united in 1640, and the other two settlements joined them in 1647, but again there was a division from 1651 to 1654. Roger Williams was active in bringing harmony, and went to England and there secured a charter for all Rhode Island in 1663. The name adopted legally was Rhode Island and Providence Plantations, which as used even today is the longest name for the smallest state. During the oppressive administration of all New England, together with New York and New Jersey, by Edmund Andros, the charter was suspended for three years, but again was restored after the English Revolution of 1688.

Newport became the center of the carrying trade with the West Indies and also of privateering. Rhode Island felt heavily the oppressive force of the Sugar Act of 1764 and the Navigation Acts, which greatly crippled the shipping and progress of the colony. When the British ship *Gaspee*, sent from England to enforce these acts, ran aground in Narragansett Bay in 1772, the men of Providence burned it to the water's edge. Nathaniel Greene, commander of the Rhode Island militia, became a Continental major general in 1776, and directed much of the southern campaign. Under Howe the British maintained a garrison of over 6000 at Newport, which the colonials under General John Sullivan and a French fleet under Count D'Estaing tried in vain to dislodge. While the new American government was being organized, Rhode Island maintained an independent attitude or an individualistic one, such as still is apparent in many of the smaller communities. Roger Williams was a Baptist for a time, and then a "seeker" or independent. Both in religious and political affairs he directed a spirit of tolerance and freedom.

Colonial Unions. After the first stage of pioneering, there was a tendency in all colonies for the isolated communities to unite on some common ground. On a large scale a form of union was attempted in 1643. It was known as the United Colonies of New England, made up of the leader, Massachusetts Bay Colony, Connecticut, Plymouth, and New Haven. In spite of divergence of opinion and difference in political and other ideals, it continued to 1684, a period of 41 years. During this time the Commonwealth in England had come and had in turn given way to the Restoration. Plymouth and Connecticut led in progressive political enactments; Rhode Island and Plymouth, in religious tolerance. Massachusetts and Connecticut led in political influence. Already in 1636 Plymouth had enacted the Great Fundamentals, in eight general articles, putting into words the political faith of men like Brewster, Bradford, and their successors. After the Commonwealth the colonies feared royal encroachments. Hence, they were quite prepared to resist the obnoxious actions of Sir Edmund Andros as governor of the New England, New York, and New Jersey settlements. Connecticut had united three separate colonies in 1665, following the Rhode Island union thirteen years before. New Jersey followed in 1702. Doubtless, these experiences paved the way for events of the Revolution.

The Early Carolinas. During the first periods of exploration and early settlements, it is impossible to separate the fortunes of the north and the south parts of the two Carolinas. Spanish explorers like Gordillo and Quexos, coming from Española, coasted north to Cape Fear in 1521. Ayllón secured a patent in 1523, and Stephen Gómez, seeking a north strait, skirted the coast from Nova Scotia to Florida in the same year. Gómez completed for Spain the exploration of the coasts from Magellan to Nova Scotia.

Ayllón made a settlement which lasted a few months. In 1566 the Spanish settled on Parris Island and remained 20 years, after some French under Ribaut had been there. From this time the Spanish confined their plans to Florida and the coast of the Gulf of Mexico.

Sir Robert Heath, attorney general under Charles I, obtained a grant of land between

the 31st and 36th parallels in 1629. No settlement was attempted. Charles II made a similar grant to the earl of Clarendon and other favorites in 1663, including all between the 30th and 36th parallels and extending west to the Pacific. Ten years earlier some Presbyterians had emigrated from Virginia to the Chowan River. Two or three other early attempts at settlements failed, and Virginia was given control over the entire territory. Since the time of the ill-fated effort to settle on Roanoke Island, now in North Carolina, Virginia had a nominal claim to the coast almost to the present Florida. (See under *Virginia* for history of Roanoke.)

Proprietary rule in the Carolinas lasted from 1663 to 1729. It was characterized by much bickering between the patentees and the actual settlers. One year before the first permanent settlement in 1670, Lord Ashley, better known to us as the earl of Shaftesbury, assisted by the English philosopher, John Locke, drew up the "Fundamental Constitutions," based on feudal principles long outgrown. For 30 years the colonists disputed over one provision or another of this first constitution for the Carolinas. By 1693 the commons in South Carolina won the right to initiate legislation. Then followed a church struggle, which was ended only when the Whig House of Lords in England in 1704 refused to make membership in the Church of England a test for legislators in South Carolina. Yet in 1706 the Church of England was established and so remained until 1778. After the proprietors had vetoed several important laws, the people rebelled in 1719, expelled the governor, and elected their leader in his place. Though a royal province was set up in 1720, the final payments to the proprietors were not made until 1729.

All these years the two districts were regarded as one province. Yet each had its own governor until 1691. Then for 21 years one governor resided at Charleston, and another deputy in the north. Separate governors were appointed after 1712. No attempts to fix precise boundaries were made until 1730, and they were not all determined until 1815.

Meanwhile, North Carolina had its own period of turmoil and struggle. Following the Presbyterians at Chowan River, Huguenots, Swiss, Germans, and others came in considerable numbers, many of them down from the valleys of Pennsylvania. The north part of the Carolinas for a long time was called Albemarle, which contained about 2500 inhabitants in 1682. By the close of the colonial period, North Carolina had 300,000, including 40,000 blacks. Of the 16 governors or their deputies, between 1673 and 1712, six were driven out of office by the settlers. During the trouble in 1677 over collection of customs, John Culpepper and 100 men imprisoned the governor, the collector of customs, and most of the members of the assembly. Not until the coming of Governor Ludwell in 1691 did the district quiet down. Another cause of bitterness was the decree that Presbyterian ministers could not perform marriage ceremonies, and the Scotch-Irish became much embittered. When John Archdale, a Quaker, came as the governor in 1685, conditions began to mend.

North Carolina as a Royal Colony. Seven of the proprietors gave up their rights in 1729 for £17,500, with £5,000 arrears in rent, which had been in dispute. Lord Carteret, the final owner, gave up his claim in 1744 in return for land on the borders of North Carolina and Virginia. Many disputes arose between the crown and the colony, such as those over duties on imports, religious establishment, fees, and products. After 1740 the "back country," or the districts across the mountains to the west were pretty well occupied by Scotch-Irish, German, and other immigrants. Between them and the coastal district was an area of hills and beyond sparsely settled forests. Hard times, large fees, extortions by officers led the men to organize themselves into a band of Regulators. When Governor Tryon led a force against them, they broke up, but later came back and were defeated in the battle of Alamance in 1771. Fifteen were captured, and seven of them executed. Trouble continued, however, until 1835.

The first provincial congress met at Newbern in 1774, and a second in 1775, after which Governor Martin fled for safety. On May 21, 1775 a committee in Mecklenburg County passed some resolutions, which some have thought were more drastic and more far-reaching than the Declaration of Independence, some phrases of which come from the similar Mecklenburg Declaration. On April 12, 1776 steps were taken to set up an independent government. Important battles of the Revolution were fought in the Carolinas. After 10 states had ratified the new federal Constitution in 1788, North Carolina refused (vote was 184 to 84) to agree until a bill of rights was added and other changes made. When these were guaranteed, North Carolina ratified in November 1789.

South Carolina as a Royal Colony. Charleston, the first settlement in the Carolinas, became an important center after 1725. Trade in deer skins, indigo, and rice became large, while the arts of the theatre and music made Charleston the center of culture in the south. Legislative troubles continued, until the lower house assumed much of the power to initiate laws, and complete control over financial bills. The dispute over whether the assembly or commons (said to be a model of the British House of Commons) had sole rights in finance gave the colonists additional courage. A volunteer provincial congress in 1775 took over the government, and the royal governor fled.

Various military expeditions and wars had inured South Carolina to stand loyally with the other colonies during the Revolution. Considering size, remoteness, and resources, more important battles were fought on the soil of this state than on any other, some being Ft. Moultrie, siege of Charleston (two months in 1780), Camden, King's Mountain, Cowpens, and Eutaw Springs, most of them in the campaign of General Greene, assisted by natives like Sumter, Marion, and Pickens. Wars in previous years were the Spanish in 1686, 1702, 1740, with pirates in 1717, with Indians in 1715, 1760–61, and a slave uprising in 1739. As in the case of North Carolina, the eastern low-

lands and the western hilly regions for many years were at strife. Consequently, in 1790 a new capital was set up at Columbia, but until 1865 both the state officers and the supreme court maintained sessions at both Columbia and Charleston, to represent each section separately. For many years also control of one house rested with representatives from the lowlands, and of the other, from the mountain regions.

Georgia. Once more religious and social restrictions led to the formation of this colony, the last of the original 13, and the only one founded after 1700. The British government wished to protect the Carolinas from incursions from the Spanish in Florida and the French in Louisiana. For centuries persons unable to pay their debts had been thrown into prison, while their families suffered privations. Col. James Edward Oglethorpe moved in Parliament that a committee investigate this practice. As a result George II gave the charter to lands between the Savannah and Altamaha Rivers and west to the Pacific. Parliament contributed £10,000 and individuals much more. Led by Oglethorpe himself, a company of about 100 landed at what is now Charleston early in 1733, made a treaty with the Creek Indians, and proceeded to lay out Savannah. Religious refugees from Europe and from some of the colonies also emigrated to Georgia, while some settlers from Virginia and the Carolinas came down in 1753.

When military posts were built between the Altamaha and St. John's Rivers, the Spanish in Florida were angered. While again in Europe, Oglethorpe was given permission to raise a regiment to defend the Georgian borders. Aided by men from South Carolina, by Indians, and others, he succeeded twice in driving the Spanish back to the gates of St. Augustine, oldest city perhaps in North America, founded in 1565.

As a commercial venture, Georgia failed to succeed. It was taken over as a royal province in 1753. Lands had been leased on a military basis to males only prior to 1759. Profits were supposed not to go to the proprietors, whose lease was for 21 years only. Imports of rum were forbidden, and of slaves previous to 1753. Trade with the Indians was limited to licensed persons. Attempts were made in vain to produce hemp, silk, and medicinal plants.

Great prosperity followed when the crown assumed control in 1753. The last colonial governor, James Wright, declared that this was "The most flourishing colony on the continent." Led by some settlers from Dorchester, Massachusetts, residents in St. John's parish joined with other colonists in the Revolution. Feeling for the motherland was so strong, however, in Georgia that five out of the 13 parishes sent no representatives to the first provincial congress, and the elected delegates to the Continental Congress did not claim their seats. Yet in 1787 Georgia was a strong advocate for the central government. That state was the fourth to ratify the new Constitution, and one of only three by a unanimous vote. In *Chisholm vs. Georgia,* however, this state first questioned the right of a citizen of one state to sue another state, a contention that was written into the 11th amendment in 1798. Troubles also over land west of Georgia claimed by the state and also lands once held by the Cherokee Indians were settled by payments of money to Georgia.

We have now traced the founding of the original colonies. When they united in the conflict with England, it was on grounds of longstanding disputes. While the colonies were small and poor, Great Britain was content to allow much local liberty of government. As lands became valuable and their products of more value in Europe, more and more the proprietors, and officials of settlement companies, and crown ministers tightened their holds, until at last the colonists could stand it no longer. Though they had been founded through quite diverse motives, by people that differed greatly in social and religious traditions, in the end all saw the chance of joining for a common good in forming the United States of America.

United States, Formation of. After 1688 colonial government was somewhat reorganized in favor of greater freedom for the American colonists. Massachusetts obtained a new charter uniting with Plymouth in 1691, New York and New Hampshire became royal provinces as did South Carolina in 1719, North Carolina in 1729, and Georgia after 1752. Connecticut and Rhode Island continued under original charters, as they also did after the Revolution. Colonial assemblies remained, with an upper house and a governor representing the crown. Following troubles as to commerce and trade, Great Britain withdrew some colonial privileges, and after 1763 passed various obnoxious acts. Meanwhile, the spirit of liberty grew in England, and, as Edmund Burke pointed out, the Americans after all were Englishmen, with similar love for freedom. So conditions remained up to the beginning of the Revolution.

Continental Congresses. Opposition to the Stamp Act and others led Britain to quarter General Gage and his soldiers in Boston. This unwise move irritated the colonies, so that all but Georgia joined in a Congress which sent protests to the crown and ministry. All agreed to support Massachusetts, even by force of arms, against encroachments from abroad. The English Whigs tried to obtain conciliations, led by Burke in his famous *Speech.* The policy of Lord North, however, was finally approved. The latter proposed that any colony setting up a self-government and contributing to the common defense should be freed from taxes imposed by England. Matters had gone too far, however, and Concord, Lexington, and Bunker Hill began the Revolution in April of 1775.

Even before hostilities commenced, delegates had been chosen for the second Continental Congress. United at first for common advantages in trade and commerce, the colonists now united for common defense. Congress at once began to urge, and in some cases to command, certain measures, and Washington was appointed to organize the army. Royal governments in the colonies had already begun to break down. Virginia adjourned the House of Burgesses in May of 1774, and never called it again as a royal assembly. Massachusetts followed in October, New York in March, 1775,

North Carolina in April, Georgia in May, and New Hampshire and South Carolina in June. Governor Franklin met the New Jersey assembly in November, but all important functions had been taken over by a colonial group. So one can see that the colonies were ready to unite.

Independence Proclaimed. Lack of success during the first year of the Revolution gave the Tories a chance to resist the growth of popular assemblies. Meanwhile, Congress courageously issued bills of credit amounting by 1779 to over $240,000,000, and the states over $200,000,000. Some jealousy sprang up among the colonies, New York put into the field a considerable force opposed to independence, and affairs looked sad for the colonies until 1777. Only by the financial aid of Spain and Holland, and the financial and military aid of France, could the Revolution have succeeded by keeping England busy with a war at home.

On June 4, 1776, Richard Henry Lee of Virginia, in the Congres, offered a resolution "that these United Colonies are and of right ought to be free and independent." The ensuing debate showed that a few states had not instructed their delegates how to vote. After three weeks delay, all but Georgia, South Carolina, and New York voted to break with England. When the British attacked Charleston, Georgia and South Carolina joined the other colonies. On July 4, 1776, the Declaration of Independence, written largely by Jefferson, was adopted, but New York took no part. A convention a bit later agreed to the declaration and the signatures of all delegates were later appended.

National Development. Congress was hampered by lack of means, of money, and of international standing. When Henry Laurens was captured in 1779 by England while on his way to represent the colonists in Holland, the new nation gained definite support of other governments. The state governments took form gradually, while rights of assemblies of people were clearly defined as never before by Great Britain. Most states passed a general bill of rights, provided for trial by jury, freedom of press and speech and of assembly, and forbade monopolies and hereditary titles or grants. The Articles of Confederation, as proposed after Burgoyne's surrender in 1777, were ratified after the large states had given up certain concessions, among them their claims to western lands, as Maryland insisted till the point was won, but they did not go into effect until 1781. Congress thus came into possession of 430,000 square miles of public domain. The Ordinance passed July 13, 1787 provided for much of later development of states. (See reasons why the Articles failed in department of Government.)

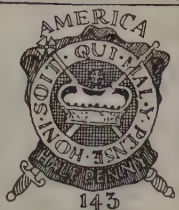
Congress and the States. Taxation and import duties proposed by Congress brought to a head the conflict with the states, some of which refused all cooperation in one matter or another. Issuing of paper money had all but bankrupted several states. In 1784 Congress adjourned, having been unable at times to get a quorum and at others to get nine of the 13 states, as required, to agree on a measure. Then followed at Annapolis, Maryland, a convention of five states, which recommended the Constitutional Convention, finally held at Philadelphia in May 1787. New York had blocked all attempts of Congress to levy an impost. All but Rhode Island were represented at Philadelphia. Virginia as a large state proposed one house as before but with enlarged powers. Connecticut proposed a compromise, out of which grew our form of government.

New Government. Fifty-five delegates attended the Constitutional Convention of 1787. From May 28 to September 17, various committees and plans were considered. Washington presided, Franklin at 81 was the eldest member, Gilman of New Hampshire, only 25, was the youngest. Many of the delegates afterward became important in the development of the new nation. Some of these were Washington and Madison, who became presidents, Elbridge Gerry, who became vice president, Rufus King the candidate for second place in 1804 and 1808, and for president in 1814, Landgon, a candidate in 1809 and Jared Ingersol, also for vice president in 1812, also C. C. Pinckney in 1804, 1808, and 1812. Langdon was the president of the Senate. Randolph was first attorney general, Hamilton first secretary of the treasury, M'Henry the second secretary of war. Ellsworth and Johnson became first senators from Connecticut, Robert Morris from Pennsylvania, Caleb Strong from Massachusetts, Patterson from New Jersey, Dickinson and Bassett from Delaware, Pinckney and Butler from South Carolina, and Col. Few of Georgia; while Sherman of Connecticut, Gilman of New Hampshire, and Baldwin of Georgia became first representatives and later senators. Those who became governors were Morris of Pennsylvania, Gerry and Strong of Massachusetts, Patterson of New Jersey, Basset of Delaware, Spaight and Davie of North Carolina, Pinckney of South Carolina, and Alexander twice governor of North Carolina.

Ratification was slow and progress uncertain. Delaware, Pennsylvania, New Jersey, Georgia, and Connecticut ratified without much trouble, Delaware and New Jersey by unanimous vote. New Hampshire waited for Massachusetts, where sentiment was almost equal, and in the end resulted in ratification by 19 majority out of 355. Madison, Jay, and above all Hamilton, urged adoption by the Federalist Papers which they published. On June 21, 1788, New Hampshire made the ninth state necessary to make the Constitution binding: Virginia fell into line by a majority of 10 out of 168, and in New York the majority was only two. North Carolina joined the union on Nov. 21, 1789, and Rhode Island on May 29, 1790, after remaining outside because of the religious issue which still was alive there.

Extension of Settlements. The vast northwest territory was ceded by England in the treaty of 1783. Part of New Hampshire became Vermont in 1791, Virginia's claims to the west became Kentucky in 1792 and North Carolina's claim became Tennessee four years later, heretofore this territory had been called Frankland. The ordinance of 1787 guaranteed religious liberty. So the Ohio region was opened by Arthur St. Clair in 1788, but Marietta, Losantiville (Cincinnati), and Louisville were already established.

The REVOLUTIONARY WAR

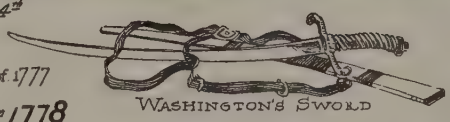


THE MINUTE MAN

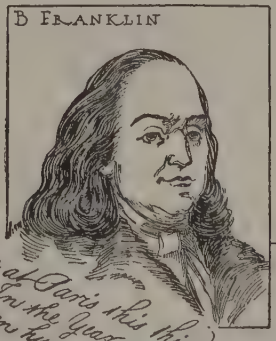
PAUL REVERE'S RIDE APRIL 18 1775

THE STAMP ACT *Passed March 22nd 1765*
A cause of our war with Great Britain
The **"DECLARATION of RIGHTS"**
formulated by colonists Oct 25th 1765
BOSTON RIOT *March 5th 1770*
BOSTON TEA PARTY *Dec 1773*
FIRST CONTINENTAL CONGRESS
Sept 5-26 **1774**
MINUTE MEN ORGANIZE
at Concord in **1775**
PAUL REVERE'S RIDE *Apr 18th*
"For the country folk to be up and to arm"
LEXINGTON *Apr 19th*
First engagement of the war
FORT TICONDEROGA
taken by Ethan Allen
May 17th
BATTLE of BUNKER HILL
June 17th
Washington takes command July 3d
ST. JOHN MONTREAL *taken Nov 7th*
British evacuate Boston Mar 17th **1776**
DECLARATION of INDEPENDENCE
Adopted July 4th
Washington retreats up the Hudson, across New Jersey and into Philadelphia pursued by the British August-December
Washington crosses the Delaware and attacks the Hessians Dec 25th BATTLE of TRENTON

CHADD'S FORD *Sept 11th* **1777**
British take Philadelphia October 4th
British attack New York
BURGOYNE'S ARMY TAKEN *Oct 17th*
Washington in camp at Valley Forge Winter of 1777
British evacuate Philadelphia and the
BATTLE of MONMOUTH *follows, June 28th* **1778**
British invade the South
and take Savannah
STONY POINT *July* **1779**
Paul Jones in the Bonhomme Richard takes the British frigate Serapis after a fierce engagement off the coast of Ireland Sept 23rd **1779**
KING'S MOUNTAIN *October 7th* **1780**
COWPENS *January 17th* **1781**
SURRENDER of LORD CORNWALLIS
at Yorktown October 19th **1781**
Peace treaty signed at Paris Sept 3d **1783**

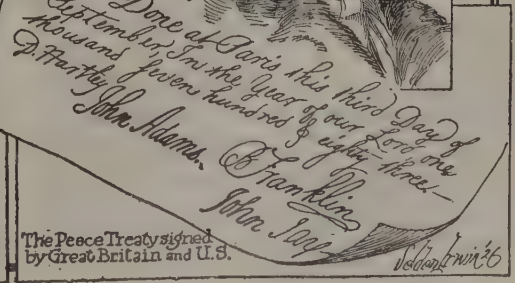


WASHINGTON'S SWORD

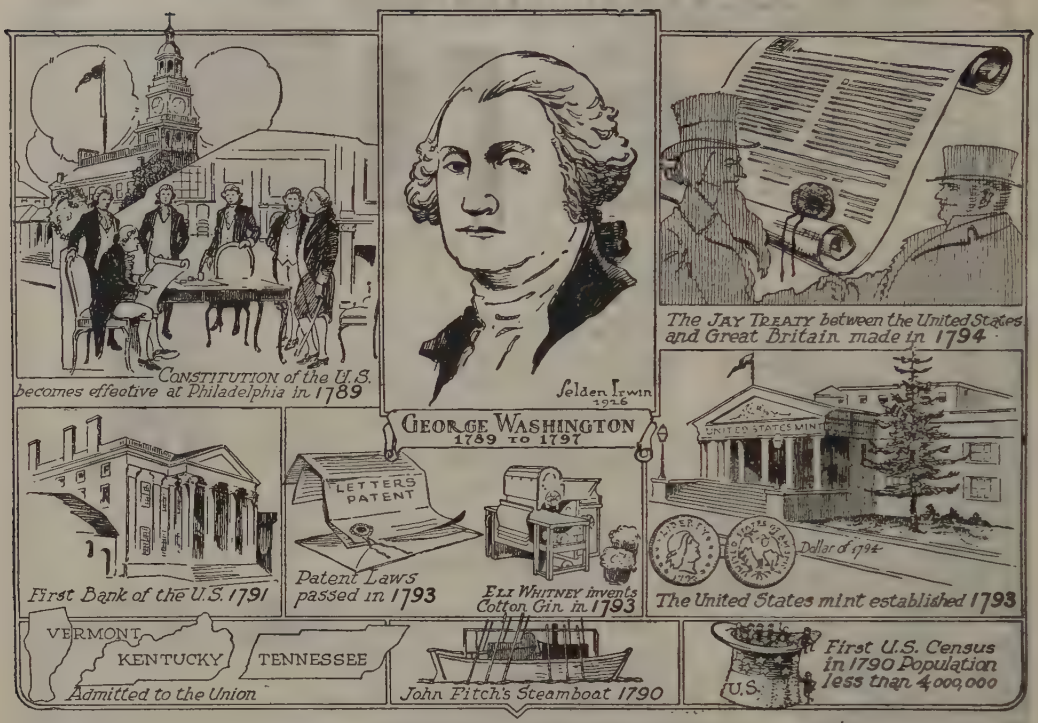


FLAG OF THE UNITED COLONIES

FLAG OF THE U.S. 1777


Done at Paris this third Day of September in the Year of our Lord one thousand seven hundred & eighty three
John Adams.
B Franklin
John Jay

The Peace Treaty signed by Great Britain and U.S.


CONSTITUTION of the U.S. becomes effective at Philadelphia in 1789
Selden Irwin 1926
GEORGE WASHINGTON 1789 TO 1797
The JAY TREATY between the United States and Great Britain made in 1794
First Bank of the U.S. 1791
LETTERS PATENT
Patent Laws passed in 1793
ELI WHITNEY invents Cotton Gin in 1793
UNITED STATES MINT
Dollar of 1794
The United States mint established 1793
VERMONT
KENTUCKY
TENNESSEE
Admitted to the Union
John Fitch's Steamboat 1790
U.S.
First U.S. Census in 1790 Population less than 4,000,000

ADMINISTRATION OF GEORGE WASHINGTON—1789–1797.

The Cabinet.—Washington was inaugurated Apr. 30 at New York City, the first capital of the U. S. His first Cabinet consisted of Thos. Jefferson, Sec. of State; Alex. Hamilton, Sec. of Treasury; Henry Knox, Sec. of War; Edmund Randolph, Attorney General.

Financial Measures.—The first and greatest problem of the administration was to provide an adequate revenue. Hamilton proposed to levy a moderate tariff on imported goods, to assume the debts contracted by the states during the Revolutionary war, to issue U. S. bonds sufficient to cover the entire indebtedness, and to charter a Bank, somewhat like the Bank of England, which should act as the fiscal agent of the Federal government.

Party Divisions—These proposals divided the political leaders into two groups, the Federalists and the Anti-Federalists or Republicans, the latter, led by Jefferson, insisting upon a strict construction of the U. S. Constitution. Hamilton, the leader of the Federalists, believed that the Constitution was created for the benefit of the whole country, and that it should be so interpreted as best to serve that purpose. Washington, after much deliberation, supported Hamilton's views, and it was due to his influence that Congress passed the necessary laws. The tariff was very low, judged by modern standards; the consolidated national debt amounted to $75,000.00; the Bank was chartered for a twenty-year term, and a mint was set up at Philadelphia. So by 1791 the U. S. was a going concern.

The Judiciary Act.—Among the most important early acts of Congress was the Judiciary Act, providing for a Chief Justice and five Associate Justices to constitute the Supreme Court; four Circuit and thirteen District Courts to make up the inferior Courts. So wisely was this law drawn up that it remained for many years unchanged in essentials.

The Constitution Amended.—Complying with pre-ratification promises, Congress passed and submitted to the states ten amendments to the U. S. Constitution, the first eight of which were known as a Bill of Rights, protecting individuals from Federal encroachment upon their personal rights. The Union was completed when North Carolina and Rhode Island came in.

A Permanent Capital Provided for.—In order to get the support of the Virginia representatives in Congress for his plan of taking over the state debts, Hamilton made an agreement with them whereby, if they supported the Assumption Bill, the national capital was to be removed to Philadelphia for ten years, and then was to be established at some point on the Potomac river, the land to be ceded by Virginia and Maryland. This is the genesis of Washington, D. C.

Neutrality in Foreign Affairs.—The French Revolution which broke out in 1789 divided the people of the U. S. into two groups, one openly sympathetic and the other hostile or favoring a strict neutrality on the part of the U. S. The fact that the French had given us decisive aid in our Revolution inclined the Americans to the support of the French in their effort to get rid of a wicked and useless nobility. As a result it took all of Pres. Washington's firmness and tact to keep the U. S. from violating established

laws of neutrality. Genet, the French representative, soon after landing began to commission American privateers to prey upon English commerce. Washington at once stopped this, although by so doing he incurred the hostility of the ardent French supporters.

Trouble With England.—To make Washington's policy the more difficult to follow through, England began to seize U. S. ships bound for French ports and confiscate their cargo. Worse than this U. S. vessels were boarded anywhere on the high seas and sailors of British birth were taken off, regardless of the naturalization laws of the U. S. In some cases native-born Americans were impressed. Washington was conscious of these indignities but he realized that the U. S. was too weak to make more than formal protests. In all probability our independence might have been seriously jeopardized if any other than a neutral policy had been followed by the U. S.

Jay's Treaty.—Washington sent John Jay to England to negotiate a treaty, and after much difficulty he persuaded the British government to make some concessions, one of which was the agreement to give up the fur-trading posts. But the treaty said nothing about the right of search and impressment, nor did it leave the U. S. free to trade with the West Indian colonies. Jay's treaty aroused a storm of opposition, and for a while Jay was the most unpopular man in the U. S.; but Washington wisely saw that half a loaf was better than none at all, and he exerted his influence in having the Senate confirm the treaty, which it did.

Mississippi Trade.—For the people of the west a more important question than naval rights was that of opening the Mississippi river, the sole outlet for the trade of the western country. Spain had been restricting our use of that stream in a most exasperating manner, and the westerners were ready either to fight Spain, or to set up a separate republic for themselves. In 1795 Spain signed an agreement whereby the Mississippi should be open to the use of U. S. citizens and New Orleans should be a port of deposit.

The Whisky Rebellion.—The word "excise" had been hateful to the Americans since pre-Revolutionary days; therefore when Congress, following the suggestion of Hamilton, imposed an internal revenue tax on distilled spirits in 1789 there was a strong protest from the people of western Pennsylvania, Virginia, and North Carolina, who had been turning their corn into whisky unmolested by Federal taxes. Collection of the tax from the western Pennsylvanians especially became so difficult that Washington had to resort to the use of troops to put down the incipient rebellion. The six or seven thousand insurgents melted away before the Federal troops, and the government had exhibited its strength in a most useful and decisive manner. Had the Federal government weakened or compromised on this occasion the new Republic might have been called upon to face a similar situation every time a section or a group objected to a Federal law.

Cabinet Changes.—When Washington became President he declared his intention of ignoring party lines—in other words, of running the government on a bi-partisan basis. Thus, the leaders of the two extremes, Jefferson and Hamilton, were members of the first Cabinet. It was a great disappointment to Washington when he found that party differences were so irreconcilable that he would have to choose between them. His own good judgment told him what the U. S. most needed at that time was strength. Hence his support of Hamilton rather than Jefferson, who would sacrifice stability for theories of democracy. By the end of the year 1793 partisan quarrels had become so acrimonious that Jefferson resigned as Sec. of State. He and Washington parted the best of friends, although there is good reason for thinking that he was responsible for the newspaper and pamphlet attacks upon the President. In January, 1795, Hamilton retired from the position which he had so ably filled, leaving office with the satisfaction of knowing that he had refuted absolutely all the charges brought against him by the Republicans. To Hamilton this country owes a debt of gratitude, for without his confidence and enthusiasm the U. S. might not have had such an auspicious beginning. His private faults were petty compared with his public virtues.

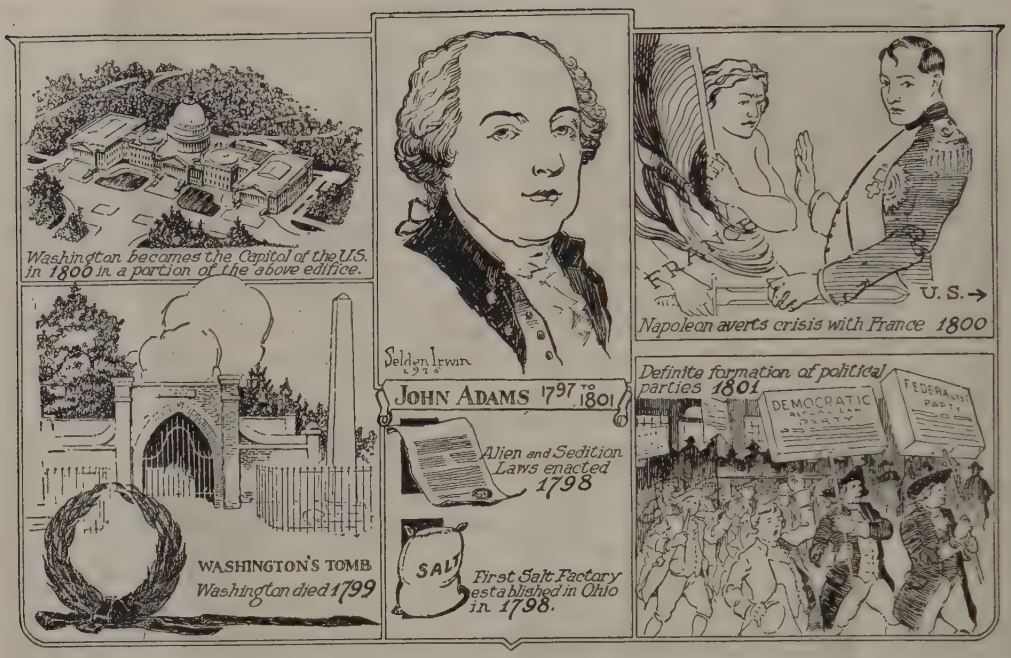
The North-West Ordinance.—The famous North-West Ordinance had been passed in 1787 by the old Congress, providing that the country north of the Ohio river and east of the Mississippi should be organized as territories until such a time as they possessed sufficient population to be admitted as states. Article 6 of the Ordinance was of great importance, providing as it did that "neither slavery or involuntary servitude should exist" in this territory.

Kentucky and Tennessee.—In 1788 Virginia consented to the breaking off of Kentucky, and in 1792 this territory became a state. Tennessee originally belonged to North Carolina but for years had been almost entirely neglected. After a vain attempt to set up for themselves without the consent of the mother state, in 1790 North Carolina gave up claim to Tennessee, and in 1796 the latter became a state.

Settlement of the North-West.—In the meantime the region north of the Ohio was rapidly filling up. The Great Lakes country was being settled by people from New York and New England whereas the settlers in the Ohio River valley came mainly from the middle states. The latter would start from the growing town of Pittsburgh, floating down the Ohio until they came to a favorable spot, where they would take up a claim.

Indian Troubles.—The new settlers had small regard for the rights of the Indians whom they found there, and warfare between the races was constant. In 1791 General St. Clair, the Governor of the Territory, was defeated by the Indians, but this defeat was redeemed later by General Anthony Wayne in the battle of Fallen Timbers.

Washington Retires.—Washington had accepted a second term with unfeigned reluctance, and so declined to consider a third term. On March 4, 1797 he retired from public office, having served in some public capacity for the greater part of his life. The Republicans welcomed his retirement with undisguised pleasure, but the mass of people estimated him at his true worth —one of the great characters of all times.


Washington becomes the Capital of the U.S. in 1800 in a portion of the above edifice.
Seldon Irwin
JOHN ADAMS 1797 TO 1801
Napoleon averts crisis with France 1800
U. S.
Definite formation of political parties 1801
DEMOCRATIC
FEDERALIST PARTY
Alien and Sedition Laws enacted 1798
WASHINGTON'S TOMB
Washington died 1799
SALT
First Salt Factory established in Ohio in 1798.

ADMINISTRATION OF JOHN ADAMS—1797–1801

Adams's Difficulties.—The difficulties confronting John Adams, at home and abroad, were so great that his administration is a record of little else than party strife and foreign humiliation. He made his first mistake in retaining Washington's Cabinet—a conglomeration of undistinguished men who were under the influence of Hamilton, the leader of the faction of the Federalist party opposed to Adams.

"War" with France.—The first external problem which Adams had to face was that of French seizure of U. S. ships in retaliation for Jay's Treaty. Upon hearing that our minister had been sent out of France Adams had Congress pass some bills designed to strengthen our army. But wishing to avoid war the President sent to France three envoys, C. C. Pinckney, Elbridge Gerry, and John Marshall. The French "Directory" refused to treat with these men on honorable terms, even demanding a bribe, so negotiations were not begun. Diplomatic relations were broken, and war appeared certain, when the French, not wishing to add another enemy to her list, consented to make a treaty, in 1800. Between 1796 and 1800, there was a virtual state of war existing, and the losses to American shipping were great.

The Alien and Sedition Laws.—The trouble with the French led the Federalists into passing the Alien and Sedition Laws, aimed at foreigners especially. The Alien Law gave the President the power to deport any alien who was deemed dangerous to the safety of the country; the Sedition Law forbade the printing of libelous statements against the Congress or the President, on penalty of a heavy fine and imprisonment. A new naturalization law extended the period of residence from five to fourteen years. Taken together, these acts infringed upon some valued American principles, and ultimately brought about the downfall of the Federalist party.

The Virginia and Kentucky Resolutions.—Jefferson, a most astute politician, lost no time in making capital of the mistakes of the Federalists, and the Virginia and the Kentucky Resolutions were the result. The Virginia Legislature adopted a set of resolutions drafted by James Madison to the effect that the states might "interpose" to stop the operation of a law of Congress. The Kentucky Resolutions asserted outright the power of states to nullify acts of Congress. Although no other states formally affirmed these doctrines at this time, these resolutions were destined to play an important part in the later history of the U. S.

The Judiciary Reorganized.—The last act of the Federalists was to pass a bill creating 16 new judgeships and relieving the Supreme Court of circuit duty. All new judges were Federalists, an inexcusable act of partisanship. Adams's last appointment was that of John Marshall to be Chief Justice.

An Estimate of the Adams Administration.—In summing up the John Adams administration it must be admitted that the four years were productive of little that was constructive. For this Adams can not be held entirely responsible; but had he been a man of tact, as he was a man of impeachable integrity, the country might have gone forward farther than it did. Adams's most solid accomplishment was his handling of the French controversy, and it is to his eternal credit that the U. S. escaped a useless and disastrous war at a time when it could least afford it.

ADMINISTRATION OF THOMAS JEFFERSON —1801–1809.

Republican Changes.—The Conservatives viewed the accession of Jefferson to the Presidency as a great calamity, but the worst fears were not realized, for, as is usually the case, the sense of power had a sobering effect upon Jefferson. The changes he made were showy, but of slight import. His inauguration was a simple affair, but pomp would have been incongruous in such a setting. The national capital consisted of a few plain buildings in the midst of a wilderness. Thus there were several reasons for Jefferson's preference for Monticello, his Virginia mansion, to Washington.

Appointments.—His first cabinet consisted of James Madison, Sec. of State, Albert Gallatin, Sec. of the Treasury, Henry Dearborn, Sec. of War, Levi Lincoln, Attorney General, and Robert Smith, Sec. of the Navy. Jefferson found himself hampered by the fact that practically all the Federal offices were filled by Federalists, and he complained that there were few deaths and no resignations. The custom of removing office-holders for political reasons was not established, and Jefferson was discriminating in his removals.

New Policies.—The Republicans had a working majority in both houses of Congress and put through their reforms without much difficulty. The whisky tax was repealed, and customs duties were depended on to bring in enough revenue to run the government. The policy of reducing the national debt was decided on, and, by cutting down expenses in decisive fashion, this was gradually accomplished.

Attack on the Judiciary.—Jefferson came into office resolved to wipe out the latest Judiciary Act, not merely because it increased expenses, but because Adams had appointed all Federalists to the judge-ships. After a bitter fight Congress repealed the Act, and the constitutional provision that judges should hold their positions for life was rendered void by the discovery that the same end could be attained by removing the office from the man.

The Tripolitan War.—Jefferson's first term is a record of great accomplishments and few failures. For years the pirates of the Mediterranean had been exacting tribute from the U. S., but in the Tripolitan War our navy put a stop to this degradation.

The Purchase of Louisiana.—The greatest of all the events of this period was the purchase of Louisiana, "the most gigantic real estate transaction of all time." In 1802 Spain broke her treaty by closing the Mississippi to American citizens, thus affecting the fast-growing population west of the Alleghanies. Jefferson knew well the spirit of the western people, so he started negotiations for the purchase of a strip of land at the mouth of the Mississippi. In 1800 Spain had ceded back Louisiana to France with the stipulation that France was not to dispose of it to any other power. Napoleon tried to establish a colonial empire, but when that failed he was so disgusted that he was ready to give up all the colonies. So when the U. S. approached him with a view to purchasing part of Louisiana he offered to sell all of it. This appealed to Jefferson's imagination, for he was much interested in exploration and discovery; but he was not sure that the Constitution gave Congress the power of buying new territory. Being a practical man, however, and forseeing the wonderful possibilities of Louisiana he arranged for its purchase, recommending

that an amendment to the constitution be adopted giving Congress the power of buying territory. The price paid was $15,000,000 and the area included parts of the present states of Colorado, Montana, Minnesota, Wyoming, Oklahoma; and all of Louisiana, Missouri, Arkansas, Iowa, Kansas, Nebraska, North and South Dakota. By this purchase the territory of the U. S. was doubled.

Hamilton Killed.—On July 11, 1804 Alexander Hamilton was killed in a duel by Aaron Burr who was protected from punishment by the unwritten law of the time.

Jefferson Re-elected.—In 1805 Jefferson was re-elected to the presidency with an electoral vote of 162 against 14 received by his opponent, C. C. Pinckney, thus indicating that the Federalist party was disappearing from the political scene. But Jefferson's second term brought him little that he could look back upon with pride.

Foreign Affairs.—Napoleon's imperial ambitions were so extensive that to defeat them almost the whole of Europe was arrayed against him. England tenaciously held out, and to put an end to Napoleon's pretensions fought him with his own weapons. The carrying trade of the U. S. was interfered with by both contending parties. By the Berlin and the Milan decrees Napoleon closed to foreign ships all the ports in the British Empire—a paper blockade, but dangerous to neutrals nevertheless. Great Britain retorted with her Orders in Council shutting out from commerce the ports of Europe under French control. Thus U. S. ships were safe in no part of the world, and the number of confiscated ships increased so fast that there seemed to be danger that U. S. vessels would disappear from the high seas. Jefferson was so pacific in disposition that he was willing to go to almost any length to avoid war.

Foreign Trade Cut Off—England's impressment of American seamen was flagrant enough to arouse almost any one to the fighting pitch, but Jefferson chose to make war in his own way, which was to cut off all the foreign trade of the U. S. In 1806 Congress passed a Non-Importation Act which prohibited trade with Great Britain and her colonies, but before there was time to test its efficiency Congress, following Jefferson's suggestion, passed an Embargo Act, practically prohibiting all trade between the U. S. and other nations. No vessel could leave a port of the U. S. without giving bond that she was bound for another port of the U. S.

New England Objects.—New England was outraged by this action, which threatened to cut off the chief source of revenue; but Jefferson held firm and the Embargo was nominally in force for several years, during which time smuggling became common.

Failure of the Embargo.—Jefferson had hoped that the Embargo would so cripple the manufacturing interests of England that they would force the government to modify its policy toward the U. S., but in this he was disappointed. Moreover, England's shipping trade gained by the embargo, since it was entirely free from American competition. The results of the Embargo in the U. S. were disastrous. An important industry was wiped out, and the chief source of revenue of the U. S. was diminished by more than half.

Home Manufacturing.—There were several other effects that were of more lasting importance. Cut off from imported manufactured goods, the people of this country hastened to make such goods themselves; and in a short time New England had begun to lay the foundation for the activity which was destined to give her a pre-eminent place in the economic world.

Westward Migration.—Another effect of the Embargo Act was that of hastening the settlement of the western country. The sea-coast population turned toward the west, and the years immediately preceding the War of 1812 were marked by a shifting of population from the east to the west. The states north of the Ohio river filled up rapidly, and each new wave went a little farther west than the preceding one.

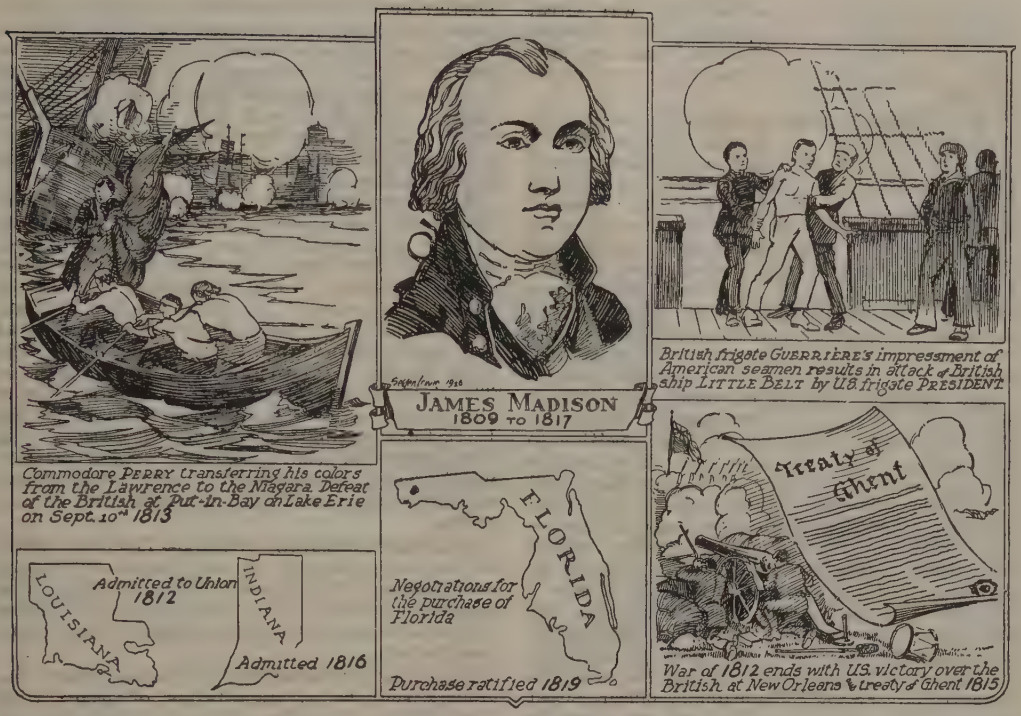
The National Pike.—In 1803 Ohio was admitted to state-hood. An immediate result was the construction of the first highway built in the U. S. by the Federal government. In 1806 Congress appropriated $30,000 for a road to be built from Cumberland, Maryland, to the Ohio river at Wheeling. Construction began in 1811, and by 1818 it had reached the Ohio, with the result that travel between the seaboard and the west increased enormously. Other sections of the country, observing the benefits to the communities immediately affected, made efforts to secure money for similar purposes, and the subject of public appropriations for local undertakings became one of the questions that Congress confronted at every session.

The Lewis and Clarke Exploration.—Jefferson was instrumental in setting on foot the famous Lewis and Clarke expedition to the Oregon country. These two officers of the U. S. army, after training intensively a small force of men, left St. Louis in 1804; went up the Missouri river to the Bitter Root Mountains; made their way laboriously across the Rockies until they came to one of the tributaries of the Columbia river, and followed it to the mouth. They reached St. Louis in 1806, completing one of the most successful explorations that history records.

The Fur Trade.—The effect was that the fur-traders now extended their activities to the north-west, thus bringing them into contact with the subjects of Great Britain who were plying a similar trade in that region. For a number of years the Oregon country was a live subject of dispute, and more than once threatened to disturb the relations between the U. S. and Great Britain.

Jefferson Retires.—In 1809, the Embargo Act proving a failure, a Non-intercourse Act was passed. A few days after, Jefferson retired from the Presidency, having declined to be a candidate for a third term.

Jefferson's Influence.—The influence of Thomas Jefferson upon the political philosophy of the U. S. has been greater than that of any other man. His doctrine that "the government is best that governs least" has played a powerful part in strengthening the natural individualism of the American people. He was viewed as a radical by his contemporaries, but if he were living today he would be considerd almost reactionary. To the end he believed that government at best was a necessary evil.


JAMES MADISON
1809 TO 1817
Commodore PERRY transferring his colors from the Lawrence to the Niagara Defeat of the British at Put-in-Bay on Lake Erie on Sept. 10th 1813
British frigate GUERRIERE'S impressment of American seamen results in attack of British ship LITTLE BELT by U.S. frigate PRESIDENT
LOUISIANA
Admitted to Union 1812
INDIANA
Admitted 1816
FLORIDA
Negotiations for the purchase of Florida
Purchase ratified 1819
Treaty of Ghent
War of 1812 ends with U.S. victory over the British at New Orleans & treaty of Ghent 1815

ADMINISTRATION OF JAMES MADISON—1809–1817.

Madison's Election.—Madison was Jefferson's personal selection, the Republican Congressional caucus obediently voting as Jefferson desired, although George Clinton of New York was rather more popular than Madison whose reticence and soberness had kept him from being better liked. Madison had been in public life for the greater part of his manhood and no man called to the Presidency has excelled him in thoroughness of preparation. His services to the country in the Philadelphia Convention entitled him to the highest gift the country had to offer. But he was unfortunate in being called upon to preside over the nation at a time when our foreign relations were in a most disturbed state.

Relations with England.—For a time in 1809 it seemed that the differences with Great Britain might be composed, for the British minister to the U. S. agreed that if the U. S. cut off France from trade the Orders in Council would be repealed. The Non-intercourse Act was repealed, and American ships prepared to take advantage of this promise of the restoration of trade, when word came from England that the British government had disavowed its minister's agreement. So the Non-intercourse Act was renewed, and the two nations drifted gradually into war.

Relations with France.—Napoleon's actions were even less excusable than England's, for he pretended to repeal the Berlin and the Milan Decrees, hoping thereby to seize foreign ships that would take him at his word. Madison tried to get England to withdraw her Orders but she refused on the ground that France was not acting in good faith, as it soon proved. As our Non-intercourse Act had been repealed so far as it applied to France, we were now put in the position of favoring one belligerent over another. That Madison had been trapped by the unscrupulous French Emperor there can be no doubt, and the effects were such that a war with England came to be recognized as certain to happen.

Indian Raids.—Added to the trouble over the impressment of our sailors and the searching of our ships there was another sore spot that touched the Americans almost as much as the other two. The Indians in the Northwest had been causing the white settlers much alarm, and there was good reason for holding the British responsible.

Events Leading to War.—In 1811 the American frigate President and the British ship Little Belt had an encounter in which the U. S. vessel worsted its opponent. Two young men, Henry Clay and John C. Calhoun, were the ardent leaders of the war-party. President Madison favored preparation for war but, with his usual caution, he backed away from the final step as long as possible. Clay and his followers, however, persuaded Congress that the time to attack England was while the latter was engaged in a life and death struggle with Napoleon, and Madison was borne down by the impetuosity of their attack.

War with England.—June 18, 1812, Congress passed a declaration of war against Great Britain, and once more the nation was called upon to face in battle its over-seas cousins. That the war was unnecessary is the opinion of historians today, especially in view of the fact that five

days after Congress had declared war Great Britain withdrew unconditionally her offensive Orders in Council. This action came too late, for the war-party was resolved upon war at all hazards.

The Unpreparedness of the U. S.—To say that the U. S. was not prepared for war would give little idea of the total unpreparedness of this country. The army of 6,000 was poorly drilled and worse armed. The navy consisted of a few ships which could by courtesy be called ships-of-war, but which were wholly inadequate to meet on equal terms a great navy such as England possessed. In addition, our finances were not in shape to stand the drain of war expenditure, and the settled opposition of the Americans to heavy taxes made the raising of the necessary funds an almost impossible task.

New England Opposes the War.—If all these discouragements were not enough, Federalist New England gave evidence of a disposition to withhold her support altogether. That section persisted in calling it "Mr. Madison's War," and gave little support to the cause. Worse than that, not a few New Englanders engaged in commerce with the enemies of their country, which made their refusal to enlist and contribute to the support of our army seem a slight offence.

Early Failures.—With these handicaps the government prosecuted a war that brought us little glory and no shame. Our first plan of campaign was to get possession of Canada, in which General Hull, an old Revolutionary officer, failed utterly. Not only that, Michigan was soon in possession of the enemy, and Ohio was always in danger.

Naval Successes.—This disaster was forgotten when the people learned that the U. S. ship Constitution had defeated the British frigate Guerriere, an occurrence almost unheard of in British sea annals. Following this there occurred the battle of Lake Erie when the U. S. squadron under the command of Commodore Perry wiped out an enemy fleet off the coast of Lake Erie near Sandusky, Ohio. The results of Perry's victory were immediately apparent for the British made no further effort to attack the Ohio country and soon gave up Detroit and most of Michigan. Another notable victory of the Americans was that of Captain McDonough's on Lake Champlain where, by defeating a British squadron, he prevented a contemplated invasion of New York.

England Indifferent Toward the War.—This was in the early part of 1814 when the outlook for American success was dark indeed. Napoleon had been defeated at Leipzig in the Battle of Nations, and Great Britain found herself free to deal with the Americans. The worst might have occurred if the British had been interested sufficiently; but when the hero of Waterloo, the Duke of Wellington, objected to taking command of the British forces operating against the Americans the British government declared its willingness to discuss terms of peace.

U. S. Invaded.—While preliminary negotiations were under way the Americans, after the battle of Lundy's Lane, withdrew from Canada and the British invaded Maryland and Virginia. Washington was captured and the Capitol and the White House were burned in reprisal for a similar act of the Americans in Canada. They made an attack on Baltimore but failed because of the protection afforded the city by Fort McHenry. "The Star-Spangled Banner" was the result of this thwarted attack, as its author, Francis Scott Key, took part in the defense of Baltimore, and was inspired to write the now-historic words of our national anthem when the British sailed away.

The Hartford Convention.—Encouraging incidents were few, however, and the Hartford Convention came as the climax. In December 1814 representatives from five New England states met at Hartford, Conn., to protest against the war. The doctrines set forth in the Virginia and the Kentucky Resolutions were affirmed as the true basis of our government, especially the right of the states to nullify laws of Congress. The right of the states to secede from the Union was hinted at, and certain amendments to the U. S. Constitution were suggested, dealing with the control of the states over some matters which had heretofore been left to Congress, especially war-powers and the admission of new states.

The Battle of New Orleans.—The last battle of the war, General Andrew Jackson's victory over General Packenham at New Orleans, was fought two weeks after the Treaty of Ghent had been signed so it had no effect upon peace negotiations.

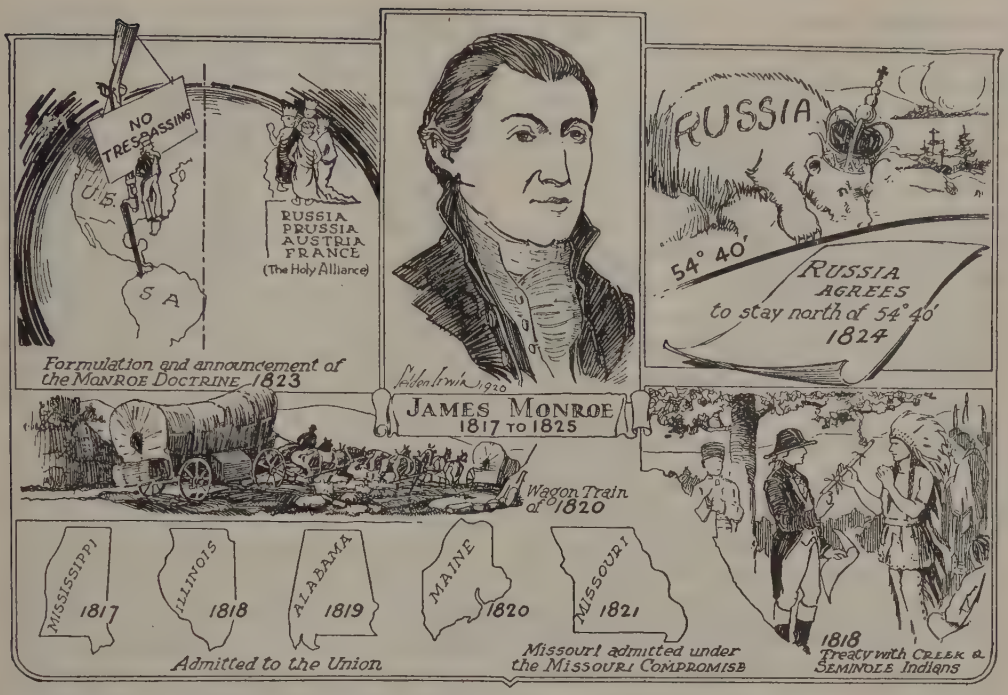
The Treaty of Ghent.—The American commissioners sent to arrange terms of peace with Great Britain had been instructed to secure at all costs a promise from the British that they would give up impressment of our seamen; but we were in no position to dictate terms, and had to be satisfied with a treaty that did not mention any of the important points of dispute. The Treaty of Ghent thus merely ended the war without settling anything.

The Cost of the War.—But if the U. S. gained nothing by the war she also lost little. The total number of men killed was less than 2,000, and the war-debt, large as it was, did not prove a serious burden in the prosperous years that were to come.

Effect of the War Upon Manufacturing.—During the war Americans had begun to engage in the manufacture of articles which England had been exporting. When the war ended English manufacturers sent over great quantities of these goods, and the American producer was threatened with extinction.

The Tariff of 1816.—This led to the demand for a higher tariff, and in 1816 the duties on iron, cotton, woolen goods, paper and sugar were increased. President Madison, laying aside his old beliefs for the time, approved the measure, which proved inadequate to protect the native manufacturer. So the tariff question becomes a live issue in our politics.

Madison Retires.—In 1817 Madison retires from the presidency, quite willing to hand over the responsibilities of the office to some one else. He had served the country to the best of his ability, and it is no detraction to say that his eight years as President added nothing to his reputation. The times required a man of action rather than a student of government.



ADMINISTRATION OF JAMES MONROE 1817–1825

The Era of Good Feeling.—The Hartford Convention had destroyed about all that was left of the Federalist party, so Monroe was elected with the votes of all but three of the states. For the first time in our history the country was free from strife of party, and when in 1817 Monroe made a tour which took him to all sections of the land, he even received a warm welcome in New England. The late war had helped to develop a stronger sense of nationality, and Monroe benefitted by it. The people turned away from European conflicts to domestic affairs, and undisturbed by foreign affairs they devoted their energies to the task of developing this huge empire.

The Missouri Compromise.—We hear little of the slave question in the first thirty years of our history. It disturbed the framers of the Constitution for a brief time, until they adopted the compromise whereby the slaves were to be counted as three-fifths in apportioning representation in the lower house of Congress. There was a clause in the Northwest Ordinance, adopted in 1787, prohibiting slavery in the territory north of the Ohio river. The Pennsylvania Quakers had petitioned Congress in early days to abolish slavery, and even the Southerners had been ready to admit that slavery was an evil institution. In 1793 Congress passed the first Fugitive Slave Act providing that escaped slaves must be returned to their masters, and the same year Eli Whitney invented the cotton-gin, which, unfortunately, by making profitable the raising of cotton perpetuated slavery for seventy years more. In 1808 Congress prohibited the bringing of slaves into the U. S. The first real slavery contest occurred in 1819 when a bill to admit Missouri as a state was being considered by the House of Representatives. Tallmadge of New York offered an amendment to the effect that there should be no further introduction of slaves into Missouri and that slaves born in the state after its admission should be free at the age of twenty-five. This provision passed the House but was rejected by the Senate, and the bill was carried over to the next session. In the meantime the entire country had been aroused to the importance of the issue. The question most discussed was whether or not Congress had the right to regulate a domestic concern such as slavery, the South taking the position that such interference did violence to the rights of states as reserved by the Constitution. The anti-slavery men argued that Congress could impose any conditions it saw fit on new states, and that the states north of the Ohio had come into the Union with a similar restriction. In the session of 1819–20 the bill to admit Missouri was tacked on to the bill to admit Maine, the latter having received the consent of Massachusetts to break away. The debate was bitter in the extreme, and led Jefferson, then in his old age, to predict that the Union would eventually be broken up over the issue of slavery. The question was finally settled by a compromise whereby Missouri was to be admitted as a slave state, but there were to be no more slave states west of the Mississippi and north of the parallel 36–30. Missouri promptly adopted a constitution which embodied the provisions of the strict slave codes of the southern states, including the prohibition of emancipation and the coming in of free negroes. Congress refused to admit

Missouri unless these provisions were taken out, but a second compromise was adopted binding the Missouri Legislature to the promise that these provisions were not to interfere with the rights of citizens under the Federal Constitution.

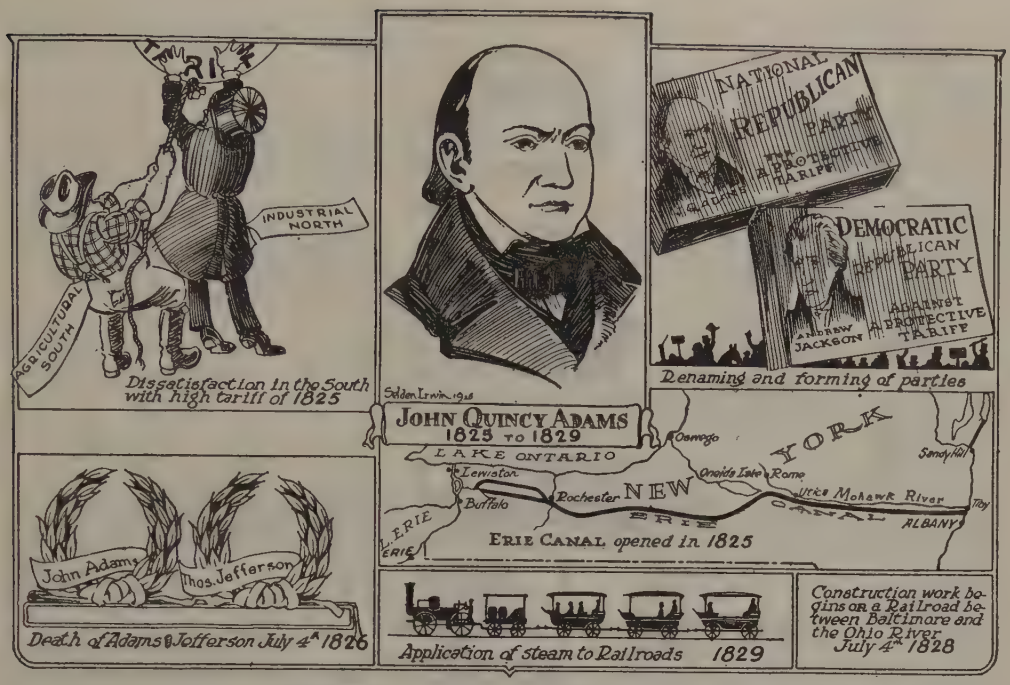
The U. S. Constitution Broadened.—Chief-Justice John Marshall, in many notable decisions, may be said to have breathed the breath of life into the Constitution. The Jeffersonians had asserted that the words of the Constitution must be taken literally, and Congress especially was held to doing only those things specifically enumerated in the Constitution. Thus their contention that Congress could not charter a National Bank. The Hamiltonians said that one power might be implied from another, and the Constitution was made to serve as an instrument of government. John Marshall in a series of decisions, especially Marbury vs Madison, Cohens vs Virginia, Gibbons vs Ogden and McCulloch vs Maryland, broadened the scope of the Constitution to include many powers not heretofore considered to be exercisable by the Federal government. In general terms, Marshall's doctrine was that Congress could exercise any powers which seemed necessary in order to carry out to the fullest extent the powers vested in Congress by the Constitution. The effects of John Marshall's opinions were far-reaching, and, although "strict constructionist" decisions are not uncommon, as a usual thing the U. S. Supreme Court is inclined to take the broader view.

The Purchase of Florida.—The acquisition of Louisiana only served to whet the appetite of the people of the U. S. Near at hand lay Florida, which had changed hands several times and now seemed destined by nature to be a part of the U. S. Jefferson had always claimed that West Florida had been included in the Louisiana territory, but Spain, which now possessed Florida denied the claim. In 1810 an uprising in West Florida caused Madison to instruct the authorities of New Orleans territory to take over that part of Florida lying between the Perdido and the Mississippi rivers. Spain was too weak to do more than make a protest, to which the U. S. paid no attention. East Florida was over-run by a motley crowd of Indians, escaped slaves, and desperate characters of all sorts who gave the states bordering on Florida much trouble. In 1817 General Jackson was sent to quell the Seminoles, which he easily did. His execution of two British subjects, Arbuthnot and Ambrister on the charge of spying might have brought on another war with England if that country had felt belligerently disposed. The U. S. was now in virtual possession of all Florida and, being unable to resist the U. S., Spain made a treaty of cession by which we were to obtain Florida for $5,000,000, most of which was to be turned over to Americans who had old claims against Spain. The boundary between the U. S. and Mexico was fixed as running from the mouth of the Sabine river to the forty-second parallel of latitude, thence to the Pacific. The U. S. gave up all claims south and west of that line, and Spain gave up her claims east and north.

The Monroe Doctrine.—During the Napoleonic wars some of the South American colonies of Spain had taken advantage of the difficulties of the mother-country to declare their independence. By 1822 Venezuela, Buenos Aires, Colombia, Peru, and Chile had been recognized by the U. S. as independent states, but they had to face the hostility of the combination of European powers known as the Holy Alliance. Great Britain, having succeeded in gaining the larger part of the trade of these states, refused to enter the Alliance; and when, in 1823 it became apparent that an effort would be made to re-conquer these newly-formed states, Canning, the British Foreign Secretary, suggested that the U. S. warn off all European powers from the American continent. To Monroe this seemed a wise suggestion, and acting upon it there was enunciated the famous Monroe Doctrine which stated in effect that the American continent was not open to conquest, and the U. S. would view any such attempt as an unfriendly act. By 1822, when the Doctrine was promulgated, the U. S. was strong enough to command the respect of the world, and the South American colonies were left to work out their problems as independent states.

Internal Improvements.—Should the Federal government build roads, construct canals etc., or should these matters be left to the states most concerned? This question was a live one for a number of years, and was not definitely settled until the Civil War placed the Republican party in power for a long term. In 1816 Congress passed the Calhoun bill providing for Federal construction of a system of roads and canals which could be used in time of war to transport men and goods from one part of the country to the other. Madison vetoed the bill on the grounds that Congress did not have the power to appropriate money for local purposes. He suggested that the Constitution be amended to give Congress that power. In 1822 Monroe vetoed a bill making a small appropriation for the repair of the National Road, but in 1825 he signed a bill extending this road from Wheeling to Zanesville, Ohio. The advocates of internal improvements, led by Henry Clay, argued that all sections of the country would benefit by the construction of such works, while the opponents were equally sure that public taxes would be spent in such a way that most sections would get nothing from them. The west strongly supported Clay's position, the south was opposed, and the east was rather indifferent and divided.

The Tariff.—Clay again took the lead, this time urging that the tariff be high enough to afford complete protection to the American manufacturer. He said that all sections would gain, even the agricultural, which would find a better market for their products. The argument of the other side was that only the persons interested in manufacturing would benefit; that the higher prices resulting from the cutting off of foreign competition would add to the cost of living without there being any corresponding advantage. On this issue the South was opposed to high tariff, the west was inclined to favor it, and the east, adverse at first, saw ultimately that they had the most of all to gain. In 1824 a bill was passed increasing the duties on wool, woolen goods, hemp, pig-iron, and iron manufactures.



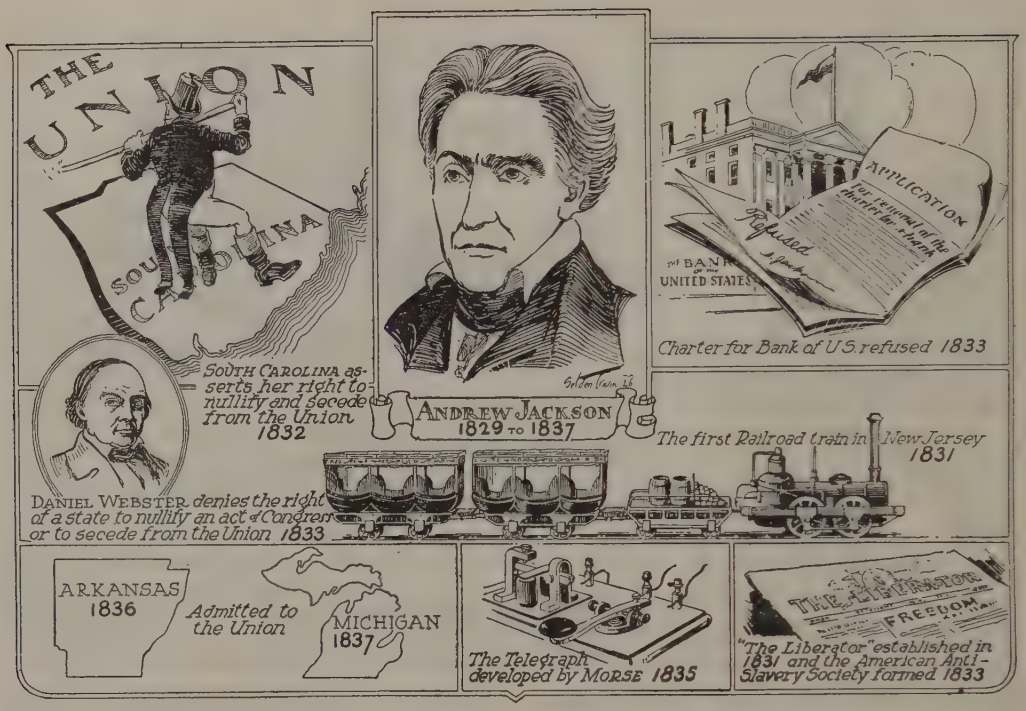
THE ADMINISTRATION OF JOHN QUINCY ADAMS—1825–29

The Election of Adams.—A number of candidates for the Presidency appeared in 1824, but none of them was prominent enough to secure a majority in the electoral college. Votes were cast for John Q. Adams, W. H. Crawford, Henry Clay, and Andrew Jackson. Thus the election was thrown into the House of Representatives, as provided for by the Constitution, each state getting one vote. Jackson had received the greatest number of electoral votes, but Clay, who did not like Jackson, used his influence to elect Adams, who got the vote of thirteen of the twenty-four states. This election embittered Jackson, who accused Adams and Clay of forming a corrupt bargain, through which Clay became Secretary of State.

The Rising Tide of Democracy.—During the first thirty years of our history the propertied class controlled the government by reason of the fact that in most states only those who had property could vote or hold office. As the states one by one abolished this qualification and adopted universal manhood suffrage our governments, state and national, underwent a change. The people of the west, where there were few persons of wealth, led in this democratic movement, and their first great leader was Andrew Jackson, who successfully capitalized his popularity. The Jeffersonians were less democratic in practice than in theory, and the now-defunct Federalists had been frankly aristocratic. So a new party, or several of them, had to arise to appeal to the new class of voters. Jackson's party, the Democratic, stood for equality, and opposed privilege in all forms. Thus it drew to it the people of the west, and the working people of the east, besides a share of the southerners. The National Republicans, Clay's party, was scarcely able to compete with the party that professed to stand so strongly for the rights of man.

Tariff Legislation.—The preceding tariff had failed to protect the American manufacturers as much as was expected, so a new demand was made for higher duties. At this time the east was divided on the tariff issue, so when the leaders were framing a bill they took this into consideration and bid for eastern support. The duties were made much higher than any one expected they would ever be put, but after some political maneuvering, the Tariff of Abominations was passed. The south was angered at this disregard of their interests, and it is true that this measure discriminated against that section, as most high tariffs have done.

Internal Improvements.—Adams was an ardent "nationalist," and favored everything that would tend to draw together the different sections of the country. So he advocated some construction of roads and canals wherever they might serve this purpose. Jackson and his supporters opposed this policy and made an issue of it. One might think that since the west was most interested in such improvements Adams would be popular there, but such was not the case, for he possessed to a marked degree the bluntness and tactlessness that had made his father unpopular. During his four years in office there was little constructive legislation accomplished, due partly to the fact that he was not able to form an "administration party," without which no President can be influential.


THE UNION
SOUTH CAROLINA
South Carolina asserts her right to nullify and secede from the Union 1832
ANDREW JACKSON 1829 TO 1837
APPLICATION
Refused
UNITED STATES
Charter for Bank of U.S. refused 1833
DANIEL WEBSTER denies the right of a state to nullify an act of Congress or to secede from the Union 1833
The first Railroad train in New Jersey 1831
ARKANSAS 1836
Admitted to the Union
MICHIGAN 1837
The Telegraph developed by MORSE 1835
THE LIBERATOR
FREEDOM
"The Liberator" established in 1831 and the American Anti-Slavery Society formed 1833

ADMINISTRATION OF ANDREW JACKSON
1829–37

The Election of Jackson.—Adams destroyed all hope he might have had of re-election by refusing to "play politics." He would not contribute money to the campaign fund or make speeches. As a statesman Adams takes high rank, but as a politician he was a failure, so Jackson, a master politician, won easily, receiving 178 electoral votes to 82 for Adams. Jackson got the votes of all states west of the Alleghanies, and was the undoubted choice of the people of the U. S.

A New Regime.—Before Jackson's day removals from public office for political reasons had been few, and the practice was frowned upon. Jackson's belief that one American was as good as another to hold office established the principle of "rotation in office," by which it became customary for each in-coming President to remove all office-holders who were of the opposite party. A most vicious system was thus fastened upon the country, and we are not altogether rid of it today. At the time of Jackson's accession thousands of office-seekers poured into Washington and received a welcome from their idol who liked the importance of his position. Removals began at once, and caused great hardship among the Federal employees who had considered themselves fixtures so long as their work was satisfactory.

South Carolina Nullification.—Was there any way by which the states could prevent the enforcement of an act of Congress to which they objected? This old question had been answered affirmatively by Jefferson and Madison in the Virginia and the Kentucky Resolutions and by the Hartford Convention in 1814. It bobbed up again in 1828 when South Carolina resisted the Tariff Law of that year. There can be little doubt that the south was injured by high tariff, but experience has shown that few laws affect all sections alike. Calhoun started the trouble by writing a broad-side entitled the "South Carolina Exposition," which was little more than the Virginia and the Kentucky Resolutions re-worded. In 1830 a notable debate took place in the U. S. Senate between Webster of Massachusetts and Hayne of South Carolina. When Hayne asserted the right of nullification Webster replied that if this was the case the Union was a "rope of sand." He said that the U. S. Supreme Court was the umpire in case a law of Congress was questioned. Jackson disappointed the South Carolinians by declaring against nullification, and when in 1832 South Carolina formally nullified the Tariff Law of that year Jackson issued a proclamation which stated that the laws of the U. S. would be enforced even though it took 40,000 soldiers to do it. Matters never went this far, however, for in 1833 a new Tariff Act was passed providing for a gradual reduction of the rates until 1842 when there should be no duty over 20 percent. The danger of disunion was over for the present, but many times in later history do we find states refusing to obey laws of Congress, treaties of the U. S., and decisions of the Supreme Court.

The Second U. S. Bank.—This bank had been chartered in 1816 for a term of twenty years; it took care of government deposits; had established branches in various parts of the country; and was controlled by a Board of Directors chosen

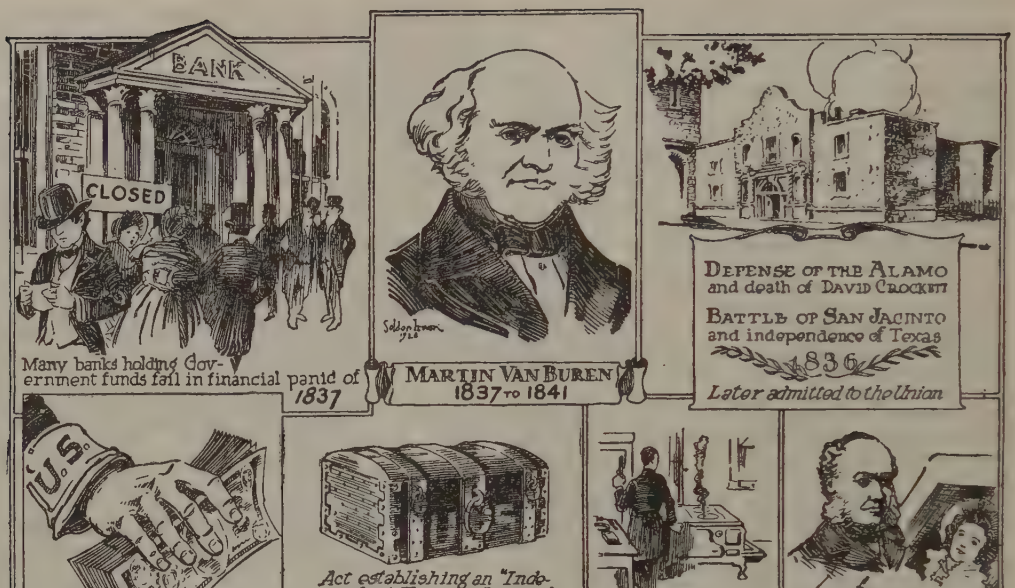
by the private stock-holders and the U. S. government. After a poor start it proceeded on a very successful career and contributed a great deal toward financial stability. Its branches came into direct competition with the state banks which steadily lost many of their best customers. This explains the hostility to the U. S. Bank of the people in the less settled sections of the country. Jackson, a "hard-money" man, understood very vaguely business and banking principles, and professed to think that the U. S. Bank was becoming a money monopoly. It is true that the Bank was using its influence against Jackson and had not been discreet in its opposition. So when in 1832, four years before the expiration of its charter, the Bank applied for a renewal of its charter a controversy of the bitterest kind arose. Jackson vetoed the bill that Congress passed, saying that he believed the Congress had no right to charter an institution which was in effect a monopoly. This veto became the chief issue of the presidential campaign of 1832, and Henry Clay, the nominee of the National Republicans, made the most of it. But the great American democracy was behind Jackson and, without understanding the economic questions involved, trusted Jackson implicitly. He received 219 electoral votes to Clay's 49, and, considering this a mandate from the people, continued his attack on the Bank. In 1833 he directed Duane, the Secretary of the Treasury, to withdraw the deposits of the U. S. government in the Bank and its branches and make no more deposits. Duane refusing to do this, Jackson appointed Roger B. Taney in his place, and Taney gave the necessary order. The effects were immediate, as the Bank upon surrendering its government deposits had to curtail its own loans. Business all over the country slowed up for want of funds and a money stringency of serious proportions resulted. Not content with this, Jackson openly questioned at various times the soundness of the Bank, and would not take the report of committees appointed by Congress to investigate as worthy of acceptance. The Senate, which was controlled by Jackson's enemies, Clay, Calhoun, and Webster, passed a resolution of censure against Jackson for his usurpation of powers not conferred upon him by the Constitution. Thomas H. Benton of Missouri led the fight against this resolution, and in 1837 succeeded in getting it taken off the Senate Journal.

Indian Affairs.—In 1802 Georgia ceded its western lands to the U. S. with the understanding that Indian land titles should be extinguished. By 1825 the Creeks and the Cherokees still retained nearly ten million of acres of good land. The latter had attained a rather high stage of civilization and the U. S. recognized this by making a treaty with them recognizing their right to hold land. In 1829 gold was discovered in the Cherokee country and white persons poured in. Jackson knew that the Indians could not long hold out against the whites no matter how just their case was, so he advised them to surrender their lands in Georgia and take up lands west of the Mississippi. The Cherokees objected to emigrating so Georgia, acting under a law of Congress, extended her jurisdiction over the Indian lands. Georgia passed an act prohibiting whites from residing within the Cherokee territory without a permit from Georgia. A missionary named Worcester disregarded this, was arrested and sentenced to four years imprisonment. The case was taken to the U. S. Supreme Court where John Marshall gave an opinion that the Georgia statute was unconstitutional, and that Worcester was therefore free. Georgia disregarded this decision and kept Worcester in prison until he was pardoned by the Governor of the state. Jackson was not sorry to have the opportunity of spiking Marshall's guns and refused to carry out the decision, saying, so the story goes, "John Marshall has made his decision; now let him enforce it." In 1835 the Cherokees yielded to the inevitable and gave up their lands east of the Mississippi, receiving $5,000,000 and new lands in the Indian territory. Neither the national nor the state governments had behaved toward the Indians in such a way as to be a matter of pride for us today.

Public Lands.—One of the great questions of the hour was what to do with the public lands. The old policy of selling them for a nominal sum and taking in exchange the depreciated currency of the states had broken down. Its greatest effect had been that of causing land speculation, and this had had a discouraging effect upon the serious buyer of lands. Jackson was in favor of reducing the price so that the U. S. would not make a profit on the sale of these lands, but he believed that the money paid for the land should be good money. In 1835 an order went forth to the effect that hereafter only gold and silver would be received in payment for public lands. The western banks were seriously affected by this order as they had been taking in all kinds of money, and their debtors had little specie. But for a time speculation was stopped.

Party Conventions.—The electoral college devised by the framers of the Constitution had ceased to function in anything but name after Washington's retirement, and nominations for the presidency had been made in various ways, usually by caucus of the members of the party in congress. In 1831 the Anti-Masons called a convention to nominate candidates for President and Vice President, and within a short time this became the established custom.

Jackson as President.—The place of Andrew Jackson in the history of our country is still a matter of dispute among historians. Some credit him with great virtues and few faults, while others can not overlook his temperamental deficiencies. The latter are inclined to view him as a successful politician rather than a statesman. Some even rank him as a demagogue, but the general opinion is that he was honest in his convictions. He was essentially a man of the frontier, with all the merits and the weaknesses of the west; its optimism and courage, and its distrust of wealth and indifference to the cultural and esthetic side of life. Jackson was an American product and embodied the good and the evil side of our people.

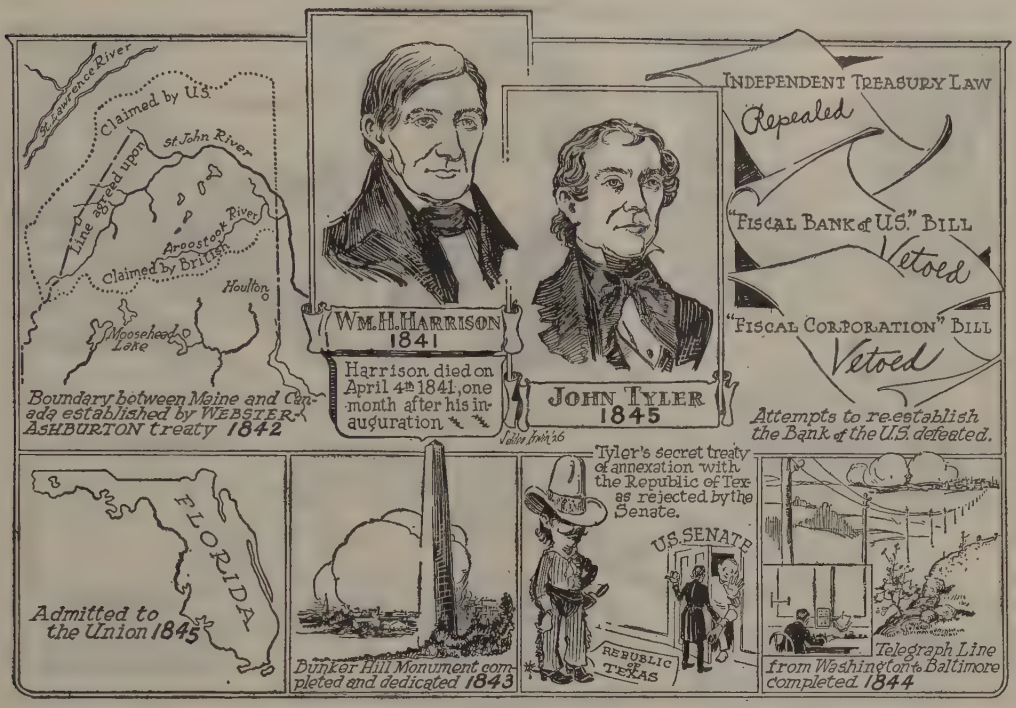

BANK
CLOSED
Many banks holding Government funds fail in financial panic of 1837
MARTIN VAN BUREN
1837 TO 1841
DEFENSE OF THE ALAMO
and death of DAVID CROCKETT
BATTLE OF SAN JACINTO
and independence of Texas
1836
Later admitted to the Union
U.S.
Congress authorizes an issue of $10,000,000 in treasury notes to relieve the situation 1837
Act establishing an "Independent Treasury" passed and Receivers General appointed to collect and safeguard U.S. revenues 1840
GOODYEAR discovers & patents method for vulcanizing rubber 1844
First photograph from life made by J. W. DRAPER 1839

ADMINISTRATION OF MARTIN VAN BUREN
1837–41

The Election of Van Buren.—Jackson was getting old, and so declined to run for a third term, but he virtually named his successor, Martin Van Buren, a New York politician whose mind went along with Jackson's in everything. His opponent, William Henry Harrison, the Whig candidate, did not make a good candidate, and Van Buren won easily.

The Panic of 1837.—Van Buren had to suffer for Jackson's shortcomings. The attacks on the U. S. Bank and the refusal to re-charter it had been the beginning of an economic disturbance that reached its worst consequences shortly after Van Buren's inauguration. Hundreds of state banks had been established and all of them were issuing currency the volume of which increased immensely after the U. S. Bank went out of business. It is estimated that during the last year of Jackson's administration $50,000,000 of "wild-cat" currency was issued, little of which was worth anything. This inflation caused wild speculation, especially in land which the government was now selling for a dollar and a quarter an acre. The sale of this land enabled the Federal government to pay off its national debt and still have left $35,000,000. Congress provided for the distribution of this surplus among the states as a nominal loan, and $28,000,000 was paid over. This was another source of trouble for it led to the issuance of more paper money, and speculation increased in proportion. Jackson's Specie Circular brought about a sudden curtailment of loans and money of all kinds became scarce. The banks, being unable to redeem their currency in specie, shut up their doors, and many merchants did the same. To meet the crisis Van Buren called a special session of Congress but he refused to withdraw the Specie Circular, believing that the country would get along better without paper money. He proposed an Independent Treasury to handle government funds, but the banks were influential enough to keep such an act from being passed until 1840. The effects of this panic wore away gradually, but hard times recurred periodically. That they could have been avoided by a wise Federal banking system is probable.

The Slavery Question.—Following the discussion over the admission of Missouri there arose a group of anti-slavery men known as the Abolitionists. The man now commonly recognized as the soul of the movement was William Lloyd Garrison, and he had to face not only the bitterest hostility of the south, but the disapproval of most of the people of the north who believed that while slavery was an evil it could only be dealt with by state laws. John Quincy Adams, who was now in the House of Representatives, gave his valuable aid to the anti-slavery cause. Several bloody slave insurrections in the south had frightened that section into passing severe laws against free negroes. Their grievance against the Federal government was that the U. S. mails were used by the Abolitionists to carry anti-slavery literature to the south where it sometimes fell into the hands of the slaves. A Federal order stopped this, but it gave the anti-slavery men a chance to say that one of the rights sacred to the Americans had been destroyed. In 1836 the House of Representatives passed the "Gag Law," by which anti-slavery petitions could not be presented in the House. Adams fought hard against this, and in 1840 the Law was repealed.


St. Lawrence River
Claimed by U.S.
St. John River
Line agreed upon
Aroostook River
Claimed by Britain
Houlton
Moosehead Lake
Boundary between Maine and Canada established by WEBSTER-ASHBURTON treaty 1842
WM. H. HARRISON 1841
Harrison died on April 4th 1841, one month after his inauguration
JOHN TYLER 1845
INDEPENDENT TREASURY LAW Repealed
"FISCAL BANK of U.S." BILL Vetoed
"FISCAL CORPORATION" BILL Vetoed
Attempts to re-establish the Bank of the U.S. defeated.
FLORIDA
Admitted to the Union 1845
Bunker Hill Monument completed and dedicated 1843
Tyler's secret treaty of annexation with the Republic of Texas rejected by the Senate.
U.S. SENATE
REPUBLIC OF TEXAS
Telegraph Line from Washington to Baltimore completed 1844

ADMINISTRATION OF WILLIAM HENRY HARRISON AND JOHN TYLER—1841–45

The Election of Harrison.—Van Buren was nominated unanimously by the Democrats for a second term, and the Whigs, passing by Clay, nominated William Henry Harrison of Ohio. For Vice President they chose John Tyler of Virginia whose admiration for Clay was responsible for his being in the Whig party. The campaign of 1840 was one of the noisiest campaigns in our history and the Whigs made the most of the fact that Harrison was a war hero and a man of the people. He was elected by 234 electoral votes to 56 for Van Buren who even lost his own state, New York.

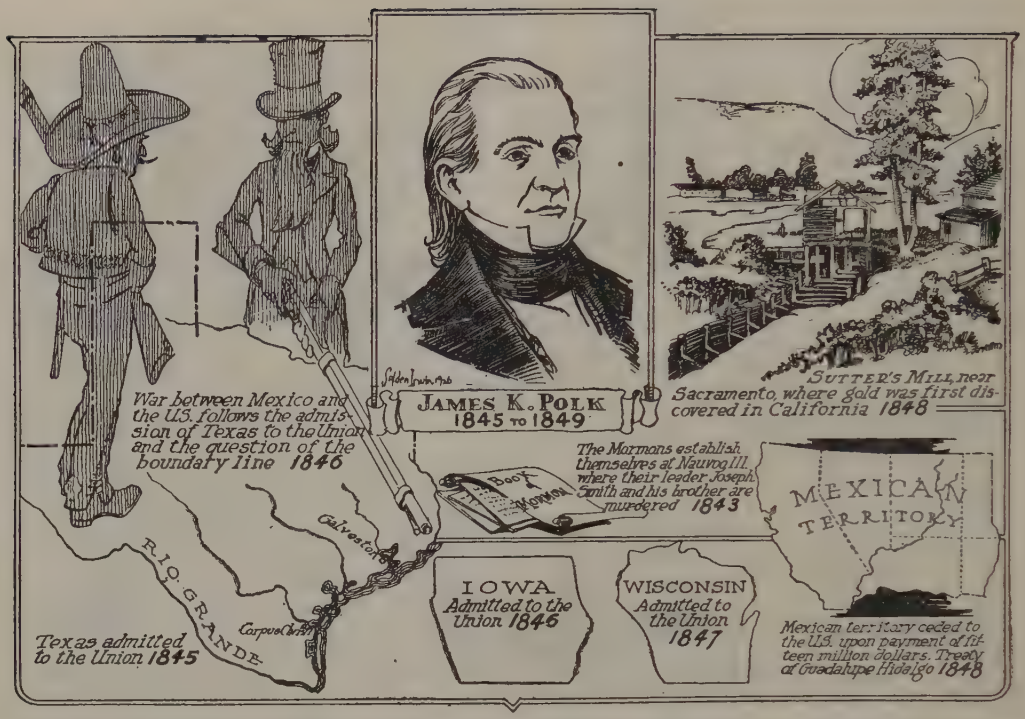
The Death of Harrison.—The President was nearly seventy years of age when he was elected, and not in the best of health, but undoubtedly his death was hastened by trying to please the numerous office-seekers who poured into Washington. He was the first President to die in office.

Tyler's Difficulties.—Clay, rather than Tyler, was the Whig leader, and trouble began when Clay attempted to dictate the policy that the President should follow, particularly with regard to a National Bank which Clay wanted to have chartered and which Tyler opposed as vigorously as did Jackson. A Bank bill was passed, providing the opportunity for Tyler to assert himself, which he did by vetoing it, stating that the bill was unwise and unconstitutional. Another bill was drawn up which was supposed to meet the objections of the President, but this was vetoed also. Tyler's break with his party was now complete and every member of the Cabinet except Webster resigned. As his former party, the Democratic, refused to have him back he was isolated for the remainder of the term. Webster resigned in 1843 when he found that Tyler favored the annexation of Texas.

The Tariff of 1842.—The Compromise Tariff of 1833 ran out in 1842 and the Whigs replaced it with a new measure which restored most of the rates in force in 1832. With this act the Tariff ceases to be a live subject of political discussion for many years, partly because a more exciting issue pushed it into the background.

The Webster–Ashburton Treaty.—The northeast boundary between the U. S. and Canada had never been definitely fixed and several times threatened to cause trouble between the two countries. A local disturbance, known as the "Aroostook War" brought matters to a head, and in 1842 a treaty was signed giving the U. S. 7015 square miles of the disputed territory.

The Annexation of Texas.—Texas won her independence from Mexico in 1837 and, after trying to join the U. S., set up an independent republic. France and England tried to extend their influence in Texas, and England was believed to be trying to get special trade concessions. The southerners became alarmed at the possibility of losing Texas while the people of the north were inclined to view the whole thing as a "bluff" of Texas to force annexation. Tyler reflected the opinions of his fellow slaveholders by doing all in his power to admit Texas. A treaty was made whereby Texas was to be admitted, but the U. S. Senate defeated it, and the matter was left over until the next administration. The annexation of Texas and the dispute with England over Oregon became the issues of the campaign of 1844.


JAMES K. POLK
1845 TO 1849
War between Mexico and the U.S. follows the admission of Texas to the Union and the question of the boundary line 1846
Texas admitted to the Union 1845
RIO GRANDE
Galveston
Corpus Christi
The Mormons establish themselves at Nauvoo Ill. where their leader Joseph Smith and his brother are murdered 1843
Book of Mormon
SUTTER'S MILL near Sacramento, where gold was first discovered in California 1848
MEXICAN TERRITORY
IOWA
Admitted to the Union 1846
WISCONSIN
Admitted to the Union 1847
Mexican territory ceded to the U.S. upon payment of fifteen million dollars. Treaty of Guadalupe Hidalgo 1848

ADMINISTRATION OF JAMES K. POLK
1845–49

The Election of Polk.—Texas was the big issue and both parties had to consider this in making their nominations. Van Buren spoiled his chances for the nomination by declaring against the annexation of Texas, thereby alienating the south. Clay had straddled the issue, but his strength in the north was enough to secure him the nomination. The campaign was bitterly fought but Polk won by 170 electoral votes to Clay's 105.

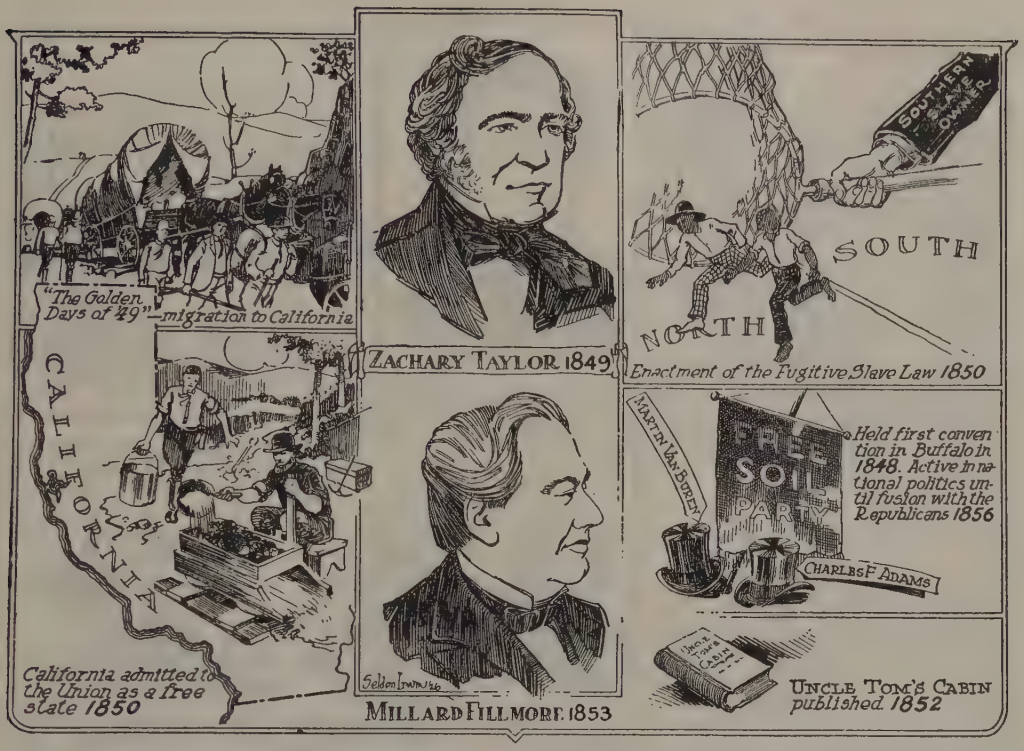
Texas Annexed.—Just before Tyler went out of office Congress passed a joint resolution providing for the admittance of Texas into the Union when her constitution should be accepted by Congress. Tyler at once entered into negotiations with the Texan government, and Polk, on becoming President, hastily brought the affair to a conclusion. Texas was admitted in December, 1845. Mexico at once broke off diplomatic relations with the U. S.

The Tariff of 1846.—The Democrats were displeased with the existing tariff rates and lost no time in passing a new bill which reduced the duties to a revenue basis and which remained on the statute books until 1857. The manufacturing interests were now strongly enough established to get along without high protection, and did not suffer because of the reduction.

The Oregon Question Settled.—In the campaign of 1844 the Democrats had made their slogan, "fifty-four forty or fight," but now that they were in power they adopted a more moderate attitude toward England. Polk's offer to settle on the 49th parallel as the boundary was finally accepted.

The Mexican War.—Polk was very desirous of acquiring California and New Mexico, and to that end he sent Slidell to Mexico to make an offer of $25,000,000 for California and $5,000,000 for New Mexico. We were in Mexico's bad graces at that time and the offer was never considered. The boundary between Texas and Mexico had never been settled, and Polk used this disagreement as a means of getting into war. He ordered General Taylor to cross over into the disputed territory; the Mexicans attacked an American force, and Congress declared war May 12, 1846. Taylor soon defeated the Mexicans in the hard-fought battle of Buena Vista, and early in 1847 General Scott, starting from Vera Cruz, marched through Mexico and captured Mexico City, ending the war. By the treaty of Guadaloupe Hidalgo it was agreed that the boundary should follow the Rio Grande to the New Mexican line, thence west to the first branch of the Gila river, thence with the river to the Colorado, and from that point with the boundary between upper and lower California to the Pacific. We agreed to pay Mexico $15,000,000 for New Mexico and California.

The Wilmot Proviso.—The addition of all this new territory only served to make the slavery question more acute. In 1846 and 1847 Congress was debating a resolution in the form of a proviso that none of the territory which was to be added to the U. S. was to be open to slavery. Although the proviso was ultimately defeated it set the country in an uproar and divided the U. S. hopelessly into sections.


"The Golden Days of '49"—migration to California
ZACHARY TAYLOR 1849
SOUTHERN SLAVE OWNER
SOUTH
NORTH
Enactment of the Fugitive Slave Law 1850
CALIFORNIA
California admitted to the Union as a free state 1850
MARTIN VAN BUREN
FREE SOIL PARTY
CHARLES F. ADAMS
Held first convention in Buffalo in 1848. Active in national politics until fusion with the Republicans 1856
MILLARD FILLMORE 1853
UNCLE TOM'S CABIN published 1852

THE ADMINISTRATION OF ZACHARY TAYLOR AND MILLARD FILLMORE
1849–53

The Election of Taylor.—The Whigs once more nominated a war-hero, General Taylor. A factional fight in New York prevented Polk from getting a re-nomination, and the Democratic convention named Lewis Cass of Michigan, a former Cabinet officer under Jackson. The anti-slavery people were not satisfied with the position taken by either of the two major parties on the slavery question, and formed the Free Soil party, nominating Van Buren. New York, by going for Taylor, decided the election. Taylor received 163 electoral votes and Cass 127.

The Compromise of 1850.—When Congress met in December, 1849, affairs were critical. California and New Mexico had not been given any status, and California had formed an irregular state government. Three courses were open: to admit them as states (or territories) without saying anything about slavery; to prohibit slavery; or to compromise. Under the doctrine of popular sovereignty slavery was a domestic question, to be settled by the people of the states or territories, and we hear much of this in the next ten years. It remained for Henry Clay to round out his long political career by proposing the terms of the compromise ultimately agreed to: California was to come in as a free state; New Mexico and Utah were to be created territories without restrictions as to slavery; the prohibition of the slave-trade in the District of Columbia; a more effective fugitive-slave law. The debate over these proposals takes rank as probably the greatest ever delivered in our Congress. Calhoun, now in his last days, spoke against the compromise. He foresaw the time when the slave states would be so outnumbered that their rights would be taken from them. Each successive decade had witnessed a decline in the influence of the south. The Northwest Ordinance, the Missouri Compromise, the protective tariff, and the general policy of Federal consolidation had all worked hardships on the south. Clay's proposals would increase the difficulties of the south. Calhoun realized better than anyone else that such a compromise could only be of temporary duration. Webster took a moderate attitude, condemning the Abolitionists for their radical views, and supporting Clay's proposals. After a three months debate the Compromise of 1850 was passed.

The Nashville Convention.—While the above matters were under consideration by Congress nine southern states met in convention at Nashville, Tennessee, for the purpose of protecting the interests of their section. Some of the delegates were ready for immediate secession, especially those from South Carolina and Mississippi, but calmer counsel prevailed, and the Convention adjourned without taking any decisive action. However it paved the way for southern co-operation later.

The Death of President Taylor.—July 9, 1850, Taylor died, worn out by the duties of his office. He had exhibited an unusual independence in his attitude toward public questions, and, although a slave-holder himself, frowned upon the southern "fire-eaters."

KANSAS AND NEBRASKA DOMAIN
36°30'
SLAVERY FORBIDDEN INSIDE by MISSOURI COMPROMISE
KANSAS NEBRASKA BILL
MO.
COMPROMISE
Kansas-Nebraska Bill, fought by Free-Soilers as extending slavery, passed 1854
FRANKLIN PIERCE
1853 TO 1857
Newly formed REPUBLICAN party holds first NATIONAL CONVENTION at Philadelphia, nominating John C. Frémont & W. L. Dayton 1856 after marked success in state politics.
CAL.
NEW MEXICO
GILA RIVER
GADSDEN PURCHASE
AREA 45,535 SQ. M.
Purchased from Mexico for $10,000,000 1853
LOWER CALIFORNIA
MEXICO
First company formed to produce and market Petroleum products 1854
CYRUS FIELD lays the first Atlantic Cable 1857

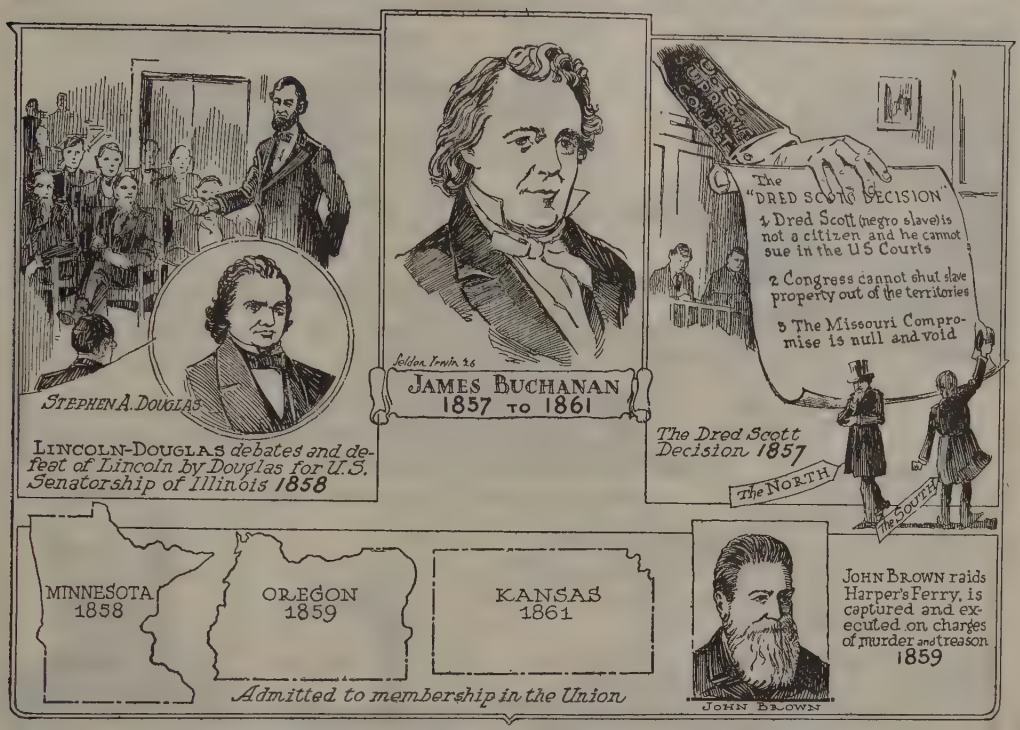
THE ADMINISTRATION OF FRANKLIN PIERCE—1853–57

The Election of Pierce.—With the exception of the Abolitionists and the southern extremists the people of the U. S. hoped that the Compromise of 1850 had finally settled the slavery controversy, and both the Whig and the Democratic conventions adopted resolutions to that effect. The Democrats finally gave the nomination to a "dark horse," Franklin Pierce of New Hampshire, after forty-nine ballots. The Whigs continued their policy of nominating military men by selecting General Winfield Scott. The Free Soil party also put a candidate in the field. Pierce received 254 electoral votes and Scott 42, thus proving beyond doubt that the great mass of Americans endorsed the Compromise.

Trouble over Fugitive Slaves.—"Slave-stealing" had been increasing steadily, especially after the Abolitionists had put into operation the "Underground railroad," which systematically took care of escaped slaves until they reached Canada. Not only that, but when fugitive slaves were captured in the north they were often rescued by mobs. States in the north began passing "personal liberty laws" by which the people were forbidden to aid in the return of fugitive slaves. As the Federal law on the subject directed the return of such persons these states were put in the position of nullifying a law of Congress.

The Kansas-Nebraska Controversy.—Nebraska was the unorganized territory west of Iowa and Missouri. In January, 1854, S. A. Douglas of Illinois, reported to the Senate a bill providing for two territories. When the bill passed it had been so amended that one of these territories was to be free, the other slave, and the Missouri Compromise was to be repealed. Douglas defended the measure on the ground that the people of a territory had the right to decide their own problems, and that climate determined slavery. The whole country was aroused again, and a new host of leaders arose to take the place of Clay, Webster, and Calhoun, now all dead. William H. Seward, S. P. Chase, and Benjamin Wade opposed slavery extension; Jefferson Davis and Toombs represented the interests of the slave-holders; Douglas and James Buchanan took the middle ground.

Bloody Kansas.—After Kansas became an organized territory settlers poured in, at first mainly from slave states, and the legislature drew up a slave code. An influx of New Englanders made it possible for them to set up a separate government, and the U. S. had to choose between them. Congress wrangled over the matter while anarchy prevailed in Kansas. Two hundred persons were killed in this guerilla warfare, in which John Brown took a leading part. Pierce, who was very much under the domination of the southern leaders, especially Jefferson Davis, was inclined to favor the slave party in Kansas, and denounced the free-state government as rebellious. When Pierce retired in 1857 Kansas was still disputed territory. The effect of the Kansas controversy was to bring home to the people of the country the near possibility of civil war.


STEPHEN A. DOUGLAS
LINCOLN-DOUGLAS debates and defeat of Lincoln by Douglas for U.S. Senatorship of Illinois 1858
JAMES BUCHANAN
1857 TO 1861
U.S. SUPREME COURT
The "DRED SCOTT DECISION"
1 Dred Scott (negro slave) is not a citizen and he cannot sue in the U.S. Courts
2 Congress cannot shut slave property out of the territories
3 The Missouri Compromise is null and void
The Dred Scott Decision 1857
THE NORTH
THE SOUTH
MINNESOTA 1858
OREGON 1859
KANSAS 1861
Admitted to membership in the Union
JOHN BROWN
JOHN BROWN raids Harper's Ferry, is captured and executed on charges of murder and treason 1859

THE ADMINISTRATION OF JAMES BUCHANAN—1857–61

The Election of Buchanan.—The Whigs were hopelessly disrupted. The northern and southern wings could never be brought together again. The Democratic party in the south gained by the accession of many Whigs, while northern Democrats were still inclined toward conservatism. A new party, the Know-Nothing, drew its strength mainly from the Whigs. It was principally an anti-foreign party, and may be said to be the fore-runner of the modern Ku Klux Klan. In 1854 the Republican party was formed, carrying over the principles of the Free Soil party. The candidates in 1856 were, John C. Fremont, Republican; James Buchanan, Democratic; Millard Fillmore, Know-Nothing. Buchanan got 174 electoral votes, Fremont 114, Fillmore 8.

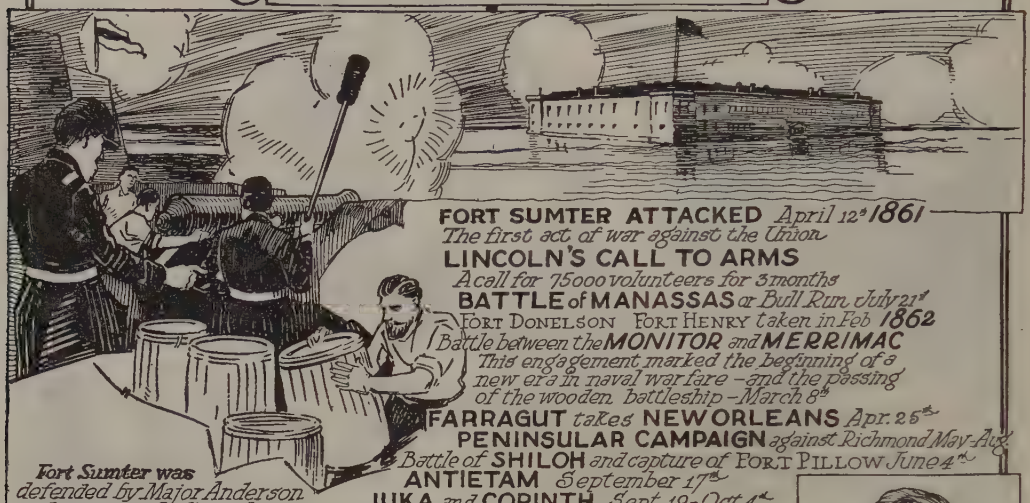
The Dred Scott Decision.—Dred Scott was a slave who had been taken by his master into free territory and brought back to slave territory. He sued for freedom, claiming that his residence in a free state had made him free. The case reached the U. S. Supreme Court where two points were considered: was Scott a citizen of Missouri, and did the Missouri Compromise protect him? The decision of the majority was read by Chief-Justice Taney who said that Scott, not being recognized as a citizen of Missouri, was not a U. S. Citizen. Furthermore, the Missouri Compromise was null and void. A dissenting opinion delivered by Justice Curtis upheld Scott's contentions.

The Lincoln-Douglas Debates.—Lincoln first became widely known through his debates with Douglas over current issues centering around slavery. Both were candidates for the U. S. Senate at the time. Lincoln said that "a house divided against itself can not stand. I believe this government can not endure permanently half slave and half free." Douglas denounced this as Abolition doctrine. Lincoln destroyed Douglas's chances for the Presidency by forcing the latter to say that if the people of the states did not want slavery they would keep it out in spite of any Supreme Court decision. This alienated the southern Democrats, although it served to elect Douglas to the U. S. Senate.

The John Brown Raid.—After a wild career in the west John Brown went east with a crazy scheme for a slave insurrection. Receiving some aid from Abolitionists he fixed on Harper's Ferry, Virginia, as the base of operations. Oct. 16, 1859 he seized the U. S. arsenal at Harper's Ferry, only to be captured on the 18th by U. S. troops. He was hanged for starting a rebellion, and the incident might soon have been forgotten if the country had not been on the verge of war.

The Gulf States Secede.—The nomination of Lincoln, and the split of the Democratic party, making Lincoln's election almost sure, convinced the radical southerners that slavery was doomed so long as the Union in its present form existed. Seeing no hope for their cause South Carolina passed an ordinance of secession Dec. 20, 1860, and by Feb. 4, 1861 Georgia, Alabama, Mississippi, Louisiana and Florida had followed suit. They set up the Confederate States of America electing Jefferson Davis President, and Alexander H. Stephens Vice President. Buchanan, about to retire, did nothing to stop the progress of secession, as indeed there was little anyone could do.

The CIVIL WAR

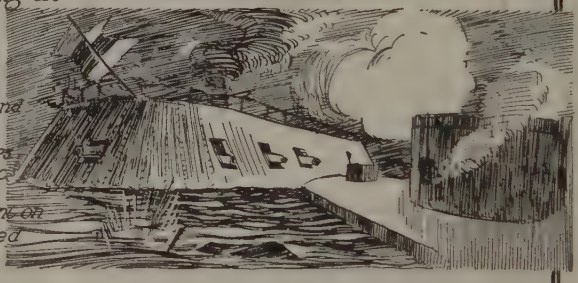


FORT SUMTER ATTACKED *April 12th* **1861**
The first act of war against the Union
LINCOLN'S CALL TO ARMS
A call for 75000 volunteers for 3 months
BATTLE of MANASSAS *or Bull Run July 21st*
FORT DONELSON FORT HENRY *taken in Feb* **1862**
Battle between the **MONITOR** *and* **MERRIMAC**
This engagement marked the beginning of a new era in naval warfare – and the passing of the wooden battleship – March 8th
FARRAGUT *takes* **NEW ORLEANS** *Apr. 25th*
PENINSULAR CAMPAIGN *against Richmond May-Aug*
Battle of **SHILOH** *and capture of* FORT PILLOW *June 4th*
ANTIETAM *September 17th*
IUKA *and* **CORINTH** *Sept 19-Oct 4th*
BRAGG'S RAID *Oct. 8th*
FREDERICKSBURG *December*
MURFREESBORO *Dec. 31st*
BATTLE of GETTYSBURG *July 1-3* **1863**
VICKSBURG SURRENDERS *July 4th*
CHICKAMAUGA
AND
CHATTANOOGA *Sept. 19-20th*
LOOKOUT MOUNTAIN
"The Battle above the Clouds" – Nov 24th
GEN. U. S. GRANT *is put in command of the Army of the Potomac in the Spring of* **1864** *and plans an attack on Richmond.*
GEN. SHERMAN *marches against Johnson with an army of 98000 men proceeding toward Atlanta which he captures and destroys, continuing on "The march to the sea" – November*
THE WILDERNESS CAMPAIGN *May 4th*
EARLY'S RAID *May and June*
SHERIDAN'S RIDE *Oct. 19th*
GEN SHERMAN *takes* FORT McALISTER *and* SAVANNAH *Dec. 13th*
In Feby 1865 Alexander H. Stevens, Vice Pres of the Confederacy met LINCOLN *and Sec Seward to discuss terms of peace. The terms were not accepted and the war went on*
GEN LEE *retreats from Richmond pursued by* GEN. GRANT.
LEE SURRENDERS
at Appomattox Court House on April 9th **1865**

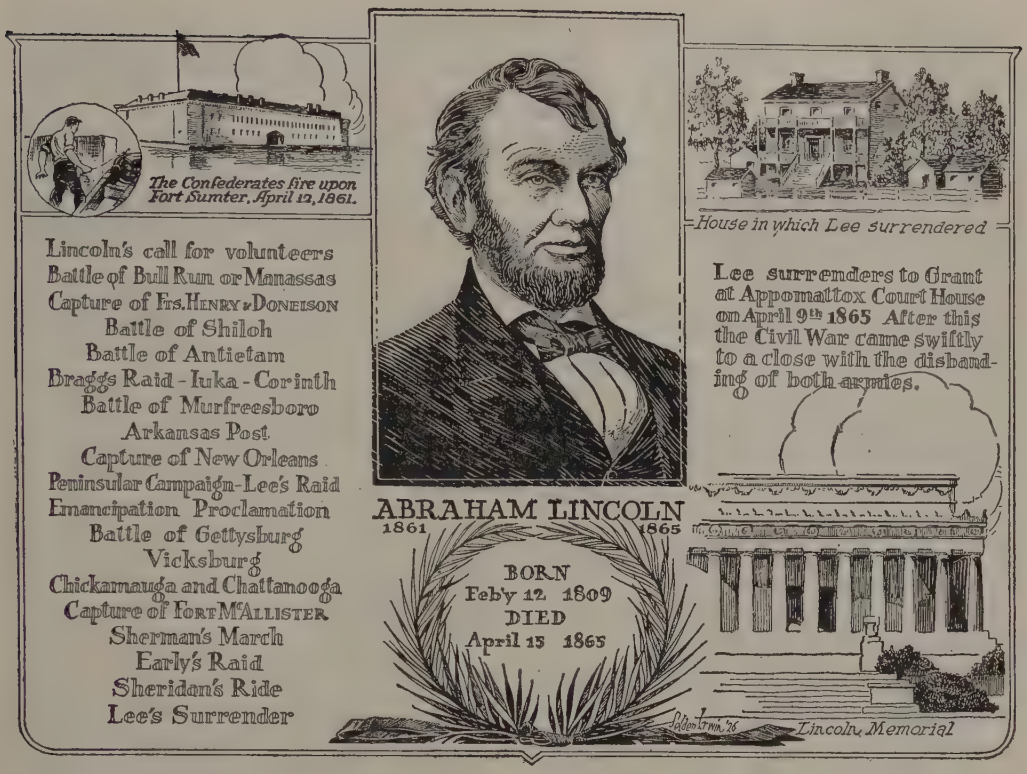
Fort Sumter was defended by Major Anderson and evacuated after a thirty-four hour bombardment

GEN. U. S. GRANT

GEN. ROBERT E. LEE



The MONITOR *and* MERRIMAC


The Confederates fire upon Fort Sumter, April 12, 1861.
Lincoln's call for volunteers
Battle of Bull Run or Manassas
Capture of Frs. Henry & Donelson
Battle of Shiloh
Battle of Antietam
Braggs Raid - Iuka - Corinth
Battle of Murfreesboro
Arkansas Post
Capture of New Orleans
Peninsular Campaign-Lee's Raid
Emancipation Proclamation
Battle of Gettysburg
Vicksburg
Chickamauga and Chattanooga
Capture of Fort M'Allister
Sherman's March
Early's Raid
Sheridan's Ride
Lee's Surrender
ABRAHAM LINCOLN
1861 1865
BORN
Feb'y 12 1809
DIED
April 15 1865
House in which Lee surrendered
Lee surrenders to Grant at Appomattox Court House on April 9th 1865 After this the Civil War came swiftly to a close with the disbanding of both armies.
Lincoln Memorial

THE ADMINISTRATION OF ABRAHAM LINCOLN—1861–65

The Election of Lincoln.—The Republicans turned away from their most prominent men, Seward, Wade and Chase, to select a candidate who had not been in public life prominently enough to have made enemies. The Democrats met in convention at Charleston, S. C., only to find that the party was hopelessly divided; so one wing met at Baltimore and nominated Douglas, while the radicals met at Richmond and nominated J. C. Breckenridge, Kentucky. With John Bell, of Tennessee, selected by the Whig-Know-Nothing party, there were four prominent candidates in the field. Lincoln was the only one who got the undivided support of his party and was elected, receiving 180 electoral votes to 72 for Breckenridge, 39 for Bell, and 12 for Douglas.

Lincoln's Inaugural Address.—The whole country waited anxiously to hear what Lincoln proposed to do. In his inaugural address he assured the South that slavery was safe, but expressed his intention of enforcing Federal laws. He denied the right of secession, but was evidently very anxious to conciliate the South.

The Outbreak of the Civil War.—Fort Sumter, at Charleston, S. C., was cut off from Union aid, and ships finally sent to Major Anderson's relief arrived too late. The Confederates bombarded the fort, and on April 13 it surrendered. War was assured and Lincoln called for 75,000 volunteers. By June all the southern states had joined the Confederacy. The border states, Maryland, Kentucky, and Missouri were held in the Union, although in all three southern sympathizers were in the majority. The north had the advantage in material supplies and number of possible soldiers. The southerners were better soldiers and went into the war with more enthusiasm.

The Battle of Bull Run.—Two large Union armies under Generals McDowell and Patterson were sent toward Richmond, and before advancing far they came into conflict with Confederate forces under the command of Generals Beauregard and Johnston. The battle at first favored the Union troops, but at the crisis the Confederates received re-enforcements and the Union soldiers began a disorderly retreat. If the Confederates had realized it they might have captured Washington. This battle served to nerve both sections of U. S. for a long struggle.

Trouble with Great Britain.—European peoples were inclined to favor the South, believing that it was a fight for freedom. European governments would have been glad to see the U. S. broken up into sections, and thus gave the South aid whenever they could. At the outbreak of the war the British government made an official recognition of belligerency which gave the Confederates a legal status in their dealings with foreign powers. The Lincoln government protested against this, but an affair of greater importance soon engaged the attention of both countries. The U. S. ship, San Jacinto, stopped the British ship, Trent, and took off two Confederate emissaries, Mason and Slidell. War between the U. S. and England was barely

averted, the U. S. disavowing the act of Captain Wilkes and restoring the Confederate agents. In the next point of dispute England was in the wrong. She permitted warships for the southern Confederacy to be built in her shipyards—a violation of international law, and these ships, the Alabama and the Florida especially, did untold damage to American shipping.

The War in the West.—General Grant was put in charge of operations in the West, and in the early part of 1862 by capturing Confederate forts on the Tennessee and Mississippi rivers drove the enemy farther south. By the middle of the year the Union forces were in control of most of the Mississippi, Admiral Farragut having taken New Orleans in April. The next year Grant renewed his operations and on July 4 captured the Confederate stronghold, Vicksburg. After a long period of severe fighting, in which the battles of Chickamauga, Chattanooga, and Lookout Mountain stand out most prominently, the whole of Tennessee was in Union hands. In Feb., 1864, the command of the army in the West was given to General Sherman after Grant was made commander of all the Union forces, and in Sept., 1864, Atlanta was taken. By the end of the year Sherman had taken Savannah and the Confederacy was cut in two.

The War in the East.—General McClellan, in 1862, tried to fight his way to Richmond but his over-caution and the excellent strategy of the Confederate leaders, Generals Lee and Jackson, made the operation a failure and he was removed from command, being succeeded by General Halleck. General Pope was put in command of the Union army in the field but the choice was a poor one, for he was completely out-generaled by Lee and Jackson. Finally at the second battle of Manassas he was driven back upon Washington and was deprived of his command. Lee now invaded Maryland and McClellan was restored to his former position to oppose him. The battle of Antietam which occurred Sept. 17, 1862, was one of the major engagements of the war, and while neither side could claim victory the Confederates were checked. Burnside now took McClellan's place with orders to move toward Richmond. He bungled the campaign and, after suffering terrible losses at Fredericksburg, gave way to Hooker who had no better success, finally being defeated at Chancellorsville. The Confederates lost more than they gained, however, for General "Stonewall" Jackson was killed. In June, 1863, the southern army started north. General Meade was put in command of the Union forces and put his army in front of the Confederates as they reached Pennsylvania. The great battle of Gettysburg lasted three days, and when it ended Lee was on his way back to Virginia. The north had been saved from invasion. In March, 1864, Grant took command of the Union armies and started for Richmond. The Wilderness campaign lasted for two months, May and June, 1864, and resulted in Grant's being checked after an enormous loss of life. With the opening of 1865 the Confederacy was fighting a lost cause. Its man-power was low; the blockade had effectually cut off supplies from foreign countries, and the war-spirit was declining. In the spring Grant renewed his attacks with an army immensely superior in numbers to Lee's, and, on April 9, 1865, Lee surrendered, virtually ending the war.

Draft Riots During the War.—The North and South both had to resort to conscription to raise enough troops. This draft met with opposition among the foreign-born people of the north, and bloody riots occurred. In July, 1863, 1,000 persons were killed or wounded and much property destroyed in riots that occurred in New York City.

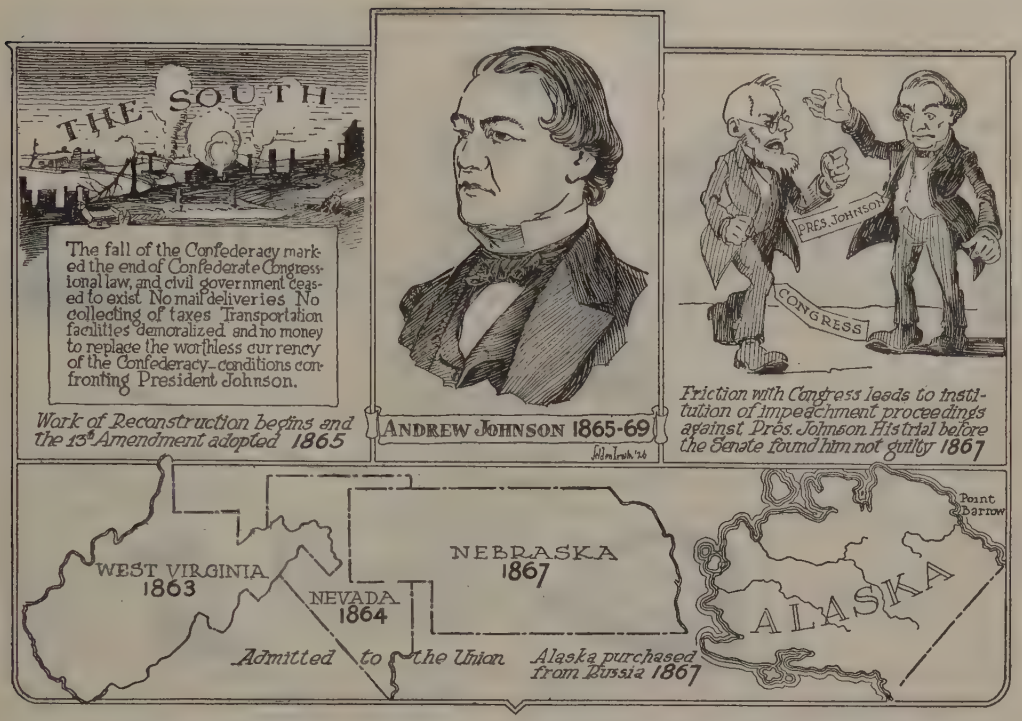
How the War was Financed.—For the first time in its history the Federal government had to resort to an income tax. But expenses were too heavy to be met altogether out of taxes so bonds were sold. In addition Treasury notes were issued and made legal tender. The National Banking Act of 1863 provided for the chartering of national banks which could issue paper money, under certain restrictions. A ten percent tax levied on the currency issues of state banks forced the latter to become national banks or give up the privilege of issuing currency. In 1864 the expenses were so enormous that the government had to issue paper money to the amount of $431,000,000, besides levying taxes on almost every thing. Gold and silver were driven from circulation.

Emancipation.—From the beginning Lincoln had insisted that the war was not fought to end slavery, and he disavowed the acts of generals who took the matter into their own hands, having in mind the slave states which had remained in the Union. But by the middle of 1862 he had made up his mind that freeing the slaves would injure the Confederacy, so he decided upon it as a war measure. Sept. 23, 1862, he issued the Emancipation Proclamation, declaring free all slaves which were held in the Confederate states.

Lincoln Re-elected.—The Republicans re-nominated Lincoln in 1864, and the Democrats chose General McClellan to oppose him. Lincoln won by 212 electoral votes to 21 for McClellan.

Lincoln's Plan of Reconstruction.—Lincoln held to the theory that the southern states were not out of the Union because they could not constitutionally secede. His policy was to re-build the so-called seceded states around whatever loyal element existed in them, that nucleus being fixed by him at one-tenth of the voters of the state. Thus he insisted upon the recognition of the state of West Virginia which had been erected by a small number of Virginians living in northwestern Virginia, and whenever one of the states of the Confederacy was conquered by Union troops he proceeded to reconstruct it by urging the loyal persons to re-form the state government.

Lincoln Assassinated.—On April 14, 1865, while attending a theatrical performance, Lincoln was shot by an actor, John Wilkes Booth who crazily thought he was redressing the wrongs of the South. Lincoln died the next day. The assassin was killed and four other conspirators were executed.


THE SOUTH
The fall of the Confederacy marked the end of Confederate Congressional law, and civil government ceased to exist. No mail deliveries. No collecting of taxes. Transportation facilities demoralized and no money to replace the worthless currency of the Confederacy—conditions confronting President Johnson.
Work of Reconstruction begins and the 13th Amendment adopted 1865
ANDREW JOHNSON 1865-69
PRES. JOHNSON
CONGRESS
Friction with Congress leads to institution of impeachment proceedings against Pres. Johnson. His trial before the Senate found him not guilty 1867
WEST VIRGINIA 1863
NEVADA 1864
NEBRASKA 1867
Admitted to the Union
Alaska purchased from Russia 1867
Point Barrow
ALASKA

THE ADMINISTRATION OF ANDREW JOHNSON—1865–69.

Johnson's Unfitness.—The Republicans had selected Johnson, a southern Democrat, as their candidate for Vice President in 1864, in order to get votes from the opposing party. The choice was unfortunate, for Johnson was cursed with an uncontrollable temper that was made worse by a fondness for liquor. His tactlessness made it impossible for him to work with the leaders of Congress, and without their support he could do little.

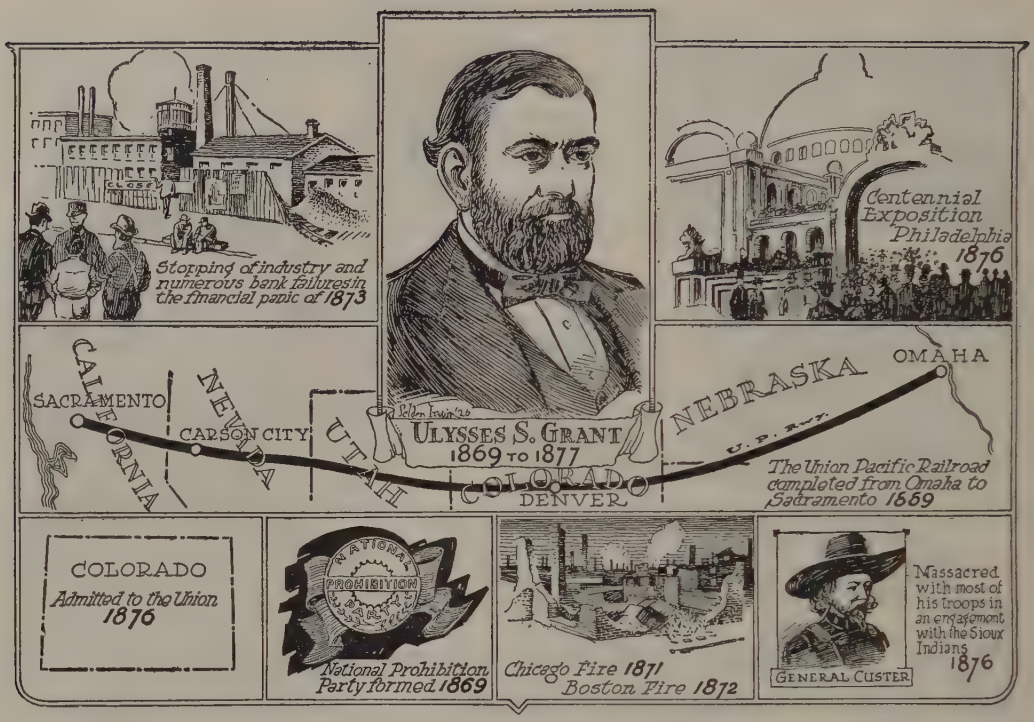
Plans of Reconstruction.—Lincoln's theory had been that the Union was indestructible, and that the so-called seceded states had never been out of the Union. His plan of reconstruction was to re-build the southern states around any loyal element that existed, and to make it easy for the disloyal to come back into their proper relation. Johnson, who had at first favored severe punishment for the "rebels," came around to Lincoln's views when he became President. The radicals in Congress, led by Charles Sumner and Thaddeus Stevens, wanted to inflict penalties upon the southerners. Congress insisted that reconstruction was a matter for it to handle, while Johnson insisted that it came under his powers. At first Johnson, having popular support, had his way, and before the end of 1865 had restored most of the former Confederate states on easy terms. They abolished slavery and repudiated their war debts. Sumner and Stevens wanted to keep the former Confederates from having any share in the state governments.

The Freedmen's Bureau.—To take care of the newly freed negroes Congress established the Freedmen's Bureau which was to act as the guardian of the blacks. Northern men and women were sent South to put the plan in operation. They frequently clashed with southerners, and the bad feeling stirred up both the North and the South to such an extent that both sections did foolish things. The negroes were led to believe that the government would take care of them.

The Fourteenth Amendment.—This provided that all persons born or naturalized in the U. S. were citizens of the U. S. and the state in which they resided, and that the states could not deprive U. S. citizens of their rights. The southern states rejected it, and this gave the radicals the chance to say that the control in the South must be taken from the whites.

The Reconstruction Acts of 1867.—Johnson's lack of dignity and tact had turned the country against him, so the radicals were able to pass a series of acts depriving the southern states of self-government and putting them under military government. Control of the southern states passed to the negroes and the "carpet-baggers," northern whites.

The Impeachment of Johnson.—Secretary of War Stanton had played false with Johnson and the latter wanted to remove him. Congress passed the Tenure-of-Office act by which the consent of the Senate was made necessary to remove a Cabinet officer. Johnson believed this to be unconstitutional, and removed Stanton. He was impeached on a number of charges, and the Senate failed to convict, lacking one vote. Historians today are more inclined to deal gently with Andrew Johnson. His plan of bringing about a reconciliation between the sections was a benevolent one, but the mis-informed public did not sustain him.



THE ADMINISTRATION OF ULYSSES S. GRANT—1869–77.

The Election of Grant.—The Republican convention nominated Grant unanimously, although he had been a Democrat. Governor Seymour of New York was nominated by the Democrats. The Republicans made the most of the lawlessness of the Ku Klux Klan and the attempts of the South to keep the freedmen down. The Democrats denounced the Reconstruction Acts and upheld Johnson's policies. Grant won by 214 to 80 electoral votes, but his popular vote exceeded Seymour's by only 300,000.

Grant's Cabinet.—The men selected by Grant for the Cabinet illustrated his unfitness for civil office. Fish, Sec. of State, and Hoar, Attorney General, were good men, but the others ranged from mediocre to very poor. Grant's love of money and his admiration for rich men, combined with a trustful disposition, made his appointments to office the worst in our history.

Reconstruction.—Grant was not in the least vindictive and would have been glad to see the South restored on easy terms. But the radicals responsible for his election were otherwise inclined and Grant followed their lead. The military governments of the South were a sore burden to the South, and may be said to have caused most of the disorder. After the native whites were disfranchised the government of the states was in the hands of the blacks and the "scalawags," who indulged in orgies of extravagance. The whites organized to meet these conditions and the entire section was in a state of anarchy. The black legislature of South Carolina spent millions of dollars for wines, whiskey, food, clothes, tapestries, rugs, etc., besides what the members appropriated for their personal use. Little wonder that the southerners rebelled. Gradually affairs went back to normal. Several amnesty acts removed the disabilities against the former Confederates and when they were restored to citizenship they wrested the government from the usurpers.

The Fifteenth Amendment.—This measure was designed to perpetuate the Republican party in power. When first proposed it was not popular even in the North, and the radicals were forced to wait until the southern legislatures were in control of the negroes before it could be adopted. It provided that the right of voting should not be denied by the U. S. or by any state on account of race, color, or previous condition of servitude. The amendment was effective only so long as the South abstained from making it of no effect, which they did before long.

Foreign Affairs.—Grant was an expansionist, and had it not been for the opposition of Sumner, chairman of the Foreign Relations committee, the U. S. would have annexed Santo Domingo. On his own responsibility he negotiated a treaty providing for this, but the Senate, much to Grant's disappointment, rejected it. The settlement of the Alabama dispute reflected credit upon both the U. S. and Great Britain. The damage to American shipping caused by the British government permitting the Confederate cruisers to be built in her ship-yards was very great, and the U. S. had never ceased to press her claims for reparation. In 1870 Secretary Fish induced Great Britain to leave the matter to arbitration. By the Treaty of Washington, 1871, the two countries left the question to be settled by a joint high commission, one representative from each of the countries concerned,

with the President of Switzerland, the King of Italy, and the Emperor of Brazil as the neutral arbitrators. The U. S. was awarded damages to the amount of $15,500,000.

Financial Disturbances.—Our national debt amounted to more than two and a half billions. U. S. paper money in circulation exceeded three hundred and fifty millions. Holders of U. S. securities did not know whether they would be paid in gold or in paper money. The western part of the U. S., needing more money for development, favored inflation; the conservative east feared the results of inflation, and favored contraction. Gold was out of circulation.

The Panic of 1873.—Speculation in gold went on until a crash was certain to come. Two New York speculators, Jay Gould and James Fisk, set about to corner the market. To make their game sure they had to keep the U. S. from selling gold, and, working through Grant's brother-in-law, they made the President's acquaintance and even entertained him in New York. They bid the price up to 162 and were about to make a huge profit when the Secretary of the Treasury began to sell gold. The price fell amid wild scenes. This was known as "Black Friday." Hard times ensued, and it was several years before the U. S. recovered.

"The Crime of 1873."—This was an act whereby silver was demonetized, and gold was made the single standard. To the people of the west this was a crime, for the effect was to tighten money at a time when the west needed it most.

The Redemption Act.—Soon after the war the government adopted the policy of retiring the "greenbacks" whenever they came back to the treasury. By 1868 the amount had been reduced to $356,000,000, and many people believed that deflation had gone far enough. In 1875 Congress passed the Redemption Act by which after January, 1879, the greenbacks were to be redeemed at par in gold if the holders desired. In 1878 Congress yielded to western demands sufficiently to enact a law whereby whenever a greenback was redeemed in specie it was to be re-issued, thus keeping up the amount in circulation. When the time arrived for redemption practically none were presented, and thus they were on a par with gold. They are still in circulation.

The Credit Mobilier.—This was a construction company which built most of the Union Pacific Railroad. The big stockholders controlled both companies, and were enabled to pay themselves enormous profits out of the construction. Congress was drawn into it when a number of the members accepted presents of stock in the Credit Mobilier, in return for which Congress was to give the company a free hand. A number of prominent politicians were found to be implicated, including Vice President Colfax, James A. Garfield, and James G. Blaine. They professed to be innocent of any corruption, but as Prof. Dunning says, "they saved their virtue at the sacrifice of their intelligence."

The Liberal Republicans.—The rotten conditions prevailing during Grant's administration brought about a cleavage in the Republican party, a group breaking away because they believed the party to be in the hands of corruptionists. The leaders of this movement were Horace Greeley and Carl Schurz. Their chief demand was civil service reform, concerning which Grant had expressed himself as being skeptical.

Grant Re-Elected.—The regular Republicans brought about Grant's re-nomination without difficulty, but there was a strong group, headed by Horace Greeley, editor of the New York Tribune, who attacked the Grant administration for its oppressive measures in relation to the South, and its corruption. These Liberal Republicans nominated Greeley for the Presidency, and the Democrats endorsed his nomination. Greeley's personality was against him, as he was too easily caricatured. The public conscience at the time was not sensitive to corruption, and the people still remembered that Grant had rendered great services to the Union. Grant was elected by a vote of 272 to 66. Greeley died shortly afterward.

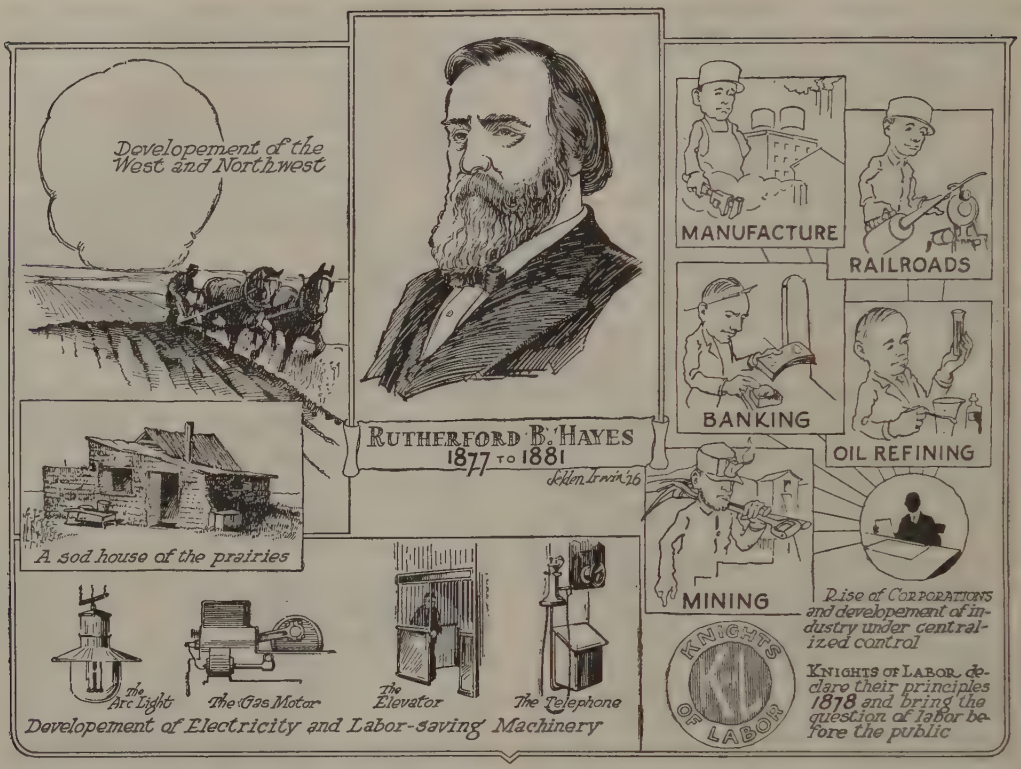
The Salary Grab Act.—Congress was encouraged by the indifference of the people to the irregularities of Grant's administration, and so an act was passed increasing the pay of the President, the members of the Cabinet, Federal judges, and members of Congress. The increase was made to apply to the two years preceding 1873, and was called the "back pay steal." This was too much even for the tolerant American people, and the outcry that arose scared Congress into repealing the law at the next session so far as it applied to Congress, the inferior judges, and the members of the Cabinet.

The Whiskey Ring.—The government of the U. S. was being defrauded of its revenues from whiskey by a gang with headquarters in St. Louis. Grant's private secretary was involved, and Grant himself had accepted a valuable present from one of the ring-leaders. He went so far as to oppose the prosecution of the "ring," and removed a U. S. officer who tried to bring them to justice. The U. S. was defrauded of $3,000,000, and Grant can not be acquitted of all blame. He did not share directly in the loot, but he evinced no desire to punish the guilty.

The Belknap Affair.—Grant's Secretary of War, Belknap, had been selling government offices, and a committee of the House of Representatives recommended his impeachment. To save Belknap from this disgrace, Grant accepted his resignation.

Grant as President.—The eight years of Grant's administration constitute one of the most disgraceful periods in our history. Grant was elected to the presidency as a result of his war record. His term of office was marked by political intrigues and corrupt politics. The "Whiskey Ring" largely dominated the government during his administration.

As a soldier, Grant was far more outstanding than as a statesman. His two terms as president are marked by the absence of constructive measures.


Developement of the West and Northwest
RUTHERFORD B. HAYES
1877 TO 1881
MANUFACTURE
RAILROADS
BANKING
OIL REFINING
MINING
A sod house of the prairies
The Arc Light
The Gas Motor
The Elevator
The Telephone
Developement of Electricity and Labor-saving Machinery
Rise of Corporations and developement of industry under centralized control
KNIGHTS OF LABOR
KNIGHTS OF LABOR declare their principles 1878 and bring the question of labor before the public

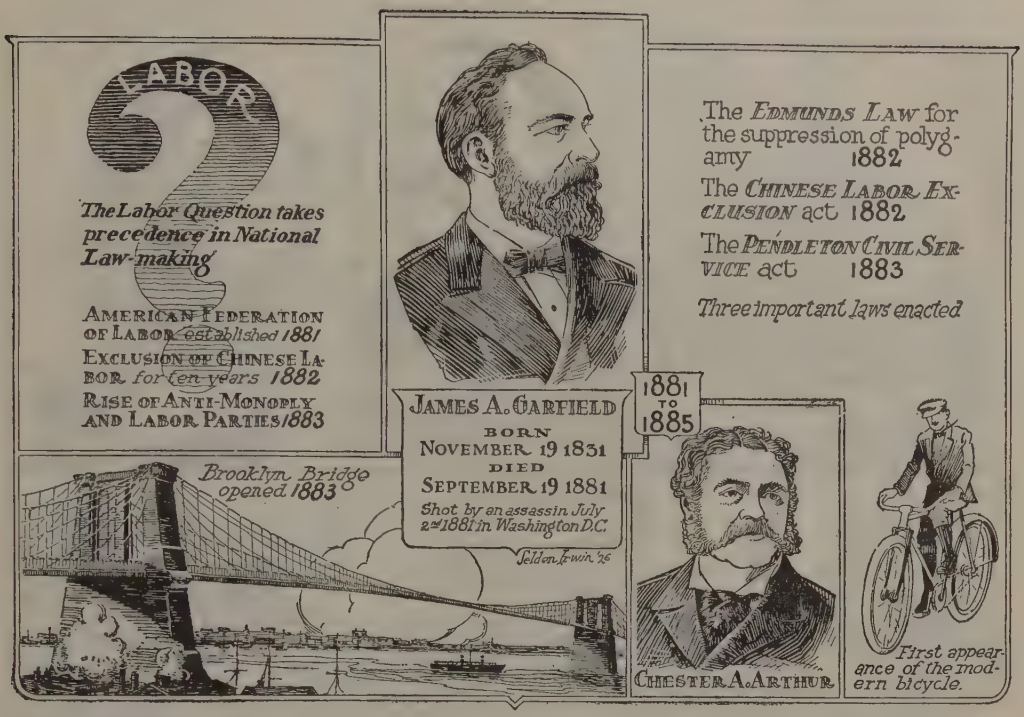
THE ADMINISTRATION OF RUTHERFORD B. HAYES—1877–81.

The Election of Hayes.—Things were going badly for the Republicans. The corruption of the preceding eight years combined with hard times were a serious handicap, and now the Democrats were in control of the House of Representatives. Most of the Republican leaders had been involved in political scandals, so they finally chose as their candidate Rutherford B. Hayes of Ohio, against whom nothing was known. The Democrats nominated Samuel B. Tilden of New York, a reformer. The election turned upon the results in South Carolina, Florida, Louisiana, and Oregon, in all of which there were disputed returns. Both sides claimed the electoral votes of the first three states so the matter was thrown into Congress which passed a bill providing for an Electoral Commission consisting of five senators, five representatives, four justices of the Supreme Court, and a fifth justice to be chosen by the other four. As finally constituted, the Commission was composed of eight Republicans and seven Democrats. In all disputed cases the Commission divided on party lines, so Hayes was declared elected. Although it is probable that partisanship and not lack of votes defeated Tilden the Democrats behaved with commendable self restraint.

Hayes's Difficulties.—Hayes came into office with a dubious title, although no blame is attached to him. He was a man of scrupulous honesty, and because he would not play the game the way the Republican leaders wished they turned against him and made things uncomfortable for him. His kindly policy toward the South especially angered them. He brought military rule there to a final end, although he knew that his party was at an end in that section if he did so.

The Bland-Allison Silver Bill.—With a Congress divided and with his own party leaders bitterly opposed to him Hayes was able to do little. The only law of real importance passed was one providing that the Secretary of the Treasury should buy not less than $2,000,000 nor more than $4,000,000 worth of silver each month and coin it into silver dollars. This was pure inflation and the country lived to regret it; but the owners of silver mines and the debtor farmers of the west possessed enough influence to have the legislation they wanted passed. Hayes saw that the measure was unsound and vetoed it, but the Democrats wanted to secure votes in the west and, combined with the Republican inflationists, were able to pass the bill over the President's veto. A feature of the original bill, sponsored by Bland of Missouri, and providing for free coinage of silver was rejected.

An Estimate of Hayes.—President Hayes was a man with whom history has not dealt kindly. His enemies were able to get the ear of the public and he was too proud and too scrupulous to fight them with their own weapons. Under different circumstances he might have made a name for himself that would rank today with that of Washington and Lincoln. Woodrow Wilson said of him: "He was upright, public-spirited, inclined to serve the country unselfishly and in the interest of sound policy."


LABOR
The Labor Question takes precedence in National Law-making
AMERICAN FEDERATION OF LABOR established 1881
EXCLUSION OF CHINESE LABOR for ten years 1882
RISE OF ANTI-MONOPOLY AND LABOR PARTIES 1883
JAMES A. GARFIELD
BORN NOVEMBER 19 1831
DIED SEPTEMBER 19 1881
Shot by an assassin July 2nd 1881 in Washington D.C.
Selden Erwin '26
1881 TO 1885
The EDMUNDS LAW for the suppression of polygamy 1882
The CHINESE LABOR EXCLUSION act 1882
The PENDLETON CIVIL SERVICE act 1883
Three important laws enacted
Brooklyn Bridge opened 1883
CHESTER A. ARTHUR
First appearance of the modern bicycle.

THE ADMINISTRATION OF JAMES A. GARFIELD AND CHESTER A. ARTHUR—1881–5.

The Election of Garfield.—Hayes was opposed in principle to a second term and refused to be a candidate in 1880. Grant's friends worked hard to secure the nomination for him and he would have been glad to get it, but James G. Blaine wanted it for himself, and he controlled enough votes to defeat Grant. The Republican Convention compromised on James A. Garfield of Ohio. The Democrats wanted Tilden to run but he refused, so they nominated General Hancock whose war record had been excellent. The only issue of prominence was the tariff, with the Republicans promising higher duties and the Democrats a reduction. Garfield's popular plurality was only 7018.

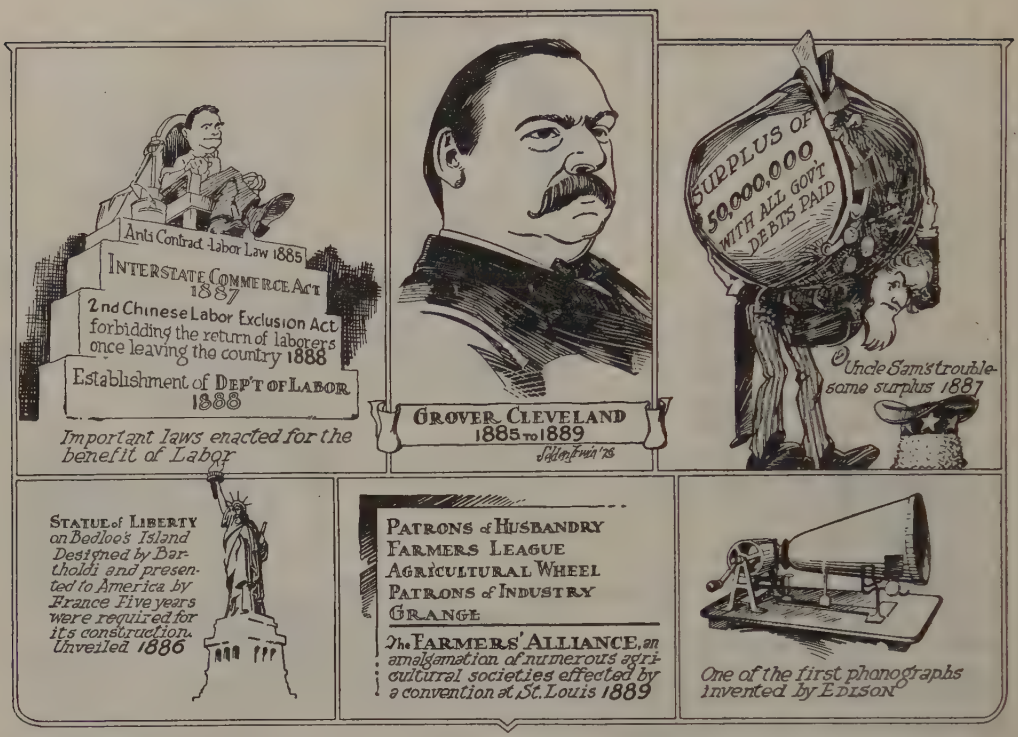
Party Quarrels.—Trouble arose when Garfield nominated Blaine for Secretary of State, Conkling, the New York "boss" being the leader of the faction opposed to Blaine. Garfield had his way in this and in other appointments so to show his disapproval Conkling resigned his seat in the U. S. Senate, expecting the New York legislature to re-elect him. It failed to do so.

Garfield Assassinated.—On July 2, 1881, while in a railroad station in Washington, Garfield was shot by a disappointed office-seeker. He lingered several months before finally succumbing.

Vice-President Arthur Becomes President.—Arthur's nomination for the Vice Presidency had been dictated by the "spoilsmen" of New York and his accession to the Presidency was considered a calamity by the friends of pure government. But to the surprise of everyone Arthur administered the duties of his office with unusual independence and ability, disregarding his former friends if it was to the interest of the public to do so.

Civil Service Reform.—For many years thoughtful people had denounced the spoils system that Jackson introduced, but no leaders had yet appeared who were able to get public opinion back of the plan to introduce the merit system. President Arthur urged it with all his might; the public was at last aroused to the necessity, and in 1883 Congress passed the Pendleton Act which provided for the appointment of a Civil Service Commission to examine candidates for certain public positions. The number of these positions was small at first, but the number was extended to include a majority of public offices.

High Tariff Continued.—Civil war duties were still being imposed, with the result that the government piled up a surplus each year. Arthur saw the necessity for tariff reduction and got Congress to appoint a committee to study the situation. It reported that the tariff should be reduced twenty per cent on an average. Congress, which had usually disregarded reports of special investigators, drew up a new tariff measure in 1883 which virtually left the tariff as it was, the slight reductions being more than counter-balanced by the increases. A powerful manufacturers lobby, by using all the legal and illegal means they could, were responsible for this iniquitous measure. It is interesting to note that William McKinley, later President, voted against the bill because the rates were too low. In 1884 hard times came, the surplus was reduced, and demand for tariff reform was not so insistent.


Anti Contract-Labor Law 1885
INTERSTATE COMMERCE ACT 1887
2nd Chinese Labor Exclusion Act forbidding the return of laborers once leaving the country 1888
Establishment of DEP'T OF LABOR 1888
Important laws enacted for the benefit of Labor
GROVER CLEVELAND 1885 TO 1889
SURPLUS OF 50,000,000 WITH ALL GOV'T DEBTS PAID
Uncle Sam's troublesome surplus 1887
STATUE of LIBERTY on Bedloe's Island Designed by Bartholdi and presented to America by France Five years were required for its construction. Unveiled 1886
PATRONS of HUSBANDRY
FARMERS LEAGUE
AGRICULTURAL WHEEL
PATRONS of INDUSTRY
GRANGE
The FARMERS' ALLIANCE, an amalgamation of numerous agricultural societies effected by a convention at St. Louis 1889
One of the first phonographs invented by EDISON

THE FIRST ADMINISTRATION OF GROVER CLEVELAND—1885–89.

The Election of Cleveland.—Blaine managed to overcome the opposition of the reformers in his party and was nominated for the Presidency. The Democrats chose as their candidate Grover Cleveland, the reform Governor of New York. Blaine's public career had not been free from irregularities, and one deal that he had made with the Union Pacific showed him up as a man who was not averse to taking favors from large corporations. A number of the leading reformers in the Republican party supported Cleveland who won the election by carrying his own state. Blaine's cause was injured by an injudicious speech made in his behalf by Rev. Burchard, who referred to the Democrats as the friends of "Rum, Romanism, and Rebellion." Enough New York Catholics took this seriously to vote for Cleveland. His popular plurality was only 23,000.

Civil Service.—The Democrats had been out of power for many years so their desire to take over the public positions filled by Republicans was natural. The Civil Service laws protected some, and Cleveland's own inclination was to leave in office all competent persons; but he had to yield somewhat, and about two-thirds of the unclassified offices were filled with Democrats. During the course of his administration Cleveland extended the Civil Service and set an example of watchfulness and self-restraint.

Presidential Succession.—By the law of succession to the Presidency, in case of the death, resignation, or removal of the President the office devolved upon the President pro tem of the Senate, and then upon the Speaker of the House. The death of Vice President Hendricks in 1885, occurring when there was no Congress, brought up the necessity for a new law; hence one was passed providing that the succession should pass to the Cabinet officers in the order of the establishment of their offices, beginning with the Secretary of State.

Regulation of the Railroads.—During the seventies and the eighties railroad building was at its height. To secure franchises and appropriations the railroad companies got into politics, and corruption was rife. Competition among themselves was giving way to agreements, and the public was being gouged. The western farmers especially were discriminated against. After much agitation Congress passed the Interstate Commerce Act of 1887, the main provisions of which were as follows: A Commission of five was to be appointed by the President to supervise the actions of the railroads so far as the public interest was affected; rates were to be reasonable, and were to be printed; more could not be charged for a short than a long haul.

The Tariff Issue.—A group of high-tariff Democrats united with the Republicans to prevent revision of the tariff. In his message of December, 1887, Cleveland denounced the tariff as productive of high prices and over-speculation. The surplus had been piling up for several years and there was no good use to which it could be put. The House of Representatives passed the Mills Bill, but it was rejected by the Senate.

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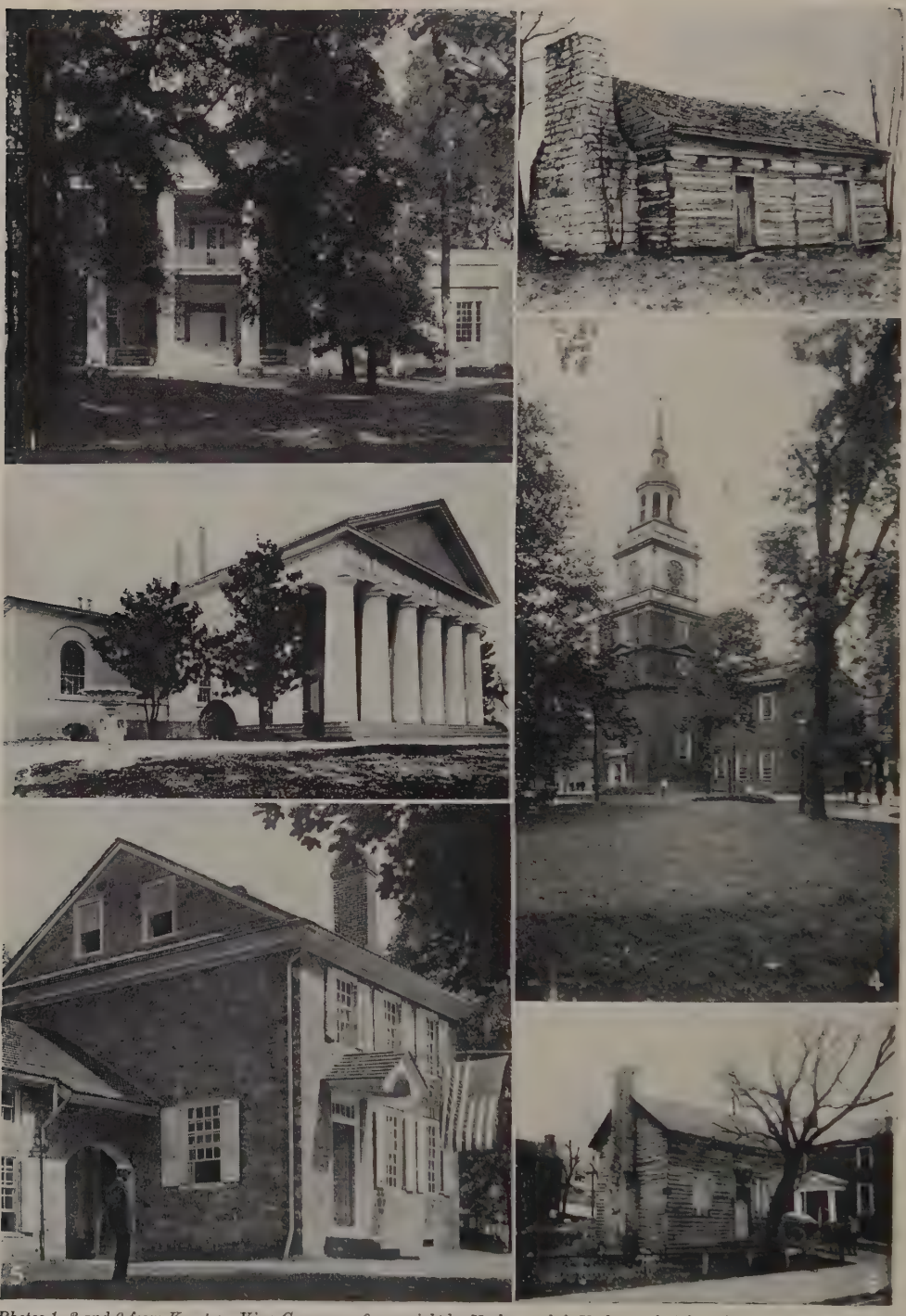
HISTORIC SCENES IN AMERICA—III

1 St. John's Church, Richmond, Virginia, scene of Patrick Henry's famous oration. 2 Mount Vernon, ancestral home of George Washington. 3 Fairfax Court House, Virginia, in which is preserved Washington's will. 4 Monticello, Virginia, home of Thomas Jefferson. 5 Powhatan Oak, Virginia.



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HISTORIC SCENES IN AMERICA—IV

1 "The Hermitage," Andrew Jackson's Home, Nashville, Tennessee. 2 Kitchen of the original "Hermitage." 3 Robert E. Lee Mansion. 4 Independence Hall, Philadelphia, Pennsylvania. 5 Washington's Headquarters, Valley Forge, Pennsylvania. 6 Andrew Johnson's tailor shop, Greenville, Tennessee.

SILVER
After repeated failures to pass a bill for the free coinage of silver the SHERMAN SILVER PURCHASE LAW was enacted, the U.S. agreeing to buy 145 tons of silver each month giving notes in payment
The Sherman Law enacted 1890
Selden Irwin '46
BENJAMIN HARRISON
1889 TO 1893
THE PEOPLES PARTY OF THE U.S.A.
JAMES B. WEAVER
JAMES G. FIELD
LOANS FOR FARMERS
FREE COINAGE OF SILVER
GOVERNMENT OWNERSHIP of PUBLIC UTILITIES
RESTRICTED IMMIGRATION
The Farmers' Alliance and Knights of Labor combine and form a new national party 1891
N.DAKOTA 1889
S. DAKOTA 1889
MONTANA 1889
WASHINGTON 1889
IDAHO 1890
WYOMING 1890
Public lands in Oklahoma opened to settlers 1889
OKLAHOMA
OKLAHOMA OR BUST
JOHNSTOWN
The Johnstown Flood devastates the Conemaugh Valley 1889

THE ADMINISTRATION OF BENJAMIN HARRISON—1889-93.

The Election of Harrison.—The Democrats nominated Cleveland without so much as taking a ballot. The Republicans nominated Benjamin Harrison of Indiana, rejecting a much stronger man, John Sherman of Ohio. The issue of the campaign was the tariff, and the manufacturing interests contributed large sums of money to defeat Cleveland whom they accused of being a free-trader. Cleveland denied this, but the people of the country seemed to think that a reduction of the tariff meant the loss of prosperity, so Harrison was elected by 233 electoral votes to 168, although Cleveland got more popular votes than Harrison.

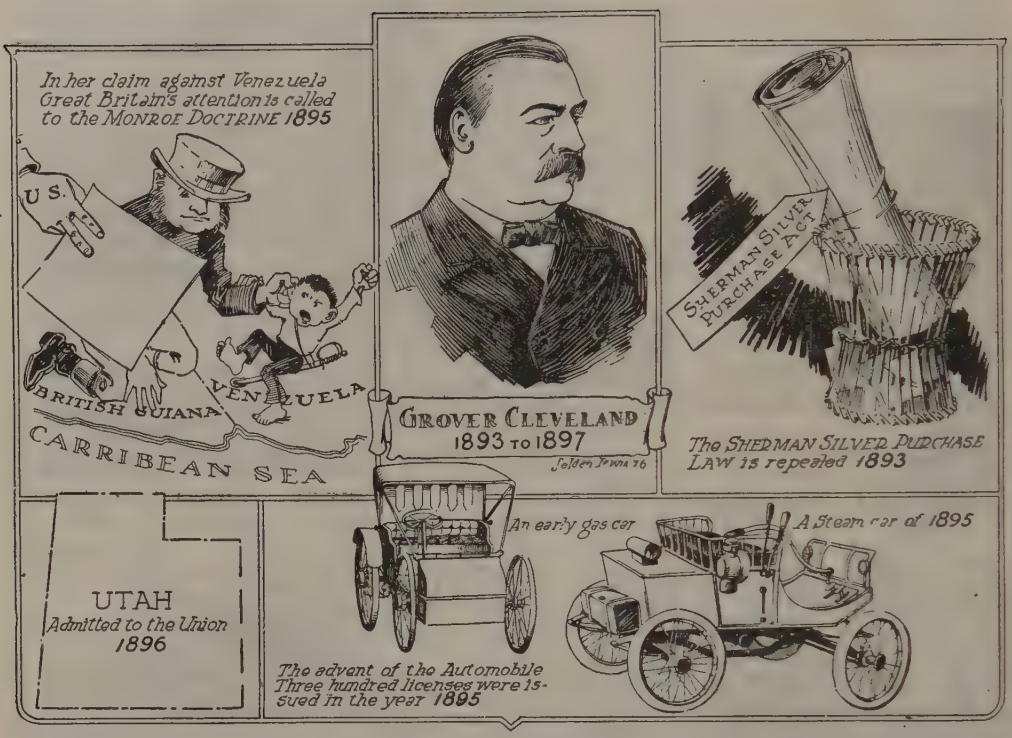
The Spoils System.—Harrison was a believer in Civil Service but the urge of office seekers was too much for him. He managed to protect the Civil Service rules from serious inroads but almost every Democrat in the unclassified service was removed. 30,000 Democrats lost their positions the first year. Harrison allowed the bosses of Pennsylvania and New York, Matthew S. Quay and Thomas Platt, to dictate removals and appointments, and he himself took good care of his relatives and friends.

Foreign Affairs.—Blaine, Secretary of State, pursued an aggressive foreign policy, and several times the U. S. was seriously involved in controversies with other countries. The question of what country owned Samoa was settled by a conference of Germany, Great Britain, and the U. S., but not until bad feeling between Germany and the U. S. had resulted. Another bothersome issue was that of the Alaska seal-fisheries. British and Canadian seal fishermen had been killing seals in the open sea off Alaska, and the U. S. made the claim that the whole of the Bering Sea belonged to the U. S. After many irritating incidents the matter was left to a board of arbitration which decided against the U. S. on almost every point.

Pension Legislation.—In 1890 a Pension Law was passed giving all veterans of the Civil War, Union, of course, a pension of not more than twelve dollars a month, and the act applied to widows, dependents, and children of the veterans. In 1893 the number of pensioners amounted to 1,000,000, and the money paid annually to $157,000,000. The surplus was thus easily disposed of.

The McKinley Tariff Bill.—By this law, passed in 1890, duties on articles of common use were raised, including agricultural products. The duty on sugar was reduced but a bounty to domestic sugar raisers was granted which cost the government about $10,000,000 a year. Duties under the McKinley bill averaged fifty per cent, and the cost of living rose proportionately.

The Sherman Anti-Trust Act.—High tariffs had bred trusts and other forms of business combinations, and the public was in the grip of these selfish interests. The agitation to exercise some control over them had been growing until Congress could not afford to disregard it. So the Sherman Act was passed making illegal "every contract, combination in the form of trust or otherwise, or conspiracy in restraint of trade." Prosecutions were rare, and convictions rarer.


In her claim against Venezuela Great Britain's attention is called to the MONROE DOCTRINE 1895
U.S.
BRITISH GUIANA
VENEZUELA
CARRIBEAN SEA
GROVER CLEVELAND 1893 TO 1897
Selden Irwin '96
SHERMAN SILVER PURCHASE ACT
The SHERMAN SILVER PURCHASE LAW is repealed 1893
UTAH
Admitted to the Union 1896
An early gas car
A Steam car of 1895
The advent of the Automobile Three hundred licenses were issued in the year 1895

THE SECOND ADMINISTRATION OF GROVER CLEVELAND—1893–97.

The Election of Cleveland.—Harrison was renominated with little opposition. He was not in the least a popular man and had been an undistinguished President, but he controlled the party machinery. The Democrats again chose Cleveland. The parties took their old stand on the tariff, but Cleveland let it be known that manufacturing interests were safe from him. A third party, the Populist, nominated a candidate on the platform of free silver. The Republicans suffered from the fact that hard times were upon the country and labor disturbances were frequent. Cleveland was elected by 277 electoral votes to 145 for Harrison. The Populists carried four states in the west.

Financial Troubles.—The McKinley Act had decreased the revenues from imports. Paper money redeemable in gold amounted to $500,000,000 and the U. S. Treasury's gold reserve amounted to only $100,000,000. As fast as the legal-tender notes were redeemed they were reissued and paid out, only to come back soon for redemption. Cleveland persuaded Congress to repeal an act of 1890 which instructed the Secretary of the Treasury to buy silver. This was unavailing, and the gold reserve dropped lower until the U. S. was facing virtual bankruptcy. Cleveland had to suffer for the sins of the preceding administration. To remedy the situation he bought gold from New York bankers, and then sold U. S. bonds to the public. The silver people used this as an illustration of what occurred under the single monetary standard.

The Panic of 1893.—The causes of this disturbance were varied, but probably the most important cause was the expectation that the U. S. would abandon the gold standard. The Republicans have always claimed that it was due to the Wilson Tariff Law, but since hard times were upon the country before this Law was passed it could have had little to do with it. The depression was severe, and the resultant evils great. Strikes were common, that of the employees of the Pullman Company being the worst. During this strike a judge of the U. S. District Court ruled that the violation of an injunction was contempt of court and could be punished by the judge without trial by jury. The labor unions have never ceased to combat this.

Foreign Questions.—The matter of annexing Hawaii had long been thought of and it had been a virtual protectorate of the U. S. for years. An American had overthrown the old government, and Cleveland had a report made. On the basis of that report Cleveland ordered the American to give up the throne, which he refused to do. The U. S. Senate evidently supported the usurper, for it would not support Cleveland in his attempt to restore the legitimate ruler of Hawaii. In 1898 Hawaii was annexed to the U. S. The Venezuela dispute was a serious one indeed. The boundary between Venezuela and British Guiana had long been disputed, and by 1895 the British were evidently going to encroach upon Venezuela's territory. Cleveland objected in the strongest terms he could find to this violation of the Monroe Doctrine, but fortunately for the world the British government was not equally belligerent, and the dispute was settled by arbitration.

Transports off for Cuba 1898
WILLIAM McKINLEY
1897 1901
BORN JAN. 29 1843
DIED SEPT. 14 1901
Capron's battery at El Caney
WAR BETWEEN the U.S. and SPAIN 1898
Spain's misrule of her West Indian possessions led to war with the US and the complete independence of Cuba.
The US acquired the island of Porto Rico and the Philippine Islands
U.S. Battleship Maine blown up in Havana Harbor, Feb. 15th 1898
APARRI
LUZON I.
SAMAR I.
MANILA
MINDANAO I.
MINDORO I.
PANAY I.
COTABATO
The PHILIPPINE ISLANDS purchased from SPAIN for $20,000,000 1898
OAHU I.
HONOLULU
HAWAII I.
HAWAIIAN ISLANDS annexed 1898

THE ADMINISTRATION OF WILLIAM McKINLEY—1897–1901.

The Election of McKinley.—Cleveland left his party in a demoralized condition, the "gold" and "silver" Democrats being hopelessly split. The latter secured the nomination of William J. Bryan after a bitter fight, but at the cost of losing the support of the "gold" Democrats who nominated a separate candidate. The Republicans took Mark Hanna's man, William McKinley of Ohio, a friend of high tariff. Bryan's brilliant oratory was not sufficient to win for him, and McKinley won the election with 271 electoral votes to Bryan's 176.

The Dingley Tariff Act.—McKinley urged tariff revision, and Congress rushed through a bill which raised duties to the peak. Raw materials were restored to the dutiable list. The Dingley Act was denounced by the Democrats as a betrayal of the interests of the people, and the Republicans praised it as the source of the prosperity of the country.

The Spanish-American War.—Cuba had more than once caused trouble between the U. S. and Spain, our people always sympathizing with the Cubans in their attempts to be free. A revolution which broke out in 1895 brought forth severe retaliation from the Spanish Governor and caused much indignation in the U. S. McKinley protested, and Spain promised the Cubans self-government, but the Cubans would be satisfied with nothing short of independence. The U. S. battleship Maine, anchored in Havana harbor, was blown up February 15, 1898, and investigation seemed to prove that it had been caused by a mine. McKinley reluctantly sent a message to Congress urging intervention, and in April Spain declared war on the U. S. Spain was in no condition to fight, and in a few months declared her readiness to make peace. By the terms of the treaty Spain gave up Cuba, the Philippines, Puerto Rico, and other islands, all but Cuba being ceded to the U. S., which paid Spain $20,000,000 for the Philippines.

The Open Door in China.—This was a period of world imperialism, and all the great powers were looking for new lands to conquer or "protect." China offered a fair field for exploitation, and several European nations had marked out fields for themselves there. To prevent the shutting out of U. S. commerce Secretary of State John Hay announced what has since been known as the "open door" policy in China, asserting that the interests of the U. S. could not be disregarded. Great Britain acceded, but the other nations would not. Nevertheless, this pronouncement did much both for China and the U. S.

The Gold-Standard Act.—In 1900 exports exceeded imports by over $500,000,000, and gold was pouring into the country. In March, 1900, Congress passed the Gold-Standard Act which declared the gold dollar to be the standard unit of value and provided that all legal-tender notes were to be redeemed in gold the reserve of which was to be increased to $150,000,000. Bi-metallism now became a dead issue. Another part of this law amended the National Banking Act to permit the establishment of national banks in places of 3,000 inhabitants or less, with capital of $25,000.

THE ADMINISTRATION OF McKINLEY AND THEODORE ROOSEVELT—1901–5.

McKinley Re-Elected.—The unprecedented prosperity of the McKinley administration assured his re-nomination, which took place on the first ballot. Bryan again received the Democratic nomination. The Republicans played up the "full dinner-pail" idea and gave their party the sole credit for prosperity, while the Democrats, saying less than they had the preceding campaign about free silver, made imperialism the chief issue. The people were not interested in this and the issue fell flat. McKinley received 292 electoral votes to Bryan's 155.

McKinley Assassinated.—On Sept. 5, 1901, while in the city of Buffalo, N. Y., visiting the Pan-American exposition President McKinley was shot and killed by an anarchist. McKinley had many of the qualities that make for popularity and his death was mourned by everyone.

Law against Threatening the President.—So great was the public revulsion when a third president was shot within a generation in the United States that steps were taken almost at once to secure the passage of a special act dealing with those who threaten or attempt the life of the President. The federal law quoted below makes it a crime even to threaten to harm or kill our chief executive.

Chapter 64—U. S. Statutes—An act to punish persons who make threats against the President of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that any person who knowingly or wilfully deposits or causes to be deposited for conveyance in the mail or for delivery from any post office or by any letter carrier, paper, writing, printing, or document containing any threat to take the life of, to inflict bodily harm upon the President of the United States, or who knowingly or wilfully otherwise makes any such threat against the President, shall upon conviction be fined not exceeding $1,000 or imprisoned not exceeding five years, or both.

Roosevelt Becomes President.—Roosevelt had taken a spectacular part in the Spanish war and had been known in a small way as a reformer. He kept McKinley's Cabinet and announced his intention of continuing McKinley's policies.

The Trusts.—Republican policy had fostered the gigantic combinations known as trusts. Many of the commonest articles of consumption were controlled by these corporations, and competition scarcely existed. The Sherman Act was a dead letter, not one trust being prosecuted under the McKinley administration. The public was being mulcted by these monopolies.

Roosevelt Attacks the Trusts.—Roosevelt made a distinction between good and bad trusts; the latter must go, he said. With his ability to dramatize a situation he aroused the people to the dangers from these organizations, but Congress remained unmoved. Roosevelt then resorted to the Sherman Act, and by his direction the U. S. Attorney General began the prosecution of some of the more notorious trusts. The government won a number of these suits but the result so far as the public interest was concerned was little. Roosevelt won great popularity, not with "big business," of course, but with the general public.

The Coal Strike.—In the early part of 1902 there was a strike in the anthracite coal mines of Pennsylvania. The whole country was affected and Roosevelt took a hand. The operators tried to maintain that the affair was one wholly between the miners and the operators, but public opinion forced them to agree to arbitration, and the strike was thus settled.

The Panama Canal.—The question of a canal in Central America to connect the Atlantic and the Pacific was a very old one. The attempt of the builder of the Suez Canal, de Lesseps, had failed. Roosevelt set about accomplishing it. In 1901 the Hay-Pauncefote agreement between the U. S. and Great Britain recognized the right of the U. S. to build a canal, the only restriction being that all vessels must be "on terms of entire equality." Colombia owned Panama and provoked the U. S. by its unstable policy and double dealings. The people of Panama, in 1903, rebelled against Colombia, and U. S. war-vessels prevented the Colombian government from suppressing the insurrection, so it was successful. A treaty was signed with the new Republic of Panama by which the U. S. purchased a zone for the building of the canal. Roosevelt never made any apologies for his part in the Panama affair—to the contrary, he was proud of it.

The Open Door in China.—The annexation of the Philippines brought the United States into contact with the politics of the far East at a time that European powers were engaged in the economic exploitation of that part of the world. China, especially, was being absorbed by the great European states; Great Britain had taken Hong Kong, France was established in southwestern China, and Germany occupied the Shantung Peninsula. The United States was building up a large trade with the Chinese and this was endangered by the aggressive attitude of the European powers. John Hay, the United States Secretary of State, addressed a note to these states requesting that each would agree, in effect, not to interfere in the trade of China with countries which did not possess a foothold in China. Although no formal assent to Hay's "open door policy" was ever given, the states to which the note was addressed understood its import and respected our rights.

TREATY of PORTSMOUTH
JAPAN and RUSSIA, at the invitation of the U.S. make the treaty at PORTSMOUTH, N.H. which brings their war to an end 1905
THEODORE ROOSEVELT 1901 TO 1909
CARIBBEAN SEA
PANAMA
COLUMBIA
PACIFIC OCEAN
Work on the PANAMA CANAL begins 1906
OKLAHOMA
Admitted to the Union 1907
Advent of a practicable airplane 1904
LANGLEY'S Machine
The WRIGHT Bi-plane

THE ADMINISTRATION OF THEODORE ROOSEVELT—1905–9.

Roosevelt Elected.—The Republican leaders were rather doubtful about Roosevelt, but they could not resist popular demand, so he was nominated. The conservatives were now in control of the Democratic party and nominated Alton B. Parker of New York. Free silver dropped out altogether as an issue, as did imperialism. Both parties were lacking issues, so the popular candidate won with an electoral vote of 321 to 162.

The Hepburn Act.—The railroads had for years been discriminating against certain shippers and communities, giving better rates to their favorites, especially to the concerns in which they had an interest. The evils were very great, and the western farmers especially were hurt. The Elkins Act of 1903 forbade rebates, but little attempt was made to enforce it. In 1906 Congress passed the Hepburn Act giving to the Interstate Commerce Commission the power of fixing rates.

Pure Food Laws.—The public had been at the mercy of manufacturers of food products. Spoiled meats, adulterated medicines, poisonous patent-medicines, had been sold for years with no effort on the part of the states to stop it. To Roosevelt's lasting credit he forced through a reluctant Congress a law with the following provisions: All meat shipped in inter-state commerce had to be from healthy animals; it had to be inspected by government officials; and it had to be prepared under sanitary conditions. Although evaded sometimes, these laws were productive of great good.

Conservation.—Roosevelt was an "out-of-doors" man, and hence interested in the preservation of natural resources, forests especially. Acting under authority of a law passed in 1891 he withdrew nearly 150,000,000 acres of public land to be used as a forest reserve. Through his initiative the U. S. and the states set about the irrigation of the desert lands and in a short time many millions of acres had been reclaimed.

Campaign Funds.—In 1905 it was discovered that the great corporations had been contributing large sums of money to campaign funds, and even had prominent senators on their payroll. To break up the first practice a law was passed prohibiting corporations from making any contributions to campaign funds. Experience has since determined that the law was futile, for no method can be devised that will keep the prominent officials of corporations from making such donations as they please.

Roosevelt as President.—Not much in the way of constructive legislation was accomplished during the seven years that Roosevelt was President, but public interest in important questions was stimulated to heights it had not reached since the early days of the republic. For this Roosevelt deserves the credit. Wall Street found that his bark was worse than his bite, and as time went on the great bankers and corporation officials ceased to fear him. Roosevelt was a nationalist above all, and he believed that the rights of the states ought to be subordinated to the interest of the entire people of the U. S.

THE ADMINISTRATION OF WILLIAM HOWARD TAFT—1909–13.

The Election of Taft.—Roosevelt refused to be a candidate in 1908, although strictly speaking he had been elected but one term. He was strong enough to name his successor, Secretary of War Taft, a former judge and Governor-General of the Philippines. The Democrats returned to Bryan as their best chance, and not only nominated him but allowed him to write the platform, which contained some constructive suggestions for the control of monopolies. Taft won with 321 electoral votes to 162 for Bryan.

The Payne-Aldrich Tariff Bill.—Taft called a special session of Congress almost as soon as he became President, the purpose being tariff revision. The House bill was not high enough to suit Senator Aldrich, now the boss of the Senate, and when the bill was finally passed it was far more of a Senate than a House measure.

Progressivism.—By this time there was a rift in the Republican party. It finally began to dawn upon the middle west especially that the interest of that section was not well taken care of by the corporation lawyers who controlled Congress and Cabinet. High tariff was profitable for the manufacturers, but less so for the farmers.

The Ballinger-Pinchot Controversy.—Upon his retirement Roosevelt withdrew more land for reserves, with the idea of keeping water-power sites out of the hands of private corporations. Taft's Secretary of the Interior, Richard Ballinger, rescinded this order, and the U. S. Chief-Forester, Gifford Pinchot, attacked the action of his superior officer as one designed to turn over the valuable reserves of the U. S. to water-power corporations. Pinchot was dismissed, but the affair did not end until Roosevelt and Taft were estranged, Taft supporting Ballinger.

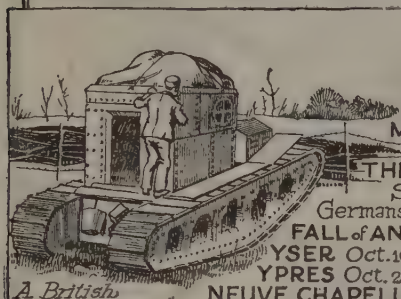
Progressive Legislation.—Taft, while not a progressive, was not a reactionary either, and he supported a good deal of advanced legislation. In 1910 a postal savings-bank system was set up. The same year a Bureau of Mines was established for the purpose of aiding the states in the prevention of accidents. Another act required the names of all persons contributing to campaign funds to be published along with the amounts subscribed. The most important law was the Mann-Elkins Act which gave the Interstate Commerce Commission power to make investigations on its own initiative and change rates. The most important part of the original bill was struck out by the Senate, that requiring the consent of the Commission before stock or bond issues could be sold by common carriers. Two amendments to the U. S. Constitution were passed by Congress and ratified by the states during Taft's administration, the 16th permitting Congress to levy an income tax, the 17th providing for the election of Senators by the direct vote of the people.

Trust Prosecution.—Public opinion forced Taft to proceed with the prosecution of the great trusts, and the government won several decisions, notably in the cases of the American Tobacco Co. and the Standard Oil Co., both of whom were declared to be combinations in restraint of trade. Their dissolution was ordered, but the companies were not adversely affected.

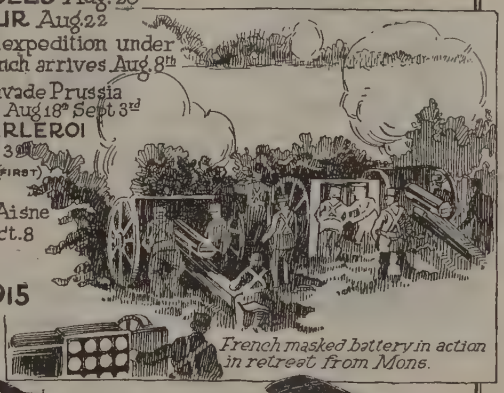
The WORLD WAR

Assassination of Archduke Ferdinand of Austria Hungary at Sarajevo, Bosnia on June 28th 1914

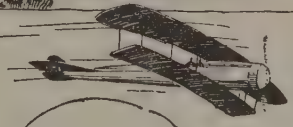
GERMANS INVADE LUXEMBURG
AND BELGIUM Aug 1-4 1914
LIEGE FORTS Aug 15
BRUSSELS Aug. 20
NAMUR Aug. 22
English expedition under
Gen. French arrives Aug. 8th
Russians invade Prussia
and Galicia Aug 18th Sept 3rd
MONS CHARLEROI
Aug. 21-23rd
THE MARNE (FIRST)
Sept. 6-10
Germans retreat to Aisne
FALL of ANTWERP Oct. 8
YSER Oct. 16-28
YPRES Oct. 22
NEUVE CHAPELLE Mar. 10 1915
YPRES (SECOND) Apr 22-26
ARRAS May 9th
Germans in Galicia & Poland
VERDUN Feb'y-July 1916
British fail at Dardanelles
SOMME Sept. 1-26
Abdication of Czar Mar. 10 1917
ARRAS Vimy Ridge
taken Apr. 9th
SOISSONS RHEIMS
MESSINES RIDGE
First American troops
reach France June 26th
FLANDERS July 31st
LENS (CANADIANS)
August 15th
Germans at Riga Sept. 3
CAMBRAI Nov.-Dec.
Allied drive between
ARRAS & LA FERE 1918
Fall of BAILLEUL
AISNE H'GTS OURCQ
SOISSONS CHATEAU-THIERRY
DORMANS ST. QUENTIN
BELLEAU WOOD CANTIGNY
Great Allied Offensive July-Nov.
GERMANY SURRENDERS

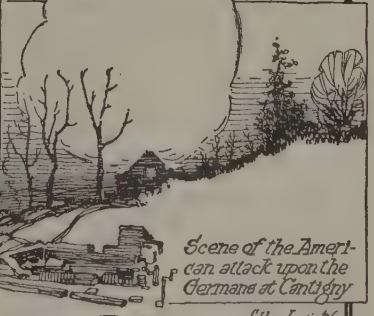


A British "Whippet Tank"



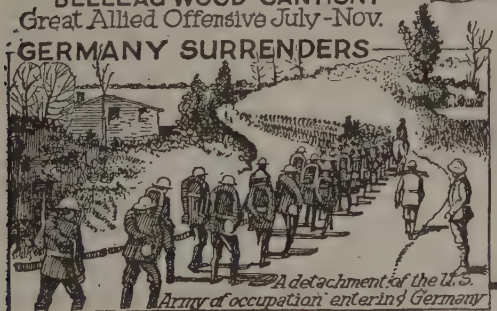
French masked battery in action in retreat from Mons.





Scene of the American attack upon the Germans at Cantigny

Selden Irwin '26



A detachment of the U.S. Army of occupation entering Germany

Germany make a peace overture on Nov. 7th 1918
Armistice signed Nov. 11th 1918 and the treaty of Versailles is made the following year, 1919

Pres. Wilson sails for Europe

WAR
EUROPE
U.S.
U.S. DECLARES WAR on Germany, Austria and Turkey 1917
VICTORY FOR ALLIES 1918
Declaration of Armistice
ARMISTICE DAY Nov. 11th
WOODROW WILSON 1913 to 1921
NATIONAL PROHIBITION by Constitutional Amendment 1920
Woman Suffrage granted 1920
PANAMA CANAL — Opened 1914
The ocean liner LUSITANIA sunk by a German submarine 1915
The first airplane flight across the Atlantic Ocean. Rockaway L.I. to Plymouth, England May 8th 1919
NC.4

THE ADMINISTRATION OF WOODROW WILSON—1913–21.

The Election of Wilson.—The break between Roosevelt and Taft became complete after the former returned from his African trip. Taft displayed an independence that Roosevelt did not like, and to defeat him went after the nomination himself in 1913. Republican leaders much preferred Taft, and they controlled the nominating convention. That Roosevelt was the choice of the rank and file of the party is probably true, but Taft got the nomination. The Roosevelt men seceded and formed a Progressive party, naming Roosevelt as their nominee. The Democrats had the choice of several prominent men, notably Bryan, Champ Clark, and Oscar Underwood. When Bryan saw that he could not be nominated he threw his strength to the man who seemed to be the most progressive, Woodrow Wilson, Governor of New Jersey, and former President of Princeton University. Wilson won the election by virtue of the split in the Republican party. Wilson's electoral vote was 435, Roosevelt's, 88, and Taft's, 8.

A New Kind of Statesman.—Wilson was a genuinely new kind of President. All but two years of his mature life had been spent in scholarly pursuits, and his knowledge of politics was theoretical rather than practical. As governor of New Jersey he had sponsored many progressive laws, and this attracted Bryan to him. To many, a "scholar in politics" was a man out of place; but Wilson was destined to accomplish more constructive legislation than any President we have ever had. He was fortunate in that his party controlled both houses of Congress at first.

The Underwood Tariff Bill.—Wilson called a special session of Congress to consider the tariff, and for the first time since 1801 a President read his message to Congress in person. The Underwood Bill reduced the tariff on 1,000 articles and made it necessary to levy an income tax to make up the expected deficit. This act was denounced by the Republicans as a blow at business, but manufacturing interests did not suffer apparently.

The Federal Reserve Act.—A better Federal banking system had been talked of for many years, but the Republicans did not push it, and allowed a Democrat to get the credit for it. The Owen-Glass Federal Reserve Act of 1913 contained the following provisions: Twelve Federal Reserve banks were set up in as many cities, and the national banks of the region were to be member banks, with the addition of as many state banks as would come in; currency could be issued by these Reserve banks on the commercial paper of the member banks; the whole system was to be under the direction of the Federal Reserve Board, composed of 6 members appointed by the President. Few legislative acts in our history have had so beneficent an effect upon the country.

The Clayton Act.—Wilson now turned his attention to the trusts, with the result that a Congress wholly under his control passed the Clayton Anti-Trust Law of 1914 forbidding the discrimination in price between purchasers where

the effect is to stifle competition; it forbade inter-locking directorates and the purchase of stock by a corporation of another corporation where competition was lessened; it exempted labor unions and farmers organizations from the provisions of the Act. The last provision was declared void by the Supreme Court so far as it exempts labor unions. The Clayton was a serious attempt to put teeth in the Sherman Act.

Latin-American Troubles.—In 1914 the U. S. made a treaty with Nicaragua whereby we acquired the right to build a canal in Nicaraguan territory and to supervise fiscal affairs. In 1916 we assumed a similar protectorate over Haiti. Both of these treaties were destined to disturb our relations with other states of Latin America which feared "Yankee" imperialism. The Mexican situation was bad when Wilson became President, due to the murder of Madero and the accession of Huerta. Wilson would not recognize Huerta, especially as Mexico was in a state of anarchy and lives and property of Americans were in danger. In spite of many provocations Wilson refused to intervene, proclaiming his policy to be that of "watchful waiting." In 1915 Huerta was overthrown by Carranza who sometime later was recognized by the U. S. government. But Mexico remained a thorn in the side of this country.

The Great War Breaks Out.—After 1914 foreign affairs engaged the attention of the U. S. almost to the exclusion of domestic matters. At the outbreak of the Great War President Wilson issued a proclamation of neutrality, but it was a difficult thing to live up to because of the fact that millions of Germans, Slavs, Irish, English, etc. were living here, and most of them supported the mother country enthusiastically.

German Plots.—Another source of difficulty was the plots set on foot by Germans mainly, having for their purpose the destruction of plants engaged in making supplies for the Allies. Our government was compelled to be on its guard constantly against such acts.

Dispute with England.—When U. S. vessels attempted to carry goods to Germany they were stopped by British ships sent out to enforce the blockade. Wilson protested against this as an unwarranted extension of international law, but in the end was forced to give in.

Wilson Re-Elected.—The Republicans took their nominee from the Supreme Court, Chas. E. Hughes, and he got the support of Roosevelt who did not like Wilson's policy. Wilson was re-nominated by the Democrats, and won the election by 274 electoral votes to 257 for Hughes.

The U. S. Joins the Allies.—The sinking of the Lusitania with the loss of more than 100 Americans almost got us into the war in 1916; but Wilson was averse to fighting if it could be avoided. But Germany disregarded her promises to spare American vessels and at last Wilson's patience was exhausted, and on April 5 Congress declared war on Germany.

Raising an Army.—No time was lost in assembling a military force, and a Conscription Act was passed to provide an adequate army. By the time the war ended the U. S. army numbered more than 4,000,000 men, and the whole force had been raised with a minimum of objection, in contrast with the conscription riots of the Civil war.

Food and Fuel.—To assure an adequate supply of food for the army as well as civilians the U. S. government put the regulation of the sale of food in the hands of a Food Administration under Herbert Hoover. Hoarding was forbidden, prices regulated somewhat, and the farmers were given every encouragement to increase the crops. A Fuel Administrator was appointed to conserve the supply of coal especially. Both these organizations functioned efficiently, in contrast with the Aircraft Board whose administration was a disgrace.

Wilson as War Leader.—After we were once in the war Wilson became an inspiring leader. His addresses were master-pieces of eloquence and did much to unite the American people. Some Republicans were disposed to be jealous of him but in the main he was supported by all persons regardless of party.

Our Part in Winning the War.—The U. S. troops arrived in France at a most critical time for the Allies. Whether or not we actually won the war we at least prevented Germany from winning it. Our losses were not great, considering the magnitude of the conflict, and on the whole the money appropriated was well spent.

The Armistice.—In October, 1918, the Germans realized that they were beaten, and so asked for an armistice on the basis set forth by Wilson some time before, the "Fourteen Points." These had stipulated for the freedom of the subject races of Europe, freedom of the seas, etc., all of which seemed mild to the Germans now. The Armistice was granted on terms laid down by General Foch, the French Commander-in-Chief. The Germans were in no position to refuse, although they protested that they had been tricked.

The Treaty of Versailles.—To make a permanent settlement of European affairs the nations engaged in the war sent representatives to Paris, and Wilson chose to go himself. For this he has been much criticized, but it remains for future historians to appraise this act. He was unable to embody all the liberal provisions that he desired in the Treaty, but it is safe to say that had he not been there even worse terms would have been imposed.

The U. S. Senate Rejects the Treaty.—Senator Lodge, the Republican leader of the Senate, was the bitter personal enemy of Wilson's, and when the latter brought back the Treaty of Versailles containing a provision for a League of Nations the Senate supported Lodge's contention that the U. S. ought not to take part in European affairs to such an extent as would be necessary under the League. Wilson used his waning strength to convert the people of the U. S. to his views, but his health broke down and during the last year of his administration was unable to carry on the duties of his office. He died in February, 1924.

TEN YEAR "NAVAL HOLIDAY"
PEACE TREATY WITH GERMANY
W.S.
RADIO
Phenomenal developement of Radio Broadcasting
Wis.
N.Y.
NEV.
ILL.
Four states vote for modification of the present National Prohibition Laws.
Dr. W. D. Coolidge does important work in the developement of the CATHODE-RAY TUBE.
WARREN G. HARDING
1921 TO 1923
WARREN G. HARDING
BORN 1865
NOVEMBER 2d
DIED 1923
AUGUST 2d
A "DISARMAMENT CONFERENCE" is held in Washington to discuss the practicability of reducing armaments-1921. Some progress is made. Most individuals with a fair degree of intelligence stopped carrying weapons long ago.
CALVIN COOLIDGE 1923-29

THE ADMINISTRATIONS OF WARREN G. HARDING AND CALVIN COOLIDGE—1921-29

The Election of Harding.—The leader of the Republican party was Senator Penrose of Pennsylvania, but, like Mark Hanna and other bosses, he was too well known to secure the nomination. He did secure the selection of a man of the McKinley type, Senator Harding of Ohio, and naturally was the power behind the throne. Progressive sentiment was ignored. The Democrats could have taken Wilson's son-in-law, W. G. McAdoo, who had displayed remarkable administrative ability during the war and who was popular with the laboring people, but McAdoo had made many enemies. Their choice was Governor James M. Cox of Ohio who had made a good record in that state. The issue of the campaign was the League of Nations and the people apparently repudiated it by electing Mr. Harding by a huge majority, 404 electoral votes to 127.

The Budget System Established.—Wilson had vetoed a Budget Bill because it took away from the President powers that he thought the President should have. Harding was not so sensitive as to his prerogatives and gladly signed a bill establishing a budget system. There was to be a Director whose duty it was to prepare a budget and submit it to the President who passed it on the Congress. Differing from the English system there was nothing to prevent Congress from raising the estimates, and this proved to be the vital weakness of the system.

The Washington Conference.—Since the U. S. had rejected the League of Nations, Harding, a well-meaning man, thought that we might contribute to world peace in a practical way by having a conference of the great powers meet in Washington for the purpose of considering disarmament. In November, 1921, this conference met and came to an agreement affecting naval establishments. The U. S. and Great Britain were to be on equal terms, Japan could have a navy about three-fifths as large as the two Anglo-Saxon states, and France and Italy were limited still more.

Harding Dies.—While on a trip through the far west in the summer of 1923 President Harding was taken ill and died unexpectedly. Like McKinley he was a very popular man and the people of the country were shocked by his death. He had not been President long enough to accomplish much, but there were indications that if he had lived out his term he would have asserted his leadership.

Coolidge Becomes President.—Calvin Coolidge had been obscure until the newspapers had played him up as the strong man who had settled the policemen of Boston when they went on a strike. This occurred when he was Governor of Massachusetts, and was the best kind of publicity. He now stepped from the obscurity of the Vice Presidency to the glare of the Presidency, but, being of phlegmatic disposition, his new duties did not outwardly disturb him. He retained all of Harding's Cabinet and announced his intention of carrying on Harding's policies.

Congressional Investigations.—The 68th Congress spent much of its time investigating charges of corruption that were brought against public officials. Affairs in the Bureau of War Risk Insurance were shown to be rotten in the extreme, and criminal charges were made against the Director, Colonel Forbes. The reason why the expenditure of hundreds of millions of dollars for aircraft during the war failed to produce results was looked into. Most important of all was the charge of corruption brought by Senator Walsh of Montana against certain Cabinet officers that they had given away valuable oil lands belonging to the government. Specifically, Secretary of the Interior Fall was accused of illegally leasing The Teapot Dome oil field to a company headed by Harry Sinclair, and California reserves to Edward L. Doheny. The leases were made secretly and Secretary Fall was alleged to have received a large sum of money from Sinclair and Doheny. Fall resigned, and Secretary of the Navy Denby, who had transferred the control of the oil lands from his department to the Interior Department, also resigned. Suits were brought by the government to set aside the leases, but the lower court held them to have "been made in accordance with the law."

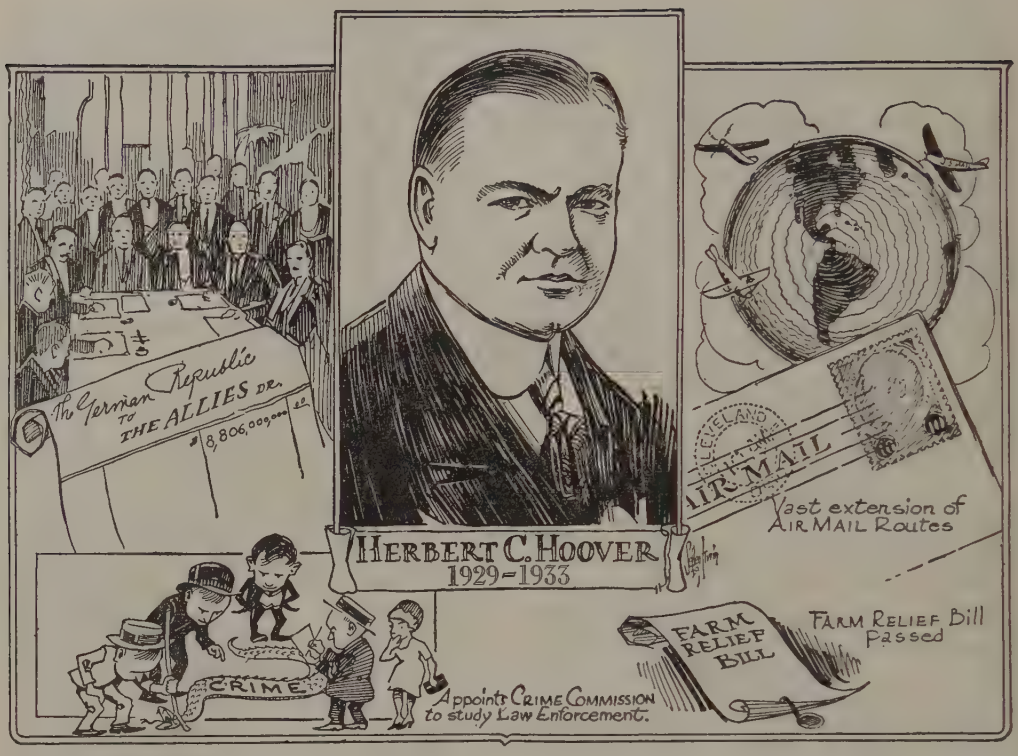
The Campaign of 1924.—There was no question that President Coolidge would be nominated by the Republican party, and this was done unanimously by the Cleveland Convention. A group of Progressives, led by Senator LaFollette, broke away from the old parties, and nominated LaFollette and Senator Wheeler of Montana, who had taken a prominent part in the investigation of the oil scandals. The two most prominent candidates for the Democratic nomination were Governor Alfred Smith of New York, and William McAdoo, former U. S. Secretary of the Treasury. The New York convention balloted for nearly two weeks, and finally nominated John W. Davis of West Virginia, who had served as Ambassador to Great Britain. Coolidge polled nearly as many votes as his opponents combined, and won easily.

The Foreign Debt Question.—During the Great War and the period immediately following the U. S. had loaned its Allies nearly eleven billion dollars. England, whose loans abroad were larger than the U. S., offered to cancel the debts owed her if the U. S. would do likewise. Arguments favoring this were: The war had been fought in a common cause and the U. S. had not borne her share. The U. S. emerged from the war by far the richest state in the world. The interest the U. S. would receive from year to year would upset still more the balance of trade, and would impoverish Europe for years, at the same time injuring the U. S. by hampering the buying capacity of Europe. The U. S. Government replied: The other Allied states had taken their recompense in territories formerly belonging to the Central Powers. The U. S. had little at stake compared with the other Allies. To cancel debts contracted in good faith was a bad precedent, which might hamper future borrowing. The U. S. taxpayers should not be called upon to assume European debts. If the states of continental Europe would go on a peace basis (cutting down their expenditures for military purposes) they could balance their budgets and pay their debts. Secretary Mellon and Chancellor of the Exchequer Baldwin came to an agreement regarding the British debt whereby sixty-two annual payments were to be made, interest to range from three to three and one-half per cent. Baldwin's successor, Winston Churchill, condemned the agreement, and a controversy between him and Mellon ensued, disturbing somewhat the good feeling between England and the U. S. The chief point at issue had to do with the time the money was loaned, and the use made of it, Mellon stating that the U. S. had practically canceled the debts contracted during the war and was only demanding the payment of its post-war loans. Mellon announced that all of the U. S. debtors with the exception of Russia had signed agreements to pay the U. S. The terms were based on their respective capacity to pay, the severest terms being imposed upon Great Britain and the most lenient upon Belgium.

The World Court.—President Coolidge made a mild effort to have the U. S. enter the World Court, and the Senate passed a resolution authorizing our entry but with stringent reservations which would give us the position of the most favored state. Senator Borah, the leader of the "Irreconcilables," fought against the adhesion of the U. S. to the Court on any terms, and in the end he won because the World Court states would not accept all the U. S. reservations. Coolidge made a statement to the effect that if the great world powers did not agree to a reduction of armament the U. S. would embark on a naval-building program calculated to be the greatest ever undertaken by any nation.

Tax-Reduction.—The prosperity of the U. S. was so great that the amount of Federal taxes collected exceeded all official expectations. The surplus could be used to pay off the U. S. domestic debt, or it could be returned to the tax-payers as a rebate. The income and corporation taxes had been greatly lowered for the year 1926 and Secretary Mellon opposed any further cut, stating that the government had better be on the safe side. But by the close of the year the surplus had piled up to such an extent that President Coolidge on his own initiative declared that tax-payers should be given a rebate on their 1926 taxes. Mr. Coolidge vetoed some bills calling for increased expenditures, but Congress enacted several of them over his protest. He also vetoed the McNary-Haguen bill designed to promote farm relief.

Refuses to Run.—Many supposed Mr. Coolidge intended to try for another term in 1928. In the summer of 1927, however, he sought to quiet all such rumors by making his famous pronouncement, "I do not choose to run again." In August, 1928, the United States became a party to the Treaty of Paris, by which fifty-five nations agreed to outlaw war. Mr. Coolidge followed this with a clear exposition of U. S. policy on Armistice Day, reenforced in magazine articles after his retirement in March, 1929.



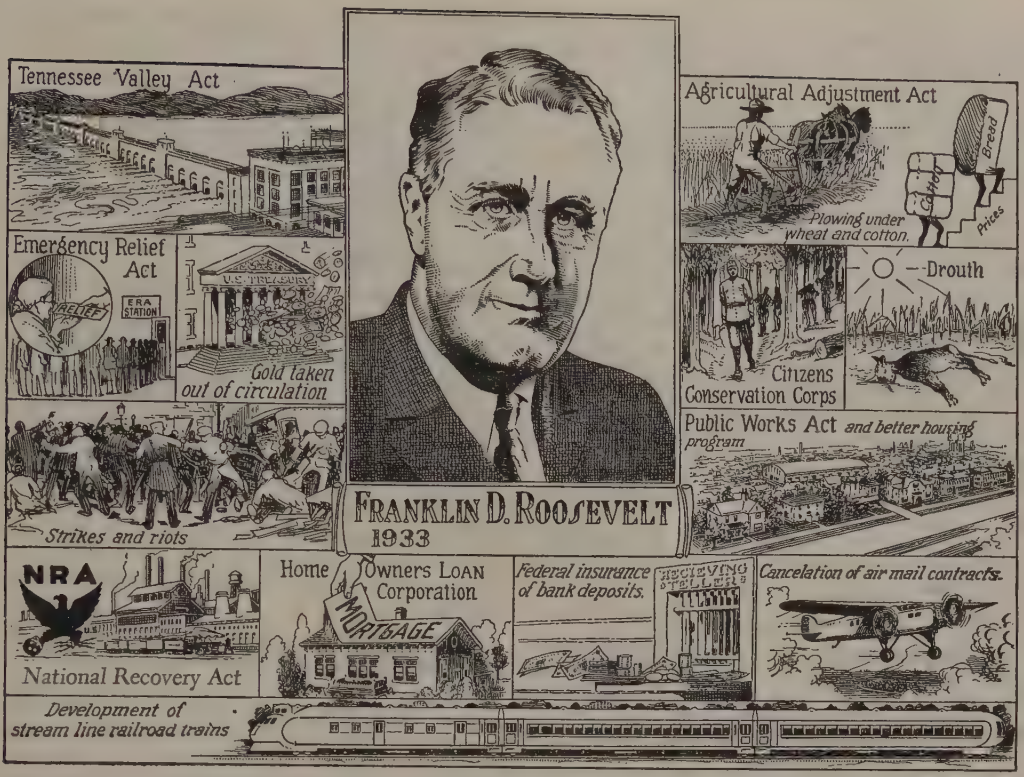
THE ADMINISTRATION OF HERBERT HOOVER
1929–1933

Election of 1928. Hoover defeated Alfred E. Smith by an electoral vote of 444 to 87, largest to that time; he carried 44 states, including Virginia, North Carolina, Florida, and Texas of the "solid South." In his eight campaign speeches, he stressed farm relief, flood prevention, hydro-electric development, and government economy.

Early Legislation. A special session of Congress set up a plan to help the farmer, but it proved ineffective, and also passed a tariff raising rates about 20%, after 1253 differences in schedules as between the Senate and House were adjusted. Hoover signed the compromise because it gave him permission to change certain rates as need arose. A commission of 11 authorities in law, chosen to study the "entire question of law enforcement" recommended change in the Prohibition law and in enforcement of all laws to prevent crime. Enforcement stiffened as a result of this report. Income taxes were reduced because of a treasury surplus of 160 millions. By a reapportionment, the House of Representatives lost members in 11 states and gained in 21. The Kellogg-Briand Treaty renouncing war was ratified, and President Hoover tried to delay building of battleships already ordered. He sought in vain to unify government bureaus and to promote economy.

The Depression. Borrowing by individuals rose to over 200 billions, securities reached new peaks, but farm prices went down and down, and foreign nations failed to pay us and to trade with us. On October 29, 1929, the stock market crashed to new low levels, while 16 billion shares were sacrificed at an untold loss to holders. To remedy these conditions, Hoover secured a debt moratorium among foreign nations to save Germany from complete collapse, and to stimulate international trade. The gold standard was abandoned, however, by most nations, payments on debts ceased, confidence declined, and eventually over 10 million men were out of work in the United States. The Federal Farm Board, created to stabilize prices, proved a failure. Banks and other corporations that otherwise would have failed were helped, however, by loans from the Reconstruction Finance Corporation, organized early in 1932. Yet a publicity feature written into it by a hostile Congress caused further distress and lack of faith. World War veterans demanded payment of the "bonus" due in 1942, and thousands of men marched to Washington, only to be dispersed by the military and police.

Other Legislation. The banking laws were amended, the Farm Credit Banks were favored, the short or "Lame Duck" session of Congress was abolished by amendment to the Constitution, the Norris anti-injunction law was passed, and the United States refused longer to aid in collection of debts owed our citizens in foreign lands.



Emergency Legislation.—The banking crisis reached its height between election time and Roosevelt's taking of office. Fear of devaluation, hoarding, and sending of money out of the U. S. resulted in many states proclaiming bank holidays. March 5, Roosevelt summoned Congress to meet on March 9, and proclaimed a national bank holiday until March 13.

The country being in panic condition, business at a stand-still, Congress completely Democratic, with the nation solidly behind the President, there quickly followed a large number of measures, beginning with an Act of Congress that transferred to the President, almost absolute control over credit, currency, gold, silver, and foreign exchange. Penalties were provided for hoarding gold, and nearly a billion came back into circulation by March 27, the last day allowed without a penalty. The final date was however extended. He received a wave of popular approval on his Economy Act when he entered office by cutting salaries and reducing the soldiers' pensions. These salaries and pensions were restored however within a year.

One of the earliest acts of the Administration was the legalization of 3.2 beer, followed by the repeal of the 18th Amendment and the return of hard liquor. The cheapness of farm products, prices being the lowest in 34 years, resulted in the creation of the AAA, Agricultural Adjustment Administration, with power to impose processing taxes and subsidize the farmer for not growing cotton and cereals, for killing hogs, in an effort to raise the price level to 1926 prices; the Unemployment Relief Act, granting money to people out of work; the CWA Act, which became known as the "Leaf Raking Act"; the CCC, Civilian Conservation Corps, providing jobs for 300,000 boys and young men to work in the forests on conservation projects; the Tennessee Valley Authority to develop water power projects on a gigantic scale. This was also to be used as a social project in the Tennessee valley. A treaty of recognition was made with Russia with the hope of stimulating business.

The National Recovery Act (Blue Eagle), provided three and a quarter billions for expense and relief to be used prior to June 16, 1935, when it was to expire. Under this Act, there sprang up many bureaus; such as, "Subsistence Homesteads," removing people from centers of unemployment, and establishing them in government-built homes on one or more acres of ground; the Commerce Credit Corporation, to buy, sell, and deal in agricultural commodities; Federal Bank Guarantee Act, guaranteeing deposits in banks up to $5,000; the HOLC or Home Owners' Loan Corporation, to provide home loans, relieve debts; the SEC or Securities Exchange Act, governing all transactions on the New York Stock Exchange. The President was given the power to stabilize the currency with the gold profit. Congress adopted a navy replacement program calling for the expenditures of 500 millions.

Monetary Policies.—Two schools existed on the gold policies of the United States. One group insisted on maintaining a solid gold basis, another

insisted on devaluation. Roosevelt finally called in all gold coins and certificates, reduced the content to 59 cents for a dollar, and raised the price from $20.66 to nearly $34 an ounce. On the transaction, the treasury took a profit of $2,800,000,000. Later silver was fixed at $1.29 an ounce, but a free ounce had to be given by the owner for coinage costs.

Early Results.—Subjects considered were agriculture, banking, relief, sale of securities, unemployment, electric power, mortgage relief, better housing, railroads and industrial profits. (See pages 1138–1148.) By 1934 over 30 "alphabet" agencies and administrations had been set up, while costs and government employees increased amazingly. Unemployment in May, 1935, was 5.5% greater than a year before. Living costs had been at times 10% above those of 1931. Farm prices rose 23% in 1934 compared with August, 1933. Later, government provisions to buy up surpluses, to subsidize cotton, wheat, and corn farming and other schemes, failed to maintain a higher level for agriculture. The national budget for the year ending June 1, 1934, was 10 billions and in February, 1935, Congress reached an all-time high of a single appropriation for relief, nearly 5 billions, in a gigantic effort to "prime the pump" of national industry.

The Supreme Court.—During the first six years of his administration, the President felt that his liberalizing effort of the government would be invalidated by the old members of the Supreme Court. His liberalizing of the Court brought the first real split in the ranks of the New Deal. The resignations of Justices VanDevanter, Sutherland and Brandeis, and the death of Justice Cardozo gave Roosevelt the opportunity to liberalize the Supreme Court by appointing younger men, namely, Hugo L. Black, Stanley Reed, Felix Frankfurter, Wm. O. Douglas (the youngest man ever appointed to the Court), and later on Frank Murphy. The new appointees, together with liberal Justice Stone, makes the majority of the Supreme Court anti-conservative.

Labor.—The split of the AFL by the John L. Lewis faction into the CIO created labor difficulties throughout the administration. The AFL followed the crafts organization principle while the CIO followed the horizontal organization principle. The Wagner Labor Act of 1937 was administered by the NLRB (National Labor Relations Board) and was considered by the majority of people to favor the CIO as against the AFL. Under this Act, company labor unions were outlawed. Since the Act guaranteed certain rights to workers, radical elements within the organization took unwarranted powers by taking possession of plants and industries by remaining indoors. These were termed "sit-down strikes."

Recovery or Reform.—Roosevelt and Garner were reelected over Landon and Knox by the greatest majority in our history, carrying all states but Maine and Vermont. The Wage and Hour Bill was passed, and government Reorganization was again brought forward. The many restrictions and taxes on business brought a recurrence of depression in the fall of 1937, and unemployment reached a new high of approximately 13,000,000.

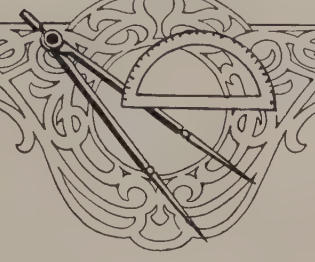
The fall elections of 1938 seemed to indicate the country was becoming more interested in Recovery than further Reform, as the "purge" of anti-New Deal Democrats failed with one exception. Many state governments returned to the Republican fold. Congress assembled in January, 1939, with the Roosevelt faction still well in control, but with enough Republicans and conservative Democrats to compel more careful consideration of legislation. Recovery now became the aim of the administration. Harry Hopkins, close advisor of the President, was transferred from head of the WPA to Secretary of Commerce upon the resignation of Secretary Roper.

Foreign Affairs.—The Lima Conference tended to greater solidarity between the nations of the Western Hemisphere. The foreign situation created by Hitler and Mussolini in 1939 brought neutrality and armament to the foreground with large increase in the number of airplanes, and authorization of additions to the army and navy. The outbreak of the German-Polish War, the heroic resistance of Finland to Russia, brought up the issue of Isolationist vs. Interventionist. A great many felt preparations would involve us in war. A neutrality act was passed, but repealed later, as the zone of combat extended as far as Greenland and Iceland. American ships patrolled the Atlantic.

The Third Term.—Roosevelt and Wallace won the 1940 election over Willkie and McNary. All major candidates agreed in principle on foreign policy. Domestic issues were bureaucracy, excessive spending, assumption of power by the President. Early in 1941 defense agencies sprang up and finally conditioned all planning. Employment increased, and relief agencies were retracted. Early in 1942 the C. C. C. was ordered closed down as soon as convenient. The 1943 executive budget called for close to 100 billions, while government employment tremendously increased. The 1943 debt rose to over 200 billions.

Foreign Relations.—The Cash and Carry policy of the preceding year was changed to a Lend-Lease agreement with Britain, and later with other nations. New bases were established in the Americas. Aid was promised Russia, Yugoslavia, Greece, while consulates of the Axis were closed and U. S. credit frozen. Defense equipment was demanded at once. By June the President had declared a national emergency. The nations of the Western Hemisphere began to draw together, and after Pearl Harbor was raided, gradually broke with the Axis, except Chile and Argentina. Chile broke off early in 1943. Brazil made agreements on coffee; Mexico to pay certain agrarian claims of long standing; Peru, and Argentina to exchange more trade. Money was lent to carry out these acts. The Atlantic Charter proposed by Roosevelt and Churchill, in an historic meeting at sea, was followed by conferences in December, 1941, in Washington, and in 1943 at Casablanca in Africa. All came to a climax with the declaration of war on the Axis in December, 1941, and the sending of men to all quarters of the globe in the next year.

MATHEMATICS



IMPORTANCE OF MATHEMATICS
THE HOME AND ARITHMETIC
EARLY NUMBER WORK
FRACTIONS
DECIMALS
METRIC SYSTEM
PRACTICAL MEASUREMENTS
MENSURATION
GRAPHS
COMMERCIAL ARITHMETIC
DICTIONARY OF WEIGHTS AND MEASURES
ALGEBRA
GEOMETRY

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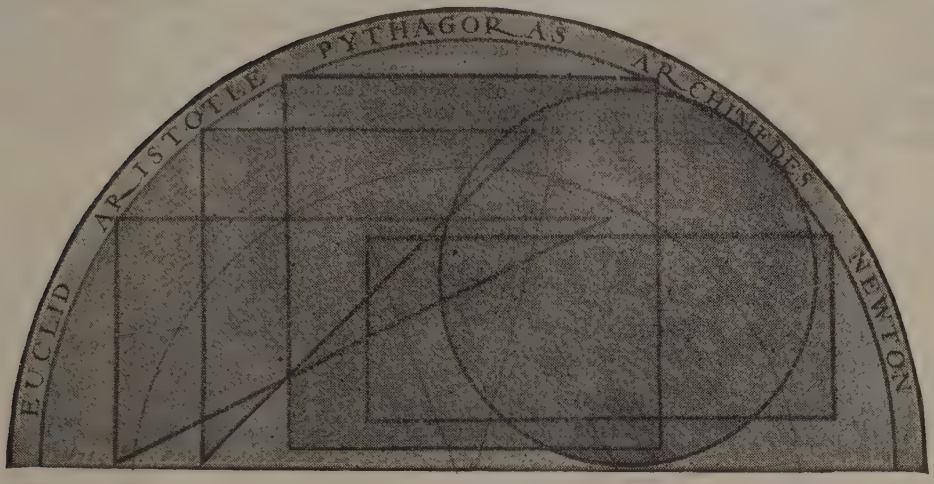
FAMOUS MATHEMATICIANS

Karl Frederick Gauss
Sir Isaac Newton
Johan Kepler
Archimedes
Euclid
Prof. Albert Einstein
Joseph Louis Lagrange
Gottfried Wilhelm Leibnitz

BOOK IV.
MATHEMATICS.



Drawing by SELDEN IRWIN.

PURPOSE AND HISTORY OF MATHEMATICS. PARENTS AS TEACHERS, NUMBER PREPARATION, TEACHING WITH GAMES, NOTATION AND NUMERATION. INTRODUCTION TO FRACTIONS, FUNDAMENTAL OPERATIONS, SHORT METHODS OF COMPUTATION, ALIQUOT PARTS. SQUARE AND CUBE ROOT. DECIMALS. ABBREVIATED MULTIPLICATION AND AVERAGES. METHOD OF TESTING PROBLEMS. PRACTICAL MEASUREMENTS. PAPERING, CEMENT AND MASONRY, CONCRETE WORK, ETC. DENOMINATE NUMBERS, DICTIONARY OF WEIGHTS AND MEASURES. ALGEBRA. POSITIVE AND NEGATIVE NUMBERS, EQUATIONS. GEOMETRY. LINES, ANGLES, TRIANGLES, QUADRANGLES, REGULAR POLYGONS, CIRCLES.

MATHEMATICS.

Recent investigations show many interesting as well as instructive facts concerning our present national life. A glance at some of these results helps to direct us in planning the work of our own lives as well as that of others. These results have served as a *guide* in the preparation of this department.

Today, our public schools reach practically all our children with at least a minimum of education. A rapidly increasing number of our young people are receiving further training in the secondary or high schools of the country. In the past ten years, the number of students enrolled in the high schools of one of the larger cities has increased from less than 3,000 to over 13,000. At the present time, the board of education in this city is planning for over 20,000 students before 1930. Just recently, the United States Commissioner of Education stated that in his opinion within twenty years a high school education would be as essential as a grade school education is now. It is evident the future will demand fuller preparation of its leaders.

The number of young people who are seeking still further training is so great that they have crowded the classrooms and strained the equipment and faculties of our colleges and universities. The World War placed a great emphasis on the value of education. The trained man was able to render a larger service, and was at the same time able to accept opportunities and responsibilities that were coveted by all.

Statistics of insurance actuaries show us that the percentage of men who gain financial independence is very limited.

A second and, for our purpose, more instructive study has been made as to the kind of preparation made by those who are called successful. The accompanying graph shows in a forceful fashion the relation between the groups considered. See page 422.

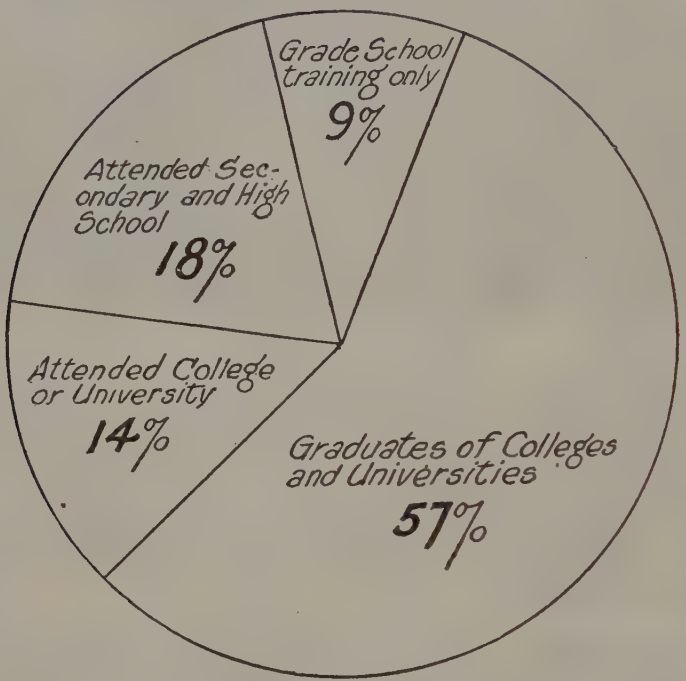
A consideration of this graph cannot fail to emphasize the importance of securing as complete an education as possible. Such an education must include a certain amount of knowledge about the science of mathematics. This has long been deemed second in importance only to a knowledge of how to read and write. In the present social and economic order, each individual must be able to "figure" if he is to protect his own best interests.

Mathematics is the oldest of the sciences. It is also one of the most modern. Developments in recent years have caused writers to call this the golden age of mathematics. The ancients must have known many of its facts and principles long before they built their temples and

pyramids. The earliest written work on the subject yet discovered is a treatise written by a scribe named Ahmes, which dates back to about 1700 B. C. It is a copy, according to its author, of a manuscript which was even then very old, authorities estimating that the original was probably written as far back as 3000 B. C.

After the Egyptians, the Babylonians and the Greeks in turn added to the knowledge of the subject. The great names in the History of Human Thought are all met as one reads the history of this subject. Thales, Plato, Aristotle, Euclid, Archimedes among the ancients, Descartes, Leibnitz, Newton among the moderns are only a few of those whose names are written high by their achievements both here and in other fields as well.

Today, the field of mathematics has become so extensive that students find time to specialize within the subject. Progress is still dependent on mathematics for the tools with which it works. The aeroplane and the radio were perfected by men who knew how to use its principles.



2% Undetermined.

It is still important for one who hopes to take his or her place in affairs to know something of the fundamental principles of the different branches of the science, Arithmetic, Algebra, and Geometry. Many are unable to avail themselves of opportunities offered by institutions of higher education, even though these institutions are supported by the state. Yet one ambitious of better equipping himself for life's tasks can do so by home study as has been dramatically illustrated in our national history. With this in mind, the following sections have been prepared. The arrangement includes work on "Arithmetic in the Early Grades," "The Principles of Arithmetic," "Commercial Arithmetic," "Practical Measurements in Arithmetic," "Algebra," "Plane Geometry," and a "Dictionary of Weights and Measures."

The child needs careful help and direction in the forming of his elementary concept of number. A right beginning is of great importance. The thoughtful parent as well as the earnest teacher will find many valuable plans and useful suggestions here which will help them in leading the child into a correct idea of the meaning of figures. Many new and improved methods are now being used in the early grades. The use of the play instinct is being greatly increased. To any one who has been out of touch with the progress being made in education since the days when they were themselves students of the "Three R's," the following pages will be a revelation.

The section on arithmetic sets forth in simple form with easy illustrations the rules under which numbers may be combined. Integers, fractions and decimals are considered. As each new number is introduced, the various operations, addition, subtraction, multiplication, division, and the extraction of roots are explained and the processes illustrated.

In commercial arithmetic, the problems which arise in transacting one's personal business are considered. Buying and selling goods, borrowing and paying money, commission, interest, insurance and kindred topics are treated.

Everyone has occasion at some time or other to figure areas and volumes of various kinds. How much paper is needed to paper a room, how much carpet to cover a floor, how many shingles

to cover a roof, how much lumber to lay a floor, these and similar questions are answered in the section on practical measurements.

The Dictionary of Weights and Measures is a reference section which contains the value of most of the Standard measures used throughout the world. Constant reference is made to it in the section on Practical Measurements.

In Algebra, the methods of arithmetic are generalized. The student who wishes to become acquainted with the subject for the first time will find the explanations clear and concise. The student who is studying the subject in high school will find the point of view developed here helpful. Those who have finished the work years ago will find the essential rules and principles explained here in convenient form.

The same purpose directed the preparation of the section on Plane Geometry. At all times, the writers of these pages have been mindful of the actual needs of prospective readers. Those who master the work set forth in the following sections, will find before them an interesting and profitable field for further study.

PRIMARY ARITHMETIC.

Arithmetic is the science which deals with numbers. It also refers to the art of computation, or "figuring" with numbers. The word comes from the Greek word, *arithmos*, which means number.

The aims and purposes of present courses in arithmetic may be variously stated. In the preface to one of the leading text books on this subject, the author states that the aim of the book is threefold:

1. To give the pupil skill in the art of computation.
2. To make him a good mathematician.
3. To give him a working knowledge of modern business methods.

In the course of study adopted by the Pittsburgh Public Schools, the aims and objectives of the course in arithmetic are stated as follows:

1. To give the pupils a knowledge of arithmetical facts and processes necessary to interpret and solve the problems met in everyday life, and to develop skill in using them.
2. To develop in the child power to reason accurately in the face of as complicated data as occur in problems adapted to the growth and development of the child.
3. To secure skill, rapidity, and accuracy in the use of numbers required in ordinary business transactions and practical affairs of life.
4. To satisfy the child's felt need for a knowledge of the laws of number and to aid him in interpreting the quantitative relations of life.

In the following pages the best methods of computation and proof of problems are given. Following this theoretical phase of the subject, the problems of business are considered. Problems in mensuration together with many practical illustrations are next developed. The rules and principles are stated in simple language. In many cases, rules are used without attempting to develop them in detail.

While the article on Primary Number Work is arranged principally for the benefit of parents as teachers in the home, it will be found just as practical as an outline for teachers to follow in building up a proper course of study for the first four grades. No text book can solve all the problems that arise in the teaching of arithmetic. The alert teacher is ever ready for new and helpful suggestions.

THE PARENT AS TEACHER.

"Come, now, let us live with our children."

The period of childhood and youth is the strategic period (in the life of the home, the school, the church, and the world), and it is imperative that parents and teachers realize their responsibilities and measure up to them.

The mother is the natural educator of the child in its early years. In early Roman history the mother had entire charge of the child's education during the first six or seven years of its life; only when Rome had begun to decay did she commit their training to nurses and slaves. The Roman mother taught strict obedience, politeness, poems from the great masters, and instructed them in the "Twelve Tables of Roman Law" and thus they came to have respect for authority.

The child's first idea of number concept comes when an infant. All authorities are agreed that the first two or three years of life are the years in which we learn most.

The most important thing in the education of the child is *sense training*. "His mind is like a fallow field, waiting for any seed that may be sown therein,—good, bad or indifferent. The harvest is always sure." Every child learns to talk by its own efforts. It concentrates by listening intently, watching movements of the lips, and practicing sounds all day long. Thus it is important in the early years of a child's life, that he be taught the things that will count most in his mental development—to see, to think and to do.

The development of consciousness of fingers and toes is very important. Every mother should become familiar with Emilie Poulsson's "Finger Plays," such as,

"This is our father,
This is our mother,
This is our brother tall.
This is our sister,
This is our baby,
Oh, how we love them all."

This introduces earliest counting of fingers and toes. In all times and among all nations, finger plays have been a delight to childhood. However, their value is not solely based upon the pleasures derived from them, but by their judicious and early use a foundation can be laid for number concept.

Before the child forms a definite number concept, we find him comparing objects—large, small; round, square; regular, irregular; long, short; much, little—etc.

Let it be urgent that the parent take advantage of this stage in the child's development and help him to arrive at truthful conclusions. He

is constantly making discoveries; hence, he should lead and the parent follow. Give the craving numerical instinct something to work upon and wisely guide it to its richest development. If he were permitted to continue in this process, he would become mentally independent, an investigator rather than a mere learner of facts.

There are few children who do not delight in number work. Counting (the fundamental process in arithmetic) is a thing of joy to them. It is the promise of higher things. The one, two, three of the very small child is the expression of a higher energy struggling for complete utterance. He has acquired some vague idea of numbers because he has been acting under the number instinct—he has been counting and measuring.

No doubt among the early ideas of number, the idea of two is first to appear; his experience has been rich in twos: two eyes, two ears, two hands, two feet. The number three is a much more difficult idea for the child, since it has no seeming relationship to the child's world. It cannot be mastered without the use of higher numbers. It is best taught by contrast or by constructing groups of three with pegs, splints, etc.; in nature we may contrast the three-leaf and the four-leaf clovers. If he knows three he can master counting to the number ten in a few lessons and will have the higher numbers within easy reach. Encourage his counting every thing within his environment.

Play is instinctive with children; hence, we refer you, as a further development in forming number ideas to the games listed under each grade. "Motion Picture," "Climbing the stairs," etc.

Recent developments in home and community life insistently demand a higher order of service and a more economical expenditure of time and energy.

School methods are not yet ideal; under present conditions, it is impossible to adapt subjects and methods to the intelligence of the individual pupil. Children having more or less than average capacity require special treatment. The parent at home has unlimited opportunities to approach the child's number problems—in work and play, on hikes, in confidential talks, and in countless other ways that the routine of the home affords. The closer the learning process comes to being a part of the immediate daily life the more permanent the value of the education.

Boys and girls waste a great deal of time at home because they do not know what to do. They should be doing some type of *constructive* work. Since ingenuity is better than the finished product, every boy should have some sort of work shop at home even though it be equipped very meagerly at first; it will be better equipped when its value is discovered. The person whose every early wish was granted finds it hard to adjust himself to life. Valuable experience could be obtained by utilizing *waste* material; reconstructing old clocks, electric bells; by constructing play houses, toys, air ships, radios, etc. The girl does not call for a special shop, the whole house is hers. These experiences would supply a real need for number work, the ideal condition under which it should be taught.

Children are susceptible to suggestion. Like sheep they follow a good leader. Here is the golden opportunity for the parent.

Children want room to think—their minds must grow as well as their bodies; hence, they are continually asking questions. The common error into which busy parents fall is that of ignoring or rebuking the oft repeated questions of children. Such inquiries should be encouraged. Every indication that the mind is being roused is a mark of progress and all such tendencies should be fostered by the wise parent. Some one has said, "If the pupil could have his individual mathematics lesson as he has his individual music lesson, not one out of a thousand would fail."

The mother of a child two and one-half years old once questioned Darwin as to when she should begin its education. His reply was: "Madam, you have already lost two and one-half years."

NUMBER PREPARATION FOR FIRST GRADE.

Children upon entering school have some number concepts learned through home experiences; therefore, the first problem of the teacher is to make a survey of the lives of the pupils and their environment to find situations which involve number problems.

Such a survey would reveal problems from various sources; such as, games, apportioning of school supplies, cost of school lunches, marketing, disposition of allowance, cost of amusements, etc. Since we proceed from the known to the unknown these should be utilized as a medium for arousing his interest in numbers and incidentally for building a background for work of second grade.

'Tis true, arithmetic, like other subjects, should be taught when the *need* for it arises, yet a definite amount of work should be accomplished in each year of the child's life.

Business men today are constantly complaining that pupils on leaving our schools cannot *add, subtract, multiply* and *divide* and they are hopelessly lost in the simplest problems involving fractions.

If our pupils are to be prepared for life we must aim to have them *completely master the fundamental processes;* however, it is not enough to know these processes, they must be able to "size up" the situation and know when to use them.

"It is the function of the teacher and the text so to present the thing to be done, so to propose the problems to be solved that they require real discovery on the part of the child."

As a preparation for the formal study of combinations it is necessary that the child be able to do the following work:

1. Rote counting 1–100.
2. Counting by 2's, 5's, 10's.
3. Read numbers to 100.
4. Write numbers to 100.
5. Recognize at sight groups of 2, 3, 4, and 5 objects.
6. During the first school year children should become familiar with house numbers, street numbers, telephone numbers, calendar dates, their own weights, ages, etc.

The fundamentally important thing for beginners is learning to count. They should first count objects serially related and later think the symbols that represent them. This counting serves to fix in the pupil's mind the sequence of numbers; therefore,

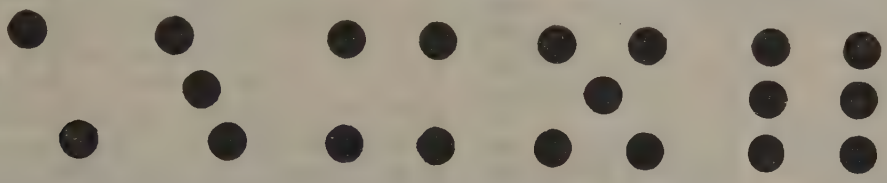
1. Let children count to the bouncing of a ball or to the tapping of a bell. At first count in concert, then individually.

2. Count objects in room: doors, windows, pictures, desks, erasers, piano, gold fish, rabbits, plants, etc.

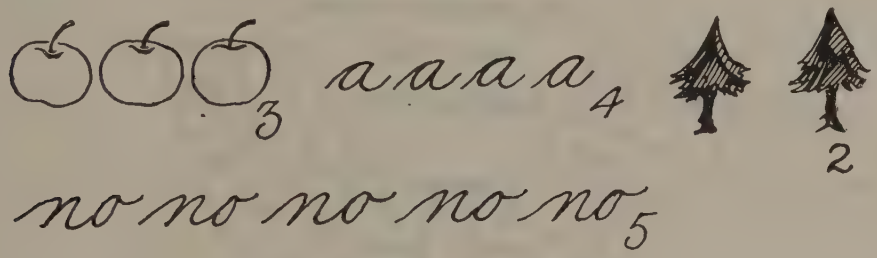
3. Have children tell the number of trees in their yard; automobiles, cars and people passed on their way to school; how many brothers and sisters in the family; how many plates are needed at the table.

4. To count by 2's, have children count hands, feet, eyes, ears; to count by 5's and 10's, use fingers and toes, nickels and dimes.

For practice in recognizing groups, let each home provide some form of blackboard, be it ever so crude, upon which the following groups may be placed with colored crayons:



Have children make groups of simple objects—trees, apples, letters, etc. The Domino Game may be used to advantage in recognizing these groups.



Let the child learn the digits by association with objects; count doors and pictures in the room and let the crayon tell how many there are.

When using Primer teach children to read the numbers of the pages and to refer to them by numbers.

For writing numbers from 1-100, arrange the work in the following manner, building up the form with the child:

0	10	20	30	40	50	60	70	80	90	100
1	11	21	31	41	51	61	71	81	91	
2	12	22	32	42	52	62	72	82	92	
3	13	23	33	43	53	63	73	83	93	
4	14	24	34	44	54	64	74	84	94	
5	15	25	35	45	55	65	75	85	95	
6	16	26	36	46	56	66	76	86	96	
7	17	27	37	47	57	67	77	87	97	
8	18	28	38	48	58	68	78	88	98	
9	19	29	39	49	59	69	79	89	99	

In order to use this form independently, make use of the following game:

Parent:—Touch each number in second column.
Touch all the 20's, 30's, 40's, and read them.
Touch the number after 29, 39, 49, etc.
Touch the numbers beginning with 2, 3, and 5 and read them.
Touch number that tells your age, etc.
Let the child copy this form until he is able to reproduce it from memory.

The following exercise will fix in the child's mind the relative value of the numbers represented by the above figures:

6	4	8	10	7
2	0	14	12	9
1	5	3	13	15

Parent:—Jack may erase the number which means nothing.
Betty may erase the largest number.
Erase the number which tells how many days in the week.
Erase the number which tells how many eyes you have, etc.

Number work may be taught incidentally by association with Physical Training, Music, Paper Folding, Writing and Drawing.

As a rest exercise, we may play "Picking Apples" thus—

Parent:—Pick up two apples. (Children pretend).
Put them into your basket. Now pick up two more apples. Put these into your basket. How many apples have you, John?
John—I have four apples.
Children, eat one apple. (Children pretend).
How many have you now?
Children—We have three apples left.

Occasionally, during the music lesson, children may count tones as they are played on the piano, or sung by the teacher.

In teaching the lines and spaces on the staff, have children use the terms first, second, third, fourth and fifth.

Practice in number work by means of the paper folding lesson can be gained in the following way:

Jimmy, place your paper before you and fold it through the middle. How many equal parts has your paper now?

Jimmy: It has two equal parts.

Parent: Fold it through the middle of each half. How many parts has your paper now?

Jimmy: It has four parts.

Parent: Fold it again through the middle, then again through the middle of each half. Count the squares in your paper. Play this is your school room and number the seats. How many children in the first row? In the second row? How many in all?

In a similar way take advantage of other subjects and activities to teach number work incidentally.

While the exercises suggested above apply particularly to the school room, the parent can find countless opportunities to lead the child to think about numbers in a natural way.

SOCIALIZING NUMBER WORK.

Much has been said in recent years about bringing the school into more intimate contact with the activities and problems of social life. Play is one of the important phases of every day life. The child is by nature very active and should be taught games that have real value.

"The game socializes the child, and since it is through social co-operation that man lives, this activity is a fundamentally important one—educationally. Through games the child learns the fine art of getting on with his fellows, how to co-operate, how to influence, how to lead, when to submit, when to seek help, when to resist, when to command, manners, customs, morals."

GAMES FOR FIRST GRADE.

MOVIES.

Recognition Game.

Let us play we are ushers and help John to find these seats:

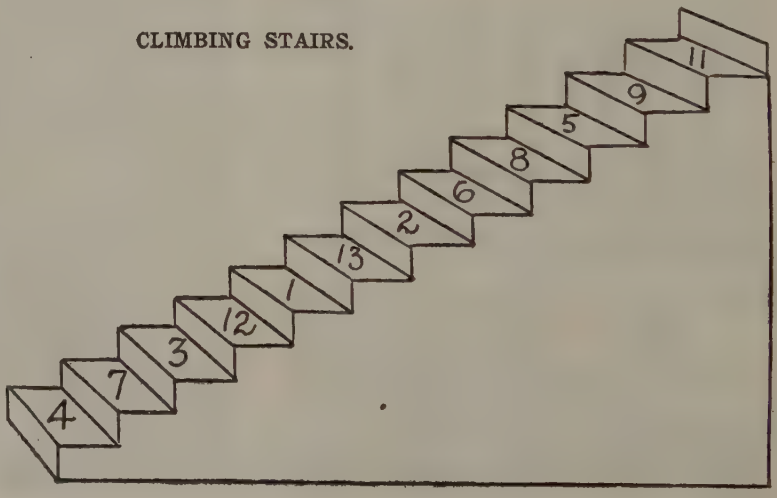
Seat 5	Seat 4	Seat 7	Seat 2
Seat 6	Seat 3	Seat 9	Seat 8

Mary purchased tickets for seats 3, 5, and 7. Sara purchased tickets for seats 2, 4, and 6. Help John to find them.

CLIMBING STAIRS.

Parent: Draw thirteen steps on the blackboard and on each step write one of the numbers from 0 to 12.

Children: Stand in the aisles near their desks, one row at a time. Have each child climb stairs by recognizing figures. If a child stumbles on a step, he must take his seat. The row having greatest number standing at the close, wins the game.



THE TOY SHOP.

Let children contribute toys for the toyshop, such as dolls, balls, blocks, pocket books, etc.

Parent: Let the first store be a "cent shop" where all sorts of toys may be bought for a few cents, nothing should cost more than ten cents.

Children: The shop keeper stands in front of the room near his toys. The other players, all customers—remain in their seats except when they are making purchases. A purchase is made like this:

Customer: What is the price of this doll?

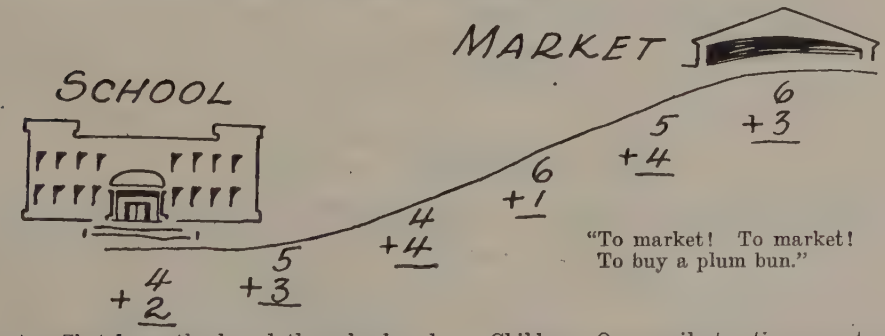
Shopkeeper: That doll is 8 cents.

Customer: I would like that doll if you please. Here is a dime.

Shopkeeper: Your change is 2 cents. Thank you.

GOING TO MARKET.

Easy Combinations.



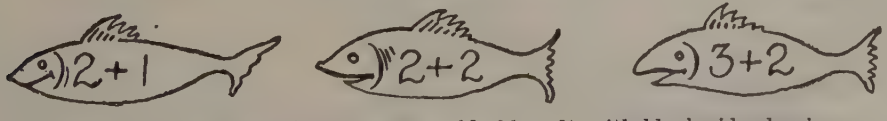
Parent: Sketch on the board the school and a market. Between the two buildings, write several combinations.

A child going to market must recognize each group he meets and call it by name.

Children: One pupil at a time goes to market. If he fails to recognize a group, he can go no further, but must return to school (seat). If he reaches market he should be clapped, etc.

FISHING GAME.

Easy Combinations.



Cut any number of fish from heavy paper. On one side of each fish write a number combination. Place fish in a brook (ledge of the blackboard) with blank side showing.

Parent: Divide class into two parties of fishers. Each fisher stands facing the front, ready

to run forward, when his turn comes to fish. As a signal to begin the parent repeats:

Little fishes in the brook,
I can catch you without a hook.

Players: As soon as the last word of rhyme is spoken, the leader of one row runs quickly to the brook and catches a fish. If he can correctly name his fish (give the result of combination) he takes it to his seat. If not, he must put it back into the brook. The leader of the other row immediately follows, and so on until all have tried.

The party having the larger catch, wins the game.

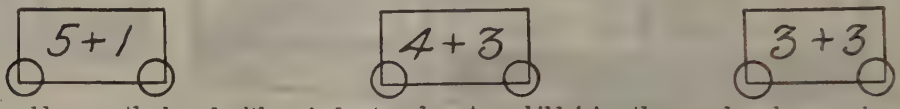
THE CALLER.
Counting Game.

Parent: Send one child into the cloakroom. Give each of the remaining children a number—not higher than 20.

Children: Players in their seats must listen attentively, while the child who has been sent out raps on the door for admittance. Suppose the caller knocks at the door seven times. The parent says: Who is wanted? If Alice has been given the number seven, she should promptly reply:

"I, seven, am wanted," and change places with the caller by taking her place in the hall. Should Alice fail to recognize her number the caller raps again, (a different number of times.)

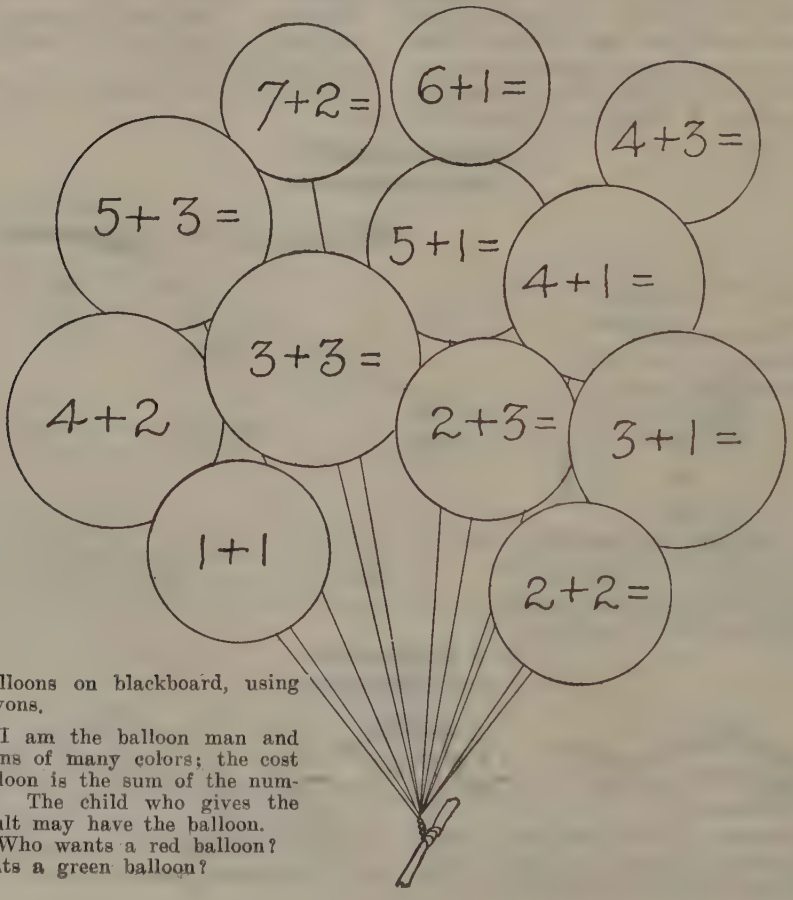
JOINING THE PARADE.



Draw oblong on the board with a circle at each of the lower corners. Call these drawings the "circus parade" and write numbers on them.

Any child joins the parade, who can give combinations correctly.

THE BALLOON GAME.
Easy Combinations.

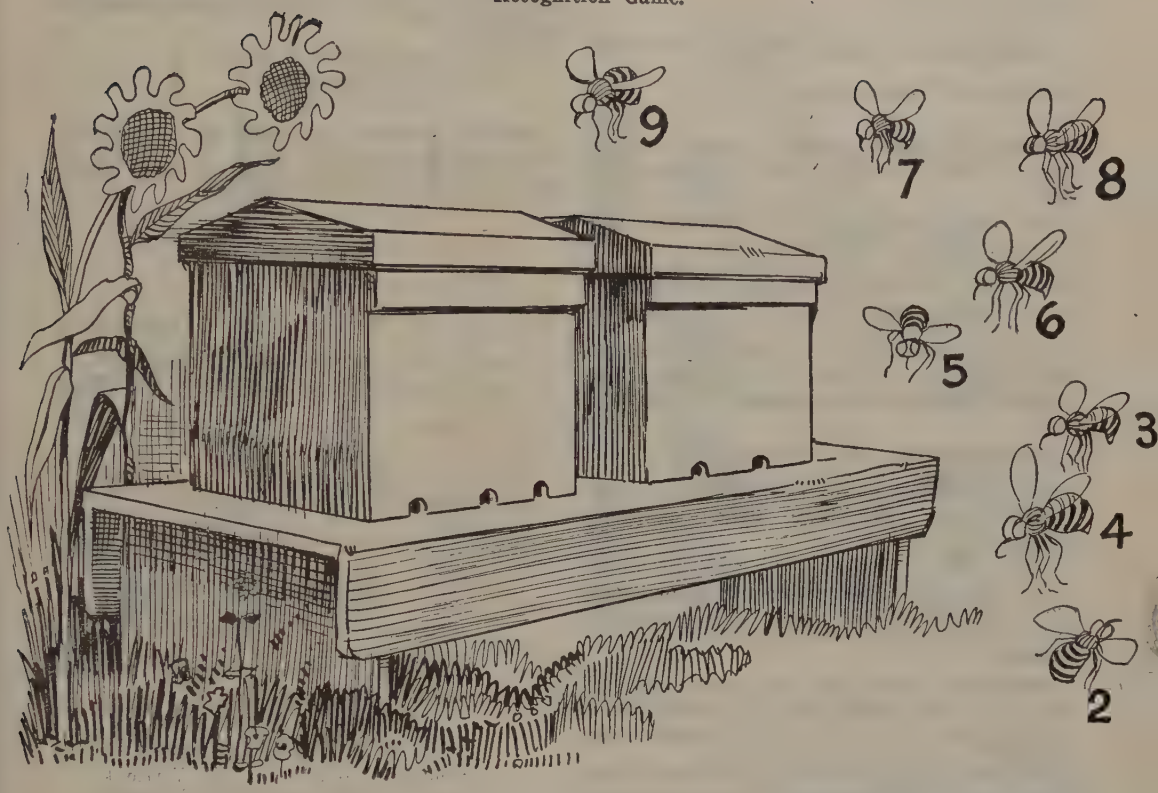


Draw balloons on blackboard, using colored crayons.

Parent: I am the balloon man and have balloons of many colors; the cost of each balloon is the sum of the numbers on it. The child who gives the correct result may have the balloon.

Parent: Who wants a red balloon? Who wants a green balloon?

BEE HIVE.
Recognition Game.



Draw on the board a beehive around which a number of bees are swarming, and number each bee. Have the child try to get all the bees into the hive by recognizing the numbers. When he fails to give the correct number he has been stung by that bee and the next child takes his turn.

SECOND GRADE NUMBER WORK.

The child upon entering the second grade should have a thorough review on the basic work of the first grade. "A woodchopper who takes time in the morning to sharpen his ax, will soon make up the time thus taken out."

Children memorize facts and form mental habits easily; and, since "First impressions are the lasting impressions," it is important when learning the basal facts, that they form correct habits which are to serve them through life.

The aim of the second grade should be to complete the following work:

1. The 45 Combinations in Addition.
2. Counting, Reading, Writing Numbers to 1,000.
3. The Subtraction Process.
4. The Addition Process.
5. Simple Units of Measure.
6. United States Money.
7. Introduction to Fractions.

The 45 combinations can be made an interesting game. Its value will be greatly increased if the child is encouraged to develop his own number cards. The cards will look like this:

1
1
2

1	2	3	4	5	6	7	8	9		2	3	4	5	6	7	8	9		
1	1	1	1	1	1	1	1	1		2	2	2	2	2	2	2	2		
2	3	4	5	6	7	8	9	10		4	5	6	7	8	9	10	11		
3	4	5	6	7	8	9		4	5	6	7	8	9		5	6	7	8	9
3	3	3	3	3	3	3		4	4	4	4	4	4		5	5	5	5	5
6	7	8	9	10	11	12		8	9	10	11	12	13		10	11	12	13	14
	6	7	8	9				7	8	9					8	9		9	
	6	6	6	6				7	7	7					8	8		9	
	12	13	14	15				14	15	16					16	17		18	

The following lesson will suggest one way in which these cards may be used:

Parent (Pointing to $\frac{2}{\frac{4}{6}}$): This combination means 6. Show me another card that means 6.

John chooses $\begin{array}{r} 5\ \ 3\ \ 4 \\ 1\ \ 3\ \ 2 \\ \hline 6,\ 6,\ 6. \end{array}$

Parent: You may write all the combinations which mean 6. John writes: $\begin{array}{r} 1\ \ 5\ \ 2\ \ 4\ \ 3 \\ 5\ \ 1\ \ 4\ \ 2\ \ 3 \\ \hline 6,\ 6,\ 6,\ 6,\ 6. \end{array}$

Parent: You have 6 rabbits. Four are white and the others are gray. Tell how many are gray.

The child is naturally active—mentally and physically—and it is important that the parent keep him mentally alert and interested in his work. It is more realistic to learn that 5 and 4 are 9 by counting children, pictures, toys, etc., than by merely using abstract numbers.

The ingenious parent can easily provide something pleasing to the child by letting the season and the child's environment suggest the problem, as

Halloween: Black cats, witches, owls.
Thanksgiving: Turkeys, pumpkins.
Christmas: Santa Claus, Christmas trees, bells.
Washington's Birthday: Flags, hatchets, cherries.
Easter: Eggs, chickens, rabbits.

The child should be encouraged to originate problems from his experience; it will not only be a source of delight, but also an aid in clear thinking.

Subtraction. By leading the child to see that these same combinations can be expressed in a different manner, we have laid the foundation for the Additive Method of Subtraction.

This method is fast coming into use in the business world; it naturally follows the addition combinations since it does not require the introduction of a new idea; it eliminates "borrowing" and substitutes the "carrying" idea which is a part of the addition process; it is also the method used in making change.

Suggestive Lesson.

Parent: You may bring me 4 balls, Mary. Now bring one more ball. How many balls have I now?

Mary: You have 5 balls.
Parent: What kind of problem is that?
Mary: It is a problem in addition.
Parent: I am going to teach you a new kind of problem. Let us throw one ball away. How many have we left?
Mary: We have 4 balls left.
Parent: You know this because the ball we threw away and the 4 we have left make 5 balls. We had 5 balls and one rolled away. How many have we left?
Mary: We have 4 balls left.
Parent: How do you know?
Mary: Because it takes one more than 4 to make 5.
Parent: Let me show you a new way to write it:

5 balls
−1 ball (rolled away)
—
4 balls (left)

Parent (Pointing to sign): We call this sign "minus." It means "take away" or "subtract." The following jingle helps to fix the method of procedure:

"Begin at the sign 1
Go to the bottom 4
Go to the top" 5

Similar problems involving the subtraction idea (sell, fly away, give away, etc.) should be given—the child repeating the jingle as he points to the figures.

8	7	6
−1	−3	−4
7	4	2
1 and 7 are 8	3 and 4 are 7	4 and 2 are 6

Parent: We can make a large problem by writing these figures close together and using only one sign:

$$\begin{array}{r} 876 \\ -134 \\ \hline 742. \end{array}$$

Mary (pointing to numbers) repeats: 4 and 2 are 6; 3 and 4 are 7; 1 and 7 are 8.

Parent: Today we shall learn how to do examples like this:

$$\begin{array}{r} 723 \\ -169 \\ \hline 554 \end{array}$$

In this example 9 is more than 3, so we think. "9 and 4 are 13." Write 4 and carry 1 to 6. 7 is more than 2, so we think. "7 and 5 are 12." Write 5 and carry 1 to 1. "2 and 5 are 7." Write 5.

Borrowing Method.

$$\begin{array}{r} 723 \\ -169 \\ \hline 554 \end{array}$$

In this example we think:
"9 from 13 are 4." Write 4.
"6 from 11 are 5." Write 5.
"1 from 6 is 5." Write 5.

Never teach more than one method to the primary child.

Column Addition. The first step in column addition is to show the need for adding more than two numbers.

Parent: Mary, let the chalk tell how many plates we need at the table. (Parent, talking as she writes.)

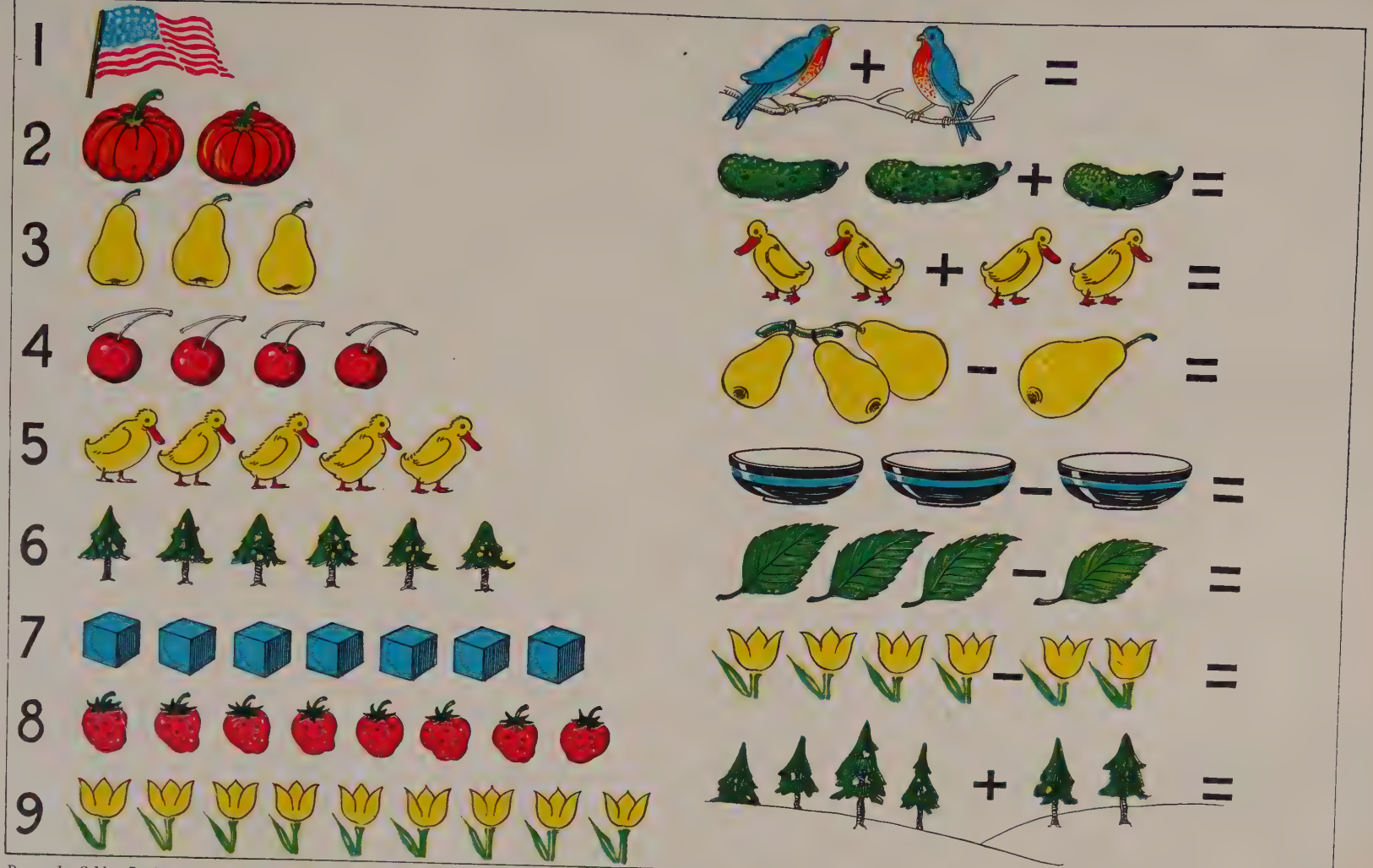
1 Father
1 Mother
3 Brothers
1 Mary
2 Sisters
—
8 Plates needed

The next step is to add by endings. Lead the child to see that a certain combination appears each time as the end of the example:

$$\begin{array}{rrrrrr} {\scriptstyle 2)} & {\scriptstyle 2)} & {\scriptstyle 2)} & {\scriptstyle 3)} & {\scriptstyle 3)} & {\scriptstyle 3)} \\ 12 & 32 & 52 & 12 & 42 & 62 \\ \hline 14 & 34 & 54 & 15 & 45 & 65 \end{array}$$

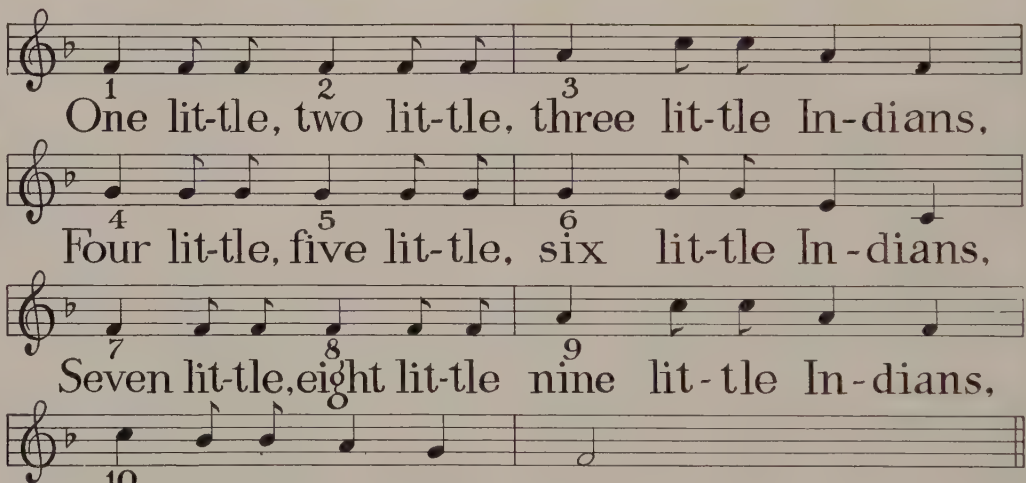
$$\begin{array}{rrrrrr} {\scriptstyle 4)} & {\scriptstyle 4)} & {\scriptstyle 4)} & {\scriptstyle 5)} & {\scriptstyle 5)} & {\scriptstyle 5)} \\ 13 & 33 & 23 & 13 & 73 & 93 \\ \hline 17 & 37 & 27 & 18 & 78 & 98 \end{array}$$

When the sum of the endings is 10 or more, write only the last figure of the sum and carry



Drawn by Selden Irwin

NUMBER WORK


1 2 3
One lit-tle, two lit-tle, three lit-tle In-dians,
4 5 6
Four lit-tle, five lit-tle, six lit-tle In-dians,
7 8 9
Seven lit-tle, eight lit-tle nine lit-tle In-dians,
10
Ten lit-tle In-dian boys.

Drawn by Selden Irwin

TEN LITTLE INDIANS

1 (or more) to the next column. Gradually increase the difficulty and length of the column.

			2	6	7	24	37	21
			4	1	1	36	25	62
			3	7	3	43	15	75
			5	8	4	21	13	20
7	7	7	6	2	6	62	41	33
3	13	24	1	3	2	10	20	51
10	20	31	21	27	23	196	151	262

Insist that work be accurately done the first time.

Reading and Writing Numbers. Since the child already knows how to read and write numbers to 100, he can easily learn to read 300, 600, 800, etc, by merely changing the digit in 100 to some other number. Emphasize the fact that hundreds requires three numbers.

Parent (writing 47): Read this number.
Mary: Forty-seven.

Parent (placing 1 before 47 and calling the one, 100): Read this number.
Mary: One hundred forty-seven.
Parent (changing 1 to 5): Read it now.
Mary: Five hundred forty-seven.

Numbers in which zero appears may require special attention. He should write similar numbers from dictation.

Writing in thousands requires four figures.
Parent: What number is one more than 999?
Mary: One thousand.
Parent: Read this number—527.
Mary: Five hundred twenty-seven.
Parent (placing 1 before 527): Read it now.
Mary: One thousand five hundred twenty-seven.

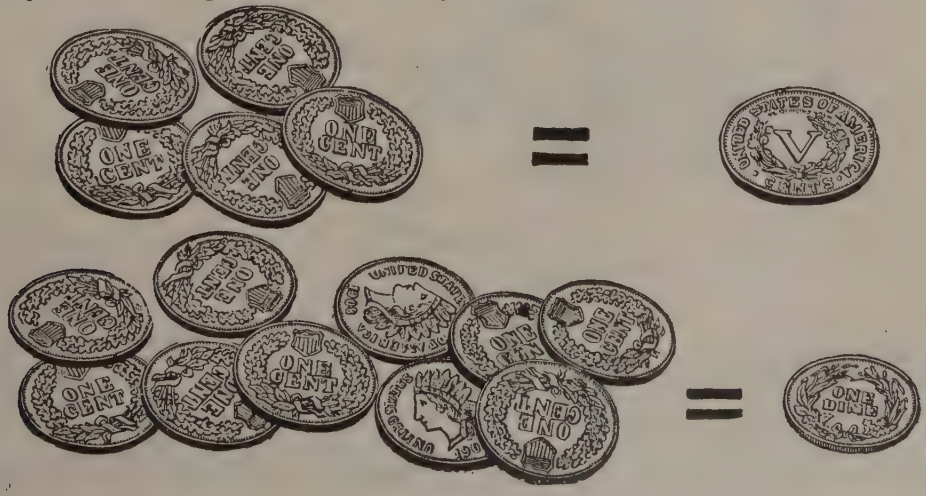
Continue in this manner until the child can write any number containing four figures.

Telling Time. Early number training may include occasional lessons in "Telling Time." Let the child draw a clock on the blackboard.

Parent: Show me how the clock looked when you went to bed. When you ate breakfast. When we ate lunch. When sister came home from school. When father came home from work, etc.

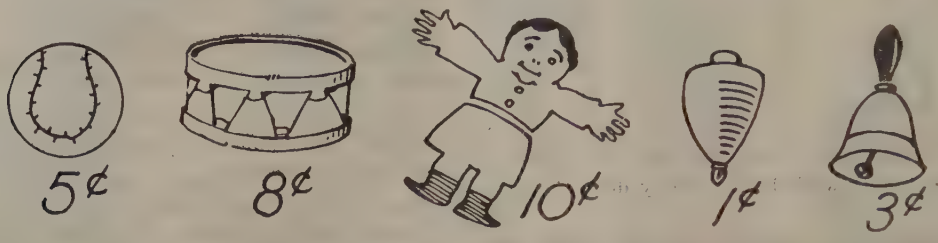
Money Values. Through the use of real money teach the child to recognize and to know the value of the cent, nickel, dime, quarter, half-dollar and dollar bill.

If possible provide toy money so that the child may play store and learn to make change from a nickel, a dime, a quarter.



Help him to make lists of articles that are for sale and teach him to write the cost of each.

If you sell a ball and a bell, how much will you receive for both articles?



More and more we are coming to realize the priceless need of "thrift." Take your child to the savings bank to get a deposit book such as "big folks" have, and encourage him to save a part of his weekly allowance. This habit involves more than the mere saving of money; it is moral training in self-denial, reasoning, and a correct attitude toward the family finances. History teaches that thrify nations prosper and thriftless ones pass away. "Economy means happy homes and sound nations. Instil it deep."

Measurements. Kindergarten and primary construction work—making the simplest kind of box, scrapbook or doll's house, all require measuring. The more accurate the measurements are, the better will be the results.

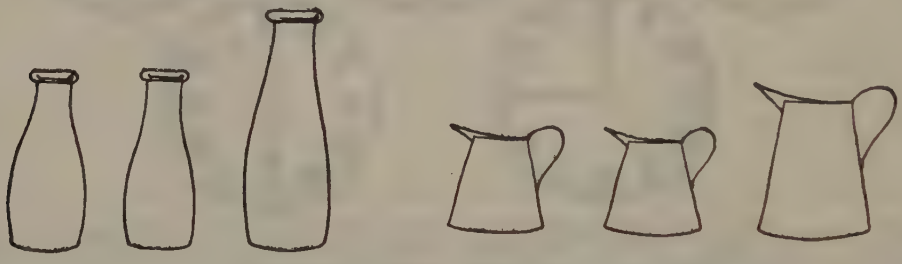
Parent: What measures do people use to find how tall they are?

Parent: Using ruler, measure your blackboard. How long is it? How wide?

Measure the table, door, window-sill, and tell how wide they are.

Using yard stick, tell how long and how wide the rug is.

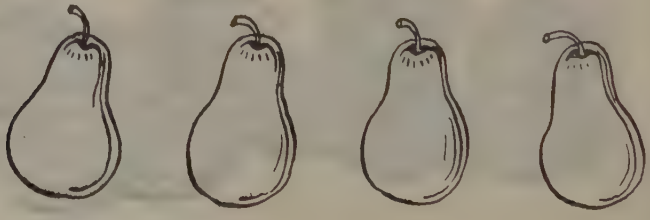
Parent: What measure does your teacher use when she finds your weight? How much do you weigh? To insure correct weight you should drink at least one quart of milk each day. What part of this amount should you drink in the morning? At noon? In the afternoon? In the evening?



Introduction to Fractions. The child's experience in sharing things with others can be utilized to introduce fractions; and, in a simple way he can grasp all four ideas:

1. Part of single object.

2. Part of group of objects.

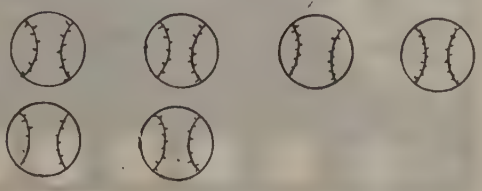


3. Comparison of two single objects.

NICKEL

DIME

4. Comparison of two groups of objects.



In a conversational way lead the child to see that one of the two equal parts into which a unit is divided equals ½; that two units equals ½ of a group of four units; that one article may equal ½ the value of another article; that a group of three objects is ½ as large as another group containing twice as many similar objects.

This incidental work in simple fractions is all that is necessary in second grade.

GAMES FOR SECOND GRADE.

TRAIN RIDE.

The gatekeeper distributes tickets containing number facts. Each child shows his ticket and *if he knows the combination* passes into the car. Each child places his hands on the shoulders of the child in front of him and when the train is made up the bell rings and they are off for a run around the room.

GATHERING NUTS.

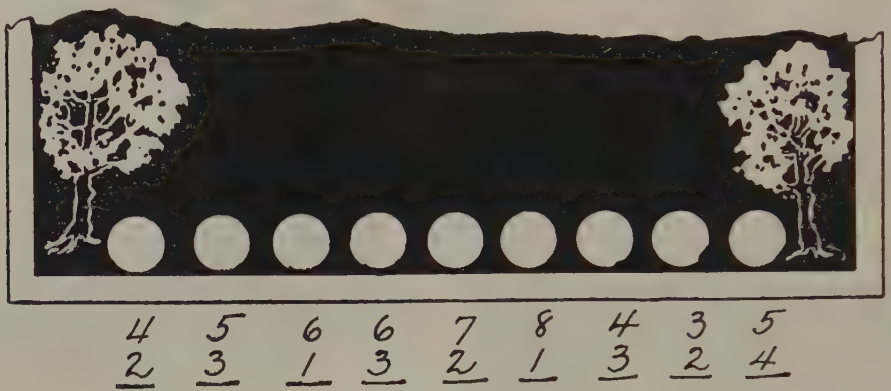
Cut any number of four-inch circles from pasteboard. These will represent the nuts. On each "nut" write a combination.

Parent: On the blackboard, at some distance apart, roughly sketch two trees. On the ledge of blackboard place the nuts with blank sides toward the class. Divide the players into two groups of nut gatherers.

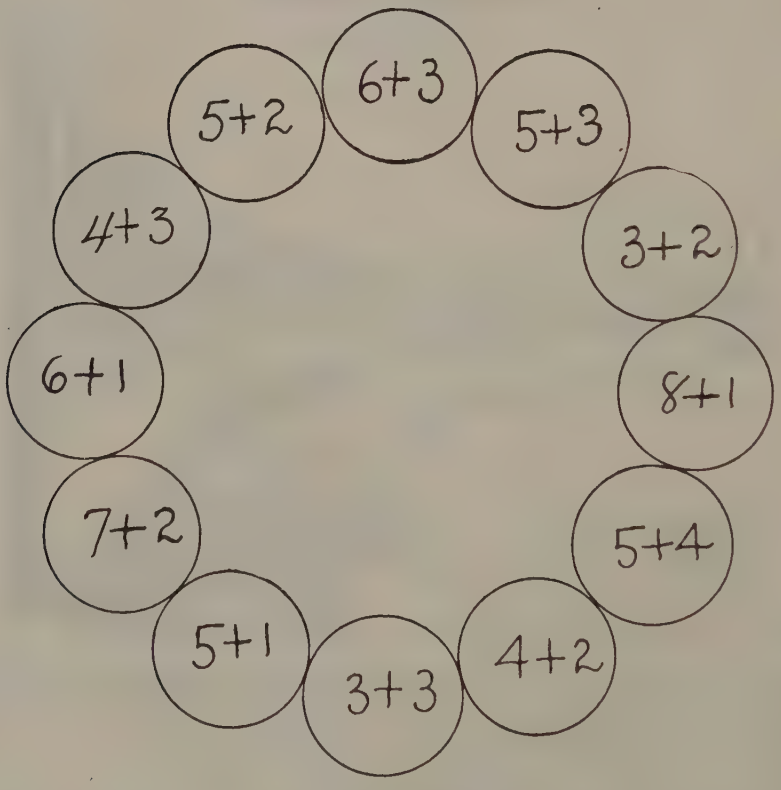
Players: At a signal from the parent—the first child on one side runs quickly to the board

and picks up a nut. If he gives the correct answer to the combination he may pick up another. If that result is also correctly given he may have one more nut. No player may have more than three nuts. The first player on the other side follows; then the second player on first side, etc.

The parent keeps score, and the side gathering the greater number wins the game.



THE MERRY-GO-ROUND.

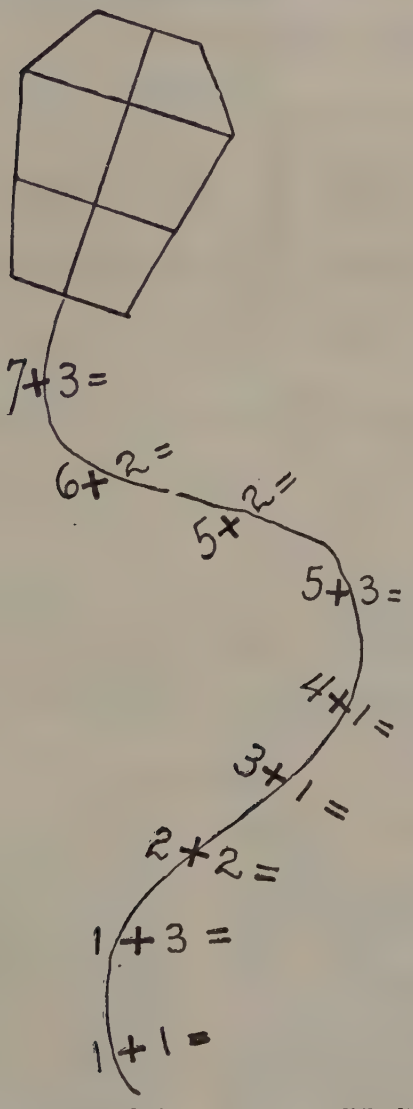


Material: None required.

Parent: Draw circles on blackboard. The circles represent the rings that hang from the bars of the merry-go-round.

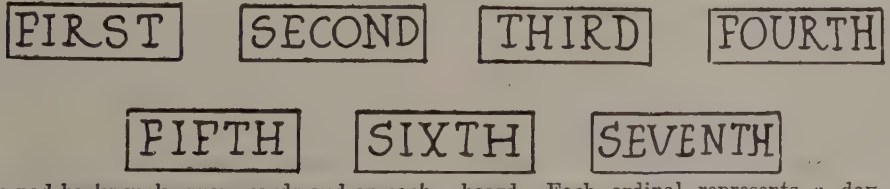
Children: Let the children pretend they are riding on a merry-go-round. A ring is taken when the result of the combination in that ring is correctly given. John has the first ride. He tries to ride fast and catch all the rings he can. When he misses a ring, another player takes a ride. Clap every rider who takes all the rings.

FLYING THE KITE.
Combinations.



When the early spring days come much interest can be created by playing this game. Each child will be anxious to fly the kite higher than his playmate. The addition facts should grow more difficult as they near the top. The child begins at the bottom and if possible gives all the combinations. If he fails on one, another child must assist in order to fly the kite higher.

DAYS OF THE WEEK.



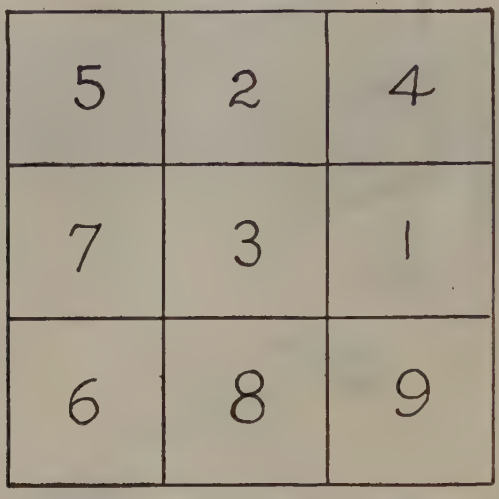
From pad backs make seven cards and on each write one of the seven ordinals. Stand cards in irregular order on the ledge of the blackboard. Each ordinal represents a day of the week.

Parent: Take away one of the cards and call upon a child to arrange the remaining cards in their right order.

Children: The player chosen to arrange the cards, must give the name of the missing ordinal. If answer is given correctly, the players in their seats should clap.

The Months of the Year may be played in the same way.

HOP SCOTCH.



Parent: Draw on the blackboard a square and divide it into nine smaller squares. In each square write a figure. Divide the class into two rows facing the diagram.

Players: Start with the figure in the center. Then go in any direction, giving the sum of the combination, as: 3 and 9 are 12; 3 and 6 are 9; 3 and 5 are 8. Players take turns—one side and then the other. If a child fails to "hop" (give the combination correctly), he must take his seat. The side having greatest number of players standing at the close wins the game.

THE POSTMAN.

Pieces of pasteboard to represent post cards, or use old post cards.

Parent: Let children "make believe" the aisles are streets and the desks are houses. Choose two players for postmen. Give each postman a pack of post cards to deliver.

Children: Make believe it is Xmas, Thanksgiving, New Year's Day, Valentine Day. Postmen start on their rounds from opposite sides of room. They go down one street, and up the next, leaving cards at every house (any number not to exceed 5 may be left). After postmen have finished their rounds, each child tells how many cards he received.

John says: "The first postman left me 4 cards, and the second postman left me 3 cards, so I have 7 cards altogether."

Mary says: "The first postman left me 5 cards and the second gave me 4—I have 9 cards in all."

Parent: Instead of collecting the cards, let each child mail them by bringing the cards and telling the amount of postage required.

John brings his cards and says: I want 7 one-cent stamps for my cards. Here are a nickel and two pennies. (He may make believe the money is in any form that he chooses).

THIRD AND FOURTH GRADE NUMBER WORK.

The beginning of each year is always the time for balancing accounts; most of the world then weighs its best efforts in order that it may know just where it stands. Mankind's seeming need for renewal and refreshment is proverbial; this is especially true in the learning process,—therefore, begin the work of the third grade with a thorough review of second grade work.

Automatic mastery of the fundamentals is the chief objective of the third and fourth grades. It is impossible to do effective work in the upper grades until that of the previous grades has been mastered.

Obtaining correct results with minimum effort is important. With this end in view the child should have frequent, short, snappy drills.

"If one wishes to produce correct number habits with the least possible expenditure of energy and time he should permit no exceptions,—the correct answer must be given every time," for no matter how the child responds to number work—correctly or incorrectly—the tendency of the nervous system is to respond in that same way again.

"Our nervous systems have grown to the way in which they have been exercised, just as a coat, once creased or folded, tends to fall forever in the same identical folds."

As soon as the new processes—Multiplication and Division—have been learned, they should immediately be used in problems and when difficulties arise, time should be taken for drill. The child will then be convinced that drills are necessary, and if they are varied from day to day, it will be easier to secure a high degree of attention. A short, snappy drill daily is much more valuable than a long drill occasionally.

Insist upon accuracy. Teach the child that "similar" does not mean "same." Make him call things by their correct names. "He can learn anything that is important to him if the power to learn is secured;" as mechanics say, "when one has learned the use of tools it is easy to learn a new craft."

One of the chief causes of failure in arithmetic is the child's inability to interpret the problem; hence, solving problems without numbers (telling the processes to be used and why) is a valuable aid to clear thinking.

Remember, it is not what the child is told to do, but what he *does* that educates him.

Aim:

Multiplication.
Division.
Measurements (Continued).
Money Values (Continued).
Fractions (Continued).
Roman Numerals.

Multiplication. The child already knows:

0	1	2	3	4	5	6	7	8	9	10	11	12
+0	+1	+2	3	4	5	6	7	8	9	10	11	12
0	2	4	6	8	10	12	14	16	18	20	22	24

also

2	2	2	2	2	2	2	2	2	2	2	2
	2	2	2	2	2	2	2	2	2	2	2
	4	2	2	2	2	2	2	2	2	2	2
		6	2	2	2	2	2	2	2	2	2
			8	2	2	2	2	2	2	2	2
				10	2	2	2	2	2	2	2
					12	2	2	2	2	2	2
						14	2	2	2	2	2
							16	2	2	2	2
								18	2	2	2
									20	2	2
										22	2
											24

Lead him to see that the same thing can be expressed in a shorter way by using a different sign (×) and saying "times."

The sign is not always written but when told to multiply we must *think* the sign.

0	1	2	3	4	5	6	7	8	9	10	11	12
×2	×2	×2	2	2	2	2	2	2	2	2	2	2
0	2	4	6	8	10	12	14	16	18	20	22	24

Multiplication can also be expressed in this way:

$2 \times 0 = 0$. Think—"Two times zero equals zero."
$2 \times 5 = 10$. Think—"Two times five equals ten."

```
 93   Think—"Two times 3 is 6."  Write 6
  2   under 2.
 --   Think—"Two times 9 is 18."  Write 18
186   to the left of 6.

 96   Think—"Two times 6 is 12."  Write 2,
  2   remember 1.
 --   Think—"Two times 9 is 18."  18 + 1 (re-
192   membered) = 19.
```

The number by which we multiply is called Multiplier.

The number multiplied is called Multiplicand.

The result is called Product.

Drill problems:

24	63	82	50	45	56	95	38	89
2	2	2	2	2	2	2	2	2

The other basic tables should be developed in a similar manner. The child should then be ready to use the following table for drill work:

MULTIPLICATION TABLE.

	2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

TWO-FIGURE MULTIPLIER.

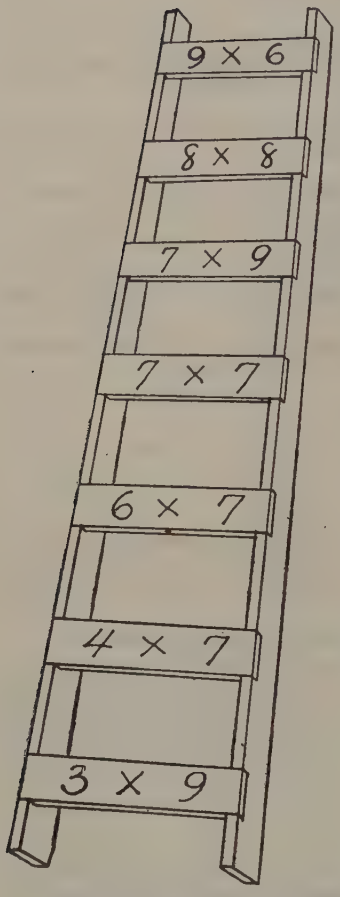
```
735   First, multiply 735 by 5. Be sure
 25   to write each figure in its proper
----  place.
3675  Then multiply 735 by 2. Place the
1470  first figure of your product (0)
-----  under the multiplier (2) and keep
18375  all figures in straight columns.
```

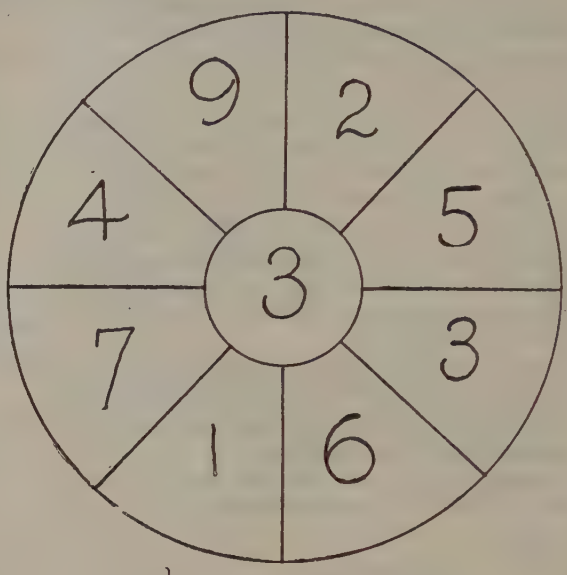
The sum of the numbers between the lines (18,375) is the product.

THREE-FIGURE MULTIPLIER.

```
1048   The three-figure multiplier is a
 432   continuation of the above process.
----   When multiplying by 4, notice that
2096   the first product number (2) is
3144   placed directly under the 4 of the
4192   multiplier.
-----
452736
```

DRILL WORK—MULTIPLICATION TABLES.





12
8
0
1
4
0
5
10
0
2
7
3
11

} × 2, 3, 4, 5, 6, 7, 8, 9.

Drill, Drill, DRILL.

MULTIPLIERS CONTAINING ZERO.

48
70
3360

Notice the position of the multiplier. Place 0 of the product under 0 of the multiplier, then multiply by 7.

48
700
33600

Place two 0's in product, then multiply by 7.

237 Multiplicand
403 Multiplier
711
948
95511 Product

Be careful to place the first figure in each partial product exactly under the figure by which you are multiplying. (1 under the 3) (8 under the 4).

SUGGESTIVE PROBLEMS IN MULTIPLICATION.

School Supplies.

Tablet	5¢	Crayon	10¢
Pencil	5¢	Paints	25¢
Ink	10¢	Brush	10¢
Pen	5¢	Eraser	5¢

What materials do you need in your school work? What would your supply cost? There are 30 pupils in your class. What would it cost to supply each one with a pencil? What would the crayon supply cost? What would be the total cost of all the supplies listed above for your class?

843	986	846	387	618	425	372
56	37	76	396	392	160	406

DIVISION:

PREPARATORY DRILL FOR SHORT DIVISION.

How many 2's in	How many 3's in	How many 4's in
24	36	48
8	18	24
10	6	4
16	30	36
2	15	8
8	3	44
12	12	12
18	21	32
6	9	16
14	27	28
22	9	20
4	24	40
20		

Continue this drill with 5's, 6's, 7's, 8's. 9's.

After thorough drill in preceding work take up each table in the following way—teaching *remainder*:

How many 3's in:

3 = 1	18 = 6
4 = 1 + 1	19 = 6 + 1
5 = 1 + 2	20 = 6 + 2
6 = 2	21 = 7
7 = 2 + 1	22 = 7 + 1
8 = 2 + 2	23 = 7 + 2
9 = 3	24 = 8
10 = 3 + 1	25 = 8 + 1
11 = 3 + 2	26 = 8 + 2
12 = 4	27 = 9
13 = 4 + 1	28 = 9 + 1
14 = 4 + 2	29 = 9 + 2
15 = 5	
16 = 5 + 1	
17 = 5 + 2	

When dividing by 3 no remainder can be greater than 2. When dividing by 4, no remainder can be greater than 3. In division, a remainder can never be as large as the divisor.

Short Division:

32 — How many 2's in 6? 3. Write 3 over 6.
2 ∫ 64 — How many 2's in 4? 2. Write 2 over 4.

29 — How many 2's in 5? 2 and 1 remaining.
2 ∫ 58 — Write 2 over 5 and think 18 instead of 8.
How many 2's in 18? 9. Write 9 over 8.

$76\frac{1}{2}$ — How many 2's in 15? 7 and 1 remaining.
2 ∫ 153 — Write 7 over 5 and think 13 instead of 3.
How many 2's in 13? 6 and 1 remaining.
Write 6 over 3 and a small 1 to represent the remainder.

The number divided is called Dividend.

The number by which we divide is called Divisor.

The result in division is called Quotient.

23 — Divide: How many 21's in 48? (First think how many 2's in 4) 2. Write 2 over 8.
21 ∫ 483
42 — Multiply: 2 × 21 = 42
63 — Subtract: 48 − 42 = 6
63 — Compare: 6 is less than 21. Bring down 3.
Divide: How many 21's in 63? Write 3 in quotient over 3 in dividend.
Proof: 21 × 23 = 483.

Remember the order: Divide, Multiply, Subtract, Compare.

230 — When partial dividend is "zero," place zero in the quotient over zero in dividend.
21 ∫ 4830
42
63
63
0
Proof: 21 × 230 = 4830.

Suggestive Problems in Division:

A gardner planted 1575 cabbage plants in 15 rows, with an equal number in each row. How many plants were in each row?

A train of 17 cars contained 2448 barrels of potatoes. What was the average number of barrels in one car?

If 25 lots sell for $37,500.00 what is the average price of a lot?

Mary promised to read 180 pages of a book about gardening. How long would it take her to read it at the rate of 20 pages in one hour?

78)13555 73)8328 47)5766 29)8976

Measurements:

LIQUID MEASURE.

2 pints = 1 quart
2 pt. = 1 qt.

4 quarts = 1 gallon
4 qt. = 1 gal.

How many pints will fill 4 quart bottles?
How many quarts will fill a 3 gallon jar?
How many pints in one gallon?
How many gallons in 12 quarts?
How many quarts in 2 gallons?

How many gallons in 16 pints?
A family uses 3 pints of milk each day. How many quarts of milk do they use in four days? How many gallons? How many gallons will they use in 6 days?

MEASURE OF LENGTH.

12 inches = 1 foot. 3 feet = 1 yard.
12 in. = 1 ft. 3 ft. = 1 yd.

Draw three lines of different lengths. Have the child measure them in inches and in feet.

Have the child draw a line 12 inches long.

Have the child draw a line 3 feet long. How many inches in this line?

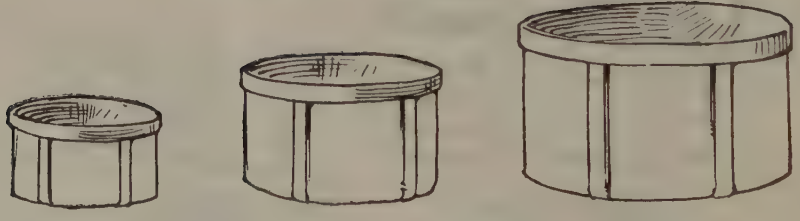
How many inches in 1 yard?

MEASURE OF WEIGHT.

16 ounces = 1 pound 16 oz. = 1 lb.

How old are you?
How tall are you?
How many pounds do you weigh?
How many ounces in 5 pounds?
How many pounds in 32 ounces?

DRY MEASURE.



2 pints = 1 quart
8 quarts = 1 peck
4 pecks = 1 bushel

2 pt. = 1 qt
8 qt. = 1 pk.
4 pk. = 1 bu.

How many pecks are there in 2 bu.?
How many quarts are there in 2 pecks?

How many quarts are there in one bushel?
How many pints are there in one peck?

MEASURE OF TIME.

The numbers on this clock are *Roman Numerals*. The Romans used the letters I, V, L and C to write numbers from one to one hundred.

I means	1	IV means	1 less than 5
V means	5	VI means	1 more than 5
X means	10	XL means	10 less than 50
L means	50	LX means	10 more than 50
C means	100	XC means	10 less than 100

The long hand measures the time in minutes; the short hand tells the hour. It takes the long hand 5 minutes to go from one number to the next. How long does it take it to go from XII to IV? What is the time when the long hand is on the XII and the short hand at VI?

60 minutes = 1 hour	60 min. = 1 hr.
24 hours = 1 day	24 hr. = 1 da.

How many minutes in 3 hours? In one-half hour?

How many hours in 4 days? In one-half day?

1926	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
JAN.						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31						
FEB.		1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28						
MAR.		1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31			
APR.					1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	

1926	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
MAY							1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31					
JUNE			1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30			
JULY					1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
AUG.	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				

1926	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
SEPT.				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30		
OCT.						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31						
NOV.		1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30				
DEC.				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	

7 days = 1 week	7 da. = 1 wk.
12 months = 1 year	12 mo. = 1 yr.
52 weeks = 1 year	52 wk. = 1 yr.

How many days in one week? Name them.

How many months in one year? Name them.

Look at the calendar and name the months that have 30 days, 31 days. Name the month that has less than 30 days.

Memorize:

Thirty days hath September,
April, June and November;
All the rest have thirty-one,
Except the second month alone,
Which has but twenty-eight in line,
Till leap year makes it twenty-nine.

How many days in 5 weeks? How many days in the months of August and September?

How many weeks in 56 days? How many weeks in 3 years? How many months?

MONEY VALUES.

Show by using real money that:

A nickel	= 5 cents
A dime	= 2 nickels; 10 cents
A quarter	= 2 dimes and a nickel; 5 nickels; 25 cents
A half-dollar	= 2 quarters; 5 dimes; 10 nickels; 50 cents

The game of playing store is the best method of teaching money values to the child, as it involves problems of buying and selling. Teach him how the grocer counts change. John's purchase amounted to 7 cents and he gave the grocer a quarter. Begin with the amount of the purchase and say: 7, 10, 20, 25.

When the need arises teach the child how to write numbers meaning dollars and cents, thus introducing the dollar sign ($). A period called the decimal point is always placed between dollars and cents. Cents are written in two places at the right of the decimal point.

Thus 7 dollars and 25 cents is written: $7.25. 5 dollars and 5 cents is written: $5.05.

Milk bills and grocery bills may be used to illustrate the need for a knowledge of U. S. money.

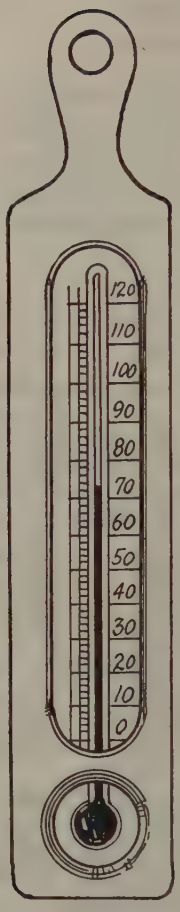
"Playing Cashier."

Tell how you would make change for the following purchases:

4 cents from a nickel.
2 cents from a dime.
8 cents from a quarter.
35 cents from a half dollar.
61 cents from 75 cents.
17 cents from a dollar.
60 cents from a two-dollar bill.
50 cents from a five-dollar bill.

When giving drill problems, insist upon the correct position of the decimal point:

$132.05	$535.43
+ 29.50	− 40.85
$161.55	$494.58
$75.43	$127.15
× 8	5)$635.75
$603.44	



MEASURING TEMPERATURE.

Temperature is measured by a *Thermometer* and is marked in degrees. (Sign = °.) Water freezes at 32°. It boils at 212°. Zero is 32° colder than freezing point.

Heat causes the mercury to rise; cold causes it to fall.

The temperature of the blood is 98°.

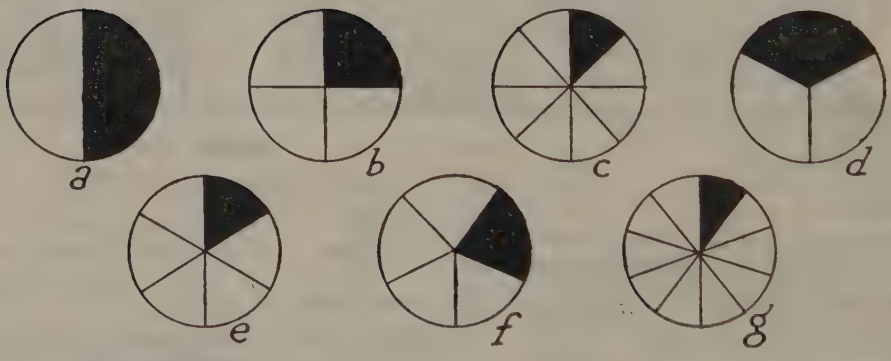
The temperature of your room should be 68°.

On January 10th, the mercury fell from 12° above zero to zero.

How much colder was that?

How many degrees too warm is your room when the temperature is 75°?

When mother was sick her temperature was 105°. How much above normal was that?



FRACTIONS.

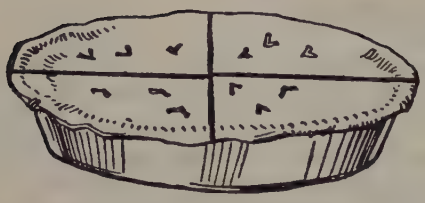
To introduce and to develop the fraction idea in its simplest forms is the aim of the first four grades.

In an informal way they should know ½, ¼, ⅛, 1/3, 1/6, 1/5, 1/10 of objects and groups of objects.

The circle (a) is divided into two equal parts. Each of these parts is a half of the whole circle; that is, each is a fraction of a circle. Each part, or fraction, is one-half, which is written ½.

Another circle (d) is divided into three equal parts; each of these parts is called one-third, and is written 1/3.

The circle (f) is divided into five equal parts, each of which is called one-fifth and is written 1/5.



Into how many equal parts is this pie divided? How many persons would it serve?

When anything is divided into four equal parts we call each part one-fourth.

Mother cut two pies into fourths. How many pieces would that be?

How many halves in one pie? How many fourths?

How many fourths in one-half?

If mother and John each ate one-fourth of a pie, what part would remain?

Mary, how shall we divide this cake so that you and each of your two playmates may have equal parts?' Into three parts.

When anything is divided into three equal parts, we call each part one-third (1/3).

When two of these parts are taken, the fraction is called two-thirds (2/3).

Follow the above plan to develop fourths, eighths, sixths, fifths, tenths.

Before beginning the work of the fifth grade the child should know the meaning and use of the terms, *fraction, numerator,* and *denominator.*

A fraction is one or more of the equal parts into which a unit is divided. It is expressed by means of two numbers, one over the other, separated by a line.

Thus, ¾ is a fraction. 4 is called the *denominator* and means that something has been divided into fourths. 3 is called the *numerator* and means that three of these parts have been taken.

A clear idea of the above terms and the ability to use easy fractions insures a valuable foundation for the work of the next grade.

PROBLEMS WITHOUT NUMBERS.

If you know what percent you have in each of six lessons, how would you find your average grade?

If you know the cost of a quart how can you find the cost of a peck?

If you know the cost of a pint of milk and use one quart per day, how can you find your milk bill per week?

If you know the cost of a daily paper and the cost of a Sunday paper, how would you find the cost of your papers per week?

Given the daily temperature for one week, how would you find the average temperature for that week?

Given the number of pupils in a class, and the total cost of supplies, how would you find the cost of supplies for each pupil?

Given the number of stamps on one page and the cost of each stamp, how would you find the amount of money invested per page?

Given the salary per month and the expenses per month, how would you find the amount saved?

SUGGESTIVE PROJECTS IN NUMBER WORK.

The child should be given opportunities to originate problems. Projects that are worked out in a social way not only stimulate thought in arithmetic, but also provide worth-while drill in spelling, writing and English.

Father's automobile cost $1,600.00. He paid $15.00 extra for a bumper, $6.00 for a mirror, $4.00 for a clock, $20.00 for a spare tire. What was the total cost? If the car depreciated $500.00 the first year, what was it worth then?

On our trip this car traveled 50 miles on 10 gallons of gasoline. How far did it travel per gallon?

If gasoline is worth 25c per gallon, what was the total cost of gasoline? If depreciation amounted to 4c a mile, cost of oil ½c a mile, wear on tires 2c per mile, find the total cost for the 50 mile trip.

Five passengers traveled in this car. If they had traveled by rail at 4c per mile, what would have been the total cost?

Similar projects may be developed using the following ideas:

Birthday parties, picnics, gardening, banking, building a radio, camping trip, school lunches, etc.

GAMES FOR THE THIRD AND FOURTH GRADES.

BEAN BAG.
Addition Facts.

Draw this diagram on the floor with chalk. Several feet away a line is drawn behind which the player stands and throws a bean bag toward the center. Each player is given two throws and his score is the sum of the two numbers hit. In order to get this score the child must state the sum of the two numbers correctly.

OF WHAT ARE YOU THINKING?

(Table Drill.)

Material: No material required.

Parent: Have children form in a circle around one of their number.

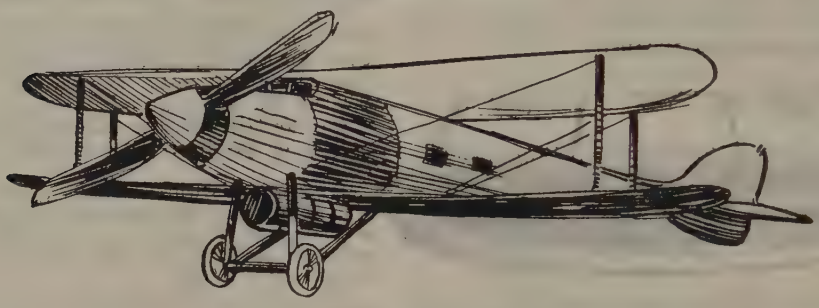
Children: The player in the center of the circle must think of a result in a multiplication table.

The players in turn ask the "Thinker" such questions as: "Are you thinking of 4×9?" The answer may be: "No, I am not thinking of 36." The next player may ask: "Are you thinking of 3×8?" "No, I am not thinking of 24." The third may ask: "Are you thinking of 6×7?" If the thinker has in mind 42, he answers: "Yes, I am thinking of 42." When the right guess is made, the "Questioner" and the "Thinker" change places.

After three calls and failures to guess correctly, the "Thinker" tells his combination and then chooses another one.

AN AEROPLANE FLIGHT.

Subtraction Facts.



	6	8	7	9	5	4	8	9	6	8	9	7	
Washington	−1	−5	−4	−2	−3	−1	−6	−6	−4	−3	−7	−3	San Francisco
	—	—	—	—	—	—	—	—	—	—	—	—	

Fly from Washington City to San Francisco. Each error means a stop for repairs. See if you can make a record flight.

THE TUG OF WAR.

(Table Drill.)

Material: None.

Parent: Two rows of children at a time may play this game. The parent names a table to be written on the blackboard and at a given signal the "Tug of War" between the two rows begins. The signal may be given in this way:

"The tug of war will now begin,
The stronger side will surely win."

Children: At the word "win" the first in each of the two rows runs quickly forward and writes on the blackboard the first step of the table. As soon as he finishes writing, the second child immediately follows and writes the second step of the table. Going to the blackboard a child leaves his seat from the right hand side and returns on the left—thus avoiding danger of collision. The third child follows the second, and so on. The row which finishes the table (correctly) first is the stronger and wins the "Tug of War." Let the other children clap. When the first and second rows have tugged, the third and fourth rows have a contest, and so on. Change about so that the same rows shall not always compete; the first and third rows, and the second and fourth rows, etc.

MOTORING TO NEW YORK.

(Table Drill.)

6	7	8	9	7	5	6	7	9	8	8	5	6	4	7
×7	×7	×6	×6	×4	×9	×6	×9	×9	×9	×8	×7	×5	×9	×6
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Each failure to give the correct product means a delay. Try to get to New York on schedule time.

FORMAL ARITHMETIC.

What number is. The word number comes to have meaning to the child early in his school life if he does not form this idea even earlier. At first it is difficult to get him to think in terms of numbers rather than in terms of things. Slowly the idea takes form. The one, two and many are replaced by a system of counting. Five comes to mean something of itself instead of a group of things, as five fingers, five apples, five pennies and so forth. *Numbers* are the things we use in arithmetic.

What arithmetic is. Arithmetic is the science of numbers and the art of computation. The word itself comes from the Greek word, *arithmos*, which means number.

After the child learns to count with numbers, he must learn to read and write numbers. The writing of numbers is called *notation*. The reading of written numbers is called *numeration*.

There are two systems of notation in more or less common use today. The first is known as the *Arabic system*. It is so called because it was introduced into Europe by the Arab traders of the tenth and eleventh centuries. This method of notation is really of Hindu origin and is very old. The figures or symbols now used are very different from those used in olden times but the method of arrangement is unchanged.

The other method of writing numbers is known as the *Roman System* of notation. Numbers are not so easily written in this system nor are they so readily read. Computation is difficult with them. For these reasons, Roman numerals are not used in the solution of problems. They are used mostly to mark the hours on watches and clocks; to designate the chapters and sections of books; to number the pages of extra material in books, as in the introduction or the appendix; and to mark dates in inscriptions on monuments and buildings.

NOTATION AND NUMERATION.

Roman numerals. In writing a number with Roman numerals, seven letters are used.

I = 1; V = 5; X = 10; L = 50; C = 100; D = 500; M = 1,000.

1. A straight line placed above a letter multiplies its value by 1,000. Eg., $\overline{V}$ = 5,000 etc.

2. The same letter written twice, means double the number; written three times, it indicates three times the number. Eg., XX = 20. CCC = 300.

At one time I was written four times to indicate 4, five times to indicate 5, and so on. In time the upper half of the X came to mean half of ten and was written V. To meet a similar problem, L came to mean 50 and D to mean 500. This called for additional rules.

3. If a letter folows a letter of greater value, its value is added to the value of the greater letter. Eg., XI = 10 + 1 = 11. CL = 100 + 50 = 150.

4. If a letter comes before a letter of greater value, its value is subtracted from the value of the greater letter. Eg., XL = 50 − 10 = 40. CM = 1,000 − 100 = 900.

The number is written thousands first, then hundreds, tens and units. The following examples show how numbers are written in this system.

Numbers to one hundred are written in the following manner.

I	1	XX	20
II	2	XXX	30
III	3	XL	40
IV	4	L	50
V	5	LX	60
VI	6	LXX	70
VII	7	LXXX	80
VIII	8	XC	90
IX	9	C	100
X	10		

The years are written as follows.

MCMXXVI = 1926
MCMXXVII = 1927
MCMXXVIII = 1928
MCMXXIX = 1929
MCMXXX = 1930

Arabic numerals. The Arabic system makes use of ten signs or symbols, called *figures*. They are

1, 2, 3, 4, 5, 6, 7, 8, 9, 0.

These figures are also called *numerals* or *digits*, and by their use any number can be written.

The figures are written in a horizontal line. Each has a value determined by the place it occupies in the number represented. The value of each figure, however, is always equal to the value of the figure when it stands alone multiplied by some power of ten. For this reason, this method of reading and writing numbers is also called the *decimal system*.

Numbers are divided into *periods* of three figures each beginning at the right of the number. The figures and the periods are named to enable one to read them readily.

Billions Period			Millions Period			Thousands Period			Units Period		
Hundred Billions	Ten Billions	Billions	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Units
7	2	8,	4	3	6,	5	0	9,	1	4	3

This number is read "*seven hundred twenty eight billion, four hundred thirty six million, five hundred nine thousand, one hundred forty three.*"

Do not use "and" between the periods.

Additional periods to the left of billions are called trillions, quadrillions, quintillions, etc.

Unless stated to the contrary, the word number is used to refer to numbers in the Arabic system.

Kinds of numbers. In arithmetic, three kinds of numbers are used. They are called *integers*, *fractions*, and *decimal fractions* or *decimals*.

INTEGERS.

A *unit* is a single thing or a group of things thought of as one.

An *integer* is a whole number. It is made up of one or more units. It is represented by a figure or a group of figures, as 3, 7, 36, 407.

Abstract numbers are numbers used without reference to things. Problems using numbers of this kind are called abstract problems. They are used for purposes of instruction and drill.

Concrete numbers are numbers used to denote a certain group of things or quantities. Problems using numbers of this kind are called concrete or practical problems. A great deal of emphasis is being placed upon problems of this kind at present. They should deal with questions that arise in the actual experience of the pupil. Examples of this kind of number are 5 days, 7 quarts, 3 dollars, 6 miles, etc.

An integer which when multiplied by another integer gives a number, is called a *factor* of the number. 2 is a factor of 4, of 6 and of 10. Factors of 12 are 2, 3, 4 and 6. Some writers speak of 1 and the number itself as being factors of the number. It is apparent that every integer has 1 and itself as factors.

A *prime number* is a number which has no factors except itself and 1. It is often valuable to know if a number is prime. Tables are printed showing all prime numbers up to several millions. Many numbers do not need to be considered in testing for prime numbers.

All numbers ending in 0, 2, 4, 6, or 8 have 2 as a factor and are called *even numbers*. No even number except 2 is prime.

All numbers ending in 5 have 5 as a factor. Except 5 itself, no such number is prime.

Numbers which are not even numbers are called *odd*. It follows from the above that all prime numbers greater than 2 are odd numbers.

The prime numbers to 100 are as follows,

2,	3,	5,	7,	11,	13,	17,
19,	23,	29,	31,	37,	41,	43,
47,	53,	59,	61,	67,	71,	73,
79,	83,	89,	97,			

Integers which are not prime are called *composite* numbers.

If a number is a factor of two or more numbers it is a *common factor* of the numbers.

Two numbers which do not have a common factor are said to be prime to each other or *relatively prime*.

If a factor is a prime number, it is called a *prime factor*.

The largest number that is a factor of two or more numbers is called the *greatest common factor* of the numbers.

A number is a *multiple* of any of its factors. It may be thought of as a *common multiple* of two or more of its factors. Thus 12 is a multiple of 2 and of 3, etc. or it is the common multiple of 4 and 6.

The *least common multiple* of two or more numbers is the smallest number that has both the given numbers as factors. Thus 12, 24, and 36 are all common multiples of 4 and 6, but 12 is their least common multiple.

FUNDAMENTAL OPERATIONS.

The four fundamental operations of arithmetic are *addition*, *subtraction*, *multiplication*, and *division*. Numbers are combined with one another in accordance with certain laws. These laws or rules must be carefully developed to see how they work for the three kinds of numbers used in arithmetic.

There are certain axioms or truths that must be accepted by the student of any science. In elementary arithmetic, these truths are not even stated to the child. A collection of the axioms commonly used in mathematics is given in connection with the section on geometry, Par. 18. Attention is here called to only two. 1. Things equal to the same thing are equal to each other. 2. The whole is equal to the sum of all its parts and is greater than any of its parts.

ADDITION.

Addition is the process of collecting two or more numbers into one equivalent number.

The numbers combined are called the *addends*.

The result obtained by the process is called the *sum*.

Any number of abstract numbers can be added together.

In adding concrete numbers, it is necessary that they refer to the same kind of things or quantities.

The sign of addition is +, read *and* or *plus*.

The sign of equality is =, read *equals* or *is equal to*.

Example. Add 7,246, 51 and 398.

7, 2 4 6	
5 1	Addends
3 9 8	
7, 6 9 5	Sum

In adding, write the numbers so that figures of the same order will be in the same column. Begin at the right. Add the units column. Write the unit part of the sum in the units column "carrying" the tens part to the next or tens column. Repeat this process, writing each time the units part of the sum in the column just added, carrying the tens part of the sum to the next column.

In the example, the sum of the units is 15, write the 5 and carry 1 saying 1 + 9, etc. The sum of the tens column is 19, write the 9 and carry 1. The sum of the hundreds column is 6, write the 6. There is nothing to carry. The sum of the thousands column is 7, write the seven.

In adding columns of figures, speed will be gained if the numbers are added in pairs or groups of numbers as indicated in the accompanying illustration.

7
3 10
9
4 13
6
5 11
1
2 6
3
40

In adding, do not repeat the numbers. Say six, seventeen, thirty, forty.

With a little practice, the student will be able to add by this method in much shorter time than formerly. This method assumes a thorough knowledge of the 45 combinations which are explained in the work relating to the second grade. These combinations should be learned so that the numbers 4 and 9 in the above problem together with the idea of addition mean 13. *Speed as well as accuracy is to be gained if one is to become a good arithmetician.*

Problems in arithmetic must be worked correctly. Even when all possible care is taken, mistakes will be made. In order to be sure of a result, every problem should be tested or checked. This checking is an important part of the problem. Even in banks where adding machines are used for speed and accuracy, the figures are all checked a second time to make sure that the wrong key was not pressed by the operator.

There are several methods used to prove or check problems in addition.

1. *Add beginning at the top.* In the example, say 10, 23, 34, 40.

2. *Divide the column into two parts, add each part separately, then add the sums.*

3. *Add each column separately,* writing the units of each sum under the column added. *Then add these sums.* This method is illustrated in the accompanying example.

4, 318
5, 684
6, 857

15
1 7
14
19

16, 859

4. *Casting out the nines.* This is accomplished by finding the *excess* of each of the numbers over 9. By the *excess* is meant the remainder when the number is divided by 9. The excess is readily found due to the fact that the excess of any number over 9 is equal to the excess of the sum of its digits over 9.

To test addition by casting out the nines, find the excess over 9 of each of the addends and of the sum. The excess of the sum of the excesses of the addends must equal the excess of the sum if the problem is correct.

EXAMPLE.

74,826 Sum of Digits = 27, Excess = 0
36,519 Sum of Digits = 24, Excess = 6
42,680 Sum of Digits = 20, Excess = 2
51,432 Sum of Digits = 15, Excess = 6

205,457, Sum of Digits = 23, Excess = 5

Sum of excesses = 0 + 6 + 2 + 6 = 14, Excess = 5. Check.

This test does not give an absolute check to the accuracy of a problem. Numbers may be interchanged or mistakes may cancel each other. The test may be applied very rapidly, however, and is much used by accountants and others.

This method is much shortened in practice by dropping of "casting out" nine every time the sum of the digits becomes equal to or greater than 9. In the above problem, starting in the top row, say 7 + 4 = 11, cast out 9, 2 + 8 = 10, cast out 9; 1 + 2 + 6 = 9, cast out 9; 0 + 3 = 3, 3 + 6 = 9; etc, getting 5 as the remainder in the addends. Any combination which gives 9 may be ignored. In practice, casting the nines out of the sum, say 2 + (ignoring the combination 54) 5 + 7 = 14 gives 5 as the excess of the sum over 9.

SUBTRACTION.

Subtraction is the process of finding the difference between two numbers.

The *minuend* is the larger of the two numbers, or the number from which the other is to be subtracted.

The *subtrahend* is the number to be subtracted. It is the smaller of the two numbers.

The *difference* or *remainder* is the number left after subtraction.

The sign of subtraction is —, read *minus.*

There are three methods of subtraction in more or less common use in this country.

7426
5638

1788

First Method. Since 8 cannot be taken from 6, "use" one ten from the tens column. Say 8 from 16 leaves 8, write the 8 in the units column in the answer. Since one ten was used, say 3 from 11 leaves 8, write the 8 in the tens column. In this step 1 was used from the hundreds column. Say 6 from 13 leaves 7, write the 7 in the hundreds column. In this step one was used from the thousands column. Say 5 from 6 leaves 1, write the 1 in the thousands column.

Second Method. The principle in this method is the same as that used in the first method. Here, the number that is "borrowed" from the minuend, is "paid back" to the subtrahend. Say 8 from 16 leaves 8, write the 8. The one that was "borrowed" is added to the 3 in the subtrahend. Say 4 from 12 leaves 8. 7 from 14 leaves 7. 6 from 7 leaves 1.

Third or Additive Method. Advocates of this method insist that it makes use of the adding principle and the 45 fundamental combinations. Also that it is the natural method for most counting. The ordinary practice in making change is an example of this method.

In the example the student finds the figures in the remainder by asking himself the following questions.

8 + how many = 16? 8 + 8 = 16. Write 8.

The one borrowed for the 6, is repaid to the 3 in the subtrahend.

4 + how many = 12? 4 + 8 = 12. Write 8, and 1 to carry.

7 + how many = 14? 7 + 7 = 14. Write 7, and 1 to carry.

6 + how many = 7? 6 + 1 = 7. Write 1.

A recent survey shows that the first method is most used in our schools, at this time. Any

one of these methods is satisfactory. Select the one you prefer and use it always.

Test all problems in subtraction by adding the remainder to the subtrahend. The sum should be the minuend.

Other tests. The problem may also be checked by subtracting the remainder from the minuend, getting the subtrahend as the new remainder.

The method by casting out the nines will also work in this case but is no shorter than either of the other methods and is not so sure a check. For this reason it is not often used in subtraction problems.

Subtraction is the reverse of addition. Hence, *only like numbers can be subtracted from each other.*

Drill by counting. Proficiency in addition, can only be attained by drill on the fundamental operations. This drill may be varied somewhat by "counting" by twos, threes, fours, and so on, starting with any number between 1 and 10. To drill on subtraction, start with any number in the nineties and count backwards by different numbers.

Counting by twos; 1, 3, 5, 7, ...
Counting by fives; 3, 8, 13, 18, 23, ...
Backward by sixes; 98, 92, 86, 80, 74, ...
Backward by nines; 95, 86, 77, 68, 59, ...

MULTIPLICATION.

Multiplication is the process of taking one number as many times as there are units in another.

The *multiplier* is the number with which one multiplies.

The *multiplicand* is the number multiplied.

The multiplier and the multiplicand are factors of the result of the process which is called the *product.*

The sign of multiplication is ×, read *times* or *"multiplied by."*

The multiplier is always considered as an abstract number. The multiplicand may be either abstract or concrete.

In multiplying two numbers together, either number may be taken as the multiplier and the other as the multiplicand.

To multiply two numbers together, write one number above the other as in the example, being careful to have units under units, tens under tens, etc.

Starting at the right, multiply by the units digit, writing the partial product so that its right hand figure will fall in the units column. Then multiply by the tens digit, writing this partial product so that its right hand figure will fall in the tens column. Continue till all the figures of the multiplier are exhausted.

Add the partial products to find the product.

EXAMPLE. Multiply **1024 by 564.**

1024 Multiplicand.
564 Multiplier.

4096 First partial product.
6144 Second partial product.
5120 Third partial product.

577536 Total product.

Interchanging the multiplier and multiplicand gives,

564 Multiplicand.
1024 Multiplier.

2256 First partial product.
1128 Second partial product.
564 Fourth partial product.

577536 Product.

The third partial product, obtained by multiplying the multiplicand by zero, is not written. The fourth partial product is written with its right hand number in the thousands place.

Tests of Multiplication.

1. *Multiply the multiplier by the multiplicand.* See above.

2. *Divide the product by either the multiplier or the multiplicand.* The result must be the other number.

3. *Casting out the nines.* Cast the nines out of the multiplicand, multiplier, and product. The excess of nines in the product of the excesses of the multiplier and multiplicand must equal the excess of nines in the product.

EXAMPLE.

1024 Excess = 7.
564 Excess = 6.

4096
6144
5120

42 Excess = 6.

577536 Excess = 6.

Short methods of multiplication.

1. To multiply a number by 10, 100, 1000, etc, annex one, two, three, etc., zeros to the number.

$48 \times 10 = 480.$ $48 \times 1000 = 48000.$

2. To multiply a number by 5, 50, 500, etc. annex one, two, three, etc., zeroes to the number and divide by 2.

$48 \times 50 = 4800$ divided by $2 = 2400.$

3. To multiply a number by 2.5, 25, 250, etc., annex one, two, three, etc., zeroes and divide by 4.

$48 \times 25 = 4800$ divided by $4 = 1200.$

4. To multiply by a number near 100, take 100 times the multiplicand and, if the multiplier is less than 100, subtract the product of the multiplicand and the difference between the multiplier and 100. If the multiplier is greater than 100, add the product obtained in this manner.

$$428 \times 97 = 42800 - 428 \times 3.$$
$$= 42800 - 1284.$$
$$= 41516.$$

Speed in multiplication depends upon a thorough knowledge of the 45 combinations in multiplication. This comes through drill and constant practice. Cards such as are used in teaching the combinations in addition can be used to great advantage. Drill at this work until the pairs of numbers with the thought of multiplication *means* the answer. In the applications of arithmetic, one should not need to stop to figure out simple problems in computation. The results should be ready for use when needed.

DIVISION.

Division is the process of finding how many times one number is contained in another num-

ber. It is also the process of dividing or separating a number into a certain number of equal parts.

The *dividend* is the number to be divided.

The *divisor* is the number by which to divide.

The *quotient* is the result obtained by division. It indicates how many times the divisor is contained in the dividend.

The *remainder* is the amount of the dividend that is left when the divisor is not a factor of the dividend. It is obviously less than the divisor.

The sign of division is ÷, read "divided by."

In division, the numbers may be either concrete or abstract. If both are concrete, they must be the same kind of number.

Division is indicated in several ways, as

$24 \div 6$; $6\overline{)24}$; $\frac{24}{6}$; etc.

EXAMPLE.

```
                 771 Quotient
          ------------
Divisor 758 ) 584676 Dividend
              5306
              ----
               5407
               5306
               ----
                1016
                 758
                ----
                 258 Remainder.
```

The first group of figures that will contain the divisor is 5846. 758 is contained in this number 7 times. This is a partial quotient and is to be written in the quotient over the last number in the dividend that is used, in this case over 6. The product of this partial quotient and the divisor is written under the part of the dividend used. Subtract, getting 540 as a remainder. Bring down the next number in the dividend. This gives 5407 as the new or partial dividend. The divisor is contained in this number 7 times with a remainder of 101. Write this partial quotient over the number brought down. Bring down the 6 and divide 758 into 1016. It is contained once, with a remainder of 258. Write this partial quotient over the 6 which was brought down, completing the quotient. The remainder, 258, is often written 258/758.

This process is repeated till all the digits in the dividend have been used.

If, at any time, after a figure is brought down, the partial dividend is still too small to contain the divisor, write 0 in the quotient over the number brought down and bring down another figure.

The above method of solution is called *long division.*

In dividing by a single number, the multiplication and subtraction is performed mentally. The process is called *short division.*

```
Divisor 7 ) 52486 Dividend
            -----
             7498 Quotient.
```

When there is no remainder, as in the above problem, one number is said to be contained *evenly or exactly* in the other.

Tests of Division.

1. *Multiply the quotient by the divisor and add the remainder to the product so found.* The result will equal the dividend if the division is correct.

2. *Casting out the nines.* Cast out the nines from the divisor, dividend, quotient and remainder. Multiply the excess in the quotient by the excess in the divisor. To the excess in this product add the excess in the remainder. The excess of this sum will be equal to the excess of the dividend if the division is correct.

In the example of long division above,

Quotient = 771.	Excess = 6.
Divisor = 758.	Excess = 2.
6 × 2 = 12.	Excess = 3.
Remainder = 258.	Excess = 6.
3 + 6 = 9.	Excess = 0.

Dividend = 584676. Excess = 0. The last two excesses are the same and the division is probably correct.

As mentioned under tests of addition, casting out the nines does not give an absolute test.

Short methods of division.

1. To divide a number by 10, 100, 1000, etc., point off as many places as there are zeros in the divisor. The number left will be the quotient and the number pointed off will be the remainder.

$$42861 \div 100 = 428 \text{ and } 61/100.$$

2. To divide by any number ending in zeros, point off as many places as there are zeros at the right of the number. Divide the number left by the divisor without the zeros. The quotient found will be the desired quotient. To get the remainder, annex the figures pointed off to the remainder left on dividing. This will be the desired remainder.

$$785436 \div 4000 = 785 \div 4 \text{ and } 436 = 196 \text{ and } 1436/4000.$$

3. To divide by 5, 50, 500, etc., multiply by 2 and divide by 10, 100, 1000, etc.

$$4856 \div 50 = 2 \times 4856 \div 100 = 97 \text{ and } 12/100.$$

4. To divide by 2.5, 25, 250, etc., multiply by 4 and divide by 10, 100, 1000, etc.

$$3728 \div 25 = 4 \times 3728 \div 100 = 149 \text{ and } 12/100.$$

For a further explanation of the special methods of multiplication and division, see multiplication and division of decimals and the section on aliquot parts.

FACTORING.

It is often necessary to determine the factors of a number. From the definition of a factor, it follows that *a number is exactly divisible by any of its factors.*

Factoring is the process of finding the factors of a number.

There are certain tests that make the work of factoring much simpler.

Tests of divisibility.

1. An even number is divisible by 2.

2. A number whose unit's figure is 0 or 5 is divisible by 5.

3. A number is divisible by 3 if the sum of its digits is divisible by three.

4. A number is divisible by 9 if the sum of its digits is divisible by 9.

Other tests are often given but like number 4, they are combinations of the first three.

To find the prime factors of a number, divide the number by its least prime factor, divide the quotient so found by its least prime factor, etc., till the last quotient so found is a prime number. The divisors and the last quotient are the prime factors of the number.

EXAMPLE. Factor 1428.

2)1428 By Test 1.
2)714 By Test 1.
3)357 By Test 3.
7)119 The next possible prime.
17 A prime number

The prime factors are 2, 2, 3, 7, and 17.

To find the greatest common factor of two or more numbers.

CASE 1. When the numbers can be factored easily.

Find the prime factors of each of the numbers. The product of all the factors common to all the numbers is the greatest common factor of the numbers.

This number is also called the *greatest common divisor* of the numbers. Written G. C. D.

EXAMPLE. Find the G. C. D. of 24, 60 and 210.

Factoring $24 = 2 \times 2 \times 2 \times 3$.
$60 = 2 \times 2 \times 3 \times 5$
$210 = 2 \times 3 \times 5 \times 7$
$\therefore$ G. C. F. $= 2 \times 3 = 6$.

CASE 2. When the factors are not immediately apparent.

Divide the greater by the smaller number. Divide the first divisor by the remainder. Repeat this process till a remainder is found that is contained evenly in the preceding divisor. This number is the required G. C. D. If the process continues till 1 is the remainder, the numbers are prime to each other.

EXAMPLE. Find the G. C. D. of 4656 and 10767.

4656) 10767 (2
9312
1455) 4656 (3
4365
291) 1455 (5
1455

$\therefore$ G. C. D. = 291.

If more than two numbers are given, find the G. C. D. of any two, then find the G. C. D. of this number and the third number, and so on.

To find the least common multiple of two or more numbers.

CASE 1. When the numbers can be factored readily.

First method. Find the prime factors of the numbers. The product formed by multiplying together all the prime factors, each factor being taken as many times as it occurs in any single number is the least common multiple. Written L. C. M.

EXAMPLE. Find the L. C. M. of 10, 15, and 24.

$10 = 2 \times 5$
$15 = 3 \times 5$
$24 = 2 \times 2 \times 2 \times 3$. L.C.M. $= 2 \times 2 \times 2 \times 3 \times 5 = 120$.

Second method. Arrange the numbers horizontally. Divide by any number common to two or more of the numbers. Bring down the quotients of all numbers divided, together with those numbers which are not divisible by the divisor being used. Continue in this manner until no two of the quotients have a common factor. The product of the divisors and last quotients is the L. C. M.

EXAMPLE. Find the L. C. M. of 10, 15, and 24.

2) 10 15 24
5) 5 15 12
3) 1 3 12
1 1 4

L. C. M. $= 2 \times 5 \times 3 \times 4 = 120$.

CASE 2. When the factors are not immediately apparent.

Find the G. C. D. of the numbers. Divide each number by the G. C. D. The product of these quotients and the G. C. D. is the L. C. M.

EXAMPLE. In the example under Case 2 for finding the G.C.D.,
$4656 \div 291 = 16$ and $10767 \div 291 = 37$.
L. C. M. $= 16 \times 37 \times 291 = 172272$

When there are only two numbers, it is not necessary to divide both numbers by the G. C. F. The L. C. M. may be found by multiplying one number by the quotient obtained by dividing the other number by the G. C. F.

In the above example, the L. C. M. $= 10767 \times 16 = 172272$.

The following statements may be readily verified.

1. In addition, multiplying or dividing each of the addends by a number, multiplies or divides the sum by the same number.

2. In subtraction, multiplying or dividing the minuend and subtrahend by a number, multiplies or divides the difference by the same number.

3. In multiplication, multiplying or dividing either the multiplier or multiplicand by a number, multiplies or divides the product by the same number.

4. In division, multiplying or dividing both the dividend and the divisor by the same number does not affect the quotient.

Other propositions of a similar nature can be verified without difficulty.

CANCELLATION.

The fourth proposition stated above furnishes a means of greatly shortening many computations.

Cancellation is the process of shortening computations in division by dividing out or cancelling equal factors from both dividend and divisor.

In cancellation, division is usually indicated by a horizontal line with the dividend written above and the divisor below it.

EXAMPLE. Divide $8 \times 24 \times 36 \times 50$ by $48 \times 75 \times 18$.

$$\frac{\overset{1}{\cancel{8}} \times \overset{4}{\cancel{24}} \times \overset{4}{\cancel{36}} \times \overset{2}{\cancel{50}}}{\underset{6}{\cancel{48}} \times \underset{3}{\cancel{75}} \times \underset{2}{\cancel{18}}} = \frac{16}{3} = 5 \text{ and } \frac{1}{3}$$

Cancel 8 from dividend and divisor, leaving 1 in place of 8 and 6 in place of 48. Cancel 6, leaving 4 in place of 24 and 1 in place of 6. Do not write the 1. Cancel 25, leaving 2 in place of 50 and 3 in place of 75. Cancel 9, leaving 4 in place of 36 and 2 in place of 18. Cancel 2. Multiply the factors in the dividend and divide by the product of the factors left in the divisor. This will give the required quotient and remainder.

In cancellation, many different plans can be followed. Smaller factors may be used, or if they are recognized, larger numbers may be cancelled. In the illustration, 18 could have been cancelled instead of 9. *Be sure and cancel the same factor in both dividend and divisor.*

FRACTIONS.

The second kind of number studied in arithmetic is called a *fraction.*

Anything that may be thought of as a whole may be considered as a unit.

A fraction is one or more of the equal parts of a unit.

A fraction is written by placing one number above and one below a horizontal line. One third $= \frac{1}{3}$, etc.

The *terms* of a fraction are the *numerator* and the *denominator.* The *numerator* is the number above the line. It indicates the number of parts of the unit taken. The *denominator* is the number below the line. It indicates into how many equal parts the unit is divided.

In the fraction $\frac{3}{4}$, the unit is divided into 4 equal parts and 3 of these parts are taken. The numerator is 3 and the denominator is 4. The fraction is read three fourths.

When two or more fractions have the same denominator, this denominator is called a *common denominator.* Fractions which have a common denominator are said to be *similar.*

The notation used in writing fractions suggests the idea of division. In fact, *a fraction is an expressed division.* The numerator of the fraction is to be divided by the denominator. The quotient of this division is the *value* of the fraction.

A *proper fraction* is a fraction whose value is less than 1; as $\frac{1}{2}$, $\frac{3}{4}$, $\frac{15}{16}$, etc.

An *improper fraction* is a fraction whose value is equal to or greater than 1; as $\frac{5}{5}$, $\frac{7}{4}$, $\frac{21}{16}$, etc.

A *mixed number* is a number composed of an integer and a fraction. Its value represents the sum of the integer and the fraction. Eg., $2\frac{3}{5}$, $15\frac{7}{16}$, etc.

REDUCTION OF FRACTIONS.

Reduction of fractions is the process of changing the terms of a fraction without altering its value. If the terms are increased, the fraction is reduced or raised to *higher* terms. If the terms are lessened, the fraction is reduced to *lower* terms.

A fraction is *raised to higher terms* by multiplying the numerator and denominator by the same number. From the laws of division it follows that this does not alter the value of the fraction.

EXAMPLE. $\frac{3}{4} = \frac{3}{4} \times \frac{6}{6} = \frac{18}{24}$.

A fraction is *reduced to lower terms* by dividing the numerator and denominator by the same number. This does not alter the value of the fraction.

EXAMPLE. $\frac{6}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3}{4}$.

A fraction is *reduced to its lowest terms,* when the numerator and denominator have no common factor.

To reduce a fraction to its lowest terms, divide the numerator and denominator by their greatest common factor.

EXAMPLE. Reduce $\frac{24}{36}$ to its lowest terms.

$$\frac{\cancel{24}^{\,2}}{\cancel{36}_{\,3}} = \frac{2}{3}$$

Or,

G. C. D. of 24 and 36 = 12.

$$\frac{24 \div 12}{36 \div 12} = \frac{2}{3}.$$

Use the method of cancellation to take out common factors or find the G. C. F. and divide both terms by it.

To change a mixed number into an improper fraction. Any integer may be thought of as a fraction with the denominator 1. Reduce the integral part of the mixed number to a fraction with the same denominator as the fractional part by multiplying the numerator of 1 by the denominator of the fraction. Add the numerator so found to the numerator of the fractional part of the number.

EXAMPLE. Change $15\frac{7}{8}$ to an improper fraction.

$$15 = \frac{15}{1} = \frac{15 \times 8}{1 \times 8} = \frac{120}{8}$$

$$15\frac{7}{8} = \frac{120}{8} + \frac{7}{8} = \frac{127}{8}.$$

To change an improper fraction into a mixed number. Divide the numerator by the denominator. The quotient will be the integral part, and the remainder will be the numerator of the fractional part of the mixed number.

To reduce two or more fractions to similar fractions. Find a common multiple of the denominators and reduce each fraction to a fraction having this common multiple as its denominator. The case usually met with in practice is the following.

To reduce two or more fractions to their least common denominator. The least common denominator of two or more fractions is the least common multiple of their denominators.

Find the L. C. M. of the denominators. Reduce each fraction to a fraction having this L. C. M. as the new denominator.

EXAMPLE. Change to similar fractions having a least common denominator, $\frac{3}{7}, \frac{11}{14}, \frac{19}{28}$.

The L. C. M. of the denominators is 28.

$$\frac{3}{7} = \frac{3 \times 4}{7 \times 4} = \frac{12}{28}.$$

$$\frac{11}{14} = \frac{11 \times 2}{14 \times 2} = \frac{22}{28}.$$

$$\frac{19}{28} = \frac{19}{28}.$$

ADDITION OF FRACTIONS.

CASE 1. SIMILAR FRACTIONS.

Add the numerators and place the sum over the common denominator.

EXAMPLE. $\frac{3}{16} + \frac{7}{16} + \frac{11}{16} = \frac{3 + 7 + 11}{16}$

$= \frac{21}{16} = 1\frac{5}{16}.$

When the answer is an improper fraction, it is customary to reduce it to a mixed number.

CASE 2. FRACTIONS HAVING DIFFERENT DENOMINATORS.

Only like numbers can be added. In fractions, this means that only like parts of units can be added. If the parts are not the same, they must be expressed in terms of other parts which are. The rule follows.

Make the fractions similar by reducing them to fractions whose denominators are the L. C. M. of the given denominators. Add the resulting numerators and place the sum over the L. C. M.

EXAMPLE. $\frac{1}{3} + \frac{3}{10} + \frac{11}{15} = \frac{10}{30} + \frac{9}{30} + \frac{22}{30}$

$= \frac{10 + 9 + 22}{30}$

$= \frac{41}{30} = 1\frac{11}{30}.$

CASE 3. MIXED NUMBERS.

Add the fractional parts of the mixed numbers as explained in cases 1 and 2. Add this sum to the sum of the integral parts of the numbers.

EXAMPLE. Add $23\frac{2}{9}$, $36\frac{11}{15}$, and $50\frac{8}{45}$.

Add the fractions first.

$\frac{2}{9} + \frac{11}{15} + \frac{8}{45} = \frac{10 + 33 + 8}{45}$

$= \frac{51}{45} = 1\frac{6}{45} = 1\frac{2}{15}.$

$23 + 36 + 50 + 1\frac{2}{15} = 110\frac{2}{15}.$

$23\frac{2}{9}$

$36\frac{11}{15}$

$50\frac{8}{45}$

$110\frac{2}{15}$

Addition of mixed numbers is usually performed by placing the integral parts above each other as in addition of integers. The student should learn to add small fraction mentally and as readily as he adds integers. In many problems the reduction to a common denominator and the adding of the numerators can be carried out in this way with great saving in time. In the illustration, the fractions add to give $1\frac{2}{15}$. The whole part of this number, the 1, is carried to the digits column and added with the integers.

SUBTRACTION OF FRACTIONS.

In subtraction, as in addition, only like numbers can be subtracted. Hence if the fractions are not similar they must be reduced to a common denominator. Subtract the resulting numerators and place the difference over the common denominator.

In the case of mixed numbers, the fractions are subtracted and then the integers. It may be necessary to borrow 1 from the units place in order to make the fraction in the minuend greater than the fraction in the subtrahend. In this case the fraction in the minuend will be an improper fraction.

EXAMPLE. Subtract $54\frac{9}{15}$ from $82\frac{4}{9}$.

$82\frac{4}{9}$ Reducing $\frac{4}{9}$ and $\frac{9}{15}$ to their L. C. D.,

$54\frac{9}{15}$ gives $\frac{20}{45}$ and $\frac{27}{45}$. Since $\frac{20}{45}$ is the smaller

$27\frac{38}{45}$ number it is necessary to borrow 1 from 82 leaving 81 and adding $1 = \frac{45}{45}$ to $\frac{20}{45}$. This gives $\frac{65}{45} - \frac{27}{45} = \frac{38}{45}$. 4 from 11 leaves 7; 6 from 8 leaves 2

MULTIPLICATION OF FRACTIONS.

CASE 1. A FRACTION AND AN INTEGER.

Multiply the numerator of the fraction by the integer and place the product over the denominator. Reduce this fraction to its lowest terms.

EXAMPLE. Multiply $\frac{5}{12}$ by 14.

$\frac{5}{12} \times 14 = \frac{5 \times \cancel{14}^{7}}{\cancel{12}_{6}} = \frac{5 \times 7}{6} = \frac{35}{6} = 5\frac{5}{6}.$

In multiplication, the multiplier and multiplicand may be interchanged without changing the product. Hence, the multiplication of a fraction by an integer is the same as multiplying an integer by a fraction. This principle is called the *commutative law* for numbers.

CASE 2. TWO OR MORE FRACTIONS.

Multiply the numerators for the new numerator and multiply the denominators for the new denominator. Reduce the result to its lowest terms.

In multiplying fractions, cancel factors common to both numerator and denominator before multiplying when possible.

EXAMPLE. Multiply $\frac{21}{32}$ by $\frac{12}{35}$.

$\frac{21}{32} \times \frac{12}{35} = \frac{\cancel{21}^{3} \times \cancel{12}^{3}}{\cancel{32}_{8} \times \cancel{35}_{5}} = \frac{9}{40}.$

In multiplying fractions, the sign × is read *times* or *of*; for example, $\frac{1}{2} \times \frac{3}{4}$ is read one half *times* two thirds or one half *of* two thirds.

CASE 3. MIXED NUMBERS.

I. To multiply a mixed number by an integer, multiply each part of the mixed number by the integer and add the results. Reduce to lowest terms.

EXAMPLE. $9 \times 26\frac{5}{6} = 9 \times 26 + 9 \times \frac{5}{6}.$

$= 234 + \frac{\overset{3}{\cancel{9}} \times 5}{\underset{2}{\cancel{6}}}$

$$= 234 + \frac{15}{2} = 234 + 7\frac{1}{2}$$

$$= 241\frac{1}{2}.$$

II. **To multiply a mixed number by a fraction,** multiply each part of the mixed number by the fraction and add the results. Reduce to lowest terms.

EXAMPLE. $\frac{3}{4}$ of $14\frac{2}{9}$.

$$\frac{3}{\cancel{4}_{2}} \text{ of } \frac{\cancel{14}^{7}}{\cancel{9}_{3}} = \frac{21}{2}; \quad \frac{\cancel{3}}{\cancel{4}_{2}} \text{ of } \frac{\cancel{2}}{\cancel{9}_{3}} = \frac{1}{6}.$$

$$\frac{21}{2} + \frac{1}{6} = \frac{64}{6} = 10\frac{2}{3}.$$

III. **To multiply two mixed numbers.**

First method. Reduce the mixed numbers to improper fractions, multiply the numerators for the new numerator and the denominators for the new denominator, reduce to lowest terms.

EXAMPLE. $7\frac{1}{4} \times 11\frac{3}{7}$.

$$7\frac{1}{4} = \frac{29}{4}, 11\frac{3}{7} = \frac{80}{7}$$

$$\frac{29}{4} \times \frac{\cancel{80}^{20}}{7} = \frac{580}{7} = 82\frac{6}{7}.$$

Second method. When the integers in the mixed numbers are large it is often more convenient to perform the multiplication by the four step method. The following example will illustrate the rule.

EXAMPLE. Multiply $456\frac{3}{4}$ by $87\frac{2}{9}$.

$456\frac{3}{4}$

$87\frac{2}{9}$

$\frac{1}{6}$ First step. $\frac{\cancel{2}}{\cancel{9}_{3}} \times \frac{\cancel{3}}{\cancel{4}_{2}} = \frac{1}{6}$.

$101\frac{1}{3}$ Second step. $\cancel{456}^{152} \times \frac{2}{\cancel{9}_{3}} = \frac{304}{3} = 101\frac{1}{3}$.

$65\frac{1}{4}$ Third step. $87 \times \frac{3}{4} = \frac{261}{4} = 65\frac{1}{4}$.

3192 Fourth step. 87×456.
3648

$39838\frac{3}{4}$ Answer.

The four steps are as follows:

First step. Multiply the fractions.

Second step. Multiply the integer in the multiplicand by the fraction in the multiplier.

Third step. Multiply the integer in the multiplier by the fraction in the multiplicand.

Fourth step. Multiply the two integers.

Add these four products to obtain the required product.

It should be noticed that the method in case 2 for multiplying two fractions is the general rule. If one regards an integer as a fraction whose denominator is 1, case 1 and case 3 and even the multiplication of integers are covered by this rule. This is true for the rules for all the fundamental operations as worked out for fractions. They are a more general statement of the rules for integers.

DIVISION OF FRACTIONS.

Dividing the numerator of a fraction by a number, divides the value of the fraction by that number.

Multiplying the denominator of a fraction by a number, divides the fraction by that number.

These principles will be recognized as true from a consideration of the meaning of fractions. They are used in the process of division of fractions.

CASE 1. DIVIDING A FRACTION BY AN INTEGER.

Divide the numerator by the integer if it goes evenly and place the quotient over the denominator. Or multiply the denominator by the number and place the product under the original numerator.

EXAMPLE. $\frac{14}{15} \div 7 = \frac{14 \div 7}{15} = \frac{2}{15}$.

Or $\frac{14}{15} \div 7 = \frac{1}{\cancel{7}} \text{ of } \frac{\cancel{14}^{2}}{15} = \frac{2}{15}$.

CASE 2. TO DIVIDE ANY NUMBER BY A FRACTION OR MIXED NUMBER.

First method. Reduce both numbers to fractions having a common denominator. The quotient of the numerators will be the required number.

EXAMPLE. Divide $61\frac{1}{4}$ by $7\frac{7}{8}$.

L. C. D. is 8.

$$61\frac{1}{4} = \frac{490}{8}; 7\frac{7}{8} = \frac{63}{8}$$

$$63)490(7\frac{7}{9} \text{ Ans.}$$
$$441$$
$$\frac{49}{63} = \frac{7}{9}.$$

Second method. Reduce both numbers to fractional form, invert the divisor and multiply. Use cancellation whenever possible.

EXAMPLE. Divide $43\frac{3}{4}$ by $7\frac{7}{8}$.

$$43\frac{3}{4} = \frac{175}{4} \text{ and } 7\frac{7}{8} = \frac{63}{8}.$$

$$\frac{175}{4} \div \frac{63}{8} = \frac{\overset{25}{\cancel{175}}}{\cancel{4}} \times \frac{\cancel{8}^{2}}{\cancel{63}_{9}}$$

$$= \frac{50}{9} = 5\frac{5}{9}.$$

COMPLEX FRACTIONS.

A *complex fraction* is a fraction which has mixed or complex numbers in either the numerator or denominator or both.

To find the value of a complex fraction, reduce the numerator and denominator to fractional form, and multiply the numerator by the inverse of the denominator.

EXAMPLE.

$$\frac{12\frac{1}{2} + 3\frac{1}{3}}{10\frac{5}{6}} = \frac{\frac{95}{6}}{\frac{65}{6}} = \frac{\overset{19}{\cancel{95}}}{\cancel{6}} \times \frac{\cancel{6}}{\cancel{65}_{13}} = \frac{19}{13} = 1\frac{6}{13}$$

DECIMALS.

In actual experience with practical problems, fractions with denominators greater than 32 are seldom encountered. When fractions with larger denominators do occur, they are usually all reduced to fractions having some power of ten as a denominator. By a power of ten is meant 10, $10 \times 10 = 100$, $10 \times 10 \times 10 = 1000$, etc. The number of times ten is taken is indicated by a number called the exponent. Using this notation, $1000 = 10^3$.

Fractions whose denominators are powers of ten are called *decimal fractions or decimals.* They are written in a special way. The denominator is not expressed, the number of tens in it being indicated by the number of figures to the right of a dot called the *decimal point.* The integral part of a mixed number is written to the left of the decimal point and the fractional or decimal part is written to the right. As in the case of integers, the places to the right of the decimal point are named to enable them to be read easily.

The names assigned to each place are indicated in the accompanying chart.

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Units	Decimal Point	Tenths	Hundredths	Thousandths	Ten Thousandths	Hundred Thousandths	Millionths	Ten Millionths	Hundred Millionths
3,	7	2	4,	1	9	0	.	1	0	7	2	9	3	1	4

Additional places to the right are named in a manner similar to that indicated in the notation and numeration of integers.

In reading a mixed decimal, the word and is used between the integral and fractional part of the number.

The above number is read: 3 million, 7 hundred 24 thousand, 1 hundred 90 *and* 10 million, 7 hundred 29 thousand, 3 hundred 14 hundred millionths.

Zeros between the decimal point and the first significant figure of the decimal do not affect the reading of the numerator of the decimal but they are counted in determining the number of zeros in the denominator. That is, .00143 is read 1 hundred 43 hundred thousandths.

A most important property of decimals is the ease with which decimals can be reduced to a common denominator. All that is required is to add zeros to the right of any of the numbers till all have the same number of figures to the right of the decimal point.

Because of this, addition and subtraction of decimal fractions is accomplished more easily than in the case of common fractions.

ADDITION OF DECIMALS.

To add decimals, set the numbers down so that the decimal points are directly under each other and add as in integers, the decimal point in the sum being placed directly below the other decimal points.

It is not necessary to add zeros at the right unless they are needed to help one to keep figures of like value under each other. It is important that the columns be kept straight.

The most common application of decimal fractions in the United States is in handling money. The unit in our money is One Dollar, written \$1.00. One tenth of a dollar is written \$.10. One one hundredth of a dollar or one cent is written \$.01.

EXAMPLES Add

\$ 5,095.76	28.9014
9,172.85	316.4823
8,763.76	7.92
\$23,032.37	18.015
	240.2
	611.5187

SUBTRACTION OF DECIMALS.

To subtract decimals, set the numbers down so that the decimal points are directly under each other and subtract as for integers, placing the decimal point in the difference directly below the other decimal points.

If there are more places to the right of the decimal point in the subtrahend than in the minuend, zeros are added to the minuend to make up the number.

EXAMPLES.

\$11,007.91	91.42600
7,892.83	37.02846
\$ 3,115.08	54.39754

MULTIPLICATION OF DECIMALS.

To multiply decimals, multiply the numbers exactly as if they were integers. Place the decimal point so that the number of decimal places in the product is equal to the sum of the decimal places in the numbers.

EXAMPLE. Multiply 41.08 by .093

```
  41.08
    .093
 -------
  12324
 36972
 -------
 3.82044
```

Short methods of multiplication.

1. To multiply by 10, 100, 1000, etc., move the decimal point one, two, three, etc., places to the right in the number.

EXAMPLE. $42.831 \times 100 = 4283.1$.

2. To multiply by 5, 50, 500, etc., move the decimal point one, two, three, etc., places to the right and divide the number by 2.

EXAMPLE. $37.423 \times 5 = 374.23 \div 2 = 187.165$.

3. To multiply a number by 2.5, 25, 250, etc., move the decimal point one, two, three, etc., places to the right and divide the number by 4.

EXAMPLE. $9.928 \times 250 = 9928. \div 4 = 2482$.

In multiplying decimals, it is a good plan to estimate the result mentally before multiplying. This will often furnish a valuable check on the position of the decimal point. To estimate a result, multiply the first significant figures of the numbers.

In the above example, $9 \times 200 = 1800$ and the answer will be larger than this number.

In multiplying two decimals, the number of places in the product is often more than is needed in practical problems. In fact, the data involved in the problem are often such that decimals after the first or second place are meaningless. For this reason, it is important to know what degree of accuracy is necessary or desirable in a problem. In measuring a farm, an error of .001 of an acre would not bother much. In this case, all figures after the third place may be dropped and the answer "rounded off" by taking the number to three places that is nearest to the number obtained. In case the product lies exactly between them, a good rule is to take the nearest even number.

Abbreviated multiplication. This rounding off process can be performed in connection with a form of multiplication known as abbreviated multiplication. An illustration will serve best to explain the method. The solution is shown in three ways, by the regular method, with the multiplier reversed, and with the partial products rounded off in each step.

Regular method

```
    41.26
    3.1416
 ---------
    24756
     4126
   16504
    4126
12378
 ---------
129.622416
```

Reversed method

```
    41.26
61416.3
 ---------
123786
   4126
  16504
     4126
    24756
 ---------
129.622416
```

Abbreviated method

```
    * * * *
    41.26
61416.3
 ---------
123.78   Locate dec. pt. in 1st partial product.
   413   Round off 4126, getting 413.
   165   Round off 16504.
     4
     2
 ---------
129.62
```

After multiplying by 3, place the decimal point and decide how many decimal points are wanted in the answer. Check the figure in the multiplicand which is multiplied by 3 to get the last number to be kept. In multiplying by the next digit, 1, multiply the starred number mentally, i.e. 6. This being greater than 5, 1 is carried and the multiplication goes on regularly. Again star the first number whose product by 1 was kept and in multiplying by the next digit do not write its product. 4×2 is 8 so carry 1. In the next multiplication, 1×1 is 1 and this number is dropped. In the last multiplication, the 4 is already starred. 6×4 is 24. The 4 is dropped and only the 2 is carried. There is nothing to go with it, so it is written in the right hand column.

In case the product of a starred number ends in 5, carry it as 1 if the preceeding number is odd and drop it if the preceeding number is even.

In the above problem, the answer is not apt to be correct to more than two decimal places since the multiplicand is given to only two places. The answer when rounded off is the same by the regular method as by the abbreviated method. It will sometimes vary in the last figure, but the result will be as satisfactory for practical purposes, as that obtained by the longer method.

DIVISION OF DECIMALS.

To divide decimals, divide the numbers exactly as if they were integers. There are several ways that are used in determining where the decimal point is to be placed in the quotient.

First method. Multiply the dividend and divisor by that power of ten which will make the divisor a whole number. This is done by moving the decimal point in the divisor and dividend as many places to the right as there are decimal places in the divisor. Divide the numbers as in the case of integers, placing the decimal point in the quotient directly above (in the case of short division, below) the new decimal point in the dividend.

EXAMPLE. Divide 4.2 3 1 6 by .0 0 8.
Move decimal point three places to the right.

```
  528.95
8)4231.60
```

Division may be continued indefinitely or until there is no remainder by adding zeros to the right of the last significant figure in the dividend.

EXAMPLE. Divide 2 5 0 0.6 by 7 5.4 3.
Move decimal point two places to the right.

```
          33.15
      ------------
7543)250060.00
     22629
     ------
      23770
      22629
      -----
       11410   Rem. = 955/7543 thousandths.
        7543
        ----
        38670
        37715
        -----
          955
```

In division of decimals it is customary to round off the remainder, taking the nearest number after the desired amount of accuracy has been reached. If the numbers in this example represented dollars and cents, the remainder would have no meaning in money and would be "dropped."

Second method. This method is based on the same principles as the first but it does not require the actual moving of the decimal points.

Instead, the first figure of the quotient is written as many places to the left of its normal position as there are decimal places in the divisor. The decimal point in the quotient is placed directly above the decimal point in the dividend.

EXAMPLE Divide 2.0 4 by .6 2 5.

```
          3.2 6 4
        ------------
.6 2 5 ) 2.0 4 0 0 0 0
         1 8 7 5
         -------
           1 6 5 0
           1 2 5 0
           -------
             4 0 0 0
             3 7 5 0
             -------
               2 5 0 0
               2 5 0 0
               -------
```

The natural place for the first figure of the quotient to be written is above the first zero after the 4 in the dividend. Counting three places to the left, it is written above the 2.

Third Method. Divide without regard to decimal points, and when the division is completed, point off as many places in the quotient as the number of decimal places used in the dividend is greater than the number of decimal places in the divisor. In this method, zeros added to the dividend to continue the division are counted as places in the dividend.

While the last method is probably more used than any of the others, many teachers prefer to use the first method in presenting the subject to their pupils for the first time.

In practice, it is cutomary to indicate in the dividend by a caret (∧) or some other mark, the same number of decimal places in the dividend as are present in the divisor, placing the decimal point in the quotient after the last number to the left of the caret has been used.

EXAMPLE. Divide 4 5.2 6 by 7.5 2 1.

```
                6.0 1 7 8
              ------------
7.5 2 1 ) 4 5.2 6 0∧0 0 0 0
          4 5 1 2 6
          ---------
            1 3 4 0 0
              7 5 2 1
              -------
              5 8 7 9 0
              5 2 6 4 7
              ---------
                6 1 4 3 0
                6 0 1 6 8
                ---------
                  1 2 6 2
```

Remainder = $\frac{1262}{7521}$ hundred thousandths.

The quotient can be rounded off by dropping the remainder or it may be written, $6.0178\frac{1262}{7521}$.

A quotient that has been rounded off is an *incomplete or approximate decimal.* If the remainder is dropped in the process, the sign + is added; eg., 6.0178 +. If, in the process, the next higher number is taken, the sign − is added; eg., rounding off the above after the second decimal gives 6.02−.

If the remainder is written as a part of the quotient the number is a *complex decimal.*

Short methods of division.

1. To divide by 10, 100, 1000, etc., move the decimal point, one, two, three, etc., places to the left in the number.

Other special rules can be stated similar to those in the work on multiplication.

Abbreviated Division. The work of division can often be greatly shortened when the degree of accuracy desired has been determined. By this method, the last example worked above would appear as follows.

Regular form

```
                6.0 1 7 8
              ------------
7.5 2 1 ) 4 5.2 6 0 0 0 0 0
          4 5 1 2 6
          ---------
            1 3 4 0 0 0
              7 5 2 1
              -------
              5 8 7 9 0 0
              5 2 6 4 7
              ---------
                6 1 4 3 0
                6 0 1 6 8
                ---------
                  1 2 6 2
```

Abbreviated form

```
                * * *
                6.0 1 7 8
              ------------
7.5 2 1 ) 4 5.2 6 0 0 0
          4 5 1 2 6
          ---------
            1 3 4 0 0
              7 5 2 1
              -------
              5 8 8 8
              5 2 6 4
              -------
                6 2 3
                6 0 1
                -----
                  2
```

All numbers are rounded off at a line under the desired number of decimal places in the quotient.

If the answer is desired to only two places, the work would appear as follows.

```
                  6 0 1
                * * *
              ------------
7.5 2 1 ) 4 5.2 6 | 7 8
          4 5 1 3 |
          -------
            1 3   |
              7   |
              ----
              6
```

The remainder is 6/7, and makes the quotient 6.02.

A mark is placed over the numbers in the divisor that are not used in the first partial division. After each division, one of the remaining numbers is checked. If it is desired to have a number correct to two places, round it off in the third place.

With practice, this method may be used to great advantage and is quite as accurate as the tables that are used to aid in work of this kind.

REDUCTION OF A FRACTION TO A DECIMAL.

To reduce a common fraction to a decimal, perform the indicated division, adding as many zeros to the numerator as may be needed.

EXAMPLE. Reduce $\frac{3}{8}$ to decimal form.

Divide 3 by 8: 8) 3.0 0 0

.3 7 5

Hence, $\frac{3}{8} = .375$.

Fractions are reduced to decimals to simplify many problems. When it is decided by the nature of the problem that a certain degree of accuracy is sufficient, the decimals express the values of several fractions in a satisfactory manner, stopping the division when this degree of accuracy is obtained.

The magnitude of fractions can be compared more readily when the fractions are in decimal form.

EXAMPLE. Which is the greater number, $\frac{7}{15}$ or $\frac{15}{31}$?

```
        .4 6 +                    .4 8 +
      ----------                ----------
15 ) 7.0 0              31 ) 1 5.0 0
     6 0                     1 2 4
     -----                   -----
       1 0 0                   2 6 0
         9 0                   2 4 8
         -----                 -----
           1 0                     1 2
```

Hence, $\frac{15}{31}$ is the greater number.

Any decimal may be written as a common fraction by writing the number without the decimal point as the numerator and 1 followed by as many zeros as there are places to the right of the decimal point in the given number.

EXAMPLE. $.2\,1\,6 = \frac{216}{1000} = \frac{27}{125}$.

ALIQUOT PARTS.

An *aliquot part* of a number is any part of the number which is contained an integral number of times in the given number.

By the use of aliquot parts, the work of multiplication and division by certain numbers is made much easier and the work can be performed much more rapidly. Some of the short methods of multiplication and division are based upon the methods of aliquot parts. For example, 25 is an aliquot part of 100, and to multiply by 25 multiply by 100 and divide by 4, i.e., number of times 25 is contained in 100.

Prices are very often fixed at aliquot parts of one dollar. This is equivalent to a certain number of units for one dollar, and makes it possible for the salesman to tell the price of any number of units very quickly.

Tables of aliquot parts are often furnished in stores and offices. In these cases, the number used is one dollar or 100 cents.

Below is a list of the more important aliquot parts of 100. In the first row, how many such parts there are in 100 is shown by the denominator of the fractions. The second row of the table shows the value of the aliquot parts.

ALIQUOT PARTS OF 100.

$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{7}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{1}{10}$	$\frac{1}{11}$	$\frac{1}{12}$	$\frac{1}{13}$	$\frac{1}{14}$	$\frac{1}{15}$	$\frac{1}{16}$	$\frac{1}{20}$	$\frac{1}{25}$	$\frac{1}{30}$	$\frac{1}{40}$	$\frac{1}{50}$
50	$33\frac{1}{3}$	25	20	$16\frac{2}{3}$	$14\frac{2}{7}$	$12\frac{1}{2}$	$11\frac{1}{9}$	10	$9\frac{1}{11}$	$8\frac{1}{3}$	$7\frac{9}{13}$	$7\frac{1}{7}$	$6\frac{2}{3}$	$6\frac{1}{4}$	5	4	$3\frac{1}{3}$	$2\frac{1}{2}$	2

There are other aliquot parts of 100 but these include all that are commonly met with in business.

To multiply and divide by aliquot parts of 100.

Multiplication. Multiply by 100 and divide by the number of times the aliquot part is contained in 100.

EXAMPLE. $54 \times 33\frac{1}{3} = \frac{5400}{3} = 1809$.

Division. Divide by 100 and multiply by the number of times the aliquot part is contained in 100.

EXAMPLE. $39420 \div 16\frac{2}{3} = \frac{39420}{100} \times 6$

$= 394.20 \times 6$

$= 2365.20$.

Multiples of aliquot parts may be used in a similar manner by using as many times 100 as the aliquot part is taken.

EXAMPLE. Multiply 14.28 by $37\frac{1}{2}$.

$37\frac{1}{2} = \frac{3}{8}$ of 100, hence multiply by 300 and divide by 8.

$\frac{14.28 \times 300}{8} = \frac{4284.00}{8} = 535.50$.

EXAMPLE. Divide 698.60 by $83\frac{1}{3}$.

$83\frac{1}{3} = \frac{5}{6}$ of 100, hence divide by 500 and multiply by 6.

$\frac{698.60}{500} \times 6 = \frac{4191.60}{500} = 8.3832$.

Combinations of aliquot parts. It is often possible to consider a number as the sum of two aliquot parts of a number or as the sum or difference of the number and an aliquot part of the number. Practice will develop skill and suggest many new methods. The pupil should endeavor to perform as much of the computation mentally as possible. The time spent in drill will save a great deal of work at a later period. Practice with the simpler aliquot parts first. A few additional examples will be suggestive.

EXAMPLE. $920 \times 7\frac{1}{2}$.

$7\frac{1}{2}$ is $\frac{3}{40}$ of 100.

Hence, $\frac{\overset{23}{\cancel{920}} \times 3 \times 100}{\underset{40}{\cancel{40}}} = 6900$.

EXAMPLE. $3090 \times 23\frac{1}{3}$.

$23\frac{1}{3} = 20 + 3\frac{1}{3} = \frac{1}{5}$ of $100 + \frac{1}{30}$ of 100

Hence, $\frac{3090 \times 100}{5} + \frac{3090 \times 100}{30} = 61800 + 10300$

$= 72100$

EXAMPLE. $1280 \times 133\frac{1}{3}$.

$133\frac{1}{3} = 100 + \frac{1}{3}$ of 100

Hence, $1280 \times 100 + \frac{1280 \times 100}{3} = 128000 + 42666\frac{2}{3}$

$= 170666\frac{2}{3}$.

EXAMPLE. $640 \times 87\frac{1}{2}$.

$87\frac{1}{2} = 100 - 12\frac{1}{2} = 100 - \frac{1}{8}$ of 100.

Hence, $640 \times 100 - \frac{\overset{80}{\cancel{640}} \times 100}{\underset{8}{\cancel{8}}} = 64000 - 8000$

$= 56000$.

DENOMINATE NUMBERS.

Measurement. Measurement is always a comparison of the thing being measured with something else of the same kind. For purposes of convenience, the elements that are used for comparison are fixed by law or custom. They are called the *units of measure*.

From these fundamental units, other elements are derived to facilitate the measurement of magnitudes of different sizes. The relation between different units of the same kind are set forth in what are called *tables of denominate numbers*.

A *denominate number* is a unit of measure whose value has been fixed by custom or by law.

Tables of denominate numbers are given in the Dictionary of Weights and Measures.

The kinds of denominate numbers depend upon the nature of the quantity to be measured.

There are two systems of denominate numbers that are in general use. One is *the English system* and the other is *the metric system.*

The fundamental unit of *length* in the English system is the foot. The inch, the yard, the mile and other linear units are derived from this. (See Long Measure.) The fundamental unit in the metric system is the *meter.* In the metric system only decimal parts of the meter are used as the millimeter, centimeter, decimeter, decameter, hectometer, and kilometer.

In measuring area, a square is used each side of which is equal to the unit of length. In the English system, the units are the square foot, square inch, square mile, etc. In the metric system, they are the square meter, the square centimeter, and the area which is equal to 100 square meters.

In measuring volume, a cube is used each side of which is equal to the unit of length. In the English system, the units are the cubic foot, the cubic inch, and the cubic yard. In the metric system, they are the cubic meter, the cubic decimeter and the cubic centimeter, etc.

In each of these cases there are other units that are sometimes used. The ones named are the more common ones.

In measuring *capacity,* the English system has one set of units for liquids and another for dry substances as grain, vegetables, etc. The unit of liquid measure is the *gallon.* (See gallon. Also, liquid measure.) The unit of dry measure is the *bushel.* (See bushel. Also, dry measure.) The unit of measure for capacity in the metric system is the *liter.*

In measuring *weight,* four kinds of units are in common use. 1. *Troy weight,* used in weighing gold, diamonds, and other precious minerals. (See grain, pennyweight, ounce, and pound.) 2. *Apothecaries weight,* used by druggists in preparing medicines. (See grain, scruple, dram, ounce, and pound.) 3. *Avoirdupois weight,* used to weigh all kinds of heavy articles. (See ounce, pound, and ton.) 4. The *metric system,* used almost entirely in scientific work and increasingly in general work. (See gram, kilogram, and quintal.)

Time is the measure of duration.

The unit of time is the second. (See time.)

Reduction of denominate numbers consists in changing the units of measure of a number without changing its value. A denominate number may be reduced from a lower to a higher or from a higher to a lower denomination.

The work of reducing or combining denominate numbers is of such a simple nature that no particular solution will be given for it. The principles are developed in the sections dealing with arithmetic in the third and fourth grades.

INVOLUTION AND EVOLUTION.

Involution.

The *power* of a number is the product obtained by multiplying the number by itself a certain number of times. If the number is multiplied by itself, the product is the *second* power of the number. If this product is multiplied again by the number, the resulting product is the *third* power of the number, and so on.

An *exponent* is a small number placed to the right and above the number to indicate the power of the number, i. e. the number of times the number is to be used as a factor.

The second power of 4 is written 4^2, and is equal to $4 \times 4 = 16$.

Similarly, $15^3 = 15 \times 15 \times 15 = 3375$.

$1.4^4 = 1.4 \times 1.4 \times 1.4 \times 1.4 = 3.8416$.

The process of finding the power of a number is called *involution.*

Evolution.

The *root* of a number is that number which multiplied by itself one or more times as a constant factor gives the number.

The square root of a number is that number which used twice as a factor will give the number.

The cube root of a number is that number which used three times as a factor will give the number.

Higher roots are defined in the same manner.

The root of a number is commonly indicated by the *radical sign,* $\sqrt{\ }$. Which root is meant is indicated by placing a small number just above and to the left of the radical sign. This number is called the *index.*

The square root of 16 is written $\sqrt{16} = 4$. The index is not written for square roots.

Similarly, $\sqrt[3]{125} = 5$.

$\sqrt[6]{64} = 2$.

It is not always possible to find the exact root of a number. The methods below will give the result to any desired degree of accuracy by carrying the operation on for additional steps. The nature of the problem will usually determine how much accuracy is desirable.

Any number of two digits may be thought of as the sum of the tens and units of the number. Actual trial with different numbers will convince one of the truth of the following statement.

The square of any number of two digits is equal to the square of the tens plus twice the product of the tens by the units plus the square of the units.

The rule for finding the square root of any number is based upon the above principle.

To find the square root of any number.

Beginning at the decimal point, point off the number into periods of two figures each.

Determine the largest perfect square in the left hand period. Write its root as the first figure of the required root. Subtract its square from the first period and bring down the second period with the remainder.

Use twice the root already found as a trial divisor. A zero is added to the trial divisor to make allowance for the next number in the root. Divide the remainder by this divisor, writing the quotient as the next number of the root. Add this number to the trial divisor. Multiply

this sum by the number in the root just found and subtract the product from the remainder. If the product is too large, try a smaller number in the root. Bring down the next period and proceed as above till all the periods have been used or, in the case of decimals, till the desired degree of accuracy has been reached.

There will be as many places to the left of the decimal point in the root as there are periods to the left of the decimal point in the number.

EXAMPLE. Find the square root of 265.294.

```
          *   *   *   *
        2 6 5.2 9 4 0   ( 1 6.2 8
        1
      -----
2 0 |   1 6 5
    6
  -----
2 6 |   1 5 6
      -------
    3 2 0 | 9 2 9
        2 |
      -------
    3 2 2 | 6 4 4
          -------
  3 2 4 0 | 2 8 5 4 0
        8 |
      -------
  3 2 4 8 | 2 5 9 8 4
          -----------
                2 5 5 6
```

If it is desired to continue the process, a period of two zeros would have to be added to the right of the number. This can be repeated indefinitely.

In the example, the first trial divisor, 20, is contained 8 times in the remainder, 165. But when 8 is added to 20 and the sum multiplied by 8 the product is too large. The same is true for 7. Hence 6 is used as the second number of the root.

The last period to the right of the decimal point is completed by the addition of a zero.

To find the cube root of a number.

Beginning at the decimal point, point off the number into periods of three figures each.

Determine the largest perfect cube in the first period. Write its root as the first figure of the required root. Subtract its cube from the first period and bring down the next period with the remainder.

The trial divisor is formed by taking three times the square of the root already found. Two zeros are added to make allowance for the next figure in the root. Divide the remainder by this divisor, writing the quotient as the next number in the root.

To the trial divisor, add three times the product of the first part of the root with a zero attached by the last number of the root plus the square of the last number. This sum is the complete trial divisor.

Multiply it by the last number of the root and subtract from the preceding remainder. If the product so found is too large, a smaller number must be used in the root.

Bring down the next period and repeat the process.

In pointing off the root, allow one place for every period in the number.

EXAMPLE. Find the cube root of 52486.

```
          *     *     *
        5 2 4 8 6.0 0 0   ( 3 7.4
        2 7
      -----
2 7 0 0 | 2 5 4 8 6
    6 3 0 |
      4 9 |
  -------
3 3 7 9 | 2 3 6 5 3
        -------------
              1 8 3 3 0 0 0
```

Repeat the process.

Tables are available which give the squares and cubes, and the square root and cube root of all numbers from 1 to 1000. They are so arranged that they give approximate values for the powers and roots of all numbers.

A small table of this kind is given below.

n	n^2	n^3	$\sqrt{n}$	$\sqrt{10n}$	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$
1.	1.	1.	1.	3.162	1.	2.154	4.642
2.	4.	8.	1.414	4.472	1.260	2.714	5.848
3.	9.	27.	1.732	5.477	1.442	3.107	6.694
4.	16.	64.	2.000	6.325	1.587	3.420	7.368
5.	25.	125.	2.236	7.071	1.710	3.684	7.937
6.	36.	216.	2.449	7.746	1.817	3.915	8.434
7.	49.	343.	2.646	8.367	1.913	4.121	8.879
8.	64.	512.	2.828	8.944	2.000	4.309	9.283
9.	81.	729.	3.000	9.487	2.080	4.481	9.655
10.	100.	1000.	3.162	10.000	2.154	4.642	10.000

In the above table, the fifth column gives the square root of 10, 20, 30, and so on. The seventh and eighth columns give the cube root of 10, 20, 30, ... and 100, 200, 300 and so on. In larger tables of this kind, this arrangement makes it possible to look up the square root or cube root of any number by simply looking up the number as if the whole part was composed of the left hand period. Values between the numbers in the table can be estimated approximately. The process of finding values not given in the tables is called *interpolation.*

PERCENTAGE.

Percentage is an application of decimal fractions in which one one-hundredth or *one per cent* is used as the unit for computation. In decimal fractions any power of ten may be the denominator. In percentage, the denominator is always 100.

The words "*per cent*" come from the Latin words "per centum" and mean by the hundred.

One one-hundredth is called one per cent. The symbol for per cent is %. Four per cent is written 4%, and means .04 or 4/100 of the quantity.

Obviously, any per cent may be written as a decimal or as a common fraction. Also, any decimal or common fraction can be expressed in per cent and fractions of a per cent to any desired degree of accuracy.

EXAMPLES. $\frac{2}{3} = .6667 = 66.67\%$

$4\frac{1}{2}\% = .045 = \frac{45}{1000} = \frac{9}{200}$

$\frac{1}{4}\% = .0025 = \frac{25}{10000} = \frac{1}{400}.$

The principle numbers involved in percentage problems are the *base*, the *rate*, and the *percentage.* The terms *amount* and *difference* are also used.

The *base* is the number of which a certain number of per cents, or hundredths is taken.

The *rate* is the number of per cents, or hundredths taken.

The *percentage* is the amount of the number taken.

The *amount* is the sum of the base and the percentage.

The *difference* is the base minus the percentage.

When any two of the five numbers defined above are given, it is possible to find the others. Most problems deal only with the first three. The following rule is the basis of all computations in percentage.

Base × *rate* = *percentage.*

1. To find the percentage when the base and rate are given. Write the rate in decimal form and multiply the base by it.

EXAMPLE. A man bought a house for $6500 and sold it at a profit of 12%. What was his profit? What was the selling price?

$6500	Base
.12	Rate
$ 780.00	Percentage
6500.00	Base
$7280.00	Amount or selling price.

2. To find the rate when the base and percentage are given.

The use of percentage is so common that it is desirable to express the number of per cent one number is of an other. From the general rule, it follows:

Rate = Percentage ÷ base.

Hence, to find the rate per cent, divide the percentage by the base and express the resulting decimal as per cent.

EXAMPLE. A baseball team won 84 out of 156 games played in a season. What per cent of games did they win?

.5 3 11/13 Rate

Base 1 5 6) 8 4.0 0 0 Percentage
7 8 0
6 0 0
4 6 8
1 3 2

$$\frac{132}{156} = \frac{33}{39} = \frac{11}{13}$$

11

The team won $53\frac{11}{13}\%$ of their games.

3. To find the base when the rate and percentage are given.

From the general rule, it follows

Base = Percentage ÷ rate.

Hence, to find the base, express the rate as a decimal and divide the percentage by it.

EXAMPLE. The monthly income from an apartment house, is $640, which represents a gross annual income equal to $12\frac{1}{2}\%$ of the value of the property. What is the value of the property?

$640 × 12 = $7680 Annual income.

$12\frac{1}{2}\% = .125$ Rate in decimal form.

By aliquot parts,

$$\frac{\$7680}{.125} = \frac{\$7680 \times 8}{} = \$61{,}440.$$ Base or value.

4. Given the amount and rate to find the base and percentage.

The amount is equal to the base plus the percentage.

The base is equal to 100% and the percentage is equal to the base times the rate. Hence the amount is equal to 100% of the base plus the rate times the base. The base is found by dividing the amount by the sum of the rate and 100% expressed in decimal form.

EXAMPLE. The total sales in a department in December were $2416 which was an increase of 8% over the sales for November. What were the total sales in November? The increase?

November sales = 100%.
December sales = 100% + 8% = 108%
$2416 = 108% = 1.08

Hence, $$100\% = \frac{\$2416}{1.08}$$

= $2237.04 — November sales = base.
$2416 — $2237.04 = $178.96 Increase = percentage.

In a similar manner, rules may be developed that state how to find any of the quantities in percentage when two are given. If the amount and percentage are given, the base can be found by subtraction and the problem reduces to Case 2 above. If the difference and rate are given, the difference is set equal to 100% of the base minus the rate per cent, and the base is found by dividing the difference by the above per cent expressed as a decimal.

These processes are the same throughout all computations, though different names are used for the terms.

Base = Cost, capital, principal, valuation.
Rate = % of gain or loss, interest, commission.
Percentage = Gain or loss, discount, interest, premium.
Amount = Selling price with gain, total cost.
Difference = Selling price at a loss, net cost, proceeds.

Important Per Cents and Their Fractional Equivalents.

Per Cent.	Fractional Values.	Per Cent.	Fractional Values.
50%	1/2, .5	87-1/2%	7-8, .875
25%	1/4, .25	16-2/3%	1/6, .166
75%	3/4, .75	33-1/3%	1/3, .333
20%	1/5, .2	66-2/3%	2/3, .666
40%	2/5, .4	6-1/4%	1/16, .0625
100%	1, 1.	6-2/3%	1/15, .0666
12-1/2%	1/8, .125	8-1/3%	1/12, .0833
37-1/2%	3/8, .375	11-1/9%	1/9, .1111
62-1/2%	5/8, .625	14-2/7%	1/7, .1428

COMMERCIAL ARITHMETIC

PROFIT AND LOSS.

There are many applications of percentage in business. The whole theory of profit and loss, discount, bank discount, interest, commissions, taxes, stocks and bonds, insurance, exchange, and many other topics is based upon percentage. In some of these, the numbers used are the same as are used in percentage problems, in others the element of time enters into the problem and makes the computation more difficult. The simpler problems will be considered first.

In business, goods are bought and sold. The purpose of engaging in business is to make a profit from the transactions.

The *cost* is the price paid by a merchant for his goods. It is usually made to include freight and delivery charges. Sometimes additional items are charged against the purchase price and included in the cost. Individual concerns have different practices in this regard.

If goods are sold for more than cost, the amount over the cost is the *profit* or *gain* on the transaction.

If goods are sold at less than cost, the amount less than the cost is the *loss* on the transaction.

The *selling price* is the price at which goods are sold.

In figuring profit and loss, either the cost or the selling price may be taken as the base.

If the cost is taken as the base, the profit or loss is the percentage, the rate of gain is the per cent the profit is of the base, and the selling price is the amount or difference.

Many elements enter into the determination of the per cent of profit which the merchant needs to allow for in order to show a net profit. In large stores, the rent is pro-rated according to the area of floor space used by a department. The cost of heat, light, office expense, shipping expense, advertising, damaged goods, left overs, clerks salaries, and so on, must be allowed for in addition to a certain amount known as the *net profit* which is the real return on the money invested and the business itself. In order to guarantee a net profit of 10%, it is necessary to sell goods at a gross profit of much greater amount. In the case of seasonable or perishable goods, the per cent is much higher than in staples in which there is little or no loss due to handling.

A few illustrations of the type of problems met with in considering profit and loss are given below.

1. To find profit when cost and rate per cent of profit are given.

Multiply the cost by the rate per cent.

EXAMPLE. An article costing $5 was sold at a profit of 25%. What was the gain? What was the selling price?

$5 × .25 = $1.25, gain.
$5 + $1.25 = $6.25, selling price.

2. To find the rate per cent of profit when cost and selling price are given.

Subtract the cost from the selling price to find the profit, and divide the profit by the cost to find the rate per cent of profit.

EXAMPLE. Shoes were bought at $4.50 and sold for $6.00. What was the gain per cent?

$6.00 − $4.50 = $1.50

$1.50 ÷ $4.50 = $33\frac{1}{3}$% of gain.

3. To find cost, when selling price and per cent of profit are given.

The cost is 100%. The selling price is 100% plus the per cent of profit. *Divide the selling price in dollars by the selling price in per cent to get the cost in dollars.*

EXAMPLE. A grocer sells sugar at $7.60 per hundred pounds which gives him a gross profit on the transaction of 16%. What was the cost per hundred pounds?

Selling price = Cost + profit.
= 100% + 16%.
= 116%.
116% = $7.60
$100\% = \frac{\$7.60}{1.16} = \$6.55$ Cost price.

4. To find cost when profit and per cent of profit are given.

The profit is a per cent of the cost. *Divide the profit in dollars by the per cent of profit to get the cost in dollars.*

EXAMPLE. A merchant showed a gross profit of $13,650 for the year 1926. If this represents 26% of profit, what was the cost price of the goods handled?

$$\text{Cost} = \frac{\text{Profit}}{\text{\% of profit}}$$
$$= \frac{\$13,650}{.26} = \$52,500 \text{ Cost.}$$

These rules and many others may be expressed best by use of letters to represent the quantities being used. In all cases where multiplication or division by per cent of profit or loss is called for, the decimal form of the per cent is to be used.

This method of notation is explained in the section on algebra.

In the following brief rules or formulas,

c = Cost
g = Gain or profit
s = Selling price
l = Loss
% of g = Per cent of gain
% of l = Per cent of loss.

1. Given c and % of g; $g = c \times$ % of g.

2. Given c and s; % of $g = \frac{s - c}{c}$

3. Given s and % of g; $c = \frac{s}{100\% + \text{\% of g}}$

4. Given g and % of g; $c = \frac{g}{\text{\% of g}}$

5. Given c and % of l; $l = c \times$ % of l.

6. Given c and s; % of $l = \frac{c - s}{c}$

7. Given s and % of l; $c = \frac{s}{100\% - \text{\% of l}}$

8. Given l and % of l; $c = \frac{l}{\text{\% of l}}$

9. $s = c + g$ or $s = c - l$.

In case the selling price is taken as the base, these rules and formulas have to be changed slightly. The same principles determine the solution in this case and the problems are worked in a similar manner. It is necessary to remember that if the selling price is the base, it is taken as 100% and the cost is less than 100% in case profit is realized on the transaction.

MARKING GOODS.

In many lines of business, it is necessary to have the selling price of goods marked on them. It is also convenient to have the cost price marked on the goods. Even though the per cent of profit being taken may be entirely justifiable, it would occasion dissatisfaction on the part of many customers if these prices were known to them. When merchants desire to keep their cost or selling prices from the public, the price marks are written in letters or characters, the interpretation of which depends upon a knowledge of what is called the key word.

The key word may be any word or phrase composed of ten different letters. To this key certain letters called repeaters are added to allow the same figure to be repeated without disclosing the key.

If both the cost price and selling price are

marked on the goods in code, a separate key is used for each.

Cost Key.

C E N T U R Y B O K
1 2 3 4 5 6 7 8 9 0

Repeaters A and B

Selling Key.

S E L P R I C O D A
1 2 3 4 5 6 7 8 9 0

Repeaters X and Y.

Any word or phrase may be used. They are sometimes spelled backwards to make it more difficult for strangers to interpret the prices.

If the cost price is $4.25 and the selling price is $5.25, the price card would then be marked as follows:

Cost T EU — or — T EU / R ER
Sell R ER

If an article costs $6.66 and sells for $8.00, the marking is as follows:

Cost R AB — or — R AB / O AX
Sell O AX

Here, the two repeaters are used in the cost price to avoid showing R three times, while one repeater is used in the selling price to indicate the second zero. If the two prices are written above and below a horizontal line, as in the second form, the upper number is the cost and the lower the selling price.

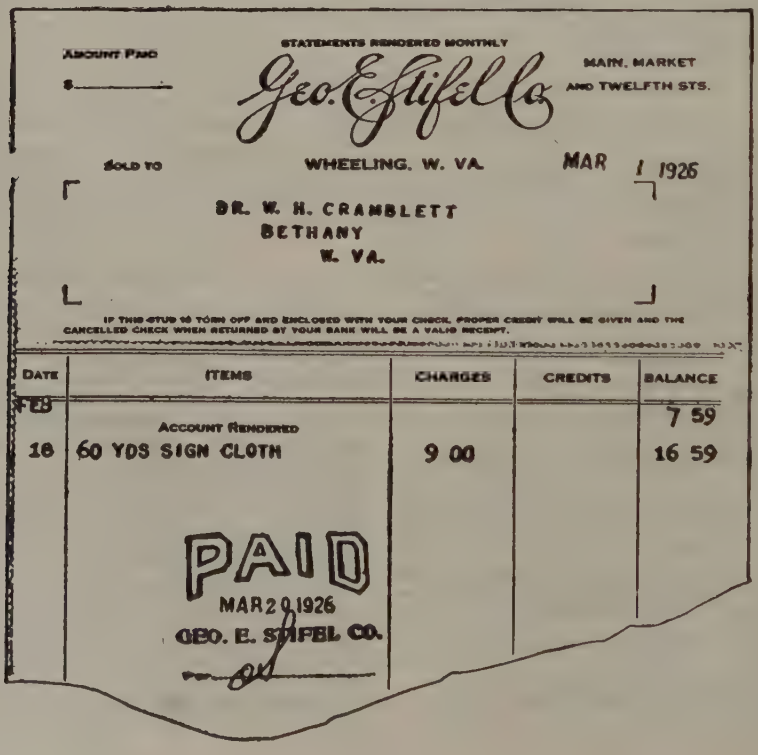
Many goods are bought from the wholesaler by the dozen and sold by the piece. In this case, the marking shows the wholesale price per dozen and the retail price per piece.

The person marking goods, is told to allow for a certain amount of profit. The retail or selling price is usually figured mentally and calls for a knowledge of the value in cents of the various twelfths of a dollar. In figuring the profit and selling price, the rate may be applied to the cost per dozen and then 1/12 taken, or the cost of a single article may be figured and the profit figured on this base.

BILLING AND TRADE DISCOUNT.

When goods are bought or sold, it is customary for the seller of the goods to furnish the buyer with a memorandum of the sale. This is called a *bill* or *invoice*. It contains a heading on which appears the buyer's name and address, the seller's name and address, the date of the bill; and an itemized statement of the goods purchased, the price of each item, and the total value of the entire bill. Somewhere on the bill the terms of the sale are stated. In case the purchase was with cash the bill should so state. If the buyer is to pay the shipping and delivery charges, this should appear on the bill and any part of this amount that is advanced by the seller is added to the total of the bill.

Goods are very often sold on terms and the terms are set out in the bill. Stores carry charge accounts for the convenience of their customers. These bills are due each month and are to be paid on or before the tenth of the month following that in which the purchase was made. Large stores usually furnish the buyer with a sales slip at the time of purchase and a monthly invoice or bill showing all goods purchased the preceding month.



Bills are often made out subject to certain reductions for prompt payment or other causes.

Discount is a deduction from an amount for any reason.

Cash discount is discount made because of prompt payment of an account. The amount of discount is usually stated in per cent. A ten day period is often allowed to enable the goods to be checked and the money received in what is called the cash period. Goods are billed with 2% discount allowed for cash in ten days or net in thirty days. This is indicated on the bill and the buyer is supposed to figure the discount he may take if the bill is paid within the time limits.

DEPARTMENTS
SASH, DOORS AND MILLWORK
PAINTS, OILS VARNISHES AND BRUSHES
BUILDERS' HARDWARE NAILS AND ROOFING
WINDOW, PLATE AND ORNAMENTAL GLASS
ART GLASS AND MIRRORS

BELL TELEPHONE 2080
PRIVATE BRANCH EXCHANGE

W. A. WILSON & SONS
BUILDERS SUPPLIES
1409, 1411 AND 1421 MAIN STREET

W. A. WILSON, ESTATE
W. P. WILSON
A. A. WILSON

WHEELING, W. VA. July 2 1926

SOLD TO
Bethany College
Bethany W Va

ORDER NO.
F. O. B.
Terms: 60 Days Net, 2% 15 Days excepting on
WINDOW GLASS
LINSEED OIL, MIRRORS
PLATE AND ORNAMENTAL GLASS } 30 Days Net 2% 10 Days
TURPENTINE: Net Cash
All Estimates and Contracts: Net Cash
Positively No Discount Allowed on Freight

Our responsibility ceases when we receive receipt from Transportation Company. If goods are short or damaged upon arrival, insist on agent noting same on freight bill, otherwise do not accept them. Check invoice and material carefully,-as no claim will be considered after 10 days.

SHIPPED VIA Car TO 7th Street Station

4	Gal P & L #38	5 50	22 00	
	Less 25-10%		14 85	
1	2" Blk Pilgrin Brush		80	
	Carfare		25	
				15 90
				.31
	M. V. Demford Less 2% on 15.65			15.59

Commercial discount is a reduction from the price of anything. It occurs often in special sales where the merchant desires to move left over or damaged stocks quickly. A flat twenty or twenty-five per cent reduction is made on the selling price of all goods in the sale.

Trade discount is a reduction from a trade list. It is made to enable the retailer to buy from a wholesaler at a price which will enable him to resell at a fair price and with a reasonable profit. The catalogue can then be used by the retailer with his customers without letting them know the cost price of the article. The discount allowed by the wholesaler may vary from time to time. It often happens that rather than publish a new catalogue, a new or an additional discount is allowed on goods bought between certain dates.

Trade discounts are figured by the seller and appear on the bill as a credit. Additional credits for cash etc., are figured by the buyer

When several discounts are allowed on a bill, they are called a *discount series.* In a discount series, the first discount is figured and the reduction made and then the second discount is figured on the remainder, and so on. Or the first per cent of discount is subtracted from 100%, and the per cent of the whole which is equivalent to the second per cent of discount is figured and subtracted, and so on till all the series have been used. The resulting per cent is called the net cost rate factor. The product of the list price and the net cost rate factor (N. C. R. F.) is the net cost price.

EXAMPLE. Electric light bulbs are sold with 40% and 10% trade discounts and a 2% cash discount. The list price of an order is $160. Find the net cash cost.

FIRST METHOD.

40% of $160 = $64.00 First discount.
$160 — $64 = $96.
10% of $96 = $ 9.60 Second discount.
$96 — $ 9.60 = $86.40 Net price.
2% of $86.40 = $ 1.73 Cash discount.
$86.40 — $ 1.73 = $84.67 Net cash price.

SECOND METHOD.

100% − 40% = 60%
10% of 60% = 6%
60% − 6% = 54% N. C. R. F.
54% of $160 = $86.40 Net price.

Since the cash discount is always figured by the buyer when he pays the bill or invoice, it is not figured as a part of the series when the seller makes out the bill for the goods.

This method is especially valuable when the discounts to be figured are aliquot parts of 100.

A third method is also used for figuring discount series. The N. C. R. F. is found by subtracting each discount in the series from 100% and multiplying the remainders.

EXAMPLE. On a radio listed at $250.00, discounts of 33-1/3%, 10%, and 5% are allowed. What is the net price of the set?

100%	100%	100%	
33-1/3%	10%	5%	
66-2/3%	× 90%	× 95%	= 57% N. C. R. F.

$$\$250 \times .57 = \frac{.57 \times 1000}{4} = \$142.50 \text{ Net price.}$$

Tables showing the N. C. R. F. for the more common discount series are published and are a great convenience when much work of this kind is to be done.

Some Rate Per Cents, Their Equivalents, and the Net Price.

N. C. R. F.	N. P. %	N. C. R. F.	N. P. %
2-1/2, 2-1/2 = .0494	.9506	2-1/2, 5, 2-1/2 = .0969	.9031
2-1/2, 10 = .1225	.8775	5, 5, 2-1/2 = .1201	.8799
15, 2-1/2 = .1713	.8287	10, 5, 2-1/2 = .1664	.8336
20, 2-1/2 = .22	.78	15, 10, 2-1/2 = .2541	.7459
25, 7-1/2 = .3063	.6937	20, 10, 2-1/2 = .2980	.703
30, 2-1/2 = .3175	.6825	25, 2-1/2, 2-1/2 = .2871	.7129
32-1/2, 10 = .3925	.6075	25, 7-1/2, 2-1/2 = .3236	.6764
35, 5 = .3825	.6175	30, 7-1/2, 5 = .3849	.6151
37-1/2, 7-1/2 = .4219	.5781	35, 5, 5 = .4134	.5866
40, 2-1/2 = .415	.585	37-1/2, 10, 5 = .4656	.5344

COMMISSION AND BROKERAGE.

A large part of the business today is carried on by middle men called commission merchants, brokers, or agents. This is especially true of such businesses as the selling or buying of farm products, insurance, real estate, stocks and bonds, etc.

The *principal* is the person or firm for whom the business is transacted.

The *commission* or *brokerage* is the rate per cent on the volume of business charged by the *commission merchant* for his services in the transaction. In some cases, a flat amount per unit of goods is agreed upon instead of a per cent.

Material forwarded by the principal to his agent is called a *consignment*. The person or firm shipping the goods is the *consignor*. The person or firm to whom the goods are shipped is called the *consignee*.

The *gross proceeds* of a sale is the total amount for which the goods are sold.

The *net proceeds* is the amount left from the gross proceeds after the commission and all expenses have been deducted.

The *prime cost* of a purchase is the net cost or first price paid by the agent for the merchandise.

The *gross price* is the net price plus the commission and all expenses of the transaction.

When goods are sold, the agent furnishes the principal an *account sales* showing all the details of the transaction and remits the net proceeds to him.

When goods are bought, the agent sends the principal an *account purchase* showing all details of the transaction and the principal remits the gross price to the agent.

Problems in commission and brokerage are problems in percentage where the elements considered are as follows;

The gross sales or prime cost is the base.

The rate of commission is the rate.

The amount of commission is the percentage.

Since other factors than these enter into the net proceeds, or the gross price, the terms amount and difference have little significance.

1. To find the amount of commission when the rate of commission and the gross proceeds or the net price are given.

EXAMPLE. A commission merchant sells a consignment of goods for $2,400. His commission is at the rate of 6%. How much did he receive and how much did he remit to the principal.

6% of $2,400 = $144 Commission to agent.
$2,400 − $144 = $2,256 Remitted to principal.

The commission is found by multiplying the gross proceeds, or the net price, by the rate of commission.

2. *To find the gross proceeds* when the rate of commission and commission are given.

EXAMPLE. A trust company charges 3% on the income from an estate for handling the investments of its funds. If the trust company receives $1,692.66 in one year, what was the gross income and what was the net income to the estate.

The commission is figured on the gross income.
3% of the gross income = $1,692.66

$$\text{Gross income} = \frac{\$1692.66}{.03} = \$56{,}422.00 = \text{Gross income.}$$

$56,422.00 − $1692.66 = $54,729.34 Net income.

The gross proceeds, or the prime cost, is found by dividing the commission in dollars by the rate of commission in per cent.

3. *To find the rate of commission* when the commission and gross income are given.

EXAMPLE. An agent collected a gross rental of $7,240 from the tenants of an apartment house. His commission amounted to $362. What was his rate of commission?

$$\frac{\$362}{\$7240} = .05 \text{ Rate of commission.}$$

The rate of commission is found by dividing the amount of the commission by the gross proceeds or the prime cost.

Let g = gross proceeds. p = prime price.
n = net proceeds. t = total or gross price.
c = commission. r = rate of commission.

The following formulas may be stated.

1. Given g and r; $c = g \times r$.
2. Given p and r; $c = p \times r$.
3. Given c and r; $g = \frac{c}{r}$, or $p = \frac{n}{r}$.
4. Given g and c; $r = \frac{c}{g}$.
5. Given p and c; $r = \frac{c}{n}$.

INSURANCE.

Insurance is an agreement wherein one party, for a consideration, guarantees to indemnify another in the event of certain events or happenings.

The agreement between the parties is called the *policy*. It is usually issued by the insurance company through its authorized agents and when properly signed is binding upon the company and the insured.

Many new forms of insurance are now being offered to the public. In some lines of insurance, the field is so new that the prices vary widely. In others, where there is much experience to determine probable hazards, the business is well established. The companies are carefully inspected by the authorities and the rates that may be charged are usually either fixed by law, or are determined by a board appointed under state control.

The consideration paid the insurance company by the insured is called the *premium*. The premium may be a certain per cent of the face of the policy, or it may be figured as a certain amount per $100 or per $1000.

There are two general kinds of insurance; namely *property insurance* and *personal insurance*.

Property insurance is of many kinds; as fire, theft, collision, rain, hail, tornado, cyclone, flood, transportation and baggage, live stock, crops, etc. In fact, some of the large companies advertise that they will insure anything.

The most common kind of property insurance is fire insurance. This kind of insurance guarantees the owner of property against loss by fire.

Fire insurance policies in the various states are quite similar. It is important that one understand the terms of his policy or he may unintentionally violate some of its conditions.

The rate of fire insurance is usually a certain amount per $100 for one year's insurance. The rate for two years is 1¾ times the one year rate. The rate for three years is 2½ times the one year rate. If a policy is written for less than one year, a "short rate" table is used to determine the percentage of the annual rate that should be charged. When a policy is cancelled, the amount to be refunded to the insured is sometimes figured "pro-rata" and at other times it is figured from the "short rate" table.

SHORT RATE TABLE FOR ONE YEAR POLICIES.

Time, days	Percentages to be charged or retained	Time, Days	Percentages to be charged or retained
1	2%	20	17
2	4	25	19
3	5	30 (1 mo.)	20
4	6	35	23
5	7	40	25
6	8	45	27
7	9	50	28
8	9	55	29%
9	10	60 (2 mo.)	30
10	10	65	33
11	11	70	36
12	11	75	37
13	12	80	38
14	13	85	39
15	13	90 (3 mo.)	40
16	14	105	46
17	15	120 (4 mo.)	50
18	16	135	56
19	16	150 (5 mo.)	60
165	66	270 (9 mo.)	85
180 (6 mo.)	70	285	88
195	73	300 (10 mo.)	90
210 (7 mo.)	75	315	93
225	78	330 (11 mo.)	95
240 (8 mo.)	80	345	98
255	83	360 (12 mo.)	100

Problems in insurance make use of the principles of percentage.

The value of the policy is the base.

The premium is the percentage.

The rate of premium per $100. is the rate.

1. EXAMPLE. The annual rate for a frame dwelling is published by the inspection bureau as .40 per $100. What is the premium on $3500 for three years?

$$2\frac{1}{2} \times .40 = 1.00 \text{ per } \$100 = 1\% \text{ Rate.}$$

1% of $3500 = $35.00 Premium.

The premium is equal to the value of the policy multiplied by the rate per cent.

2. A company spends $2000 per year on insurance written at the three year rate. If the annual rate is .6%, how much insurance will the company be carrying after three years?

$$2\frac{1}{2} \times .6\% = 1.5\% \text{ 3 year rate.}$$

$$\frac{\$2000}{.015} = \$133{,}333.33 \text{ Insurance written per year.}$$

$133,333.33 × 3 = $400,000.00 Total insurance after 3 years.

The premium divided by the rate equals the value of the insurance.

3. The annual rate is .32 per $100. How much will a policy for $7400 cost for 64 days?
Use the short rate table.
Annual premium = $23.68.
64 days takes 65 days charge.
Percentage to be charged is 33.
33% of $23.68 = $7.81 cost for 64 days.

Personal insurance includes all kinds of insurance on the life or person of an individual. One may insure his own life for any amount. The right of a person to take out insurance on the life of another is an unsettled question. Various decisions have been rendered by the courts and it seems from them that actual interest in the life of the person covered by the policy must be shown.

Among the common forms of personal insurance, may be mentioned life insurance, accident insurance, health insurance, disability insurance, and insurance against liability for injury to the person of others or personal liability insurance.

There are three general forms of life insurance:

1. *Life policies.* In policies of this kind, the policy is payable only at death of the insured. The premium may be made payable annually, in which case the policy is called *a straight life policy.* The premium may be paid entirely in advance, or in 5, 10, 15, or 20 annual payments. When these payments have been made, the policy becomes a *paid up policy.*

2. *Term policies.* In policies of this kind, the policy is payable only in the event of the death of the insured during the term of the policy. At the expiration of the term the insurance ceases.

3. *Endowment policies.* Policies of this kind represent both insurance and investment. They are payable in the event of the death of the insured at any time or at a fixed date if he is then living.

Policies are made payable to one's estate or to some person named in the policy. The person to whom the policy is to be paid is called *the beneficiary.*

Insurance is based upon certain vital statistics. Perhaps the most well known is the American experience table of mortality. From this table, the probable life expectancy is calculated. A portion of every premium is required by law to be set aside and invested in approved securities. The amount set aside is such that it will at stated interest rates amount to the value of the policy at the end of the period of life expectancy.

This reserve really belongs to the insured and determines the cash or loan value of the policy at any time. If the insured cancels a policy, he may receive this cash value or he may elect to take the value of the policy in paid up insurance. The various values of these options are printed on and made a part of the policies.

Since the life expectancy varies with the age of the individual, the cost of the same kind of insurance also varies. The amount charged by the company for a policy of $1000 for any age is printed in a rate book furnished the agent by the company. This amount is called the rate.

The rate per thousand dollars is multiplied by the number of thousands covered by the policy to find the annual premium.

The mathematics of life insurance goes beyond the limits of arithmetic. However, the computations involved in the buying and selling of insurance are all simple problems in percentage.

INTEREST.

Interest is money charged for the use of money.

The *principal* is the sum of money borrowed or used.

The *amount* is the sum of the principal and the interest.

The amount of the interest on a sum of money is determined by the *rate of interest.* The *rate of interest* is that part of $1, expressed as per cent, which is charged for the use of $1 for one year. The maximum rate of interest which may be charged is usually fixed by law. This varies in different states but is commonly from 6 to 8 per cent. The charging of a higher rate than that allowed by law is called *usury.*

The *time* is an important element in the figuring of interest. The rate of interest is usually stated for one year.

Simple interest is interest calculated on the principal only.

Compound interest is interest calculated on the sum of the principal and unpaid interest, the calculation being made at stated intervals.

Ordinary interest is figured on the basis of 360 days in a year.

Exact interest is figured on the exact number of days.

The principles of percentage are used in the solution of all interest problems.

The principal is the base.

The interest is the percentage.

The rate of interest is the rate.

When the interest is for a period other than one year, the time is expressed as a fraction of a year. The interest for one year multiplied by this fraction gives the interest for the period. In practice this general method is modified in different ways to secure a rapid solution.

SIMPLE INTEREST.

There are many ways in which the work of computing interest can be materially shortened.

1. Ordinary interest by the 60 day method. Since, in ordinary interest, 60 days or 2 months equals 1/6 of 360 days or one year; the interest for 60 days is 1/6 of the interest for one year.

Hence, if the rate is 6%, the interest for 60 days is 1/6 of 6% or 1% of the principal.

RULE. *To find the interest at 6% for 60 days, move the decimal point two places to the left in the principal.*

Also, *to find the interest at 6% for 6 days, move the decimal point three places to the left in the principal.*

To find the interest at 6% for one day, take 1/6 of the interest for 6 days.

Any period of time may be expressed as a certain number of 60 day periods plus a certain number of 6 day periods plus a certain number of days. The interest for these various times are found and added separately.

In practice, the use of the aliquot parts of 60 will be found helpful.

30 = 1/2 of 60.
20 = 1/3 of 60.
15 = 1/4 of 60.
12 = 1/5 of 60.
10 = 1/6 of 60.
6 = 1/10 of 60.
5 = 1/12 of 60.
3 = 1/2 of 1/10 of 60.
2 = 1/3 of 1/10 of 60.
1 = 1/6 of 1/10 of 60.

RULE. *To find the interest at any rate, divide the amount of the interest at 6% by 6 and multiply the quotient by the given rate.*

EXAMPLE. What is the interest on $890.50 at 6% for 11 months 10 days?

11 mo. 10 da. = 10 mo. + 1 mo. 10 da.
= 5 × 2 mo. or 60 da. + 40 da.

$ 8.9050 = Interest for 2 mo. or 60 da.
5

$44.5250 = Interest for 10 mo.
4.4525 = Interest for 30 da. (1/2 of Int. for 60 da.)
1.4842 = Interest for 10 da. (1/3 of Int. for 30 da.)

$50.4617 = Interest for 11 mo. 10 da.

EXAMPLE. What is the interest on $450 for 7 mo. 17 da. at 4-1/2%?

7 mo. 17 da. = 3 × 60 da. + 47 da.

$4.50 = Interest for 60 da.
3

$13.50 = Interest for 3 × 60 da.
2.25 = Interest for 30 da.
1.125 = Interest for 15 da.
.15 = Interest for 2 da.

$17.025 = Interest for 7 mo. 17 da. at 6%.

Custom determines whether this amount is called $17.02 or $17.03. The number is not rounded off till all computation is completed.

6)$17.025 Interest at 6%.
2.8375 Interest at 1%.
4-1/2 given rate.
1.41875
11.3500
$12.76875 or $12.77 = Interest for 7 mo. 17 da. at 4-1/2%.

2. Exact interest by the cancellation method.

In exact interest, the time is expressed in days and divided by 365, the number of days in one year.

When the interest is for a period other than one year, the interest is found by the following relation:

Interest = Principal × Rate × Time,

where interest and principal are expressed in dollars, the rate as a decimal fraction and the time as a fraction of one year of 365 days.

In the above relation any one of the elements can be determined if the other three are given.

The number of days between two dates can be figured out for each case but it is customary to refer to a table that tells at a glance the number required. Such a table is given under the heading of time in the dictionary of weights and measures. When the period of time includes the extra day of leap year or Feb. 29, one must be added to the figures in the table.

EXAMPLE. What is the exact interest on $890.50 from Mar. 10, 1925 to Feb. 20, 1926 at 6%?

From the table, the number of days between the given dates are 416 − 69 = 347.

$$\$890.50 \times .06 \times \frac{347}{365} = \frac{178.10}{\cancel{\$890.50}} \times \frac{\cancel{6}}{100} \times \frac{347}{\cancel{365}\ 73}$$

= $50.79 Exact int. at 6%.

EXAMPLE. What principal invested at 4% will bring in a return of $90.00 every 6 months?

From the interest relation.

$$\text{Principal} = \frac{\text{Interest}}{\text{Rate} \times \text{Time}}$$

$$= \frac{\$90.00}{.04 \times 1/2}$$

$$= \frac{\$90.00}{.02}$$

= $4500.00 Principal.

EXAMPLE. How long will it take for $1000 to double itself at simple interest at 5%.

From the interest relation.

$$\text{Time} = \frac{\text{Interest}}{\text{Principal} \times \text{Rate}}$$

$$= \frac{\$1000}{\$1000 \times .05}$$

= 20 years.

3. By the use of tables.

Many tables for computing simple interest have been developed. These are much used as they reduce the amount of work very materially. The following table is for ordinary interest from one to ten dollars. The times given may be readily combined to total any required time. The principal is broken up into the sum of units, tens, hundreds, etc. and the interest on each part is figured separately.

INTEREST TABLE AT 6%.

Time.	$1	$2	$3	$4	$5	$6	$7	$8	$9	$10
1 da.	.00017	.00033	.0005	.00067	.00083	.001	.00117	.00133	.0015	.00167
2 da.	.00033	.00067	.001	.00133	.00167	.002	.00233	.00267	.003	.00333
3 da.	.0005	.001	.0015	.002	.0025	.003	.0035	.004	.0045	.005
4 da.	.00067	.00133	.002	.00267	.00333	.004	.00467	.00533	.006	.00667
5 da.	.00083	.00167	.0025	.00333	.00417	.005	.00583	.00667	.0075	.00833
6 da.	.001	.002	.003	.004	.005	.006	.007	.008	.009	.01
7 da.	.00117	.00233	.0035	.00467	.00583	.007	.00817	.00933	.0105	.01167
8 da.	.00133	.00267	.004	.00533	.00667	.008	.00933	.01067	.012	.0133
9 da.	.0015	.003	.0045	.006	.0075	.009	.0105	.012	.0135	.015
10 da.	.00167	.00333	.005	.00667	.00833	.01	.01167	.01333	.015	.01667
20 da.	.00333	.00667	.01	.01333	.01667	.02	.02333	.02667	.03	.03333
1 mo.	.005	.01	.015	.02	.025	.03	.035	.04	.045	.05
2 mo.	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10
3 mo.	.015	.03	.045	.06	.075	.09	.105	.12	.135	.15
4 mo.	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20
5 mo.	.025	.05	.075	.10	.125	.15	.175	.20	.225	.25
6 mo.	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30
7 mo.	.035	.07	.105	.14	.175	.21	.245	.28	.315	.35
8 mo.	.04	.08	.12	.16	.20	.24	.28	.32	.36	.40
9 mo.	.045	.09	.135	.18	.225	.27	.315	.36	.405	.45
10 mo.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50
11 mo.	.055	.11	.165	.22	.275	.33	.385	.44	.495	.55
1 yr.	.06	.12	.18	.24	.30	.36	.42	.48	.54	.60
2 yr.	.12	.24	.36	.48	.60	.72	.84	.96	1.08	1.20

Tables are also published for other rates though they can readily be computed from the 6% table.

EXAMPLE. What will be the interest at 6% on $456.00 for 3 mo. 26da.?

$6.00 = .06 × 100 = Int. on $400 for 3 mo.
1.333 = .01333 × 100 = Int. on $400 for 20 da.
.40 = .004 × 100 = Int. on $400 for 6 da.
.75 = .075 × 10 = Int. on $50 for 3 mo.
.1667 = .01667 × 10 = Int. on $50 for 20 da.
.05 = .005 × 10 = Int. on $50 for 6 da.
.09 = Int. on $6 for 3 mo.
.02 = Int. on $6 for 20 da.
.006 = Int. on $6 for 6 da.
$8.8157 = $8.82 = Int. on $456 for 3 mo. 26 da.

COMPOUND INTEREST.

In many lines of business, the interest is allowed to remain with the principal to become a part of the investment. Compound interest is used to determine the value of a savings bank deposit at any time. The same is true of the value of life insurance policies. Again, in order to have the proper amount of money in a sinking fund at some future date, certain sums must be laid aside each year. This also requires the use of compound interest.

Compound interest can not be collected at law. However it is not against the law to charge compound interest and to collect the same.

When the payments run over a long period of time and involve additions to the principal other than the accumulated interest, the solution of the problem becomes both tedious and complicated. To avoid making the problem too difficult, savings banks usually fix a day on

which the interest will be computed and make no allowance for fractional periods of less than one month.

Compound interest is always greater than simple interest after the first interest period. This is due to the fact that the interest on the interest is added at the end of the second and succeeding periods.

EXAMPLE. Compare the value of $500 at the end of 1, 2, 3, and 4 years at simple and at compound interest at the rate of 6%

SIMPLE INTEREST	COMPOUND INTEREST
$500.00 Principal.	$500.00 Principal.
30.00 Simple int. 1 yr.	30.00 Compound int. 1 yr.
$530.00 Value end 1st yr.	$530.00 Value end 1st yr.
30.00 Simple int. 2nd yr.	31.80 Compound int. 2nd yr.
$560.00 Val. end 2nd yr.	$561.80 Val. end 2nd yr.
30.00 Simple int. 3rd yr.	33.71 Compound int. 3rd yr.
$590.00 Val. end 3rd yr.	$595.51 Val. end 3rd yr.
30.00 Simple int. 4th yr.	35.73 Compound int. 4th yr.
$620.00 Val. end 4th yr.	$631.24 Val. end 4th yr.

The relative value of money at simple and compound interest at various rates of interest may be seen by a comparison of the amounts.

The times in which money will double itself at simple and compound interest are shown in the following table.

Time in Which Money Doubles at Several Rates.

Rate.	Simple Interest.	Compound Interest.
1%	100 yrs.	69 yrs. 245 da.
2%	50 yrs.	35 yrs.
2½%	40 yrs.	28 yrs. 26 da.
3%	33 yrs. 4 mo.	23 yrs. 164 da.
3½%	28 yrs. 208 da.	20 yrs. 54 da.
4%	25 yrs.	17 yrs. 246 da.
4½%	22 yrs. 81 da.	15 yrs. 273 da.
5%	20 yrs.	14 yrs. 75 da.
6%	16 yrs. 243 da.	11 yrs. 327 da.
7%	14 yrs. 114 da.	10 yrs. 89 da.
8%	12 yrs. 183 da.	9 yrs. 2 da.
9%	11 yrs. 40 da.	8 yrs. 16 da.
10%	10 yrs.	7 yrs. 100 da.

If the interest is computed once a year and added to the principal, the interest is said to be *compounded annually*. It may be done more often than this, in which case it is said to be *compounded semi-annually* or twice a year, *compounded quarterly* or four times a year, and so on. It will be seen that the oftener the interest is compounded the greater the value of the amount will be.

In order to solve problems in compound interest easily and accurately, tables which show the amount of $1 compounded annually for any number of years at different rates are used. The following is an example of such a table.

Table Showing Amounts of $1 at Compound Interest. Compounded Annually.

Years	2%.	2½%.	3%.	3½%.	4%.	4½%.	5%.	6%.	7%.	Years
1	1.0200	1.0250	1.0300	1.0350	1.0400	1.0450	1.0500	1.0600	1.0700	1
2	1.0404	1.0506	1.0609	1.0712	1.0816	1.0920	1.1025	1.1236	1.1449	2
3	1.0612	1.0769	1.0927	1.1087	1.1249	1.1412	1.1576	1.1910	1.2250	3
4	1.0824	1.1038	1.1255	1.1475	1.1699	1.1925	1.2155	1.2625	1.3108	4
5	1.1041	1.1314	1.1593	1.1877	1.2167	1.2462	1.2763	1.3382	1.4026	5
6	1.1262	1.1597	1.1941	1.2293	1.2653	1.3023	1.3401	1.4185	1.5007	6
7	1.1487	1.1887	1.2299	1.2723	1.3159	1.3609	1.4071	1.5036	1.6058	7
8	1.1717	1.2184	1.2668	1.3168	1.3686	1.4221	1.4775	1.5938	1.7182	8
9	1.1950	1.2489	1.3048	1.3629	1.4233	1.4861	1.5513	1.6895	1.8385	9
10	1.2190	1.2801	1.3439	1.4106	1.4802	1.5530	1.6289	1.7908	1.9672	10
11	1.2434	1.3121	1.3842	1.4600	1.5395	1.6229	1.7103	1.8983	2.1049	11
12	1.2682	1.3449	1.4258	1.5111	1.6010	1.6959	1.7958	2.0122	2.2522	12
13	1.2936	1.3785	1.4685	1.5640	1.6651	1.7722	1.8856	2.1329	2.4098	13
14	1.3195	1.4130	1.5126	1.6187	1.7317	1.8519	1.9799	2.2609	2.5785	14
15	1.3459	1.4483	1.5580	1.6753	1.8009	1.9353	2.0789	2.3966	2.7590	15
16	1.3728	1.4845	1.6047	1.7340	1.8730	2.0224	2.1829	2.5404	2.9522	16
17	1.4002	1.5216	1.6528	1.7947	1.9479	2.1134	2.2920	2.6928	3.1588	17
18	1.4282	1.5597	1.7024	1.8575	2.0258	2.2085	2.4066	2.8543	3.3799	18
19	1.4568	1.5987	1.7535	1.9225	2.1068	2.3079	2.5270	3.0256	3.6165	19
20	1.4859	1.6386	1.8061	1.9898	2.1911	2.4117	2.6533	3.2071	3.8697	20

EXAMPLE. Find the value of $4500 compounded annually at 4-1/2% after 12 years.

From the table, $1 at 4-1/2% amounts to $1.6959 after 12 years.

$4500 × 1.6959 = $7631.55 amount after 12 yrs.

If the interest is compounded semi-annually, use half the rate and twice the number of years to find the amount of $1. If it is compounded quarterly, use one-fourth the rate and four times the number of years.

EXAMPLE. Find the value of $512 after 8 years, interest at 5%, compounded semi-annually.

From the tables, $1 at 2-1/2% for 16 years amounts to $1.4845.
$512 × 1.4845 = $760.06 Amount after 8 years.

A compound interest problem closely connected with the problems of insurance is to find the value of any amount deposited annually for any number of years with interest compounded at regular intervals at a given rate. The premium on a life insurance policy is this kind of annual payment. The following table will show the value of $1 deposited annually for any number of years up to 30 at various rates of interest.

YEARS	ONE DOLLAR PER ANNUM PAID IN ADVANCE AT THE BEGINNING OF EACH YEAR						
	3%	3½%	4%	4½%	5%	5½%	6%
1							
2	1.030	1.035	1.040	1.045	1.050	1.055	1.060
3	2.091	2.106	2.122	2.137	2.153	2.168	2.184
4	3.184	3.215	3.246	3.278	3.310	3.342	3.375
5	4.309	4.362	4.416	4.471	4.526	4.581	4.637
	5.468	5.550	5.633	5.717	5.802	5.888	5.975
6	6.662	6.779	6.898	7.019	7.142	7.267	7.394
7	7.892	8.052	8.214	8.380	8.549	8.722	8.897
8	9.159	9.368	9.583	9.802	10.027	10.256	10.491
9	10.464	10.731	11.006	11.288	11.578	11.875	12.181
10	11.808	12.142	12.486	12.841	13.207	13.583	13 972
11	13.192	13.602	14.026	14.464	14.917	15.385	15.870
12	14.618	15.113	15.627	16.160	16.713	17.287	17.882
13	16.086	16.667	17.292	17.932	18 599	19 292	20 015
14	17.599	18.296	19.024	19.784	20.579	21 409	22.276
15	19.157	19.971	20.825	21.719	22.657	23.641	24.673
16	20.762	21.705	22.698	23.742	24.840	25.996	27.213
17	22.414	23.500	24 645	25 855	27.132	28 481	29 906
18	24.117	25 357	26.671	28 064	29 539	31 103	32.760
19	25.870	27 280	28.778	30 371	32 066	33 808	35.786
20	27.676	29.269	30.969	32.783	34.719	36.786	38.993
21	29.537	31.329	33.248	35.303	37.505	39.864	42.392
22	31.453	33.460	35.618	37.937	40.430	43.112	45.996
23	33.426	35.667	38 083	40.689	43 502	46 538	49.816
24	35.459	37.950	40.646	43.565	46.727	50 153	53 865
25	37.553	40.313	43.312	46.571	50.113	53.966	58.156
26	39.710	42.759	46.084	49.711	53.669	57.989	62.706
27	41.931	45.291	48.968	52.993	57.403	62.233	67.528
28	44.219	47.911	51.966	56.423	61.323	66.711	72.640
29	46.575	50.623	55.085	60.007	65.439	71.435	78.058
30	49.003	53.429	58.328	63.752	69.761	76.419	83.802

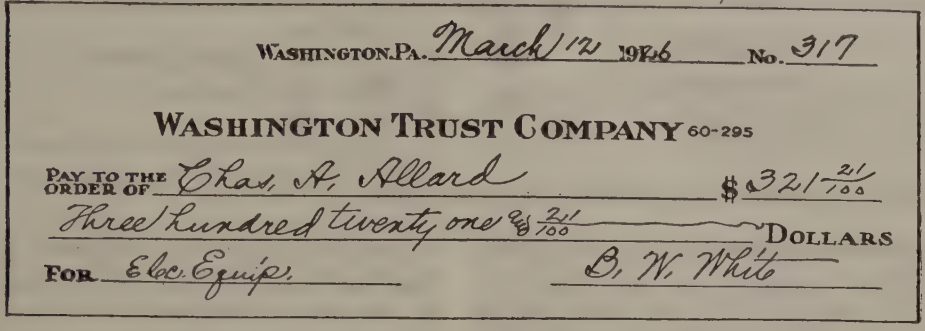
NEGOTIABLE PAPER.

A *negotiable paper* is the written promise or order for the payment of money which may be transferred by indorsement and delivery, or by delivery only, the indorser in turn guaranteeing the payment of the same.

The more common forms of negotiable paper are checks, notes, drafts, certificates or deposit, money orders, and bonds.

A *check* is an order drawn on a bank calling for payment in cash on demand. The individual signing the check must have deposited with the bank subject to check, an amount sufficient to cover it.

The person whose name is signed to the check is called the *drawer;* the bank on which it is drawn is called the *drawee;* the person to whom it is to be paid is called the *payee.*


WASHINGTON, PA. March 12 1926 No. 317

WASHINGTON TRUST COMPANY 60-295

PAY TO THE ORDER OF Chas. A. Allard $321 21/100

Three Hundred twenty one 21/100 DOLLARS

FOR Elec. Equip. B. W. White

When checks are transferred or paid, the payee writes his name across the back of the check, thereby *indorsing* it. Each person through whose hands the check passes adds his indorsement till it is finally stamped paid by the bank on which it is drawn.

If a check is drawn on a bank and there are not sufficient funds on deposit to cover it, it may be protested; in which case, each indorser is called upon in turn for the payment of the check.

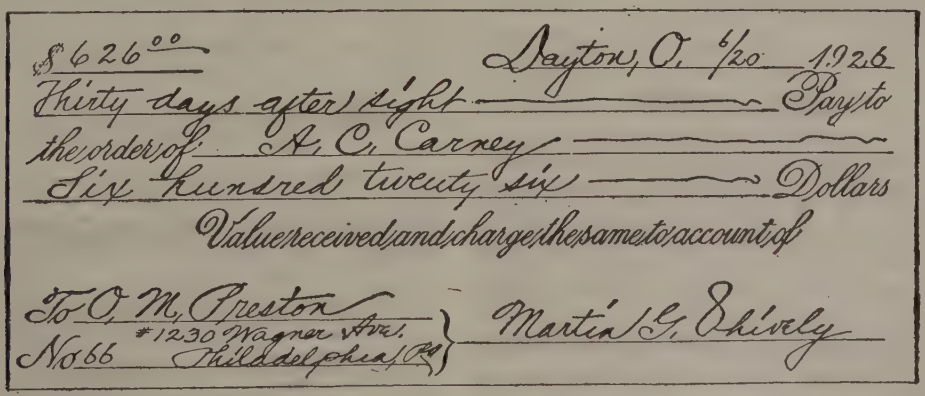
A *draft,* or *bill of exchange,* is a written order by one person on another, requiring the person to whom it is addressed to pay on demand, or at a certain fixed time, a certain sum of money to a person named therein, or to bearer.

The person or firm whose name is signed to the draft is called the *drawer;* the person or firm ordered to pay the amount is called the drawee; the person to whom the money is to be paid is called the *payee.*

A draft payable at sight is called a *sight draft.* Sight drafts are often attached to the bill of lading and they must be paid before the goods are delivered.

A draft payable a certain time after date or after sight is called a time draft.

A draft must be accepted by the drawee before it is binding upon him. In a time draft, "after sight," means after the date of acceptance.


$626 00 Dayton, O. 6/20 1926

Thirty days after sight Pay to

the order of A. C. Carney

Six Hundred twenty six Dollars

Value received and charge the same to account of

To O. M. Preston
#1230 Wagner Ave.
No 66 Philadelphia, Pa.

Martin G. Shively

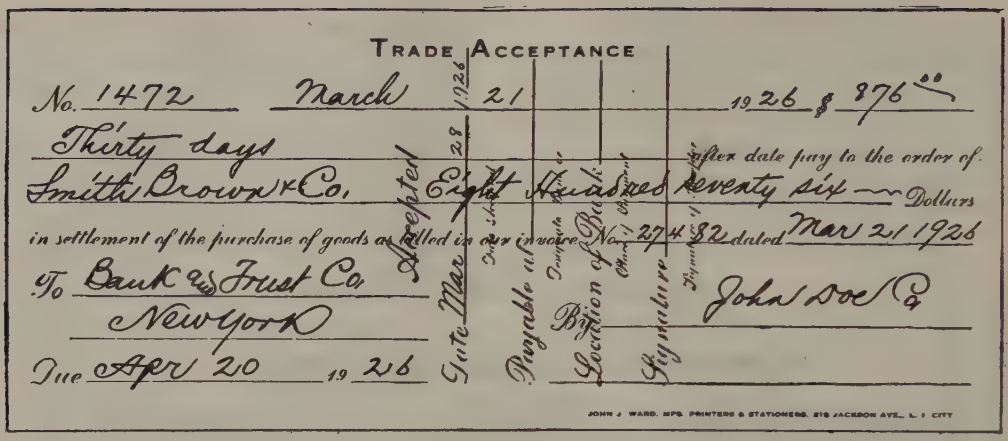
A *trade acceptance* is a time draft drawn by the seller of goods on the buyer for the amount of the purchase price of the goods which has been accepted by the buyer. It is as binding as a note after his acceptance is written on it. If an oral acceptance can be established, it is as binding as a written acceptance.

A *bank draft* is a draft drawn by one bank on another payable to a third party.

A *promissory note* is the written promise to pay a certain sum of money to a person named in the note, to order or to bearer, on a certain date.

The person who signs the note is called the *maker;* the person to whom the note is to be paid is called the *payee.*

A promissory note is without interest unless the rate of interest is stated in the note.



TRADE ACCEPTANCE

No. 1472 March 21 1926 $ 876 00/100

Thirty days after date pay to the order of

Smith Brown & Co. Eight Hundred Seventy six ——— Dollars

in settlement of the purchase of goods as billed in our invoice No. 2744 32 dated Mar 21 1926

To Bank & Trust Co

New York

Due Apr 20 1926

Accepted 1926 Mar 28 Suite

Payable at

Location of Bank

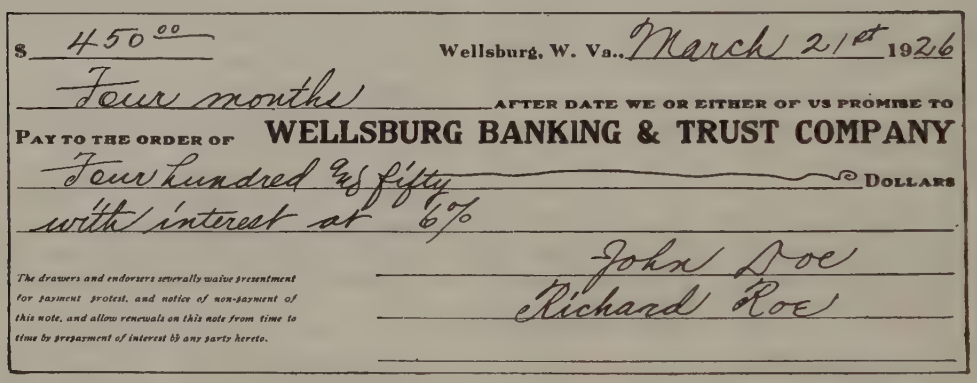
Signature

By John Doe Co

JOHN J. WARD, MFG. PRINTERS & STATIONERS, 215 JACKSON AVE., L. I. CITY

An ordinary note signed by one or two persons is called a *several note.* A note reading "we or either of us" is called a *joint and several note.*

An indorsement is anything written on the back of negotiable paper. An indorsement may add to the security of the paper; it may serve to transfer the paper to another; or it may record the payments made, thereby reducing the face value of the paper.



$ 450 00/100 Wellsburg, W. Va., March 21st 1926

Four months AFTER DATE WE OR EITHER OF US PROMISE TO

PAY TO THE ORDER OF WELLSBURG BANKING & TRUST COMPANY

Four hundred & fifty DOLLARS

with interest at 6%

The drawers and endorsers severally waive presentment for payment protest, and notice of non-payment of this note, and allow renewals on this note from time to time by prepayment of interest by any party hereto.

John Doe

Richard Roe

BANK DISCOUNT.

Bank discount is the amount charged by a bank for cashing a note or draft before maturity. The amount of the discount is determined by reckoning the simple interest on the amount of the note from the day it is discounted to the date of maturity. This period is called the *term of discount.* The rate of interest charged is called the rate of discount. Exact interest is used in computing discount.

Problems in bank discount involve the principles of simple interest.

The principal is the value of the note at maturity.

The rate of discount is the rate.

The discount is the interest.

The period of discount is the time.

EXAMPLE. A time draft, 90 days after sight, for $1240 was accepted Feb. 24, 1925, and discounted by a bank on March 13, 1925. What were the proceeds from the note, if the rate of discount was 8%?

From the table for days between dates, 90 days after Feb. 24 would make the draft due May 25. The number of days between March 13 and May 25 is 145 − 72 = 73, the period of discount.

$$\frac{\cancel{\$1240}^{248} \times .08 \times \cancel{73}}{\cancel{365}_{5}} = \$19.84 \text{ Bank discount.}$$

$1240 − $19.84 = $1220.16 Proceeds.

EXAMPLE. A note for $3500, bearing 6% interest, dated Oct. 1, 1924, and payable in 4 months was discounted at 7%, Dec. 29, 1924. What was the proceeds and the bank discount?

4 mo. = 1/3 year.

$3500 × .06 × 1/3 = $70.00 Int. on note.

$3500 + $70 = $3570 Principal at maturity.

From Dec. 29 to Feb. 1 = 397 − 363 = 34 days.

$$\frac{\$3570 \times .07 \times 34}{365} = \$23.28 \text{ Bank discount.}$$

$3570 − $23.28 = $3546.72 Proceeds.

EXAMPLE. A firm needs $4286 to meet its payroll April first. What must be the face value of a note that will realize this amount if the note is payable in 60 days and the discount rate is 6%?

There is a discount of $.01 on each $1 of the face of the note. Hence the proceeds of each $1 is $.99.

$$\frac{\$4286}{.99} = \$4329 \text{ Face of note.}$$

Discount for 60 da. = 1% of face

= $43.29.

TAXES.

The expenses of the various branches of the government are met by funds collected from the people of the country through a system that attempts to distribute this expense equitably. Money collected in this way is called a *tax.*

Taxes are of two kinds; *direct* and *indirect.*

A *direct tax* is a tax levied directly upon a person or his property, or his business. This tax is to be paid by him from his own income. Examples of taxes of this kind are poll taxes, property taxes, income taxes, license fees, etc.

An *indirect tax* is a tax charged upon certain goods when they are imported into the country, or it is a tax on the manufacture or sale of certain commodities. In a tax of this kind, while the money is collected from some firm or individual, the actual burden of the tax is passed on in the price of the goods to be paid by the consumer. During the World War, many forms of indirect taxation were used to help raise the money needed for the unusual expenses of the Federal government. Examples of taxes of this kind are duties collected by the Bureau of U. S. Customs, sales taxes, excise taxes, etc.

Federal taxes are collected by the Federal government through the customs offices or through the department of internal revenue.

Some state taxes are collected by the state itself. The state personal and property taxes are collected for the state by the counties along with their own taxes.

Counties and incorporated towns and cities levy and collect their own taxes.

For purposes of taxation, property is of two kinds; real and personal.

Real property or *real estate* is immovable property, as houses and lands.

Personal property is movable property, as household furnishings, automobiles, machinery, stocks, bonds, mortgages, notes, cash, etc.

The *rate of taxation* is determined by the ratio between the needs of the government and the total value of the property subject to the tax.

In order to determine the total value of the property, *assessors* are elected or appointed who determine the taxable value of each person's property. The value placed upon property by the assessors is the *assessed valuation* of the property.

The total tax is levied upon the total assessed valuation of the property subject to the tax. Each person owning property is charged his proportionate share of the total tax.

The person who collects the tax is called a *collector.*

Problems in taxation are solved by the principles used in percentage.

The assessed valuation is the base.

The tax rate is the rate.

The tax is the percentage.

The tax rate is expressed in mills per dollar, or cents per hundred dollars. The rate per cent is found from the rate in mills by moving the decimal point one place to the left. The rate per cent is found from the rate in cents by moving the decimal point two places to the left. This is the same as thinking of the rate as so many dollars, usually a fraction, per hundred dollars.

1. To find the tax, when the assessed valuation and tax rate are given.

Assessed valuation × *rate* = *tax.*

EXAMPLE. Find the tax on property assessed at $15,000 if the tax rate is $1.845 per $100.

$1.845 per $100 = 1.845% = .01845

$15,000 × .01845 = $276.75 Amount of tax.

2. To find the tax rate, when the total assessed valuation and the estimated expense of the government are given.

Estimated expense ÷ *total valuation* = *tax rate.*

EXAMPLE. The assessed valuation of the property in a school district is $7,460,000. The estimated expense of the schools for the coming year is estimated at $56,700. Find the school levy.

$$\frac{\$56,700}{\$7,460,000} = .0076+ = \$.76 \text{ per } \$100. \text{ Tax rate}$$

In this example, no allowance is made for uncollected taxes. In actually levying the tax, the board might ask for $.77 per $100 or more.

3. To find the assessed valuation, when the tax and rate are given.

Tax ÷ *rate* = *assessed valuation.*

EXAMPLE. The tax levy is $1.82 per $100. Find the assessed valuation of property if the tax on it is $121.94.

$$\frac{\$121.94}{.0182} = \$6,700 \text{ Assessed valuation.}$$

STOCKS AND BONDS.

A *corporation* is a group of individuals authorized by a charter from the state to transact business as an individual. Its rights and powers are set forth in its charter and it can transact only such business as is allowed by its charter.

The money used in carrying on a business is called *capital.* The capital of a corporation is generally called *stock* or *capital stock.*

The *capital stock* of a corporation is divided into *shares.* These shares may have a definite par value, usually $100 per share. Par value of shares varies from 10 cents to $500. Some stocks have no par value.

The *market value* of stock is the value for which it can be sold. This varies above and below par, in which case the stock is said to be selling at a premium or at a discount.

Any person who holds one or more shares of stock is a *stockholder* in the corporation. A certificate of stock is issued to all stockholders.

The profits of the business are distributed to the stockholders of the corporation. These profits when they are distributed are called *dividends.* A dividend is usually declared as a certain per cent of the par value of the stock.

Capital stock is of two kinds, common and preferred. *Preferred stock* is stock on which a certain dividend must be paid before any dividend can be declared on the common stock. Common stock has no specified dividend.

The control of the corporation is in the hands of the stockholders who elect a group of men, called the directors to represent them in carrying on the business.

An *assessment* is sometimes levied against the stockholders to pay losses, special expenses, etc.

A *bond* is a written obligation, promising to pay, for value received, a certain sum of money,

called the face value, at a certain time, with interest at a stated rate to be paid at regular intervals during the life of the bond.

Bonds are issued by the government, by corporations, firms or individuals. They are secured by a first mortgage upon the property of the person issuing them. Federal bonds are guaranteed by all the resources of the federal government. Because of this security, the interest rate is lower than on some other bonds.

Many things enter into a determination of the value of bonds. Among the more important elements are the reputation of the government, municipality, or corporation issuing them, the rate of interest they bear, the date of maturity, the purpose for which they were issued, freedom from taxation and the type of security back of them.

Coupon bonds have interest coupons attached which are to be clipped and presented for payment in order on or after the date printed on them. Coupon bonds and coupons are payable to bearer.

Registered bonds are so called because the name of the owner is registered with an agent of the parties issuing the bonds. Interest on registered bonds is sent direct to the owner of the bonds on the interest dates. Such bonds are payable only to the owner or to some one legally appointed to act for him.

Stocks and bonds are bought and sold through agents called *brokers*. The fee or compensation paid him for his services is called *brokerage*.

When a broker buys stocks or bonds, the brokerage is added to the net cost to determine the actual cost to the customer. When a broker sells stocks or bonds, the brokerage is deducted from the actual selling price to determine the net proceeds of the sale to the customer. The amount of the brokerage is sometimes calculated as a certain per cent of the par value of the stocks or bonds. At other times, a fixed charge is made for bonds of different denominations and for shares of different par values. The problems of brokerage are similar to the problems of commission.

1. To find the cost of a purchase or the proceeds of a sale.

EXAMPLE. For stock selling below $10 per share the brokerage is $.075. Find the cost of buying 750 shares of stock quoted at $7-3/8.

$$\$7\frac{3}{8} = \$7.375$$

$7.375 + $.075 = $7.45 Actual cost per share.
$7.45 × 750 = $5587.50 Total cost.

2. To find the number of shares.

EXAMPLE. How many shares quoted at $108.50 must be sold to realize $33,700, if the brokerage charge is .15 per share? How much money will be left over?

$108.50 − $.15 = $108.35 Proceeds per share.
$33,700 ÷ $108.35 = 311 shares + $3.15 still needed
= 312 shares + $105.20 money left over.

3. To find the amount of dividend, when the rate and number of shares are given.

EXAMPLE. Find the dividend due on 75 shares, par value $100 per share, when the company declares a 7% dividend.

75 × $100 × .07 = $525.00 dividend.

4. To find the actual income on an investment.

EXAMPLE. Find the annual income on $24,000 invested in 5% bonds purchased at $83-1/3, par value $100. This is equivalent to what rate of interest on the cash invested?

$$\$24{,}000 \div \$83\frac{1}{3} = 288 \text{ No. of \$100 bonds.}$$

$28,800 × .05 = $1440 Annual income.
$1440 ÷ $24,000 = .06 = 6% on the investment.

PRACTICAL MEASUREMENTS.

Most persons are called upon at one time or another to find by measurement or otherwise, the length of lines, the area of surfaces and the volume of solids.

In this section, the general rules and formulas needed in the solution of problems of this kind are stated and their use explained. Following the general statement of the rules, many of the more common applications are explained as they occur in the home, in construction work, in business, and elsewhere.

Most readers are already familar with the terms used in measurements as well as many of the elementary rules. Simple problems of this kind are introduced into the course of arithmetic in the early grades. In the work which follows, informal definitions are given of all terms likely to cause difficulty.

The rules and formulas stated here are proved in the higher branches of mathematics, as geometry, algebra, trigonometry and calculus. All that is necessary, for one to be able to use them readily, is a satisfactory knowledge of the fundamental operations of arithmetic.

Wherever possible, two methods of solution should be used.

1. Graphical solution. Draw a figure to scale showing the relations between the given dimensions. Construct and measure to the same scale the required dimensions.

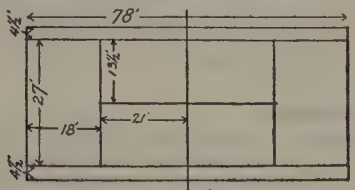
This method is much used by engineers and others in many practical problems; as in finding the load part of a bridge will carry.

2. Mathematical or analytical solution. Study the figure explained in (1) or draw a sketch showing the relation between the several dimensions. Determine the rule or formula that will express the unknown dimensions in terms of known magnitudes. Substitute in this formula, being careful to use numbers of like denomination.

DRAWING TO SCALE.

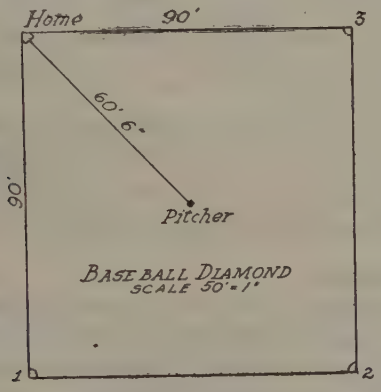
It is often impracticable to draw a picture of an object as large as the object itself. They are drawn, however, in such a way that each dimension of one figure will have a constant ratio to the corresponding dimension of the original object. To do this, a certain unit of length, such as one inch, in the drawing is made to correspond to some definite distance, such as 1 foot, 50 feet, 200 feet, 1 mile, or any convenient amount, in the original object. The ratio between these two distances is the *scale* of the drawing.

In the accompanying figure, the scale is 1" to 50', or 1 : 600". The figure represents a tennis court. The actual dimensions are marked on the sides.



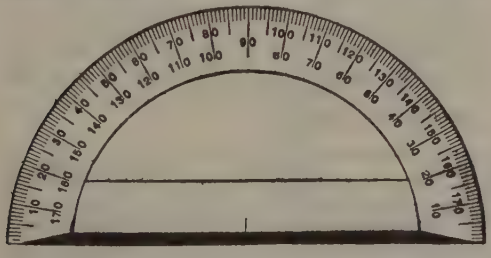
TENNIS COURT
SCALE 50' = 1"

Using the same scale, the drawing of a baseball field is a square. Each side is 1⅜ inches long. The pitchers box is located on a line between the home plate and second base. The actual distance from the pitchers box to home plate is 60' 6", represented on the drawing by a line 1⅛ inches long.



BASE BALL DIAMOND
SCALE 50' = 1'

The angles of a figure drawn to any scale must be equal to the corresponding angles of the original figure. In order to draw figures with the proper angles, an instrument called a *protractor* is used.



In measuring angles, the unit used is the *degree*.

The *degree* is defined to be 1/360th of the total of the angles at a point, or 1/90th of a right angle.

The protractor is a semi-circle which is divided into degrees from 0° to 180°. By placing the center of the circle at the vertex of the angle to be constructed or measured with the zero point of the circle falling over some point on one side of the angle, the location of a point on the other side may be determined or the value of the angle read directly from the protractor.

To construct an angle of 60°, draw a line from a point 0. Place the center of the protractor at 0, letting the zero of the protractor fall on the line. Mark the point where 60° on the protractor falls on the drawing. The line through 0 and this point is the other side of the angle.

GRAPHS.

A *graph* is a picture or diagram that illustrates relationship between the elements represented on the graph. It is in many cases a drawing to scale of the elements being studied.

Graphs are being used more and more to show the significance of statistical information. Formerly the graph was used mainly in the study of higher mathematics and economics. Now it is used in all the sciences. In addition to these technical uses, an examination of the daily and monthly publications in any locality will furnish one with examples of the many ways in which graphs are now being used.

To mention only a few of the more common uses to which graphs are being put at the present time, one lists the following, temperature, interest, receipts and disbursements, height and weight, distribution of expenditures, industrial statistics, etc.

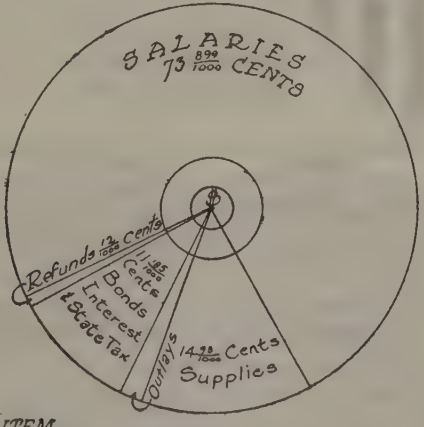
The graph is also used as a means of rapid calculation. Price-scales are really a form of this kind of graph.

The graph is usually presented in one of the three following forms.

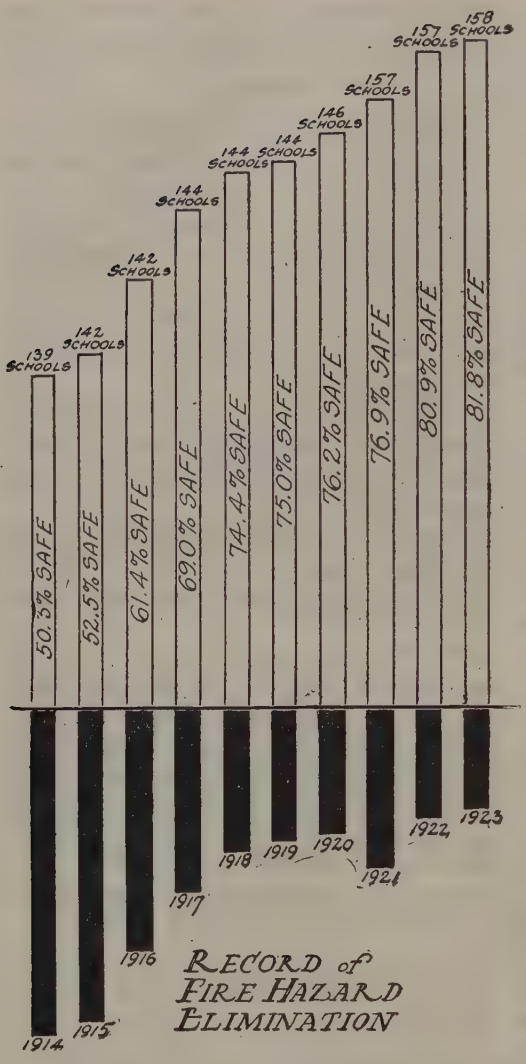
The area graph.

In graphs of this kind, the circle is usually used. This is divided into parts by lines drawn from the center to the circumference. The areas of these divisions are in the same proportion as are the quantities which they represent. This is accomplished by measuring the angles at the center of the circle and making each angle bear the same relation to 360° that the quantity represented by its division bears to the entire amount under consideration.

Distribution of payment of each dollar from JANUARY 1, 1923 to DEC. 31, 1923



ITEM NUMBER			
1a	Teachers' salaries	6198984.09	
1c	Other salaries	1353427.20	7552,411.29
2	Supplies		1440,263.03
3	Outlays		82,893.29
4	Bonds, Interest & State Tax		1143122.91
6	Refunds		1176.18
	TOTAL PAYMENTS		10219866.70



This graph shows the way in which each dollar received by the Board of Public Education of Pittsburgh was spent. The area of each part of the circle is to the area of the circle as the amount of money spent for the items indicated is to the whole amount.

The bar graph.

In graphs of this kind, lines of different lengths are placed side by side, vertically or horizontally, showing at a glance the relative value of the statistics they represent.

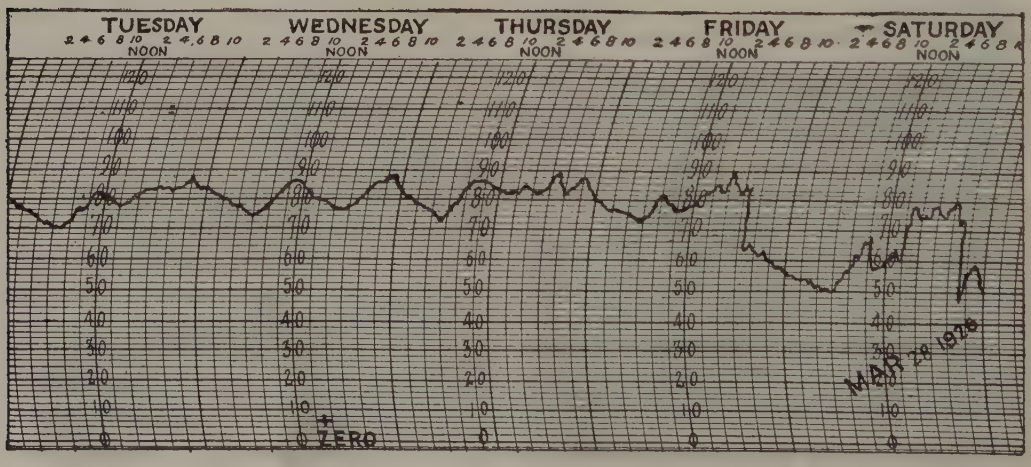
The black part of the bars represents the percentage of schools that did not have adequate means of taking care of the children in case of fire. This is the story of the progress that has been made by one city over a period of several years. Their program calls for the elimination of the unsafe school buildings by 1926. The effect of the World War and the high prices of 1921 are shown by an actual increase of unsatisfactory buildings. The original program called for the modernizing of the buildings by the end of 1920.

Very often, in practice, the bars are replaced by men of different heights to represent population at different times, by ships of different lengths to indicate the volume of shipping, by cigars of different lengths to indicate comparative consumption in certain years, and so on.

Rate graphs.

Graphs of this kind show, by means of straight lines or curves the way in which one quantity varies with respect to another. From the point of view of mathematics, it is much more valuable that any of the other methods.

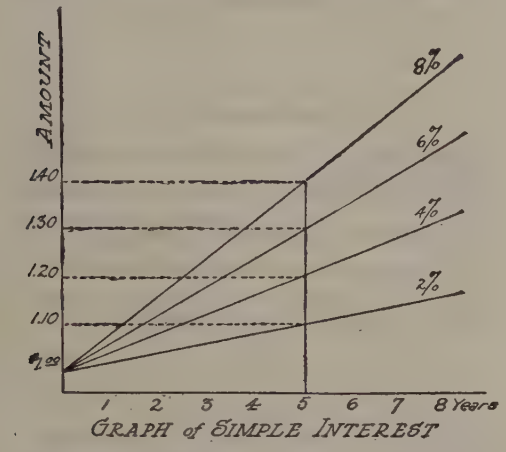
The direction of the lines or curves tells at once whether one quantity is increasing or decreasing as the other quantity increases. Curves of this kind may be drawn mechanically. An example of this kind of graph is seen in connection with the recording thermometer. It tells us at a glance when the temperature was increasing, when it was decreasing, what the temperature was at any time, when it was coldest, and when it was warmest during the interval covered by the graph.



Of especial interest here is the *straight line graph.* It is used when one quantity changes *uniformly* with respect to another.

THE GRAPH OF SIMPLE INTEREST.

The accompanying graph shows the value of $1 at various rates of simple interest over a period of 8 years. It will be noticed that the greater the rate of interest, the steeper the graph.

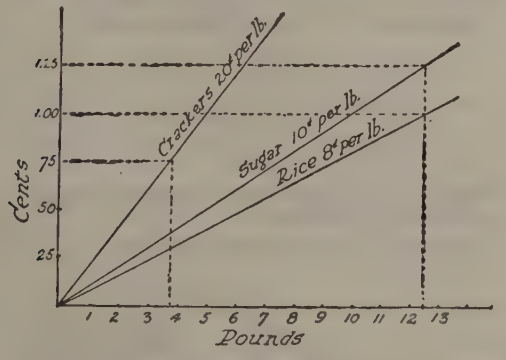


GRAPH of SIMPLE INTEREST

THE PRICE GRAPH.

Graphs of this kind are used to show the price of any number of units, when the price per unit is given. They are also valuable as showing how many units can be purchased for any given amount of money.

The following graph is drawn for rice @ 8c per lb., sugar @ 10c per lb., and crackers @ 20c per lb.



From the graph, the answers to the following questions can be read at once.

How many pounds of rice can be bought for $1? Ans. 12½ lbs.

How many pounds of sugar can be bought for $1.25? Ans. 12½ lbs.

How many pounds of crackers can be bought for $.75? Ans. 3¾ lbs.

In these problems, the amount is found on the vertical line at the left. Follow out along a horizontal line till the line representing the commodity is reached. From this point, follow a vertical line down to the horizontal line where the number of pounds is read immediately. In the following problems, this process is just reversed.

How much will 5½ lbs. of sugar cost? Ans. $.55.
How much will 7¼ lbs of rice cost? Ans. $.58.
How much will 5 lbs. of crackers cost? Ans. $1.

A modification of this kind of graph is used on all those scales which tell at a glance the price of any number of pounds at any price per pound.

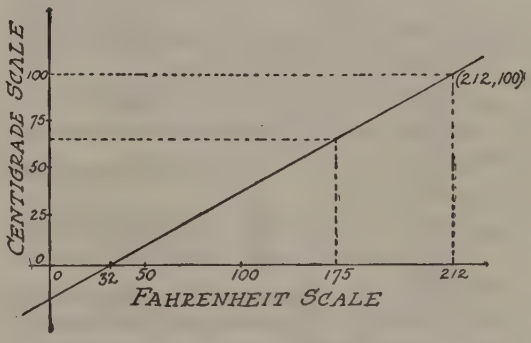
THE TEMPERATURE SCALE.

Temperature is measured by the *Fahrenheit system* in which freezing is 32° and boiling is 212°, and also by the *Centigrade system* in which freezing is 0° and boiling is 100°.

The relation between them is expressed by the formula,

$$C = \frac{5}{9}(F - 32°) \text{ or } F = \frac{9}{5}C + 32°.$$

The conversion of temperature Fahrenheit into temperature Centigrade and vice versa can be performed rapidly by the following graph.



Temperature Fahrenheit is measured on the horizontal line. Below zero is represented to the left of the point 0.

Temperature Centigrade is measured on the vertical line. Below zero is represented below the point 0.

The graph is drawn through the two known common points in the two systems, i.e., freezing and boiling.

To express 77° Fahrenheit in degrees Centigrade. Go up vertically from 77° F to the graph, then to the left horizontally to the Centigrade scale where the number of degrees Centigarde is read, namely 25°.

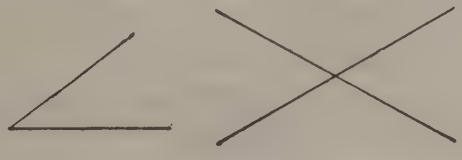
By reversing the process, it is seen that 40° C is equal to 104° F.

In all straight line graphs, increased accuracy may be secured by increasing the size of the scales.

MENSURATION.

LINES AND ANGLES.

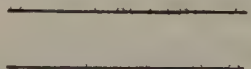
A line has only one dimension; *length.*



An *angle* is formed when two lines meet. If the lines are allowed to extend on both sides of their point of intersection, they form four angles at the point.

When two lines meet so that the four angles formed at their intersection are equal, the angles are called *right angles* and the lines are said to be *perpendicular*.

Two lines which will not meet even if they are extended indefinitely are equally distant everywhere and are said to be *parallel*.



PLANE FIGURES.

A plane figure bounded by straight lines is called a *polygon*. Polygons are named according to the number of their sides.

A *quadrilateral* is a plane figure bounded by four straight lines. It has four angles.

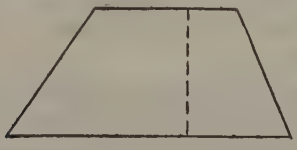
The side on which a figure may be thought of as resting is called the *base*.

The intersection of any two adjacent sides is called a *vertex*.

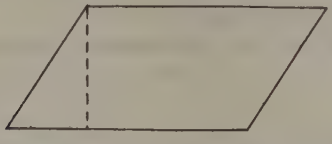
The *altitude* of a figure is the distance from the highest vertex to the base measured along the perpendicular drawn from this vertex to the base.

When certain relations exist between the sides and angles of a quadrilateral, the figure is given special names.

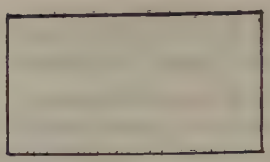
A *trapezoid* is a quadrilateral two of whose sides are parallel. The parallel sides are called *the bases*. The non-parallel sides are called *legs*. The altitude of a trapezoid is the perpendicular distance between the bases.



A *parallelogram* is a quadrilateral whose opposite sides are parallel. The opposite sides are also equal. Either pair of parallel lines may be taken as the *bases*. The other two are called *sides*. The altitude of a parallelogram is the perpendicular distance between the bases.



A *rectangle* is a parallelogram all of whose angles are right angles. The altitude of a rectangle is equal to the sides.



A *square* is a rectangle all of whose sides are equal.

A *diagonal* is a line joining two opposite vertices of a figure.

The following facts are stated for reference.

The diagonals of a parallelogram bisect each other.

The diagonals of a rectangle are equal.

A figure bounded by three straight lines is called a *triangle*. It has three angles.

A triangle is named from the nature of its angles:

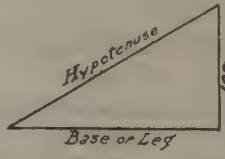
Acute, if all its angles are acute angles,
Obtuse, if one of its angles is an obtuse angle,
Right, if one of its angles is a right angle,
Equiangular, if all its angles are equal.

A triangle is named from the nature of its sides:

Scalene, if the sides are unequal,
Isosceles, if two of its sides are equal,
Equilateral, if all of its sides are equal.

The *hypotenuse* of a right triangle is the side opposite the right angle.

The other two sides are called *legs*.



In a triangle, any side may be taken as the base, and the vertex opposite the base is the vertex of the triangle.

The *altitude of a triangle* is the length of the perpendicular from the vertex to the base. If necessary, the base is extended so that the perpendicular from the vertex will meet it.

The following statements are given for reference.

The sum of the angles of any triangle is two right angles or 180°.

The angles opposite the equal sides in an isosceles triangle are equal.

Equilateral triangles are also equiangular. Each angle is equal to 60°.

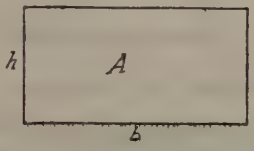
AREA.

The *area of a surface* is the ratio that the total surface bears to some surface taken as the unit of surface measure. (See Denominate Numbers and Dictionary of Weights and Measures.)

Many of the areas met with in common experience are made up of combinations of the plane forms just defined.

The rules for finding the areas of these figures will now be stated, following which many practical problems will be solved to indicate how these rules and formulas are used.

The area of a rectangle is equal to the product of its base and altitude.



The truth of this statement can be readily seen by dividing the rectangle into unit squares and counting the squares.

Let A = area, b = base, h = height or altitude.
Then $A = b \times h$.
Also, $h = A \div b$.
And $b = A \div h$.

EXAMPLE. The two adjacent sides of a rectangle are 4.8 inches and 7.5 inches. Find the area.

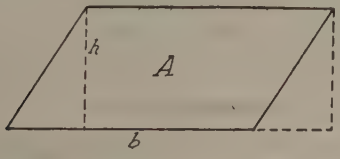
Multiplying by aliquot parts, $7.5 = \frac{3}{4}$ of 10.

$A = 4.8 \times 7.5 = \frac{3}{4}$ of $10 \times 4.8 = 36$ sq. in.

EXAMPLE. The area of a rectangle is 624 sq. ft. and the base is 26 ft. Find the altitude.

$$h = \frac{624}{26} = 24 \text{ ft.}$$

The area of a parallelogram is equal to the product of its base and altitude.



The truth of this statement can be seen by noticing that the triangle at the left may be moved to the right hand end of the parallelogram thus forming a rectangle having the same base and altitude.

Using the same notation as before.

$A = b \times h$.
$h = A \div b$.
$b = A \div h$.

EXAMPLE. Find the area of a field in the form of a parallelogram, the base equal to 17.4 rods and the altitude equal to 4.5 rods.

Sketch such a field. Notice that the area of the field does not depend upon the length of the sides of the figure.

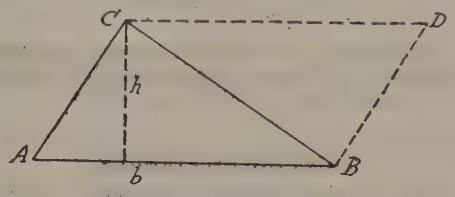
Area = 17.4 rd. × 4.5 rd.
= 78.3 sq. rd.

EXAMPLE. The area of a parallelogram is one-half acre. The base is 330 feet. Find the altitude.

Reducing to units of the same denomination, 1 Acre = 43,560 sq. ft.

$$h = \frac{21780}{330} = 66 \text{ ft.}$$

The area of a triangle is equal to one half the product of its base and altitude.



In the figure, the triangle, ABC, is obviously the same size as the triangle BDC. The two triangles together form a parallelogram. Hence, the area of any triangle is half the area of a parallelogram having the same base and altitude.

$$A = \frac{1}{2} \times b \times h.$$

$$b = \frac{2 \times A}{h}.$$

$$h = \frac{2 \times A}{b}.$$

EXAMPLE. Find the area of a triangle whose base is 4 feet 3 inches and altitude is 2 feet 8 inches.

4 ft. 3 in. $= 4\frac{1}{4}$ ft.

2 ft. 8 in. $= 2\frac{2}{3}$ ft.

$$A = \frac{1}{2} \times \frac{17}{4} \times \frac{2}{3} = 5\frac{2}{3} \text{ sq. ft.}$$

$= 5$ sq. ft., 96 sq. in.

EXAMPLE. Find the base of a triangle if its area is 426.8 square meters and its altitude is 12.8 meters.

$$b = \frac{2 \times 426.8}{12.8} = 66.687 \text{ meters.}$$

Area of a triangle in terms of its sides.

Let the sides of a triangle equal a, b, and c,

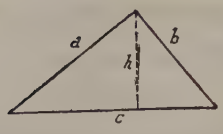
$s = \frac{1}{2}(a + b + c)$, h = altitude, A = area.

$$h = 2\frac{\sqrt{s\,(s-a)\,(s-b)\,(s-c)}}{b}$$

$$A\sqrt{s\,(s-a)\,(s-b)\,(s-c)}$$

$h = 2\,A \div b$

Fig. on page 424



EXAMPLE. Find the altitude and area of a triangle if a = 120′; b = 296′. and c = 186′.

$$s = \frac{1}{2}(120 + 296 + 186) = 301.$$

$$A = \sqrt{301 \times 181 \times 5 \times 115}$$

$$= 5597 \text{ sq. ft. nearly.}$$

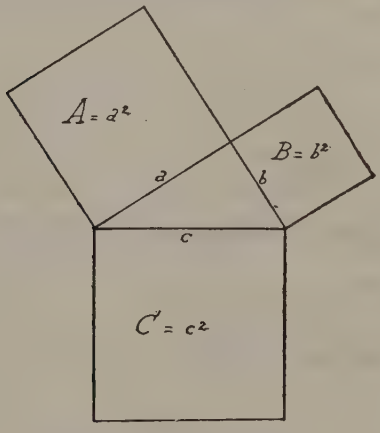
$$h = \frac{2 \times 5597}{296} = 37.8 \text{ nearly.}$$

Computations of this kind involve very large numbers. The work is greatly simplified by the use of special tables called *logarithms.*

THE RIGHT TRIANGLE.

One of the most famous theorems of mathematics is known as the Pythagorean theorem.

The area of the square on the hypotenuse of a right angle is equal to the sum of the areas of the squares on the two legs.



If a represents the hypotenuse, and b and c the legs of a right triangle.

$$a^2 = b^2 + c^2$$
$$a = \sqrt{b^2 + c^2}$$
$$b = \sqrt{a^2 - c^2}$$
$$c = \sqrt{a^2 - b^2}$$

Actual measurement of the areas of the squares will convince one of the truth of the theorem.

By the above theorem, the length of the diagonals of rectangles and the altitude of isosceles triangles can be found.

In a rectangle or square, if d = the diagonal.

$$d = \sqrt{b^2 + h^2}$$
$$h = \sqrt{d^2 - b^2}$$
$$b = \sqrt{d^2 - h^2}$$

EXAMPLE. Find the hypotenuse and area of a right triangle whose legs are 2′ 4″ and 1′ 7″ respectively.

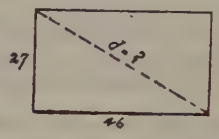
$$b = 2' 4'' = 28'', \; c = 1' 7'' = 19''.$$

$$a = \sqrt{28^2 + 19^2} = 33.84'' \text{ nearly.}$$

$$A = \tfrac{1}{2} \times 28 \times 19 = 266 \text{ sq. in.}$$

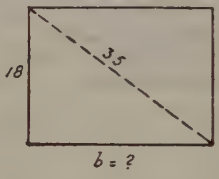
$$= \frac{266}{144} = 1 \text{ sq. ft., } 122 \text{ sq. in.}$$

EXAMPLE. A rectangular field has its two adjacent sides equal to 46 rd. and 27 rd. respectively. Find the length of the diagonal.



$$d = \sqrt{46^2 + 27^2} = \sqrt{2845} = 53.34 \text{ rd. nearly.}$$

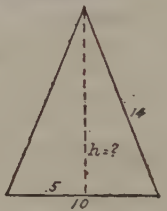
EXAMPLE. One side of a room is 18′ and the diagonal is 35′ Find the length of the other side.



$$b = \sqrt{35^2 - 18^2} = \sqrt{901} = 30' +.$$

EXAMPLE. Find the altitude of an isosceles triangle whose sides are equal to 14″ and whose base is 10″.

Note. This problem can be worked by the three side method but its solution is much simplified by the fact that the altitude of an isosceles triangle bisects the base and is perpendicular to it.

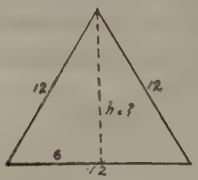


The problem is to solve the right triangle with hypotenuse equal to 14 and one leg equal to 5.

$$h = \sqrt{14^2 - 5^2} = \sqrt{171} = 13.07'.$$

EXAMPLE. Find the altitude and area of an equilateral triangle whose sides are equal to 12 inches.

NOTE.—An equilateral triangle is also isosceles.



$$h = \sqrt{12^2 - 6^2} = \sqrt{108} = 10.39'' \text{ nearly.}$$

$$A = \frac{1}{2} \times 12 \times 10.39 = 62.34 \text{ sq. in. nearly.}$$

APPLIED PROBLEMS.

Painting.

In figuring the price of painting, it is customary to calculate the number of square yards of surface to be painted. This is multiplied by the price per yard. In calculating the area of the surface no allowance is made for openings.

EXAMPLE. Find the cost of painting a wall 30′ long by 9′ high at 24c. per square yard.

$$\frac{30 \times 9}{9} = 30 \text{ sq. yd. of surface.}$$

$.24 \times 30 = \$7.20$ cost of painting.

Lathing and Plastering.

In lathing and plastering the unit of measure is the square yard. Allowance is made in the contract for openings. It is not often that the full opening is allowed. The lathing and plastering may be contracted for separately or as a single job.

EXAMPLE. Find the cost of lathing and plastering a room 16′ long by 12′ wide by 9′ high at 75c., per square yard, allowing 10 sq. ft. for each of three windows and 12 sq. ft. for each of two doors.

Area of walls $= 2 \times 16 \times 9 + 2 \times 12 \times 9 = 504$ sq. ft.

Area of ceiling $= 16 \times 12 = 192$ sq. ft.

Total allowed for openings $= 3 \times 10 + 2 \times 12 = 54$ sq. ft.

Net area $= 504 + 192 - 54 = 642$ sq. ft.

$$= 71\frac{1}{3} \text{ sq. yd.}$$

$71\frac{1}{3} \times .75 = \$53.50$ cost.

Papering.

Paper is bought by the single or double roll. A single roll is 18 inches wide and 8 yards long. In estimating the number of single rolls, the total width of all openings is deducted from the perimeter of the room. (It is estimated that the ends of the rolls, etc., will be sufficient to paper above and below all openings.) Divide this net perimeter by 18″ to find the number of strips required. Divide this quotient by the number of strips that can be cut from a double roll, being sure to make allowance for matching patterns. Many stores sell paper only by the double roll. Border strips are sold by the linear yard.

The price of papering may include the cost of the paper and the expense of hanging it, or these items may be cared for separately.

EXAMPLE. How much paper is needed to paper the walls of a room 20′ × 18′ × 10′ 6″, allowing for 2 windows 4′ wide, 1 door 3′ 6″ wide, and 6″ on each strip for matching patterns.

2 (20 + 18) = 76′	Total perimeter.
2 × 4′ + 3′ 6″ = 11′ 6″	Allowance for openings.
76 − 11′ 6″ = 64′ 6″	Net perimeter
64-1/2 + 1-1/2 ft. = 43	Strips required.
10′ 6″ + 6″ = 11′	Length of each strip.
48 + 11 = 4	Number of strips from double roll.
43 + 4 = 10-3/4 = 11	Double rolls required.

Carpeting.

Carpet is sold by the linear yard. One cannot buy a fractional width of carpet. Most carpets are ¾ of a yard wide, except ingrain which is 1 yard wide. Carpet is usually laid lengthwise of a room. Allowance must be made for matching patterns. First find the number of strips required and multiply this by the length of each strip.

EXAMPLE. How much brussels carpet is required to cover a floor 16 ft. long and 14 ft. wide? Allow 1 ft. for matching pattern.

¾ yd. = 2¼ ft. Width of carpet.

14′ ÷ 2¼′ = 6⅔ or 7 Number of strips.

16′ = Length of first strip since it matches nothing.

16′ + 1′ = 17′ Length of each of the other 6 strips.

6 × 17′ = 102′ of carpet in 6 strips.

102′ + 16′ = 118′ or 39⅓ yds, of carpet needed.

Flooring.

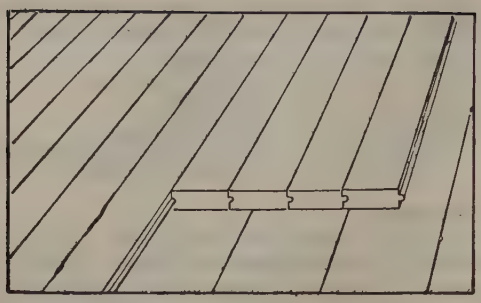
Flooring is usually bought by the *square foot* or by the *thousand board feet.* Flooring is finished with a tongue and groove. Lumber dealers always figure the lumber before it is "matched." Hence 1,000 square feet of flooring will not cover 1,000 square feet of floor. An allowance must be made to take care of the waste due to matching. This allowance is different for different widths of flooring. It is customary to allow 1/5 for waste, etc. Hence, to cover a floor, 1/5 more than the area of the floor or 6/5 of the area of the floor will give the amount of lumber needed.

EXAMPLE. A floor is 18′ 6″ by 14′ 6″. How much lumber is needed to floor it?

$$\frac{6}{5} \times 18\frac{1}{2} \times 14\frac{1}{2} = \frac{\overset{3}{\cancel{6}} \times 37 \times 29}{5 \times 2 \times 2}$$

$$= 321.9 \text{ square or board feet.}$$

In practice the lumber dealer will furnish the nearest number of square feet above this amount that will come out in even boards. In the above problem, if the flooring is in 16′ pieces, 4″ wide, the amount would be 324 square feet.



Roofing.

Roofing is usually bought and laid by the *square* of *100 square feet*. The actual amount of tile, slate, shingles, etc., vary with the size used and the nature of the roof. Contractors and builders have tables which show how many tile, etc. of a certain size are needed to cover a square. It takes about 900 standard shingles to roof a square. If the roof is quite steep, more of the shingle may be exposed to the weather and less shingles will be needed.

EXAMPLE. Each slope of a roof is 40′ by 20′. How many slate, 10″ by 16″, 4″ exposed to the weather, should be ordered to roof it?

$$\frac{2 \times 40 \times 20}{100} = 16 \quad \text{No. of squares in the roof.}$$

$$4'' \times 10'' = 40 \quad \text{sq. in.}$$

$$= \frac{40}{144} \quad \text{sq. ft. surface covered by each slate.}$$

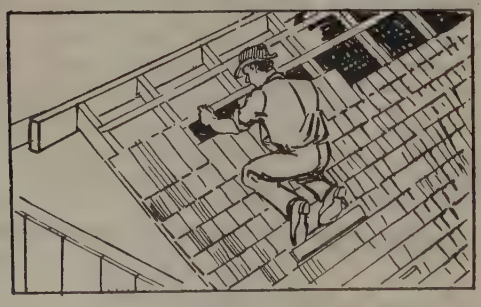
$$100 \div \frac{40}{144} = 360 \quad \text{No. of slate per square.}$$

$$16 \times 360 = 5760 \quad \text{Number of slate required.}$$

Shingles are either 12, 14, or 16 inches long. They are of varying widths, but the average width of a shingle is taken as 4 inches.

Each bunch of shingles is regarded as containing 250 shingles, each 4 inches wide, because a bunch of shingles consists of 25 double layers (or 50 single layers) each 20 inches (the width of 5 average shingles) wide. For this reason the bunch is regarded as containing 250 shingles, and 4 such bunches make a thousand shingles.

Shingles are usually laid with 4 inches of the butt, or thick part, exposed to the weather, the other parts of the shingles overlapping.



To find the number of shingles in a roof.

(1) Find the whole area of the roof in square inches.

(2) Multiply the width of an average shingle (4 inches) by the number of inches of the shingle to be exposed to the weather.

(3) Divide the whole area of the roof in square inches by the last named product and the result is the number of shingles required.

(4) To find cost, divide number of shingles required by 1,000, multiply quotient by cost per M.

EXAMPLE. How many shingles are needed to cover a roof which measures 20′ by 12′, if the shingles are laid 4″ to the weather?

$$\frac{20 \times 12 \times \overset{3}{\cancel{12}} \times \overset{3}{\cancel{12}}}{\underset{1}{\cancel{4}} \times \underset{1}{\cancel{4}}} = 2160 \text{ shingles.}$$

$$= 9 \text{ bundles.}$$

Miscellaneous applications.

There are many other practical problems in which the cost is figured at a certain price per square unit. Sidewalks, street pavements and similar problems are figured by the square yard. Etchings and engravings are charged for by the square inch. Most land problems are figured by the acre. In all cases, the rules for finding areas of simple figures are used as much as possible.

REGULAR POLYGONS AND CIRCLES.

A *regular polygon* is a polygon all of whose angles and all of whose sides are equal.

The *center* of a regular polygon is a point equally distant from all the vertices of the polygon.

The lines drawn from the center of the polygon to the vertices, are called the *radii* of the polygon. They divide the polygon into as many equal isosceles triangles as the polygon has sides. The altitude of these triangles is called the *apothem* of the polygon.

The *perimeter* of a regular polygon is equal to the sum of the sides. If P = perimeter, s = one side, and n = the number of the sides.

$$P = n \times s.$$

The *area* of a regular polygon is equal to one half the product of a side by the apothem, taken as many times as the polygon has sides. If A = area, s = one side, a = apothem, and n = number of sides,

$$A = \tfrac{1}{2}s \times a \times n.$$

EXAMPLE. Find the area of a regular hexagon (six sided polygon) one side of which is 12 inches.

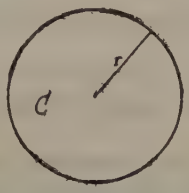
The radii divide the polygon into 6 equilateral triangles, since the angles at the center are all equal to 60°. Hence the radii are also equal to 12.

$$a = \sqrt{12^2 - 6^2} = 10.39'' \text{ nearly.}$$

$$A = \frac{1}{2} \times 12 \times 10.39 \times 6 = 374.04 \text{ sq. in.} \quad \text{Total area.}$$

By means of tables and relations studied in Trigonometry, the area, radius, and apothem of a regular polygon can be found if the number of sides and the length of one side are known. These tables are called trigonometric tables. They are used a great deal in problems in physics and engineering.

A *circle* is a plane figure bounded by a curved line every point of which is equally distant from a point within called the *center*. The curved line is called the *circumference*.



A straight line through the center of a circle, and having both its ends on the circumference, is called a *diameter*. A line from the center to the circumference is called a *radius*. All radii are equal and equal to half of a diameter.

It is proved in higher mathematics, and it may be shown true by careful measurements, that the ratio between the circumference and diameter is the same for every circle. The value of this ratio has been determined to a great degree of accuracy. For practical purposes it is taken equal to 3 1/7 or 3.1416. It is usually represented by the Greek letter π, pronounced pī.

It follows from the above, that the circumference of any circle is equal to π times the diameter. If C = circumference, d = diameter, and r = radius,

$$C = \pi d = 2\pi r.$$
$$r = C \div 2\pi.$$
$$d = C \div \pi.$$

EXAMPLE. Find the circumference of a circle whose radius is equal to 8.5′.

$$C = 2 \times 3\frac{1}{7} \times 8.5 = 53.428 \text{ feet}$$

or $C = 2 \times 3.1416 \times 8.5 = 53.4072$ feet.

The value 3-1/7 is larger than the real value of π. If accuracy is desired beyond the third significant figure, use the second value for π.

A circle may be thought of as being a regular polygon of a great number of sides. The circumference is the perimeter of the polygon. The radius of the circle is the apothem and also the radius of the polygon. The area of the circle is the same as the area of the polygon. These statements are actually true as the number of the sides of the polygon approaches infinity.

Hence, *the area of a circle* is equal to one half the product of the circumference by the radius. Using the same notation as above,

$$A = \frac{1}{2} \times C \times r = \pi r^2.$$

$$r = \sqrt{A \div \pi}$$

EXAMPLE. Find the area of a circle of radius 4′.

$$A = 3\frac{1}{7} \times 4^2 = 50\frac{2}{7} \text{ sq. ft.}$$

EXAMPLE. Find the area inclosed by a 1 mile circular race track.

1 mi. = 5280 ft., circumference of track.

$$r = \frac{5280}{2 \times 3.1416} = \frac{2640}{3.1416}$$

$$A = \cancel{3.1416} \times \frac{\overset{2}{\cancel{2640}} \times \overset{80}{\cancel{2640}}}{\cancel{3.1416} \times 3.1416} \times \frac{1}{\underset{22}{\cancel{7}}}$$

$$= \frac{160}{3.1416} = 50.930 \text{ acres.}$$

Note. Much work is avoided by indicating the solution and reduction to acres before multiplying. The cancellation eliminates some long problems in multiplication and division.

Any number which can be expressed as the quotient of two integers is called a *rational number*. All common fractions and all decimals which either end after a certain number of figures or start to repeat themselves are rational numbers.

All other numbers are called *irrational numbers*. It is impossible to find the value of an irrational number exactly. Among the more common irrational numbers are $\sqrt{2}$, $\sqrt{3}$ and π. Proofs that show these numbers irrational, establish the following facts.

A square and its diagonal have no common unit of measure that will be contained exactly in both of them.

It is impossible to construct a square whose area will be exactly equal to a given circle. This is known as the problem of squaring the circle and has engaged the attention of scholars through the centuries.

The ratio between a square and the circle that can be drawn within it touching its sides is 1.273, approximately.

VOLUME.

The *volume* of a solid is the ratio that the total volume bears to some volume taken as the unit of volume or capacity. (See Dictionary of Weights and Measures.)

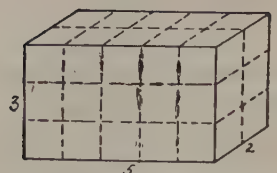
A solid figure in the shape of a box is called a *rectangular solid*. It has six rectangles for faces. The faces on opposite sides of the solid are equal and parallel. The face on which the figure seems to rest is called the *lower base*. The face parallel to it is the *upper base*. The other faces of the solid are called *sides*.

It can be readily seen that the number of cubic units in the solid illustrated equals the product of the *length*, *breadth*, and *depth*. These are called the *dimensions* of a solid.

The volume of a rectangular solid is equal to the product of the length, breadth, and thickness. These dimensions must be measured in terms of the same unit. The volume will be in terms of a cubic unit whose edge is equal to the linear unit used in measuring the dimensions of the solid.

Let a, b, and c, be the three dimensions. V = Volume.

$$V = a \times b \times c.$$
$$a = V \div b \times c.$$
$$b = V \div a \times c.$$
$$c = V \div a \times b.$$



EXAMPLE. How many cubic feet in a box 2′ × 4′ × 6′?

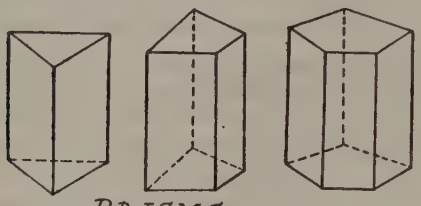
$$V = 2 \times 4 \times 6 = 48 \text{ cu. ft.}$$

EXAMPLE. The volume of the largest rectangular box that can be sent by parcel post is 3 cu. ft. 304 cu. in. Find its height if the base is a square 14″ on a side.

3 cu. ft. 304 cu. in. = 5488 cu. in. Volume.

$$c = \frac{5488}{14 \times 14} = 28''. \text{ Height of box.}$$

A *rectangular prism* is a solid whose bases are equal polygons and whose sides are rectangles.



PRISMS

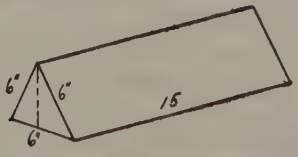
The *altitude* of a prism is the perpendicular distance between the bases. In a rectangular prism, it is equal to one of the edges of the prism.

The volume of a prism is equal to the product of the area of the base by the altitude. The area of the base must be found by the methods outlined in the previous sections.

Let, V = volume, A = area of base, h = altitude.

$$V = A \times h.$$

EXAMPLE. Find the volume of a triangular prism whose base is an equilateral triangle each side of which is 6″, and whose altitude is 15″.



A = 15.588. See equilateral triangles.
V = 15.588 × 15 = 233.82 cu. in.

A solid whose side is a curved surface and whose bases are equal and parallel curves is called a *cylinder*. The cylinders met with in ordinary work are all right circular cylinders. The *bases* are equal circles and the side curves uniformly and is at right angles with the bases.

The *altitude* is the distance between the bases.

The volume of a cylinder is equal to the product of the area of the base by the altitude.

The lateral area is the area of the side or curved part of the cylinder.

Let V = volume, A = area of base, h = altitude, L = lateral area, r = radius of base, T = total area.

$$V = A \times h = \pi \times r^2 \times h.$$
$$L = 2 \times \pi \times r \times h.$$
$$A = \pi r^2.$$
$$T = 2A + L = 2\pi r^2 + 2\pi \times r \times h.$$
$$= 2\pi r \times (r + h).$$

EXAMPLE. Find the volume and total area of a cylinder whose radius is 8′ and whose altitude is 10′.

$$V = 3\frac{1}{7} \times 8 \times 8 \times 10 = 2011\frac{3}{7} \text{ cu. ft.}$$

$$T = 2 \times 3\frac{1}{7} \times 8 \times (8 + 10) = 905\frac{1}{7} \text{ sq. in}$$

A *pyramid* is a solid whose base is a polygon and whose sides are triangles which have a common vertex, called the vertex of the pyramid.

The *altitude* of a pyramid is the perpendicular distance from the vertex to the base.

The volume of a pyramid is equal to the one-third the volume of a prism having the same base and altitude. Hence, *the volume of a pyramid* is equal to one-third the product of the base by the altitude.

Use the same notation as that used for prisms.

$$V = \tfrac{1}{3} A \times h.$$

In practice, the figures met with are usually *regular pyramids*, i.e., the bases are regular polygons and the faces are isosceles triangles. The vertex is directly above the center of the polygon.

EXAMPLE. The base of a pyramid is a square whose sides are 8″. If its altitude is 11″, find the volume.

$$V = \frac{1}{3} \times 8 \times 8 \times 11 = 234\frac{2}{3} \text{ cu. in.}$$

A *cone* is a solid whose base is a curved figure, usually a circle, and whose lateral surface tapers uniformly to a point called a vertex.

The *altitude* of a cone is the perpendicular distance from the vertex to the base. In a right circular cone, this line is measured from the vertex to the center of the base.

The *slant height* of a cone is the distance from the vertex to a point in the circumference of the base.

The volume of a cone is equal to one-third the product of the area of the base by the altitude.

Let V = volume, A = area of base, r = radius of base, h = altitude, s = slant height, L = lateral area, C = circumference of base.

$$V = \frac{1}{3} A \times h = \frac{1}{3} \times \pi r^2 \times h.$$

$$L = \frac{1}{2} C \times s = \pi r \times s.$$

$$s = \sqrt{r^2 + h^2}.$$

EXAMPLE. The diameter of the base of a right circular cone is 10′. If the altitude is also 10′, find the volume and lateral area.

$$V = \frac{1}{3} \times 3.1416 \times 25 \times 10 = 261.8 \text{ cu. ft.}$$

$$s = \sqrt{25 + 100} = 11.18' \text{ nearly.}$$

$$L = 3.1416 \times 5 \times 11.18 = 175.62 \text{ sq. ft. nearly.}$$

A *sphere* is a solid bounded by a curved surface, every point of which is equally distant from a point within called the *center*.

The *radius of a sphere* is a straight line joining the center with any point on the surface.

A *diameter* is any line through the center of the sphere terminating in the surface.

Let V = volume, S = surface, and r = radius.

$$V = \frac{4}{3} \pi r^3.$$

$$S = 4 \pi r^2.$$

EXAMPLE. The radius of the earth is approximately 4000 mi. Assuming it to be spherical in shape, find its total area and its total volume.

$$V = \frac{4}{3} \times \frac{22}{7} \times 4000^3 = 258{,}180{,}000{,}000 \text{ cu. mi.}$$

With the approximate assumptions made in this problem, there is no value in more than three or four significant figures. An error of 1 mile in the radius will result in an error of over 2,500,000 cu. mi. in the volume.

$$S = 4 \times \frac{22}{7} \times 4000^2 = 201{,}000{,}000 \text{ sq. mi.}$$

APPLIED PROBLEMS, VOLUME.

Bricklaying and Masonry.

A standard brick for building purposes measures about 8″ × 4″ × 2″. It occupies more space than this in a wall however, due to the mortar between the joints.

Masons and builders use various methods in figuring the number of bricks required to build a wall. The following is a method in common use in many places.

From the area of the outside surface of the wall or building deduct the area of all the openings and the area of one side of each of the corners. (This is necessary to keep from counting the volume of the corners twice.)

For a wall 1 brick thick (4″ thick) allow 7 bricks for each square foot of surface.

For a wall two bricks thick (8½″ thick) allow 14 bricks for each square foot of surface.

For a wall three bricks thick (12¾″ thick) allow 21 bricks for each square foot of surface.

A wall one brick thick is used as a brick veneer over frame or tile, for partitions, and so forth. A wall two bricks thick is used in the construction of small buildings, to fill the spaces between steel pillars in larger constructions, and for other purposes.

Other materials are used beside bricks, as stone, tile, concrete blocks, etc., which require special methods of computation depending upon the size of the unit used and the specifications of the construction.

Bricks are quoted by the thousand (M) but they may be bought in any fractional part of this amount.

EXAMPLE. The walls of a brick house are 32 feet long, 24 feet wide and 19 feet high and 3 bricks thick. Allowing for 15 windows averaging 3-1/2 ft. by 6 ft. and 3 doors averaging 3-1/2 ft. by 7 ft., find the number of bricks required to build the wall.

$$2\,(24 + 32) \times 19 = 2128 \text{ sq. ft. Total surface.}$$

$$4 \times \frac{13}{12} \times 19 = 82\frac{1}{2} \text{ sq. ft. Corners.}$$

$$15 \times 3\frac{1}{2} \times 6 = 315 \text{ sq. ft. Windows.}$$

$$3 \times 3\frac{1}{2} \times 7 = 73\frac{1}{2} \text{ sq. ft. Doors.}$$

$$82\frac{1}{3} + 315 + 73\frac{1}{2} = 470\frac{5}{6} \text{ sq. ft. Total allowance.}$$

$$2128 - 470\frac{5}{6} = 1657\frac{1}{6} \text{ sq. ft. Surface counted.}$$

$$\frac{21 \times 1657\frac{1}{6}}{1000} = 34.8 \text{ M bricks required.}$$

Concrete.

The cost of concrete is usually figured in terms of a *cubic yard*. In figuring the volume, allowance is made for all openings. A separate charge is made for *forming*, unless this is included in the estimate.

Concrete is a mixture of cement, sand, gravel or crushed stone, and water. The proportions of these various substances vary according to the nature of the construction. The mixture is named by stating in order the number of parts of cement, sand, and gravel. Recent experiments indicate that the mix should be made with as little water as possible.

When the sand and gravel are mixed together, the volume of the mixture is less than the sum of the volumes of the two materials. This is again true when the cement is added. This is due to the fact that the smaller particles fill the voids or spaces between the larger pieces. The volume is increased over that of the gravel in the different mixtures used.

The following table shows the amount of the various materials in the mixtures listed. Cement is measured by the barrel = 400 lbs. gross = 386 lbs. net. In the mixtures, one measure of cement is one sack or 1/4 barrel; the sand and cement are measured in cubic feet.

Mixture	Sacks of cement per cu. yd. of concrete.
1 1	19.2
1 1½	15.5
1 2	12.8
1 2½	11.0
1 2: 3	7.0
1 2: 4	6.0
1 3: 5	4.7
1 3: 6	4.3

To find the amount of sand necessary to make a cubic yard of concrete, multiply the number of sacks of cement by the number of parts of sand in the mixture to be used and divide by 27.

To find the amount of gravel necessary to make a cubic yard of concrete, proceed in the same way with the number of parts of gravel in the mixture to be used.

EXAMPLE. The excavation for a cellar is 32′ by 24′ by 5′. How much of cement, sand, and gravel are needed to build 12 inch walls of a 1:3:5 mixture?

$2 \times (32 + 22) \times 5 \times 1 = 540$ cu. ft.
$= 20$ cu. yd. Total volume.

From the table,

$$4.7 \times 20 = 94 \text{ sacks} = 23\frac{1}{2} \text{ bbls. cement.}$$

$$\frac{94 \times 3}{27} = 10\frac{4}{9} \text{ cu. yd. sand.}$$

$$\frac{94 \times 5}{27} = 17.4 + \text{ cu. yd. gravel.}$$

Notice that the width of the cellar is taken as 22′ to avoid counting the corners twice. In practice, it is not necessary to solve for the amount of sand and gravel in a cubic yard. Instead, multiply the total number of sacks by the number of parts of sand and gravel in the mix. This gives number of 100 lbs. of each.

Board measure.

One foot in board measure or one board foot is equal to a board one foot square and one inch thick. Its volume is one-twelfth of a cubic foot.

Boards less than one inch thick are figured as if they were one inch in thickness.

To find the number of board feet, multiply the length in feet by the width in feet by the thickness in inches. It is obvious that any one of these three dimensions may be expressed in inches and the other two in feet.

Lumber is sold by the thousand (M) board feet.

Many special methods are used in lumber yards to figure quickly the number of board feet in lumber of various widths and thicknesses.

The following are samples of some of these special rules.

Thickness	Width	To find number of board feet.
1 inch	2 inches	Take 1/6 of the length.
1 inch	3 inches	Take 1/4 of the length.
1 inch	4 inches	Take 1/3 of the length.
1 inch	6 inches	Take 1/2 of the length.
1 inch	8 inches	Deduct 1/3 the length.
1 inch	10 inches	Deduct 1/6 the length.
1 inch	12 inches	Take the length.
2 inches	4 inches	Deduct 1/3 the length.
2 inches	6 inches	Take the length.
2 inches	8 inches	Add 1/3 the length.
2 inches	10 inches	Add 2/3 the length.
2 inches	12 inches	Take twice the length.

EXAMPLE. How many board feet are there in 42 plank, 2″ × 8″ × 16′ long?

First method.

$$42 \times \frac{1}{6} \times 16 \times 8 = 896 \text{ board feet.}$$

Second method.

$16 \times 42 = 672$ Total length.
Add 224 1/3 length.
896 Board feet.

Capacity of Bins, Reservoirs, etc.

Many products are now sold by weight, as coal, wheat, grain of all kinds, fruit, vegetables, and so on. It is still customary to speak of these products in terms of bushels. In order to secure uniformity in this connection, the federal government and the several states have established by statute the weight of a bushel of these various commodities.

One bushel of the following substances has the indicated weights:

Product	Weight	States
Wheat	60 lbs.	All
Shelled corn	56 lbs.	All
Oats	32 lbs.	All
Potatoes	60 lbs.	Most
Beans	60 lbs.	All
Apples	48 lbs.	Most

The variation between states, when it exists, is very slight. The tendency is toward uniformity.

It is often desirable to reach an estimate as to the amount of material in a bin without going to the expense of weighing or measuring the material in it. This is accomplished readily by the use of the following rules.

The same remarks hold with regard to the contents of cisterns, resevoirs, vats, etc.

A heaped bushel contains 2,747.71 cubic inches.
A stricken bushel contains 2,150.42 cubic inches.
A peck contains 537.6 cubic inches.
A quart contains 67.2 cubic inches.
A pint contains 33.6 cubic inches.
A hogshead contains 8.422 cubic feet.
A barrel contains 4.211 cubic feet.
A gallon (liquid) contains 231 cubic inches.
A quart (liquid) contains 57.75 cubic inches.
A pint (liquid) contains 28.875 cubic inches.

(1) Find the cubic contents of the vessel or bin in inches.

(2) Divide the contents by the number of cubic inches contained in the chosen unit, whether gallon, bushel, or barrel.

For quick, rough estimates it may be remembered that 1 cubic foot equals nearly .63 of a heaped bushel, or equals nearly .80 of a stricken bushel, or equals nearly 7.5 liquid gallons, or equals nineteen eightieths of a barrel. These fractions are to be used as multipliers of the cubic contents in corresponding dimensions. Thus—

Volume in cubic feet × .63 gives the number of heaped bushels.

Volume in cubic feet × .80 gives number of stricken bushels.

Volume in cubic feet × 7.5 gives number of liquid gallons.

Volume in cubic feet × nineteen eightieths gives the number of barrels.

ALGEBRA.

In the Aahmes copy before mentioned, the simple equation appears thus: Hau (literally heap), its seventh, its whole, it makes 19; if put in modern symbols means $\frac{x}{7} + x = 19$. The Egyptians made no further progress in algebra; the Greeks used it in connection with their wonderful system of geometry. In Euclid (c. 300 B. C.), we find formulas for $(a + b)^2$ with other algebraic relations worked out by geometric figures. Heron of Alexandria (c. 100 B. C.) solved quadratic equations. To Diophantus (last half third or first part of fourth century A. D.) we are indebted for the first book written on algebra chiefly. He used one unknown quantity, symbols for equality and subtraction, while his favorite subject was indeterminate equations of the second degree. Aryabhatta, a Hindu mathematician (476), made some contributions, but no additions to the science. About 800 there came a mathematician, known from his birthplace as Al-Khowarazmi, who wrote the first great work and gave the science its present name. He called it "al-jabir;" it became in Latin, "algebrae," in the sixteenth century English, "algiebar," and modern English, "algebra." For 700 years little advance was made in the science, until in Italy, Cardano, Ferro, and Fiori solved cubic equations. Vieta, a Frenchman, was the founder of our present symbolic system (1591).

Algebra is at first but a continuation and extension of arithmetic. The methods employed are so improved however that many problems that were not solved in arithmetic are worked easily here. Other subjects grow out of the study that have no seeming connection with arithmetic. The field of algebra as the term is now understood, is very large. It is safe to say that much of modern science has been discovered by use of the principles and theorems of algebra. A knowledge of the science is necessary to one who plans to do work in mathematics, physics, engineering, chemistry, economics, or in practically any technical or professional field. It is usually studied in the ninth grade or first year of the high school course. It is an almost universal requirement for entrance to colleges and technical schools. This is true not only because of the "cultural" value of the study, but also because of the practical usefulness of the content of the course.

While algebra is now a science of itself, the best approach to an understanding of the subject is by noticing its close relation to arithmetic. For many centuries, its sole purpose was to furnish a short and systematic solution for the problems of arithmetic. The rules used there are stated concisely by use of the letters and symbols of the new science.

Three new ideas are introduced at the very beginning of Algebra. It is necessary to gain a clear understanding of each of these before the science can be developed. A brief statement concerning each of these is given here, after which each idea is developed in detail.

The most obvious difference, that is the difference which is noticed immediately is the use of letters to represent numbers. Science and industry make much use of this practice in expressing general laws and rules in brief and concise form. Several examples of this kind appear in various sections on arithmetic. For example in the section on profit and loss, page 461 and the sections on area and volume on pages 477 and 478 and 481 to 484.

The second new idea involves a new concept of number or rather an extension of the number system used in arithmetic. The new numbers are called negative numbers. This extension of the number system calls for an examination of the fundamental operations and a restatement of the rules of addition, subtraction, multiplication and division. These new rules must be so stated that they do not contradict any of the work in arithmetic. This is done on pages 486 and 487.

When these two ideas are combined the number system of algebra is complete. The various laws for combining the algebraic numbers are developed considering in order polynomials, fractions and irrational expressions.

The third new idea is that of the equation. The use of letters as numbers in arithmetic referred to above, also illustrates the form of the equation. Many problems can be solved easily when the principles of the equation are understood. Various examples of problems of this kind appear in the following pages. They are placed along with the material which explains the operations on algebraic numbers used in their solution.

The signs of arithmetic; +, −, ×, ÷, √, =; have the same significance in algebra as in arithmetic. The sign of multiplication is sometimes the dot written above the line, ·. In many cases the sign is not written at all.

Eg. 4 times a times b may be written $4 \times a \times b$ or $4 \cdot a \cdot b$ or $4ab$.

LETTERS USED AS NUMBERS.

In the problems of percentage and interest as well as in problems of measurement, this use of letters is often made.

The percentage equals the rate times the base. The formula is $p = r \times b$
which is written in the algebra notation as follows:

$$p = rb.$$

Interest is equal to the principle times the rate times the time. In algebra this is written:

$$i = prt.$$

The area of a circle is equal to the square of the radius times π. In algebra this is written:

$$A = \pi r^2$$

Def. A general rule written in algebraic form is called a *formula.*

In the above examples, the letter used is the first letter of the word that signifies the quantity each represents. This does not need to be the case so long as the relation is understood. Any letter may be used to represent any number or magnitude. The letters most used in actual practice are the first and last letters of the alphabet, a b c .... being used to represent

"known" or given values, and x y z .... to represent *"unknown"* or wanted values.

By the theory of equations, a formula may be changed in various ways so that any one of the quantities may be found if the others are given.

E.g. From the percentage formula, by dividing both sides of the equation by r and b, the following formulas are derived for the base and the rate respectively:

$$b = \frac{p}{r} \text{ and } r = \frac{p}{b}.$$

Def. An *algebraic expression* is a combination of figures, letters, and symbols used to represent any number or quantity.

E.g., 2a, a — b, 3ax, xy + 2.
2a is read 2 times a or simply "2 a."
a — b is read "a minus b."
3ax is read "3 a x" and means 3 times a times x.
xy + 2 is read "x y plus 2" and means that 2 is to be added to the product of x and y.

Def. The value of the number represented by an algebraic expression can not be known until the values of the various letters are determined and these values put in the original expression. The process of putting values in an expression for a certain letter or symbol is called *substitution.*

After the substitutions have been made, the indicated operations are performed. The entire process is called the *evaluation* of the expression.

EXAMPLE. If a = 2; b = 3; x = 1; y = 4: Evaluate the following expressions.

1. $2a + 3b = 2 \cdot 2 + 3 \cdot 3 = 4 + 9 = 13.$
2. $2ax - y = 2 \cdot 2 \cdot 1 - 4 = 4 - 4 = 0.$
3. $ay - bx = 2 \times 4 - 3 \times 1 = 8 - 3 = 5.$

Difficulty arises in evaluating the following problem.

$$4ax \div 2a = ?$$

If the division is performed before the values for the letters are substituted the result is 2x which with the values assumed above is equal to 2.

Substituting the values before dividing gives the following:

$$4 \cdot 2 \cdot 1 \div 2 \cdot 2 = ?$$

Here, if the multiplications are performed first, the result;

$$8 \div 4 = 2$$

is the same as that obtained by the above process. If, however, the multiplications and divisions are performed in order, as in arithmetic, the result would be

$$8 \div 2 \times 2 = 4 \times 2 = 8$$

which contradicts the result obtained by simplifying results before substituting.

In the above examples, the multiplication is always performed before the addition or subtraction. This practice must be followed at all times. In general, the order of the operations in any problem is determined by the following rule.

Order of indicated operations. *In any problem, perform all indicated multiplications first. Next perform all indicated divisions. Additions and subtractions are performed last and may be taken in any order.*

There is sometimes confusion due to the fact that in arithmetic, it is usually customary to perform multiplications and divisions in order as they occur. The change in algebra is due to the fact that it is customary to think of an expression involving only multiplications as a single number, as one writer puts it, "the multiplication is considered as being already performed."

Parentheses. Various symbols are used to indicate that several terms are to be treated as one number or to be operated on in the same way. These symbols are called the *symbols of aggregation.* The one that is used most often is the *parenthesis,* ( ). Other signs are the *bracket* [ ], the *brace,* { }, and the *vinculum* —.

3(a + b) means that the sum of a and b is to be multiplied by 3. [2a — 3x] ÷ 4a means that the difference between 2a and 3x is to be divided by 4a. $\sqrt{x^2 + 2x + 1}$ means that the square root of the sum of x^2 and 2x and 1 is to be taken.

Within a parenthesis, the rules for the order of operations applies as stated above.

For convenience, the word parenthesis is used to refer to the various signs of aggregation, brackets, braces and so forth.

While the processes used in algebra have not yet been considered, a comparison of the solution of a problem as worked in arithmetic and as worked in algebra will serve to show the nature of the latter method.

Problem. The area of the surface of a cube is 486 sq. ft. Find the length of one edge.

Solution. Let x = length of edge.
Then x^2 = area of one face.
Since there are 6 faces to a cube, the total area = $6x^2$.
Hence, $6x^2 = 486.$
Dividing by 6, $x^2 = 81.$
Transposing $x^2 - 81 = 0.$
Factoring, $(x + 9)(x - 9) = 0.$

Setting each factor equal to zero gives $x = \pm 9$ = one edge. The root, —9, has no significance as an edge of a cube.

The arithmetical solution of this problem follows the same outline as the above. It is as follows:

If the area of the whole cube is 486 sq. ft., the area of one face is one-sixth of 486 or 81 sq. ft. Each side of a cube is a square, hence the edge of the cube which is equal to a side of this square is equal to the square root of 81 or 9 ft.

In many of the problems of arithmetic, the algebraic method serves simply to write the arithmetic solution in better form.

Problem. A train leaves Pittsburgh for New York at 8:00 A. M. travelling at the rate of 30 miles per hour. Three hours later, a second train starts in the same direction from Pittsburgh travelling at the rate of 40 miles per hour. When and where will the second train overtake the first?

ARITHMETICAL SOLUTION. The first train travelling at the rate of 30 miles per hour will have gone 3 × 30 = 90 miles when the second train starts.

The second train will gain 40 — 30 = 10 miles per hour on the first train after it starts.

The number of hours it will take for the second train to gain 90 miles at 10 miles per hour is given by 90 ÷ 10 = 9 hours.

Hence the first train will travel 3 + 9 = 12 hours, when it will be 8:00 P. M.

The trains will at that time be 12 × 30 = 360 miles from Pittsburgh.

ALGEBRAIC SOLUTION.

Let t = number of hours after 8:00 A. M.
30t = miles travelled by first train, t hours after 8:00.
t — 3 = hours the second train is running.
40 (t — 3) = miles travelled by second train t hours after 8:00 A. M.

The trains will be together when the expressions which represent the distances they each have travelled are equal.

Hence $30t = 40\ (t - 3)$
$= 40t - 120$
$-10t = -120.$

Dividing both sides of the equation by -10, gives

$t = 12$. hrs., after 8:00 A. M. which means that they are together at 8:00 P. M.

$30t = 360$ miles distance each train has travelled.

In the algebraic solution, $40t$ was subtracted from $30t$. the answer was written $-10t$. In the next step, each side of the expression was divided by -10. Up to this point in our study of numbers, both of these operations are impossible. This problem will now be considered.

POSITIVE AND NEGATIVE NUMBERS.

There are many situations in which the numbers of arithmetic are cumbersome. An elaborate explanation is often necessary to indicate what a number really means. A few examples of this nature will indicate the meaning of this statement.

New York and Chicago are each about 440 miles from Pittsburgh via the Pennsylvania Railroad. It is customary to speak of New York as being 440 miles east of Pittsburgh and Chicago as being 440 miles west of Pittsburgh.

In describing the motion of a ball thrown from the top of a building, it is necessary to tell whether the ball is above or below the place from which it was thrown.

In telling about the temperature on a certain day or place, one says it was a certain number of degrees above or below zero. The thermometer is marked off in degrees above and below a point called zero.

In deciding the financial condition of a firm or of an individual, the total assets and the total liabilities of the concern are considered. If the amount of the assets is greater than the liabilities, the balance is considered as credit or surplus. On the other hand, if the liabilities are the greater, the difference between the two items is called the debt or deficit.

Many other examples might be sighted where it is desirable to have some agreement that will indicate the significance of various numbers.

In mathematics, this is accomplished by calling one set of numbers *positive* and the other set *negative*. The conventions that determine which of the opposite numbers is called positive and which negative are rather well defined.

Distance east is usually called positive, west is called negative. Distance north is positive, south is negative.

Distance upward or to the right is called positive, downward or to the left is called negative.

Temperature above zero is positive, below zero is negative.

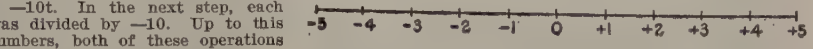
Assets and surplus are represented by positive numbers. Liabilities and deficits are represented by negative numbers.

Motion is positive if it takes place in a positive direction, negative if it takes place in a negative direction. It is generally agreed that positive rotation shall be opposite to the motion of the hands of a clock or counter-clock-wise. Motion around a point in the same direction as the hands of a clock is called negative.

The sign $+$ is used to indicate positive numbers and is read plus or positive. The sign $-$ is used to designate negative numbers and is read minus or negative. When no sign is written, the positive sign is always understood.

Def. Positive and negative numbers are also called *signed numbers* or *directed numbers*. The reason for the second name will appear below.

Graphical representation of directed numbers. If a point is taken on a line and distances are measured off to the right corresponding to the various units, as in the accompanying figure,



any positive number can be represented by some point to the right of the zero point.

Positive numbers are the numbers of arithmetic. To add two positive numbers on the scale, as $2 + 3 = 5$, from the point 2 count 3 places to the right arriving at the point 5. Notice that in this process, the counting is to the right or in the direction in which the positive numbers are measured.

To subtract two positive numbers on the scale, as $7 - 3 = 4$, from the point 7 count 3 places to the left arriving at the point 4. Notice that in this process the counting is to the left or in the opposite direction from that in which the positive numbers are measured.

If distances are measured off to the left of the zero, each point will have a certain distance from the point 0. The sign $-$ is placed before the numbers which represent these distances. *The points are said to represent the negative numbers graphically.*

The ideas of addition and subtraction of positive numbers are extended to include addition and subtraction of directed numbers.

Multiplication is an extended form of addition while division is the inverse process of multiplication. The graphical method of performing these operations is explained below.

Def. The *absolute value* of a signed number is the value of the number considered as positive regardless of the sign of the number.

E.g. The absolute value of -3 is 3; of $+4$ is 4; of -5 and $+5$ is 5; of $-a$ is a; etc.

For purposes of reference, the rules for performing the fundamental operations on signed numbers are stated below. The various operations will then be considered separately.

Rules for combining signed numbers.

1. Addition. To add two numbers of like sign, that is, two positive or two negative numbers, find the sum of their absolute values and prefix their common sign to the result.

To add two numbers of unlike signs, that is a positive and a negative number, find the difference between their absolute values and prefix the sign of the number having the greater absolute value to the result.

2. Subtraction. To subtract one signed number from another, change the sign of the subtrahend and add the resulting number to the minuend.

3. Multiplication. To multiply two signed numbers, find the product of their absolute values. This product is positive if the numbers being multiplied have like signs. It is negative if the numbers have unlike signs.

4. Division. To divide two signed numbers, find the quotient of their absolute values. This quotient is positive if the divisor and dividend have like signs. It is negative if they have unlike signs.

Addition of signed numbers. To add a positive number, one counts forward or to the right from a given number. To add a negative number, one counts backward or to the left from a given number.

To add −4 to +6, count from 6, 4 to the left, getting 2.
To add −4 to −6, count from −6, 4 to the left, getting −10.
To add +4 to −6, count from −6, 4 to the right, getting −2.

In adding two numbers which are opposite in sign but which have the same absolute value, one arrives at the zero point on the line. In this case the sum is called zero, and the numbers are said to cancel each other.

Def. The sum of two signed numbers is called the *algebraic sum* of the numbers. It is immediately evident that the algebraic sum of two signed numbers is often different from the value of the sum of their absolute values.

In algebra, to add means to find the algebraic sum.

Subtraction of signed numbers. To find the difference between two numbers means to find the number which must be added to the subtrahend to give the minuend. On the directed line, this corresponds to finding the number of units from the subtrahend to the minuend, indicating the direction of the counting by a plus sign if it is to the right and by a minus sign if it is to the left.

This process may be simplified by starting from the minuend and counting as many places as are indicated in the subtrahend, in the opposite direction to that indicated by the sign of the subtrahend. This means that in subtracting a positive number, one counts to the left; and in subtracting a negative number one counts to the right.

To subtract +5 from +8, count 5 to the left from 8 getting +3.
To subtract +8 from +5, count 8 to the left from 5 getting −3.
To subtract −5 from +8, count 5 to the right from +8 getting +13.
To subtract −5 from −8, count 5 to the right from −8 getting −3.

The advantage of this second method lies in the fact that the number reached on the scale is the answer required.

It will be noticed that this process is the same as changing the sign of the subtrahend and then adding algebraically.

By the use of signed numbers, it is possible to find the difference between any two signed numbers. This is a distinct advantage over the work in arithmetic where many problems can only be solved by the aid of a great deal of explaining of terms.

Def. The difference between two signed numbers is called the *algebraic difference* between them.

Multiplication of signed numbers. The idea of multiplication must be extended to take care of this larger number system. Four cases exist. Both numbers may be positive. Both may be negative. The multiplier may be positive and the multiplicand negative. The multiplier may be negative and the multiplicand positive. These cases will be considered in turn.

1. $+3 \times +5 = +15$.

This is the problem of arithmetic. It means that +3 is to be taken or added 5 times.

$$(+3) + (+3) + (+3) + (+3) + (+3) = 15.$$

2. $-3 \times +5 = -15$.

This means that −3 is to be added 5 times.

$$(-3) + (-3) + (-3) + (-3) + (-3) = -15.$$

3. $+3 \times -5 = -15$.

This means that +3 is to be subtracted 5 times.

$$-(+3) - (+3) - (+3) - (+3) - (+3) = -15.$$

4. $-3 \times -5 = +15$.

This means that −3 is to be subtracted 5 times.

$$-(-3) - (-3) - (-3) - (-3) - (-3) = +15.$$

since to subtract −3 is the same as adding +3.

Multiplication means addition when the numbers are positive and subtraction when the numbers are negative.

Cases 1 and 4 are covered by the first part of the rule for multiplication while cases 2 and 3 are covered by the second part.

Division of signed numbers. Division may be thought of as the inverse of the process of multiplication. The dividend corresponds to the product, the divisor to one of the factors of the product. The problem is to find the other factor. This is the quotient. Hence the signs of the quotient are determined by the considerations set forth in connection with multiplication. Notice that one of the three numbers is always positive. Also, that if one number is negative one of the others will be negative.

If the dividend and divisor have like signs, the quotient is positive.

$$(+24) \div (+4) = +6.$$
$$(-21) \div (-7) = +3.$$

If the dividend and divisor have unlike signs, the quotient is negative.

$$(+18) \div (-3) = -6.$$
$$(-27) \div (+9) = -3.$$

Zero. The introduction of the number zero in the number system presents a special case. No difficulty arises in addition and subtraction. Multiplying any number by zero always gives zero as a result. Division by zero leads to many contradictions, such as $2 = 1$, and so on. For this reason, *division by zero is not permitted in mathematics.*

ALGEBRAIC EXPRESSIONS.

Def. The factors of an algebraic expression are those numbers or expressions which multiplied together give the original expression.

E.g. 12axy has the factors 2, 2, 3, a, x, and y.

The reader should notice that the definitions and processes of algebra will always include those already worked out for arithmetic. This is true because the number system of algebra includes the number system of arithmetic and no rules or processes can be introduced in algebra that will conflict with the laws and principles of arithmetic. In the above example, the factors of the numerical part of the number are found by the methods of arithmetic.

Def. When an algebraic expression is the product of two or more numbers, either of the numbers may be called the *coefficient* of the other

in the product. The coefficient indicates how many times the other number is taken in the expression.

E.g. In the term, $4ax$, 4 may be called the coefficient of ax; $4a$ may be called the coefficient of x; a may be called the coefficient of $4x$; etc.
It is customary to think of the coefficient as being composed of arithmetical numbers and those algebraic numbers represented by the first letters of the alphabet.

When a coefficient is composed only of arithmetical numbers it is called a *numerical coefficient*. When it is composed only of letters, it is called a *literal coefficient*. When the coefficient contains both arithmetical numbers and letters, it is called a *mixed coefficient*.

E.g. In the expression $15x$, 15 is a numerical coefficient.
In the expression ay, a is a literal coefficient.
In the expression $\frac{1}{2}ax$, $\frac{1}{2}a$ is a mixed coefficient.

Def. When a factor occurs more than once in an algebraic expression, the number of times it occurs is indicated by a small number written to the right and a little above the number. These numbers are called *exponents*. The factor is said to be raised to the power indicated by the exponent. When the exponent is not written, 1 is always understood.

E.g. $2aaa = 2a^3$; $3axx = 3ax^2$.

Any kind of number may be used as an exponent.

Def. An algebraic expression which involves only the idea of multiplication of arithmetical numbers and letters is called a *term*. As a special case, all numbers of arithmetic are considered as single terms if they stand alone or are separated from the rest of an expression by plus or minus signs.

E.g. 20, $3ax$, $4bxy$, are examples of terms.

Def. A *monomial* is an algebraic expression of a single term.

E.g. 10; $5ax$; $\frac{1}{4}xy$.

Def. An algebraic expression made up of the sum and difference of algebraic terms is called a *polynomial*.

E.g. $2a + 3b - c$; $x^2 + 2x + 1$.

Def. A polynomial of two terms is called a *binomial*.

E.g. $a + b$; $2x - 3y$.

Def. A polynomial of three terms is called a *trinomial*.

E.g. $a + b - c$; $x^2 - 4x - 5$.

Def. A *root* of an algebraic number is one of the equal factors whose product gives the number. This is the same idea as that developed in arithmetic. The symbol used is also the same.

E.g. $\sqrt{9} = 3$; $\sqrt{4a^2} = 2a$; $\sqrt[3]{27x^3} = 3x$.

Def. Two or more terms are said to be *similar* if they have the same literal factors. In other words, they differ only in their numerical coefficients. This name is sometimes applied to terms having any common factor but the advantages of this more general definition are not great.

E.g. $2a$ and $5a$ are similar terms since they have the common factor a. Under the definition, $2x$ and $3xy$ are not similar since their literal parts are not the same.

Def. A number or algebraic expression which has no factors is called a *prime number*.

The prime numbers of arithmetic are also prime in algebra. $3a$ is not prime since it has the factors 3 and a. $a + b$ and $2x - y$ are prime numbers since they have no factors.

It is often important to know if a number is factorable or not. From the definition, a prime number is not factorable.

The simplest kind of algebraic expression is the monomial or term. Next to this is the combination of several terms called polynomials. The elementary operations on these numbers, i.e., addition, subtraction, multiplication and division, will now be considered.

ADDITION.

MONOMIALS.

1. To add similar terms.

In arithmetic, only like numbers can be added. In algebra, this rule takes the following form.

Rule. To add similar terms, find the algebraic sum of the numerical coefficients and prefix this result to the common factor.

EXAMPLE. Add $12a$, $-4a$ and $+a$.

$$\begin{array}{r} +12a \\ -4a \\ +a \\ \hline +9a \end{array}$$

The algebraic sum of $+12-4+1=9$. This is to be written before the common factor a.

2. To add dissimilar terms.

This can only be indicated by writing the terms one after another, giving to each its proper sign. The result of the sum of several dissimilar terms is a polynomial. See definition above.

EXAMPLE. Add x^2, $3x$, and -4.
Since these terms are dissimilar, write the sum as
$$x^2 + 3x - 4.$$

These terms may be written in any order but it is customary to write the letters of the alphabet that come first ahead of those that come later. Also, if different powers of the same letter are present in the expression, the terms should be arranged in ascending or descending powers of the letter.

E.g. The expression $-2b - 3c + a$ would be written
$$a - 2b - 3c$$
while $4x - x^2 + x^3 - 10$ is usually arranged as follows:
$$x^3 - x^2 + 4x - 10.$$

POLYNOMIALS.

In adding two or more polynomials, the similar terms are added together as in the case of monomials and the dissimilar terms are written after these sums giving to each term its proper sign.

In practice the process is much simplified by the following plan.

Rule. Write the polynomials under each other, arranging the terms so that similar terms will all be in the same column. Find the algebraic sum of each column, writing the results

of each such addition at the bottom of the column added with their proper signs.

EXAMPLE. Add $7x - y + 3z$, $6y - 2z$, $3x - 4y - 3z$.

$$\begin{array}{rl} 7x - y + 3z & \\ 6y - 2z & \text{Addends.} \\ 3x - 4y - 3z & \\ \hline 10x + y - 2z & \text{Sum.} \end{array}$$

To check an operation in algebra. The letters used in problems may represent any number. Hence the result obtained by any of the various processes must be true if *any* value is substituted for the letters involved. The following general method will furnish a rapid and accurate check on all algebra operations.

Assign values to the various letters involved in the problem. Evaluate each of the expressions entering in the problem. Perform the indicated operations on these values. The result must be the same as that obtained by evaluating the results of the algebraic process.

E.g. In the above problem, let $x = 1$, $y = 2$, and $z = 3$

$$\begin{array}{rlll} 7x - y + 3z = & 7 - 2 + 3\cdot 3 = & 7 - 2 + 9 = & 14 \\ 6y - 2z = & 6\cdot 2 - 2\cdot 3 = & 12 - 6 = & 6 \\ 3x - 4y - 3z = & 3 - 8 - 9 = & & -14 \\ \hline 10x + y - 2z = & 10 + 2 - 6 = 6 & & = 6 \end{array}$$

Check.

The same value may be used for more than one of the letters. It simplifies the work to use small numbers as much as possible. *It is important to always check the result of any mathematical process.* In important applications of this subject, results are checked and rechecked. An error may often cause the loss of money or of life. Form the habit of checking all results as the problem is worked. The time taken will be well spent. With experience, many short cuts will suggest themselves to the thinking student. The number 1 is most often used where the exponents are of the first degree only. If some of the letters are squared or raised to higher powers, 2 will give a surer test.

SUBTRACTION.

MONOMIALS.

Since the numbers of algebra are signed numbers, the methods for subtracting signed numbers explained above apply for monomials.

Rule. To subtract one term from another, change the sign of the subtrahend and add the resulting number to the minuend.

If the terms are similar, the difference will be the term formed by writing the algebraic difference of the coefficients as the coefficient of the common literal part.

EXAMPLE. Subtract $-4ax$ from $-2ax$.

By the rule this is equivalent to adding $+4ax$ to $-2ax$.

$$\begin{array}{rl} -2ax & \\ --4ax & \text{Change signs, then add.} \\ \hline & +2ax \end{array} \qquad \begin{array}{r} -2ax \\ +4ax \\ \hline +2ax \end{array}$$

If the terms are not similar, the subtraction can be indicated by writing the terms, the sign of the subtrahend being changed.

EXAMPLE. Subtract $4ax$ from $5by$.

Change the sign of $4ax$, getting $-4ax$. Write the difference as follows:

$$5by - 4ax.$$

POLYNOMIALS.

Rule. To subtract one polynomial from another, write the subtrahend below the minuend so that similar terms are in the same columns.

Change the signs of all terms in the subtrahend.

Find the algebraic sum of each column, writing the results below each column with their proper sign.

EXAMPLE. Subtract $3x - y + 4z$ from $7x + 2y - 6z$.

Solution. Check with $x = 1$, $y = 1$, $z = 1$.

$$\begin{array}{rlll} 7x + 2y - & 6z = 7 + 2 - & 6 = & 3 \\ 3x - & y + & 4z = 3 - 1 + & 4 = 6 \\ \hline 4x + 3y - & 10z = 4 + 3 - 10 = & -3 & \text{Check.} \end{array}$$

The change of sign is made mentally.

EQUATIONS.

The third new idea developed in algebra is the theory of equations. It has already appeared that the use of letters furnishes a simple and concise method of treating many of the rules of arithmetic. In the study of equations, one learns how to use these formulas as well as many other relations in the solution of practical problems.

Def. An *equation* is a statement of equality between two algebraic numbers.

E.g. $2a - 3 = a + 6$.

Def. An *identity* is an equation which is true for any values that may be assigned to the letters involved.

E.g. $2\cdot 3 - 4 = 7 - 10/2$ is an identity in which only numerical values are involved since the expression on each side of the equality sign reduces to 2.

$2x + 3 = 4x - 6 - 2x + 9$ is an identity since the expression on the right of the equality reduces to the expression on the left when similar terms are combined as indicated.

Def. An *equation of condition* is an equation which is true for certain values of the letters involved.

Def. Letters which represent values which are to be determined are called *unknowns*.

Def. Any value of an unknown which reduces the equation to an identity is called *a root* of the equation. Such a value is said to satisfy the equation.

E.g. 4 is a root of the equation $2x + 3 = 11$ since when 4 is substituted for x the equation becomes $11 = 11$.

Def. The part of an equation on the left of the equality sign is called the *left hand member*; that on the right is called the *right hand member*.

Def. A *simple equation* is an equation in which only the first power of the unknown occurs. Such an equation is said to be of the first degree in the unknown.

E.g. $2x - 3 = x + 6$ is a simple equation.

Def. To solve an equation is to find the roots of the equation.

Axioms. In dealing with equations, certain statements are assumed as true without proof. Their truth is so obvious that it is said to be self evident. Such statements are called *axioms*.

Each axiom will be illustrated by an example illustrating its use.

1. If equals are added to equals, the results are equal.

2. If equals are subtracted from equals, the results are equal.

3. If equals are multiplied by equals, the results are equal.

4. If equals are divided by equals, the results are equal.

5. Things equal to the same thing are equal to each other.

EXAMPLE. 1. Solve the equation $x - 4 = 3$.

By axiom 1, the same number can be added to the members of this equation without affecting the equality.

Adding 4 to each member, gives

$$x - 4 + 4 = 3 + 4$$

or $$x = 7$$

which is the required solution.

EXAMPLE. 2. Solve the equation $x + 6 = 3$.

By axiom 2, the same number can be subtracted from each member of this equation without affecting the equality.

Subtracting 6 from each member, gives

$$x + 6 - 6 = 3 - 6$$

or $$x = -3$$

which is the required solution.

EXAMPLE. 3. Solve the equation $\frac{1}{2}x = 3$.

By axiom 3, each member of this equation can be multiplied by the same number without affecting the equality.

Multiplying each member by 2, gives

$$2 \cdot \tfrac{1}{2}x = 2 \cdot 3,$$

or $$x = 6,$$

which is the required solution.

EXAMPLE. 4. Solve the equation $3x = 15$.

By axiom 4, each member of this equation can be divided by the same number without affecting the equality.

Dividing each member by 3, gives

$$\frac{3x}{3} = \frac{15}{3}$$

or $$x = 5,$$

which is the required solution.

In examples 1 and 2 above, the numerical value in the left member is moved to the right member where it appears with the opposite sign. This may be done with any term of either member.

Rule. A term may be transposed from one member of an equation to the other by changing the sign of the term.

E.g. The equation $2x - 3 = x + 5$ may be written

$$2x - x = 5 + 3$$

by transposing x from the right to the left member and -3 from the left to the right member.

Equations are useful in solving problems. They furnish a convenient and brief method for explaining the solution. Any kind of an algebraic expression may occur in the solution of various problems. In connection with the various forms and operations, problems will be solved illustrating the various methods. Whenever it is practicable, the problems used for purposes of illustration will be drawn from the experience of the pupil.

Problem. The sum of two numbers is 55 and difference is 17. What are the numbers.

Solution. Let x = one number.

$x + 17$ = the other number.

Since the sum of the two numbers is 55,

$$x + x + 17 = 55.$$

Transpose the 17 to the right hand member, and combine the x's.

$$2x = 55 - 17$$
$$= 38.$$

Divide each member by 2.

$x = 19$, one number.

$x + 17 = 36$, the other number.

To check the solution. See that the numbers found actually satisfy the conditions of the problem.

Here $19 + 36 = 55$, and $36 - 19 = 17$. Check.

By studying the above type solution, the steps in the process will appear as follows.

1. A study of the problem to determine what quantity will serve best as the unknown in the problem.

2. Represent this quantity by some letter, as x, and express all other quantities in terms of this letter.

3. Combine these expressions into an equation which expresses the conditions stated in the problem.

4. Solve this equation for the unknown and find the other required values by substitution.

5. Always check the results by testing to see that they actually satisfy the conditions of the problem. It is not enough to substitute in the equation as this may have been formed incorrectly.

PARENTHESES.

Problems in addition and subtraction of polynomials are written in convenient form by the aid of the signs of aggregation.

E.g. To write out a problem showing that $2x - 3y$ is to be added to $3x + y$, proceed as follows.

$$2x - 3y + (3x + y) = 2x - 3y + 3x + y$$
$$= 5x - 2y$$

Rule. Parentheses preceded by the sign + may be removed without any change in the signs of the terms within them.

E.g. To write out a problem showing that $3x + y$ is to be subtracted from $2x - 3y$, proceed as follows:

$$2x - 3y - (3x + y) = 2x - 3y - 3x - y$$
$$= -x - 4y$$
$$= -(x + 4y).$$

Rule. Parentheses preceded by the sign − may be removed by changing each term within them.

In many problems, one sign of aggregation may be contained within another. In problems of this sort the following procedure is to be followed.

Rule. Rewrite the expression, removing the inner parenthesis, giving to each term its proper sign in accordance with the above rules.

Repeat this process till all the parentheses are removed.

If, at any time, similar terms occur in the inner parenthesis, they should be combined by the rules for addition and subtraction.

EXAMPLE. Remove parentheses and simplify

$$2x - \{2(x-1) + [x - (2x-1)]\} = 2x - \{2x - 2 + [x - 2x + 1]\}$$
$$= 2x - \{2x - 2 + [-x + 1]\}$$
$$= 2x - \{2x - 2 - x + 1\}$$
$$= 2x - \{x - 1\}$$
$$= 2x - x + 1$$
$$= x + 1$$

To place a parenthesis around several terms in an expression. The principles that govern this procedure are the converse of the rules for removing parenthesis.

Rule. Two or more terms may be inclosed in a parenthesis preceded by a plus sign, +, without changing the signs of any of the terms.

Two or more terms may be inclosed in a parenthesis preceded by a minus sign, −, provided the sign of every term inclosed in the parenthesis is changed.

EXAMPLE. $2a - 3b + c - 2d = 2a - 3b + (c - 2d)$
$= 2a - (3b - c + 2d)$

In this connection, it should be noticed that the sign of the first term in a parenthesis is positive unless the minus sign is written before it. In the example, the sign of 3b was minus originally but in the second case it is changed to plus within the parenthesis in accordance with the above rule.

MULTIPLICATION.

In addition, it was assumed without further remark, that the terms may be arranged and combined in any desired order. A similar assumption is necessary in multiplication. The laws governing this are called the commutative and associative laws of numbers.

The *commutative law* states that terms of a sum or the factors of a product may be combined in any order.

E.g. $a + b = b + a$, and $ab = ba$.

The *associative law* states that the terms of a sum or the factors of a product may be grouped together in any combination.

E.g. $a + b + c = (a + b) + c = a + (b + c)$.
$abc = a(bc) = (ab)c$.

Besides these general laws which have to do with the theory of numbers in general, the following rules are used in multiplying algebraic expressions.

Law of signs. In multiplying two terms, the sign of the product is + if the terms have like signs, and − if they have unlike signs.

Law of coefficients. In multiplying two terms, the coefficient of the product is equal to the product of the coefficient of the terms.

Law of exponents. In multiplying two terms, the exponent of each letter in the product is equal to the sum of the exponents of that letter in the given terms.

These rules or laws are all that is needed to enable one to multiply monomials.

EXAMPLE. 1. $6ax \times 5by = 6ax5by$
$= 6 \cdot 5\ abxy$
$= 30\ abxy.$

EXAMPLE. 2. $4ax\ (-3by) = -4 \cdot 3\ axby$
$= -12\ abxy.$

EXAMPLE. 3. $(-2ax)(-3ax^2) = 2 \cdot 3\ a \cdot a\ x \cdot x^2$
$= 6a^2x^3.$

Polynomials.

To multiply a polynomial by a monomial, multiply each term of the polynomial by the monomial and write the resulting products in any order with their proper sign.

EXAMPLE. Multiply $7x^2 - 5$ by $-4x^2$.

Solution. Check, using $x = 1$.

$7x^2 - 5$	$= 7 - 5$	$= 2$
$-4x^2$	$= -4$	$= -4$
$-28x^4 + 20x^2$	$= -28 + 20 = -8$	Check.

Rule. To multiply a polynomial by a polynomial, multiply one polynomial by each term of the other and add the partial products.

In work of this kind, it is customary to arrange the two polynomials in the same order, i.e., in ascending or descending powers of the same letter. Then write the partial products under each other, letting similar terms fall under each other. In this way, the final product will also be arranged in the same order as the factors.

EXAMPLE. Multiply $-x^2 + 3x^3 - 5x - 1$ by $1 - x$.

Solution. Write in descending powers of x.

$$3x^3 - x^2 - 5x - 1$$
$$-x + 1$$
$$-3x^4 + x^3 + 5x^2 + x \quad \text{Partial Product}$$
$$+ 3x^3 - x^2 - 5x - 1 \quad \text{Partial Product}$$
$$-3x^4 + 4x^3 + 4x^2 - 4x - 1 \quad \text{Product.}$$

Check using $x = 1$.
First factor $= 4$.
Second factor $= 0$.
Product $= 0$ $\quad 4 \times 0 = 0$.

When one of the factors equals zero, it is a good plan to try some other number for x.

Check using $x = 2$.

$$3x^3 - x^2 - 5x - 1 = 3 \cdot 8 - 4 - 5 \cdot 2 - 1$$
$$= 24 - 4 - 10 - 1$$
$$= 9.$$
$$-x + 1 = -2 + 1 = -1$$
Multiply $9(-1) = -9$
$$-3x^4 + 4x^3 + 4x^2 - 4x - 1 = -48 + 32 + 16 - 8 - 1$$
$$= -9 \quad \text{Check.}$$

There are many special rules for multiplying certain expressions. These are explained in the sections following the work on division.

Problem. A carpet has its length five feet longer than its width. The room in which it is placed is 3 feet longer and 3 feet wider than the rug. The floor of the room contains 96 square feet more area than the carpet. What is the size of the carpet?

SOLUTION.

Let x = the width of the carpet.
Then, $x + 5$ = the length of the carpet.
$x(x + 5)$ = area of the carpet.
$x + 3$ = the width of the room.
$x + 8$ = the length of the room.
$(x + 3)(x + 8)$ = area of the room.

From the problem.
$(x + 3)(x + 8) - x(x + 5) = 96$.

Multiplying out and collecting similar terms,
$$6x + 24 = 96.$$
Transposing,
$$6x = 96 - 24 = 72.$$
$$x = 12, \text{ width of carpet.}$$
$$x + 5 = 17, \text{ length of carpet.}$$

To check this result, notice that $12 \times 17 = 204$; while $15 \times 20 = 300$. The difference is 96 as given.

DIVISION.

Division is the reverse of multiplication. The three special laws for multiplication have corresponding statements in division.

Law of signs. In dividing two terms, the sign of the quotient is + if the divisor and dividend have like signs, and − if they have unlike signs.

Law of coefficients. In dividing terms, the coefficient of the quotient is the quotient of the coefficients of the terms.

Law of exponents. In dividing terms, the exponent of each letter in the quotient is equal to the difference found by subtracting the exponent of the letter in the divisor from its exponent in the dividend.

MONOMIALS. In finding the quotient of two monomials, the work is simplified by writing the terms in the form of a fraction as in arithmetic. Factors common to the two terms may then be cancelled and the exponents of each letter may be combined.

EXAMPLE. Divide $12a^2x^3y$ by $3ax^2y$.

$$\frac{\overset{4}{\cancel{12}a^{\cancel{2}}x^{\cancel{3}}\cancel{y}}}{\underset{a}{\cancel{3}}\cancel{x^2y}} = \frac{4a^2x^3}{ax^2} = 4ax$$

Zero and negative exponents.

Division of monomials presents some interesting problems. If the law of exponents is to always apply, some new definitions are necessary. This can best be seen by studying the following cases.

1. Divide x^3 by x^3.

In arithmetic, it is stated that anything divided by itself is equal to 1. If the rule for division stated above is followed, a new expression is found.

$$\frac{x^3}{x^3} = x^{3-3} = x^0$$

Now x to the zero power has not been defined. The value of the expression is determined by the above considerations.

The following principle may therefore be stated.

Any number raised to the zero power is equal to 1.

2. Divide x^2 by x^5.

In arithmetic, when one number is greater than another, the quotient is indicated by a fractional form. This form is always reduced to its lowest terms. Proceeding in this manner, cancelling x^2 from both terms, the quotient would be written.

$$\frac{x^2}{x^5} = \frac{1}{x^{5-2}} = \frac{1}{x^3}$$

If the rule for exponents in division is followed, another expression is found.

$$\frac{x^2}{x^5} = x^{2-5} = x^{-3}$$

Up to the present x to a negative power has had no meaning. It is important to realize that any meaning can be assigned to this expression that does not contradict previous work. Two forms have been found for the above quotient. The assumption made should be such as to recognize this agreement.

The following principle may therefore be stated.

Any number raised to a negative power is equal to 1 divided by that same number raised to the same positive power.

E.g. $\frac{1}{x^3} = x^{-3}$; $a^{-1} = \frac{1}{a}$.

The theory of exponents is considered in detail after other topics of algebra are developed. It is shown there that an exponent may be any kind of number. Hence, as in our number system in both arithmetic and algebra, the rules under which exponents may be added, subtracted, multiplied, and divided are studied. The most practicable method of computation, namely logarithms, is an application of this theory.

For the present, negative and zero exponents are to be used only as a convenient notation in writing numbers.

EXAMPLE. Divide x^2yz^2 by xy^2z^6, and simplify.

$$\frac{x^2yz^2}{xy^2z^6} = x^{2-1}\,y^{1-2}\,z^{2-6} = xy^{-1}\,z^{-4} = \frac{x}{yz^4}$$

Check, using $x = 2$, $y = 2$, $z = 2$.

$$x^2yz^2 = 2^2 \cdot 2 \cdot 2^2 = 32 \qquad \frac{32}{512} = \frac{1}{16}$$

$$xy^2z^6 = 2 \cdot 2^2 \cdot 2^6 = 512$$

$$xy^{-1}z^{-4} = 2 \cdot 2^{-1} \cdot 2^{-4} = \frac{2}{2 \cdot 2^4} = \frac{1}{16} = \text{Check.}$$

POLYNOMIALS.

To divide a polynomial by a monomial, divide each term of the polynomial by the monomial and write the resulting quotients in any order with their proper sign.

EXAMPLE. Divide $6x^3 - 9x^2 + 3x$ by $3x$.

Solution.

$$\frac{6x^3 - 9x^2 + 3x}{3x} = \frac{6x^3}{3x} - \frac{9x^2}{3x} + \frac{3x}{3x} = 2x^2 - 3x + 1$$

Check, using $x = 2$.

$$\frac{48 - 36 + 6}{6} = 3$$

$$= 8 - 6 + 1 = 3 \text{ Check}$$

To divide a polynomial by a polynomial. The rule will be understood more readily by considering the following example.

EXAMPLE. Divide $x^3 + 65xy^2 - 15x^2y - 63y^3$ by $x - 7y$

Writing the dividend in descending powers of x, the problem solved as follows:

Dividend $x^3 - 15x^2y + 65xy^2 - 63y^3$ | $x - 7y$ = Divisor.

$x^3 - 7x^2y$ | $x^2 - 8xy + 9y^2$ = Quotient

$- 8x^2y + 65xy^2$

$- 8x^2y + 56xy^2$

$+ 9xy^2 - 63y^3$

$+ 9xy^2 - 63y^3$

The first term of the quotient is obtained by dividing the first term of the dividend by the first term of the divisor, $x^3 \div x = x^2$. The first partial product ($x^3 - 7x^2y$) is obtained by multiplying the entire divisor by this term. The partial product is written below the dividend with similar terms below each other, and then subtracted from the dividend. All terms of the dividend may not need to be rewritten or brought down but they are all included in the remainder after the subtraction.

The second term in the quotient is obtained by dividing the first term of this remainder by the first term of the divisor, $-8x^2y \div x = -8xy$. The next partial product is obtained by multiplying the divisor by this term. This partial product is subtracted from the remainder and the process is repeated.

In this way the third term in the quotient is $+ 9y^2$.

After this operation, there is no remainder. Hence, the divisor is a factor of the dividend. So is the quotient.

If a remainder is present, and further division with positive exponents is impossible, the remainder is written over the divisor in the form of a fraction and added to the quotient.

To check the above problem, let $x = 1$, and $y = 1$.

Dividend $= 1 - 15 + 65 - 63 = -12$

Divisor $= 1 - 7 = -6$

$$-12 + -6 = \frac{-12}{-6} = 2.$$

Quotient $= 1 - 8 + 9 = 2$ Check.

Here 1 may be used to advantage in checking the result since the exponents are easily seen to be correct. A little experience with problems of this kind will enable one to see that the quotient is always arranged in the same order as the dividend and divisor, in this case in descending powers of x.

The above process is very similar to that used in long division in arithmetic. In fact, the method of arithmetic is proved by this work here. The reason for the various steps becomes evident if the divisor is multiplied by the quotient. The result, of course, must be the dividend.

$x - 7y$ = Divisor
$x^2 - 8xy + 9y^2$ = Quotient.

$x^3 - 7x^2y$ First partial product.
$- 8x^2y + 56xy^2$ Second partial product.
$+ 9xy^2 - 63y^3$ Third partial product.

$x^3 - 15x^2y + 65xy^2 - 63y^3$ Product or dividend.

The first term of each partial product is the product of the first term of the divisor and a term of the quotient.

Rule for division by polynomials.

1. Arrange both dividend and divisor in ascending or descending powers of some letter.

2. Divide the first term of the dividend by the first term of the divisor, writing the result as the first term of the quotient.

3. Multiply all terms of the divisor by the term so found, and subtract the resulting partial product from the dividend.

4. If there is a remainder, consider it as a new dividend and proceed as before, i.e. divide the first term of this expression by the first term of the divisor, writing the result as the first term of the quotient.

5. If there is a remainder and division is no longer possible without using fractions or negative exponents, write this expression over the divisor in the form of a fraction and add it to the quotient.

Problem. The distance from New York to Pittsburgh is 440 miles. A train leaves Pittsburgh for New York travelling 30 miles per hour at the same time that a train leaves New York for Pittsburgh travelling 25 miles per hour. When and where will they meet?

Solution.

Let x = distance from Pittsburgh to any point.
Then $440 - x$ = distance from New York to same point.

$\frac{x}{30}$ = hours the first train takes to get to x.

$\frac{440 - x}{25}$ = hours the second train takes to get to x.

If the trains meet at x, the two times will be equal.

Hence, $$\frac{x}{30} = \frac{440 - x}{25}$$

Multiplying both sides of the equation by 30×25,

$$\frac{30.25x}{30} = \frac{30.25\ (440 - x)}{25}$$

Or $$25x = 30\ (440 - x)$$
$$= 13200 - 30x$$

Transposing, and solving,
$25x + 30x = 13200$
$55x = 13200$
$x = 240$ Miles from Pittsburgh.

$\frac{x}{30} = \frac{240}{30} = 8$ Number of hours till the trains meet.

To check, notice that one train goes 240 miles in 8 hours and that the other goes 200 miles in the same time. Their sum is 440 miles or the total distance.

Problem. A and B start from two towns 144 miles apart. A travels 2 miles an hour faster than B. If they meet after each has been travelling 9 hours, how far has each gone?

Solution.

Let x = miles A travels per hour.
$x - 2$ = miles B travels per hour.
Then $x + x - 2 = 2x - 2$ = distance travelled by A and B in one hour.

By the conditions of the problem, they meet after 9 hours. This gives the relation

$$9\ (2x - 2) = 144$$

Solving,
$18x - 18 = 144.$
$18x = 144 + 18$
$= 162$
$x = 9$ miles per hour, A's rate.
$x - 2 = 7$ miles per hour, B's rate.

To check these results, notice that in 9 hours A will travel 81 miles and B will travel 63 miles. The sum of these distances is 144 miles.

EQUATIONS WITH LITERAL COEFFICIENTS.

It is often possible to express a general relation by means of an equation with literal coefficients and from this to solve for other relations. In the case of formulas, this amounts to considering first one and then another of the quantities as unknown. Equations of this kind are solved in the same manner as other equations.

Problem. Find the value of x in

$$ax - a^2 + 3a = 2x + a$$

Solution.

Transpose all x terms to the left and all other terms to the right.

$ax - 2x = a^2 - 3a + a$
$(a - 2)\ x = a^2 - 2a$
$= a\ (a - 2)$.

Dividing by the coefficient of x.

$$x = \frac{a\ (a - 2)}{(a - 2)}.$$

Hence, $x = a$.

To check the solution of a literal equation, substitute the result for the unknown in the original equation. This gives,

$aa - 2a = a^2 - 3a + a$
or $a^2 - 2a = a^2 - 2a$ which is an identity. Check.

SPECIAL PRODUCTS.

Some products occur very frequently in algebra. The special forms of the more important of these should be learned at once.

The square of the sum of two terms.

$$(a + b)\ (a + b) = a^2 + 2ab + b^2.$$

PROOF.

$a + b$
$a + b$

$a^2 + ab$
$ab + b^2$

$a^2 + 2ab + b^2$

EXAMPLE. $(3x + 2y)^2 = 9x^2 + 12xy + 4y^2$.

The above relation is true for any values of a and b.

The above identity may be expressed as a rule in the following words.

Rule. The square of the sum of two numbers is equal to the square of the first, plus twice the product of the first by the second, plus the square of the second.

In all the work in this section, the letters a, b, c and so on are used to indicate any algebraic number or term.

The square of the difference of two terms.

$$(a - b)\ (a - b) = a^2 - 2ab + b^2.$$

The proof is by multiplication as above.

The identity states that *the square of the difference of two numbers is equal to the square of the first, minus twice the product of the first by the second, plus the square of the second.*

EXAMPLE. $(3x - 2y)^2 = 9x^2 - 12xy + 4y^2$.

The product of the sum and difference of two numbers.

$$(a + b)\ (a - b) = a^2 - b^2.$$

PROOF.

$$\begin{array}{r} a + b \\ a - b \\ \hline a^2 + ab \\ \quad - ab - b^2 \\ \hline a^2 \qquad - b^2 \end{array}$$

Rule. The product of the sum and difference of two numbers is equal to the difference of their squares.

EXAMPLE. $(2x + 3y)\ (2x - 3y) = 4x^2 - 9y^2$.

The product of two binomials having a common term.

$$(x + a)\ (x + b) = x^2 + (a + b)x + ab.$$

PROOF.

$$\begin{array}{r} x + a \\ x + b \\ \hline x^2 + ax \\ \quad + bx + ab \\ \hline x^2 + ax + bx + ab \end{array}$$

or $x^2 + (a + b)x + ab$

Rule. The product of two binomials having a ***common*** *term is equal to the square of the common term, plus the product of the common term by the algebraic sum of the other two terms, plus the product of these terms.*

It should be noticed that in this case, any of the numbers may be positive or negative. The phrase, algebraic sum, covers all cases. In a similar manner, the rules for the square of the sum of two numbers and the square of the difference of two numbers may be combined into one statement by considering the sign of the second term as being such that the expression may be considered as the sum of two numbers.

EXAMPLES.

$$(x + 2)\ (x + 3) = x^2 + 5x + 6$$
$$(2x + 3y)\ (2x - y) = 4x^2 + 4xy - 3y^2$$

The square of any polynomial.

$$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2ac + 2bc.$$

PROOF. Regard $a + b$ as one number.

$$\begin{aligned}(a + b + c)^2 &= [(a + b) + c]^2 \\ &= (a + b)^2 + 2(a + b)c + c^2 \\ &= a^2 + 2ab + b^2 + 2ac + 2bc + c^2.\end{aligned}$$

Rule. The square of any polynomial is equal to the sum of the squares of each of its terms plus twice the product of each term by every term which follows it in the expression.

In the above, the sign preceding each term is considered as a part of the term.

EXAMPLE. Square $x + y - z$.

$$(x + y - z)^2 = x^2 + y^2 + z^2 + 2xy - 2xz - 2yz.$$

The expression is regarded as being composed of the terms x, y, and $-z$.

The cube of a binomial.

$$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3.$$

PROOF. Multiply the square of $a + b$ by $a + b$.

Rule. The cube of a binomial is equal to the cube of the first term, plus three times the square of the first times the second, plus three times the first times the square of the second, plus the cube of the second.

This rule covers the case of the difference as well as the sum of two numbers.

EXAMPLES. $(2x + y)^3 = 8x^3 + 12x^2y + 6xy^2 + y^3$.
$(2x - y)^3 = 8x^3 - 12x^2y + 6xy^2 - y^3$.

Special methods of division may be derived from these special products. They are considered in the section on factoring, however, so they are not stated here. They furnish a rapid means for finding the quotient of two numbers.

FACTORING.

Def. *Factoring* an algebraic expression is the process of finding two or more expressions which when multiplied together produce the given expression.

Def. A *prime factor* is an algebraic expression which has no factor except itself and unity.

1. Factors of a monomial.

The factors of a monomial are the factors of the numerical coefficient and the various letters each taken as many times as is indicated in the exponent of the letter.

EXAMPLE. The factors of $12ax^2y^3$ are 2, 2, 3, a, x, x, y, y, y.

2. Roots of a monomial.

Def. The *square root* of an expression is one of the two equal factors whose product is the expression. Symbol, $\sqrt{\ }$.

In arithmetic, there is only one such number. That is, the square root of 4 is +2, of 9 is +3, etc.

In algebra, with the introduction of negative numbers, 4 has two square roots, namely +2 and −2; 9 has two square roots, namely +3 and −3; etc.

Every positive number and every algebraic expression that is equivalent to a positive number, has two square roots which differ only in sign.

The presence of the two roots is shown by the sign ($\pm$) written before the root. It is read "plus or minus."

Rule. To find the square root of a letter raised to any power, divide the exponent of the letter by 2, writing the letter to this power preceded by the $\pm$ sign.

EXAMPLE. $\sqrt{x^2} = \pm x$.
$\sqrt{a^4} = \pm a^2$.

Rule. The square root of a monomial is equal to plus or minus the square root of the numerical coefficient times all the letters of the monomial, each with an exponent equal to one-half its exponent in the monomial.

EXAMPLE. $\sqrt{16a^2x^4} = \pm 4ax^2$.
$\sqrt{225x^4y^6} = \pm 15x^2y^3$.

Def. The *cube root* of an expression is one of the three equal factors whose product is the expression.

At present, it is not possible to extract the square root of a negative number. It is possible, however, to find the cube root of any number, either positive or negative. E.g., the cube root of + 27 is + 3, and the cube root of − 27 is − 3.

In general, every number or algebraic expression has a cube root which has the same sign as the expression.

Rule. In extracting the cube root of a letter to a power, the new exponent is found by dividing the old exponent by 3.

EXAMPLE. $\sqrt[3]{a^3} = a$; $\sqrt[3]{a^3x^6} = ax^2$; $\sqrt[3]{-x^6y^{12}} = -x^2y^4$

Rule. The cube root of a monomial is equal to the cube root of the numerical coefficient with its sign, times all the letters of the monomial, each with an exponent equal to one-third its exponent in the monomial.

EXAMPLE. $\sqrt[3]{64x^3y^6} = 4xy^2$.

$\sqrt[3]{-125a^3x^9} = -5a^3x^3$.

The above process may be extended to any root desired. The required root is found by dividing the exponent by the index of the root. Obviously, it is not always possible to divide an exponent, evenly, as in the case of the square root of x^3. Problems of this kind are treated in the theory of exponents.

3. Polynomials with a common monomial factor.

Polynomials of the form

$$ax + ay - az$$

may be factored by dividing the polynomial by a.

$$(ax + ay - az) = a(x + y - z).$$

Rule. Divide the expression by the monomial factor, writing the polynomial equal to the monomial factor times the quotient thus obtained.

EXAMPLES. $ax - a = a(x - 1)$.

$2x^2y - xy + xy^2 = xy(2x - 1 + y)$.

4. Trinomials that are perfect squares.

From the work on special products, the trinomial is of one of the following forms.

$$a^2 + 2ab + b^2 = (a + b)\ (a + b) = (a + b)^2$$
$$a^2 - 2ab + b^2 = (a - b)\ (a - b) = (a - b)^2$$

In both these type forms, two terms are perfect squares.

Both the square terms have the sign +.

The third term is equal to 2 times the product of the square roots of the other two terms.

The two cases are distinguished from each other by the sign of the third term.

There are two steps in factoring such a trinomial. First test to see if its terms satisfy the above conditions. Then apply one of the type forms given above.

If the expression is arranged in descending powers of some letter, the first and third terms will be the square terms.

Rule 1. Test. A trinomial is a perfect square if, after arranging in descending powers of some letter, the absolute value of the middle term is equal to twice the product of the absolute values of the square roots of the other two terms.

2. Factor. The square root of the trinomial is the sum or difference of these square roots, the sum if the middle term is positive, the difference if the middle term is negative.

EXAMPLES. Find the square root of each of the following trinomials when possible.

$x^2 + 4y^2 + 4xy = x^2 + 4xy + 4y^2 = (x + 2y)^2$

$9a^2 - 12ab + 4b^2 = (3a - 2b)^2$

$4x^2 + 6ax + 9a^2 = \ldots\ldots$

This trinomial is not a perfect square since $2 \cdot 2x \cdot 3a = 12ax$ is not equal to $6ax$.

5. Binomials, the difference of two squares.

From the work on special products, the following relation is obtained.

$$a^2 - b^2 = (a + b)\ (a - b).$$

Rule. A binomial which is the difference of the squares of two numbers, is equal to the product of the sum of these numbers by their difference. The number whose square is preceded by the sign − in the original binomial must have a minus sign in one of the factors of the binomial.

EXAMPLES. Factor $4x^2 - 9y^2$.

$4x^2 - 9y^2 = (2x + 3y)\ (2x - 3y)$.

Therefore, the factors are $2x + 3y$ and $2x - 3y$.

Factor. $81a^2x^4 - 49b^2y^4$.

$81a^2x^4 - 49b^2y^4 = (9ax^2 + 7by^2)\ (9ax^2 - 7by^2)$.

Therefore, the factors are $9ax^2 + 7by^2$ and $9ax^2 - 7by^2$.

6. Quadratic trinomials.

Def. A *quadratic trinomial* is of the form

$$x^2 + bx + c.$$

From the work on special products, using h and k instead of a and b, the following relation is obtained.

$$x^2 + (h + k)x + hk = (x + h)\ (x + k).$$

The following rule is obtained from a comparison of these two expressions.

Rule. Find two numbers whose algebraic product is equal to c (the constant term) and whose algebraic sum is equal to b (the coefficient of x).

One factor of the trinomial is x plus one of these numbers, the other factor is x plus the other number.

EXAMPLE. Factor $x^2 - 7x + 12$.

It is necessary to find two factors of + 12, whose algebraic sum is −7. Since 12 is positive, the numbers must have the same sign. This sign is − since, the sum of the numbers is to be −7. Consider the pairs of factors of 12, discarding those whose sum is not −7.

−1 and −12 No.

−2 and −6 No.

−3 and −4 Yes.

Hence, $x^2 - 7x + 12 = (x - 3)\ (x - 4)$ and the factors are $x - 3$ and $x - 4$.

EXAMPLE. Factor $x^2 + 11x - 42$.

Since 42 is negative, the factors must be opposite in sign. The greater factor is positive since the algebraic sum is +11. Consider the factors of 42 that satisfy these conditions, discarding those whose sum is not +11.

+42 and −1. No.

+21 and −2. No.

+14 and −3. Yes.

Hence, $x^2 + 11x - 42 = (x + 14)\ (x - 3)$
and the factors are $x + 14$ and $x - 3$.

The testing for factors of c should always be done mentally, if possible.

If factors of c cannot be found which satisfy the conditions, the trinomial is prime, i.e., it has no binomial factors.

7. Binomials the sum or difference of the same power of two numbers.

The case of the difference of the squares of two numbers has already been considered.

The sum of the squares of two numbers is always prime.

E.g. $a^2 + b^2$; $x^4 + y^4$; etc. may be thought of as the sum of two squares. They cannot be factored using the numbers of elementary algebra.

The sum of two cubes. $a^3 + b^3$.

Divide by $a + b$.

$$\begin{array}{l|l} a^3 + b^3 & a + b \\ \underline{a^3 + a^2b} & \overline{a^2 - ab + b^2} \\ -a^2b + b^3 & \\ \underline{-a^2b - ab^2} & \\ +ab^2 + b^3 & \\ \underline{+ab^2 + b^3} & \\ \end{array}$$

Hence, $a^3 + b^3 = (a + b)\ (a^2 - ab + b^2)$.
Similarly, $a^3 - b^3 = (a - b)\ (a^2 + ab + b^2)$.

Rules covering this and other cases are more complicated than the formulas themselves. The student should be familiar with these relations and their uses.

EXAMPLE. Factor $x^6 - 64$.

From the formula, the first term is $(x^2)^3$, the second is 4^3.

$$x^6 - 64 = (x^2 - 4)(x^4 + x^2 \cdot 4 + 4^2)$$
$$= (x^2 - 4)(x^4 + 4x^2 + 16).$$

Hence, the factors are $x^2 - 4$ and $x^4 + 4x^2 + 16$.

EXAMPLE. Factor $27x^3 + 1$.

$$27x^3 + 1 = (3x + 1)(9x^2 - 3x + 1).$$

Hence, the factors are $3x + 1$ and $9x^2 - 3x + 1$.

Similar rules may easily be found for factoring the sum and difference of odd powers, as 5, 7, and so on.

The difference of two numbers to the fourth power, may be factored by the rule for the difference of two squares. One of the resulting factors can sometimes be factored by the same rule.

EXAMPLE. Factor $x^4 - 16$.

$$x^4 - 16 = (x^2 + 4)(x^2 - 4)$$
$$= (x^2 + 4)(x + 2)(x - 2).$$

Oftentimes it is necessary to use more than one method in finding the prime factors of an expression.

EXAMPLE. Factor $x^6 - x^3 - 2$.

Use the rule for a quadratic trinomial.

$$x^6 - x^3 - 2 = (x^3 - 2)(x^3 + 1)$$

The first factor is prime. The second may be factored by the rule for the sum of two cubes.

$$x^6 - x^3 - 2 = (x^3 - 2)(x + 1)(x^2 - x + 1).$$

EQUATIONS SOLVED BY FACTORING.

Def. *A* polynomial is said to be an *integral polynomial*, if its numerical coefficients are integers.

E.g. $3x^2 + 3x - 5$ is an integral polynomial in x.

Def. The *degree* of a polynomial is the same as the highest power of the unknown in it.

When a polynomial is set equal to zero, an equation is formed the degree of which is the same as the degree of the polynomial.

Equations of the first degree are called *linear*, if of the second degree they are called *quadratics*, if of the third degree they are called *cubics*, if of the fourth degree they are called *biquadratics*, etc.

Equations of the second and higher degrees may often be solved by using the following principle.

PRINCIPLE. *If the product of two or more factors is equal to zero, one of the factors must be equal to zero.*

In solving an equation which can be factored, each of the factors must be set equal to zero and the resulting equations solved to find all the possible values of the unknown.

Problem. Solve the quadratic equation,
$$x^2 + 5x - 24 = 0.$$

Solution. Factoring the left of this equation,
$$(x + 8)\ (x - 3) = 0$$
Set the first factor equal to zero,
$$x + 8 = 0.$$
$$x = -8, \text{ One root.}$$
Set the second factor equal to zero,
$$x - 3 = 0.$$
$$x = 3, \text{ Other root.}$$

To check, substitute each value in the given equation.
-8 gives $64 + (-40) - 24 = 64 - 40 - 24 = 0$, check.
$+3$ gives $9 + 15 - 24 = 24 - 24 = 0$, check.

Problem. Find two consecutive odd numbers, the sum of whose squares is 290.

Solution. Let x = any number
Then $2x + 1$ = an odd number
and $2x + 3$ = the next consecutive odd number.

By the conditions of the problem,
$$(2x + 1)^2 + (2x + 3)^2 = 290$$
Squaring and collecting terms,
$$8x^2 + 16x + 10 = 290.$$
or $$8x^2 + 16x - 280 = 0.$$
Dividing by 8, gives
$$x^2 + 2x - 35 = 0$$
Factoring,
$$(x - 5)\ (x + 7) = 0$$
Setting each factor equal to zero,
$x - 5 = 0$ which gives $x = 5$.
or $x + 7 = 0$ which gives $x = -7$.

Using $x = 5$, the two odd numbers, $2x + 1$ and $2x + 3$ are 11 and 13 respectively.

Using $x = -7$, they are -13 and -11 respectively.

To check, add the squares of these numbers.

HIGHEST COMMON FACTOR.

Def. The *degree of a term* is equal to the sum of the exponents of the letters which compose it.

E.g. ax is a term of the second degree, x^2y^2 is a term of the fourth degree, etc.

Corresponding to the greatest common factor of two or more numbers in arithmetic, is the highest common factor in algebra.

Def. The *highest common factor* of two or more algebraic expressions is the factor of highest degree with the greatest numerical coefficient which is common to the expressions. Abbreviation is H. C. F.

To find the highest common factor of expressions which can be readily factored.

Rule. Separate each expression into its prime factors. Find the product of all factors which are common to all the expressions, taking each the least number of times it occurs in any of the expressions.

EXAMPLE. Find the H. C. F. of $a^3 + 2a^2 + a$; $a^3 - a$; and $a^3 + 5a^2 + 4a$.

$a^3 + 2a^2 + a = a(a+1)(a+1)$.
$a^3 - a = a(a+1)(a-1)$.
$a^3 + 5a^2 + 4a = a(a+1)(a+4)$.

Therefore, the H. C. F. $= a(a+1)$ or $a^2 + a$.

If two expressions have a common factor, this is also a factor of the difference between the expressions: This fact may be generalized as follows:

Rule. If two expressions have a common factor, the remainder obtained by dividing one by the other will have as a factor the H. C. F. of the original expressions.

This furnishes a convenient method for testing two expressions for a common factor when the expressions are not readily factorable. The process is illustrated in the following example.

EXAMPLE. Find the H. C. F. of $x^3 - 8x^2 + 19x - 12$ and $x^4 - 7x^3 + 10x^2 - 9x + 5$.

Solution.

$$x^3 - 8x^2 + 19x - 12 \;|\; x^4 - 7x^3 + 10x^2 - 9x + 5 \;|\; x + 1$$
$$x^4 - 8x^3 + 19x^2 - 12x$$
$$x^3 - 9x^2 + 3x + 5$$
$$x^3 - 8x^2 + 19x - 12$$
$$-\ x^2 - 16x + 17$$

It is permissible at any time to multiply or divide by any numerical coefficient. The common factor of the original expressions is a factor of this remainder. Change the sign of the terms in the remainder, i.e., multiply by -1, and divide the former quotient by this remainder. The above principle still holds.

$$x^2 + 16x - 17 \;|\; x^3 - 8x^2 + 19x - 12 \;|\; x$$
$$x^3 + 16x^2 - 17x$$

Divide by -12:
$$-24x^2 + 36x - 12$$
$$2x^2 - 3x + 1 \;|\; +2$$
$$2x^2 + 32x - 34$$

Divide by -35:
$$-35x + 35$$
$$x - 1$$

The common factor of the original expressions is also a factor of this last remainder. Divide the preceding quotient by this last remainder.

$$x - 1 \;|\; x^2 + 16x - 17 \;|\; x + 17$$
$$x^2 - x$$
$$+\ 17x - 17$$
$$17x - 17$$

When a remainder is found which exactly divides the preceding divisor, it is the H. C. F. required.

Hence, the H. C. F. of the above numbers is $(x - 1)$.

If the process is continued until the final remainder is a numerical quantity, there is no common factor and the numbers are prime to each other.

LOWEST COMMON MULTIPLE.

Def. The *lowest common multiple* (L. C. M.) of two or more algebraic expressions is the expression of lowest degree and smallest numerical coefficient which exactly contains each.

To find the lowest common multiple. First method.

Rule. Separate each expression into its prime factors. The least common multiple is the product of all the different prime factors, each taken as many times as it occurs in any of the original expressions.

EXAMPLE. Find the L. C. M. of
$(x^2 - 1)$, $(x^2 + 2x + 1)$, $(x^2 + 8x + 7)$.

Factoring,

$$x^2 - 1 = (x+1)(x-1).$$
$$x^2 + 2x + 1 = (x+1)^2.$$
$$x^2 + 8x + 7 = (x+1)(x+7).$$

In order that an expression may be a multiple of $x^2 - 1$, it must contain $x + 1$ and $x - 1$.

In order that it may contain $x^2 + 2x + 1$, it must contain the factor $x + 1$ repeated.

In order that it may contain $x^2 + 8x + 7$, it must contain the factors $x + 1$ and $x + 7$.

However, if an expression contains $x + 1$ repeated, it needs only to contain $x - 1$ to be multiple of $x^2 - 1$ and $x + 7$ to be a multiple of $x^2 + 8x + 7$.

Hence,
L. C. M. $= (x+1)^2(x-1)(x+7)$.

Second method.

Rule. Divide each expression by the H. C. F. of the given expression. The L. C. M. is the product of the H. C. F. and the quotients so found.

EXAMPLE. Find the L. C. M. of
$x^2 - 5x + 6$, $x^2 - 7x + 12$.

The H. C. F. $= x - 3$.
$(x^2 - 5x + 6) \div (x - 3) = x - 2$.
$(x^2 - 7x + 12) \div (x - 3) = x - 4$.
$\therefore$ L. C. M. $= (x-3)(x-2)(x-4)$.

FRACTIONS.

In arithmetic, a fraction is first regarded as indicating how many equal parts of a unit are to be considered. Later, a fraction is seen to be an indicated division. By their use, division of any number by any other number is possible. The same holds true for the numbers of algebra.

Def. An *algebraic fraction*, or more briefly, a *fraction*, is an indicated division between two algebraic expressions. The fraction is written $\frac{a}{b}$. The expression above the line is called the *numerator* of the fraction. It is the dividend in the indicated division. The expression below the line is called the *denominator*. It is the divisor in the indicated division. The *value* of the fraction is the quotient.

The letters, a and b, may represent any number, positive or negative, or any algebraic expression with only one exception. This exception which was noted in the section on division, follows:

The denominator, b, of a fraction can never be zero. (Division by zero is not permitted).

Def. The *terms* of a fraction are the numerator and the denominator.

The same operations can be performed on the terms of a fraction in algebra as in arithmetic.

1. The terms may both be multiplied by the same number without changing the value of the fraction.

2. The terms may both be divided by the same number without changing the value of the fraction.

3. Multiplying the numerator by any number multiplies the value of the fraction by the same number.

4. Dividing the numerator by any number divides the value of the fraction by the same number.

5. Dividing the numerator is the same as multiplying the denominator, and multiplying the numerator is the same as dividing the denominator.

The laws for signs in division may be extended to fractions by recalling the relation between the terms of a fraction and the terms of a division.

There are three signs in connection with a fraction; the *sign of the fraction* which is written before the dividing line, the *sign of the numerator*, and the *sign of the denominator*.

Since two minus signs in multiplication and division combine to make a plus, it follows that any two of the signs of a fraction may be changed without changing the value of the fraction.

E.g. The same fraction may be written in any of the following forms:

$$\frac{a}{b} = \frac{-a}{-b} = \frac{-a}{b} = -\frac{a}{-b}.$$

Def. A *proper fraction* in algebra is a fraction in which the degree of the numerator is less than the degree of the denominator.

EXAMPLE. $\dfrac{x}{x^2+1}$.

Def. An *improper fraction* in algebra is a fraction in which the degree of the numerator is equal to or greater than the degree of the denominator.

EXAMPLE. $\dfrac{x^2-2x+3}{x+1}$.

Def. A *mixed number* is an algebraic expression which contains both integral and fractional parts.

EXAMPLE. $x-1+\dfrac{x+1}{x}$.

REDUCTION OF FRACTIONS.

Def. To *reduce a fraction* is to change its form without changing its value.

Def. A fraction is *reduced to its lowest terms*, when its terms have no common factor.

To reduce a fraction to its lowest terms.

Write the numerator and denominator in factored form. Cancel the factors common to both.

EXAMPLES.
$$\frac{3ax^2y}{12axy^2} = \frac{\cancel{3}\cancel{a}\cancel{x}\cancel{x}\cancel{y}}{\cancel{3}\cdot 4\cancel{a}\cancel{x}\cancel{y}\cancel{y}} = \frac{x}{4y}.$$

$$\frac{x^2-4}{x^2-5x+6} = \frac{(x+2)(x-2)}{(x-3)(x-2)} = \frac{x+2}{x-3}$$

In cancelling, one must be sure that the terms cancelled are factors of the entire numerator or of the entire denominator. Students often make the mistake of cancelling numbers which are alike even when they are part of polynomial expressions connected with the rest of the term of the fraction by plus or minus signs. The following method of cancelling is incorrect.

$$\frac{x^2-4}{x^2-5x+6} = \frac{\cancel{x^2}-4}{\cancel{x^2}-5x+6} = \frac{-4}{-5x+6}.$$ Wrong.

The terms must first be factored.

$$\frac{x^2-4}{x^2-5x+6} = \frac{(x+2)\cancel{(x-2)}}{\cancel{(x-2)}(x-3)} = \frac{x+2}{x-3}.$$ Correct.

To reduce an improper fraction to a mixed number.

Divide the numerator by the denominator. Write the quotient as the integral part and the remainder over the denominator as the fractional part of the mixed number.

EXAMPLE. $\dfrac{x^3+3x^2-2x+1}{x^2+1} = x+3-\dfrac{3x+2}{x^2+1}$

Divisor, x^2+1) x^3+3x^2-2x+1 ($x+3$ Quotient

$x^3 \quad +x$

$+3x^2-3x+1$

$3x^2 \quad +3$

$-3x-2 = -(3x+2)$ Remainder.

To reduce a mixed number to an improper fraction.

Multiply the integral part of the number by the denominator of the fractional part. Add this product to the numerator of the fractional part and write the result over the original denominator.

EXAMPLE. $x^2-4x+1-\dfrac{4}{2x} = \dfrac{2x^3-8x^2+2x-4}{2x}$

To reduce two or more fractions to their lowest common denominator.

Find the L. C. M. of the denominators. This is the least common denominator. (L. C. D.)

Divide the L. C. D. by each denominator.

Multiply the corresponding numerator by the quotient thus obtained and write the products over the L. C. D.

Notice that this involves multiplying the terms of the fraction by the same number or expression. By (1) above, this does not change the value of the fraction.

EXAMPLE. Reduce $\dfrac{1}{x^2-3x-4}$ and $\dfrac{1}{x^2+3x+2}$ to a common denominator.

$$\frac{1}{x^2-3x-4} = \frac{1}{(x-4)(x+1)} = \frac{x+2}{(x-4)(x+1)(x+2)},$$

and

$$\frac{1}{x^2+3x+2} = \frac{1}{(x+2)(x+1)} = \frac{x-4}{(x-4)(x+1)(x+2)}.$$

Since the L. C. D. $= (x-4)(x+1)(x+2)$.

ADDITION AND SUBTRACTION OF FRACTIONS.

Only like numbers can be added to or subtracted from each other. With this in mind, the following rule may be stated.

Rule. To add or subtract two or more fractions, reduce the fractions to a common denominator, preferably the L. C. D.

To add, find the algebraic sum of the new numerators.

To subtract, change the sign of each term in the numerator of the fraction to be subtracted and add.

Place the resulting expression over the common denominator and reduce the resulting fraction to its lowest terms.

EXAMPLE. Simplify,

$$\frac{x^2}{x^2-1} + \frac{x}{x+1} - \frac{x}{x-1}.$$

The L. C. D. $= x^2-1 = (x+1)(x-1)$

$$\frac{x^2}{x^2-1} = \frac{x^2}{(x+1)(x-1)}$$

$$\frac{x}{x+1} = \frac{x(x-1)}{(x+1)(x-1)} = \frac{x^2-x}{(x+1)(x-1)}$$

$$-\frac{x}{x-1} = -\frac{x(x+1)}{(x+1)(x-1)} = \frac{-x^2-x}{(x+1)(x-1)}$$

The sum of the numerators is $x^2 + x^2 - x - x^2 - x = x^2 - 2x$.

Hence, $\frac{x^2}{x^2-1} + \frac{x}{x+1} - \frac{x}{x-1} = \frac{x^2-2x}{(x+1)(x-1)} = \frac{x(x-2)}{x^2-1}$

Notice that the sign of subtraction in the last fraction is changed along with the sign of the numerator. The algebraic sum of the numerators is then found and placed over the L. C. D

MULTIPLICATION.

With proper regard for the signs of the various terms, fractions in algebra are multiplied in the same manner as in arithmetic.

Rule. To multiply two or more algebraic fractions, find the product of the numerators and write it as the required numerator over the product of the denominators which is the required denominator.

The above process is greatly simplified by the following operations.

Factor each numerator and each denominator.

Write the indicated product of all the numerators over the indicated product of all the denominators.

Cancel all factors which are common to numerators and denominators.

Multiply the remaining factors in the numerator and denominator to get the terms of the required product.

The sign of the product is governed by the laws of signs as stated in the section on multiplication above.

EXAMPLE. Find the product of the following $\frac{x+1}{x^4-1}$ and $\frac{x^2-1}{(x+1)^2}$.

$$\frac{x+1}{x^4-1} \times \frac{x^2-1}{(x+1)^2} = \frac{\cancel{(x+1)}}{\cancel{(x+1)}\cancel{(x-1)}(x^2+1)\cancel{(x+1)}} \cdot \frac{\cancel{(x+1)}\cancel{(x-1)}}{\cancel{(x+1)}(x+1)}$$

$$= \frac{1}{(x^2+1)(x+1)} = \frac{1}{x^3+x^2+x+1}$$

DIVISION.

Division is the reverse of multiplication.

Rule. To divide by a fraction, invert the divisor and multiply.

This is the same rule as is used in arithmetic.

The work of division by fractions is simplified by following the same steps in the solution of the problem as in multiplication.

EXAMPLE. Divide $\frac{x^2-6x-16}{x^2+4x-21}$ by $\frac{x^2+9x+14}{x^2-8x+15}$

$$\frac{x^2-6x-16}{x^2+4x-21} + \frac{x^2+9x+14}{x^2-8x+15} = \frac{x^2-6x-16}{x^2+4x-21} \cdot \frac{x^2-8x+15}{x^2+9x+14}$$

$$= \frac{(x-8)\cancel{(x+2)}\cancel{(x-3)}(x-5)}{(x+7)\cancel{(x-3)}\cancel{(x+2)}(x+7)}$$

$$= \frac{(x-8)(x-5)}{(x+7)(x+7)} = \frac{x^2-13x+40}{x^2+14x+49}$$

Def. A *complex fraction* is a fraction containing fractional expressions either in the numerator or in the denominator or in both.

To simplify a complex fraction.

Reduce both the numerator and denominator to fractional form. Then multiply the numerator by the inverse of the denominator.

EXAMPLE. Simplify $\frac{a+1-\frac{1}{a}}{a+\frac{3}{a}-\frac{1}{a^2}}$.

Reduce numerator and denominator to fractional form.

$$\frac{a+1-\frac{1}{a}}{a+\frac{3}{a}-\frac{1}{a^2}} = \frac{\frac{a^2+a-1}{a}}{\frac{a^3+3a-1}{a^2}}$$

$$= \frac{a^2+a-1}{\cancel{a}} \times \frac{\cancel{a^2}^{a}}{a^3+3a-1}$$

$$= \frac{a(a^2+a-1)}{a^3+3a-1}$$

FRACTIONAL EQUATIONS.

Many problems lead in their solutions to equations involving fractions.

In order to solve equations of this kind, notice is taken of the fact that if a fraction is equal to zero, its numerator must be zero. Hence, if the entire expression can be reduced to a single fraction equal to zero, the equation can be replaced by the numerator set equal to zero.

In practice, it is customary to reduce each member of the equation to the same denominator, and then drop this denominator. This process may be accomplished in one operation by the following rule.

Rule. Remove all parenthesis.

Multiply both members of the equation by the L. C. D. of the fractions involved, and solve the resulting equation.

In simplifying the resulting expressions, remember that a minus sign before a fraction changes all the signs in the numerator when it is to be combined with other numerators. If the work is correctly performed, the members of the equation will be clear of fractions.

EXAMPLE. Solve $\frac{1}{x} + \frac{2}{x-1} = \frac{8}{x(x-1)}$.

Solution. L. C. D. $= x(x-1)$.

Multiplying both members by $x(x-1)$.

$$\frac{\cancel{x}(x-1)}{\cancel{x}} \cdot \frac{1}{} + \frac{x\cancel{(x-1)}}{\cancel{(x-1)}} \cdot \frac{2}{} = \frac{\cancel{x}\cancel{(x-1)}}{\cancel{x}\cancel{(x-1)}} \cdot \frac{8}{}$$

$$x - 1 + 2x = 8$$
$$3x = 9$$
$$x = 3$$

To check, substitute above

$$\frac{1}{3} + \frac{2}{3-1} = \frac{8}{3(3-1)}$$

$$\frac{1}{3} + 1 = \frac{8}{3 \cdot 2}$$

$$\frac{4}{3} = \frac{4}{3}$$ Check.

Problem. A, B, C can do a piece of work in 6 days. A can do it alone in 15 days, B can do it alone in 18 days. How long will it take C to do the work?

Solution. Let x = Number of days it will take C to do the work.

Then $\frac{1}{15}$ = Amount A does in one day.

$\frac{1}{18}$ = Amount B does in one day.

$\frac{1}{x}$ = Amount C does in one day.

$\frac{1}{6}$ = Amount they do working together in one day.

Hence,

$$\frac{1}{15} + \frac{1}{18} + \frac{1}{x} = \frac{1}{6}$$

Multiplying by the L.C.D. $= 90x$ gives

$$6x + 5x + 90 = 15x$$

Transposing,

$$11x - 15x = -90$$

$$x = \frac{90}{4} = 22\frac{1}{2} \text{ days.}$$

To check, substitute in the equation.

Problem. Two men start at the same time to travel from A to a town B 80 miles distant. One man travels 4 miles an hour faster than the other and arrives at the town first. He immediately starts back and meets the other man 64 miles from A. How fast did each man travel?

Solution. Let x = rate per hr. of slower man.

Then $x + 4$ = rate per hr. of faster man.

$\frac{64}{x}$ = time first man was traveling.

$\frac{96}{x+4}$ = time second man was traveling.

By the conditions of the problem these times are equal.

$$\frac{96}{x+4} = \frac{64}{x}$$

Multiplying by the L.C.D. $= x(x+4)$,

$$96x = 64(x+4) = 64x + 256.$$

or $$32x = 256.$$

$$x = 8 \text{ rate of one man.}$$

$$x + 4 = 12 \text{ rate of other.}$$

To check, notice that one will have gone $8 \times 8 = 64$ miles while the other will have gone $8 \times 12 = 96$ miles.

SIMULTANEOUS SIMPLE EQUATIONS.

An equation in two or more unknowns is satisfied by an indefinitely great number of pairs or sets of values for the unknowns.

E.g. $2x - y = 4$ is satisfied by the following pairs of values; the x value being written first and the y value second: (2, 0), (3, 2), (6, 8), (1, −2), etc.

Def. An equation is said to be of the *first degree in two variables* if neither is multiplied by itself or by the other. If the variables are x and y, powers of either of these letters are excluded and so are terms containing the product xy.

Def. A set of equations is said to be *simultaneous* if each is satisfied by the same sets of values of the unknowns. If there are two unknowns, there must be two equations. If there are three unknowns, there must be three equations, etc.

Not all sets of equations are simultaneous. Some may not be satisfied by the same set of values. These are called *contradictory* equations. Others are so related that any set of values which satisfies one equation will also satisfy the other. These are called *dependent equations.* Equations of this kind can be derived from each other by addition and subtraction.

Def. Two equations are said to be *independent,* if neither can be derived from the other.

EXAMPLES.

The equations $2x - y = 4$, $x + y = 6$ are independent.

The equations $2x - 3y = 1$, $6x - 9y = 3$ are dependent.

The equations $x + 2y = 6$, $x + 2y = 10$ are contradictory.

To solve simultaneous independent equations.

Def. *Elimination* is the process of combining the equations in such a way that one of the unknowns is cancelled.

Rule. To solve simultaneous equations, eliminate all but one of the unknowns. Solve the resulting equation for this unknown and substitute in the preceding equations to find the values of the other unknowns.

1. Elimination by addition or subtraction.

In this process, an examination of the equations will indicate which variable can be eliminated most easily. Multiply each equation by some number which will make the coefficient of this letter the same in each equation.

If these coefficients have like signs, subtract the equations; if they have unlike signs, add.

Solve for the remaining unknown. Substitute this value in either of the preceding equations and solve for the other variable.

To check, substitute the pair of values so found in both the original equations.

EXAMPLE. Solve and check the following pair of equations,

$$\begin{cases} x - y = 6 & (1) \\ 5x - 2y = 21 & (2) \end{cases}$$

Using the smaller coefficient, multiply the first equation (1) by 2. (NOTE.—This means, of course, multiplying both members of the equation by (2.) Subtract the result from the second equation, (2).

$$\begin{array}{rll} 5x - 2y = 21 & & (2) \\ 2x - 2y = 12 & & (3) \\ \hline 3x & = 9 & \\ \text{or} \qquad x & = 3 & \end{array}$$

Substituting in (1) above, gives,

$$\begin{array}{rl} 3 - y = & 6 \\ -y = & 3 \\ \text{or} \qquad y = & -3 \end{array}$$

Hence, the solution is $x = 3$, $y = -3$.

To check, substitute in the original equations.

and $$3 - (-3) = 3 + 3 = 6$$

$$5 \cdot 3 - 2(-3) = 15 + 6 = 21 \text{ check.}$$

2. Elimination by substitution.

In this process, solve one of the equations for one of the unknowns in terms of the other unknown.

Substitute the expression so found for this unknown in the other equation and solve the resulting equation.

Complete the solution as in Case 1.

EXAMPLE. Solve and check the following pair of equations.

$$\begin{cases} 2x + y = 3 & (1) \\ 3x - 4y = 10 & (2) \end{cases}$$

Solve (1) for y.

$$y = 3 - 2x \qquad (3)$$

Substitute (3) in (2), and solve.

$$3x - 4(3 - 2x) = 10$$

$$3x - 12 + 8x = 10$$

$$11x = 22$$

or $$x = 2$$

Substituting in (1) gives,

$$y = -1$$

To check, substitute in the original equations,

$$2 \cdot 2 + (-1) = 4 - 1 = 3$$
$$3 \cdot 2 - 4(-1) = 6 + 4 = 10 \quad \text{Check.}$$

3. Elimination by comparison.

In this process, each equation is solved for the same unknown in terms of the other unknown.

The expressions so found are set equal to each other and the resulting equation solved.

Complete the solution as in the other two cases.

EXAMPLE. Solve and check the following pair of equation

$$2x + 3y = 5 \quad (1)$$
$$5x + 2y = 7 \quad (2)$$

From (1)

$$3y = 5 - 2x$$
$$y = \frac{5 - 2x}{3} \quad (3)$$

From (2)

$$2y = 7 - 5x$$
$$y = \frac{7 - 5x}{2} \quad (4)$$

Equating these values of y

$$\frac{5 - 2x}{3} = \frac{7 - 5x}{2} \quad (5)$$

Clear fractions and solve

$$10 - 4x = 21 - 15x$$
$$11x = 11$$
$$x = 1$$

Substituting in (3) $\quad y = \frac{7 - 5}{2} = 1$

To Check, substitute in the original equations.

$$2 + 3 = 5$$
$$5 + 2 = 7 \quad \text{Check.}$$

Simultaneous equations in more than two unknowns are solved by an extension of the above methods.

The graph. A linear equation in two unknowns may be represented by a straight line. Simultaneous independent equations are shown by two intersecting straight lines. The point of intersection represents the solution of the equations.

Many problems occur where it is necessary to form the equations from the conditions which are given. To check problems, the values found must be tried in the problem rather than in the equations as the equations may be incorrect.

Problem. The sum of the length and width of a room is 32 feet. If 2 feet is added to the length and 6 feet is added to the width, the area of the room is increased by 148 sq. ft. What are the dimensions of the room?

Solution. Let x = length of room.
y = width of room.

Then, xy = area of room,
$x + 2$ = length increased by 2,
$y + 6$ = width incresed by 6,

and $(x + 2)(y + 6)$ = new area.

By the conditions of the problem,

$$x + y = 32 \quad (1)$$

and $\quad (x + 2)(y + 6) = xy + 148$

or $\quad xy + 6x + 2y + 12 = xy + 148$

The xy term cancels and this equation becomes,

$$6x + 2y = 136$$

or

$$3x + y = 68, \quad (2)$$
$$x + y = 32. \quad (1)$$

Eliminate by subtracting, (1) from (2).

$$2x = 36$$
$$x = 18 \text{ length of room,}$$

and

$$y = 14 \text{ width of room,}$$

To check, notice that $18 + 14 = 32$, $18 + 2 = 20$ while $14 + 6 = 20$. Also, $20 \times 20 = 400$ which is 148 greater than $18 \times 14 = 252$. Check.

QUADRATIC EQUATIONS.

A quadratic equation has been defined as one made up of a polynomial of the second degree set equal to zero.

$$ax^2 + bx + c = 0.$$

Def. A *pure quadratic equation* is a quadratic equation which does not contain a term of the first degree in the unknown. Such equations are of the form $ax^2 + c = 0$.

To solve a pure quadratic.

Solve the equation for the square of the unknown.

The value of the unknown is the square root of the right hand member with the ± sign.

EXAMPLE. Solve $5x^2 - 3 = 1 - 4x^2$.

Given $\quad 5x^2 - 3 = 1 - 4x^2$

Transpose $\quad 5x^2 + 4x^2 = 1 + 3$

Combine $\quad 9x^2 = 4$

Divide by 9 $\quad x^2 = \frac{4}{9}$

Extract the square root.

$$x = \pm\sqrt{\frac{4}{9}} = \pm\frac{2}{3}$$

Check by substituting in original equation.

$$5\left(\pm\frac{2}{3}\right)^2 - 3 = 1 - 4\left(\pm\frac{2}{3}\right)^2$$
$$\frac{20}{9} - 3 = 1 - \frac{16}{9}$$
$$-\frac{7}{9} = -\frac{7}{9} \quad \text{Check.}$$

Def. A quadratic equation that is not a pure quadratic is called *an affected quadratic equation.* It contains terms of the first and second degree in the unknown. The constant may or may not be zero.

There are 4 methods in common use in solving quadratic equations. The method by factoring, has already been noticed in connection with the section on factoring. The others are illustrated below.

1. By completing the square.

In this process the constant term is transposed to the right and such a number is added to both members of the equation *that the left member is the square of a binomial.*

The square root of both sides of the equation is then taken placing the ± sign in front of the right hand member only.

This gives two equations, one for the + sign and one for the − sign. Each of these is solved giving, in general, two values for the unknown.

EXAMPLE. Solve for x in $x^2 - 8x + 14 = 0$

Given $x^2 - 8x + 14 = 0$

Transposing $x^2 - 8x = -14$

Completing the square

$$x^2 - 8x + 16 = -14 + 16 = 2$$

Extracting the square root of both sides

$$x - 4 = \pm\sqrt{2} = \pm 1.414 \text{ approx.}$$

Using + sign $\quad x - 4 = +1.414$
$x = 5.414$ root

Using − sign $\quad x - 4 = -1.414$
$x = 4 - 1.414 = 2.586$ root

In problems of this nature where the roots are obtained approximately, the checked solution is only approximately equal to 0.

2. The "Hindu" or "4a" method.

This method is a modification of the preceding and is used when the former would involve the use of fractions in completing the square.

In this process, the equation is *multiplied by 4 times the coefficient of the square term.* The square on the left is then completed by adding the square of the original coefficient of the unknown to both sides of the equation. The remainder of the solution is the same as that explained above.

EXAMPLE. Solve for x in $3x^2 - 7x + 4 = 0$.

Given $3x^2 - 7x + 4 = 0$

Transpose $3x^2 - 7x = -4$

Multiply by $4.3 = 12$

$36x^2 - 84x = -48$

Complete the square by adding $7^2 = 49$ to both members.

$36x^2 - 84x + 49 = -48 + 49 = 1$

Extract the square root of both members.

$6x - 7 = \pm 1$

+ sign gives $6x - 7 = 1$

$6x = 8$

$x = \frac{8}{6}$ or $\frac{4}{3}$

− sign gives $6x - 7 = -1$

$6x = 6$

$x = 1$

To Check

$3\left(\frac{4}{3}\right)^2 - 7\left(\frac{4}{3}\right) + 4 = \frac{16}{3} - \frac{28}{3} + 4 = 0$ Check.

and $3 - 7 + 4 = 0$ Check.

3. By the formula.

Any quadratic equation can be expressed in the form $ax^2 + bx + c = 0$. Using the 4a method on this equation with literal coefficients, the following general result is obtained.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

This expression may be used as a formula and the values of x found by substituting the values of the coefficients as they occur in the equation.

Solution. Solve for x in $5x - 1 = 4x^2$.

Writing the equation in standard form.

$4x^2 - 5x + 1 = 0$

Here $a = 4$, $b = -5$, $c = 1$.

Substituting in the formula.

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4.4.1}}{2.4}$$

$$= \frac{5 \pm \sqrt{25 - 16}}{8}$$

$$= \frac{5 \pm \sqrt{9}}{8} = \frac{5 \pm 3}{8}$$

$= \frac{8}{8} = 1$, using + sign

or $= \frac{2}{8} = \frac{1}{4}$, using − sign

To Check

$4.1^2 - 5.1 + 1 = 4 - 5 + 1 = 0$

and $4\left(\frac{1}{4}\right)^2 - 5\left(\frac{1}{4}\right) + 1 = \frac{1}{4} - \frac{5}{4} + 1 = 0$ Check

Problem. The area of a triangle is 40 square feet. The base of the triangle is seven times the altitude plus 2 feet. Find the lengths of the sides of the triangle.

SOLUTION. Let x = Altitude of triangle.

$7x + 2$ = Base of triangle

By the conditions of the problem

$\frac{1}{2}x(7x + 2) = 40$

or $7x^2 + 2x = 80$

or $7x^2 + 2x - 80 = 0$

Substituting in the formula

$$x = \frac{-2 \pm \sqrt{2^2 - 4.7(-80)}}{2.7}$$

$$= \frac{-2 \pm \sqrt{4 + 2240}}{14}$$

$$= \frac{-2 \pm \sqrt{2244}}{14}$$

$$= \frac{-2 \pm 47.3 +}{14}$$

$$= \frac{45.3}{14} = 3.23 \text{ Approx.}$$

The − sign gives x neg which has no meaning in the problem.

Hence $x = 3.23$ Approx. altitude

$7x + 2 = 24.61$ Approx. base

To Check, $1/2 \times 3.23 \times 24.61 = 39.79+$ which is approximately 40.

If the solution of a quadratic leads to the extraction of the square root of a negative number, the equation has no real roots.

SQUARE ROOT.

The square and square root of monomials have already been considered.

The rule for squaring a binomial, i.e.,

$$(a + b)^2 = a^2 + 2ab + b^2.$$

furnishes the basis for a general solution of the problem; *To find the square root of a polynomial.*

In order to understand the steps in the process, it is necessary to notice that any polynomial may be considered as a binomial expression in which the first term of the polynomial is regarded as the first term, and the algebraic sum of the rest of the polynomial as the second.

The first term of the root is obviously the square root of the first term, i.e., a.

The second term of the square root is seen to be the second term divided by 2 times the first term; i.e., b.

This process may be extended by considering the first two terms of the polynomial as the first term of the above binomial form and the balance of the polynomial as the second term.

E. g. Find the square root of $24a^2 - 8a^3 + 16 - 32a + a^4$.

Arrange in descending powers of a.

$a^4 - 8a^3 + 24a^2 - 32a + 16 \mid a^2 - 4a + 4$

a^4

$2.a^2 = 2a^2 \mid -8a^3 + 24a^2$

$-4a$

$2a^2 - 4a \mid -8a^3 + 16a^2$

$2(a^2 - 4a) = 2a^2 \mid -8a + 16$

$+4$

$2a^2 - 8a + 4 \mid 8a^2 - 32a + 16$

Hence, the square root $= \pm (a^2 - 4a + 4)$.

The steps in the process are explained in the following rule.

Rule. To extract the square root of a polynomial, proceed as follows.

Arrange the polynomial according to ascending or descending powers of some letter in it.

Extract the square root of the first term, writing the expression so found with the plus sign as the first term of the root, and subtract its square from the polynomial.

Use twice the root already found as a trial divisor, and the first term of the remainder as a dividend, writing the quotient as the second term of the root, at the same time annexing it to the trial divisor to form the complete divisor.

Multiply the complete divisor by the term of the root just found and subtract the product from the remainder of the polynomial.

If there is still a remainder, use twice the root already found as a trial divisor and repeat the process. This may be continued till there is no remainder, in which case the polynomial is a perfect square; or it may be continued by the use of negative exponents until the required number of terms have been found.

The double sign, ±, is then placed before the root so found.

In arithmetic, this same process is used. The number 4356 is treated as

$$(4\cdot10^3 + 3\cdot10^2 + 5\cdot10 + 6)$$

and the above method applied. Problems of this nature are solved in the section on arithmetic.

SQUARE ROOT IN ARITHMETIC.

The number 66, is treated as 6.10 + 6. The square of this number is found by the rule for the square of a binomial.

$$(6\,.\,10 + 6)^2 = (6\,.\,10)^2 + 2\,.\,6\,.\,10\,.\,6 + 6^2$$
$$= 3600 + 720 + 36 = 4356.$$

The $(6\,.\,10)^2$ corresponds to 3600. This taken from 4356 leaves 756 which is equal to $(2\,.\,6\,.\,10 + 6)\,.\,6$. The arrangement is as follows:

$$\begin{array}{r|l} & \overset{*}{4}\ \overset{*}{3}\ 5\ 6 \mid 6\ 6 \\ & 3\ 6 \\ \hline 2\,.\,6\,.\,10 = 120 & \\ \quad + 6 & 7\ 5\ 6 \\ \hline 126 & 7\ 5\ 6 \end{array}$$

For a detailed explanation as to how to point off the number in periods, etc., see the section on square root in the article on arithmetic.

CUBE ROOT.

The rule for cubing a binomial, i.e.,

$$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3,$$

in like manner furnishes the basis for the solution of the problem; *To find the cube root of a polynomial.*

The above expression may be written in the following form, $a^3 + (3a^2 + 3ab + b^2)b$.

Hence, the cube root of the first term of the polynomial must be found by inspection. The second divisor is made up of $3a^2 + 3ab + b^2$, i.e., three times the square of the root already found, plus three times the root already found times the next number of the root (found by dividing the first term of the remainder by three times the square of the root already found), plus the square of the next number of the root.

The method of extracting the cube root of an arithmetical number is an adaption of this method.

EXAMPLE. Find the cube root of $27x^3 - 54x^2y + 36xy^2 - 8y^3$.

$$\begin{array}{rl|l} & 27x^3 - 54x^2y + 36xy^2 - 8y^3 & 3x - 2y \\ & 27x^3 & \\ \hline & & \\ 3a^2 = 3\,.\,(3x)^2 = 27x^2 & - 54x^2y + 36xy^2 - 8y^3 & \\ 3ab = 3\,.\,(3x)\,(-2y) = -18xy & & \\ b^2 = (-2y)^2 = 4y^2 & & \\ \hline \text{Adding} \quad 27x^2 - 18xy + 4y^2 & - 54x^2y + 36xy^2 - 8y^3 & \end{array}$$

RADICALS.

Def. A *radical expression*, or *radical*, is the indicated root of an algebraic expression. The small number written just above and to the left of the radical, called the *index*, indicates what root is to be taken. If no index is written, the square root is to be taken.

Def. The number under the radical sign is called the *radicand*.

E.g. In the radical expression $\sqrt{3ax}$, the radicand is 3ax.

Def. An expression is said to be *rational* if it can be expressed as a polynomial or as the quotient of polynomials.

E.g. 3ax, $5x^2 - 3$ and $ax + y$, are rational expressions.

Def. Any expression which is not rational is said to be *irrational*.

Def. A *surd* is a radical which cannot be reduced to a rational expression.

E.g. $\sqrt{3x}\,.\sqrt{x-1}\,.\sqrt{x^2 - ax + 4}$ are surds.

Def. The *order of a surd* or radical is the number of the root to be taken as indicated by the index.

E.g. $\sqrt{3ax}$ is a surd of the second order, sometimes called a quadratic surd. $\sqrt[3]{x+1}$ is a surd of the third order.

Def. The product of a rational factor and a surd is called a *mixed surd*.

E.g. $(x + 1)\sqrt{3x - 2}$ is a mixed surd.

Def. An *entire surd* is a surd which has no rational factor other than 1.

E.g. $\sqrt{x^2 - 3}$ is an entire surd.

Def. *To reduce a radical* is to change its form without changing its value.

To reduce a surd to its simplest form.

Factor the radicand so that one factor will be a perfect power of the same degree as the order of the radical. Extract the indicated root of all such factors, and write the product of these roots times the given root of the remaining factors.

EXAMPLE. Simplify

$$\sqrt[3]{32x^5y^4} = \sqrt[3]{8\,.\,x^5y^3\,.\,4y}$$
$$= \sqrt[3]{(2x^2y)^3}\,.\,\sqrt[3]{4y}$$
$$= 2x^2y\sqrt[3]{4y}\,.$$

EXAMPLE. Simplify $\sqrt[4]{625x^5y\,(x-y)^4}$

$$\sqrt[4]{625x^5y\,(x-y)^4} = \sqrt[4]{5^4x^4\,(x-y)^4}\,.\,\sqrt[4]{xy}$$
$$= 5x\,(x-y)\sqrt[4]{xy}$$

The above process makes use of the fact that the square root of a perfect square is the number, that the cube root of a perfect cube is the number, and in general the nth root of a perfect nth power of a number is the number itself. This problem is considered further in the section on exponents.

To reduce a mixed surd to an entire surd.

Raise the rational part of the expression to a power equal to the order of the radical. Multiply this result by the expression under the radical sign and write the result under the radical sign.

EXAMPLES. Reduce to entire surds.

$$b^2\sqrt{a^3} = \sqrt{b^4} \cdot \sqrt{a^3} = \sqrt{a^3b^4}$$

$$(a+b)\sqrt{\frac{1}{a+b}} = \sqrt{(a+b)^2} \cdot \sqrt{\frac{1}{a+b}}$$

$$= \sqrt{(a+b)^2 \cdot \frac{1}{(a+b)}} = \sqrt{a+b}.$$

Def. Two surds are said to be *similar* when they have the same index and the same radicand.

The introduction of radicals has led to a *new kind of number*. This calls for an examination as to the conditions under which and the ways in which these numbers can be added, subtracted, multiplied and divided.

The enlarging of the number system has removed many of the original restrictions governing the use of numbers. When dealing with integers in arithmetic, a number can be subtracted only from numbers as large or larger than itself, a number can be divided only by a factor of itself, while square roots can be taken of comparatively few numbers. *The introduction of fractions* makes it possible to divide any number by any other number. *The introduction of negative numbers in algebra*, makes it possible to subtract any number from any other number. *The introduction of radicals* and irrational numbers makes it possible to extract the square root of all positive numbers.

The two operations on which restrictions are still placed are division and extraction of roots. *Division by zero is not permitted at any time* In the number system as at present developed *the extraction of the square root of negative numbers is not possible.* This last exception is removed by the definition of a new number, called *the imaginary.* It is defined to be the number whose square is -1. The numbers in this enlarged number system are called *complex numbers.*

Much of present progress in scientific lines is made possible by the use of these numbers. The operations on complex numbers will not be studied here.

The operations on radicals or surds are greatly simplified by the introduction of fractional exponents.

EXPONENTS AND RADICALS.

Exponents originally indicated the number of times a number was to be taken as a factor, as x^2, a^5, etc.

Since an exponent is a number, the meaning of addition, subtraction, multiplication and division must be considered. This results in what are known as the laws of exponents.

Laws of exponents.

ADDITION. *To multiply two or more powers of the same quantity, add the exponents of the quantity in each factor and write the sum as the exponent in the product.*

$$a^p \cdot a^q \cdot a^r = a^{p+q+r}$$

EXAMPLE. Multiply $4a^2x^3y$ by $3ax^2y^2$.

$$4a^2x^3y \cdot 3ax^2y^2 = 12a^{2+1}x^{3+2}y^{1+2}$$

$$= 12a^3x^5y^3.$$

SUBTRACTION. *To divide powers of the same quantity, subtract the exponents of the quantity in the divisor from the exponent in the dividend and write the difference as the exponent in the quotient.*

$$a^m \div a^n = \frac{a^m}{a^n} = a^{m-n}$$

EXAMPLE. Divide $12a^3b^4$ by $2a^2b^6$.

$$\frac{12a^3b^4}{2a^2b^6} = 6a^{3-2}b^{4-6}$$

$$= 6ab^{-2}$$

MULTIPLICATION. *To raise the power of a quantity to a power, multiply the exponent of the quantity by the required power and write the result as the exponent of the quantity.*

$$(a^m)^n = a^{mn}$$

EXAMPLE. Simplify $(2ab^2x^3)^3$

$$(2ab^2x^3)^3 = 2^3a^3b^{2\cdot3}x^{3\cdot3}$$

$$= 8a^3b^6x^9$$

DIVISION. *To extract a root of a power of a quantity, divide the exponent by the index of the root and write the quotient as the exponent in the required root.*

$$\sqrt[n]{a^m} = a^{\frac{m}{n}}$$

EXAMPLE. Find the cube root of $27a^6b^3$

$$\sqrt[3]{27a^6b^3} = \sqrt[3]{27}\cdot a^{\frac{6}{3}}\cdot b^{\frac{3}{3}}$$

$$= 3a^2b.$$

It is always possible to add and multiply numbers, and also exponents.

It is necessary to define zero and negative exponents so that the subtraction of exponents is always possible. This was done in connection with the work on division of monomials.

If division of exponents is always to be possible, the idea of exponents must be farther extended. E.g. Following the rule for extracting roots by dividing the exponent, the following interesting result is obtained.

$$\sqrt{a^3} = a^{\frac{3}{2}}$$

Here, the exponent 3/2 is made to mean the square root of the cube of a. It may also be considered as the cube of the square root of a.

It can be shown without difficulty that the laws of exponents holds when the exponents, powers and indices are *any kind of algebraic number.*

Relation between radicals and exponents.

Obviously, the fractional notation furnishes a convenient means of writing radicals. Certain operations on radicals are made much easier by the use of this notation.

To reduce two radicals to the same index.

Replace the radicals by fractional exponents. Reduce the exponents to a common denominator, performing the indicated operations. Rewrite in radical form.

EXAMPLE. Reduce $\sqrt[3]{ax^2}$ and $\sqrt{ax^3}$ to radicals having a common index.

$$\sqrt[3]{ax^2} = (ax^2)^{\frac{1}{3}} = (ax^2)^{\frac{2}{6}} = \sqrt[6]{(ax^2)^2} = \sqrt[6]{a^2x^4}.$$

$$\sqrt{ax^3} = (ax^3)^{\frac{1}{2}} = (ax^3)^{\frac{3}{6}} = \sqrt[6]{(ax^3)^3} = \sqrt[6]{a^3x^9}.$$

Addition and subtraction of radicals.

Similar radicals can be combined in one radical by adding the rational parts and writing the algebraic sum as the coefficient of the common radical.

EXAMPLE. Combine $\sqrt{50} + 3\sqrt{72} - 4\sqrt{18}$.

$$\sqrt{50} = \sqrt{25.2} = 5\sqrt{2}$$
$$3\sqrt{72} = 3\sqrt{36.2} = 3.6.\sqrt{2} = 18\sqrt{2}$$
$$-4\sqrt{18} = -4\sqrt{9.2} = -4.3\sqrt{2} = -12\sqrt{2}$$
$$\therefore 5\sqrt{2} + 18\sqrt{2} - 12\sqrt{2} = 11\sqrt{2}$$

Multiplication of radicals.

To multiply radicals having a common index, multiply the product of the coefficients by the product of the radicands written under a radical with the common index.

Surds or radicals having different indices must be reduced to surds having a common index. This is best done by the use of fractional exponents.

EXAMPLE. Multiply $\sqrt{3}$ by $\sqrt{27}$.

$$\sqrt{3} \cdot \sqrt{27} = \sqrt{3.27} = \sqrt{81} = 9.$$

EXAMPLE. Multiply $\sqrt[3]{ax^2}$ by $\sqrt{a^3x}$.

$$\sqrt[3]{ax^2} = (ax^2)^{\frac{1}{3}} = (ax^2)^{\frac{2}{6}} = (a^2x^4)^{\frac{1}{6}} = \sqrt[6]{a^2x^4}$$
$$\sqrt{a^3x} = (a^3x)^{\frac{1}{2}} = (a^3x)^{\frac{3}{6}} = (a^9x^3)^{\frac{1}{6}} = \sqrt[6]{a^9x^3}$$

Therefore,

$$\sqrt[6]{a^2x^4} \cdot \sqrt[6]{a^9x^3} = \sqrt{a^2x^4 \cdot a^9x^3}$$
$$= \sqrt[6]{a^{11}x^7}$$
$$= ax\sqrt[6]{a^5x}.$$

EXAMPLE. Multiply $(a+\sqrt{x})$ by $(b-\sqrt{x})$

$$\begin{array}{r} a+\sqrt{x} \\ \hline b-\sqrt{x} \\ \hline ab+b\sqrt{x} \\ \hline -a\sqrt{x}-(\sqrt{x})^2 \\ \hline ab+(b-a)\sqrt{x}-x \end{array}$$ Product.

Division of radicals.

To divide monomial surds, having a common index, multiply the quotient of the coefficients by the quotient of the radicands written under a radical with the common index.

$$a\sqrt{x} \div b\sqrt{y} = \frac{a\sqrt{x}}{b\sqrt{y}} = \frac{a}{b} \cdot \sqrt{\frac{x}{y}}.$$

Monomial surds having different indices must be reduced to a common index by the use of fractional exponents.

EXAMPLE. Divide $\sqrt{8}$ by $\sqrt{24}$.

$$\frac{\sqrt{8}}{\sqrt{24}} = \sqrt{\frac{8}{24}} = \sqrt{\frac{1}{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}.$$

EXAMPLE. Divide x^3 by $\sqrt[3]{x}$.

$$\frac{x^3}{\sqrt[3]{x}} = \frac{x^3}{x^{\frac{1}{3}}} = \frac{x^{\frac{9}{3}}}{x^{\frac{1}{3}}} = x^{\frac{9}{3}-\frac{1}{3}} = x^{\frac{8}{3}} = \sqrt[3]{x^8}$$

When a divisor is a surd, especially if it is other than a monomial, it is best to write the indicated division as a fraction and then reduce it, when possible, to a fraction *whose denominator is rational.*

EXAMPLE. Rationalize the expression $x\sqrt{2ax}$.

The rationalizing factor is $\sqrt{2ax}$ since multiplying by this will make $\sqrt{2ax}$ rational.

$$x\sqrt{2ax} \cdot \sqrt{2ax} = x.2ax = 2ax^2.$$

This process is known as *rationalizing the expression.* It is accomplished in fractions by multiplying both terms of the fraction by an expression which will make the denominator a rational expression. The factor used in this process is called the *rationalizing factor.* It is determined by inspection.

When the divisor is a binomial, involving only the sum or difference of square roots, the demoninator is rationalized by multiplying by the same terms connected by the opposite sign.

EXAMPLE. Rationalize the denominator of $\dfrac{a+\sqrt{x}}{a-\sqrt{x}}$

Rationalizing factor $= a + \sqrt{x}$.

$$\frac{a+\sqrt{x}}{a-\sqrt{x}} \cdot \frac{a+\sqrt{x}}{a+\sqrt{x}} = \frac{a^2+2a\sqrt{x}+x}{a^2-x}$$

EXAMPLE. Rationalize the denominator of $\dfrac{\sqrt{x}-\sqrt{y}}{\sqrt{x}+\sqrt{y}}$

Rationalizing factor $= \sqrt{x} - \sqrt{y}$.

$$\frac{\sqrt{x}-\sqrt{y}}{\sqrt{x}+\sqrt{y}} \cdot \frac{\sqrt{x}-\sqrt{y}}{\sqrt{x}-\sqrt{y}} = \frac{x-2\sqrt{xy}+y}{x-y}.$$

GEOMETRY

1. Arithmetic. In the study of arithmetic, one learns to use numbers in particular computations. In connection with the work on mensuration and elsewhere, rules are given for finding areas, volumes, distances, weights and many other magnitudes. These rules are stated without any proof being offered. In some cases, the rules are made to look reasonable by actual examples in measuring. The number of pints in a gallon, the number of cubic inches in a cubic foot, the number of square yards in a carpet are often introduced in this way.

2. Algebra. In the study of algebra, one learns to use symbols and letters to indicate quantities that may take on many values in different problems and even in the same problem. By means of these letters and symbols, many of the rules used in arithmetic are stated in short general forms called formulas. If area is represented by A, the length of the base by b, the height by h, then the area of a rectangle is given by the formula; $A = b.h.$ Similarly, the area of a triangle is given by $A = \frac{1}{2}b.h.$ The area of a circle is stated; $A = \pi r^2$, where $\pi = 3.1416$ and r is the radius of the circle. No proof is attempted in algebra for relations of this kind.

3. Geometry. One comes now to a study of forms and to a proof of the rules and formulas used in arithmetic and algebra. The science which deals with the forms of bodies is called *Geometry*. It is one of the most ancient, and in many ways is the most elegant of the sciences. A brief history of the development of this subject will be of interest.

4. History of Geometry. The original meaning of the word, "geometry" was "measure of land," and, in this sense, we find the ancient Egyptians using the methods of the science in order to determine the equitable tax upon different plots of land as these changed with the annual inundation of the Nile. The Babylonians advanced beyond the areas of squares and rectangles to a consideration of the circumference and area of circles, calling the ratio between the diameter and the circumference three. In this connection, the writer of the Book of Kings says of the molten sea in the temple of Solomon that it was "ten cubits from brim to brim, round in compass, . . . and a line of thirty cubits compassed it round about." (1 Kings 7:23).

So far as is known, these early peoples were interested in the applications of geometry to the pressing problems of peace and war. In war, to solve the problems of destruction that would aid in conquest or protect in case of hostile attack. In peace, to erect pyramids and towers, buildings and monuments, that still stand as memorials to the greatness of their achievements.

The Greek mind was impressed not only with the practical value of geometry but even more with the beauty of its logic and the certainty of its conclusions. From Thales and Protagoras to Plato and Aristotle we find their philosophers examining, adding to and perfecting the subject. Plato causes Socrates to find a recognition or "recollection" of the truths of geometry in the mind of an untutored slave, and argued from this that, as the slave could not possibly have learned these facts from any one else, his mind must have contained these ideas from the beginning. This served as one of his arguments in support of the theory of innate ideas, a philosophy of thought that has had a great influence on the thinking of men in all succeeding times.

The achievements of the Greek mind in the field of geometry were collected and arranged by Euclid in the closing years of the fourth century B. C. His famous work was called the "Elements," a treatise containing fifteen "books," in which he developed the axioms, postulates and theorems of plane geometry in a form that has been little changed by time. Throughout 2200 years the study of geometry has held so high a place in the opinions of educators that they have continued to write over the entrance to higher education as Plato wrote over the door of the Academy in ancient Athens,

"Let none enter here without a knowledge of geometry."

5. Plane geometry was originally limited to a study of those forms which can be drawn with an unmarked ruler or straightedge and compasses. Some recent additions have left the field rather undefined so that writers on the subject are not in complete agreement as to what should and what should not be included in the subject. It is still made up in the main of the work set forth in Euclid's "Elements" and the mensuration of the circle, to which is added some work on the problems of loci or paths of moving points.

6. Much progress has been made in the study of other forms in the plane and in space. René Descartes joined algebra to geometry in the sixteenth century and laid the foundations for modern analytical geometry and the related fields of projective and descriptive geometry. More recently, the use of the calculus has given us new fields of study and the branch of the science known as differential geometry.

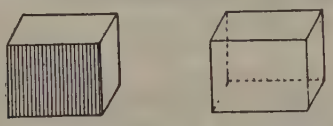
7. The field of mathematics naturally divides itself into the analytical, the geometrical, and the applied. The first of these begins with the theory of numbers in arithmetic and algebra. The second is first considered in plane geometry. The applications of both these branches of mathematics are begun in arithmetic. It is unfortunate that these various subjects are not studied together so that the relation between them could be observed. Many efforts are being made along this line both in this country and in Europe. The movement abroad has met with considerable success but no satisfactory combined course is yet available in this country. This tendency has helped a great deal, however, in bringing about many improved methods of presentation of the subjects in both the classrooms and the textbooks.

8. Plane geometry is and will continue for some time to come to be the main way of approach to a thorough understanding of mathematics. Apart from the importance of its theorems; the practice given the student in separating the essential from the non-essential,

the training given in thinking in an accurate and orderly manner, the ability trained to recognize a sufficient and completed proof, and other benefits will continue to recommend its study.

9. Geometry lays a careful foundation for itself. The terms used are defined with all the accuracy and precision possible. All statements made are either proved from the preceding statements and definitions, or the cause of accepting them as true is made clear. Some of these statements have to be accepted as true without proof. All such are carefully examined and stated for reference.

10. Certain of the terms used do not admit of satisfactory definition. Unless the student has a knowledge of the meaning of the words, point line, and plane, the pages of geometry will be unintelligible to him. These are called the *elements* of geometry and experience must help us to understanding of their meaning. The child playing with his blocks, balls, and



wheels is laying the foundations on which later we will erect his knowledge of our science. From his idea of a box, we will lead him naturally to the idea of the form of the box and so to a knowledge of the forms and elements that make up the same.

11. **Plane.** One side of the box is a square or rectangle. The sides of the box, being flat, are called *surfaces*, or *plane surfaces*. A plane surface extended indefinitely in every direction is called a *plane*.

In plane geometry, we have to do only with figures which lie in a plane. They have no thickness. They do have length and breadth. These are called the *dimensions* of the figure. Any figure in a plane is a plane figure. It cannot have more than two dimensions.

12. **Line.** Plane figures are composed of parts, which are called *lines*. The edge of the box extended in each direction is called a *line*. A line has only one dimension, which is length. Any part of a line such as is formed by the edge of the box produced is called a *straight line*. Any part of it can be placed on any other part and they will coincide. The child learns early that not all lines are straight.

13. **Point.** Two lines meet in a *point*. The corners of the box represent points. They have location or position, but no dimensions. We say, a point has neither length, breadth, nor thickness.

14. The statements used in geometry, the proof of which is not given, are of two kinds. The first are those that relate themselves to the whole field of mathematics most of which have been noticed and used in arithmetic and algebra. The second group consists of statements that have to do with relations between geometrical elements. Most of these relations are so evident that it is not difficult to lead one to accept them without question.

15. **Def.** An *Axiom* is a statement dealing with magnitudes in general that is accepted as true without proof.

16. **Def.** A *Geometrical Axiom or Postulate* is a statement dealing with geometrical magnitudes that is accepted as true without proof.

17. **Axioms.** Much work has been done in an attempt to determine the necessary axioms and postulates of geometry. In a properly selected list, no one axiom or postulate will depend upon another. None of them can be proved true or untrue. They are like the rules of a game. They may be changed by agreement, but, once they are accepted, the nature of the game is determined. So, in geometry, once the axioms and postulates are agreed upon, the conclusions follow in logical sequence. Much investigation has been undertaken to determine the nature of the science that would follow if certain of the axioms and postulates were assumed false and other statements substituted in their places. These studies do not concern us at this time.

It is sufficient to remember that while most of these statements seem true, our acceptance of them is voluntary. It is interesting to note that the Theory of Relativity, about which the scientists of the world are so concerned at present, is based upon assumptions the truth of which is not yet accepted by many people. In a case of this kind, as in all cases, the real test of the assumptions is the validity of the conclusions reached by their use.

18. The general axioms have already been used in algebra but they are stated here for reference.

Ax. 1. Things which are equal to the same thing, or to equal things, are equal to each other.

Ax. 2. If equals are added to equals the results are equal

Ax. 3. If equals are taken from equals the results are equal.

Ax. 4. If equals are taken an equal number of times, i. e. are multiplied by equals, the results are equal.

Ax. 5. If equals are divided into an equal number of parts, i. e. divided by equals, the results are equal.

From this and axiom 1 it follows that the parts are all equal to each other.

Division by zero is not permissible.

Ax. 6. The whole is equal to the sum of all its parts.

Ax. 7. The whole is greater than any of its parts.

Ax. 8. Any quantity may be substituted for its equal in a mathematical expression.

Ax. 9. If unequals are operated on by positive equals, the results are unequal in the same order.

If $a < b$, read, a less than b,
and $c = d$,
Then $a + c < b + d$
$a - c < b - d$
$a \times c < b \times d$
$\frac{a}{c} < \frac{b}{d}$

and similarily for a greater than b, written $a > b$.

Ax. 10. If unequals are subtracted from equals, the results are unequal in the reverse order.

If $a = b$ and $c > d$,
Then $a - c < b - d$.

Ax. 11. If, of three quantities, the first is greater than (less than) the second and the second is greater than (less than) the third, then the first is greater than (less than) the third.

If $a > b$ and $b > c$,
Then $a > c$.

19. Def. A *straight line* is a line which has the same direction throughout its whole extent. A straight line will lie entirely in a plane surface even when the line is turned over and over. A straight line is the intersection of two planes.

20. Def. A *broken line* is a line made up of two or more straight lines.

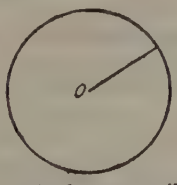
21. Def. A *curved line* is a line no part of which is straight. A part of the edge of a wheel is a curved line. The direction of a curve changes at every point. The part of a curve between two points is called an *arc*.

22. Def. A *rectilinear figure* is a figure formed by a broken line. Eg. A square is a rectilinear figure.

23. Def. The portion of a straight line between two points is called a *line segment* or simply a *segment*.

24. Def. Associated with every line segment is a unique element or value called its *length*. This length is measured in terms of units. Hence, the same length may be represented by several different numbers depending on the units used. For example, a segment 1 yard long, may be spoken of as 3 feet, 36 inches, or as a fractional part of some longer unit.

25. Def. A *curvilinear figure* is a figure bounded by curved lines. In plane geometry, one considers only those curves which can be drawn with the compasses.



26. Def. A *circle* is a curvilinear figure in which every point of the curve is equally distant from a fixed point within it. The fixed point is called the *center* of the circle. The curved line is called the *circumference*. A line segment from the center to the circumference is called a *radius*.

It is evident that a circle is the only curvilinear figure which can be drawn with the compasses. For this reason, figures bounded by circles and parts of circles are the only curvilinear figures treated in this section.

27. Postulates. The following geometrical axioms or postulates can now be stated.

Post 1. One and only one straight line can be drawn between two points.

This fact may also be stated as follows:

Two points determine a line.

Post. 2. A straight line may be extended indefinitely in either direction.

In the following, the word line is used to signify straight line unless the contrary is stated.

Post. 3. The length of the segment between two points is the shortest distance between them.

Post. 4. A geometrical figure may be moved from place to place without changing its size or shape.

Post. 5. A circumference may be drawn with any point as center and any line segment as radius.

28. Def. Two geometric figures are said to be *congruent* if one can be placed upon the other in such a way that they coincide in all their parts. Symbol $\cong$.

29. Def. When two geometric figures are congruent, the parts and magnitudes of the figures which coincide when one is placed upon the other are called *corresponding or homologous parts*.

Without writing out detailed proofs, the following statements will be recognized as true.

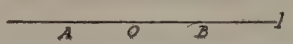
30. *Corresponding magnitudes of congruent figures are equal.*

31. *Congruent figures are equal.*

32. *Two circles having equal radii are congruent.*

33. *If two circles are equal, their circumferences are equal and their radii are equal.*

34. Def. A point O divides a line into the two parts OA and OB, called *half lines* or *rays*.



The point O is the *end point* of the ray OA and also of the ray OB. The ray extends indefinitely in one direction from its end point.

35. Def. An *angle* (Symbol $\angle$ or $\measuredangle$) is the figure formed by two rays having a common end point. This point is called the *vertex* of the angle. The rays are called the *sides* of the angle.

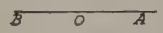
When no confusion results, we designate an angle by its vertex, and write $\angle$ O. At other times, we indicate a point on one ray, the vertex, and a point on the other ray, and write $\angle$ AOB. At other times it is more convenient to place a number or letter within the angle, and write $\angle$ 1.

36. Def. Two angles which are congruent are said to be *equal*, and it follows that *equal angles are congruent*.

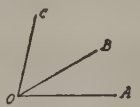
37. Def. The *bisector* of a geometric magnitude is the element, point, line or plane, which divides it into two equal parts.

38. In considering the size of angles, we think of the amount of turning necessary to bring one side into the position of the other. It is evident that the size of an angle does not depend on the length of its sides.

39. Def. A *straight angle* is the angle between the half lines or rays of a given line.



40. Def. Two angles are said to be *adjacent* when they have the same vertex and a common side between them.



In the figure ∠ AOB is adjacent to ∠ BOC.

41. Def. When two lines meet in such a way that the two adjacent angles are equal, each of these angles is called a *right angle.* Symbol, rt. ∠.

42. Def. Two lines are said to be *perpendicular* to each other if they form a right angle with each other. Each line is called a *perpendicular.* Symbol ⊥.

OB ⊥ CA

43. Def. An *acute angle* is an angle less than a right angle.

44. Def. An *obtuse angle* is an angle greater than a right angle and less than a straight angle.

At present we will not consider angles larger than a straight angle.

45. The geometrical axiom for angles may now be stated.

Post. 6. All right angles are equal.

46. The following statements follow so directly from the preceding that no proof is stated for them.

1. Two points determine a line.

2. Two straight lines can intersect in only one point.

3. A segment can be bisected by only one point.

4. A straight angle equals two right angles.

5. All straight angles are equal.

6. At a given point on a given line only one perpendicular can be drawn to that line.

If two can be drawn at a point, they make two right angles. But all right angles are equal by Post. 6. Hence the angles are congruent and the two lines coincide.

47. Def. If the sum of two angles is equal to a right angle, each angle is called the *complement of* the other and the angles are said to be *complementary.*

48. Def. If the sum of two angles is equal to a straight angle, each angle is called the *supplement* of the other and the angles are said to be *supplementary.*

49. Def. The sum of all the successive adjacent angles about a point is called a *perigon* and is equal to two straight angles or four right angles.

50. Def. The unit commonly used in measuring angles is the *degree* which is defined by the statement "360 degrees are equal to one perigon." Symbol 360°. From this it follows that a straight angle equals 180° and a right angle equals 90°. Each degree is divided into sixty equal parts called *minutes.* Symbol 60′. Each minute is divided into sixty equal parts called *seconds.* Symbol 60″.

See that the following statements are true.

51. *Complements or supplements of the same or equal angles are equal.*

52. *If two adjacent angles have their exterior sides lying in the same straight line, they are supplementary.*

53. *If two adjacent angles are supplementary, their exterior sides lie in the same straight line.*

54. Def. In the last two statements the conclusion of one is the premise of the other. When statements are related in this way, one statement is said to be the *converse* of the other. The converse of a true statement is not always true. It must be examined carefully in every case.

55. Def. *Vertical angles* are angles which have a common vertex the sides of one angle being the extension of the sides of the other.

We shall now consider the nature of the formal proof of a geometrical statement in connection with the following example.

56. *Theorem 1. If two lines intersect, the vertical angles are equal.*

Given. Lines AB and CD intersecting at O forming the vertical ∠s AOC and BOD.

To be proved. ∠ AOC = ∠ BOD.

Proof. ∠ AOC is the supplement of ∠ BOC. Par. 52.

(*If two adjacent angles have their exterior sides lying in the same straight line, they are supplementary.*)

Likewise, ∠ BOD is the supplement of ∠ BOC.

∴ ∠ AOC = ∠ BOD q. e. d. Par. 51.

(*Supplements of the same angle are equal.*)

57. Def. *A theorem* is a geometrical statement to be proved. When formally stated, a theorem consists of two parts, the *hypothesis* and the *conclusion.* The hypothesis states the special conditions that are assumed as true for the case under consideration, the conclusion states a fact that results from them.

58. The Nature of Proof. Much of the value of a study of geometry comes from an appreciation of what constitutes an exact proof. There are certain rather clearly defined steps in any consistent process of thought. The formal proof of a geometric theorem makes these steps clear and distinct. In writing out a proof of a theorem the following procedure should be followed.

1. Write down a general statement of the theorem.

2. Draw a figure showing all the facts stated in the hypothesis. All the drawing necessary in plane geometry can be done with an un-marked ruler and a pair of compasses. For convenience, an instrument called a protractor is sometimes used to measure and construct angles but no figure is allowed that requires its use. The points, lines, angles, etc., should be lettered or marked in some way so that they can be referred to readily.

3. *Given.* Under this title state the facts given in the hypothesis in terms of the figure.

4. *To be proved.* Under this title state the facts of the conclusion in terms of the figure.

5. *Proof.* Explain any additional construction that may be necessary. State such relations as are needed which are true in the figure as drawn. State the definition, axiom, postulate, or theorem which proves each such statement. These are called the reasons for the statements. In a complete proof, every such reason is stated in full.

6. These statements are to be so selected that they lead up to a restatement of the conclusion. This is usually preceded by the symbol ∴ meaning "therefore," and is followed by the letters q. e. d. which is an abbreviation for the Latin phrase "*quod erat demonstrandum*," meaning "*which was to be proved.*"

59. Def. A *problem* is a construction to be made. As mentioned above, only the rule and compasses should be used.

60. Def. When certain known or accepted truths are put together in such a way that they lead up to the conclusion as in Theorem 1, the proof is said to be *synthetic.*

TRIANGLES

60. Def. A *triangle* is a rectilinear figure composed of three line segments called *sides.* Symbol △ and ▲.

A triangle in general is *scalene.*

If two of its sides are equal, it is *isosceles.*

If all its sides are equal, it is *equilateral.*

Triangles are also named from the nature of the angles.

If all the angles are acute, the triangle is *acute.*

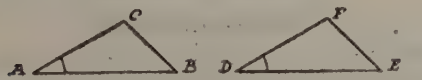
If one angle is obtuse, the triangle is *obtuse.*

If one angle is a right angle, the triangle is a *right triangle.*

If all the angles are equal, the triangle is *equiangular.*

Any side of a triangle may be taken as the *base* of the triangle. The angle opposite the base is the *vertical angle* of the triangle. Its vertex is the *vertex* of the triangle.

62. *Theorem 2. If two triangles have two sides and the included angle of one equal respectively to two sides and the included angle of the other, the triangles are congruent.*



Given. In ▲ ABC and DEF; AB = DE, AC = DF, ∠ A = ∠ D.

To be proved. △ ABC ≅ △ DEF.

Proof. Place △ DEF on △ ABC in such a way that point D will fall on point A and side DE will fall along side AB. Post. 4

(A figure may be moved from place to place without changing its size or shape.)

Point E will fall on point B. Given.

(Since AB = DE.)

Side DF will fall along side AC. Def.

(∠ A = ∠ D and equal angles are congruent.)

Point F will fall on point C. Given.

(Since DF = AC.)

∴ EF will coincide with BC. Post 1.

(One and only one straight line can be drawn between two points.)

∴ △ DEF coincides with △ ABC

∴ △ ABC ≅ △ DEF q. e. d. Def.

(Two geometric figures are said to be congruent if one can be placed upon the other in such a way that they coincide in all their parts.)

63. Def. When a theorem is proved by placing one figure on another as in the above, the method is called *proof by superposition.*

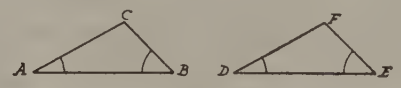
64. Def. In a right triangle, the side opposite the right angle is called the *hypothenuse*, and the other sides are called *legs or sides.*

Corol. Two right triangles are congruent, if the legs of one are equal respectively to the legs of the other.

The right angles are equal by Postulate 6 and the corollary is a special case of the preceding theorem.

65. Def. A statement which follows readily from a preceding one is called a *corollary.* Often a corollary simply restates the theorem in different form.

66. *Theorem 3. If two triangles have two angles and the included side of one equal respectively to two angles and the included side of the other, the triangles are congruent.*



Given. In ▲ ABC and DEF; ∠ A = ∠ D, ∠ B = ∠ E, and AB = DE.

To be proved. △ ABC ≅ △ DEF.

Proof. Place △ DEF on △ ABC in such a way that line DE will coincide with its equal AB. Post. 4.

(A figure may be moved from place to place without changing its size or shape.)

Then DF will fall along AC and EF along BC. Given.

(Since ∠ A = ∠ D and ∠ B = ∠ E.)

∴ Point F will fall on point C. Par. 48, 2.

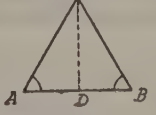
(Two straight lines can intersect in only one point.)

∴ The triangles coincide in all their parts.

∴ △ ABC ≅ △ DEF. q. e. d. Def.

(Two geometric figures are said to be congruent if one can be placed upon the other in such a way that they coincide in all their parts.)

67. *Theorem 4. If a triangle is isosceles, the angles opposite the equal sides are equal.*



Given. △ ABC is isosceles.

To be proved. ∠ A = ∠ B.

Proof. Draw line CD bisecting ∠ C. See below.

Then in ▲ ACD and BCD

AC = BC. Given.

(If two sides of a triangle are equal, the triangle is isosceles.)

CD = CD

(Common to both triangles.)

and ∠ ACD = ∠ BCD By construction.

(The bisector of a geometric magnitude, is the element which divides it into two equal parts.)

$\therefore \triangle ACD = \triangle BCD.$ Theo. 2.

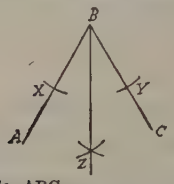
(If two triangles have two sides and the included angle of one equal respectively to two sides and the included angle of the other, the triangles are congruent.)

$\therefore \angle A = \angle B.$ q. e. d. Par. 30.

(Corresponding magnitudes of congruent figures are equal.)

In the above proof, it is necessary to draw the bisector of an angle. This construction is explained here but the proof is deferred till later.

68. *Problem 1. To bisect an angle.*



Given. The angle ABC.

Required. To draw the bisector of $\angle$ ABC.

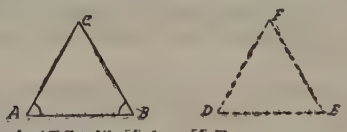
Construction. With B as center and any length as radius draw an arc of a circle cutting BA at X and BC at Y.

With X and Y as centers and the same radius as before draw arcs which intersect at the point Z.

Draw the line BZ.

This is the required bisector.

69. *Theorem 5. (Converse of Theorem 4.) If two angles of a triangle are equal, the triangle is isosceles.*



Given. $\triangle$ ABC with $\angle A = \angle B$.

To be proved. AC = BC.

Proof. Suppose $\triangle$ DEF is a reproduction of $\triangle$ ABC so that the corresponding parts are equal.

Place $\triangle$ DEF on $\triangle$ ABC in such a way that point E will fall on A and Point D will fall on B. Post. 4.

Since $\angle A = \angle B$ Given.

and $\angle B = \angle E$ By. Con.

$\therefore \angle A = \angle E$ Ax. 1.

(Things which are equal to the same thing or to equal things are equal to each other.)

Similarly $\angle B = \angle D$.

$\therefore$ Side EF will lie along AC and DF along BC. Def.

(Equal angles are congruent.)

$\therefore$ Point F will fall on C. Par. 46.

(Two straight lines can intersect in only one point.)

$\therefore EF = AC$

(Corresponding parts of congruent figures are equal.)

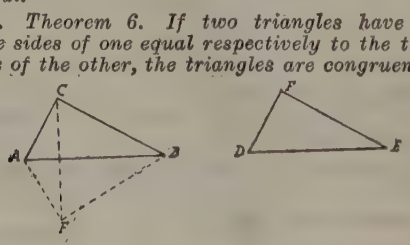
But $EF = BC.$ By Const.

$\therefore AC = BC.$ q. e. d. Ax. 1.

70. *Corollary. Equilateral triangles are also equiangular and conversely.*

The proof follows directly from the two preceding theorems. For brevity, if a theorem and its converse are both true, the statement may be made as above. The student should be careful to state the converse theorem and prove it as a separate proposition. The converse statement of the above is, *equiangular triangles are also equilateral.*

71. *Theorem 6. If two triangles have the three sides of one equal respectively to the three sides of the other, the triangles are congruent.*



Given. In $\triangle$ ABC and DEF; AB = DE, AC = DF, BC = EF.

To be proved. $\triangle$ ABC $\cong$ $\triangle$ DEF.

Proof. Place $\triangle$ DEF on $\triangle$ ABC so that side DE will coincide with its equal AB with D on the point A and E on B, the point F falling at the point F′ opposite to the vertex C.

Draw the line CF′.

Since AC = AF′ Given.

the triangle ACF′ is isosceles and Def.

$\angle ACF' = \angle AF'C$ Theo. 4.

(If a triangle is isosceles, the angles opposite the equal sides are equal.)

Similarly $\angle BCF' = \angle BF'C$

$\therefore \angle ACF' + \angle BCF' = \angle AF'C + \angle BF'C$ Ax. 2.

(If equals are added to equals, the results are equal.)

$\therefore \angle ACB = \angle AF'B$ Ax. 8.

(Any quantity may be substituted for its equal in a mathematical expression.)

$\therefore \triangle ABC \cong \triangle ABF'$ Theo. 2.

$\therefore \triangle ABC \cong \triangle DEF.$ q. e. d. Ax. 8.

From now on, a full statement of the reasons for each step of the proof will at times be omitted but the student should supply them in every case.

72. *Problem 2. To construct a triangle, given its three sides.*

Given. The lines a, b and c.

Required. To construct a triangle with these lines as sides.

Construction. On any line, lay off with the compasses the segment AB equal to c.

With A as center and b as radius draw an arc.

With B as center and a as radius draw a second arc intersecting the first at the point C.

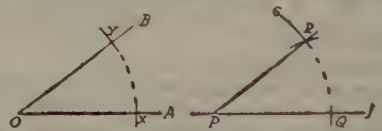
Draw AC and BC.

$\triangle$ ABC is the required triangle.

Why?

EXERCISE. Give the proof for Problem 1.

73. *Problem 3. At a given point on a given line, to construct an angle equal to a given angle.*



Given. $\angle$ AOB and point P on line L.

Required. To construct an angle at P equal to $\angle$ AOB.

Construction. With O as center and any line as radius, draw an arc cutting OA at X and OB at Y.

With P as center and the same radius draw an arc QS cutting L at the point Q.

With Q as center and a radius equal to the length of the segment XY, draw an arc cutting the arc QS at R.

Draw PR.

$\angle$ QPR is the required angle.

Proof. Draw XY and QR.

In the $\triangle$ OXY and PQR, we have

$OX = PQ.$

and $OY = PR.$ Par. 33,

(Radii of the same or equal circles are equal.)

and $XY = QR$ Const.

$\therefore \triangle OXY = \triangle PQR.$ Theo. 6.

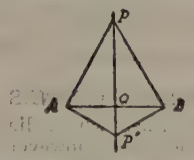
(If two triangles have the three sides of one equal respectively to the three sides of the other, the triangles are congruent.)

$\therefore \angle QPR = \angle AOB.$ Par. 30.

PERPENDICULARS.

73. Def. A line perpendicular to a segment at its mid point is called the *perpendicular bisector* of the segment.

74. *Theorem 7. If two points are each equally distant from the end points of a segment, they determine the perpendicular-bisector of the segment.*



Given. The points P and P' each equally distant from the ends of the segment AB.
To be proved. The line PP' is the ⊥ bisector of AB.
Proof. Draw the lines as indicated in the figure with PP' cutting AB at O.
In △ APP' and BPP',

	AP = BP.	Given.
	AP' = BP'	Given.
and	PP' = PP'	Common.
	∴ △ APP' ≅ △ BPP'	Theo. 6.
	∴ ∠ APP' = ∠ BPP'	Par. 30.
Then	△ APO ≅ △ BPO.	Theo. 2.
	∴ AO = OB	Par. 30.

and PP' bisects AB. q. e. d.

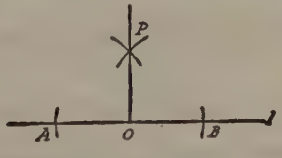
Also	∠ AOP = ∠ BOP.	Par. 30.
	∴ PP' ⊥ AB. q. e. d.	Def.

(When two lines meet in such a way that the two adjacent angles are equal, each of these angles is called a right angle and the lines are said to be perpendicular.)

75. *Problem 4. To construct the perpendicular bisector of a segment.*

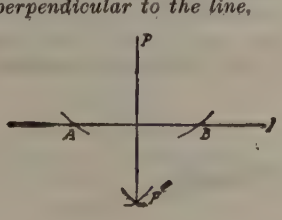
Given. The segment AB.
Required. To construct the perpendicular bisector of AB.
Construction. With A and B as centers and with the same radius draw arcs of circles intersecting each other in points P and P'.
The line PP' is the required line.
Why? Write out a complete proof.

76. *Problem 5. At a point on a line, to construct a perpendicular to the line.*



Given. The point O on the line l.
Required. To construct a line ⊥ to l at O.
Construction. With O as center and any length as radius draw a circle cutting l in points A and B.
Construct the perpendicular bisector of AB.
It is only necessary to locate the point P.
Why?
Write out a complete proof.

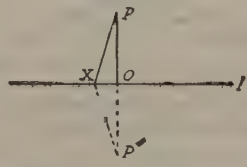
77. *Problem 6. From a point not on a line, to drop a perpendicular to the line.*



Given. The point P not on the line l.
Required. To drop a perpendicular from P to l.
Construction. With P as center and a line sufficiently long as radius, draw an arc cutting l in points A and B.
Using this or some convenient radius, construct the perpendicular bisector of AB.
This is the required line.
Prove.

78. In construction problems, it is best to set the compasses as few times as possible. Also, in determining a line, but two points are necessary. In the last two problems, directions are given to determine only two points. All figures should be drawn neatly and accurately. In this way the figure will help to make the proposition *"look true."*

79. *Theorem 8. One and only one perpendicular can be drawn from a point outside a line to that line.*



Given. Point P not on line l.
To be proved. One and only one line can be drawn ⊥ to l from P.
Proof. By Problem 6 above one such line PO, can be drawn.
Suppose the theorem not true.
Suppose PX is another ⊥ to l.
Prolong PO to P' so that PO = OP'.
Draw XP'.
By construction POP' is a straight line.
∴ PXP' is not a straight line. Post. 1.
(One and only one straight line can be drawn between two points.)
In rt. △ POX and P'OX,

	PO = OP'	By Const.
	OX = OX.	Common.
	∴ △ POX = △ P'OX.	Theo. 2. Cor.

(Two right triangles are congruent, if the legs of one are equal respectively to the legs of the other.)

and	∠ PXO = ∠ P'XO = Rt. ∠.	Hyp.
	∴ ∠ PXP' = 2∠ PXO = St. ∠.	

But this is impossible since PXP' is not a straight line.
Hence the assumption of a second perpendicular leads to a contradiction. Since all other steps in the proof are correct, the assumption must be false.
∴ PX is not ⊥ to l, q. e. d.

80. In proving a theorem, assumptions are often made and, in referring statements which follow to them, they are said to be true by *Hypothesis.* When the assumption leads to a contradiction of the axioms or postulates or previously accepted propositions, we are forced to deny the assumption and affirm its opposite. Such a method of proof is called *proof by reductio ad absurdum.*

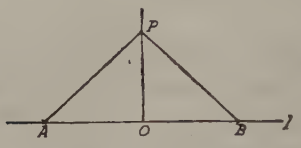
The above theorem may be proved directly by drawing the line PX as any other line from P to l. The indirect method is given here to illustrate a kind of proof that is often valuable.

81. *Theorem 9. The perpendicular is the shortest line that can be drawn from a point to a given line.*

Suggestion. From the figure in Theorem 8 we see that it is only necessary to prove PO less than PX. But they are respectively half of the distances POP' and PXP'. By Post. 3, POP' < PXP'. Ax. 5.

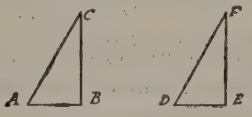
The length of the perpendicular from a point to a line is called *the distance from the point to the line.*

82. *Theorem 10. If two lines drawn from a point in a perpendicular to a given line cut off on the given line equal distances from the foot of the perpendicular, they are equal and make equal angles with the perpendicular.*



Given. PO ⊥ line l, and PA and PB cutting off equal segments OA and OB.
To be proved. AP = BP
and ∠ APO = ∠ BPO.
Proof. △ AOP and BOP are rt. △. Given.
and AO = OB. Given.
Also OP = OP. Common.
∴ △ AOP ≅ △ BOP. Theo. 2 Corol.
∴ PA = PB
and ∠ APO = ∠ BPO. q. e. d. Par. 30.
(Corresponding parts of congruent figures.)

83. *Theorem 11. Two right triangles are congruent if the hypothenuse and an adjacent angle of one are equal respectively to the hypothenuse and an adjacent angle of the other.*



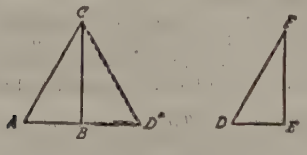
Given. Rt. △ ABC and DEF with AC = DF and A = D.
To be proved. △ ABC ≅ △ DEF.
Proof. Place △ DEF on △ ABC in such a way that DF coincides with its equal AC, point D falling on A and F on C.
Then, since ∠ A = ∠ D, DE will fall along AB.
Also, the line EF will fall along BC. Theo. 8.
(One and only one perpendicular can be drawn from a point outside a line to that line.)
∴ Point F will fall on point C. Par. 46.
∴ △ ABC ≅ △ DEF. q. e. d. Par. 28.

84. Def. It will be proved that in a right triangle the angles other than the right angle are both acute. They are called the *acute angles* of the triangle. We can now combine the above theorem and theorem 3 to prove the following.

85. *Corol. Two right triangles are congruent if a side and an acute angle of one triangle are equal respectively to a side and an acute angle of the other.*

Write out formal proof.

86. *Theorem 12. Two right triangles are congruent if the hypothenuse and a leg of one are equal respectively to the hypothenuse and a leg of the other.*



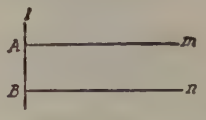
Given. Rt. △ ABC and DEF, with AC = DF, and BC = EF.
To be proved. △ ABC ≅ △ DEF.
Proof. Place △ ABC and DEF together in such a way that BC coincides with its equal EF, A and D' being on opposite sides of this common line.
Then ABD' is a straight line. Par. 53.
(If two adjacent angles are supplementary, their exterior sides lie in the same straight line.)
How do we know that ∠ ABC and ∠ BCD' are supplementary?
In the triangle AD'C, AC = D'C. Given.
∴ ∠ A = ∠ D' Theo. 4.
(If a triangle is isosceles, the angles opposite the equal sides are equal.)
∴ ∠ A = ∠ D Ax. 1.
∴ △ ABC ≅ △ DEF. q. e. d. Theo. 11.
(Two right triangles are congruent if the hypothenuse and acute angle of one are equal respectively to the hypothenuse and an acute angle of the other.)

PARALLEL LINES.

87. Def. Two lines which lie in the same plane and do not meet, however far they are extended, are called *parallel lines.* Symbol ∥.

The existence of such lines is shown in the following theorem.

88. *Theorem 13. Two lines in the same plane perpendicular to the same line are parallel.*



Given. Lines m and n ⊥ l, at A and B respectively.
To be proved. m ∥ n.
Proof. Assume that the lines will meet at some point, as X, if the lines are sufficiently produced.
This would give us two perpendiculars from a point outside a line to that line which is impossible by Theo. 8.
The assumption must be false.
∴ m and n do not meet.
∴ m ∥ n. q. e. d. Def. Par. 87.

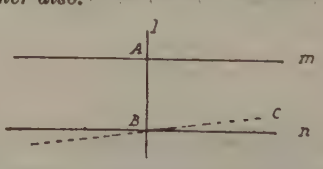
89. There has been a great deal of study and investigation in recent years into the significance of the *parallel axiom.* It may be stated as follows:

Post. 7. *Postulate of parallels. Through a given point only one line can be drawn parallel to a given line.*

90. *Corol. Two lines each parallel to a third line are parallel to each other.*

In plane geometry all three lines are considered as lying in the same plane but this statement is true in general as may be seen by referring to the box in Par. 1. There, four edges extending in the same direction are all parallel to each other but only two lie in any one plane.

91. *Theorem 14. If a line is perpendicular to one of two parallel lines, it is perpendicular to the other also.*



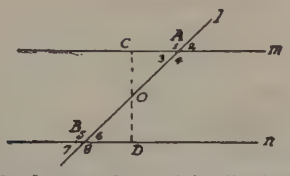
Given. Lines m ∥ n, and l ⊥ m, at A and cutting n at B.
To be proved. l ⊥ n.
Proof. At B draw BC ⊥ l.
Then BC ∥ m. Theo. 13.
(Two lines in the same plane perpendicular to the same line are parallel.)
But m ∥ n. Given.
∴ BC and n must coincide. Post. 7.
∴ l ⊥ n. q. e. d. By Const.

92. Def. A line which cuts two or more lines is called a *transversal of those lines.*

If two lines are cut by a transversal eight angles are formed which are designated as follows:

∠s 3, 4, 5 and 6 are called *interior angles.*
∠s 1, 2, 7 and 8 are called *exterior angles.*
∠s 3 and 6 are called *alternate-interior angles,* so also ∠s 4 and 5.
∠s 1 and 8 are called *alternate-exterior angles,* so also ∠s 2 and 7.
∠s 2 and 6, 1 and 5, 3 and 7, 4 and 8 are called *corresponding angles.*

93. *Theorem 15. If two parallel lines are cut by a transversal, the alternate-interior angles are equal.*



Given. The ∥s, m and n, cut by the transversal l at the points A and B respectively.
To be proved. ∠ 3 = ∠ 6 and ∠ 4 = ∠ 5.
Proof. Through O, the mid-point of AB draw CD ⊥ m.
Then CD ⊥ n. Theo. 14.
(A line perpendicular to one of two parallel lines is perpendicular to the other also.)
By construction, △s AOC and BOD are rt △s.
Also ∠ AOC = ∠ BOD. Theo. 1.
and AO = OB Const.
∴ △ AOC ≅ △ BOD Theo. 11
∴ ∠ OAC = ∠ OBD Par. 30.
or ∠ 3 = ∠ 6 q. e. d.
and ∠ 4 = ∠ 5 q. e. d. **Par. 51.**
(Supplements of equal angles are equal.)

94. *Corol. 1. If two parallel lines are cut by a transversal, the corresponding angles are equal.*

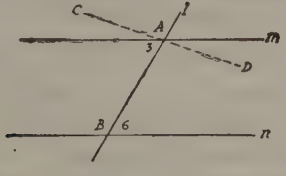
In the figure ∠s 2 and 3 are vert. ∠s and equal, while ∠ 3 = ∠ 6 by the above theorem. A similar discussion holds for each pair of corresponding angles.

95. *Corol. 2. If two parallel lines are cut by a transversal the two interior (exterior) angles on the same side of the transversal are supplementary.*

In this case, ∠s 2 and 4 are supplementary and ∠ 2 = 6 by the preceding corollary. Therefore, ∠s 4 and 6 are supplementary.

96. *Corol. 3. If two parallel lines are cut by a transversal, the alternate-exterior angles are equal.*

97. *Theorem 16. If two lines are cut by a transversal, making the alternate-interior angles equal, the lines are parallel.*



Given. Lines m and n cut by transversal l making ∠ 3 = ∠ 6.
To be proved. m ∥ n.
Proof. Through A draw a line parallel to n. This line must coincide with m.
For ∠ CAB = ∠ 6 Theo. 15.
And ∠ 3 = ∠ 6 Given.
∴ ∠ CAB = ∠ 3 Ax. 8.
∴ CD and m must coincide. Def.
(Equal angles are congruent.)
But CD is ∥ to n. Const.
∴ m, coinciding with CD, is ∥ to n. q. e. d. Post. 7.

This theorem and the corollaries which follow are the converse of the preceding theorem and its corollaries.

98. *Corol. 1. If two lines are cut by a transversal, making the corresponding angles equal, the lines are parallel.*

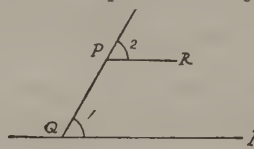
99. *Corol. 2 If two lines are cut by a transversal, making the two interior (exterior) angles on the same side of the transversal supplementary, they are parallel.*

100. *Corol. 3. If two lines are cut by a transversal, making the alternate-exterior angles equal, the lines are parallel.*

EXERCISE.

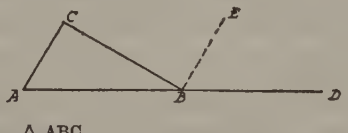
Write out proof of the corollaries stated under theorems 15 and 16.

101. *Problem 7. Through a given external point, to draw a line parallel to a given line.*



Given. Point P not on line l.
Required. To construct a line through P, ∥ to l.
Construction. Draw any line m through P cutting l in the point Q.
At P construct ∠ 2 = ∠ 1, drawing the line PR.
PR is the required line.
Proof to be supplied by pupil.
What other angles might have been constructed at P?
Would it have helped to have drawn the line through P ⊥ to l?

102. *Theorem 17. The sum of the angles of a triangle is equal to two right angles.*



Given. △ ABC.
To be proved. ∠ A + ∠ B + ∠ C = 2 rt ∠s.
Proof. Extend the base AB to D and draw BE ∥ to AC.
At B we have
∠ ABC = ∠ B
∠ DBE = ∠ A Par. 94.
∠ CBE = ∠ C. Par. 93.
Adding ∠ ABC + ∠ DBE + ∠ CBE = ∠ A + ∠ B + ∠ C
= 2 rt ∠s, q. e. d.
since ABD is a straight angle.

103. Def. The *exterior angle* of a rectilinear figure is the angle between one side and an adjacent side produced.

Corol. 1. The exterior angle of a triangle is equal to the sum of the two opposite interior angles.

In the above figure, ∠ DBC is an exterior angle.

104. *Corol. 2. The exterior angle of a triangle is greater than either of the two opposite interior angles.*

105. *Corol. 3. A triangle can have but one right or one obtuse angle.*

It follows, that the other angles of a right triangle are acute angles. See par. 84.

106. *Corol. 4. If two triangles have two angles of one equal to two angles of the other, their third angles are equal.*

EXERCISE. 1. Prove theorem 17 by drawing a line through the vertex parallel to the base.

2. Two triangles are congruent if a side and two angles of one are equal respectively to a side and two corresponding angles of the other.

107. *Theorem 18. If the sides of one angle are parallel respectively to the sides of another, the angles are equal or supplementary.*

Produce two of the non-parallel sides till they meet. The figure will indicate the proof, the angle formed at the intersection of these lines being equal to one of the angles and equal or supplementary to the other. Distinguish between the cases.

A similar theorem may be stated and proved if the sides of the angles are perpendicular

QUADRILATERALS.

108. Def. A rectilinear figure having four sides is called a *quadrilateral.* If two of the sides are parallel, the figure is a *trapezoid.* If the opposite sides are parallel, the figure is a *parallelogram.* Symbol □.

109. Def. If the adjacent sides of a parallelogram are equal, the figure is a *rhombus.* It can be shown that all the sides of a rhombus are equal.

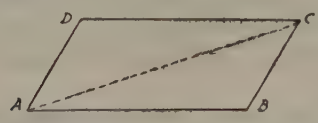
110. Def. If one angle of a parallelogram is a right angle, the figure is a *rectangle.* It will appear that all the angles of a rectangle are right angles.

111. Def. If the adjacent sides of a parallelogram are equal and one angle of the parallelogram is a right angle, the figure is a *square.* It follows from the above, that a square may be thought of as a rhombus or as a rectangle. All its sides are equal and all its angles are right angles. See Exercises following par. 120.

112. Def. The side on which the figure seems to rest is called the *base.* In case the side opposite the base is parallel to it, it is called the *upper base.* The perpendicular distance between the bases in this case is called the *altitude.* In the case of a triangle, the perpendicular distance from the vertex to the base is called the *altitude* of the triangle.

The *diagonal* of any rectilinear figure is the segment joining any two vertices which do not lie on a common side.

113. *Theorem 19. The opposite sides of a parallelogram are equal.*



Given. ABCD a □.
To be proved. AB = CD and AD = BC.
Proof. Draw the diagonal AC.
In △ ABC and ACD,

	AC = AC	Common.
	∠ BAC = ∠ ACD	
and	∠ ACB = ∠ CAD	Theo. 15.
	∴ △ ABC ≅ △ ACD.	Theo. 3.
	∴ AB = CD and AD = BC, q. e. d.	Par. 30.

114. *Corol. 1. The opposite angles of a parallelogram are equal.*

This follows from the above or it may be proved immediately from Theorem 18.

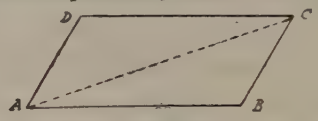
115. *Corol. 2. A diagonal bisects a parallelogram into two congruent triangles.*

116. *Corol. 3. Segments of parallel lines cut off by parallel lines are equal.*

117. *Corol. 4. Two parallel lines are everywhere equally distant.*

The distance is measured along the perpendiculars dropped from points on one line to the other. What is true of perpendiculars to the same line?

118. *Theorem 20. (Converse of Theo. 19.) If the opposite sides of a quadrilateral are equal, the figure is a parallelogram.*

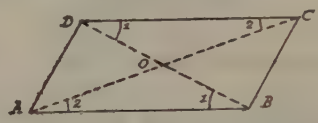


Suggestion. Draw the diagonal AC, and prove the △ ABC and ACD congruent by Theorem 6. Then ∠ ACB = ∠ CAD and AB is ∥ to CD. Similarly, AD ∥ BC.

119. *Theorem 21. If two sides of a quadrilateral are equal and parallel, the figure is a parallelogram.*

Use the same figure as above.
Show △ ABC and ACD congruent by Theorem 2, and proceed as in the preceding theorems.

120. *Theorem 22. The diagonals of a parallelogram bisect each other.*



Given. □ ABCD, with diagonals AC and BD meeting at O.
To be proved. AO = OC and BO = OD.
Proof. In △ ABO and CDO, we have

	AB = CD	Theo. 19.
	∠ ABO = ∠ CDO	
and	∠ BAO = ∠ DCO.	Theo. 15.
	∴ △ ABO ≅ △ CDO.	Theo.
	∴ AO = OC	
and	BO = OD. q. e. d.	Par. 30.

EXERCISES.

Prove the following true statements.

1. The angles of a rectangle are all right angles.

2. All the sides of a square are equal and all its angles are right angles.

3. If the diagonals of a quadrilateral bisect each other, the figure is a parallelogram.

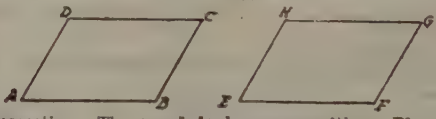
4. The diagonals of a rhombus bisect each other at right angles.

5. The diagonals of a rectangle are equal.

6. If one angle of a parallelogram is given, the others are determined.

7. If the diagonals of a quadrilateral bisect each other and are equal, the figure is a rectangle.

121. *Theorem 23. Two parallelograms are congruent if an angle and the two adjacent sides of one are equal respectively to an angle and the two adjacent sides of the other.*

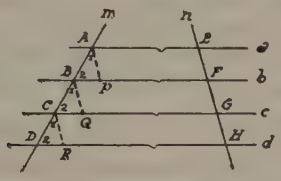


Suggestion. The proof is by superposition. Place □ EFGH on □ ABCD so that the equal angles and corresponding sides of the two figures coincide. The opposite sides will coincide by Post 7.

122. *Corol. Two rectangles are congruent if two adjacent sides of one are equal respectively to two adjacent sides of the other.*

EXERCISE. When are squares equal?

123. *Theorem 24. If three or more parallels cut off equal segments on one tranversal, they cut off equal segments on every transversal.*



Given. ∥s a, b, c, and d cut by transversal m at the points A, B, C and D, AB = BC = CD, and transversal n cutting the ∥s at E, F, G and H.

To be proved. EF = FG = GH.

Proof. Through A, B, and C draw lines ∥ to n, cutting the parallels at P, Q and R as in the figure.

Then AP, BQ, and CR are ∥. Par. 90.

The angles marked 1 are equal. Par. 94.

Similarly, the angles marked 2 are equal.

also AB = BC = CD. Given.

∴ △ ABP ≅ BCQ ≅ △ CDR. Par. 66.

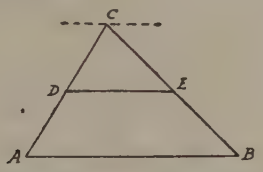
∴ AP = BQ = CR.

But AP = EF, BQ = FG, CR = GH. Par. 116.

(Segments of parallel lines cut off by parallel lines are equal.)

∴ EF = FG = GH. q. e. d. Par. 18.

124. *Corol. A line through the mid-point of one side of a triangle parallel to the base, bisects the other side.*



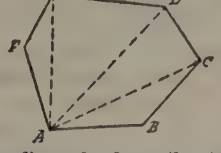
Draw a line through the vertex parallel to the base. This gives three parallel lines and we can apply the theorem.

POLYGONS.

125. Def. A rectilinear figure of more than four sides is called a *polygon.* This term is also used to include triangles and quadrilaterals. Special terms are used to designate polygons having a certain number of sides. A *pentagon* is a five sided figure. A *hexagon* is a six sided figure. Other names used are heptagon, octagon, decagon, duodecagon, etc.

The sum of the lengths of the sides of a polygon is called the *perimeter.*

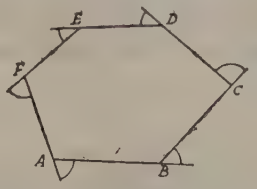
126. *Theorem 25. The sum of the interior angles of a polygon is equal to the number of sides less two times two right angles.*



Draw all the diagonals from the point A. Notice that the number of triangles formed in this manner will always be equal to the number of the sides less two, the two adjacent to A. The sum of the angles of these triangles is equal to the sum of the interior angles of the polygon. But the sum of the angles of a triangle is equal to two right angles. The theorem follows.

Write out complete proof.

127. *Theorem 26. The sum of the exterior angles of a polygon, made by producing each side in succession, is equal to four right angles.*



The sum of the interior and exterior angle at each vertex is equal to 2 rt ∠. The sum of the interior angles is (n − 2) × 2 rt ∠ = n × 2 rt ∠ − 4 rt ∠. Since there are n vertices, the first part of this expression represents the sum of the interior and exterior angles. Therefore, the last part must be the sum of the exterior angles, i. e., 4 rt. ∠.

LOCI.

128. Def. *The locus of a point, or locus of points,* is the path traced by a point moving under certain geometric conditions. It includes (1) all points that satisfy the given conditions, and (2) no other points.

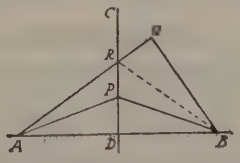
For example, the circle can be defined as the locus of points equally distant from a fixed point.

The locus of points equally distant from two parallel lines is a line parallel to and mid-way between them.

The locus of points one inch from a given line is composed of two lines, one on each side of the given line, parallel to it at a distance of one inch.

129. To prove that a straight or curved line is the locus defined by a given set of conditions two things are necessary. (1) Proof that every point on the line or lines satisfies the given conditions. (2) Proof that any point not on the line or lines does not satisfy the conditions.

130. *Theorem 27. The locus of points equally distant from the ends of a segment is the perpendicular-bisector of the segment.*



Given. CD the perpendicular-bisector of AB.

To be proved. CD is the required locus.

Proof. (1) Every point on CD satisfies the conditions.

Let P be any point on CD, and draw AP and BP.

In rt. △ PAD and PBD,

AD = BD Const.

and PD = PD Common.

∴ △ PAD ≅ △ PBD. Par. 64.

∴ PA = PB. q. e. d. ?

and any point P on CD is equally distant from A and B.

(2). Any point Q not on CD is not equally distant from A and B.

Draw QA and QB and let QA intersect CD at R.

Draw RB.

Then BQ < BR + RQ Post. 3.

(A segment is the shortest distance between two points.)

But AR = BR (1) above.

and BQ < AR + RQ. Ax. 8.

∴ BQ < AQ

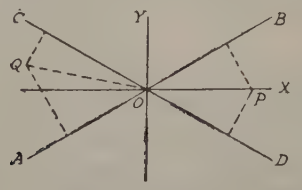
and any point Q not on CD is unequally distant from A and B.

∴ CD is the required locus. q. e. d.

EXERCISE. The locus of a point equally distant from the vertices of a triangle is the intersection of the perpendicular-bisectors of the sides.

131. Def. When three or more lines pass through the same point, as in the above exercise, they are said to be *concurrent.*

132. *Theorem 27. The locus of points equally distant from two intersecting lines is the pair of bisectors of the angles formed by the given lines.*



Given. AB and CD intersecting at O and OX and OY bisectors of the angles so formed.

To be proved. OX and OY is the required locus.

Proof. (1) Take P any point on the assumed locus and drop ⊥s on the given lines. The rt △ so formed are congruent, and, therefore, the perpendiculars are equal.

(2). Take any point Q not on the bisectors and drop ⊥s to the given lines. Show that these ⊥s are unequal by showing that if they are equal then Q will have to lie on the bisectors.

EXERCISES.

1. The perpendicular-bisectors of the sides of a triangle are concurrent.
2. The bisectors of the angles of a triangle are concurrent.

Def. The line segment drawn from a vertex of a triangle to the middle point of the opposite side is called a *median.*

3. The medians of a triangle are concurrent in a point two thirds of the distance from the vertex to the base.
4. The altitudes of a triangle are concurrent.

133. Many interesting and valuable theorems concerning the properties of rectilinear figures can be developed from the preceding work. The student should notice all theorems that prove lines or angles equal or figures congruent. It is helpful to write out a list of all theorems that might be valuable in solving particular types of propositions. The statement of what is "to be proved" indicates the group of theorems in which the "reasons" of the proof are most likely to be found.

INEQUALITIES.

134. Many times it is necessary to prove certain magnitudes greater or less than others. This calls for a group of theorems which are stated here for reference. They are not necessary in the further development of geometry, but they are useful many times in the applications of the science.

EXERCISES.

1. If one angle of a triangle is greater than a second, the side opposite the greater angle is the greater side.
2. Converse of 1. If one side of a triangle is greater than a second, the angle opposite the greater side is the greater angle.
3. If two lines drawn from a point in a perpendicular cut off unequal distances from the foot of the perpendicular, they are unequal and the more remote is the greater.
4. Two lines drawn from a point to the extremities of a segment are greater than the lines from any point within the triangle so formed.
5. The sum of any two sides of a triangle is greater than the third side, and the difference is less than the third side.

CIRCLES.

135. A circle was defined in Par. 26. The terms center, radius and circumference were also explained. Symbol is ⊙.

136. Def. A *chord* of a circle is any segment whose end points lie on the circumference of the circle.

137. Def. A *diameter* is a chord which passes through the center of the circle.

It follows at once that *all diameters of the same circle or of equal circles are equal.*

The diameter equals twice the radius.

138. Def. A part of the circumference is called an *arc.*

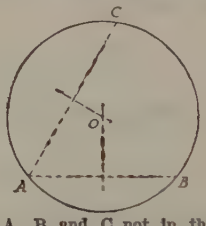
Half of the circumference is called a *semi-circumference.*

An arc less than a semi-circumference is called a *minor arc.* One greater than a semi-circumference is called a *major arc.* Unless otherwise stated, the word arc will mean minor arc.

139. Def. An angle whose vertex is at the center of the circle is called a *central angle.* It is said to *intercept* the arc between its sides while the arc is said to *subtend* the central angle. The chord joining the end points of the arc is said to *subtend* the arc.

140. Def. An angle whose vertex is on the circumference and whose sides are chords is called an *inscribed angle.*

141. *Problem 8. To draw a circle which will pass through three given points not in the same straight line.*



Given. Points A, B and C not in the same straight line.

Required. To draw a circle through A, B and C.

Construction. Construct the perpendicular-bisector of the segments AB and AC. Let these ⊥s meet at O.

With O as center and OA as radius, draw the required circle.

Proof. OA = OB.

and OB = OC. Par. 130.

(O lies on the ⊥ bisector of each segment.)

∴ OA = OB = OC. q. e. d.

Def. A circle is said to be *circumscribed* about a polygon when all the vertices of the polygon lie on the circumference of the circle.

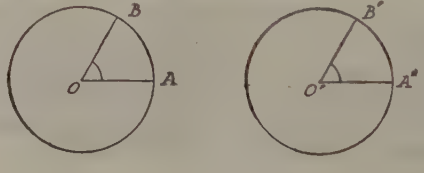
142. *Corol. 1. A circle can be circumscribed about a triangle.*

143. *Corol. 2. Through three points not in the same straight line, one and only one circle can be drawn.*

It is only necessary to show that any other point than O is not equally distant from A, B and C.

See Exercise 3 following Par. 134.

144. *Theorem 28. In the same circle or in equal circles, equal central angles intercept equal arcs on the circumference.*



Note: It will be sufficient to consider the case of equal circles.

Given. Equal ⓢ O and O′ and ∠ AOB = ∠ A′O′B′.

To be proved. Arc AB = Arc A′B′.

Proof. Place ⊙ O′ on ⊙ O so that O′ will fall on O and O′A′ will fall on OA.

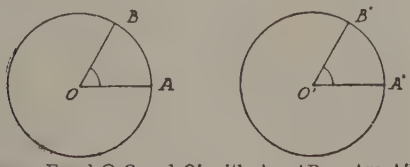
Then O′B′ will fall along OB since ∠AOB = ∠ A′O′B′ and B′ will fall on B, since OB = O′B′.

(Radii of equal circles are equal.)

∴ Arc A′B′ will coincide with AB. q. e. d.

(Equal circles are congruent.)

145. *Theorem 29. In the same circle or in equal circles, equal arcs subtend equal central angles.*

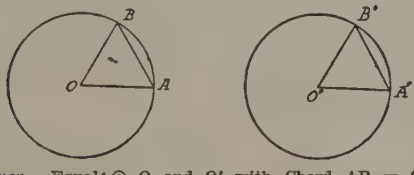


Given. Equal ⓢ O and O′ with Arc AB = Arc A′B′.

To be proved. ∠ AOB = ∠ A′O′B′.

Proof. Place ⊙ O on ⊙ O′ so that the centers coincide and rotate them till the equal arcs coincide. Then the central angles will also coincide.

146. *Theorem 30. In the same circle or in equal circles, equal arcs are subtended by equal chords.*



Given. Equal ⓢ O and O′ with Chord AB = Chord A′B′.

To be proved. Arc AB = Arc A′B′.

Proof. The proof follows by superposition; or the theorem may be proved as follows. Draw radii to the ends of the equal chords. The triangles so formed are congruent by theorem 6. The central angles are therefore equal and the theorem follows by Par. 144.

147. *Theorem 31. In the same circle or in equal circles, equal chords subtend equal arcs.*

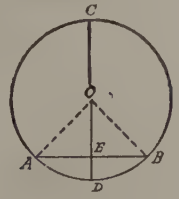
This is the converse of Theorem 30 and the proof follows in a similar manner. Prove △ congruent by Theorem 2.

EXERCISE. Using the exercises under Par. 134, prove the following statements about unequal angles, arcs and chords.

1. In the same circle or in equal circles, unequal central angles intercept unequal arcs, the greater angle intercepting the greater arc, and conversely.

2. In the same circles or in equal circles, unequal chords subtend unequal arcs, the greater chord subtending the greater arc, and conversely.

148. *Theorem 32. A line through the center of a circle, perpendicular to a chord, bisects the chord and its subtended arcs.*



Given. Line CD ⊥ to chord AB of ⊙ O at E.

To be proved. AE = EB, arc AD = arc DB, and arc AC = arc BC.

Proof. Draw radii OA and OB forming rt. △ OAE and OBE.

Show these triangles congruent. Par. 86.

∴ AE = EB q. e. d.

and ∠ AOD = ∠ BOD. ?

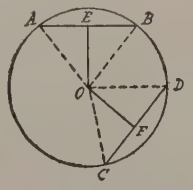
∴ arc AD = arc BD. q. e. d. Par. 144.

Also arc AC = arc BC. q. e. d. ?

149. *Corol. 1. A diameter bisects the circumference.*

150. *Corol. 2. The perpendicular bisector of a chord passes through the center of the circle and bisects the arcs subtended by the chord.*

151. *Theorem 33. In the same circle or in equal circles, equal chords are equi-distant from the center; and, conversely, chords equi-distant from the center are equal.*



Given. Chord AB = chord CD in ⊙ O.

To be proved. OE = OF.

Proof. OE and OF are drawn ⊥ to AB and CD respectively. Draw radii OA and OC. Show the rt. △ OEA and OFC congruent. Then AE = CF. Also, OE and OF bisect AB and CD by the preceding theorem.

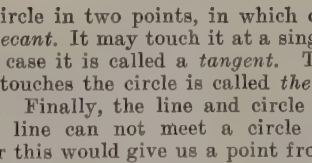
To prove the converse part of the theorem a separate statement of the "Given" data must be made. Use the same figure.

152. *Corol. 1. In the same circle or in equal circles, unequal chords are unequally distant from the center, the more remote being the smaller; and conversely.*

EXERCISE. State and prove the converse of Par. 152.

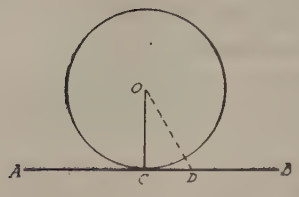
153. *Corol. 2. The greatest chord that can be drawn in a circle is a diameter.*

154. When we consider a line and a circle, we find three conditions possible. The line may



cut the circle in two points, in which case it is called a *secant.* It may touch it at a single point, in which case it is called a *tangent.* The point where it touches the circle is called *the point of tangency.* Finally, the line and circle may not meet. A line can not meet a circle in three points for this would give us a point from which three equal lines would be drawn to a line which is impossible.

155. *Theorem 34. A line perpendicular to a radius at its extremity on the circumference is tangent to the circle.*



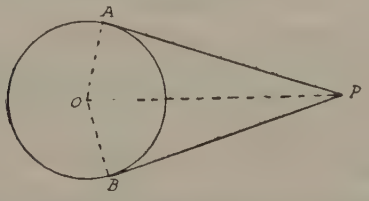
Given. AB ⊥ OC, a radius of ⊙ O, at C.
To be proved. AB is tangent to ⊙ O.
Proof. Draw OD from O to any point of AB except C.
Then OD > OC. Par. 81.
∴ D does not lie on the ⊙.
∴ Only one point of AB is on the ⊙. Hence, by definition, AB is tangent to ⊙. q. e. d.

156. *Corol. 1. A tangent to a circle is perpendicular to the radius drawn to the point of contact.*

157. *Corol. 2. Only one tangent can be drawn to a circle at a given point.*

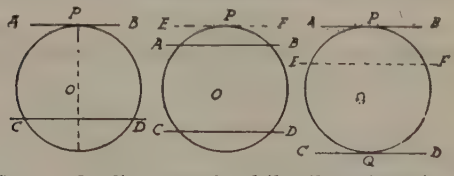
158. *Corol. 3. A line perpendicular to a tangent to a circle at its point of contact, passes through the center of the circle.*

159. *Theorem 35. The tangents to a circle drawn from an external point are equal.*



Given. Lines AP and BP tangent to ⊙ O from point P outside the ⊙.
To be proved. AP = BP.
Proof. Draw the line OP and the radii OA and OB.
Triangles AOP and BOP are rt. △ which have their hypothenuse a common line and corresponding legs equal. Therefore, they are congruent and the other legs are equal.

160. *Theorem 36. Two parallel lines intercept equal arcs on a circumference.*



Case 1. One line a secant and the other a tangent.
Given. AB tangent to ⊙ O at P and secant CD ∥ AB.
To be proved. Arc CP = Arc DP.
Proof. Draw radius OP.
OP ⊥ to AB and therefore to CD. ?
∴ OP bisects the arc CPD. Par. 148.
∴ Arc CP = Arc DP.
Case 2. The lines both secants.
Given. ∥s AB and CD, secants of ⊙ O.
To be proved. Arc AC = Arc BD.
Proof. Draw EF ∥ to AB and CD, tangent to ⊙ O at P.
(Note. The point P is found by drawing the ⊥ from O to AB cutting the ⊙ at P. At P erect a ⊥ to OP. This is the required tangent.)
Then by case 1,
Arc CP = Arc DP,
and Arc AP = Arc BP.
∴ Arc AC = Arc BD. Ax. 3.
Case 3. The lines both tangents.
Suggestion. Draw a secant parallel to the tangents and use case 1.

161. Def. The line joining the centers of two circles is called the *line of centers.*

162. Def. A line tangent to each of two circles is called a *common tangent.* Common tangents that do not cross the line of centers are called *external tangents.* Those which cross the line of centers are called *internal tangents.* By drawing circles, the following cases will be noted.

1. No points in common. One circle may lie entirely inside the other in which case there are no common tangents. One circle may lie entirely outside the other, in which case there are four common tangents, two internal and two external.

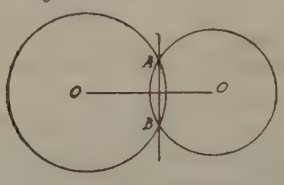
2. One point in common. They are both tangent to the same line at this point and also tangent to each other. If they lie on the same side of the tangent, they are said to be tangent internally, in which case they have no other common tangents. If they lie on opposite sides of this tangent, they are said to be tangent externally, in which case they have two common external tangents and the one internal tangent.

3. Two points in common. These points are called *the points of intersection.* The segment connecting them is the *common chord* of the two circles. In this case, the circles have two common external tangents but no common internal ones.

Two circles cannot intersect in more than two points or they would coincide by Par. 143.

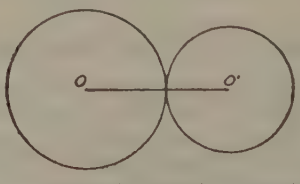
EXERCISE. Draw all cases discussed in Par. 161.

163. *Theorem 37. The line of centers is the perpendicular-bisector of the common chord of two intersecting circles.*



Suggestion. The centers are each equally distant from the end points of the common chord. Use Par. 74.

164. *Theorem 38. The line of centers passes through the point of tangency of two tangent circles.*



Suggestion. The line of centers is the shortest distance between the centers and is equal to the sum of the distances from the centers to the point of contact.

MEASUREMENT OF ANGLES.

165. Def. The *measure* of a magnitude is the number of times it contains another magnitude of the same kind which has been agreed upon as the unit of measure.

This unit is arbitrary and may be taken at pleasure. To avoid confusion and to insure fair measure most countries have passed laws making certain magnitudes the unit of measure for all other magnitudes of the same kind; as the foot, the pound, the gallon, etc. The official units for the United States are kept in Washington, D. C.,

but very accurate copies of each are to be found in the various states and cities.

166. Def. The *ratio* between two magnitudes is the quotient of their numerical measures. If the quotient is an integer or a rational fraction, the magnitudes are said to be *commensurable*. If not, the magnitudes are said to be *incommensurable*. Incommensurable magnitudes exist but for all practical purposes they can be replaced by commensurable magnitudes. It is only with the latter that we will concern ourselves at present.

It should be noted that the measure of a magnitude is the ratio it bears to the unit of measure.

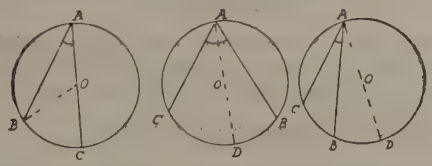
167. Def. In order to establish a connection between central angles and their intercepted arcs, the unit of measure for the arc is chosen as follows. A circumference equals 360 *degrees of arc*. Symbol °. A semi-circumference equals 180°, a quadrant or fourth part of a circumference equals 90°. Each degree of arc is divided into sixty equal parts called *minutes of arc*. Symbol ′. Each minute is divided into sixty equal parts called *seconds of arc*. Symbol ″.

By comparing the above with Par. 50, we are led to accept the following theorem without additional proof.

168. *Theorem 39. In the same circle or in equal circles, central angles have the same ratio to each other as their intercepted arcs.*

169. *Corol. A central angle is measured by its intercepted arc,* i. e., the number of degrees, minutes and seconds in a central angle equals the number of degrees, minutes and seconds of arc in the intercepted arc.

170. *Theorem 40. An inscribed angle is measured by one half its intercepted arc.*



Case 1. The center on one side of the angle.
Given. ∠ BAC inscribed in ⊙ O, side AC passing through O.
To be proved. ∠ BAC is measured by ½ arc BC.
Proof. Draw OB. △ AOB is isosceles.
∴ ∠ A = ∠ B
Also ∠ BOC = ∠ A + ∠ C Par. 103, Cor. 1.
= 2 × ∠ BAC
Or ∠ BAC = ½ ∠ BOC.
But BOC is measured by arc BC.
∴ BAC is measured by ½ arc BC. q. e. d.
Case 2. The center within the angle.
Draw the diameter AD. Apply case 1 to both of the inscribed angles so formed. Then add.
Case 3. The center outside the angle.
The proof is similar to that suggested in case 2.

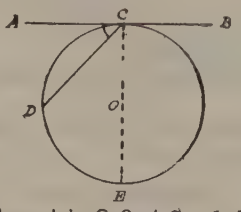
171. Def. A *segment* of a circle is the portion of the plane bounded by a chord and its subtended arc. When the chord is a diameter, the segment is a *semi-circle*.

172. Def. A *sector* of a circle is the portion of the plane bounded by two radii and their intercepted arc. When the radii are perpendicular, the sector is a *quadrant* or the fourth part of a circle.

173. Def. An angle is said to be *inscribed in* a segment when its vertex lies on the arc and the sides of the angle pass through the end points of the arc of the segment.

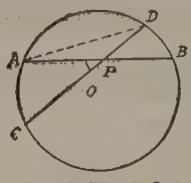
174. *Corol. An angle inscribed in a semicircle is a right angle.*

175. *Theorem 40. The angle formed by a tangent to a circle and a chord drawn from the point of contact is measured by one half the intercepted arc.*



Given. AB tangent to ⊙ O at C and chord CD.
To be proved. ∠ACD is measured by ½ arc CD.
Proof. Draw diameter COE. This will be ⊥ to AB. ?
∴ ∠ ACE = 90° and is measured by ½ arc CDE. ?
Also ∠ DCE is measured by ½ arc DE. ?
∴ ∠ ACD is measured by ½ arc CD. q. e. d. Ax. 8.

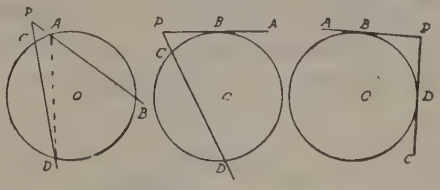
176. *Theorem 41. The angle formed by two chords intersecting within a circle, is measured by half the sum of the intercepted arcs.*



Given. Chords AB and CD of ⊙ intersecting at P.
To be proved. ∠ APC is measured by ½ (arc AC + arc BD).

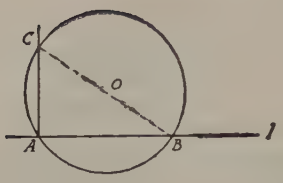
Proof. Draw the line AD. The required angle is the sum of the two inscribed angles formed at A and D and is therefore measured by one half the sum of their intercepted arcs.

177. *Theorem 42. If two secants, a secant and a tangent, or two tangents to a circle meet outside the circle, the angle so formed is measured by one half the difference of the intercepted arcs.*



Case 1. Two secants.
Given. Secants AB and CD meeting at P.
To be proved. ∠ P is measured by ½ (arc BD — arc AC).
Proof. Draw AD.
∠ BAD = ∠ D + ∠ P. Par. 103, Cor. 1.
∴ ∠ P = ∠ BAD — ∠ D.
But ∠ BAD is measured by ½ arc BD and ∠ D is measured by ½ arc AC. Par. 170.
∴ P is measured by ½ (arc BD — arc AC). q. e. d.
The proof of other two cases is left to reader.

178. *Problem 9. To erect a perpendicular to a line at a given point.*



Given. Point A on line l.

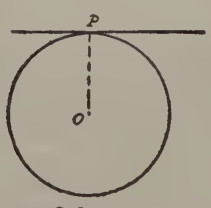
Required. To erect a ⊥ at A.

Construction. With any convenient point O as center and OA as radius draw a ⊙ cutting l at B. Draw the diameter BOC. Draw the line AC.

AC is the required line.

Proof. ∠ CAB is a rt. ∠ being inscribed in a semicircle. Par. 174.

179. *Problem 10. To draw a tangent to a circle at a given point.*

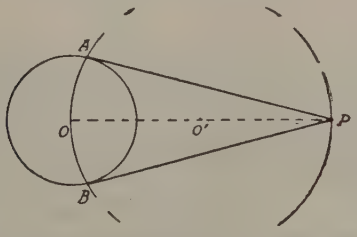


Given. Point P on ⊙ O.

Required. To draw the tangent at P.

Construction. The solution is suggested in the proof of Theorem 34, Par. 155.

180. *Problem 11. To draw a tangent to a circle from a given external point.*



Given. Point P outside ⊙ O.

Required. To draw a tangent to the ⊙ through P.

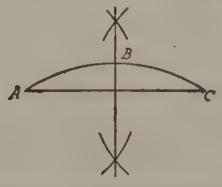
Construction. With OP as diameter, draw a circle intersecting the given circle at A and B. Draw PA and PB. Either is the required tangent.

Proof. ∠ PAO = ∠ PBO = a rt. ∠. Par. 174.

∴ PA and PB are ⊥ to the radii OA and OB respectively.

∴ PA and PB are tangent to ⊙ O. q. e. d. Par. 155.

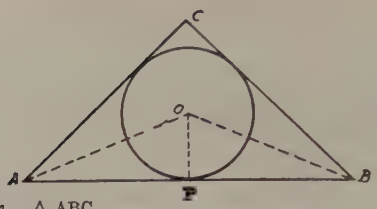
181. *Problem 12. To bisect a given arc.*



Suggestion. Bisect its subtending chord, or its central angle.

182. **Def.** A circle is said to be *inscribed in* a polygon when it is tangent to all the sides of the polygon.

183. *Problem 13. To inscribe a circle in a triangle.*



Given. △ ABC.

Required. To inscribe a ⊙ in △ ABC.

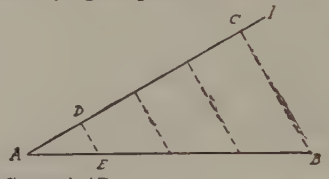
Construction. Draw the bisectors of ∠ A and B, meeting in the point O.

Draw the ⊥ OP from O to the side AB.

With OP as radius draw the required circle.

Proof. Show O equally distant from all three sides of the triangle.

184. *Problem 14. To divide a segment into any number of equal parts.*



Given. Segment AB.

Required. To divide it into any number of equal parts.

Construction. On any convenient line l through A and with any convenient length, measure off as many equal parts as are required, as four, letting the end of the last equal segment fall at C.

Draw BC and through the ends of each equal segment on l draw parallels to BC.

These parallels will divide AB into the required number of equal parts. Prove.

EXERCISES.

1. Given two adjacent sides and the included angle, construct the parallelogram.
2. Given a side, construct the square.
3. Given the diagonals, construct the rhombus.
4. Given the hypothenuse, and an acute angle, construct the triangle.

PROPORTION.

185. **Def.** A statement of equality between two ratios is called a *proportion.* The four numbers forming the two ratios are said to be *in proportion.*

Notation. A proportion is written

$$\frac{a}{b} = \frac{c}{d}, \text{ or } a : b = c : d.$$

which is read a is to b as c is to d.

The first and third terms in a proportion are called *antecedents.* The second and fourth terms are called *consequents.*

The first and fourth terms in a proportion are called *extremes.* The second and third are called *means.*

186. **Def.** The *fourth proportional* to three numbers is the number which completes the proportion; $a : b = c : x$.

187. If four numbers are in proportion, they can be grouped together in many ways. Starting with the fractional form, we will use the principles of algebra to derive some of these relations.

188. *Theorem 43. If four numbers are in proportion, either pair may be taken as the means and the other as the extremes.*

Given. $\frac{a}{b}=\frac{c}{d}$. Fundamental relation.

To be proved. $\frac{b}{a}=\frac{d}{c}$.

Proof. Clearing of fractions we get

$$bc = ad. \quad (1)$$

Dividing both sides by ac gives

$$\frac{bc}{ac}=\frac{ad}{ac},$$

or, $$\frac{b}{a}=\frac{d}{c}.$$ q. e. d. (2).

189. In a brief form, the more important laws of proportion are stated below with proofs indicated in all cases.

If four numbers are in proportion, they are in proportion

1. By Alternation; ie., $$\frac{a}{c}=\frac{b}{d}. \quad (3)$$

In relation 1 above divide by cd.

2. By Inversion; ie., $$\frac{b}{a}=\frac{d}{c}. \quad (4)$$

In relation 1 divide by ac.

3. By Composition; ie., $$\frac{a+b}{b}=\frac{c+d}{d}. \quad (5)$$

For $\frac{a}{b}+1=\frac{c}{d}+1$, and clearing of fractions gives the required equation.

4. By Division; ie., $$\frac{a-b}{b}=\frac{c-d}{d}. \quad (6)$$

Subtract 1 from each side of the Fund. Rel. and clear of fractions on each side of the equality.

5. By Composition and Division; ie.,

$$\frac{a+b}{a-b}=\frac{c+d}{c-d}. \quad (7)$$

Divide (5) by (6).

190. Def. In a series of equal ratios, if the consequent of each ratio is the antecedent of the one following, the numbers are said to be in *continued proportion.*

If three numbers are in continued proportion, the common term is called the *mean proportional* between the other two. The last term is called the *third proportional.*

191. *Theorem 44. The mean proportional between two numbers is the square root of their product.*

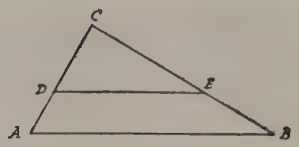
Given. $\frac{a}{b}=\frac{b}{c}$

Then, $ac = bb = b^2$ Par. 188, (1).

$\therefore \quad b=\sqrt{ac}.$ q. e. d.

192. In proportion, it is customary to speak of the ratio between the magnitudes, when the ratio between the numbers which measure these magnitudes is meant.

193. *Theorem 45. A line parallel to one side of a triangle intersecting the other two sides, divides those sides proportionally.*



Given. $\triangle$ ABC and DE $\parallel$ to AB.

To be proved. AD : DC = BE : EC.

Proof. Consider only the commensurable case where AD and DC have a common unit of measure.

Let this common unit of measure be contained 3 times in AD and 4 times in DC.

Then $\frac{AD}{DC}=\frac{3}{4}$.

Through the points of division of AC draw $\parallel$s to AB. These lines do not appear in the figure.

These lines will divide BE into 3 and EC into 4 equal parts. Par. 123.

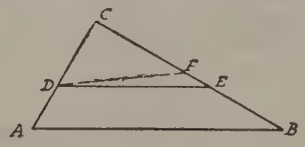
$\therefore \quad \frac{BE}{EC}=\frac{3}{4}$.

$\therefore \quad \frac{AD}{DC}=\frac{BE}{EC}$. q. e. d. ?

194. *Corol. A line parallel to one side of a triangle, intersecting the other two sides, divides these sides in such a way that one side is to either of its segments as the other side is to its corresponding segment.*

This may be proved directly or by using the law of composition on the above proportion. The corollary states $\frac{AC}{AD}=\frac{BC}{BE}$ and $\frac{AC}{DC}=\frac{BC}{EC}$.

195. *Theorem 46. (Converse of Theorem 45) A line which divides two sides of a triangle proportionally is parallel to the third side.*



Given. $\triangle$ ABC and line DE cutting AC and BC so that $\frac{AD}{AC}=\frac{BE}{BC}$.

To be proved. DE $\parallel$ AB.

Proof. Draw a line through D parallel to AB, cutting BC at F. It is sufficient to show that F must coincide with E.

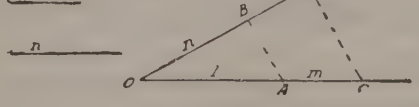
Since $\frac{AD}{AC}=\frac{BE}{BC}$,

and by const. $\frac{AD}{AC}=\frac{BF}{BC}$, Par. 194.

$\therefore$ F and E must coincide. q. e. d. Why?

NOTE.—Any proportion in pars. 193 and 194 may be taken when it is given that the two sides of a triangle are divided proportionally.

196. *Problem 15. To construct a fourth proportional to three given line segments.*

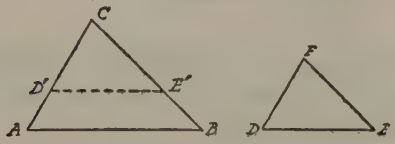


Given. Segments l, m and n.
Required. To construct their fourth proportional.
Construction. Take any two intersecting lines and on one line measure l and m and on the other measure n as in the figure. Draw AB through the end points of l and n. Draw CD through the end point, C, of m parallel to AB, cutting the other line at D. Then BD is the required line, for $\frac{l}{m} = \frac{n}{x}$. Par. 193.

SIMILAR POLYGONS.

197. Two polygons are said to be *similar* if their corresponding angles are equal and their corresponding sides are proportional. By corresponding sides of similar figures is meant the sides between pairs of corresponding equal angles. The ratio between any two corresponding sides or segments is called the *ratio of similitude.*

198. *Theorem 47. Two triangles are similar if their corresponding angles are equal.*



Given, △ ABC and DEF with ∠ A = ∠ D, ∠ B = ∠ E, ∠ C = ∠ F.
To be proved. △ ABC is similar to △ DEF.
Proof. Place △ DEF on △ ABC so that ∠ F will fall on its equal ∠ C, D falling at D' on AC and E at E' on BC.
D'E' is parallel to AB, since ∠ A = ∠ D = CD'E'. Par. 98.

$\therefore \frac{AC}{D'C} = \frac{BC}{E'C}$. Par. 193.

$\therefore \frac{AC}{DF} = \frac{BC}{EF}$.

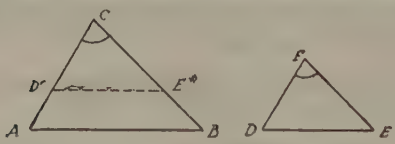
Similarly, $\frac{AC}{DF} = \frac{AB}{DE}$, and the sides are proportional. q. e. d.

199. *Corol. 1. Two triangles are similar if two angles of one equal respectively two angles of the other.*

Their third angles are also equal.

200. *Corol. 2. Two right triangles are similar if an acute angle of one equals an acute angle of the other.*

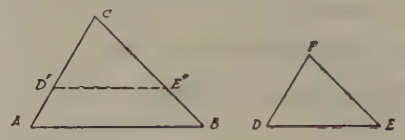
201. *Theorem 48. Two triangles are similar if an angle of one is equal to an angle of the other and the including sides are proportional.*



Write out the proof.
Suggestion. The proof is by superposition, the third side of the superposed triangle being parallel to the corresponding side of the other by Par. 195.

202. *Corol. Two right triangles are similar if the legs of one triangle are proportional to the legs of the other.*

203. *Theorem 49. Two triangles are similar if the sides of one are proportional to the corresponding sides of the other.*



Given. In △ ABC and DEF. $\frac{AB}{DE} = \frac{AC}{DF} = \frac{BC}{EF}$.
To be proved. △ ABC and DEF are similar.
Proof. On CA take CD' = FD and on CB take CE' = FE.
Then △ ABC and CD'E' are similar. Par. 201.

$\therefore \frac{AC}{D'C} = \frac{AB}{D'E'} = \frac{AC}{DF}$.

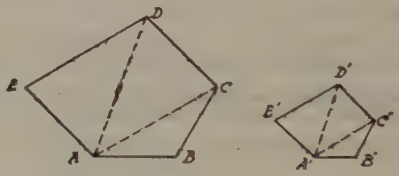
But $\frac{AB}{DE} = \frac{AC}{DF}$. Given.

$\therefore$ DE = D'E',
and △DEF and CD'E' are congruent. ?
$\therefore$ △ ABC and DEF are similar. q. e. d.

204. *Theorem 50. The perimeters of two similar polygons are in the same ratio as any two corresponding sides.*

Apply the law of Composition as many times as the polygon has sides.

205. *Theorem 51. Two polygons are similar if they are composed of the same number of triangles, similar each to each and similarly placed.*



Given. Polygons ABCDE and A'B'C'D'E' with △ ABC similar to △ A'B'C', △ ACD similar to △ A'C'D', and △ ADE similar to △ A'D'E'.
To be proved. ABCDE is similar to A'B'C'D'E'.
Proof. 1. The angles are equal. ∡ B and B' and ∡ E and E' are corresponding angles of similar triangles. ∡ C and C', and ∡ D and D' are equal being the sum of two corresponding angles in similar triangles. ∡ A and A' are equal being the sum of three corresponding angles of similar triangles.

2. The sides are proportional. The polygons are composed of triangles which have at least one side in common. Therefore, the ratio of similitude for one triangle is the same for all the rest and is the ratio of similitude for the polygon. A series of equations which are connected by the ratios of the common sides proves that all sides have a common ratio.

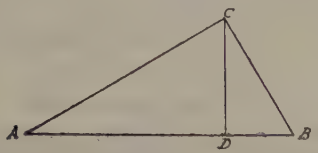
206. *Theorem 52. Two similar polygons can be divided into the same number of similar triangles, similar each to each and similarly placed.*

Suggestion. Take any two similar polygons and draw the diagonals from one vertex. This will divide the polygons into triangles. Starting with the outside triangles, we show them similar by Par. 203. Then take the next triangle. In each case, two sides will be proportional and the included angle can be shown equal.

207. *Theorem 53. If a perpendicular is dropped from the vertex of the right angle to the hypothenuse of a right triangle,*

1. The triangles so formed are similar to the given triangle and to each other,

2. The perpendicular is a mean proportional between the segments of the hypothenuse.



Given. Rt. △ ABC and CD ⊥ to hypothenuse, AB, from C.

To be proved. 1. ▲ ABC, ADC and BDC similar.

2. $DC^2 = AD \times DB$.

Proof. Part 1 follows directly from Par. 200.

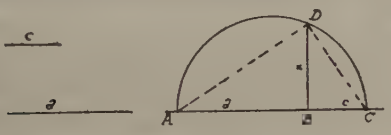
To prove Part 2, consider similar ▲ ADC and BDC.

$AD : DC = DC : DB$ Part 1.

$\therefore DC^2 = AD \times DB$. q. e. d.

208. *Corol. The perpendicular from any point on the circumference to a diameter is a mean proportional between the segments of the diameter.*

209. *Problem 16. To construct a mean proportional to two given segments.*



Given. Segments a and c.

Required. To construct b, a mean proportional between a and c.

Construction. Measure off a and c on a straight line forming ABC. With AC as diameter draw a semi-circumference. At B, erect the perpendicular to AC cutting the circumference at D.

BD is the mean proportional.

Why?

210. Many important relations between the sides of triangles can be established by the use of similar triangles. The methods used are those of algebra and geometry combined. Among these theorems is found a formula for the altitude of any triangle in terms of the three sides. As this will be used later, it is stated here for reference.

Let the sides be a, b, and c,

$$s = \tfrac{1}{2}(a + b + c),$$

and h = the altitude drawn to the side c.

Then

$$h = \frac{2}{c}\sqrt{s(s-a)\ (s-b)\ (s-c)}$$

A similar form holds for the altitudes of the other two sides.

EXERCISES.

1. Two triangles are similar if their sides are parallel each to each or perpendicular each to each.

2. In an oblique triangle, the square of a side opposite an acute (obtuse) angle is equal to the sum of the squares of the other two sides less (plus) twice the product of one of these sides by the projection of the other side upon it.

AREA.

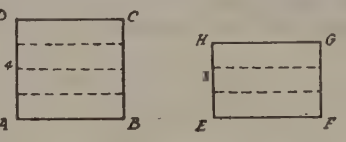
211. Def. The measure of the part of a plane included in a geometrical figure is called the *area of the figure.* It is the ratio the whole figure has to a square, a certain length on each side, which has been agreed upon as the unit of area. The side of the unit of area is usually taken equal to a unit of linear measure as the foot, the inch or the centimeter.

212. Def. Two geometrical figures are said to be *equal* when the measures of the areas included by them are equal in terms of the same unit.

213. *Congruent figures are equal,* but the converse is not necessarily true. See Par. 30.

214. For convenience, the terms triangle, rectangle, parallelogram, circle etc., are often used when the areas of these figures are being considered.

215. *Theorem 54. Two rectangles having equal bases are to each other as their altitudes.*



Consider only the case where the altitudes are commensurable to each other.

Given. Rectangles ABCD and EFGH, bases AB and EF equal.

To be proved. $\dfrac{ABCD}{EFGH} = \dfrac{AD}{EH}$.

Proof. Since the altitudes are commensurable, let the common unit divide AD and EH into m and n equal parts respectively.

Then $\dfrac{AD}{EH} = \dfrac{m}{n}$. Figure.

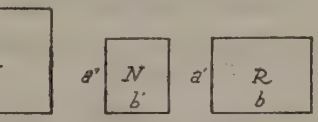
Draw parallels through the points of division dividing the rectangles into m and n equal parts so that

$$\frac{ABCD}{EFGH} = \frac{m}{n}.$$

$$\therefore \frac{ABCD}{EGFH} = \frac{AD}{EH}. \quad \text{q. e. d.}$$

216. *Corol. Two rectangles having equal altitudes are to each other as their bases.*

217. *Theorem 55. Two rectangles are to each other as the products of their bases and altitudes.*



Given. Rectangles M and N with altitudes a and a′ and bases b and b′ respectively.

To be proved. $\dfrac{M}{N} = \dfrac{ab}{a'b'}$.

Proof. Construct a rectangle R with altitude a′ and base b.

Then $\dfrac{M}{R} = \dfrac{a}{a'}$ and $\dfrac{R}{N} = \dfrac{b}{b'}$.

Multiplying the corresponding sides of these two equations gives the required result. q. e. d.

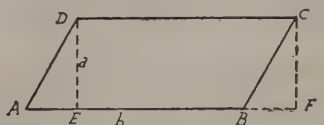
218. *Corol. The area of a rectangle is equal to the product of its base and altitude.*

Suggestion. Take the unit of area as the second rectangle and apply the theorem.

219. This important theorem is used in the upper grades of arithmetic. It is proved there informally by dividing the given rectangle into

squares equal to the unit of area being used, and then counting the squares.

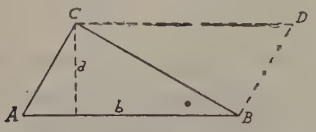
220. *Theorem 56. The area of a parallelogram is equal to the product of its base and altitude.*



Given. □ ABCD, with altitude a and base b.
To be proved. Area ABCD = ab.
Proof. Drop ⊥s CF and DE to the base AB extended. Then rt. △ AED and BFC are equal. Prove this.

∴ Rect. EFCD = □ ABCD
= ab Par. 218.
∴ □ ABCD = ab. q. e. d.

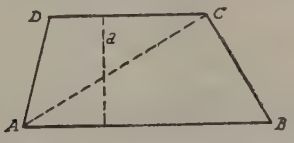
221. *Theorem 57. The area of a triangle is equal to one half the product of its base and altitude.*



Suggestion. The triangle ABC is one half the parallelogram formed by drawing BD and CD parallel to AC and AB respectively. This parallelogram has the same base and altitude as the given triangle.

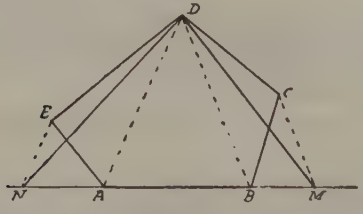
222. *Corol. Two triangles which have the same or equal bases and equal altitudes are equal.*

223. *Theorem 58. The area of a trapezoid is equal to the product of one half the sum of the bases times the altitude.*



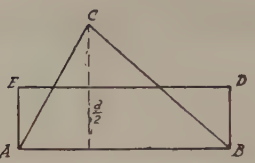
Suggestion. A diagonal will divide the figure into two triangles having equal altitudes and the two bases of the trapezoid as their respective bases.

224. *Problem 16. To construct a triangle equal to a given polygon.*



Given. Polygon ABCDE.
Required. To construct a △ = ABCDE.
Construction. Draw BD and through C draw a line ∥ to BD meeting AB produced at M. Draw DM. Then △ BCD = △ BMD and ABCDE = AMDE. Par. 222.
In the same way, draw △ AND = △ ADE making △ NMD = ABCDE. If the polygon has more than five sides as in the figure continue as indicated.

225. *Problem 17. To construct a rectangle equal to a given triangle.*



Suggestion. On the base of the triangle as the base of the rectangle and with half the altitude of the triangle as the altitude of the rectangle, construct the rectangle.

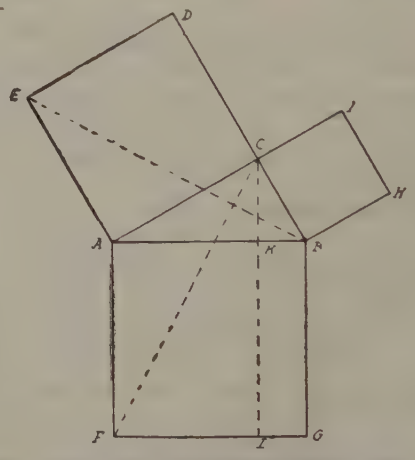
226. *Problem 18. To construct a square equal to a given rectangle.*

Suggestion. For a side of the square use the mean proportional between the base and altitude.

227. Problems 16 to 18 show how to replace any polygon by a square equal to it. One of the famous problems of geometry is known as squaring the circle, where an attempt is made to construct a square equal to a given circle. This is now known to be impossible as it involves the ratio of incommensurable magnitudes; namely, the diameter and circumference of a circle.

228. Among the most used of the theorems of geometry is the one proved in the next section. It is attributed to Pythagoras, a famous philosopher of the 6th century B. C. Many beautiful and interesting proofs of this theorem have been given since his time but none is more used than the one attributed to Euclid. The theorem follows.

229. *Theorem 59. The square on the hypothenuse of a right triangle is equal to the sum of the squares on the two legs.*



Given. Rt. △ ABC, with squares erected on each side.
To be proved. Sq. ABGF = Sq. ACDE + Sq. CBHI.
Proof. Draw CK ⊥ to AB, meeting FG at L.
Draw EB and CF.
Consider △ ACF and ABE. AC = EA, AF = AB and ∠ EAB = ∠ CAF. ∴ the △ are congruent. ?
Now △ EAB = ½ sq. ACDE ?
and △ ACF = ½ Rect. AKLF ?
∴ Sq. ACDE = Rect. AKLF. ?
In a similar manner, drawing AH and CG prove
Sq. CBHI = Rect. LGBK.
Adding these results,
Sq. ABGF = Sq. ACDE + Sq. CBHI.
q. e. d.

230. Other proofs of this important theorem are given in the various treatises on geometry. If the sides opposite the angles are represented by the corresponding small letters, a, b, and c respectively the theorem states

$$a^2 + b^2 = c^2.$$

Also,
$$a^2 = c^2 - b^2.$$

The square on the leg of a right triangle is equal to the square on the hypothenuse minus the square on the other leg.

231. *Area of a triangle in terms of its sides.* In Par. 210 the altitude of a triangle was stated in terms of its sides. Theorem 57 gives the following formula for the area in terms of the sides.

$$\text{Area} = \sqrt{s(s-a)\ (s-b)\ (s-c)}$$

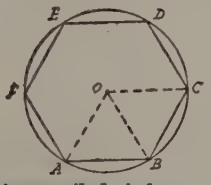
EXERCISES

1. If two triangles have an angle of one equal to an angle of the other, their areas are to each other as the product of the sides including the equal angles.
2. The areas of two similar triangles are to each other as the square of any two homologous sides.
3. The areas of two similar polygons are to each other as the squares of any two homologous sides.

REGULAR POLYGONS AND CIRCLES.

232. Def. A *regular polygon* is a polygon whose sides and angles are equal each to each. We have had examples of regular polygons in the equilateral triangle and the square.

233. *Theorem 60. A circle may be inscribed in or circumscribed about any regular polygon.*



Case 1. The circumscribed circle.
Given. Regular polygon ABCDEF.
To be proved. A circle can be circumscribed about ABCDEF.

Suggestion. Pass a circle through any three consecutive points, as A, B and C, with center at O. See Par. 141. This point O is equally distant from all the other vertices of the polygon. This is shown by proving each triangle formed as in the figure congruent to ABO, remembering that ABO and BCO are isosceles triangles with two sides and two angles equal. Both the angles at B are equal and equal to OCB. Both angles at C are equal. Use Theorem 2.

Case 2. The inscribed circle.
Consider the circumscribed polygon already drawn. The sides of the polygon are equal chords of this circle and, therefore, equally distant from the center O. With this distance as radius, the required circle can be drawn. Write out formal proof.

234. Def. The *center* of a regular polygon is the common center of the inscribed and circumscribed circles.

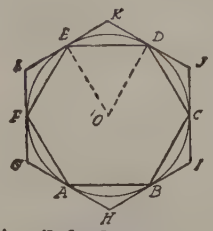
235. Def. The *radius* of a regular polygon is the radius of the circumscribed circle.

236. Def. The *apothem* of a regular polygon is the radius of the inscribed circle.

237. Def. The *central angle* of a regular polygon is the angle at the center between radii drawn to two adjacent vertices.

238. *Corol. In a regular polygon, the central angles are equal.*

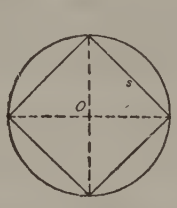
239. *Theorem 61. If a circle is divided into any number of equal arcs, (1), the chords subtending them form a regular inscribed polygon, and (2), the tangents drawn of the ends of the arcs form a regular circumscribed polygon.*



Case 1. The inscribed polygon.
Suggestion. The chords are all equal, since they are subtended by equal arcs. The central angles are all equal being measured by equal arcs. The triangles are congruent isosceles triangles and the angles at the vertices of the polygon are made up of pairs of equal angles and so are equal.

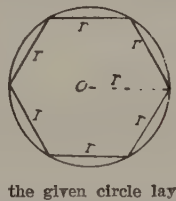
Case 2. The circumscribed polygon.
Suggestion. The triangles formed by the tangents at the end of each arc and the chord of that arc are congruent isosceles triangles. This proves the angles equal and the sides are each double one of the equal sides of the triangles.

240. *Problem 19. To inscribe a square in a circle.*



Suggestion. Draw perpendicular diameters dividing the circle into four equal arcs and connect the end points.

241. *Problem 20. To inscribe a regular hexagon in a circle.*



Suggestion. On the given circle lay off arcs subtended by chords equal to the radius. There will be exactly six such arcs. To prove this, notice that there will be six central angles to the hexagon each equal to 60°. By this construction, equilateral triangles are formed, each angle of which is 60°. There can be six such triangles. Prove.

242. *Problem 20. To inscribe an equilateral triangle in a circle.*

Suggestion. Connect alternate points of the inscribed hexagon.

243. It is obvious that when a polygon of a certain number of sides has been constructed, the number of sides can be doubled by bisecting the subtended arcs of the circumscribed circle.

Methods can be given for constructing polygons of 3, 4, 5, 15, and 17 sides, and hence for polygons of any number of sides which is the product of a power of two and any of these numbers. Many polygons can not be constructed by rule and compasses, as eg., those of 7 and 9 sides. The latter problem calls for the trisec-

tion of an angle, a problem which has claimed the attention of mathematicians for many centuries. These constructions are considered in advanced courses in mathematics.

244. *Theorem 62. Two regular polygons of the same number of sides are similar*

Suggestion. The radii divide them into the same number of triangles similar each to each and similarly placed.

245. The importance of the study of regular polygons lies in the relations which exist between the perimeters and areas of regular polygons and the circumferences and areas of the inscribed and circumscribed circles. If the number of the sides of a polygon is allowed to increase indefinitely, the difference between the perimeter of the polygon and the circumference of the circumscribed circle becomes very small. In the limiting case, they can be shown to be equal. In a similar manner, the area of the polygon approaches the area of the circle, and in the limiting case they are equal to each other.

For this reason, theorems proved for regular polygons, can be stated for circles with only a slight change in wording.

It is also shown that the apothem of the inscribed polygon and the radius of the circumscribed polygon become more and more nearly equal to the radius of the circle and to each other. In the limiting case, they are all equal to each other.

246. *Theorem 63. The perimeters of two regular polygons of the same number of sides are to each other as their radii, or as their apothems.*

How does Par. 204 apply? What about the triangles formed by the radius, apothem and half the side in each polygon?

247. *Corol. The circumference of two circles are to each other as their radii or as their diameters.*

i. e., $\frac{C}{C'} = \frac{r}{r'} = \frac{2r}{2r'} = \frac{d}{d'}$.

248. *Theorem 64. The ratio between the circumference and the diameter is the same for every circle.*

Given. Any two circles O and O'.

To be proved. $\frac{C}{d} = \frac{C'}{d'}$.

Apply the law of alternation to the equation of ratios in Par. 247.

249. The ratio considered in Par. 248 is one of the most important values in mathematics. It can not be found exactly but its value has been determined to any desired degree of accuracy. The value is called *pi*, the Greek letter for p, and is written π. The number commonly used is 3.1416, which is more accurate than most measurements with which it is combined.

250. **The circumference of a circle.** From Theorem 64 and the value of π, we get at once,

$$C = \pi d = 2\pi r.$$

251. *Theorem 65. The area of a regular polygon is equal to one half the product of its perimeter by its apothem.*

Suggestion. Divide the polygon into triangles as in the figure and notice that the area of one triangle is equal to one half the product of one side by the apothem of the polygon. There will be as many triangles as the polygon has sides.

252. *Corol. The area of a circle is equal to one half the product of its circumference by its radius, i. e.,* Area = ½ Cr.

From this it follows directly that the area of a circle equals the product of π by the square of the radius, i.e., Area = πr^2.

253. This does not by any means exhaust the field of plane geometry. Many theorems and problems grow out of those already proved. The examination of loci of points furnishes an interesting study for the earnest student. The idea of symmetry may be developed.

The introduction of a third dimension leads to the study of Solid Geometry where the formulas for the area and volume of solids are derived. The prism, pyramid, cone, cylinder and sphere are considered.

The subject which usually follows geometry is called Trigonometry where, by means of similar right triangles, an accurate method for the measurement of angles in practical problems is developed.

DICTIONARY OF WEIGHTS AND MEASURES.

FOREIGN AND DOMESTIC.

ACRE. A measure of land (Latin, *ager*, a field). Originally as much land as could be plowed in one day. The English statute acre consists of—

6,272,640 square inches.
43,560 square feet.
4,840 square yards.
160 square rods.
10 square chains.

Value of foreign measures compared with the acre—

	English acres.
Scotch acre	equals 1.27
Irish acre	equals 1.62
Austrian joch	equals 1.42
Baden, morgen	equals 0.89
Belgian hectare	equals 2.47
Danish töndeland	equals 1.36
French hectare	equals 2.47
French arpent	equals 0.91
Dutch arpent	equals 2.10
Neapolitan moggia	equals 0.83
Portuguese geira	equals 1.43
Prussian little morgen	equals 0.63
Prussian great morgen	equals 1.40
Russian dessiatine	equals 2.70
Saxon morgen	equals 1.36
Spanish fanegada	equals 1.06
Swedish tunnland	equals 1.22
Swiss faux	equals 1.62
Swiss arpent	equals 1.27
Tuscan saccata	equals 1.22
United States, English acre	equals 1.00
Württemberg, morgen	equals 2.40
Roman jugerum	equals 0.62
Greek plethron	equals 0.23

An acre is contained in a rectangular field which measures—

10	rods	× 16	rods
8	rods	× 20	rods
5	rods	× 32	rods
4	rods	× 40	rods
5	yards	× 968	yards
10	yards	× 484	yards
20	yards	× 242	yards
40	yards	× 121	yards
80	yards	× 60½	yards
70	yards	× 69½	yards
220	feet	× 198	feet
440	feet	× 99	feet
60	feet	× 726	feet
208.71	feet on a side		
110	feet	× 396	feet
120	feet	× 363	feet
240	feet	× 181½	feet

A field which measures				contains
200	feet	× 108.9	feet	½ acre
100	feet	× 145.2	feet	⅓ acre
100	feet	× 108.9	feet	¼ acre
25	feet	× 100	feet	.0574 acre
25	feet	× 110	feet	.0631 acre
25	feet	× 120	feet	.0688 acre
25	feet	× 125	feet	.0717 acre
25	feet	× 150	feet	.086 acre
2,178	square feet			.05 acre
4,356	square feet			.10 acre
6,534	square feet			.15 acre
8,712	square feet			.20 acre
10,890	square feet			.25 acre
13,068	square feet			.30 acre
15,246	square feet			.35 acre
17,424	square feet			.40 acre
19,602	square feet			.45 acre
21,780	square feet			.50 acre
32,670	square feet			.75 acre
34,848	square feet			.80 acre

A circular acre has a diameter of 235.504 feet
A circular half acre has a diameter of 166.527 feet
A circular quarter acre has a diameter of 117.752 feet
An acre contains 10 square Gunter's chains.

ALMUDE. A Portuguese measure equal to 4.422 American gallons.

ANGULAR MEASURE.

60 seconds .. = 1 minute
60 minutes .. = 1 degree
30 degrees .. = 1 sign
90 degrees .. = 1 quadrant
4 quadrants, or 360° .... = 1 circumference or circle

APOTHECARIES' WEIGHTS.

20 grains	=1 scruple	℈	= 20 grains
3 scruple	=1 dram	ʒ	= 60 grains
8 drams	=1 ounce	℥	= 480 grains
12 ounces	=1 pound	lb	=5760 grains

Drugs are purchased by Avoirdupois Weight.

ARE. One hundred square meters, equal to 119.6 square yards.

ARRATEL or LIBRA. A Portuguese weight equal to 1.011 American pounds.

ARROBA (Dry). A weight used in Spain and Spanish countries. It is equal in

Argentine Republic	to 25.3175	American pounds
Brazil	to 32.38	American pounds
Cuba	to 25.3664	American pounds
Portugal	to 32.38	American pounds
Spain	to 25.36	American pounds
Venezuela	to 25.4024	American pounds

ARROBA (Liquid). A measure used in Cuba, Spain, and Venezuela. It is equal to 4.263 American gallons.

ARSHINE. A Russian measure equal to 28 American inches.

ARSHINE, SQUARE. A Russian measure equal to 5.44 American square feet.

AVOIRDUPOIS WEIGHT. This measure of weight is used in weighing all goods excepting the precious metals, precious stones, and apothecaries' prescription quantities.

27⅓ grains	= 1 dram	=	27⅓ grains
16 drams	= 1 ounce	=	437½ grains
16 ounces	= 1 pound	=	7000 grains
8 pounds	= 1 stone of butcher's meat		
14 pounds	= 1 ordinary stone		
25 or 28 pounds*	= 1 quarter (qr.)		
4 quarters	= 1 hundredweight (cwt.)		
20 cwt.	= 1 ton		

*In nearly all of the United States by law and by practice the hundredweight is 100 pounds and the quarter 25 pounds. In England the legal hundredweight is 112 pounds and the quarter 28 pounds.

BALE. A package most commonly of cotton, wool, or hay. A bale of cotton weighs between 400 and 500 pounds according to the season of the year; a bale of cochineal weighs 1½ hundredweight; a bale of wool, about 2½ hundredweight; a bale of caraway seeds, 3½ hundredweight; a bale of Mocha coffee, 303 pounds; a bale of thread contains 100 bolts; a bale of Rio coffee, 162 pounds.

BARIL. A measure in use in Argentine Republic and Mexico. It is equal to 20.0787 American gallons.

BARREL. A barrel of flour weighs 196 pounds; a barrel of pork or beef weighs 200 pounds; a barrel in liquid measure contains 31½ gallons; a barrel of fish in Maine is by law 200 pounds; a barrel, dry measure, in Louisiana is 3¼ bushels; a barrel of apples contains usually 2¼ bushels; a barrel of potatoes, 2½ bushels or 165 pounds.

BATMAN OF TABRIZ. A Persian weight equal to 6.49 American pounds.

BERKOVETS. A Russian weight equal to 361.12 American pounds.

BONGKAL. An East Indian weight equal to 832 American grains.

BU. A Japanese measure equal to 0.1193 American inch.

BUSHEL. A dry measure containing 8 gallons or 4 pecks. The bushel of the United States is founded on the old Winchester bushel of 2,150.42 cubic inches. But the majority of states have varying bushels by weight for different commodities. The imperial bushel of Great Britain contains 2,218.192 cubic inches and holds 80 pounds of distilled water. It was legally established in 1826. The dimensions of a bushel are: 18.5 inches inside diameter; 19.5 inches outside diameter; 8 inches deep. When heaped, the cone at the top above the rim of the measure must be not less than 6 inches high. A struck bushel is level or even with the top, as in measuring grain. It is equal to 1.24445 cubic feet. A cubic foot is .80356 of a struck bushel. A heaped bushel contains 2747.715 cubic inches; 1 bushel is equal to 9.30918 gallons; 3.5756 bushels make a barrel; 36 bushels make a chaldron.

BUTT. A wine measure equal to 126 United States

gallons. The English butt contains 110 imperial gallons. It is the same as a pipe.

BUTT, SPANISH. A wine measure used in Spain equal to 140 American gallons.

CABLE'S-LENGTH. Ships' cables of chain come in 15-fathom or 90-foot lengths. Eight of these lengths are fastened together with swivels to form a cable of 120 fathoms or 720 feet in length. This 720 feet is the ordinary use. But in navy manoeuvers a cable's-length means 100 fathoms or 600 feet, which is about one tenth of a nautical mile.

CANDY. A weight used in Bombay, India, equal to 529 American pounds. The candy of Madras is equal to 500 American pounds.

CARAT. (1) A jeweler's weight for precious stones. In the United States it is 3.2 grains; in London, 3.17; in Paris, 3.18. It is divided into 4 jeweler's grains or diamond grains. (2) A jeweler's measure of the fineness of gold. Pure gold is considered to be 24 carats fine; if an alloy of 2, 4, or 6 parts be added the gold is then called 22, 20, or 18 carats fine.

CARGA or KIN. A weight used in Mexico and Salvador equal to 300 American pounds.

CATTY. A Chinese weight equal to 1⅓ American pounds. The catty of Japan is slightly less, equal to 1.31 American pounds.

CENTARE. One square meter, equal to 1,550 square inches.

CENTARO. A measure used in Central America and equal to 4.2631 American gallons.

CENTIGRAM. One hundredth part of a gram, equal to 0.1543 grain.

CENTILITER. One hundredth of a liter or 10 cubic centimeters, equal to 0.6102 cubic inch or to 0.338 of a fluid ounce.

CENTIMETER. One one hundredth of a meter, equal to 0.3937 inch, rather more than one third of an inch.

CENTNER. A weight used in

Bremen and Brunswick	equal to 117.5 American pounds
Denmark and Norway	equal to 110.11 American pounds
Prussia	equal to 113.44 American pounds
Sweden	equal to 99.7 American pounds
Vienna	equal to 123.5 American pounds

CHAIN. (1) Gunter's chain is 66 feet long and is made up of 100 links of 7.92 inches each. It contains 22 yards or 4 rods of 5½ yards each. An acre is composed of 100,000 square links. (2) The engineer's chain now most commonly used in the United States is 100 feet long and its links are each one foot.

CHALDRON. An English measure for coals, etc., consisting of 36 bushels or 25½ hundredweight; or, commonly, 32 heaped bushels. The weight varies in United States ports, but is usually 26¼ hundredweight.

CHETVERT. A Russian measure equal to 5.7748 American bushels.

CHIH. A Chinese measure equal to 14 American inches.

CORD. A cord of wood contains 128 cubic feet and is usually piled 4 feet wide, 4 feet high, and 8 feet long.

CUADRA. A measure used in Argentine Republic and equal to 4.2 American acres.

CUBIC OR SOLID MEASURE.

1728 cubic inches	= 1 cubic foot.
27 cubic feet	= 1 cubic yard.
40 do. of rough, or 50 do. of hewn timber	= 1 ton or load.
42 cubic feet of timber	= 1 shipping ton.
108 cubic feet	= 1 stack of wood.
128 cubic feet	= 1 cord of wood.
40 cubic feet	= 1 ton shipping.

CUBIT. A measure originally derived from the length of the forearm. The royal Egyptian cubit used in building the pyramids measured 20.64 English inches; the Roman cubit contained 1½ Roman feet or 17.4 English inches; high authorities place the length of the cubit of the Bible at from 19 to 26 inches. The ordinary cubit is spoken of as 18 inches, and the sacred cubit as 22 inches.

CWT. (HUNDREDWEIGHT). An English weight equal to 112 American pounds. The United States hundredweight and that of Canada are each of 100 pounds.

DAY. The natural, solar, or astronomical day is the measure of the time elapsing between two consecutive returns of the same terrestrial meridian to the sun. The civil day recognized in the United States extends from midnight to midnight. The astronomical or nautical day extends from noon to noon. The civil day contains 24 hours. A sidereal day is 23 hours, 56 minutes, 4.099 seconds, or 3 minutes, 55.901 seconds less than a mean solar day.

DECIGRAM. One tenth gram, equal to 1.5432 grains.

DECILITER. One tenth of a liter or one tenth of a cubic decimeter, equal to 6.1022 cubic inches or to 0.845 gill.

DECIMETER. One tenth of a meter, equal to 3.937 inches.

DEGREE. In angular measure a degree is the 360th part of a circumference. A degree of longtitude measured on the equator is 69.16 statute miles; a degree of latitude at the equator is 68.702 statute miles; and at the poles, 69.396 statute miles. A degree contains 60 minutes or 3,600 seconds.

DEKAGRAM. Ten grams, equal to 0.3527 ounce.

DEKALITER. Ten liters or 10 cubic decimeters, equal to 9.08 dry quarts or to 2.6417 gallons.

DEKAMETER. Ten meters, equal to 393.7 inches, or 32.8 feet, or 10.9 yards.

DESSIATINE. A Russian measure equal to 2.6997 American acres. The Spanish dessiatine is equal to 1.599 American bushels.

DOZEN. A collection of 12 units or similar things. **BAKER'S DOZEN** consists of 13. Brewer says it was good measure given by bakers to secure themselves against severe penalties for light weight. This is sometimes called **LONG DOZEN** or **DEVIL'S DOZEN.**

DRAM or DRACHM. An apothecaries' dram is one eighth of a pound or 60 grains. The avoirdupois dram is one sixteenth of an ounce or 27 11/32 grains.

DRAM, FLUID. One eighth of a fluid ounce; about a teaspoonful. In England it contains 54.8 grains of water and equals 3.55 cubic centimeters; in the United States it contains 57.1 grains and measures 3.70 cubic centimeters.

DRY OR CORN MEASURE.

4 quarts	= 1 gallon
2 gallons	= 1 peck
4 pecks	= 1 bushel
3 bushels (four of corn)	= 1 sack
12 sacks	= 1 chaldron
8 bushels, or two sacks	= 1 quarter
15 quarters	= 1 load

ELL. A cloth measure still used in England. An English ell is 1¼ yards or 45 inches; a Scotch ell was 37 inches; the Flemish ell varied, but was about 27.4 inches; a French ell was 47.245 inches. The English ell is made up of 5 quarters.

FANEGA (Dry). A measure used in

Central America	equal to 1.5745 American bushels
Chile	equal to 2.575 American bushels
Cuba	equal to 1.599 American bushels
Mexico	equal to 1.54728 American bushels

FANEGA (Liquid). A measure of Spain equal to 16 American gallons.

FIRKIN. A measure, usually of butter, which weighs 56 pounds by English law. The measure is really the fourth part of a barrel and varies greatly. A firkin of ale measures 9 gallons.

FLUID MEASURE.

		Marked.
60 minims ℿ	= 1 fluid dram	ƒ 3
8 drams	= 1 ounce	ƒ 3
16 ounces	= 1 pint	O
8 pints	= 1 gallon	*gal.*

FODDER or FOTHER. An old unit of weight of lime, lead, and some other substances. A fother of lead varies from 19½ to 22½ hundredweight of 120 pounds. In American lead mines the word fother is often used for a short ton (2,000 pounds).

FOOT. Originally the length of a man's foot. Contains 12 inches and equals 30.48 centimeters.

3 feet	equals 1 yard
3 feet, 3⅜ in.	equals 1 meter (nearly)
6 feet	equals 1 fathom
16½ feet	equals 1 rod
66 feet	equals 1 Gunter's surveying chain
5,280 feet	equals 1 mile
6,080 feet	equals 1 nautical mile

FRAIL. A Spanish measure of raisins containing 82, 50, or 75 American pounds.

FRASCO. In Argentine Republic a measure equal to 2.5096 American quarts; and in Mexico equal to 2.5 American quarts.

FUNT. A Russian weight equal to 0.9028 American pounds.

FURLONG. Originally the length of a furrow. A measure of length equal to one eighth of a mile, or 40 rods, or 220 yards, or 660 feet, or 7,920 inches. Also equal to 201.17 meters.

GALLON. A measure of capacity for both liquid and dry measures, containing 4 quarts. **LEGAL GALLON OF THE UNITED STATES.** The old wine gallon, containing 231 cubic inches, and equal to a cylinder 7 inches in diameter and 6 inches high. It contains 8.3388822 avoirdupois pounds of distilled water. **IMPERIAL GALLON OF GREAT BRITAIN.** Contains 277.274 cubic inches. The United States gallon is equal to 3.7853 liters.

GARNICE. A measure of Russian Poland equal to 0.88 American gallon.

GILL. A liquid measure equal to ¼ of a pint. The United States gill contains 7.217 cubic inches or 118.35 cubic centimeters. The English imperial gill contains 8.665 cubic inches, or 142 cubic centimeters, or 5 ounces avoirdupois of distilled water, and is one fifth larger than the United States gill.

GRAIN. Originally the weight of a plump grain of wheat.

5,760	grains equals	1 pound troy
7,000	grains equals	1 pound avoirdupois
480	grains equals	1 ounce troy
437½	grains equals	1 ounce avoirdupois
24	grains equals	1 pennyweight
20	grains equals	1 scruple

GRAM. The weight of a cubic centimeter of water at greatest density. Equal to 15.432 grains. A nickel weighs about 5 grams.

GROSS. A measure of 12 dozen or 144 units. Never used in the plural. It is sometimes called a **GREAT GROSS.** A **SMALL GROSS** is 120.

HAIR'S-BREADTH. Estimated at .02083 of an inch (a 48th part).

HAND. A measure of length equal to four inches. Used chiefly in indicating the height of horses. A horse which stands 14 hands high is measured at the fore shoulder and stands about 56 inches or nearly 5 feet high.

HECTARE. Ten thousand square meters, equal to 2.471 acres.

HECTOGRAM. One hundred grams, or 3.5274 ounces avoirdupois.

HECTOLITER. One hundred liters or one tenth of a cubic meter, equal to 2 bushels, 3.35 pecks, or to 26.417 wine gallons.

HECTOMETER. One hundred meters, equal to 328 feet 1 inch.

HOGSHEAD. A liquid measure containing 63 United States gallons or 52½ imperial gallons. A hogshead is one half of a butt, a pipe, or puncheon.

HOUR. The twenty-fourth part of a civil day, or the twelfth part of a natural day or night. Equal to 60 minutes or 3,600 seconds.

HUNDREDWEIGHT. A measure of weight equal, in the United States, to 100 pounds; in England, to 112 pounds. English weight is called long weight. A hundredweight of the United States standard is legal in England for many articles. Written **CWT.** It is one twentieth of a ton and contains 4 quarters.

INCH. The twelfth part of a foot. Formerly divided into 12 lines, and by an old statute into 3 barleycorns. In rough work it is divided into halves, quarters, sixteenths, and thirty-seconds. Gunnery and other processes require division into thousandths, and gauge makers into ten thousandths. The English inch is equal to 2.54 centimeters. The Scotch inch was a little longer than the English. A miner's inch is the quantity of water which passes through an inch square opening in 24 hours under pressure of 6 inches.

JOCH. A measure of Austria-Hungary equal to 1.422 American acres.

KEG. A small cask varying in capacity from 5 to 10 gallons. A keg of powder weighs 25 pounds. A keg of nails weighs 100 pounds.

KEN. A Japanese measure nearly equal to 6 American feet.

KILDERKIN. An old English measure, originally the eighth part of a tun or vat. It contained 2 firkins or one half a barrel. A kilderkin of soap or of ale was 18 United States gallons; of butter, one hundredweight net.

KILOGRAM or **KILO.** One thousand grams, equal to 2.2046 pounds. For rough estimates a kilo is about two and one fifth pounds.

KILOLITER or **STERE.** One thousand liters or one cubic meter, equal to 1.308 cubic yards or to 264.18 gallons in wine measure.

KILOMETER. One thousand meters, equal to 0.62137 mile or 3,280 feet 10 inches. Roughly speaking a kilometer is about three fifths of a mile. To convert kilometers to miles, multiply the number of kilometers by 0.62137. To convert miles to kilometers, divide the miles by 0.62137.

KLAFTER. A Russian measure equal to 216 American cubic feet.

KNOT. A knot is a measure of speed and not of distance. When a vessel travels one knot, it travels one nautical mile in one hour; 20 knots, 20 nautical miles in one hour.

KOKU. A Japanese measure equal to 4.9629 American bushels.

KORREE. A Russian measure equal to 3.5 American bushels.

KWAN. A Japanese weight equal to 8.267 American pounds.

LAST. A measure equal in

Belgium and Holland	to	85.134 American bushels
England (for dry malt)	to	82.52 American bushels
Germany (2 metric tons)	to	4,480 American pounds
Prussia	to	112.29 American bushels
Northern Europe	to	95 American bushels
Spain (for salt)	to	4,760 American pounds

LI. A Chinese measure equal to 2,115 American feet.

LIBRA or **POUND.** A weight equal in

Argentine Republic	to	1.0127 American pounds
Central America	to	1.043 American pounds
Chile	to	1.014 American pounds
Cuba	to	1.0161 American pounds
Mexico	to	1.01465 American pounds
Peru	to	1.0143 American pounds
Portugal	to	1.011 American pounds
Spain	to	1.0144 American pounds
Venezuela	to	1.0161 American pounds

LINE. A unit of length, the twelfth part of an inch; now almost obsolete.

LINK. The one hundredth part of a Gunter's surveyor's chain and equal to 7.92 inches. Engineers use a 100-foot chain wherein the link is one foot.

LITER. One cubic decimeter, the measure of one kilogram of water at greatest density, equal to 0.908 quart dry measure or to 1.0567 quarts wine measure. For rough estimates, a liter is about a quart.

LIVRE or **POUND.** A weight used in Greece equal to 1.1 American pounds.

LIQUID MEASURE.

	Pts.	Qts.	Gals.
Four gills	1	...	...
Quart	2	1	...
Gallon	8	4	1
Firkin or quarter barrel	72	36	9
Kilderkin or half barrel	144	72	18
Barrel	288	144	36
Hogshead of ale (1½ barrel)	432	216	54
Puncheon	800	400	100-130
Butt of ale (3 barrels	864	432	108
Pipe of Port or Masdeu		= 115	Gallons.
" Teneriffe		= 109	"
" Marsala		= 93	"
" Madeira and Cape		= 92	"
Butt of Lisbon and Bucellas		= 117	"
" Sherry and Tent		= 108	"
Aum of Hock and Rhenish		= 80	"
Hogshead of Claret		= 46	"

LOAD. A measure used in England for timber, equal to 50 cubic feet of square timber, or 40 cubic feet of unhewn timber, or 600 superficial feet of 1-inch planks (boards).

LONG MEASURE.

	In.	Ft.	Yd.	Rd.	Ch.	Fur.
Palm	3					
Hand	4					
Foot	12					
Yard	36	3				
Rod, pole, or perch	198	16½	5½			
Chain	792	66	22	4	1	
Furlong	7,920	660	220	40	10	
Mile	63,360	5,280	1,760	320	80	8

PARTICULAR MEASURES OF LENGTH.

12 lines = 1 inch.
3 inches = 1 palm.
4 inches = 1 hand.
2 feet 6 inches = 1 military pace.
5 feet = 1 geometrical pace.
6 feet = 1 fathom.
240 yards = 1 cable's length.
69⅛ miles (one degree) = 60 nautical knots or geographical miles.
3 miles = 1 league.

Inches.	Feet.	Yards.	Rods.	Miles.
12 equals	1			
36 equals	3 equals	1		
198 equals	16½ equals	5½ equals	1	
63,360 equals	5,280 equals	1,760 equals	320 equals	1

MARC. A weight of Bolivia equal to 0.507 American pounds.

MAUND. An East Indian weight equal to 82⅔ American pounds.

METER. Equal to 39.37 inches, or 1 yard 3.37 inches, or 3.281 feet. To convert meters to feet, multiply the meters by 3.281; to convert feet to meters, divide the feet by 3.281. The meter is nearly the ten millionth part of the estimated distance on a meridian between the equator and the pole.

MIL. A measure of Denmark equal to 4.68 American miles.

MILE. The Roman mile (*mille passuum*) consisted of 1,000 paces of 5 feet each. The Roman foot consisted of only 11.62 or 11.65 English inches; so the Roman mile was less than the present mile by 142 or 144 yards. The present English statute mile was defined by an act passed in the thirty-fifth year of the reign of Elizabeth as "8 furlongs of 40 perches, or 16½ feet each," which is equal to 1,760 yards of 3 feet each.

A geographical or nautical mile or a sea mile is

(*a*) the length of a minute of latitude at any point, or

(*b*) the average length of a minute of latitude, equal to 6,082.66 feet, or

(*c*) the length of a minute of longitude on the equator, equal to 6,087.15 feet. The length of a standard geographic mile, according to the United States Coast Survey, is the length of a minute of latitude of a sphere having the same surface as that of the earth, equal to 6,080.27 feet.

The geographical mile of the British admiralty is 6,080 feet.

In the United States a geographical or nautical mile is regarded as equal to 1.15155 statute mile or 1,853.24 meters.

	English miles.
English geographical mile	equals 1.153
German geographical mile	equals 4.611
Tuscan mile	equals 1.027
Scotch mile	equals 1.127
Irish mile	equals 1.273
German short mile	equals 3.897
Prussian mile	equals 4.680
Danish mile	equals 4.684
Hungarian mile	equals 5.178
Swiss mile	equals 5.201
German long mile	equals 5,753
Hanoverian mile	equals 6.568
Swedish mile	equals 6.648
Kilometer	equals 0.621
29 kilometers	(nearly) equals 18.

MILLIER, or TONNEAU, *or* METRIC TON. One million grams, equal to 2,204.6 pounds.

MILLIGRAM. One thousandth part of a gram, equal to 0.0154 grain.

MILLILITER. One thousandth part of a liter or one cubic centimeter, equal to 0.061 cubic inch or to 0.27 fluid dram.

MILLIMETER. One thousandth part of a meter, equal to 0.0394 inch.

MINIM. The lowest unit of measurement in apothecaries' liquid measure. A minim bears the same relation to the fluid units that a grain does to the solid units. There are 60 minims in a fluid dram, 480 minims in a fluid ounce. A minim is generally regarded as being equal to a drop.

MINUTE. (1) In angular measure, the sixtieth part of a degree—60 seconds. (2) The sixtieth part of an hour—60 seconds.

MONTH. A solar month is one twelfth part of a solar year, and contains 30 days, 10 hours, 29 minutes, 4 seconds. The interval from new moon to new moon is called a lunar, synodical, or illuminative month and has a mean value of 29.530589 days or 29 days, 12 hours, 44 minutes, and 2.7 seconds. The calendar months are January, 31; February, 28 or 29; March, 31; April, 30; May, 31; June, 30; July, 31; August, 31; September, 30; October, 31; November, 30; and December, 31.

MORGEN. A measure of Prussia equal to 0.63 American acre.

MYRIAGRAM. Ten thousand grams, equal to 22.046 pounds.

MYRIAMETER. Ten thousand meters, equal to 6.2137 statute miles.

NAIL. In cloth measure a nail is 2¼ inches or 1/16 of a yard.

OKE. A weight equal in

Egypt	to	2.7225	American pounds
Greece	to	2.84	American pounds
Hungary	to	3.0817	American pounds
Turkey	to	2.82838	American pounds
Hungary and Wallachia	to	2.5	American pints
China, Japan, and Sumatra	to	133⅓	American pounds
Philippine Islands	to	137.9	American pounds

OUNCE. A weight; one twelfth of a pound troy; one sixteenth of a pound avoirdupois. The troy ounce contains 480 grains; the avoirdupois ounce, 437½ grains.

OUNCE, FLUID. The British fluid ounce is equal to the bulk of 437.5 grains (an avoirdupois ounce) of distilled water at 62° Fahr.; the United States fluid ounce is 1/128 of a gallon and contains 456.033 grains of distilled water at 62° Fahr. The British fluid ounce is equal to 28.4 cubic centimeters; the United States fluid ounce, to 29.57 cubic centimeters. A fluid ounce is 1/16 of a pint.

PALM. A measure of length equal to either the width of the hand or to 3 and, sometimes, 4 inches. The same as hand.

PAPER, SIZES OF.

FOLDED.

Billet Note	6	x 8	Letter	10	x 16
Octavo Note	7	x 9	Commercial Letter	11	x 17
Commercial Note	8	x 10	Packet Post	11¼	x 18
Packet Note	9	x 11	Foolscap	12½	x 16
Bath Note	8½	x 14			

COMMON SIZES OF FLAT PAPER.

Name.	Size.	Name.	Size.
Flat Letter	10 x 16	Medium	18 x 23
Small Cap	13 x 16	Double Small Cap	16 x 26
Flat Cap	14 x 17	Royal	19 x 24
Demy	16 x 21	Double Cap	17 x 28
Folio	17 x 22		

SIZES OF NEWSPAPERS.

Term.		Size.
Five-column	Folio	20 x 26 inches
Six-column	Folio	22 x 31 inches
Six-column	Folio, extra margin	22 x 32 inches
Seven-column	Folio	24 x 35 inches
Seven-column	Folio, extra margin	24 x 36 inches
Eight-column	Folio	26 x 40 inches
Nine-column	Folio	28 x 44 inches
Four-column	Quarto	22 x 31 inches
Five-column	Quarto	26 x 40 inches
Six-column	Quarto	30 x 44 inches
Seven-column	Quarto	35 x 48 inches

PECK. The fourth part of a bushel, or 8 quarts, used in dry measure. The United States peck contains 537.6 cubic inches and is the fourth part of a Winchester bushel. The British imperial peck contains 2 gallons or 554.548 cubic inches.

PENNYWEIGHT. Originally the weight of the old Anglo-Norman silver penny—22½ grains. It is now reckoned in apothecaries' weight and in jeweler's weight at 24 grains or one twentieth of a troy ounce. Written dwt.

WEIGHTS AND MEASURES OF THE PHILIPPINES.

1 pulgada (12 linea) equals .927 inch.
1 pie equals 11.125 inches.
1 vara equals 33.375 inches.
1 gantah equals .8796 gallon.
1 caban equals 21.991 gallons.
1 libra (16 onzo) equals 1.0144 lb. av.
1 arroba equals 25.360 lb. av.
1 catty (16 tael) equals 1.394 lb. av.
1 pecul (100 catty) equals 139.482 lb. av.

PIE. A measure equal in Argentine Republic to 0.9478 American foot, and in Spain to 0.91407 American foot.

PIG. A unit of weight for lead, equal to 301 pounds.

PIK. A measure in Turkey equal to 27.9 American inches.

PINT. A measure equal to one half quart. The United States, or old wine pint, contains 28.875 cubic inches; the English imperial pint, 34.65925 cubic inches; the old customary ale pint, 35.25 cubic inches; and the old Scotch pint, about 3 old ale pints or 105 cubic inches.

PIPE. A measure of wine varying according to the sort of wine. Ordinarily a pipe is 105 imperial or 126 United States gallons. Two pipes of 105 imperial gallons or 210 imperial gallons make a tun.

POINT. A measure or unit in navigation equal to one eighth of a right angle or 11¼°. It is the angle between adjacent points of the compass. This is the term used when saying "to bring the ship up half a point."

POINT. A measure in typography used to regulate and define the bodies of type. A point is about one seventy-second of an inch. This method of measuring the height of type was originated in 1737 by Fournier the younger, a type founder of Paris. The French measure is larger than that which the United States Type Founders' Association adopted in 1883. The latter felt that the French standard would cause too great a disturbance in the thoroughly established system of the United States. The following table, showing the face of the type up to 12 point, will give the old name and the new point size of type commonly used:—

Thus 8-point type means that the body of the type stands eight seventy-seconds of an inch or one ninth of an inch high. The face of a type is not always the same height as the body. Twelve points, or twelve seventy-seconds of an inch, equal one em pica. Hence, 6 pica ems make about one inch.

Points.	Name of Type.	
3	Excelsior.	
3½	Brilliant.	
4	Semibrevier.	
4½	Diamond.	abcdefghijklmnopqrstuvwxyz
5	Pearl.	abcdefghijklmnopqrstuvwxyz
5½	Agate.	abcdefghijklmnopqrstuvwxyz
6	Nonpareil.	abcdefghijklmnopqrstuvw
7	Minion.	abcdefghijklmnopqrstuvwxyz
8	Brevier.	abcdefghijklmnopqrstuvwxyz
9	Bourgeois.	abcdefghijklmnopqrstuvwxyz
10	Long primer.	abcdefghijklmnopqrstuvwx
11	Small pica.	abcdefghijklmnopqrstuv
12	Pica.	abcdefghijklmnopqrst
14	English.	abcdefghijklmnopq
16	Two-line brevier	
18	Great primer.	
20	Paragon.	
22	Two-line small pica.	
24	Two-line pica.	
28	Two-line English.	
32	Four-line brevier.	
36	Three-line pica.	
40	Double paragon.	
44	Four-line small pica.	
48	Four-line pica.	

POOD. A weight in Russia equal to 36.112 American pounds.

POUND, AVOIRDUPOIS. Composed of 7,000 grains. A cubic inch of water weighs 252.458 grains and this weight determines the grain. An avoirdupois pound is 1.21528 of a troy pound.

POUND, TROY. Composed of 5,760 grains. A troy pound is .82286 of an avoirdupois pound.

PUNCHEON. A cask, containing from 72 to 126 gallons.

PUND. A weight in Denmark and Sweden equal to 1.102 American pounds.

QUART. The fourth part of a gallon.

The United States liquid quart equals 0.9468 liter
The United States dry quart equals 1.1017 liters
The English imperial quart equals 1.1359 liters
The Scotch quart equals 3.398 liters

QUARTER. In cloth measure is a quarter of a yard, or 4 nails. Five quarters make an English ell.

QUARTER. A measure in Great Britain equal to 8.252 bushels. For measuring coal the use in London is 36 bushels.

QUARTER. A measure of weight in the United States equal to 25 pounds; in England, to 28 pounds. It is one quarter of a hundredweight. Used chiefly in weighing grain.

QUINTAL. A weight equal in

Argentine Republic to 101.42 American pounds
Brazil to 130.06 American pounds
Castile, Mexico, Chile, and Peru to 101.41 American pounds
Greece to 123.3 American pounds

In ordinary commercial use in the United States and Canada a quintal of fish (usually cod) weighs 100 pounds.

QUINTAL. One hundred thousand grams, equal to 220.46 pounds.

QUIRE. A measure of paper consisting of 24 sheets; the twentieth part of a ream.

REAM. A quantity of paper consisting of 20 quires of 24 sheets each for writing paper—480 sheets in all. Some drawing paper reams are from 472 to 500 sheets; and a printer's ream contains 516 sheets or 1½ quires above the ordinary to allow for waste in printing.

ROD. A measure of length composed of 5½ yards, or 16½ feet, or 198 inches. It is also called a perch or pole.

40 rods equals 1 furlong
320 rods equals 1 mile

ROD, CUBIC. The usual standard for measuring brick work; sometimes spoken of as a "perch of masonry." It is generally taken at 25 cubic feet, but sometimes at 22; though a cubic rod or perch contains 24¾ cubic feet. This is calculated as being 16½ feet long by 1½ feet by 1 foot. It is being replaced by the cubic yard.

SAGENE. A Russian measure equal to 7 American feet.

SCORE. A measure of 20 units; used as an exact measure only in the singular, though the general expression "scores of writers" is used. Score is derived from an Anglo-Saxon word to cut; and when tally was kept by cutting notches on a stick, the twentieth was scored or cut in deeper than the others. It was *the* score.

SCRUPLE. Used now only in apothecaries' weight. It is one third of a dram and is made up of 20 grains, equal to 1.296 grams.

SE. A Japanese measure equal to 0.02451 American acre.

SECOND. (1) In angular measure the sixtieth part of a minute. (2) The sixtieth part of a minute.

SEER. An East Indian weight equal to 1 pound and 13 ounces (American).

SHAKU. A Japanese measure equal to 11.9305 American inches.

SHO. A Japanese measure equal to 1.6 American quarts.

SHOEMAKER'S SIZES. Number 1 is 4.125 inches and every succeeding number is one third of an inch. There are 28 numbers in all, arranged in two series: from 1 to 13 and from 1 to 15.

SPAN. A measure of length equal to 9 inches or half a cubit. It was originally the distance between the tip of the thumb and of the little finger when outstretched.

SQUARE. An architect's measure of 100 square feet.

SQUARE OR SURFACE MEASURE.

	In.	Ft.	Yds.	Pls.	Ch.	R.
Square foot	144	1				
Square yard	1,296	9	1			
Rod, pole, or perch	39,204	272¼	30¼	1		
Square chain	627,264	4,356	484	16	1	
Rood	1,568,160	10,890	1,210	40	2½	1
Acre	6,272,640	43,560	4,840	160	10	4

A square mile contains 640 acres, 2,560 roods, 6,400 chains, 102,400 rods, poles, or perches, or 3,097,600 square yards.

STANDARD. In St. Petersburg this is used as a lumber measure equal to 165 American cubic feet.

STERE. See KILOLITER.

STONE. A British weight equal to 14 pounds avoirdupois.

SUN. A Japanese measure equal to 1.193 American inches.

TAN. A Japanese measure equal to 0.25 American acre.

MEASURE OF TIME.

60 seconds	= 1 minute.
60 minutes	= 1 hour.
24 hours	= 1 day.
7 days	= 1 week.
28 days	= 1 lunar month.
28, 29, 30, or 31 days	= 1 calendar month.
12 calendar months	= 1 year.
365 days	= 1 common year.
366 days	= 1 leap year.

STANDARD TIME. Standard time was introduced, first by railroads, in 1883. The United States extends between 65° and 125° west longitude. This space of 60° is divided into 4 time sections of 15° each, exactly equivalent to one hour.

Eastern Standard time includes all of the territory between the Atlantic coast and an irregular line drawn from Detroit to Charleston, S. C.

Central Standard time extends from the last named line to an irregular line drawn from Bismarck, N. D., to the mouth of the Rio Grande.

Mountain Standard time extends from the last named line to (nearly) the western borders of Idaho, Utah, and Arizona.

Pacific Standard time is used in the rest of the country to the Pacific coast.

The difference of time in these sections as one passes from east to west through them is exactly one hour. If a passenger on a train starts from New York City at 12 o'clock noon (Eastern time), his watch, when he arrives at Chicago (Central time), will be one hour fast, for it will be only 11 a.m. there; at Denver his watch will be two hours fast and will show 12 noon when it is only 10 a.m. there. This difference of time was noted markedly in the east during the Democratic Convention at Denver in July, 1908, when it was 10 o'clock at night in New York and Boston when the convention meeting assembled at Denver at 8 o'clock (Mountain time). At San Francisco our traveler's watch would show 12 noon when it is only 9 a.m. (Pacific time).

Standard time at Boston is 16 minutes slower than true Boston time; it is 4 minutes slower at New York, 8 minutes faster at Washington, 19 minutes faster at Charleston, S. C., 28 minutes slower at Detroit, 18 minutes faster at Kansas City, 10 minutes slower at Chicago, 1 minute faster at St. Louis, 28 minutes faster at Salt Lake City, and 10 minutes faster at San Francisco.

BELL TIME ON SHIPBOARD.

Time, A. M.		Time, A. M.		Time, A. M.	
1 Bell,	12.30	1 Bell,	4.30	1 Bell,	8.30
2 Bells,	1.00	2 Bells,	5.00	2 Bells,	9.00
3 "	1.30	3 "	5.30	3 "	9.30
4 "	2.00	4 "	6.00	4 "	10.00
5 "	2.30	5 "	6.30	5 "	10.30
6 "	3.00	6 "	7.00	6 "	11.00
7 "	3.30	7 "	7.30	7 "	11.30
8 "	4.00	8 "	8.00	8 "	Noon
Time, P. M.		**Time, P. M.**		**Time, P. M.**	
1 Bell,	12.30	1 Bell,	4.30	1 Bell,	8.30
2 Bells,	1.00	2 Bells,	5.00	2 Bells,	9.00
3 "	1.30	3 "	5.30	3 "	9.30
4 "	2.00	4 "	6.00	4 "	10.00
5 "	2.30	1 Bell,	6.30	5 "	10.30
6 "	3.00	2 Bells,	7.00	6 "	11.00
7 "	3.30	3 "	7.30	7 "	11.30
8 "	4.00	4 "	8.00	8 "	Midnight

On shipboard, for purpose of discipline and to divide the watch fairly, the crew is mustered in two divisions: the Starboard (right side, looking toward the head) and the Port (left). The day commences at noon, and is thus divided: Afternoon Watch, noon to 4 P. M.; First Dog Watch, 4 P. M. to 6 P. M.; Second Dog Watch, 6 P. M. to 8 P. M.; First Watch, 8 P. M. to Midnight; Middle Watch, Midnight to 4 A. M.; Morning Watch, 4 A. M. to 8 A. M.; Forenoon Watch, 8 A. M. to noon. This makes seven Watches, which enables the crew to keep them alternately, as the Watch which comes on duty at noon one day has the afternoon next day, and the men who have only four hours' rest one night have eight hours the next. This is the reason for having Dog Watches, which are made by dividing the hours between 4 P. M. and 8 P. M. into Watches. Time is kept by means of "Bells," although sometimes there is but one Bell on the ship.

Time Difference.

PLACES.	WHEN IT IS 12 O'CLOCK NOON ACCORDING TO				AT	
	Eastern (*a*)	Central (*b*)	Mountain (*c*)	Pacific (*d*)	London.	Paris.
	STANDARD TIME IN THE UNITED STATES					
IT IS AT						
Aden.....Arabia	8.00 P. M.	9.00 P. M.	10.00 P. M.	11.00 P. M.	3.00 P. M.	2.51 P. M.
Amsterdam.....Holland	5.20 P. M.	6.20 P. M.	7.20 P. M.	8.20 P. M.	12.20 P. M.	12.10 P. M.
Athens.....Greece	6.35 P. M.	7.35 P. M.	8.35 P. M.	9.35 P. M.	1.35 P. M.	1.26 P. M.
Berlin.....Germany	5.54 P. M.	6.54 P. M.	7.54 P. M.	8.54 P. M.	12.54 P. M.	12.45 P. M.
Bombay.....India	9.51 P. M.	10.51 P. M.	11.51 P. M.	12.51 A. M.*	4.51 P. M.	4.42 P. M.
Bremen.....Germany	5.33 P. M.	6.33 P. M.	7.33 P. M.	8.33 P. M.	12.33 P. M.	12.24 P. M.
Central Time (*b*).....United States	11.00 A. M.	....	1.00 P. M.	2.00 P. M.	6.00 A. M.	5.51 A. M.
Constantinople.....Turkey	6.56 P. M.	7.56 P. M.	8.56 P. M.	9.56 P. M.	1.56 P. M.	1.47 P. M.
Copenhagen.....Denmark	5.50 P. M.	6.50 P. M.	7.50 P. M.	8.50 P. M.	12.50 P. M.	12.41 P. M.
Dublin.....Ireland	4.35 P. M.	5.35 P. M.	6.35 P. M.	7.35 P. M.	11.35 A. M.	11.26 A. M.
Eastern Time (*a*).....United States	....	1.00 P. M.	2.00 P. M.	3.00 P. M.	7.00 A. M.	6.51 A. M.
Hamburg.....Germany	5.40 P. M.	6.40 P. M.	7.40 P. M.	8.40 P. M.	12.40 P. M.	12.31 P. M.
Havre.....France	5.00 P. M.	6.00 P. M.	7.00 P. M.	8.00 P. M.	12 NOON	11.51 A. M.
Hongkong.....China	12.37 A. M.*	1.37 A. M.*	2.37 A. M.*	3.37 A. M.*	7.37 P. M.	7.27 P. M.
Honolulu.....Hawaii	6.29 A. M.	7.29 A. M.	8.29 A. M.	9.29 A. M.	1.29 A. M.	1.19 A. M.
Liverpool.....England	4.48 P. M.	5.48 P. M.	6.48 P. M.	7.48 P. M.	11.48 A. M.	11.39 A. M.
London.....England	5.00 P. M.	6.00 P. M.	7.00 P. M.	8.00 P. M.	....	11.51 A. M.
Madrid.....Spain	4.45 P. M.	5.45 P. M.	6.45 P. M.	7.45 P. M.	11.45 A. M.	11.36 A. M.
Manila.....Philippine Islands	1.04 A. M.*	2.04 A. M.*	3.04 A. M.*	4.04 A. M.*	8.04 P. M.	7.54 P. M.
Melbourne.....Australia	2.40 A. M.*	3.40 A. M.*	4.40 A. M.*	5.40 A. M.*	9.40 P. M.	9.31 P. M.
Mountain Time (*c*).....United States	10.00 A. M.	11.00 A. M.	....	1.00 P. M.	5.00 A. M.	4.51 A. M.
Pacific Time (*d*).....United States	9.00 A. M.	10.00 A. M.	11.00 A. M.	....	4.00 A. M.	3.51 A. M.
Paris.....France	5.09 P. M.	6.09 P. M.	7.09 P. M.	8.09 P. M.	12.09 P. M.	....
Rome.....Italy	5.50 P. M.	6.50 P. M.	7.50 P. M.	8.50 P. M.	12.50 P. M.	12.41 P. M.
Stockholm.....Sweden	6.12 P. M.	7.12 P. M.	8.12 P. M.	9.12 P. M.	1.12 P. M.	1.03 P. M.
Petrograd.....Russia	7.01 P. M.	8.01 P. M.	9.01 P. M.	10.01 P. M.	2.01 P. M.	1.52 P. M.
Vienna.....Austria	6.06 P. M.	7.06 P. M.	8.06 P. M.	9.06 P. M.	1.06 P. M.	12.57 P. M.
Yokohama.....Japan	2.19 A. M.*	3.19 A. M.*	4.19 A. M.*	5.19 A. M.*	9.19 P. M.	9.09 P. M.

*At places marked * the time noted is in the morning of the FOLLOWING day.

(*a*) "EASTERN" includes: New York, Boston, Philadelphia, Baltimore, Washington, Richmond, Norfolk, Charleston, Buffalo, Pittsburg, Montreal, Quebec, Ottawa, Toronto, etc.

(*b*) "CENTRAL" includes: Chicago, St. Louis, Minneapolis, St. Paul, Milwaukee, Kansas City, Omaha, Indianapolis, Cincinnati, Cleveland, Detroit, New Orleans, Memphis, Savannah, Pensacola, Winnipeg, etc.

(*c*) "MOUNTAIN" includes: Denver, Leadville, Colorado Springs, Helena, Regina (N. W. T.), etc.

(*d*) "PACIFIC" includes: San Francisco, Portland (Oregon), Victoria, Vancouver, Tacoma, Seattle, etc.

EASTER SUNDAY. A table showing the date of Easter Sunday in each year of the twentieth century:—

1900—April 15	1934—April 1	1968—April 14
1901—April 7	1935—April 21	1969—April 6
1902—Mar. 30	1936—April 12	1970—Mar. 29
1903—April 12	1937—Mar. 28	1971—April 11
1904—April 3	1938—April 17	1972—April 2
1905—April 23	1939—April 9	1973—April 22
1906—April 15	1940—Mar. 24	1974—April 14
1907—Mar. 31	1941—April 13	1975—Mar. 30
1908—April 19	1942—April 5	1976—April 18
1909—April 11	1943—April 25	1977—April 10
1910—Mar. 27	1944—April 9	1978—Mar. 26
1911—April 16	1945—April 1	1979—April 15
1912—April 7	1946—April 21	1980—April 6
1913—Mar. 23	1947—April 6	1981—April 19
1914—April 12	1948—Mar. 28	1982—April 11
1915—April 4	1949—April 17	1983—April 3
1916—April 23	1950—April 9	1984—April 22
1917—April 8	1951—Mar. 25	1985—April 7
1918—Mar. 31	1952—April 13	1986—Mar. 30
1919—April 20	1953—April 5	1987—April 19
1920—April 4	1954—April 18	1988—April 3
1921—Mar. 27	1955—April 10	1989—Mar. 26
1922—April 16	1956—April 1	1990—April 15
1923—April 1	1957—April 21	1991—Mar. 31
1924—April 20	1958—April 6	1992—April 19
1925—April 12	1959—Mar. 29	1993—April 11
1926—April 4	1960—April 17	1994—April 3
1927—April 17	1961—April 2	1995—April 16
1928—April 8	1962—April 22	1996—April 7
1929—Mar. 31	1963—April 14	1997—Mar. 30
1930—April 20	1964—Mar. 29	1998—April 12
1931—April 5	1965—April 18	1999—April 4
1932—Mar. 27	1966—April 10	2000—April 23
1933—April 16	1967—Mar. 26	

HOLIDAYS.

There are no National holidays; but Congress may appoint them. It made Labor Day a holiday in District of Columbia. The President designates Thanksgiving, which makes it a holiday in District of Columbia and the Territories.

The legal holidays in all states including Alaska and District of Columbia are: Feb. 22, Washington's Birthday; July 4, Independence Day; the last Thursday in November, Thanksgiving Day; and December 25, Christmas Day. January 1, New Year's Day, is legal in all but Massachusetts; the first Monday in September, Labor Day, in all but New Mexico, Wisconsin, and Wyoming. February 12, Lincoln's Birthday is celebrated in most of the northern states, while January 19, Robert E. Lee's Birthday, is legal in Alabama, Florida, Mississippi, North Carolina, and South Carolina; June 3, Jefferson Davis's Birthday, is a holiday in South Carolina, Texas, Tennessee, Alabama, Florida, Georgia, and Mississippi.

Arbor Day is a regular holiday in Maryland, Nebraska, Rhode Island, Utah, and Wyoming, though on different dates in April or May; Good Friday, in Connecticut, Delaware, Louisiana, Maryland, Minnesota, New Jersey, and Tennessee. Memorial or Decoration Day is observed on April 26 in Alabama, Florida, Georgia, and Mississippi; May 10, in North and South Carolina; June 3, in Louisiana; May 30, in all the others but New Mexico, Tennessee, and Texas, which have none. October 12, Columbus Day, is legal in 25 of the states, and Election Day, usually in November, in 27 states. All holidays, days of fasting or thanksgiving, appointed by the Governors of the states or the President, are legal.

Several of the states have special holidays as follows: Alabama, April 13, Thomas Jefferson's Birthday, Tuesday before Ash Wednesday, and Mardi Gras Day; California, September 9, Admission Day; Colorado, August 1, Colorado Day; District of Columbia, Inauguration Day, every fourth year; Delaware, Election Day, third Tuesday in February and again in November; Florida, Shrove Tuesday; Georgia, February 12, Georgia Day; Idaho, June 15, Idaho Pioneer Day; Louisiana, January 8, Battle of New Orleans, Mardi Gras Day (in parish of Orleans); Maine and Massachusetts, April 19, Patriots' Day; Maryland, September 12, Defenders' Day, and November 23, Repudiation Day; Nevada, October 31, Admission Day; New Hampshire, Fast Day (appointed by the Governor in April); North Carolina, April 12, Halifax Independence Resolutions; May 20, Anniversary of signing of Mecklenburg Resolutions; South Carolina, first Monday in September and Thursday of Fair Week, wherever the State Agricultural Mechanical Society holds fair; Tennessee, second Friday in May, Confederate Day; Texas, March 2, Texas Independence, and April 21, Battle of San Jacinto; Utah, July 24, Pioneer Day; Vermont, August 16, Battle of Bennington.

Table of Days Between Two Dates.

A TABLE OF THE NUMBER OF DAYS BETWEEN ANY TWO DAYS WITHIN TWO YEARS.

Day Mo	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1	32	60	91	121	152	182	213	244	274	305	335
2	2	33	61	92	122	153	183	214	245	275	306	336
3	3	34	62	93	123	154	184	215	246	276	307	337
4	4	35	63	94	124	155	185	216	247	277	308	338
5	5	36	64	95	125	156	186	217	248	278	309	339
6	6	37	65	96	126	157	187	218	249	279	310	340
7	7	38	66	97	127	158	188	219	250	280	311	341
8	8	39	67	98	128	159	189	220	251	281	312	342
9	9	40	68	99	129	160	190	221	252	282	313	343
10	10	41	69	100	130	161	191	222	253	283	314	344
11	11	42	70	101	131	162	192	223	254	284	315	345
12	12	43	71	102	132	163	193	224	255	285	316	346
13	13	44	72	103	133	164	194	225	256	286	317	347
14	14	45	73	104	134	165	195	226	257	287	318	348
15	15	46	74	105	135	166	196	227	258	288	319	349
16	16	47	75	106	136	167	197	228	259	289	320	350
17	17	48	76	107	137	168	198	229	260	290	321	351
18	18	49	77	108	138	169	199	230	261	291	322	352
19	19	50	78	109	139	170	200	231	262	292	323	353
20	20	51	79	110	140	171	201	232	263	293	324	354
21	21	52	80	111	141	172	202	233	264	294	325	355
22	22	53	81	112	142	173	203	234	265	295	326	356
23	23	54	82	113	143	174	204	235	266	296	327	357
24	24	55	83	114	144	175	205	236	267	297	328	358
25	25	56	84	115	145	176	206	237	268	298	329	359
26	26	57	85	116	146	177	207	238	269	299	330	360
27	27	58	86	117	147	178	208	239	270	300	331	361
28	28	59	87	118	148	179	209	240	271	301	332	362
29	29	..	88	119	149	180	210	241	272	302	333	363
30	30	..	89	120	150	181	211	242	273	303	334	364
31	31	..	90	....	151	....	212	243	....	304	....	365

Day Mo.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	366	397	425	456	486	517	547	578	609	639	670	700
2	367	398	426	457	487	518	548	579	610	640	671	701
3	368	399	427	458	488	519	549	580	611	641	672	702
4	369	400	428	459	489	520	550	581	612	642	673	703
5	370	401	429	460	490	521	551	582	613	643	674	704
6	371	402	430	461	491	522	552	583	614	644	675	705
7	372	403	431	462	492	523	553	584	615	645	676	706
8	373	404	432	463	493	524	554	585	616	646	677	707
9	374	405	433	464	494	525	555	586	617	647	678	708
10	375	406	434	465	495	526	556	587	618	648	679	709
11	376	407	435	466	496	527	557	588	619	649	680	710
12	377	408	436	467	497	528	558	589	620	650	681	711
13	378	409	437	468	498	529	559	590	621	651	682	712
14	379	410	438	469	499	530	560	591	622	652	683	713
15	380	411	439	470	500	531	561	592	623	653	684	714
16	381	412	440	471	501	532	562	593	624	654	685	715
17	382	413	441	472	502	533	563	594	625	655	686	716
18	383	414	442	473	503	534	564	595	626	656	687	717
19	384	415	443	474	504	535	565	596	627	657	688	718
20	385	416	444	475	505	536	566	597	628	658	689	719
21	386	417	445	476	506	537	567	598	629	659	690	720
22	387	418	446	477	507	538	568	599	630	660	691	721
23	388	419	447	478	508	539	569	600	631	661	692	722
24	389	420	448	479	509	540	570	601	632	662	693	723
25	390	421	449	480	510	541	571	602	633	663	694	724
26	391	422	450	481	511	542	572	603	634	664	695	725
27	392	423	451	482	512	543	573	604	635	665	696	726
28	393	424	452	483	513	544	574	605	636	666	697	727
29	394	....	453	484	514	545	575	606	637	667	698	728
30	395	....	454	485	515	546	576	607	638	668	699	729
31	396	....	455	....	516	....	577	608	....	669	....	730

The above table applies to ordinary years only. For leap year, one day must be added to each number of days after February 28.

EXAMPLE.—To find the number of days between June 3, 1900, and February 16, 1901: The figures opposite the third day in the first June column are 154; those opposite the sixteenth day in the second February column are 412. Subtract the first from the second product—*i. e.*, 154 from 412, and the result is 258, the number of days between the two dates.

REFORMING THE CALENDAR. The first attempt to reform the calendar was made by Julius Caesar in 45 B. C. He ordered that every year exactly divisible by 4 should have 366 days and all the others 365 days. As the sixth day before the kalends of March was counted twice in leap years, they were called *bissextile* years. He ordered also that the beginning of the year be changed from March 1st to January 1st. The fifth month, formerly called Quintilis, was named July after himself. By Caesar's arrangement the average length of the year was 365¼ days, which was too great by 11 minutes and 14 seconds. This excess amounted to about 3 days in 400 years.

GREGORIAN CALENDAR. The Gregorian calendar is named after Pope Gregory XIII., by whom it was introduced. It consists of a year of 365 days, excepting those years which are exactly divisible by 4. The centurial years, such as 2100, 2200, etc., are not considered as leap years unless they are exactly divisible by 400. This arrangement corrects the error of Caesar's or the Julian calendar. The length of the average year of the Gregorian calendar is, therefore, 365 days, 5 hours, 49 minutes, 12 seconds. England and her colonies introduced the use of the Gregorian calendar in 1752, when it was necessary to drop 11 days from the calendar, as there had been that difference since the Council of Nice in 325. September 3, 1752, was called September 14, 1752. At the same time the beginning of the legal year was changed in England from March 25 to January 1. The difference between the Julian and the Gregorian calendars is now 13 days. Russia and the Greek Church yet use the Julian calendar.

TIME, VARIATIONS IN.

Washington, D. C.,	12.00 m.	London, Eng.,	5.07 p. m.
Athens, Greece,	6.43 p. m.	Madrid, Spain,	4.53 p. m.
Auckland, New Zealand,	4.51 a. m.	Mecca, Arabia,	7.49 p. m.
Augusta, Me.,	12.29 p. m.	Mexico, Mexico,	10.27 a. m.
Austin, Texas,	10.37 a. m.	New Orleans, La.,	11.08 a. m.
Batavia, Java,	12.15 a. m.	New York, N. Y.,	12.12 p. m.
Bombay, India,	10.00 p. m.	Olympia, Washington,	8.57 a. m.
Boston, Mass.,	12.24 p. m.	Omaha, Neb.,	10.44 a. m.
Berlin, Germany,	6.01 p. m.	Paris, France,	5.42 p. m.
Calcutta, India,	11.01 p. m.	Peking, China,	12.54 a. m.
Canton, China,	12.41 a. m.	Petrograd, Russia,	7.09 p. m.
Charleston, S. C.,	11.49 a. m.	Philadelphia, Pa.,	12.13 p. m.
Chicago, Ill.,	11.18 a. m.	Pittsburg, Pa.,	11.48 a. m.
Constantinople, Turkey,	7.04 p. m.	Rio Janeiro, Brazil,	2.16 p. m.
Copenhagen, Denmark,	5.58 p. m.	Rome, Italy,	5.58 p. m.
Denver, Col.,	10.07 a. m.	St. Louis, Mo.,	11.07 a. m.
Dublin, Ireland,	4.43 p. m.	Salt Lake City, Utah,	9.40 a. m.
Gibraltar, Spain,	4.51 p. m.	San Francisco, Cal.,	8.58 a. m.
Glasgow, Scot.,	4.51 p. m.	Tallahassee, Fla.,	11.30 a. m.
Halifax, N. S.,	12.54 p. m.	Tokyo, Japan,	2.27 a. m.
Harrisburg, Pa.,	12.01 p. m.	Toronto, Can.,	11.51 a. m.
Lima, Peru,	12.00 m.	Valparaiso, Chile,	12.21 p. m.

DISTANCES AND MAIL TIME TO FOREIGN CITIES FROM THE CITY OF NEW YORK:—

By Postal Route to—	Miles.	Days.
Adelaide, *via* San Francisco	12,845	27
Alexandria, *via* London	6,150	10
Amsterdam, *via* London	3,985	8
Antwerp, *via* London	4,000	8
Athens, *via* London	5,655	11
Bahia, Brazil	5,870	17
Bangkok, Siam, *via* San Francisco	12,990	27
Bangkok, Siam, *via* London	13,125	25
Batavia, Java, *via* London	12,800	27
Berlin	4,385	8
Bombay, *via* London	9,765	23
Bremen	4,235	8
Buenos Aires	8,045	18
Calcutta, *via* London	11,120	25
Cape Town, *via* London	11,245	23
Constantinople, now Istanbul, *via* London	5,810	10
Florence, *via* London	4,800	8
Glasgow	3,370	8
Grey Town, *via* New Orleans	2,815	6
Halifax, N. S.	645	2
Hamburg	4,820	8
Havana	1,366	2
Hong-kong, *via* San Francisco	10,590	23
Honolulu, *via* San Francisco	5,645	12
Liverpool	3,540	8
London	3,740	6
Madrid, *via* London	4,925	8
Manila, *via* San Francisco	10,193	25
Melbourne, *via* San Francisco	12,265	25
Mexico City (railroad)	3,750	5
Panama	2,355	5
Paris	4,020	6
Leningrad, *via* London	5,370	10
Rio de Janeiro	6,204	13
Rome, *via* London	5,030	8
Rotterdam, *via* London	3,935	8
San Juan, Puorto Rico	1,360	5
Shanghai, *via* San Francisco	9,920	17
Shanghai, *via* London	14,745	20
Stockholm, *via* London	4,975	10
Sydney, *via* San Francisco	11,570	24
Valparaiso, *via* Panama	5,915	19
Vienna	4,740	8
Yokohama, *via* San Francisco	7,348	16

TO. A Japanese measure equal to 2 American pecks.

TON. A measure of weight equal to 20 hundredweight. In England it is 2,240 pounds, a long ton; in the United States, 2,000 pounds, a short ton.

A ton of round timber equals 40 cubic feet.
A ton of hewn timber equals 50 cubic feet.
A ton of flour equals 8 sacks or 10 barrels.
A ton of potatoes equals from 10 to 36 bushels.
A ton of wheat equals 20 bushels.
A ton of earth or ground equals 1 cubic yard or 23 cubic feet.
A ton of grindstones equals 15 cubic feet.
A ton of Portland stone equals 16 cubic feet.
A ton of salt equals 42 bushels.
A ton of lime equals 40 bushels.
A ton of coke equals 28 bushels.
A ton carrying capacity of a freight ship equals 40 cubic feet.

TON, METRIC. The weight of 1,000 kilograms, equal to 2,204.6 pounds.

TONDELAND. A Danish measure equal to 1.36 acres.

TONNAGE. Tonnage may refer to either the vessel ton or to the cargo ton.

Vessel tonnage is either displacement, gross register, or net register.

Displacement tonnage is the weight of the vessel and is equal to the weight of water displaced by the floating vessel.

Gross register tonnage is found by dividing the number of cubic feet in the capacity of the ship by 100. A vessel has one "gross" ton for each 100 cubic feet of capacity.

Net register tonnage is found by dividing by 100 the capacity in cubic feet of the space in which cargo and passengers may be carried.

Cargo ton is estimated by both weight and measurement. In the weight estimate, the short ton of 2,000 pounds, the long ton of 2,240 pounds, or the metric ton of 2,204.62 pounds may be used.

When cargo is shipped, not by weight but by measurement, 40 cubic feet of space is estimated to hold a ton. This is said to be the space occupied by a long ton of wheat and is used as the standard.

TSUN. A Chinese measure equal to 1.41 inches.

TUN. A measure of liquid equal by statute to 252 old wine or United States gallons. Equal to two butts or pipes of 126 gallons each.

TUNNLAND. A Swedish measure equal to 1.22 acres.

VARA. An old Spanish measure of about 33 inches.

VEDRO. A Russian measure equal to 2.707 gallons.

VERST. A Russian measure equal to 0.663 (or nearly two thirds) American mile.

VLOCKA. A measure of Russian Poland equal to 41.98 American acres.

WEEK. A period of 7 consecutive days, of which Sunday is the first day (usually so reckoned). There are 52 weeks in a year. A period of 2 weeks is a fortnight, an abbreviation for 14 nights.

YARD. The standard unit of long measure, composed of 3 feet or 36 inches. It is equal to 91.44 centimeters.

5½	yards	equal 1 rod
240	yards	equal 1 cable's-length
1760	yards	equal 1 mile
2026.6	yards	equal 1 nautical mile

YEAR. The period of the earth's revolution around the sun, about 365 days, 5 hours, 48 minutes, and 47 seconds. The sidereal year is 365 days, 6 hours, 9 minutes, and 9.3 seconds. A period of 12 calendar months. As we reckon 365 days to the year, that is (as seen above) 5 hours, 48 minutes, and 47 seconds too short. Accordingly once every four years a day is added to the year, making it 366 days. But by so doing we add the equivalent of 6 hours to each year, which is too much. To correct this error we do not make a leap year of any year which can be divided by 400.

GEOGRAPHY

IMPORTANCE OF GEOGRAPHY
HISTORY OF GEOGRAPHY
DIVISIONS OF GEOGRAPHY
ASTRONOMY
PHYSIOGRAPHY
AUTOMOBILE TRAILS
OCEAN ROUTES
PHYSICAL TERMS AND DEFINITIONS
COMMERCIAL GEOGRAPHY OF THE WORLD
COMMERCIAL STATISTICS OF THE WORLD
OUTLINE OF BRITISH EMPIRE
CITIES OF UNITED STATES
TABLE OF NATIVE WOODS
ECONOMIC GEOGRAPHY
DICTIONARY OF TECHNICAL TERMS
PICTORIAL GEOGRAPHY OF UNITED STATES
NATIONAL PARKS

Photos 1, 2 and 7 from Keystone View Company; 3 and 6 Underwood & Underwood; 4 and 5 from Brown Brothers; 8 from Ewing Galloway.

FAMOUS AMERICAN BUILDINGS

1 Federal Building and Postoffice, Indianapolis, Indiana. 2 New Union Station, Kansas City, Missouri. 3 Wrigley Building, Chicago, Illinois. 4 Bush Building, New York City. 5 Municipal Building, New York City. 6 Woolworth Building, New York City. 7 New State Capitol Building, Lincoln, Nebraska. 8 New addition to University of Pittsburg buildings, Pittsburg, Pennsylvania.

BOOK V.

GEOGRAPHY.

LABOR.
Mural Painting in the Congressional Library, Washington.
BY C. S. PEARCE.

IMPORTANCE OF GEOGRAPHY. HISTORY OF GEOGRAPHY. DIVISIONS OF GEOGRAPHY. BIOLOGICAL GEOGRAPHY. COMMERCIAL OR ECONOMIC GEOGRAPHY. PHYSICAL GEOGRAPHY. POLITICAL GEOGRAPHY. LARGEST ISLANDS OF THE WORLD. IMPORTANT TORNADOES. AUTOMOBILE TRAILS. CANALS. PHYSICAL TERMS AND DEFINITIONS. COMMERCIAL GEOGRAPHY. COMMERCIAL STATISTICS. BRITISH EMPIRE. FIFTEEN LARGEST CITIES OF UNITED STATES. TABLE OF FOREIGN CITIES. CENTERS OF POPULATION. STATISTICS OF UNITED STATES. CITIES OF UNITED STATES. LARGEST CITIES OF THE WORLD. MANUFACTURED PRODUCTS. ECONOMIC GEOGRAPHY. IMPORTANT BRIDGES. NATIONAL PARKS AND MONUMENTS. COMMERCIAL GEOGRAPHY OF THE WORLD. PICTORIAL GEOGRAPHY OF UNITED STATES.

IMPORTANCE OF GEOGRAPHY.

No one subject has a more universal appeal han that of Geography. We live in a world of Geography. Our food is a constant reminder f the parts of the globe in which it is produced. Our daily newspapers are a fund of geographical acts. Our amusements have many references o the subject. We get new conceptions of the ity, the state or the world every time we take n automobile trip. Even our business success nay depend to a great extent upon our geographical knowledge. Is there need to ask further, why we should study Geography?

Our world is growing smaller. By this we nean that it is easier to get from one part to nother and the details and existence of the nce unknown parts are being opened up to us ery rapidly. For example, it is not so far ack that the daily newspaper was a luxury, nly afforded in the homes of few. Today the verage family buys not only one but usually wo, the morning and evening editions. Information is thus being scattered, but with the ttempt to read a newspaper intelligently a ertain amount of geographical knowledge is necessary. The morning headline, **An Uprising in the Ruhr District**, means what? To what country does it belong, or what are its resources and people, are questions that rise at once? The newspaper not only gives a lot of geographical information but demands a knowledge of conditions as well.

The telephone, the telegraph and the radio were all epoch-making discoveries and have revolutionized our manner of living and thinking. World facts are brought to our attention in an almost unbelievably short time and thus gives us a truer picture of what is happening. The radio nightly is disseminating information. When out of the air comes "K. D. K. A." Pittsburgh, the question immediately arises, where is the city or how large is it, or what are the main factors in its location?

The motion pictures is one of the great forces in the world today and must be reckoned with as such. Millions sit every night to see their favorite actress, the film version of their favorite book or some stupendous spectacle, and is this not all linked up with Geography? What about the news reels, the travelogues that are purely

Geography, or the scenes laid in Alaska, in the streets of Rome, the mob scenes in old Paris during the French Revolution, the sets in Merrie Old England under Robin Hood.

One out of every seven persons in the United States owns an automobile. With it they have been able to see and visualize that world around them that they had never seen before. In their vacation period longer trips are taken, so that the dream of every man or woman of seeing Niagara Falls or Washington, D. C. is usually realized. All this is Geography, the seeing of mountains, rivers, valleys, peoples and strange places.

We are entering into a stage of expansion in our foreign trade and foreign service. The future of many a man and many a business house may be absolutely dependent upon a knowledge of simple geographical facts. Our schools and colleges are realizing this need and are adding new courses on world geography. In one of our largest Eastern Universities they already have six such listed courses on their curriculum.

Politically we are fast becoming entangled in European politics, in resources, boundary lines, peoples, debts and changing governments. To vote intelligently a knowledge of these facts must be before the public and these facts are geographical ones. To decide such public questions, greater knowledge must be had on all points.

These are the reasons for the great and growing importance of the field of Geography. No intelligent citizen, no intelligent business man, and most of all no intelligent parent dare to be without certain of these facts. Upon us, upon you, depends how the children of today—your children, are trained for this new and everchanging world of tomorrow. Dare we fall down in this task?

HISTORY OF GEOGRAPHY.

The ideas which people in all ages have had concerning the shape and size of the world seem ludicrous to us today. One of the earliest conceptions was that the earth was a flat circular surface, entirely surrounded by water and the sky was an inverted bowl-shaped dome of blue placed over this surface. Again it was taught that if a ship sailed far enough out, it would drop off the edge of the world into a great abyss, lost forever. Some philosophers taught that the earth was a solid body hung freely in the center of a hollow sphere of starry heavens. Another conception was that of the idea of symmetry, that is for example, the Egyptians figured that the Nile River must flow west to east before turning north in order to balance the Danube River which flows west to east before turning south. Then from a circular shape the pictures of the world began to take more of the shape of an eliptical band as more territory come to be known and included. Thus our geography started out with weird and fantastic notions which were gradually dispelled and cleared up as explorers and travelers brought us more exact knowledge of the world.

One of the first steps in this direction was when Erosthenes, librarian at Alexandria about 225 B. C., calculated the circumference of the earth by means of the shadows cast by the sun. He found it to be approximately 25,000 miles, which is astonishingly accurate considering the means he had at his disposal. Gradually the seafaring men and travelers brought back information that changed our ideas of shape and size of the world.

Men like Marco Polo, in his journeys to the East, Munster who for the first time added a list of products, industries and peoples to Geography, the Phoenicians, the first great commercial traders and explorers, and Ibn Batula, who in the fourteenth century traversed northern Africa, Asia Minor, China and Central Asia, covering an area approximately 70,000 miles square, all these added to our stock of knowledge and brought the conception of the world to a point nearer the truth. Then came the moderns; Columbus, who in 1492 crossed the Atlantic to America; Magellan, who first circumnavigated the globe; LaSalle, who first saw the Mississippi River; Balboa, the first man from the West to see the Pacific Ocean; Humboldt, the great traveler and writer; Cartier, who journeyed up the St. Lawrence River, and into Canadian territory before his contemporaries; De Soto, Drake, Terres and many others, all helped to swell our stock of geographical knowledge. Our world ideas are still being revised and changed by such men as Peary, the discoverer of the North Pole; Stefansen, who gave us much information concerning the Antarctic regions; the small band of Englishmen, who have attempted to climb Mt. Everest in the Himalaya Mountains; or William Beebe and his explorations in the Galapagos Island or the Sargasso Sea. Gradually then by discovery after discovery, and with each succeeding exploration, our stock of knowledge has increased to where we have a fairly truthful picture of the world we live in.

DIVISIONS OF GEOGRAPHY.

For purposes of classification and clearness, Geography may be sub-divided into bio-geography (biological geography), commercial or economic geography, physical geography, and political geography.

Bio-geography (biological geography). As one travels from one part of the world to another, the change in plant and animal life is very noticeable. From the great extremes of the desert area, where sage brush and cactus reign supreme, to the very edge of the glaciers, in the small valleys thousands of feet high in the mountains, where wild flowers grow and bloom in great luxuriousness, we can only find the answer to this lack of similarity in the great difference in climate and elevation. In the Arctic zone the musk-ox and the polar bear survive; in the Temperate, the red fox, the grizzly bear, the bison and the buffalo; while in the Torrid zone we find the elephant, hippopotamus and the rhinoceros. Illustration after illustration could be given to show how the difference in elevation, rainfall, nearness to water bodies, general climate and physical location are some of the important causes of the variety of plant and animal life. The study of the effect of these physical factors on the flora (plant) and fauna (animal) life of the country or world is called bio-geography.

Commercial or Economic Geography. Commercial geography deals with the industrial life of

a nation as its industry is affected and influenced by physical factors. Trade routes, trade movements, the location of raw materials and natural resources, are factors in the location of an industry. New York's commercial supremacy was laid through the building of the Erie Canal in 1825 through the low Mohawk Valley, enabling her to have an easy outlet to the West and western products, whereas both Philadelphia and Baltimore failed to keep up with New York because of the Appalachian Barrier. The rapid industrial growth of the city of Chicago is another illustration of the importance of geographical location. If the new plans for the Welland Canal are carried through, enabling ocean-going vessels by means of the St. Lawrence, Canal, Lake, route to enter the Harbor of Chicago, there is every reason why Chicago will become the metropolis of the United States, and possibly of the world. It is in the centre of probably the most fertile agricultural region in the world. Again Illinois has become the second leading state in the Union, in the production of bituminous coal. To the north of Chicago lies the Missabe Range, the greatest body of iron ore in the United States. Hence it is apparent that Chicago being midway between the sources of supply, the coal and iron ore fields, is in better position to compete with other cities, especially in that most important commodity, steel manufacturing, because of the material reduction in the cost of transportation.

Nor should we overlook the fact that with the gradually shifting westward of the Centre of Population, will come another distinct advantage to Chicago. It can be readily seen why Chicago should become the steel manufacturing centre of United States. Already it is making great strides in this respect to the corresponding loss of the City of Pittsburgh. The abolishment of the Pittsburgh Plus Plan has also added impetus to the development of its steel business.

In addition, more railroads enter Chicago than any other city in the Union, making it the natural hub for the incoming of raw materials, and again, equally facilitating the distribution of manufactured products. The backwardness of the peoples in the Kentucky Mountains and the Ozark Plateau is due in large part to the mountains which have prevented good roads and thus cut them off from the outside world. The great strides that Pittsburgh has made in iron and steel is due to nearness to good coking coal, plenty of limestone, river transportation and the ease and cheapness of bringing the iron ore down the Great Lakes. The supremacy of the United States in her three great crops, corn, cotton and wheat is due to climate and natural fertility of the land. One cannot over-estimate the importance of knowing fundamental geographical facts, either in the planning of business, or in that individual question of definite location in the earning of one's livelihood. Innumerable illustrations could be used to show how our entire industrial, agricultural and commercial life has been more or less influenced and shaped by these physical and geographical factors.

Physical Geography. This section has been divided into two parts to make analysis easier. The first deals with relative position and measurement of space, form and size, often called mathematical geography and the other, the description of the physical features of the earth. The first division deals with the distances of the earth from the planets, stars and the sun.

In order to designate distances on the earth we have devised parallels of latitude and meridians of longitude.. The representation of the earth on a flat surface is called cartography. Here the relative positions on land elevations, water masses, coastal indentations, seas, rivers, valleys, hills, plains and mountains are given and must be on a mathematical scale and correct. All this calls for exact measurements. The other division of physical geography may be subdivided into three parts, lithosphere, hydrosphere, and atmosphere.

Lithosphere is a study of the land forms of the earth. It includes their distribution, mode of origin and formation, as well as the forces that built or are building the earth, and the tearing down or destructive forces. Explanations of such phenomena as faulting, uplifts, volcanoes, and earthquakes are given. Rivers, lakes, glaciers, monadnocks, gorges, waterfalls, etc., are all discussed as well as the eroding forces of water, glaciers, winds, acids, heat and cold.

Hydrosphere concerns itself with the large salt water areas, seas, oceans, bays, and gulfs. This water area comprises 72% of the surface of the globe. Ocean depths; temperatures of the waters; causes of waves and wave actions; tides, their causes and effects; currents or drifts, their causes and effects, together with the direction of their movement and resulting effect on land areas; all are touched.

Atmosphere. The third division treats of the air; its composition, density at sea level and rarity at heights, its barometric pressure; winds, cause and effect of their movements; clouds; cyclonic and anti-cyclonic areas with their resulting effect upon the weather; and the explanation of the phenomena of rain, frost, dew, hail, ice, snow, haze, and fog.

Political Geography. Natural barriers, mountains, seas, rivers, natural resources, people, and their customs, all have an effect upon political situations and natural aspirations of a people. The weakness in the new state of Poland lies, in the first place in that she has no natural boundaries for protection and in the second place that her rich natural resources are desired by Germany, Russia, and Austria, thus causing conflict and strife because of the geographical location of these natural resources.

The new Austria is but a fragment of its former self, the old Austria-Hungary empire. Her minerals, forests, water-power all were divided among the bordering nations, leaving only the great plain area surrounding the City of Vienna. A country with so few natural resources could not be self-supporting and as a result, we again have the recurring agitation of Austria uniting with Germany as an economic necessity. Political Geography deals with the resulting political effects of Natural Geographical causes. In order to understand therefore the various phases of political affairs, a knowledge of the geographical background and their influences are necessary.

ASTRONOMY.

Stars.—Stars are suns. They are so far away that they appear very small and their motions make only very slight changes in their apparent positions. The nearest star known to us is 275,000 times as far from us as we are distant from the sun, *i. e.*, 275,000 times 94,000,000 miles. The light from the stars travels at the rate of 186,330 miles per second. There are probably over 100,000,000 stars either visible or capable of affecting delicate photographic apparatus. Only 5,000 are visible to the naked eye. The stars are divided into magnitudes based upon the amount of light they send to us. There are 20 of the first magnitude, 65 of the second, 190 of the third, 425 of the fourth, 1,100 of the fifth, and 3,200 of the sixth. There are in all about 200,000 stars in the first nine magnitudes. The light received from a first magnitude star is 100 times that received from a sixth magnitude star. The motion of the stars, while considerable, is apparently very slight, because they are so far away. The greatest motion apparent to us is that of an eighth magnitude star in the southern heavens, which passes through an arc of 8.7 seconds in a year. At this rate it would take 220 years to traverse a space equal to the apparent diameter of the moon. The earliest known catalogue showing the positions of the stars is that of Hipparchus (100-170), who listed 1,080 stars; Tycho Brahe (1546-1601) listed 1,005 stars in 1580; Lalande (1732-1807) noted 47,390 stars; Argelander (1799-1875), 324,198 stars all in the northern hemisphere; Schönfeld (1828-1891) added 133,659 stars from the southern hemisphere; Gould (1824-1896) added 32,468 stars in Argentina; and a movement is now on foot to photograph the entire area of the heavens, requiring 22,000 plates, though for the present only about a million and a quarter of the brightest stars will be measured and catalogued. The Milky Way is a band of light about 20° wide extending entirely around the sky and composed of myriads of small stars visible by instruments. The Pole Star, or Polaris, is a second magnitude star in the constellation Ursa Minor, or the Little Bear. Its height above the horizon is the latitude of the place. In the Big Dipper, or Ursa Major, there are two stars which form the side of the dipper farthest from the handle. The line of these two, when produced about five times their distance apart, will strike the Pole Star. For this reason the two stars are called pointers. Polaris is a double star, one part is a star a little fainter than the second magnitude, the other a little fainter than the ninth. The parts are 18.5 seconds distant from one another. It takes the light from the North or Pole Star over 40 years to reach us. If from any cause Polaris ceased to emit light, it would be more than 40 years before we should find that fact out. A convenient sort of celestial yardstick is the distance from the first pointer of the Dipper to the Pole Star, which is about 28°. The distance between the two "pointers" is about 5° 20′. The diameter of the moon is about half a degree.

Constellations.—These are groups of stars classified by the religion of the ancients and preserved by astronomers for convenience in locating individual stars. *Ursa Major*, or the Greater Bear, contains the familiar Big Dipper. It is estimated that it takes the light from this system over 100 years to reach us. Mizar, a star at the bend of the handle, is a notable double star. Near it is a little star, Alcor, of the fifth magnitude. *Cassiopeia* is in a line from the middle of the handle of the dipper, through the North Star, and about 30° on the other side of the North Star. Polaris is about midway between these two constellations. Cassiopeia takes the form of a W composed of seven stars. Light from this system reaches us in a little more than nine years. *Lyra* is noted for its bright, conspicuous star, Vega. If the sun were as far from us as Vega now is, the sun would be only $\frac{1}{100}$ as bright as Vega is. *Hercules* lies between Lyra and Corona Borealis. It contains one star of the second magnitude, nine of the third, and twelve of the fourth. There is in it one of the most remarkable star clusters in the whole sky, visible to the naked eye on a clear, dark night. *Scorpio*, one of the constellations of the Zodiac and the finest of the southern constellations visible in the north, lies in the Milky Way. Antares, a fiery-red star of the first magnitude, gives a light equal to 900 of our suns. *Corona Borealis*, or the Northern Crown, lies to the west of Hercules, and consists of a semicircle of six small stars. *Boötes*, or the Hunter, is a large constellation near the Northern Crown and extending north from the equator. Arcturus, a brilliant star of the first magnitude, is the most notable star in this group. Its light reaches us in 100 years and it is equal in brilliancy to 1,300 of our suns. *Leo*, the Lion, contains a sickle of seven stars, of which Regulus is the most conspicuous. It is at the end of the handle of the sickle and the ecliptic passes very close to it. *Andromeda* is just south of Cassiopeia. It contains the Great Nebula, which is often visible to the naked eye. *Perseus* is in the Milky Way, near Andromeda. It is noted for the star Algol, or the Demon, of varying brightness. *Auriga*, the Charioteer, lies east of Perseus. Its brightest star is Capella, whose light reaches us in 32 years and is equal to 220 of our suns. *Taurus* is noted for the groups, the Hyades, containing the red star Aldebaran, and the Pleiades, forming a small dipper-like group of seven stars, one of which is so faint that it is often spoken of as "lost," though fairly good eyesight may detect it unaided. The brightest star of the Pleiades is Alcyone, whose light reaches us in 267 years and is 250 times brighter than the sun. *Orion* lies across the equator, near Taurus and Auriga. Betelgeuse and Rigel are famous stars in this group; the Belt of Orion is a row of stars; and the Sword of Orion contains the Great Nebula. *Canis Major*, or the Greater Dog, lies southeast of Orion. It contains Sirius, or the Dog Star, one of the stars nearest to us, yet its light takes 8.4 years to reach us, which means that it is 47,000,000,000,000 miles away. *Canis Minor*, or the Lesser Dog, is east of Orion and contains Procyon, a star of the first magnitude. *Gemini*, or the Twins, is just north of Canis Minor. It contains the two stars, Castor and Pollux; both are just a little below the first magnitude.

The Earth.—The earth is in shape an oblate spheroid, *i. e.*, a spherical body bulging at the equator and flattened at the poles. The longest arc actually measured on the earth's surface is that extending from Hammerfest in Norway to the mouth of the Danube River; another, almost as long, from the Himalayas to the southern extremity of India. From these measurements it is concluded that the radius from the center to the surface at the equator is 3,963.296 miles; and the radius at the poles, 3,949.790 miles. The equatorial diameter is nearly 27 miles greater than the polar. The total area of the earth's surface is about 200,000,000 square miles. At latitude 0°, or at the equator, one degree of latitude is 68.704 miles; at 30°, 68.881 miles; at 60°, 69.23 miles; and at 90°, or at the poles, 69.407 miles. At latitude 0°, or at the equator, one degree of longitude measures 69.652 miles; at 30°, 59.955 miles; at 4o°, 53.431 miles; at 60°, 34.914 miles; and at 90°, or at the poles, all the meridians intersect and there is no longitude. The average density of the earth is about 5.5. The interior of the earth is very hot; but the theory that there is only a thin crust surrounding a molten mass is no longer believed by astronomers and physicists. It is now held that the earth is a solid mass; that the temperature within is above the melting point of most bodies at the surface, but, as the melting point increases with the pressure, it is believed that the pressure within the earth is great enough to maintain a solid state. The atmosphere surrounding the earth consists of about 79 per cent. of nitrogen, 21 per cent. of oxygen, about .0003 per cent of carbon dioxide, and very minute quantities of argon, neon, and helium, besides impurities. The atmosphere extends with rapidly decreasing degrees of density to probably a distance of 100 miles from the surface of the earth; but by far the greater part of the atmosphere is within a few miles of the surface. The earth rotates upon its axis and causes the alternation of day and night. As the circumference of the earth at the equator approximates 25,000 miles, and since the earth revolves completely upon its axis in about 24 hours, it follows that any given point on the earth's surface rushes forward from west to east at a rate of about 1,000 miles an hour. The earth revolves around the sun, which revolution defines the year and fixes the seasons. The orbit of the earth, or its path around the sun, is in the shape of an ellipse, but varying very slightly from a perfect circle. As the orbit of the earth measures over 560,000,000 miles, and since the earth moves over this space in one year, it follows that the earth travels around the sun at the rate of about 19 miles a second. This is in addition to the 1,000 miles an hour in its revolution on its axis. Half the length of the major axis of this ellipse is 93,000,000 miles, and this is the mean or average distance of the earth from the sun. When the earth is nearest to the sun, it is said to be in perihelion; when farthest away, in aphelion. In perihelion the earth is 3,000,000 miles nearer to the sun than when in aphelion. The ecliptic is the apparent path of the sun around the earth, and this ecliptic is inclined to the equator at an angle of about 23½ degrees.

The Moon.—The distance of the moon from the earth varies between 221,600 miles and 252,970 miles. The sun is 400 times farther away from the earth than the moon is. The moon rotates upon its axis once in a month. It always keeps the same side towards the earth. We have never seen the other side of the moon. The moon revolves around the earth. Its orbit is an ellipse very closely resembling a circle. When the moon is nearest to the earth, it is in perigee; when farthest away, in apogee. The real diameter of the moon is 2,163 miles, or about 27 per cent. (little more than one quarter) that of the earth. The volume of the moon is about $\frac{1}{50}$ that of the earth. A body weighed by a spring balance on the moon's surface would weigh one sixth of its weight on the earth's surface. The moon has no atmosphere; there is no water on the moon's surface, nor vegetation, nor snow. The surface is rocky, much cracked by extremes of heat and cold, and, maybe, covered in places by volcanic ashes. There are ten mountain ranges; some of the peaks rise over 20,000 feet, as shown by the shadows which the peaks cast. Over 30,000 craters have been mapped, some of which are from 50 to 60 miles in diameter. The surface is further marked by cracks, fissures, or rills, extending in some cases as much as 150 miles long.

Solar System.—The solar system is made up of the sun, the planets and their satellites, the planetoids, the comets, and the meteors. The sun is the center and the entire system is held together by the force of gravitation. The planetoids are small planets and all but one lie between Mars and Jupiter. The comets and the meteors are wandering or perhaps only visiting bodies without regularly defined orbits. In measuring distances between planets, the distance from the earth to the sun—92,897,000 miles—is taken as the unit of measurement. In round numbers the distances of the planets from the sun are:—

Mercury,	36,000,000 miles.
Venus,	67,200,000 miles.
Earth,	92,900,000 miles.
Mars,	141,500,000 miles.
Jupiter,	483,300,000 miles.
Saturn,	886,000,000 miles.
Uranus,	1,781,900,000 miles.
Neptune,	2,791,600,000 miles.
Pluto,	3,700,000,000 miles.

The size of the planets is indicated by the diameters as follows:—

Mercury,	2,765 miles.
Venus,	7,826 miles.
Earth,	7,918 miles.
Mars,	4,352 miles.
Jupiter,	90,190 miles.
Saturn,	76,470 miles.
Uranus,	34,900 miles.
Neptune,	32,900 miles.
Pluto,	10,000 miles.

All of the planets, except Mercury and Venus, have satellites revolving around them. The Earth has the moon; Mars has two moons, each only a few miles in diameter; Jupiter has four large satellites and five very small ones; Saturn has ten satellites, one larger than Mercury and two very small; Uranus has four satellites; and Neptune, one.

Planetoids.—The planetoids known to science number about 500 and are found in the area between Jupiter and Mars. A few of them have diameters of from 100 to 500 miles, but the very great majority are much smaller, even down to 10 miles. Eros is the only planetoid which lies out of the area mentioned; it lies between the Earth and Mars at a mean distance of 135,500,000 miles. It does not exceed 20 miles in diameter.

Comets.—A comet consists of a *head*, a bright *nucleus* within the head, and the *tail* streaming out away from the sun. They are usually very far away from the earth. They vary in size from a head of 10,000 miles in diameter up to 1,000,000 miles; and a tail from a few millions of miles in length up to more than a hundred millions of miles.

Meteors.—Meteors, or "shooting stars," appear at altitudes of from 60 to 100 miles; move over paths of 40 or 50 miles at a rate of from 10 to 40 miles a second. The light is caused by friction with the earth's atmosphere. It is estimated that from 10,000,000 to 20,000,000 touch our atmosphere every day, but only the merest fraction of them are seen. When a number are seen at one time, a "meteoric shower" is said to occur. The greatest showers of meteors occur on November 15, when they seem to emanate from the sickle of Leo, and are thus called Leonides; and on November 24, when they emanate from a point in Andromeda, and are called Andromedes. So long as a meteor is 160,000 miles or over from the earth, it is most attracted by the sun; but within this distance the earth's attraction predominates. The course which the meteors will take under these influences is along the resultant of these two attractions.

Meteorites are bodies weighing from a few pounds up to 1,000 pounds, which fall upon the earth. Only a few are noted each year, but as so much of the earth's surface is covered by water, the meteorites which reach the earth annually may number 100. They are of stone, with iron, either pure or compounded, nickel, and other common chemical elements, totaling about 30.

The Sun.—The sun is one of the millions of stars. It is the source of our light and heat. It gives 600,000 times as much light as the full moon; and over 60,000 times as much as a candle at one yard distance. It is a 60,000 candle power light. If we could harness and utilize all of the energy which the sun gives us in the form of heat, we should have three horse power for every yard of surface exposed to the sun's rays. The temperature of the sun is about 10,000° Fahrenheit. The heat radiated from it would melt a layer of ice 4,000 feet thick over its entire surface every hour. The surface of the sun which we see is called the *photosphere*. Above the photosphere and extending out from 500 to 1,000 miles is the *reversing layer*. Another outside layer from 5,000 to 10,000 miles thick is the *chromosphere*, or the color sphere; it forms a brilliant scarlet fringe seen during an eclipse. The outermost portion is called the *corona*, or crown, of a pearly light visible only during an eclipse and extending outward from 200,000 to 300,000 miles, with some streamers stretching out over 5,000,000 miles. *Sun spots* are darker bodies, or spots on the photosphere, and may endure for a few days or for several months. The shadow, or *umbra*, of a sun spot may be anywhere from 500 to 50,000 miles across; the *penumbra*, or less dark belt, may be 200,000 miles across. One one-hundredth of the sun's entire surface may be involved at one time. The larger sun spots are easily visible through smoked glass or even by the naked eye when the sun is setting or rising. Galileo discovered sun spots in 1610. They have been the object of superstitious fear, and even in the present day attempts have been made to associate climatic disturbances with the occurrence of large sun spots. The sun rotates on its axis once in about 25 days.

Eclipses.—An eclipse of the moon is caused by the moon entering the shadow of the earth, or, in other words, by the earth passing between the sun and the moon. An eclipse of the sun is caused by the moon passing between us and the sun. And these eclipses may be total or partial. When the planet Venus, which is the next one between us and the sun, passes between us and the sun, we speak of that passage of the shadow across the sun's disc as a *transit*, not as an eclipse. Eclipses may be predicted, because of a law of recurrence known from ancient times. The sun and moon return to the same positions after a period of 6,585 days and 8 hours, or 18 years, 12 days, 8 hours. This period is called the *saros;* and eclipses of every sort repeat themselves at the end of every saros. The eclipses in 1900 were a repetition of those of 1882, 1864, 1846, 1828, and so on. On account of the eight hours during which the sun goes one third around the earth, the same portion of the earth is not exposed to the eclipse, and so every eclipse is not visible at the same places as in its previous occurrence. There will not be another transit of Venus until the year 2004 and again in 2012.

Seasons.—The causes of the regular changes of conditions known as the seasons are the passage of the earth around the sun and the inclination of the earth's axis to the plane of its orbit. As the orbit of the earth is elliptical, one axis is longer than the other, so that the earth is not always at the same distance from the sun. As the axis of the earth is inclined to the plane of its orbit at an angle of 23½ degrees, the same part of the earth is not always inclined to the sun, and the sun's rays are not always perpendicular over the same place on the earth. In the season known to us as spring the sun's rays fall perpendicularly upon the equator; day and night are equal all over the earth; and the event is known as the vernal equinox, March 21. In midsummer, June 21, the sun's rays fall perpendicularly upon the tropic of Cancer; the northern hemisphere experiences its longest day, and the event is called the summer solstice because the sun appears to remain stationary on the ecliptic for a day or two before going south again. In autumn, September 21, the sun's rays fall perpendicularly at the equator; days and nights are equal all over the earth, and the event is called the autumnal equinox. In winter, December 21, the sun's rays fall perpendicularly upon the earth at the tropic of Capricorn; the day is shortest in the northern hemisphere and longest in the southern; the event is known as the winter solstice.

PHYSIOGRAPHY.

The Earth's Surface.—The division of the earth into land and water surface is slightly more than one fourth land, and slightly less than three fourths water, estimated as follows:—

Land Surface.

	Sq. Miles.		Sq. Miles.
Africa	11,317,277	Australasia	3,459,561
North America	15,418,662	Europe	3,875,670
South America		Polar regions	4,190,323
Asia	16,878,507		
		Total	55,640,000

Largest Islands in the World.

	Area Sq. Miles	Population
Greenland	825,000	14,355
New Guinea	321,232	822,348
Borneo	237,916	2,072,100
Madagascar	228,000	3,613,341
Japan	148,756	55,961,140
Sumatra	163,138	5,852,135
Great Britain	89,045	42,767,530
Celebes	72,679	3,108,337
New Zealand (South Island)	58,120	477,658
Java and Madura	52,327	36,860,805
New Zealand (North Island)	44,130	741,255
Cuba	44,164	2,889,004
Newfoundland	42,734	259,358
Philippines	114,400	10,350,330
Iceland	39,709	94,679
Ireland	32,586	4,390,219
Jesso (Yezo)	30,340	843,000
Saghalin	24,560	140,000
Haiti	29,536	3,500,000
Tasmania	26,215	213,877
Ceylon	25,331	4,504,549
Tierra del Fuego	19,299	2,500

Water Surface.

	Sq. Miles.		Sq. Miles.
Atlantic Ocean	34,700,000	Arctic Ocean	4,470,000
Pacific Ocean	67,570,000	Antarctic Ocean	5,610,000
Indian Ocean	28,900,000	Estimated area	141,250,000

Including inland seas and other waters, it is estimated that the total water surface of the globe exceeds 143,000,000 square miles.

Areas, Depths, and Heights of Great Lakes.

Lakes.	Length Miles.	Width Miles.	Max. Depth Feet.	Height above Sea (feet).	Area Square Miles.
Erie	240	30-58	200	573	9,960
Huron	250	190	700	581	22,320
Michigan	325	75	870	581	22,500
Ontario	190	55	738	247	7,240
Superior	412	167	1,008	602	31,200

The Longest Rivers in the World.

Name.	Miles.	Name.	Miles.
Africa.		**America (So.)—Cont**	
Nile	3,670	Rio Negro	1,400
Niger	2,600	Orinoco	1,490
Congo	2,500		
Zambesi	1,650	**Asia.**	
Orange	1,270	Yenisei	3,250
America (North)		Hoang-ho	2,580
Mississippi and Missouri	4,200	Lena	2,860
St. Lawrence	2,200	Obi	2,500
Mackenzie	2,490	Amur	2,780
Saskatchewan	1,090	Euphrates	1,730
Rio Grande	1,740	Ganges	1,557
Arkansas	2,000	Indus	1,800
Columbia	1,400		
Ohio and Alleghany	1,300	**Australasia.**	
Red River	1,550	Murray	1,500
Colorado	1,080		
America (South).		**Europe.**	
Amazon	about 3,900	Volga	2,293
Rio Madeira	2,200	Danube	1,777
Parana	2,720	Ural	1,400
Rio de la Plata	2,300	Don	1,156
San Francisco	1,550	Dneiper	1,336
		Rhine	760

Depths of the Oceans, Greatest.—The depths of the oceans as given by the *Challenger* Expedition are:—

	Feet.		Feet.
Atlantic Ocean	27,366	Antarctic Ocean	18,000
Pacific Ocean	31,614	Arctic Ocean	12,000
Indian Ocean	20,000		

Inland Seas and Other Waters.

	Area in Sq. Miles.		Area in Sq. Miles.
Azof, Sea of	15,000	Gulf of Mexico	600,000
Baltic Sea	160,000	Gulf of St. Lawrence	101,075
Bering Sea	864,555	Japan Sea	383,205
Black Sea	165,000	Mediterranean Sea	977,000
Caspian Sea	170,000	North Sea	197,500
China Sea	472,210	Persian Gulf	88,600
Dead Sea	360	Red Sea	170,820
English Channel	30,000	Aral Sea	26,160

Temperature and Rainfall of Foreign Cities.

Cities.	Mean Annual Temperature.	Annual Average Rainfall, Inches.	Cities.	Mean Annual Temperature.	Annual Average Rainfall, Inches.
Alexandria	69.0	10	London	50.8	25
Algiers	64.3	27	Lyons	53.0	28
Amsterdam	49.9	30	Madeira	66.0	25
Archangel	33.0	14.52	Madrid	58.2	9
Astrakhan	50.1	6	Malta	66.0	20
Athens	63.0	20	Manila	78.4	50
Bagdad	74.0	19	Maranhao	...	277
Barcelona	63.0	18	Marseilles	58.3	23
Berlin	48.2	24	Melbourne	57.0	29
Bermuda	72.0	55	Mexico	60.9	29
Berne	46.0	46	Milan	55.1	38
Bombay	81.3	75	Montevideo	62.0	44
Bofdeaux	57.0	30	Montreal	44.6	30
Brussels	50.0	29	Moscow	40.0	27
Budapest	51.9	17	Munich	48.4	19
Buenos Aires	62.8	12	Naples	60.3	30
Cairo	72.2	12	Nice	58.0	29
Calcutta	82.4	76	Odessa	48.0	26
Canton	71.0	39	Para	81.0	71
Cape Town	62.0	23	Paris	51.3	22
Cherra Punji*	...	610	Peking	53.0	27
Christiania	41.5	26	Petrograd	39.6	17
Constantinople	56.5	21	Port Said	...	2
Copenhagen	46.6	19	Prague	50.2	14
Delhi	77.0	24	Quebec	40.3	30
Dublin	50.1	29	Quito	60.9	2.5
Edinburgh	47.1	38	Rio de Janeiro	77.2	29
Florence	59.2	41	Rome	60.5	31
Frankfort	50.0	16.4	Santo Domingo	81.3	108
Geneva	52.7	32	Shanghai	59.0	37
Genoa	61.1	47	Stockholm	42.3	20
Hamburg	47.0	36	Sydney	65.8	49
Havana	79.1	91	Tobolsk	32.0	18
Hongkong	73.0	101	Trieste	55.0	43
Honolulu	75.0	33	Valdivia	52.0	106
Iceland	39.0	30	Valparaiso	64.0	10
Jerusalem	62.6	16	Venice	55.4	34.1
Lima	73.3	0	Vienna	51.0	19
Lisbon	61.4	27	Warsaw	56.2	21

*In southwestern Assam. It is the wettest place in the world. In 1861 the rainfall there reached 905 inches.

NOTE.—The mean annual temperature of the globe is 50 degrees Fahrenheit. The average rainfall is 36 inches.

Average Annual Temperature in United States.

Place of Observation.	Average Temperature.	Place of Observation.	Average Temperature.
Tucson, Arizona	69	Ft. Gibson, Oklahoma	60
Jacksonville, Florida	69	Raleigh, N. Carolina	59
New Orleans, La	69	Atlanta, Georgia	58
Austin, Texas	67	Nashville, Tennessee	58
Mobile, Alabama	66	Richmond, Virginia	57
Jackson, Mississippi	64	Louisville, Kentucky	56
Little Rock, Arkansas	63	San Francisco, Cal.	55
Columbia, S. Carolina	62	Washington, D. C.	56

Average Annual Temperature in United States—*Continued.*

Place of Observation.	Average Temperature.	Place of Observation.	Average Temperature.
St. Louis, Missouri	55	Camp Scott, Nevada	50
Baltimore, Maryland	54	Des Moines, Iowa	49
Harrisburg, Pa	54	Omaha, Nebraska	49
Wilmington, Delaware	53	Denver, Colorado	48
Trenton, New Jersey	53	Boston, Massachusetts	48
Columbus, Ohio	53	Albany, New York	48
Portland, Oregon	53	Providence, R. I.	48
Ft. Boise, Idaho	52	Detroit, Michigan	47
Salt Lake City, Utah	52	Ft. Randall, S. Dakota	47
Romney, West Virginia	52	Sitka, Alaska	46
Indianapolis, Indiana	51	Concord, N. H.	46
Leavenworth, Kansas	51	Augusta, Maine	45
Santa Fe, New Mex. Ter.	51	Madison, Wisconsin	45
Steilacoom, Wash.	51	Helena, Montana	43
Hartford, Conn.	50	Montpelier, Vermont	43
Springfield, Illinois	50	St. Paul, Minnesota	42

Average Annual Rainfall in United States.

Place.	Inches.	Place.	Inches.
Neahbay, Wash.	123	Ft. Vancouver, Wash.	38
Sitka, Alaska	83	Cleveland, Ohio	37
Ft. Haskins, Oregon	66	Pittsburg, Pa	37
Mt. Vernon, Alabama	66	Washington, D. C.	37
Baton Rouge, Louisiana	60	W. Sulphur Springs, Va.	37
Meadow Valley, Cal.	57	Ft. Gibson, Oklahoma	36
Ft. Tonson, Oklahoma	57	Key West, Florida	36
Ft. Myers, Florida	56	Peoria, Illinois	35
Washington, Arkansas	54	Burlington, Vermont	34
Huntsville, Alabama	54	Buffalo, New York	33
Natchez, Mississippi	53	Ft. Brown, Texas	33
New Orleans, Louisiana	51	Ft. Leavenworth, Kan.	31
Savannah, Georgia	48	Detroit, Mich.	30
Springdale, Kentucky	48	Milwaukee, Wisconsin	30
Fortress Monroe, Va.	47	Penn Yan, New York	28
Memphis, Tennessee	45	Ft. Kearney, Neb.	25
Newark, New Jersey	44	Ft. Snelling, Minnesota	25
Boston, Massachusetts	44	Salt Lake City, Utah	23
Brunswick, Maine	44	Mackinac, Michigan	23
Cincinnati, Ohio	44	San Francisco, Cal.	21
New Haven, Conn.	44	Dallas, Oregon	21
Philadelphia, Pa.	44	Sacramento, California	21
Charleston, S. Carolina	43	Ft. Massachusetts, Colo.	17
New York City, N. Y.	43	Ft. Marcy, New Mex. Ter.	16
Gaston, S. Carolina	43	Ft. Randall, S. Dakota	16
Richmond, Indiana	43	Ft. Defiance, Arizona	14
Marietta, Ohio	43	Ft. Craig, New Mex. Ter.	11
St. Louis, Missouri	43	San Diego, California	9
Muscatine, Iowa	42	Ft. Colville, Wash.	9
Baltimore, Maryland	41	Ft. Bliss, Texas	9
New Bedford, Mass.	41	Ft. Bridger, Wyoming	6
Providence, R. I.	41	Ft. Garland, Colorado	6
Ft. Smith, Arkansas	40	Yuma, Arizona	2.81

Velocity and Force of Winds.

Description.	Miles per Hour.	Feet per Minute.	Feet per Second.	Force in lbs. per Square Foot.
Just perceptible	1	88	1.47	.005
	2	176	2.93	.020
Perceptible	3	264	4.4	.044
Gentle breeze	4	352	5.87	.079
	5	440	7.33	.123
Pleasant breeze	10	880	14.67	.492
	15	1,320	22.0	1.107
Brisk wind	20	1,760	29.3	1.968
	25	2,200	36.6	3.075
High wind	30	2,640	44.0	4.428
	35	3,080	51.3	6.027
Very high wind	40	3,520	58.6	7.872
	45	3,960	66.0	9.963
Storm	50	4,400	73.3	12.300
Great storm	60	5,280	88.0	17.712
	70	6,160	102.7	24.108
Hurricane	80	7,040	117.3	31.488
	100	8,800	146.6	49.200

Relief Features of the Land.—Continents are made up of plains, plateaus, and mountains. *Plains* are coastal and interior. A good example of coastal plains are those on the Atlantic coast south of New York, and upon the Gulf coast. Interior plains are such as the Upper Mississippi plains and the Great Plains west of the Mississippi. Examples of *plateaus* are to be found just west of the Appalachian Mountains, where the Alleghany Plateau is formed; just north of the Wachita Mountains, where the Ozark Plateau is seen; the Great Plateau east of the Rocky Mountains, and the Lava Plateau, Basin Range Plateau, and Colorado Plateau, west of the Rocky Mountains. Plains are the most habitable parts of a country. In the United States three fifths of the population live at an altitude of 100 to 1,000 feet; one fiftieth, about 2,000 feet. The loftiest plateau in the world is the Plateau of Tibet, 15,000 to 16,000 feet high; one of the most picturesque is in northern Arizona, 7,000 feet high, containing the Grand Cañon of the Colorado, a mile deep.

The Loftiest Volcanoes.

Name and Location.	Feet.	Name and Location.	Feet.
Chimborazo, Ecuador	20,498	Mauna Loa, Hawaii	13,671
Misti, Peru	20,320	Alaghez, Russia	13,500
Cotopaxi, Ecuador	19,613	Colima, Mexico	12,750
Antisana, Ecuador	19,335	Rinjani, Malay	12,460
Cayambé, Ecuador	19,186	Fujiyama, Japan	12,440
Demavend, Persia	19,000	Erebus, Antarctic Land	12,362
Tutupaca, Peru	18,960	Tenerife, Canary Is.	12,192
Tolima, Colombia	18,316	Iliamna, Alaska	12,066
Orizaba, Mexico	18,310	Lamongan, Java	12,040
Huila, Colombia	18,000	Irazu, Costa Rica	11,198
Popocatapetl, Mexico	17,833	Etna, Sicily	10,740
Maipu, Chile	17,700	Agong, Sunda Is.	10,500
Sangai, Ecuador	17,459	Haleakala, Hawaii	10,032
Ixtaccihautl, Mexico	17,337	Bandai-san, Japan	6,000
Klyuchev, Kamchatka	16,990	Asosan, Japan	5,620
Tunguragua, Ecuador	16,690	Kirishima-yama, J'p'n.	5,530
Punchincha, Ecuador	15,700	Pelée, Martinique	5,200
Purace, Colombia	15,416	Hekla, Iceland	5,110
Toluca, Mexico	15,000	Vesuvius, Italy	4,000
Mauna Kea, Hawaii	13,805	Stromboli, Italy	3,040

The Highest Mountains.

	Feet.
Everest, India	29,141
Godwin-Austen, India	28,278
Dapsang, Tibet	28,278
Kankanjanga, India	28,156
Dhaulagiri, India	26,826
Nanga Parbat, India	26,614
Mustagh Ata, E. Turkestan	25,800
Tagharma, E. Turkestan	25,800
Masherbrum, India	25,653
Nanda Devi, India	25,560
Rakaposhi, India	25,550
Tirach Mir, India	25,420
Khan Tengri, E. Turkestan	24,010
Chamalhari, Tibet	23,929
Gaurisankar, Nepal	23,447
Aconcagua, Chile	23,088
Kaufmann, Russian Turkestan	22,993
Illimani, Bolivia	22,500
Huascan, Peru	22,045
Tupungato, Chile	22,000
Sorata, Bolivia	21,484
Parinacota, Chile	20,984
Famatina, Argentina	20,680
McKinley, Alaska	20,464
Nenda, China	20,000
Kilima-Njaro, E. Africa	19,780
Tacora, Chile	19,736
Logan, Canada	19,540
Kenia, E. Africa	18,620
Elbruz, Russia	18,526
St. Elias, Alaska	18,024
Wrangell, Alaska	17,500
Iliniza, Ecuador	17,380
Dykhtau, Russia	17,049
Ararat, Turkey	17,000
Koshtantau, Russia	16,876
Stanley, E. Africa	16,815
Kazbek, Russia	16,546
Thok Jalung, Tibet	16,325
Haramak, Nepal	16,000
Crillon, Alaska	15,900
Savalan, Persia	15,787
Mont Blanc, France	15,780
Monte Rosa, Italy	15,213
Abba Yared, Abyssinia	15,015
Gulku, Abyssinia	14,860
Weisshorn, Switzerland	14,799
Matterhorn, Switzerland	14,705
Whitney, California	14,502
Massive, Colorado	14,424
Tyndall, California	14,386
Shasta, California	14,380
Rainier, Washington	14,363
Gray, Colorado	14,341
Rosalie, Colorado	14,340
Castle, Colorado	14,259
Princeton, California	14,196
Holy Cross, Colorado	14,176

PRINCIPAL RIVERS OF THE UNITED STATES.

(Most of these rivers are navigable for a part of their length.)

Alabama, junc. of Coosa and Tallapoosa rivers, Ala., to Mobile river, 350 m.
Alleghany, near Raymond, Pa., to Ohio river, 350 m.
Androscoggin, Umbagog lake, Me., to Kennebec river, 160 m.
Apalachicola, junc. of Chattahoochee and Flint rivers, Ga., to Gulf of Mexico, 90 m.
Arkansas, Rocky mtns., Colo., to Mississippi river, 2,000 m.
Big Horn, Rocky mtns, Wyo., to Yellowstone river, 500 m.
Black Warrior, formed by Locust and Mulberry forks, Ala., to Tombigbee river, 300 m.
Brazos, in the Staked Plain, Tex., to Gulf of Mexico, 850 m.
Canadian, northeastern New Mexico to Arkansas river, 900 m.
Cape Fear, junc. of Haw and Deep rivers, N. C., to the Atlantic, 250 m.
Chattahoochee, in Habersham county, Ga., to Apalachicola river, 500 m.
Cheyenne, eastern Wyoming to Missouri river, 500 m.
Cimarron, Raton mtns., N. Mex., to Arkansas river, 650 m.
Colorado, in the Staked Plain, Tex., to Matagorda bay, 650 m.
Colorado, junc. of Green and Grand rivers, Utah, to Gulf of California, 1,360 m.
Columbia, upper Columbia lake, B. C., to the Pacific, 1,400 m.
Connecticut, Connecticut lake, N. H., to L. I. sound, 410 m.
Coosa, junc. of Oostenaula and Etowah rivers, Ga., to Alabama river, 350 m.
Cumberland, junc. of Poor and Straight forks, Ky., to Ohio river, 650 m.
Delaware, Catskill mtns., N. Y., to Delaware bay, 375 m.
Des Moines, Lake Shetek, Minn., to Mississippi river, 450 m.
Dolores, San Juan mtns, Colo., to Grand river, 250 m.
Flint, near Atlanta, Ga., to Apalachicola river, 350 m.
Fox, Green Lake county, Wis., to Green bay, 250 m.
Genesee, near Raymond, Pa., to Lake Ontario, 145 m.
Gila, Tuscan mtns., N. Mex., to Colorado river, 550 m.
Grand, Hillsdale county, Mich., to Lake Michigan, 280 m.
Grand, Grand lake, Colo., to Green river, 350 m.
Great Kanawha, Blue Ridge mtns., N. C., to Ohio river, 450 m.
Green, Lincoln county, Ky., to Ohio river, 350 m.
Gunnison, Saguache range, Colo., to Grand river, 200 m.
Hudson, Lake Sanford, Adirondacks, to New York bay, 350 m.
Housatonic, Taghanic mts., Mass., to Long Island sound, 150 m.
Humboldt, Elko county, Nev., to Humboldt lake, 375 m.
Illinois, Des Plaines river, Wis., to Mississippi river, 435 m.
James, formed by Jackson's and Cowpasture rivers, Va., to Chesapeake bay, 450 m.
Kalamazoo, Hillsdale co., Mich., to Lake Michigan, 200 m.
Kansas, junc. of Smoky Hill fork and Solomon river, Kan., to Missouri river, 300 m.
Kaskaskia, Champaign co., Ill., to Mississippi river, 320 m.
Kennebec, Moosehead lake, Me., to the Atlantic, 175 m.
Kentucky, Cumberland mtns., Ky., to Ohio river, 250 m.
Menominee, junc. Brule and Michigamie rivers, Mich., to Green bay, 125 m.
Merrimac, White mtns., N. H., to the Atlantic, 150 m.
Minnesota, Big Stone lake, S. Dak., to Mississippi river, 475 m.
Missouri-Mississippi, Rocky mtns., Mont., and Itasca lake, Minn., to Gulf of Mexico, 4,200 m.
Mobile, junc. of Tombigbee and Alabama rivers, Ala., to Mobile bay, 50 m.
Mohawk, Lewis county, N. Y., to Hudson river, 160 m.
Monongahela, formed by West Fork and Tygart's Valley rivers, W. Va., to Alleghany river, 300 m.
Neosho, Morris county, Kan., to Arkansas river, 400 m.
Neuse, Person county, N. C., to Pamlico sound, 300 m.
Ohio, junc. of Alleghany and Monongahela rivers, Pa., to Mississippi river, 950 m.
Osage, Lyon county, Kan., to Missouri river, 460 m.
Passaic, Morris county, N. J., to Newark bay, 100 m.
Pearl, Winston county, Miss., to Gulf of Mexico, 350 m.
Pecos, Rocky mtns., N. Mex., to Rio Grande river, 800 m.
Pedee, Blue Ridge mtns., N. C., to Winyaw bay, S. C., 300 m.
Penobscot, Somerset county, Me., to Penobscot bay, 350 m.
Platte, Sweetwater river, Wyo., to Missouri river, 1,260 m.
Powder, Big Horn mtns., Wyo., to Yellowstone river, 400 m.
Potomac, Alleghanies, W. Va., to Chesapeake bay, 450 m.
Red, in the Staked Plain, Tex., to Mississippi river, 1,200 m.
Red (of North), Lake Traverse, Minn., to Lake Winnipeg, 700 m.
Rio Grande, San Juan mtns., Colo., to Gulf of Mexico, 1,800 m.
Roanoke, formed by Dan and Staunton rivers, Va., to Albemarle sound, 240 m.
Rock, Koshkonong lake, Wis., to Mississippi river, 330 m.
Sabine, northern Texas to Gulf of Mexico, 460 m.
Sacramento, Goose lake, Cal., to Suisun bay, 600 m.
St. Croix, Douglas and Bayfield counties, Wis., to Mississippi river, 200 m.
St. Francis, St. Francois co., Mo., to Mississippi river, 460 m.
St. John's, e. Florida, flows n. to the Atlantic, 400 m.
St. Joseph, Hillsdale county, Mich., to Lake Michigan, 260 m.
San Joaquin, Sierra Nevada mtns., Cal., to Sacramento river, 350 m.
Santee, junc. of Wateree and Congaree rivers, S. C., to the Atlantic, 150 m.
Savannah, formed by Tugaloo and Kiowee rivers, S. C., to the Atlantic, 450 m.
Schuylkill, near Pottsville, Pa., to Delaware river, 130 m.
Scioto, Auglaize county, Ohio, to Ohio river, 225 m.
Shenandoah, Northern Virginia to Potomac river, 200 m.
Snake, Yellowstone Nat. Park, Wyo., to Columbia river, 950 m.
Susquehanna, north or east branch, Lake Schuyler and Otsego lake, N. Y., to Chesapeake bay, 256 m.
Susquehanna, west branch, near Raymond, Pa., to Susquehanna river, 250 m.
Suwanee, Okefinokee swamp, Ga., to Gulf of Mexico, 200 m.
Tallahatchee, northern Mississippi to Yazoo river, 240 m.
Tallapoosa, Paulding county, Ga., to Coosa river, 250 m.
Tennessee, formed by French Broad and Holston rivers, Tenn., to Ohio river 1,200 m.
Tombigbee, Prentiss county, Miss., to Mobile river, 475 m.
Trinity, northern Texas to Galveston bay, 530 m.
Wabash, Mercer county, Ohio, to Ohio river, 550 m.
Washita, western Arkansas, to Red river, 550 m.
White, northwestern Arkansas to Mississippi river, 800 m.
Willamette, Cascade range, Ore., to Columbia river, 275 m.
Wisconsin, northern Wisconsin to Mississippi river, 400 m.
Yazoo, junc. of Tallahatchee and Yalobusha rivers, Miss., to Mississippi river, 300 m.
Yellowstone, Rocky mtns., Wyo., to Missouri river, 1,100 m.

PRINCIPAL FOREIGN RIVERS.

(Most of these rivers are navigable for a part of their length.)

Amazon, S. America, Peruvian Andes to Atlantic, 3,900 m.
Amu-Darya, Turkestan, Pamir plateau to Aral sea, 1,500 m.
Amur, Siberia, w. of Kingans to Gulf of Tartary, 2,600 m.
Brahmaputra, India, Tibet to Bay of Bengal, 1,680 m.
Danube, c. and s. e. Europe, junc. headwaters near Black Forest to Black sea, 1,725 m.
Darling, Australia, Vic. and N.S. Wales to Murray river, 1,160 m.
Dnieper, Russia, Smolensk to Black sea, 1,400 m.
Dniester, Austria and Russia, Carpathians to Black sea, 800 m.
Elbe, Germany, Riesengebirge to North sea, 700 m.
Euphrates, Asiatic Turkey, flows into Persian gulf, 1,700 m.
Gambia, w. Africa, Futa-Jallon w. to the Atlantic, 500 m.
Ganges, India, Hurdwar to Bay of Bengal, 1,500 m.
Garonne, France, Pyrenees n. w. to Bay of Biscay, 385 m.
Hoang-ho, n. China, Kokonor to Gulf of Pechili, 2,600 m.
Indus, Asia, Himalaya mtns., Tibet, to Arabian sea, 2,000 m.
Irawadi, Burma, n. e. of Assam to Bay of Bengal, 1,250 m.
Kongo, c. and w. Africa, 3,000 m.
La Plata, S. America, junc. of Paraná and Uruguay rivers, with Paraná to the Atlantic, 2,300 m.
Lena, Siberia, Baikul mtns. to Arctic ocean, 2,800 m.
Loire, France, Gerbier-des-Joncs to Bay of Biscay, 650 m.
Mackenzie, Canada, Gt. Slave lake to Beaufort sea, 2,300 m.
Madeira, S. America, including the Mamoré, 2,000 m.
Magdalena, Colombia, Ecuador to Caribbean sea, 950 m.
Marne, France, enters the Seine near Paris, 310 m.
Maros, Hungary, Carpathian mtns. to the Theiss, 500 m.
Mekong, s. e. Asia, Tibet to China sea, 2,600 m.
Meuse, France, dept. Haute-Marne to North sea, 575 m.
Murray, Australia, junc. headwaters to Indian ocean, 1,450 m.
Niger, w. Africa, Sudan n. w. of Sierra Leone to Gulf of Guinea, 2,900 m.
Nile, Africa, Victoria Nyanza to Mediterranean, 3,766 m.
Ob, Siberia, Little Altai mtns. to Ob gulf, 2,300 m.
Oder, Germany, Carpathians to Baltic sea, 550 m.
Orange, s. Africa, Drakenberg to the Atlantic, 1,100 m.
Orinoco, S. America, s. Venezuela to the Atlantic, 1,600 m.
Paraguay, Brazil, Matto Grosso state to Paraná river, 1,500 m.
Paraná, Brazil, Minas Geraes state to the Atlantic, 2,450 m.
Po, n. Italy, Monte Viso to Adriatic sea, 420 m.
Rhine, Europe, Switzerland to North sea, 700 m.
Rhone, France and Switzerland to Gulf of Lyons, 500 m.
Rio Negro, Colombia, joins Amazon in Brazil, 1,400 m.
Rio Teodoro, Brazil, to Madeira river, 950 m.
St. John, Maine and New Brunswick, Bay of Fundy, 550 m.
St. Lawrence, Lake Ontario to Gulf of St. Lawrence, 2,150 m.
Salwin, Burma, Tibet to Martaban gulf, 1,750 m.
São Francisco, Brazil, Minas Geraes state to Atlantic, 1,200 m.
Saskatchewan, Canadian Rockies to Lake Winnipeg, 1,100 m.
Seine, France, Côte d'Or to English channel, 475 m.
Shannon, Ireland, Cuilcagh mtns. to the Atlantic, 250 m.
Tagus, Spain and Portugal, flows into the Atlantic, 550 m.
Thames, England, junc. of headwaters to North sea, 215 m.
Theiss, Hungary, Carpathian mtns. to the Danube, 800 m.
Tigris, Asiatic Turkey, unites with Euphrates, 1,150 m.
Ural, between Europe and Asia, to Caspian sea, 1,400 m.
Vistula, Europe, Carpathians to Baltic sea.
Volga, European Russia Tver govt. to Caspian sea, 2,300 m.
Weser, Germany, Münden to North sea, 300 m.
Yangtze, China, northern Tibet to Yellow sea, 3,400 m.
Yenesei, Mongolia and Siberia to Arctic ocean, 3,300 m.
Yukon, Lake Lindeman, Canada, to Bering sea, 2,200 m.
Zambezi, e. Africa to Indian ocean, 1,600 m.

Atmospheric Forces.—The forces exerted by the atmosphere are those of the wind and chemical forces. The atmosphere is everywhere laden with *dust*—on mountain tops, over the ocean, and over the ice fields of the polar regions. The microscope shows that atmospheric dust is composed of grains of pollen from plants, bits of vegetable fiber, hairs, mineral and rock fragments, metallic iron, fungi, bacteria, and disease germs. Dust particles in the air reflect sunlight into shady places; without them all shady places would be black. They soften direct sunlight; for without them the sun would be of dazzling brightness, shining out of a black sky in which the stars would be visible in daytime. They cause or affect the blueness of the sky and the glorious tints of the sky at sunrise and sunset. Water vapor in the air coats the particles of dust, and condensation, causing clouds and rain, follows. Dust, then, is an important, though not a necessary, factor in rain-making. Volcanic dust is thrown into the atmosphere and widely distributed over the world during volcanic eruptions. After the eruption of Soufrière, in the island of Martinique, in 1902, a layer of volcanic dust from five to six feet deep was deposited five miles distant; and it is estimated that some of this dust was in the air for three years and went several times around the earth before settling.

Loess is a dust-like earthy material, the grains of which are smaller than those of sand, but larger than those of clay. These are carried by the wind, and are capable of compacting and forming bluff-like mounds of great solidity. They are to be found in China, Europe, and in many parts of the Mississippi basin. The two most marked *chemical effects* of the air are oxidation and carbonation. *Oxidation* is the effect of the oxygen of the air upon many substances in rocks, most notably upon iron. This rusts or hydrates, and the rocks crumble away. *Carbonation* is caused by the action of the carbon dioxide or carbonic acid gas in the air which unites with some constituents of rocks and causes them to crumble. These are potent forces in the weathering of rocks which make large and valuable contributions to soils. *Freezing* and *thawing*, due to changes in the temperature of the air, are important atmospheric forces. The expansion of frozen water in cracks of rocks acts as a powerful wedge which in time drives the parts asunder and breaks the rocks in pieces. Even the contraction and expansion of rocks under the great ranges of temperature of the air, heated by day and cooled at night, has a similar effect. Masses of rocks on slopes, slightly covered by layers of loose material, gradually peel off under this effect, and, though the process is slow, the cumulative effect of slight changes upon large areas is very great. Roots of plants penetrating crevices in rocks accomplish the same results; and the genus of plants known as the Saxifrage (rock-breakers) exerts a wonderful effect for such slight and delicate agents. Trees growing in crevices of rocks are not of infrequent occurrence. In time their roots bring about important changes in the rocks into which their roots penetrate. The mass of rocks and loosened soil torn up by the roots of trees blown down by heavy winds are also contributory to the same results.

Water Forces.—The effects of water upon the land are seen after heavy falls of rain, rapid melting of snow, and the consequent filling of streams, and in the force of waves from lakes and seas. The average rainfall the world over is about 40 inches a year. In computing the rainfall, from 10 to 12 inches of snow are regarded as equivalent to one inch of rain. If this quantity of water fell at one time it would be sufficient to cover the surface of the land with more than three feet of water. The rainfall varies in different parts of the world.

Ground Water.—Forty inches of rainfall over the whole land equals about 35,000 cubic miles of water in a year. Only about 6,500 cubic miles of this is emptied into the sea by rivers. Part of the remainder sinks into the soil, depending upon the porosity of the earth upon which it falls; part lodges in lakes and pools upon the surface; part runs off the soil; and part is evaporated. That part which soaks into the soil is ground water. It is thought that the water which soaks into the earth does not penetrate deeper than five or six miles. Ground water is not evenly distributed throughout the soil; for in some localities water in well-digging is found in sufficiently large quantities at only a few feet, while in other places it is necessary to bore down hundreds or even thousands of feet before a supply of water can be procured. St. Louis has an artesian well over 4,000 feet deep; Berlin has one the same depth; one in Cincinnati is about 2,500 feet; Chicago has one about 2,700 feet; and there are many over 1,000 feet deep. Ground water is constantly moving, upon the theory that water seeks its own level, but ground water never attains it, because of the added supply which rain constantly brings. Part of the ground water flows into wells or springs; part flows underground into lakes and ponds; part is drawn up by the capillarity of cultivated soil and feeds the roots of plants and trees; and part escapes from the soil by invisible evaporation. When ground water forms a spring, it often passes through soil and rocks which contain substances which are capable of being dissolved by it. In this way salt, mineral, and medicinal springs are formed. When the water has reached considerable depths and has come in contact with hot rocks, a hot spring may be formed, such as the Hot Springs of Arkansas, South Dakota, and Carlsbad in Bohemia. When the hot water is forced out of the spring at intervals a geyser is formed. The most celebrated is the Great Geyser of Iceland. It consists of an immense well, or funnel, 10 feet wide at its mouth, and about 70 feet deep, surmounted at the surface with a basin 65 feet in diameter and 7 feet deep, formed by the deposit of mineral matter from the water. At intervals it sends up a column of water and steam to the height of 100 feet. More remarkable even than the geysers of Iceland are some that are found in the "National Park." One, the Giantess, throws water to the height of 200 feet. Another is known as "Old Faithful," because it discharges its waters regularly once an hour. Grasshoppers and other insects, and pieces of wood which fall into the waters, soon become incrusted with quartz, which is held in solution by the water, thus permanently petrifying them.

Ground water in its passage through the soil dissolves out of the rocks and soil many mineral substances and disintegrates the structure, forming caves after long periods.

The Mammoth Cave is situated in Edmondson County, near Green River, Kentucky, and extends some nine miles. It contains a succession of wonderful avenues, chambers, domes, abysses, grottoes, lakes, rivers, and cataracts. One chamber, the Star, is about 500 feet long, 70 feet wide, and 70 feet high; the ceiling is composed of black gypsum, and is studded with innumerable white points, that by a dim light resemble stars; hence the name. There are avenues one and a half and even two miles in length, some of which are incrusted with beautiful formations, and present a most dazzling appearance. There is a natural tunnel about three quarters of a mile long, 100 feet wide, covered with a ceiling of smooth rock, 45 feet high. Echo River is some three fourths of a mile in length, 200 feet in width at some points, and from 10 to 30 feet in depth, and runs beneath an arched ceiling of smooth rock about 15 feet high; while the Styx, another river, is 450 feet long, from 15 to 40 feet wide, and from 30 to 40 feet deep, and is spanned by a natural bridge. Lake Lethe has about the same length and width as the river Styx, varies in depth from 3 to 40 feet, lies beneath a ceiling some 90 feet above its surface, and sometimes rises to a height of 60 feet. There is also a Dead Sea. The entrance to the cave is reached by passing down a wild, rocky ravine through a dense forest. To visit the portions of this wonderful cave already traversed requires, it is said, 150 to 200 miles of travel.

Carlsbad Caverns in New Mexico, first explored in 1924, are to date the largest known caves in the world. The greatest room is 1,125 feet wide, 350 high, and the total space is 25 times larger than any room in Mammoth Cave. There are many miles of passages, numerous rooms, fountains of rocks that look like frozen Niagaras, ice chambers like delicate lace, and zoological specimens of rare interest. Streams, glaciers, stone lily pads, totem poles and cacti are among the many strange formations. The temperature remains stationary at 56°. Wonderfully colored crystals abound.

Wyandotte Cave and others in southern Indiana, and Luray Cave and others in Virginia, are of similar origin. Some of the solid matter forms bodies, like icicles, called stalactites when they hang from the ceilings, and stalagmites when they rise up from the ground. In the same way crystals form upon the walls. When water carrying mineral matter held in suspension flows into cracks of rocks, these cracks become filled in time with the mineral matter, and veins are formed which often carry gold, silver, and other ores. When ground water charged with solutions of mineral matter falls upon trunks of trees and other vegetable matter, the mineral matter is deposited and takes the place of the vegetable matter as it decays, and in this way petrifaction takes place. The mechanical burrowing under the soil by ground water often results in landslides where great masses of land slide down from sloping positions, burying other regions under the mass and often destroying life and property.

Great Floods and Inundations.—Year 353. Cheshire, England; 3000 drowned.
758. Glasgow; 400 families perished.
1219. Nordland, Norway; 36,000 by lake-burst.
1521. Holland dikes gave way; 100,000 drowned.
1642. Kaifong, China, 300,000 by Yellow River.
1646. Holland and Friesland, 110,000.
1813. Silesia, 6000 drowned; 4000 in Poland.
1825. One-third of Friesland, Denmark submerged; north Jutland made an island.
1833. Canton, China, 1000 dead; and hundreds elsewhere in river valleys.
1840. In France, 60,000 acres flooded.
1849. In New Orleans, 1600 houses flooded.
1874. Williamsburg, Mass., 143 dead; in western Pennsylvania, 220.
1875. Toulouse, France, covered by Rhone; 1000 deaths.
1876. In Ganges delta, India, 150,000 drowned by tidal waves.
1879. Murcia, Spain, 2000 houses and 1000 people destroyed.
1887. Hwang-Ho, China, drowned millions.
1889. Johnstown, Pa., swept by bursting reservoir; 7 other villages razed; 2,209 killed.
1896. In Japan earthquake wave drowned 27,000 and made 60,000 homeless.
1900. Galveston, Texas, flooded by waves, with 7000 drowned, and loss of $30,000,000.
1910. Seine flooded a fourth of Paris; damage $200,000,000; 250,000 homeless.
1911. China, 100,000 drowned by Yang-tse, which made new lake, 50 by 35 miles.
1913. Ohio and Indiana flooded; 400 dead in Miami Valley; 730 in all; loss $100,000,000.
1927. Mississippi River flooded 28,573 square miles; greatest of 30 major floods since 1785; about 200 dead; other great floods in 1844, 1858, 1882, 1903, 1912, 1913, 1922.
1931. In China 2000 sq. miles covered, 150,000 killed; loss, $200,000,000.
1932. In Manchuria, 30,000; $100,000,000.
1935. Hurricane, Fla., high waters in New York, New England, Pennsylvania, and Nebraska drowned 300; damage, $50,000,000; 90,000 on relief.
1936. Even greater damage in Ohio, Connecticut, Potomac, and Merrimac valleys.
1937. Greatest Ohio River flood; 1,000,000 homeless; 500 dead; $300,000,000 loss.

The Mississippi carries half a billion tons of solid earth into the Gulf of Mexico every year. In 1875 Eads made jetties to narrow the river bed, and so to cause the current to wash out all loose material. Recently, by dredging and building up the levees even better results have been obtained. In China a modified Eads method has tended to keep the Hwang-Ho or Yellow River ("The Sorrow of China") within banks, but millions in past history have been drowned by frequent floods of this and the Yang-tse.

The Great Waterfalls.—Waterfalls are formed by a current of water passing rapidly from a higher to a lower level. They are found most frequently in mountainous regions where many streams from the mountain sides unite in the valley. They change their appearance from year to year owing to erosion or the wearing

away of the rocks. Among the highest waterfalls are the following:—

Yosemite (3 plunges)	2660 feet.
Oroco Falls of Monte Rosa	2400
Roraima Fall, Guiana (2 plunges)	2000
Grand Falls of Labrador	2000
Sutherland Falls, New Zealand (3 plunges)	1904
Kukenam Fall, Guiana (sheer plunge)	1500
Gavarnie Fall, Pyrenees	1400
Krimmler Falls, Austria	1300
Staubbach, Switzerland	1000
Vermafos, Norway	984
Maanelvan, Norway	940
Bridal Veil, California (with cascades)	900
Vettisfos, Norway	853
Rjukanfos, Norway	804
Kaieteur Falls, Guiana	740
Skykjefos, Norway	700
Nevada Fall, California	600
Velino Falls, Italy (3 plunges)	591
Tessa Falls, Austria (3 plunges)	541
Vöringsfos, Norway	520
Rukaufos, Norway	513
Great Falls, Montana	500
Tequendama, Colombia	475
Gastein Falls, Austria	469
Victoria Falls, Zambesi	400
Shoshone, Idaho	210
Foyers, highest in Britain (2 plunges)	205
Hay River, Alaska	200
Niagara	165

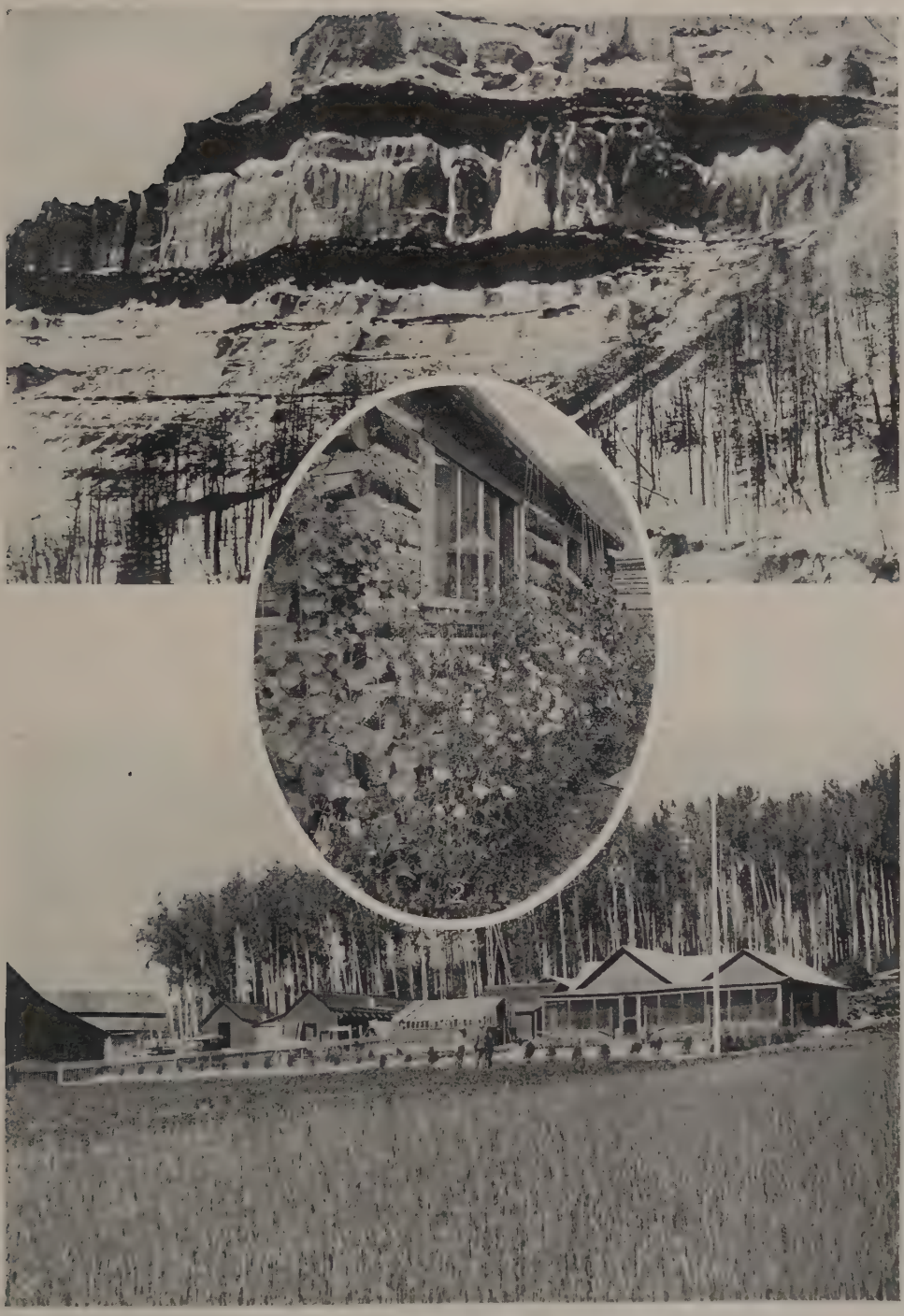
It is estimated that Niagara Falls has a force of about 4,000,000 horse power. In the wearing away it is estimated that Niagara Falls has receded about 7 miles. Estimates have been made of the rate at which it is now receding, and of the time when there will be no falls. But that is what every waterfall is tending to, for all rivers will one day reach a base level. In the work of erosion there are many instances where a mass of rock harder than its fellows has withstood the ravages to which they have yielded. Such masses of rock standing alone as hills or even mountains, are called "monadnocks." When it takes the form of a long, narrow ridge it is called by some a "hog back." In the West these are called "buttes." When flat-topped and table-like, it is a "mesa."

Snow and Ice.—The snow-line on mountains varies with the latitude of the place, being higher at the equator and lower as the poles are approached. Near the equator the snow-line is about 18,000 feet above the sea-level. On the north side of the Himalayas, facing the plateau of Tibet, it is at 19,500 feet. In the Caucasus and in the Rocky Mountains it is about 11,000 feet. In the Alps it is between 7,500 and 9,000 feet. In Iceland, on the Arctic Circle, it is about 3,000 feet. In Spitzenberg it is almost at the sea-level. Snow is seldom known to fall between north and south latitudes of 33°. It is estimated that the total amount of snow and ice on the land amounts to 1,000,000 cubic miles, which, if melted, would raise the sea-level over 30 feet. Glaciers are heavy and compacted snow-fields which creep out of their positions, move down slopes, or spread in all directions if the surface upon which they rest is level. When a glacier cracks open, a crevasse is formed. Great masses of stone and earth are carried by glaciers. This transported matter is called glacier débris. Flat rocks prevent the sun's rays from melting the ice directly under them, and a column of ice remains supporting the stones, giving the whole the appearance of a huge toadstool. As the glacier creeps along and is melted or wasted by the sun's rays at one end, it is being constantly fed or replenished by the snow-fields at the other. The creeping motion of the glacier has been measured by planting rows of stakes along its lower margin. It has been found that the rate of descent of most glaciers is about a foot or two a day, though one huge glacier in Iceland moved over 100 feet a day. Glaciers are numerous in the Alps, where more than 2,000 are known, the longest being 10 miles long and the greater number less than a mile long. In the Caucasus Mountains, the Himalayas, Greenland, and especially in Alaska and Canada, glaciers abound. South of Canada the glaciers are of much less size. Greenland, with its area of from 400,000 to 600,000 miles, is one vast ice field, except on its borders. From these and similar ice formations, great masses break off and float away as icebergs. The great force of glaciers is seen in the polishing, grinding, and powdering effect upon rocks, as well as the transportation of bowlders, stones, and gravel.

Volcanoes.—A volcano is a vent in the earth's crust through which liquid rock or lava and solid rock are emitted. As the material gathers, a cone is formed around the opening or crater. Among active volcanoes the best known are Stromboli, on a small island north of Sicily, about one mile high, and in constant activity; Vesuvius, 4,000 feet high, on the Bay of Naples, disastrously active in the spring of 1906; Krakatoa, in the Strait of Sunda between Java and Sumatra, whose eruption in 1883 caused the death of 36,000 persons and the destruction of 295 villages; Mont Pelée, in Martinique, which in the eruption of 1902 destroyed 30,000 persons; Soufrière, on the island of St. Vincent, in a sympathetic eruption on May 7 of 1902, caused the death of 1,350 persons; Mauna Loa and Kilauea, in Hawaii. Many of the lofty mountains of the globe are of volcanic origin. Among these are Mt. Shasta, in northern California; Mt. Rainier, in Washington; and Mt. Hood, in the Cascade Range. Hardened lava assumes many forms, such as the basaltic columnar structure of the Giant's Causeway.

The name Giant's Causeway is often applied to the entire range of cliffs in the County Antrim, on the northeast coast of Ireland, but it properly belongs to only a small portion of them, which is a platform of basalt in closely arranged columns, from 15 to 36 feet high, which extends from a steep cliff down into the sea till it is lost below low water mark. This platform is divided across its breadth into three portions, the Little, Middle, and Grand Causeway, these being separated from each other by dikes of basalt. The columns are generally hexagonal prisms, but they are also found of five, seven, eight, and nine sides, in almost every instance being fitted together with the utmost precision, even so that water cannot penetrate between adjoining columns. The name "causeway" was given to the platform because it appeared to primitive imagination to be a road to the water, prepared for giants.

Earthquakes.—The general opinion of investigators is that these agitations proceed from within outward, and are not of atmospheric or other external origin. True, Professor Alexis Perry, of Dijon, France, thought he discovered relations between the ages of the moon and these occurrences which seemed to sustain the theory of Zantedeschi that the liquid nucleus of the earth responds to the moon's attraction in tides,



Photos 1, 2 and 3 from Ewing Galloway; 2 and 3 by Burton Holmes.

ALASKAN CONTRASTS—I

1 Coal region, Nenana River section. 2 Flowers amid snow-capped peaks of Skagway. 3. Grain field, U. S. Agricultural Experimental Station, Fairbanks.

Photos 1, 2 and 3 by Burton Holmes, from Ewing Galloway; 4 copyright by Ewing Galloway.

ALASKAN CONTRASTS—II

1 Gold prospectors' camp, Chilkoot Pass. 2 Strawberries growing in summer in Haines, Chilkoot District. 3 Flowers backed by snowy hills, Skagway. 4 Winter transportation by dog teams, Nome.

but the theory that the earth has a liquid nucleus covered with only a thin, solid crust is losing adherents continually. Mr. Robert Mallet, one of the foremost investigators of seismic phenomena, in an elaborate report on the subject presented to the British Association, proposed an ingenious theory. He assumes that volcanoes and the centers of earthquake disturbances are near the sea or other large supplies of water; and he says that when an eruption of igneous matter takes place beneath the sea-bottom the first action must be to open up large fissures in its rocky material, or to lift and remove its incoherent portions, such as sand, mud, gravel, etc. The water, on meeting the heated surface, assumes the spheroidal state. While in this condition the intestine motion may be great, but little steam is generated; but no sooner have the surfaces cooled than the water comes into close contact with them, and a vast volume of steam is evolved explosively and blown off into the deep and cold water of the sea, where it is condensed, and thus a blow of the most tremendous sort is given at the volcanic focus, and, being transferred outwardly in all directions, is transmitted as the earthquake shock. Whatever their origin, whether of one cause or various causes, the prevailing opinion still is that the vibrations of every earthquake can be traced to a focus within the earth, and that this lies directly beneath the point of greatest disturbance on the earth's surface. This center of impulse, or, as it is termed, the "seismic focus," is not an exact mathematical point, but may measure many miles in diameter.

It is only within the last 60 years that the phenomena of earthquakes have been subjected to exact investigation, and a new science has been created, known as *seismology* (σεισμός, an earthquake). Special instruments called seismometers and seismographs have been designed for the purpose of recording the direction and intensity of the disturbances.

We now learn that earthquakes are much more frequent than was formerly supposed. There are, for instance, official records of 8,331 earthquakes in Japan between the years 1885 and 1892; that is, an average of over 1,000 shocks a year. Seismologists have further discovered that, although volcanic and seismic disturbances may take place side by side, the direct relationship between them is extremely rare. Speaking generally, it is found that earthquakes are more frequent along the steeper flexures in the earth's surface, and in those localities where geological conditions show that the secular movements of the earth's crust are still in progress. These conclusions would indicate that the origin of many earthquakes is connected with rock folding. Such movements, including upheavals, subsidences, and horizontal displacements, are termed bradyseismical (βραδύς, slow) movements.

Great Earthquakes.

425 B. C.—One which made Euboea an island.
345 B. C.—Duras in Greece and 12 cities in Campania buried.
17.—Ephesus and other cities demolished.
79.—One accompanying the eruption of Vesuvius and destruction of Herculaneum and Pompeii.
115.—Antioch destroyed.
157.—One hundred and fifty towns wrecked in Asia Minor and Macedonia.
557.—Thousands perished at Constantinople.
742.—In Syria, Palestine, and Asia Minor. Immense loss of life.
936.—Constantinople desolated; all Greece shaken.
1137.—In Catania, Sicily; 15,000 perished.
1158.—In Syria, etc.; 20,000 perished.
1268.—In Cilicia; 60,000 perished.
1318.—Greatest earthquake known in England.
1456.—At Naples; 40,000 perished.
1531.—At Lisbon; 30,000 buried.
1626.—In Naples; 70,000 perished.
1693.—In Sicily; 354 cities, towns, and villages destroyed. More than 100,000 perished.
1703.—In Jeddo (now Tokyo), Japan; 200,000 killed.
1716.—At Algiers; 20,000 perished.
1731.—In China; 100,000 perished.
1746.—Lima and Callao demolished; 18.000 buried.
1755, November 1.—Great Lisbon earthquake. In about eight minutes most of the city and 50,000 people were destroyed. Other cities in Portugal, a large part of Malaga in Spain, one half of Fez in Morocco, and half the island of Madeira were ruined.
1759.—In Syria; 20,000 perished.
1783.—In Calabria; shocks continued to end of 1786, towns and villages destroyed.
1797.—Country between Santa Fé and Panama destroyed, including Cuzco and Quito; 40,000 buried.
1805.—At Frosolone, Italy, 6,000 perished.
1812—In Caracas; whole city ruined; 10,000 inhabitants buried.
1815. In island of Sumbawa, East Indies; one of the most violent eruptions recorded in history.
1819.—At Cutch, India; many towns over a wide area converted into ruins.
1822.—Aleppo destroyed; over 20,000 perished.
1822.—Coast of Chile permanently raised.
1835.—In Chile; Concepción, Talcahuano and other towns were destroyed.
1839.—At Martinique; nearly half of Port Royal destroyed.
1842.—At Cape Haytien, Santo Domingo; 4,000 killed.
1851.—Melfi, Italy, wrecked; 14,000 perished.
1857.—Montemuro and other towns in the kingdom of Naples destroyed; 10,000 perished. (Lacaita says that in 75 years, from 1783 to 1857, the kingdom of Naples lost at least 111,000 inhabitants by earthquakes, or more than 1,500 a year, out of an average population of 6,000,000.)
1860.—At Mendoza, Argentina; about two thirds of the city destroyed, and 7,000 lives lost.
1863.—Manila, P. I., great destruction of property.
1868.—Cities of Arequipa, Iquique, Tacna, and Chincha, and many small towns in Peru and Ecuador destroyed; about 25,000 perished.
1874.—Cities in Guatemala destroyed; great loss of life.
1880.—Shock at Brieg, Switzerland; several killed.
1883.—Java and neighboring isles desolated.
1884.—Severe shocks in eastern counties of England.
1884.—Several Spanish towns destroyed.
1885.—In province of Granada, Spain; 690 perished.
1886, August 31.—Shocks throughout eastern United States; at Charleston, S. C., 41 lives and $5,000,000 worth of property lost.
1886, September-December.—Slight shocks at and around Charleston, causing panic.
1887.—Severe shock in southern Europe, especially in the Riviera; estimated that 2,000 perished.
1891.—In Japan; officially estimated that 4,000 perished and that 50,000 houses were destroyed.
1893.—Islands of Zante and Stromboli, the former west of Greece, the latter one of the Lipari group, west of Calabria, Italy, severely shaken. Great loss of lives and property at Zante.
1897—In Assam, India; much damage; many killed.
1906, April 18.—Violent shocks in California wrecked San Francisco and adjacent towns. Bursting of water mains in San Francisco gave the city over to what was the greatest fire in all history, lasting two days. Area burned was over three times greater than that of the Chicago fire, and ten times that of either the Boston or the Baltimore fire. Great loss of life, and $300,000,000 of property destroyed; over 300,000 homeless. The business section of San José was destroyed, 19 lives lost, and property valued at over $8,000,000 destroyed. Santa Rosa was swept by fire; 50 lives were lost. At Agnews Insane Asylum 117 patients and 9 attendants were crushed to death. Stanford University buildings were damaged to the extent of $2,800,000, including the fine Memorial Church. Much damage in the Santa Clara, Napa, and Sonoma valleys.
1906, August 16, 17.—At Valparaiso, Chile, causing great destruction of life and property.
1907.—Large part of Kingston, Jamaica, destroyed.
1909.—In Sicily and southern Italy, Messina and many towns and villages desolated. Appalling loss of life; thousands buried alive; the survivors homeless.

1908.—On December 28 in northwestern Sicily and southwestern Calabria there occurred one of the worst earthquakes recorded, and while lasting only a matter of about thirty-five seconds, the loss of life amounted to 76,000 people, the injured 95,470 and the homeless population over 1,000,000. Among the cities destroyed were Messina, Faro and Scolleta in Sicily and Reggio, Gallicia and Palmi in Calabria.
1910.—On May 5th in the Island of Costa Rico, town of Cartago, 1,500 people were killed by an earthquake.
1912.—In this year, Turkey was the scene of another earthquake, with the loss of 3,000 lives, injuring 6,000 and making 40,000 homeless.
1915.—Devastating large areas in Central Italy, one of the worst earthquakes recorded there came on January 13th, affecting 372 provinces, wiping out practically one entire town, Avezzano, and killing 29,978 people.
1917.—This earthquake started on December 24th and with its shocks felt intermittently for one week it caused the death of 2,500 lives in Guatamala City.
1919.—The eruption of the volcano Kalut on May 20th, in the Brengatand district, Java, destroyed thirty-one villages and population numbering over 5,000.
1920.—In Mexico the combination of an eruption and an earthquake caused the death of 3,000 people, the loss of thousands of dollars in property and the destruction of entire towns.
1920.—With a loss of life more appalling than any we have record of, the earthquake in the Kansu provinces of China on December 16th, was the cause of 200,000 of the population losing their lives, 300 square miles of territory badly damaged and the practical destruction of ten cities.
1923.—On May 29th in Persia, the entire Kharasoau province was shaken, causing the death of 4,600 people and destroying six towns and villages.
1923.—The Japanese Earthquake, first shock being recorded September 1st, and followed by others of varying intensity. Yokohoma was almost completely destroyed. 68,000 out of 93,000 homes were destroyed either by the earthquake or fire that followed it. Tokyo, the capital of Japan suffered heavily. The dead exceeded 100,000 people, with 146,000 wounded and missing.
1925.—In May, 400 Japanese killed and 500 wounded in another earthquake with property loss of 50 millions.
1930.—Italy in four provinces, 1,475 dead; 60,000 homeless.
1931.—Nicaragua. City of Managua, 2,000 dead; 60,000 homeless; damage $70,000,000.
1931.—Japan. On two islands, 1,000 dead.
1934.—India. Two districts, over 20,000 killed; whole towns wiped out.
1935.—India. At Karachi, 56,000 killed. At Quette, 30,000.
1935.—Formosa. Over 3,000 killed; 12,000 injured.

Important Tornadoes in the United States.

1882.—April.—Kansas—40 killed.
1892.—July 14.—Minnesota—50 killed.
1893.—June 20.—Kansas river valley—16 killed.
1893.—July 6.—Pomeroy, Iowa—63 killed.
1896.—May 27.—St. Louis and East St. Louis—500 killed.
1897.—Mar. 30.—The town of Chandlen, Oklahoma, was three-quarters wiped out.
1905.—May 9.—Marquette, Kansas—30 killed.
1905.—May 11.—Snyder, Oklahoma—130 killed.
1908.—Apr. 24.—Mississippi, Louisiana & Alabama—500 killed.
1913.—Mar. 13.—Illinois, Indiana, Tennessee, Louisiana and Texas—heavy property damage and great loss of life.
1923.—Apr. 25.—Oklahoma—100 killed.
1925.—Mar. 18.—This tornado arose in the Ozark Hills, Missouri, zigzagged into southern Illinois crossed over into Indiana and spent its real force in Kentucky and Tennessee. For more than five hours, this whirling wind swept over 300 miles of territory, covering parts of five states, taking the lives of 823 people, injuring 2,990 and making over 15,000 people homeless, entailing a loss of millions.
1926.—Oct.—Florida visited with hurricane. Principally in regions between Palm Beach and Key West. Hurricane hit the hardest in regions north of Miami, Fort Lauderdale and Moore Haven. —315 lost lives, 150 missing, 1100 injured, 20,000 homeless. Property damage $165,000,000.
1927.—Oct.—St. Louis and environs visited by tornado which killed nearly a hundred and destroyed 25 millions in property.

GREAT FIRES

64 A. D.—Rome burned 8 days, 10 of 14 wards.
1106.—Venice nearly destroyed.
1491.—Dresden destroyed.
1614.—Stratford-on-Avon, England burned.
1624.—Oslo, Norway, nearly destroyed.
1666.—Greatest London fire, 13,200 houses, 400 streets, 436 acres, St. Paul's and 80 churches, scores of other structures; loss estimated then at $50,000,000.
1728.—Copenhagen, 1650 houses, 77 streets.
1750.—Constantinople, 20,000 houses in three different fires.
1752.—Moscow, 18,000 houses.
1772.—Smyrna, 3000 buildings.
1782.—Constantinople, 17,000 houses, 50 mosques, 100 corn mills, with 100 dead. Others in 1784 (10,000 houses), and lesser fires in 1756, 1765, and 1767.
1790.—Carlscrona, 1087 houses, churches.
1811.—In Tyrol, a forest fire, 64 villages.
1812.—Moscow fired to drive out Napoleon; 30,000 houses, loss $150,000,000.
1822.—Canton, China, nearly all burned.
1835.—New York, 530 buildings, 32 acres, 1000 firms homeless, loss $15,000,000.
1842.—Hamburg, Germany, 4219 buildings, 100 killed; loss $35,000,000.
1850.—Cracow, Poland, largely burned.
1866.—Yokohama, two-thirds of native town.
1870.—Constantinople, 7000 buildings in Christian and diplomatic area, including foreign legations.
1871.—Great Chicago fire, 17,430 buildings, 250 killed, 98,500 homeless, 2124 acres burned over, one-third of city (half in value), loss about $200,000,000.
1872.—Boston, 776 buildings, 75 acres, loss $75,000,000.
1904.—Baltimore, 175 blocks; $85,000,000.
1906.—San Francisco. See under **Earthquakes.**

OTHER MEMORABLE DISASTERS

1836.—Leningrad, Lehman's Theatre	800
1845.—Canton, China, Theatre	1,670
1860.—Lawrence, Mass., factory	600
1863.—Santiago, Chile, church	2,000
1872.—Tientsin, China, theatre	600
1880.—Vienna, Ring, theatre	450
1896.—St. Louis, Mo., tornado	500
1902.—Martinique, Mt. Pelee, eruption	30,000
1903.—Chicago, Iroquois theatre	575
1905.—New York, General Slocum, ship	958
1905.—Karatsisk, Russia, mine	500
1906.—Courriere, France, mine	1,060
1907.—Toyooda, Japan, mine	400
1907.—Monogah, W. Va., mine	360
1910.—Bolton, England, mine	300
1911.—Ontario, Canada, mine	400
1912.—Atlantic, Titanic, ship	1,517
1913.—Senghenyyd, Wales, mine	423
1915.—Chicago, Eastland, ship	812
1915.—Near Ireland, Lusitania, ship	1,198
1919.—Java, eruption	5,100
1925.—Missouri, Ills., tornado	823
1926.—Florida, hurricane	372
1928.—Porto Rico, hurricane	300
1928.—Dutch East Indies, eruption	1,200
1931.—Belisa, Hondurus, hurricane	1,200
1932.—Camaguey, Cuba, tornado	2,500
1932.—Georgia, tornado	362
1934.—Osaka, Japan, typhoon	2,064
1935.—Haiti, hurricane	2,000
1935.—Florida, hurricane	700
1937.—New London Texas Explosion	500

Distance Between the Chief Ports of the World by Sea in Nautical Miles.

UNITED STATES PORTS.

	Miles.
BOSTON to Liverpool, northern route	2,790
southern route	2,932
HONOLULU to Auckland, N. Z.	3,915
San Francisco	2,089
Yokohama	3,445
NEW ORLEANS to Havana	570
Liverpool	4,767
Southampton, England, *via* Havana	4,744
NEW YORK to Colon	1,989
Genoa	4,061
Glasgow	3,000
Havre	3,160
Liverpool	3,025
Southampton	3,110
SAN FRANCISCO to Acapulco	1,850
Honolulu	2,089
Victoria	760
Yokohama	5,280

CANADIAN PORTS.

HALIFAX, N. S., to Bermuda	740
London	2,723
PORT CHURCHILL, Hudson Bay, to Liverpool	2,966
QUEBEC to Glasgow	2,563
ST. JOHN, N. B., to Glasgow	2,605
London	2,972
VANCOUVER, B. C., to Vladivostok	4,401
Sydney, N. S. W.	6,780
VICTORIA, B. C., to San Francisco	760
Yokohama	4,320

WEST INDIAN PORTS.

BERMUDA to Halifax, N. S.	740
HAVANA to New Orleans	570
San Juan, Porto Rico	1,030
Vera Cruz	810
KINGSTON, JAMAICA, to Belize, Honduras	660
MARTINIQUE to Colon	1,357
Havre	3,560
ST. THOMAS to Southampton	3,630
Colon	1,023
Para	1,700
Liverpool	3,627
SAN JUAN, PORTO RICO, to Havana	1,030

CENTRAL AMERICAN PORTS.

ACAPULCO to Panama	1,410
San Francisco	1,850
BELIZE, HONDURAS, to Kingston, Jamaica	660
COLON to St. Thomas	1,023
Martinique	1,357
New York	1,989
PANAMA to Acapulco	1,410
Auckland, N. Z.	6,160
VERA CRUZ to Havana	810

SOUTH AMERICAN PORTS.

BUENOS AIRES to Liverpool	6,258
CAPE HORN to Rio de Janeiro	2,350
Wellington, N. Z.	4,400
GEORGETOWN or **DEMERARA** to London	4,260
MONTEVIDEO to Punta Arenas	1,070
Valparaiso	2,743
Rio de Janeiro	1,000
PARA to Liverpool	4,000
St. Thomas	1,700
PERNAMBUCO to St. Vincent, Cape Verde	1,608
PUNTA ARENAS to Montevideo	1,070
RIO DE JANEIRO to Cape Horn	2,350
Montevideo	1,000
VALPARAISO to Montevideo	2,743

EUROPEAN PORTS.

BRINDISI to Malta	360
CADIZ to Teneriffe	698
CONSTANTINOPLE to Malta	894
Odessa	345
CORK to St. John's, Newfoundland	1,730
EDINBURGH (LEITH) to Hamburg	480
Iceland	1,050
Shetland Islands	270
FAROE ISLANDS to Shetland Islands	250
Iceland	250
GENOA to Gibraltar	858
Naples	336
New York	4,061

	Miles.
GIBRALTAR to Genoa	858
London	1,299
Marseilles	694
Naples	973
Southampton	1,054
GLASGOW to New York	3,000
Quebec	2,563
St. John, N. B.	2,605
HAVRE to Martinique	3,560
New York	3,160
ICELAND, REYKJAVIK, to Edinburgh	1,050
LISBON to Dakar	1,547
Liverpool	983
San Miguel, Azóres	780
LIVERPOOL to Boston (northern)	2,790
(southern)	2,932
Buenos Aires	6,258
Lisbon	983
Madeira	1,430
Mauritius, *via* Cape Town	9,950
New Orleans	4,767
New York	3,025
Para	4,000
Port Churchill, Hudson Bay	2,966
Quebec	2,634
St. Thomas	3,627
LONDON to Georgetown (Demerara)	4,260
Gibraltar	1,299
Halifax	2,723
Melbourne, *via* Suez Canal	11,055
St. John, N. B.	2,972
Wellington, *via* Cape Horn	11,970
MALTA to Constantinople	894
Brindisi	360
MARSEILLES to Algiers	417
Gibraltar	694
Sydney, *via* Suez Canal	9,831
NAPLES to Genoa	336
Gibraltar	973
Port Said	1,110
ODESSA to Constantinople	345
PORT SAID to Naples	1,110
SAN MIGUEL, AZORES, to Lisbon	780
SHETLAND ISLANDS to Edinburgh	270
Faroe Islands	250
SOUTHAMPTON to Cape Town	6,016
Gibraltar	1,054
New Orleans	4,744
New York	3,110
St. Thomas	3,630
Teneriffe	1,501
TRIESTE to Bombay	4,317

AUSTRALASIAN PORTS.

ADELAIDE to King George's Sound	1,015
APIA, SAMOA, to Sydney	2,354
AUCKLAND to Panama	6,160
Honolulu	3,915
Sydney	1,284
HOBART to Cape Town	5,838
KING GEORGE'S SOUND to Melbourne	1,340
Adelaide	1,015
Aden	5,114
MELBOURNE to King George's Sound	1,340
Mauritius	4,594
London, *via* Suez Canal.	11,055
NOUMEA, NEW CALEDONIA, to Sydney	1,077
SAMOA to Sydney	2,354
SUVA, FIJI ISLANDS, to Sydney	1,753
SYDNEY to Apia, Samoa	2,354
Auckland	1,284
Suva, Fiji Islands	1,753
Marseilles, *via* Suez Canal.	9,831
Noumea, New Caledonia	1,077
Vancouver	6,780
Wellington	1,280
WELLINGTON to Cape Horn	4,400
London, *via* Cape Horn	11,970
Sydney	1,280

ASIATIC PORTS.

ADEN to Bombay	1,650
Colombo, Ceylon	2,100
Karachi	1,480
King George's Sound	5,114
Port Said	1,308
Zanzibar	1,120
BOMBAY to Aden	1,650
Mauritius	2,530
Trieste, *via* Suez	4,317
CALCUTTA to Rangoon	680

	Miles.
COLOMBO to Aden	2,100
King George's Sound	3,347
Penang	1,278
HONGKONG to Manila	650
Shanghai	800
Singapore	1,440
Tokyo	1,620
Yokohama	1,620
KARACHI to Aden	1,480
MANILA to Hongkong	650
Singapore	1,343
NAGASAKI to Shanghai	454
PENANG to Colombo	1,278
PORT SAID to Aden	1,308

	Miles.
RANGOON to Calcutta	680
SHANGHAI to Hongkong	800
Nagasaki	454
Tien-tsin	735
SINGAPORE to Hongkong	1,440
Manila	1,343
TIEN-TSIN to Shanghai	735
TOKYO to Hongkong	1,620
VLADIVOSTOK to Vancouver	4,401
YOKOHAMA to Hongkong	1,620
Honolulu	3,445
San Francisco	5,280
Victoria, Canada	4,320

Distances Between European Cities.

TRAVELING DISTANCES BETWEEN THE PRINCIPAL CITIES IN EUROPE. IN MILES.

	Odessa	Moscow	Petrograd	Stockholm	Copenhagen	Warsaw	Constantinople	Trieste	Rome	Munich	Vienna	Turin	Berne	Berlin	Hamburg	Antwerp	Lisbon	Madrid	Paris	Liverpool	London
Odessa		950	1356	1733	1510	693	1205	1725	2138	1564	1298	2018	1883	1699	1903	2025	3345	2718	1899	2232	2080
Moscow	950		406	836	1252	1510	1510	668	1067	1318	671	697	1047	885	270	208	620	2012	1600	812	1181	979
Petrograd	1356	406		430	846	1252	1733	1510	1769	2239	1395	1899	2119	1714	1091	1269	1588	3286	2874	1699	1976	1774
Stockholm	1733	836	430		416	846	1510	2408	1082	1171	1731	1084	1110	1337	1176	685	580	993	2384	1972	1219	1491	1289
Copenhagen	1510	1252	846	416		1067	1510	1510	668	1067	1318	671	697	1047	885	270	208	620	2012	1600	812	1181	979
Warsaw	693	1510	1769	1082	1067		1276	1702	436	1156	1021	398	576	895	2593	1925	1067	1557	1355			
Constantinople	1205	1510	2239	1510	1510	1276		1725	2138	1564	1298	2018	1883	1699	1903	2025	3345	2718	1899	2232	2080	
Odessa	863	842	1330	1800	1226	960	1680	1545	1240	1418	1787	3117	2625	1760	2119	1917						
Moscow	811	1617	2087	1513	1247	1967	1832	1209	1387	1706	3414	2904	1843	2117	1915							
Petrograd	693	1769	2239	1395	1899	2119	1714	1091	1269	1588	3286	2874	1699	1976	1774							
Stockholm	1082	1171	1731	1084	1110	1337	1176	685	580	993	2384	1972	1219	1491	1289							
Copenhagen	668	1067	1318	671	697	1047	885	270	208	620	2012	1600	812	1181	979							
Trieste	1510	668	1067	1318	671	697	1047	885	270	208	620	2012	1600	812	1181	979						
Rome	1769	1067	1318	671	697	1047	885	270	208	620	2012	1600	812	1181	979							
Munich	1899	1318	671	697	1047	885	270	208	620	2012	1600	812	1181	979								
Vienna	1787	1387	1706	3414	2904	1843	2117	1915														
Turin	1706	3414	2904	1843	2117	1915																
Berne	1588	3286	2874	1699	1976	1774																
Berlin	993	2384	1972	1219	1491	1289																
Hamburg	620	2012	1600	812	1181	979																
Antwerp	2025	3345	2718	1899	2232	2080																
Lisbon	1917	3117	2625	1760	2119	1917																
Madrid	1915	3414	2904	1843	2117	1915																
Paris	1774	3286	2874	1699	1976	1774																
Liverpool	1289	2384	1972	1219	1491	1289																
London	979	2012	1600	812	1181	979																

Number of Miles from New York to

Adrian, Mich.	775
Akron, Ohio.	610
Albany, N. Y.	143
Alexandria, Va.	238
Algiers, La.	1,551
Allegheny, Pa.	434
Allentown, Pa.	92
Alton, Ill.	1,060
Annapolis, Md.	222
Ann Arbor, Mich.	716
Atchison, Kan.	1,368
Atlanta, Ga.	1,018
Auburn, N. Y.	328
Augusta, Me.	407
Augusta, Ga.	887
Aurora, Ill.	951
Baltimore, Md.	188
Bangor, Me.	482
Bath, Me.	382
Baton Rouge, La.	1,320
Belfast, Me.	424
Bellefontaine, Ohio.	658
Binghamton, N. Y.	215
Blackstone, Mass.	272
Bloomington, Ill.	1,037
Boston, Mass.	236
Bristol, R. I.	215
Bucyrus, Ohio.	632
Buffalo, N. Y.	433
Burlington, N. J.	74
Burlington, Iowa	1,122
Burlington, Vt.	280
Cambridge, Mass.	239
Camden, N. J.	91
Canandaigua, N. Y.	377
Carson City, Nevada	2,800
Chambersburg, Pa.	246
Charleston, S. C.	874
Charlestown, Mass.	235
Chattanooga, Tenn.	980
Chicago, Ill.	911
Chillicothe, Ohio.	645
Cincinnati, Ohio.	744
Circleville, Ohio.	640
Cleveland, Ohio.	581
Columbia, S. C.	744
Columbus, Ohio.	624
Concord, N. H.	308
Covington, Ky.	745
Cumberland, Md.	364
Davenport, Iowa.	1,093
Dayton, Ohio.	804
Denver, Col.	1,980
Des Moines, Iowa.	1,251
Detroit, Mich.	679
Dover, N. H.	304
Dubuque, Iowa.	1,100
Dunkirk, N. Y.	460
Elmira, N. Y.	274
Erie, Pa.	508
Evansville, Ind.	1,021
Fall River, Mass.	180
Fitchburg, Mass.	218
Fort Kearney, Neb.	1,598
Fort Wayne, Ind.	763
Fredericksburg, Va.	296
Galena, Ill.	1,083
Galesburg, Ill.	1,076
Galveston, Tex.	1,900
Georgetown, D. C.	228
Hamilton, Ohio.	766
Harrisburg, Pa.	182
Hartford, Conn.	112
Hudson, N. Y.	115
Indianapolis, Ind.	838
Jackson, Miss.	1,498
Jefferson City, Mo.	1,210
Kalamazoo, Mich.	822
Kansas City, Mo.	1,361
Kingston, N. Y.	88
Lafayette, Ind.	903
Lansing, Mich.	785
Lawrence, Mass.	262
Leavenworth, Kan.	1,385
Lexington, Ky.	840
Lexington, Mo.	1,354
Little Rock, Ark.	1,430
Lockport, N. Y.	507
Louisville, Ky.	900
Lowell, Mass.	261
Lynchburg, Va.	404
Macon, Ga.	1,121
Madison, Wis.	1,049
Memphis, Tenn.	1,289
Milledgeville, Ga.	1,100
Milwaukee, Wis.	996
Mobile, Ala.	1,370
Montgomery, Ala.	1,193
Montpelier, Vt.	454
Nashua, N. H.	275
Nashville, Tenn.	1,085
New Albany, Ind.	903
New Bedford, Mass.	181
New Brunswick, N. J.	32
Newburgh, N. Y.	53
New Haven, Conn.	76
New Orleans, La.	1,550
Newport, Ky.	744
Newport, R. I.	162
Norwalk, Conn.	45
Omaha, Neb.	1,455
Oswego, N. Y.	237
Paterson, N. J.	17
Peoria, Ill.	1,072
Petersburg, Va.	378
Philadelphia, Pa.	88
Pittsburg, Pa.	431
Portland, Me.	344
Providence, R. I.	193
Quincy, Ill.	1,176
Racine, Wis.	976
Raleigh, N. C.	669
Reading, Pa.	128
Richmond, Va.	356
Rochester, N. Y.	386
Rock Island, Ill	1,093
Rome, N. Y.	264
Roxbury, Mass.	238
Sacramento, Cal.	2,900
St. Joseph, Mo.	1,384
St. Louis, Mo.	1,084
St. Paul, Minn.	1,441
Salem, Mass.	252
Salt Lake City, Utah.	2,410
San Francisco, Cal.	3,038
Sandusky, Ohio.	642
Saratoga, N. Y.	182
Savannah, Ga.	974
Scranton, Pa.	142
Springfield, Ill.	1,068
Springfield, Mass.	138
Springfield, Ohio.	826
Staunton, Va.	482
Stonington, Conn.	143
Syracuse, N. Y.	302
Taunton, Mass.	210
Tallahassee, Fla.	1,190
Terre Haute, Ind.	912
Toledo, Ohio.	742
Tonawanda, N. Y.	463
Trenton, N. J.	58
Troy, N. Y.	148
Utica, N. Y.	237
Vicksburg, Miss.	1,542
Washington, D. C.	230
Wheeling, W. Va.	522
Wilmington, Del.	116
Wilmington, N. C.	604
Worcester, Mass.	192

Number of Miles by Water from New York to

Amsterdam	3,510
Bermuda	660
Bombay	11,574
Boston	310
Buenos Aires	7,110
Calcutta	12,425
Canton	13,900
Cape Horn	8,115
Cape of Good Hope	6,830
Charleston	750
Columbia River	15,965
Constantinople	5,140
Dublin	3,225
Gibraltar	3,300
Halifax	612
Hamburg	3,775
Havana	1,420
Havre	3,210
Hawaii	15,300
Kingston	1,640
Lima	11,310
Liverpool	3,210
London	3,375
Madras	11,850
Naples	4,330
New Orleans	2,045
Panama	2,358
Pekin	15,325
Petrograd	4,420
Philadelphia	240
Quebec	1,400
Rio Janeiro	3,840
Round the Globe	25,000
San Francisco	15,858
Valparaiso	9,750
Washington	400

LARGEST SHIP CANALS IN THE WORLD.

Opened.	Name.	Value to Commerce.	Location.
1876	**Amsterdam Ship:** 16½ miles long; 197 feet wide; 23 feet minimum depth.	Reduces distance to North Sea 50½ to 16½ miles.	Connects Ymuiden, on the North Sea, with Amsterdam. Annual net tonnage, 4,662,229 tons.
1902	**Bruges:** 6¼ miles long; 26¼ feet deep; 72 feet wide. Cost over $7,500,000.	Brings ocean trade from the North Sea to Bruges.	Connects Bruges with Heyst on the North Sea.
1822	**Caledonian:** length 60½ miles; depth 17 feet; width 100 feet; 25 locks. Cost up to 1849, $6,381,294.	Fishing fleets and small tourist steamers for access to the heart of Scotland.	Connects Atlantic with Moray Firth on the North Sea. Twenty-three of the 60½ miles are cutting, the rest small lochs; controlled by a government commission.
1914	**Cape Cod:** 13 miles long; 25 feet deep at low tide; 100 to 400 feet wide at bottom; sea level. Begun in 1909.	Shortens route from Boston to New York 70 miles and time of passage 4 hours, besides greatly lessening sea hazards.	Between Massachusetts and Buzzards Bay. Cost, $12,000,000,
1893	**Corinth:** 4 miles long; 26 feet deep; 72 feet wide. Cost $13,750,000. Tolls are 18 cents a ton and 20 cents a passenger.	Shortens voyage from the Adriatic to harbor of Athens by 202 miles. Saves 185 miles between Adriatic and Black seas.	Connects the Gulf of Corinth with the Saronic Gulf. Difficulties of navigation in the gulfs at the terminals cause larger vessels to avoid it.
1885	**Cronstadt or Pontileff:** 17½ miles long; 22 feet deep; 200 feet wide. Cost $10,000,000,	Carries vessels direct to St. Petersburg without unloading as formerly.	Connects Cronstadt with St. Petersburg.
1681	**Du Midi or Languedoc:** 148 miles long; 600 feet above sea level: 100 locks; 6½ feet deep; 60 feet wide; Cost $8,500,000.	Floats vessels of about 100 tons; shortens the route between French ports, and develops inland trade.	Connects the Bay of Biscay through the Garonne River with the Mediterranean Sea and the two terminals, Toulouse and Narbonne.
1900	**Elbe and Trave.** Cost nearly $6,000,000.	Opens up the trade of the interior with the Baltic Sea.	Connects the Elbe with the Baltic through the Trave.
1791	**Forth and Clyde:** 38 miles long; 160 feet above sea level; 8 to 10 feet deep; 39 locks.	Transports merchandise across Scotland and benefits small fishing boats.	Connects the River Forth with the Clyde.
486 B.C. to 18th C. A. D.	**Grand:** 1000 miles long; barges are drawn up inclined planes by capstans.	Connects the cities of Hangchow and Peking. Still used to carry rice and passengers.	Extends from Hangchow to Tientsin, China. Connects the waters of the Yang-tse-kiang with the Peiho.
1895	**Harlem Ship Canal.**	Cuts across Manhattan Island and obviates the passage around by the Battery.	Connects the Hudson and Harlem rivers.
1895 to 1914	**Kaiser Wilhelm or Kiel.** Length, 61¼ m.; width, 144⅓ ft. at bottom, 234 ft. at top; depth, 36½ ft.; locks, 1062⅔ × 147 × 45½ ft. Original cost, $40,000,000.	Saves over 200 miles in going from the Baltic to the North Sea. Passage occupies 8 to 10 hours. A sea level canal.	Connects the Baltic and North seas. Extends from Holtenau on the Baltic to Brunsbüttel on the Elbe. Enlarged to its present dimensions to serve larger war vessels, at the cost of $55,000,000. Reopened, June, 1914. Tonnage, 10,292,158.
1894	**Manchester:** 35½ miles long; 28 feet deep; 300 feet wide; 4 locks. Cost $75,000,000.	Seagoing vessels can ascend to Manchester. One of the greatest feats of hydraulic engineering.	Runs from the Mersey at Eastham just above Liverpool, to Manchester. A swing aqueduct carries the Bridgewater Canal over the Manchester Canal and lifts like a drawbridge to let vessels with masts pass through.
1855	**Sault Ste. Marie, St. Mary's or "Soo:"** 2 miles long; 25 feet deep; 160 feet wide at bottom; has one lock, the largest in the world. Cost $6,100,000.	Overcomes the obstruction of St. Mary's Falls in Michigan.	Connects the waters of Lake Superior with St. Mary's River and Lake Huron. Though open only 8 months in the year the traffic is the largest in the world, greater than that through the Suez, amounting to about 40,000,000 tons a year.
1896	**Sault Ste. Marie** (Canadian); ⅔ mile long; 150 feet wide; 22 feet deep; one lock. Cost $3,770,621.	Overcomes obstructions in St. Mary's River. Gives a waterway from the head of Lake Superior to the St. Lawrence.	Connects Lake Superior and Lake Huron; has a traffic of about 5,500,000 tons annually.
1869	**Suez:** length nearly 100 miles; uniform depth, 29 feet. Cost originally $80,000,000; improvements (1884-1889) cost $20,000,000.	Shortens sea route to India by saving passage around the south of Africa. Built by the French under De Lesseps.	Connects Port Said on the Mediterranean with Port Thewfik on the Red Sea. Annual value of traffic exceeds $700,000,000; time of transit, 16 hours 8 minutes. Accommodates a ship of 10,000 tons. Toll receipts exceed $22,000,000 from over 4,000 ships a year. England bought nearly half the stock from the Khedive (1875) for $19,855,320. Toll is 8½ francs per ton for loaded ships; 7 francs for empty ships; and 10 francs for passengers.
1829	**Welland** (Canadian): 26¾ miles long; 14 feet deep; 45 feet wide at bottom; 27 locks; Cost $28,000,000.	Passes around Niagara Falls. Completes the waterway from the head of Lake Superior to the sea.	Connects Lakes Erie and Ontario. Begun in 1824 and completed in 1833. Locks give a rise of 365 feet.

Ship Canals in Construction and Projectèd—*Continued.*

Opened.	Name.	Value to Commerce.	Location.
1914	**Panama Canal:** 50 miles long; depth — minimum, 41 feet, maximum 85 feet, average, 45 feet; summit level, 85 feet; width of channel at base, 300 to 1,000 feet; 6 pairs locks; time of passage (without delays), 10 to 12 hours. Total excavation, about 242,000,000 cubic yards. Cost, $375,000,000.	Will shorten the voyage from Liverpool to San Franvisco 43 per cent. and to Iquique 30 per cent. From New York to Australia, 28 per cent. shorter than by Suez. From New Zealand to England 15 per cent. shorter than by Suez.	Connecting the Atlantic and Pacific Oceans across the isthmus of Panama, between Panama and Colon. The dam at Gatum is to catch the overflow from the Chagres River. The reservoir has a surface area of 164 square miles; the dam at its crest is 115 feet above sea level, is nearly 8,000 feet long, and about 2,100 feet wide at its base. The hardest part of the work was about five miles of the Culebra cut between the Cascades and Paraiso. From 35,000 to 50,000 men were employed in the construction.
	Riga: 1000 miles long, 27 feet deep, 213 feet wide; to cost $500,000,000; five years to construct.	To connect the Baltic with the Black Sea and give an outlet for trade of the interior of Russia.	From Riga on the Baltic to Kherson on the Black Sea.
	Berlin: 25 feet deep, 190 feet wide; to cost $50,000,000.	To develop Berlin's trade and to make it accessible by ships of large size.	From the Baltic Sea to Berlin.
1921	**New Orleans Industrial:** 6 miles long, 30 feet deep and 150 feet in width, costing $20,000,000.	Allows New Orleans two outlets to the sea.	Connecting Lake Pontchartrain with the Gulf of Mexico.
1926	**Marseilles-Rhone:** 4½ miles long, 79 feet wide, cut 50 feet through hills; water depth, 10 feet.	Twenty-five miles travel in Mediterranean.	Allows boats to go direct from Lyons to Marseilles, without entering the Mediterranean.

PHYSICAL TERMS AND DEFINITIONS.

Adobe—Clay formations or soil which cover large portions of the states of Colorado, Utah, Western Kansas, Nevada, Texas, Arizona and California. This soil is workable when sufficiently moistened, but tillage is practically impossible when dry.

Aeolian Deposits—Dust, fine particles of soil and sand grains blown to sheltered places where they accumulate. In certain regions of China and the Mississippi Valley they have accumulated in deposits of great thickness, sometimes forming sandstones.

Air—The gaseous substance which fills the atmosphere surrounding the earth, although invisible it can be weighed, liquified or frozen to a solid. It provides oxygen for breathing, conveys sound and light, absorbs heat during sunshine. It is comprised of 23.10 parts oxygen and 76.90 parts nitrogen. Its exact height is unknown. At two and seven-tenths miles above the surface of the Earth its density decreases. Calculation seems to indicate that at a height of fifty miles it becomes too light to affect the barometer.

Alluvial Fan—Areas of sand or soil ranging from very small to large areas, often including many square miles, caused by erosion of hills or mountains, the material being brought down and deposited in fan shape mounds.

Altitude—Meaning height, used in reference to the physical relief, as the altitude of a mountain.

Anti-cyclone—High barometric pressure with out blowing winds, opposite of cyclone.

Aridity—Dryness of atmosphere, prevailing in regions of low rainfall, mostly in desert sections.

Aurora Borealis—A luminous display in the northern hemisphere, usually in moving bands or rays, ranging from silvery whiteness to yellow or red. The cause of this display is thought to be electrical disturbances in the atmosphere.

Avalanche—Ice and snow mixed with earth moistened from mountain slopes or glaciers dashing downward into the valley, causing great destruction, usually termed slides.

Barrier Reef—Coral reef bordering the shore, separated from the mainland by a narrow body of water or lagoon.

Bay—An arm of the sea partly enclosed by land, very often a sunken river valley.

Bayou—A body of water or a small lake, caused by the meandering of a stream and the meander finally being cut off from the main stream.

Beach—The fringe of land skirting the water's edge, which has been worn and torn by the waves. In some cases we have smooth sandy beaches, as at Atlantic City or Daytona or rocky ones as in Maine. *Barrier beaches* are bars of sand which have been piled up some distance from the shores by wave action, and the intervening strip of water is called a lagoon, if small and shallow, or a sound, if large and deep.

Blizzard—A driving snow storm, combined with a cold wind of great velocity.

Bluff—A high point of land with steep escarpments or a bold headland.

Bog—Wet spongy ground covered with decayed moss and other vegetable matter.

Boulder—A block of rock, which has usually been transported and which has no connection with the surrounding rock bed.

Breakers—When waves from the open sea reach water so shallow that perceptible wave motion reaches to the bottom, the increase friction retards the bottom of the advancing wave, and the waves following, gradually overtake it. The waves thus become shorter and higher and the front slope becomes steeper as the water becomes more shallow so that the water in its crest falls forward in a graceful curve dashing upon the beach in foam and spray, as a breaker.

Butte—A round topped hill of fairly steep sides.

Campos—Open plains are called prairie, llanos, pampas and campos in different sections of the world.

Canal—An artificial ditch, ranging anywhere from a few inches deep and a few feet wide to 100 feet deep and a number of thousand feet wide, the latter being used for transportation purposes, the Panama or Suez canals for example.

Canyon—A deep gorge, usually caused by erosion, the softer material being worn away, or rock faulting plus erosion.

Cape—A point of land extending into the water.

Cascade—A fall of water over a series of small precipices.

Cave—Formed by the prolonged solution and abstraction of mineral matter by percolating water. In some limestone districts, owing to the solubility of different rocks such caves or caverns are often miles in extent, as the Mammoth Cave in Kentucky, or the Luray Cavern in Virginia. By falling in of the roof of the caverns or the solution of the rock along the vertical joints that serves as channels for descending rain-water, sink holes are formed.

Chinook—A name given to a warm wind that descends on the eastern slope of the Rockies, melting the snow in the winter, and burning up the vegetation in the summer time.

Cliff—A steep, precipitous, vertical face of rock caused by water erosion as when hard and soft strata of rock alternate. The rapid erosion of the softer strata undermines the hard strata which falls from its own unsupported weight. If such fragments collect faster than erosion can remove them, they gradually form a *talus* which may cover and protect the softer strata from erosion.

Climate—The condition of warmth, coolness, dryness, dampness, clearness, etc., caused by various factors, such as nearness to the water, the altitude, the topography, type of winds, and general location. There are two general types of climate:

Marine Climate: effected by large bodies of water, resulting in a very moderate climate with no great extremes of temperature.

Continental Climate: A climate of great extremes, very warm summers, and cold winters found in areas where we have great open spaces with no water or other barriers to break it up.

Climatology—The study, or science of weather conditions.

Clouds—Mass of mist or fog floating in the air. Clouds screen the earth from excessive heat in summer, while serving as a mantel, they keep it warm in winter, by checking radiation. They present a variety of appearances and are divided into seven classes. The three simple ones are cirrus, cumulus, and stratus.

Cirrus: Consisting of white wavey lines or curled bands. It is the lightest of cloud forms, attains the highest elevation, supposed to consist of minute crystals of ice as in the snow flake and may be defined as frozen fog. They frequently herald cyclones.

Cumulus: Derived their names from being heaped up like touring mountains, often of glistening whiteness, appearing frequently in the summer when evaporation is rapid, forecasting generally thunder storms.

Stratus: Appear in long layers or ribbons seem most frequently in the evening.

Compound Clouds—Cirro-cumulus, cirro-stratus, cumulo-stratus and cumulo-cirro-stratus or nimbus.

Cirro-cumulus is made up of fleecy masses of cirrus which roll themselves up into rounded shapes, frequently known as "mackeral sky."

Cirro-stratus consists of layers of Cirrus clouds. They resemble shoals of fishes swimming parallel to one another, like the Cirrus, often the forewarner of a storm.

Cumulo-stratus, formed of heaps of clouds resting on layer clouds. General mass is often quite dark and threatening, although the edges are bright with sunshine behind the clouds.

Nimbus, simply a cloud of any kind from which rain falls.

Continent—The land elevations above the ocean are called continents, and then rather arbitrarily subdivided again for the purpose of classification on almost a political basis as South America, North America, Europe, etc.

Continental Shelf—The slightly submerged section of the ocean's bottom, in close proximity to the shore, before it drops off to a depth of a mile or more.

Coral Island and Reefs—Composed of rock, and nearly pure carbonate lime, formed by myriads of sea animals called polyps, living in vast colonies on the bottom of clear shallow tropical seas; growing upward in varied forms, they form islands and reefs. These islands seldom rise above ten to twelve feet from sea level, generally take the form of a narrow strip or ring of rocky land, wholly or partially surrounding a shallow lake or a lagoon of sea water. These islands are called atolls and are common in the warm part of the Pacific and Indian Oceans.

Cordillera—A combination of mountain chains, or the main mountain axis of a country.

Crater—The principal mouth or vent of a volcano, usually occurring in the hollow or summit of a cone.

Crevasse—Glaciers passing through narrow gorges and gliding over steep irregularities, crack and splinter, the lower parts break away from the upper forming fissures of great depth called Crevasses.

Currents.

Aleutian Current—When the Japanese Current, (also called Kuro Shiwo), passes the Aleutian Islands, it receives that name, taking a southeastwardly course. It gives to Western North America its enormous rainfall and abundant timber growth. It waters Washington and

Oregon, turns westward and again becomes part of the Equatorial Current.

Equatorial Current (Of the Atlantic)—Crosses this ocean between the shores of Africa and South America, striking the latter continent at Cape Saint Roque. Here it divides. One portion going southward, being named the **Brazil Current**. The other going northwestwardly, is divided by the West Indies. The main section enters the Caribbean Sea, becoming the well known Gulf Stream.

Gulf Stream—On leaving the Strait of Florida parallels the Atlantic seaboard, as far as Newfoundland, turns eastward striking the Azores, where it divides, one branch passing north toward the British Isles, the other to the western shores of Europe and Africa, finding its way back into the Equatorial Current. In length it is about 3000 miles. Its breadth at the Strait of Florida is about 40 miles. In the Middle Atlantic its breadth is about 120 miles. In volume it exceeds the Mississippi more than 1,000 times. The climate of Western Europe is tempered by the winds blowing over the stored up heat of the Gulf Stream.

Japanese Current—Is the Gulf Stream of the Pacific, having a two-fold office, watercarrier and heatbearer. Its principal effect is on the northwestern coast of the United States, Canada and Alaska.

Labrador Current—The Labrador Current flowing out of the Arctic Ocean enters Baffin Bay, striking the coast of East Canada or Labrador, from whence it gets its name to the Island of Newfoundland, reaching as far south as Cape Cod. This current teems with fish and gives rise to the great fishing industry of Grand Banks. The Newfoundland fogs are caused by the cold Labrador Current meeting the warmer Gulf Stream.

From the Antarctic a broad drift flows toward the equator, divides off Cape Horn, one branch passing into the Atlantic and the other, the *Humboldt or Peruvian Current* enters the Pacific, carrying its cool waters along the west coast of South America. When these waters touch the equator it is still too cool for the growth of the coral polyp.

Cyclone—Bodies of air of high pressure, displacing areas of low pressure or vice versa give us cyclonic areas or cyclonic storms. These pressure areas aid us in forecasting the weather. The popular meaning of this term seems to be rapidly changing areas of pressure, giving us very heavy winds and much rain.

Delta—A sand or mud bar caused by the deposition of sediment at the mouth of a stream.

Desert—A very arid region with only a very small amount of rainfall.

Dew—Moisture formed on cold surfaces, due to condensation of the water vapor, in the air.

Divide—The name given to the escarpment that separates two or more river systems.

Doldrums—Occurring within 15° north and south of the Equator. An area of low barometric pressure, being free from movements of the atmosphere. It is the most difficult part of the ocean for the sailors to cross, hence by the sailors called Doldrums.

Drumlin—In Central New York, Eastern Massachusetts, and southern Wisconsin, ridges of glacial *debris* or *till* having an oval or elongated oval form and smooth rounded surfaces are called drumline, usually occurring in the flat lowlands, elliptical in form and the larger axis always parallel to the direction of ice movement. Height rarely exceeds 100 to 200 feet.

Dunes—The surface of the desert consisting in some places of sharp stones and in others of gravel and of sand, the latter when driven before the wind are arranged in huge billows, called dunes. Found in the Sahara and along the Atlantic coast and some of the western states.

Dust—Finely divided organic and inorganic matter in the atmosphere.

Earth—The name given to the planet on which we live.

Earthquake—Movements or tremblings of the earth's surface due to some faultings or fissures formed under the earth's surface.

Equator—An imaginary circle around the earth, 90 degrees from each pole.

Erosion—The wearing away of the earth's surface. *Mechanical erosion*—the physical washing or tearing away of the soil by rain, snow, wind or glacial action. *Leaching* is the dissolving out of certain elements in the soil as the leaching of the phosphorous or the nitrogen.

Escarpment—A steep slope.

Estuary—Very deep indentations in land, affected by the tides, usually caused by a sunken river mouth.

Fault—A fissure or a series of fissures in the rock structure oftentimes in retaining and horizontal positions.

Fiord—A narrow inlet of the sea with steep sides.

Fog—The condensation of water vapor in very fine particles near the earth as contrasted with the condensation at higher altitudes or clouds.

Frost—Condensation and freezing of water vapor on a cold surface.

Geyser—A hot spring which spouts steam and hot water, intermittently.

Glacier—A large mass of accumulated ice in motion. The residues or deposits left by the glacier were numerous, such as *eskers*, *long ridges* of sand or gravel, *moraines*, and *kame*.

Gorge—A very narrow valley with steep sides.

Gulf—A large body of salt water, partially landlocked.

Hail—Precipitated water vapor that has frozen at a high altitude.

Harbor—An indentation in land sufficiently protected for ships to anchor, and deep enough for ships, shipping and dock facilities.

Hardpan—A hard layer below the subsoil usually of impenetrable clay.

Heaths—Tracks of open level land covered with shrubs of the Heath family, occurring largely in Northern Europe.

Hemisphere—Half of the terrestrial sphere divided either, by the equator into Northern or Southern hemispheres, by a meridian into Eastern and Western (so that North and South America are contained in the Western) or into divisions known as *Land* and *Water* hemispheres.

Hill—A land elevation.

Horizon—The apparent visual juncture where earth and sky seem to meet.

Humidity—The amount of water vapor in the air. *Relative humidity* is the ratio between the actual amount of vapor in the air and the amount it could hold at saturation. *Absolute*

humidity is the amount of water vapor actually in the air.

Hurricane—Cyclonic storms on a violent scale, with high winds, thunder and lightning, usually in tropical regions.

Ice—Water frozen in a solid state or water in a crystalline form.

Iceberg—A great floating mass of ice, usually broken off from a glacier.

Island—A body of land completely surrounded by water. They can be divided into two main classes.

Continental—Meaning islands which rise from the submerged continental borders, and not from deeper parts of the ocean floor.

Oceanic—Arise from deeper portion of the ocean's floor. In structure either volcanic or coralline.

Isobar—A line on a map connecting all areas or places having the same barometric pressure at a definite time or period of time.

Isotherm—Lines connecting areas having the same temperatures at a definite time or over periods of time.

Isthmus—A narrow neck of land, connecting two larger bodies of land.

Kames—Closely related to drumlin, are mounds or knolls of sand and gravel or glacial debris, which have been more or less stratified through water action.

Lagoon—A stretch of shallow salt water between a barrier beach and the shore, if quite deep is called a sound.

Lake—A body of water surrounded by land. Formation of lake basins can be generally classified as follows: (1) Great (diastrophic) movements of earth's crust. (2) Drainage obstruction by mountain elevations. (3) Land subsidence caused by earth movement or earthquakes. (4) Moraines left by melting of ice. (5) Glacial erosion. (6) Volcanic action.

Latitude—Imaginary circles around the earth in an east-west direction parallel to the equator. Since it is 90 degrees from the equator to either pole, each degree represents about sixty-nine miles. North of the equator it is north latitude, south, it is south latitude.

Lava—Molten rock underneath the surface of the earth or rock that has been poured out of the earth in a molten state.

Levee—(Natural) Alluvial plain built up along the channel of a river.

Lightning—Electrical discharges in the atmosphere from one cloud to another, noticeable because of the brilliant flashes.

Llanos—West of the Buina Highland, the Amazon River Valley becomes a treeless or prairie plain; during wet seasons flooded, and in the dry weather covered with a luxuriant growth of grass resembling a great meadow, called **llanos.**

Longitude—Imaginary circles around the globe in a north-south direction, passing through both poles, the lines of the circles being called meridians. The greatest distance between the meridians is about 69 miles. The English speaking people have designated Greenwich Observatory, England, as the starting point and running 180 degrees to the East, called east longitude and 180 degrees to the west being west longitude.

Magnetic Poles—There are two magnetic poles, one in the northern and one in the southern part of the globe. Both shift slightly from time to time. The last position of the northern pole was latitude 70 degrees north, and longitude 97 degrees west. The southern, latitude 72 degrees south, and longitude 153 degrees east. The magnetic needle of the compass is directed towards the northern pole in the northern hemisphere, and towards the southern pole, the other side of the equator.

Marsh—An area of low, watery land.

Meander—A gently flowing stream, having soft banks which are easily turned by obstacles and forms many curves, almost meeting itself in places. Such windings are called meanders.

Mesas—Isolated table lands or plateaus.

Mineral—An inorganic chemical substance found in nature.

Mineral Waters—Springs or wells that have in solution, chemicals, that are thought to have a beneficial effect on the human body.

Mirage—Adjacent layers of the air near the earth surface, owing to differences in temperature or humidity have widely different densities. The refraction and total reflection of light rays in traversing such layers give rise to distorted, displaced or inverted images. They often occur in the desert. Distant objects seem near, or suspended in the air. Sometimes the traveler thinks he sees sparkling water, only to find he has been pursuing a mirage.

Monadnock—Knobs of hill or hard rock left standing due to the glacier wearing away the softer rock.

Monsoon—Land heats and cools much more quickly than water masses and thus this difference in temperature causes winds, blowing either from the water to the land or vice versa. These winds are called monsoons.

Moraines—Rocks and debris brought down from mountain slopes, from ravines by frost and avalanches, accumulating on the surface of the glaciers forming bands of earth and stone, are called moraines. When occurring on the side of the glacier are called *lateral moraines.* At the confluence of two glaciers and two lateral moraines coming together, they form a *medial moraine.* At the lower end of the glacier, where the ice melts and leaves them, the immense deposits are called *terminal moraines.*

Ocean—A large body of salt water in the great hollows and low places of the earth, covering about three-fourths of the globe.

Pampas—Level plains of the Plata River Valley lying south of Amazon Basin. The larger part of the basin is in the form of level plains, with occasional hills and low mountains, called Pampas. The northern portion is wooded and is famous as hunting ground, known as The Chaco.

Pass—A narrow opening of low elevation through mountains or high hills where the heading together of transverse valleys making it possible to cross lofty mountain ranges. Mankind has improved these natural courses of travel, and some of them have been made marvels of engineering skill. The Simplon, St. Bernard, and St. Gothard in the Alps are the most noted.

Peninsula—A body of land nearly surrounded by water, connected to the mainland only by a small neck of land.

Plain—An area of land whose surface is rela-

tively flat and level. *Flood plains* are areas which are so low that they are constantly in danger of being flooded and in fact the top soil is usually a result of these deposits. This silt covered plain is called usually an *alluvial plain.* Plain areas that have been caused by erosion are called *plains of denudation.*

Plateau—A plain at a goodly elevation above sea level.

Prairie—A treeless plain or plateau.

Precipice—An almost perpendicular cliff.

Quick Sand—A sandy area so loose that heavy bodies easily sink in it.

Rain—Condensed water vapor, falling to the earth in fairly large drops.

Rainbow—After or during a rainstorm, with the sun shining, the refraction and reflection of the sun's rays on the drops of water gives us an arch of the spectrum colors in the sky.

Rapids—Cascades—denote more or less a violent descent of streams from a higher to a lower level.

Relief—Elevations or inequalities in land surface.

Reservoir—A storage basin either natural or artificial for water.

River—A body of water flowing in a depression which may be either slight or very great. The tributaries of a river are the smaller streams flowing into it. A river system is composed of the streams and all its tributaries, whereas a river basin is the area drained by the entire system. The source is its starting point, the mouth is where it empties itself into the sea.

Rock—The consolidated material comprising the hard shell of the earth's crust. *Igneous rock*—rocks that have been solidified from molten state such as quartz, feldspar or granite. *Sedimentary rock*—rock which has decomposed, been re-deposited, then through pressure cemented together forming for example, limestone, shale, sandstone, etc. When either igneous or sedimentary rock or both have been buried, and then due to heat and pressure, a change of form and structure, called metamorphosis, has resulted, the rocks are called *metamorphic rocks.* To this group belong gneisses, schists, marbles, etc.

Saint Elmo's Fire—In storms at sea, the masts and yards of the ship are sometimes tipped with balls of electric light due to electricity, passing without noise when the clouds are low, between the clouds and tips of the spars of the ship.

Sargasso Sea—The Spanish name—sea weed—Vast collections of sea weed gathered at those places in the different oceans most free from influence of currents.

Silt—Deposits carried along by sluggish streams and dropped.

Silvas—Lying within the tropical rain belt of the Amazon River Valley, together with the warm climate and rich alluvial soil has been the cause of a remarkable dense forest growth known as *Silvas.* During the rainy season it is flooded with water.

Simoon—Desert whirlwind, intensely hot and air so rarefied as to be suffocating.

Slough—Wet and marshy place. This term is generally associated with a reedy pond commonly caused by inlets or small channels from river or creek.

Snow—The condensation and subsequent freezing of water vapor in particles too large to be supported in the air.

Soil—The covering of the earth's surface, composed of decomposed rock and humus or organic matter. Soils are usually classified as of two kinds—*residual,* meaning that it has remained in the place of decomposition and bears a relation to the underlying rock and transported soil which has been formed and carried by water which is called *alluvial,* by a glacier called *glacial,* and *loess* that is carried by the wind.

Sound—A body of salt water connecting two larger bodies of water, much larger than a strait.

Stalactites—As water with limestone in solution drips down from the roof of a cave, the water is slowly evaporated, leaving the limestone forming a kind of stone icicle. Where it doesn't evaporate on the roof, it drops and evaporates on the floor and forms there, a chrystaline column called *stalagmites.*

Steppe—A grassy plain or plateau with no forest covering, as the Russia Steppes.

Strait—A narrow neck of water connecting two larger bodies of water, as Bering Strait.

Swamp—A low damp watery area, often densely overgrown with underbrush and trees, as the Mangrove Swamps of Florida.

Temperature—Degree of heat or cold.

Thunderstorm—A storm in an area of high pressure and humidity, accompanied by thunder and lightning.

Tide—A great wave or uplift, caused by the attraction of the moon and to some extent the sun. There are two tides a day. In midocean the height is only one or two feet, but when it hits the coast line with indentations, the height of the tide changes with the slope and the size of the indentation. In the Bay of Funday which is funnel shaped, the tides rise as high as 60 feet, whereas the average is from 3 to 6 feet.

Topography—A description of the relief of the earth's surface—mountains, plains, deltas, lakes, etc.

Tornado—A violent wind with dark clouds, in the form of a spout in the center. This center, the heart of the violence of the wind, is accompanied also by heavy rain, hail and often thunder and lightning.

Tundras—The Russian name for level treeless and marshy plains.

Typhoon—A name given to cyclonic storms in the West Pacific and Indian Oceans, attaining a speed often of from 60 to 70 miles an hour. These often continue for a week or more.

Undertow—The receding waves flowing near the ocean bottom cause a back current, often of great strength, which in a high sea or on an open coast is dangerous.

Universe—The entire aggregation of physical things, constituting some kind of a system.

Valley—A depression in the earth's surface with elevation on either side.

Volcano—An opening in the earth's surface through which molten lava and partially molten materials find their way out. After several eruptions a cone shaped mound is often built up but sometimes it remains a fairly level surface.

Watergap—Water flowing through a gorge in the mountains.

Water Spout—As a heavy storm passes over water bodies similar to a tornado on land, a funnel shape spout of water is formed, the narrow end on the water surface, caused by the condensation of the water vapor and the whirling motion of the wind.

Waves—Undulating motion of the surface of the ocean caused by friction of the wind on the water surface.

Weather—The atmospheric condition of warmth, dryness, windiness or cloudiness at any one time.

Wind—Air in motion, caused by a difference in temperature and pressure. The air is warmest in the torrid zone and coldest in the frigid zone, thus causing a circulation of warm air upwards and toward the poles, and as it becomes cooler, drifts are pulled back to the equator. *Doldrums* are belts of calm at the equator where the warm air rises. The *horse latitudes* are areas where the air is falling, at 30 degrees north and 30 degrees south of the equator. The *trade winds* are winds blowing near the surface, from both horse latitudes toward the equator. In the northern hemisphere they are northeast winds and in the southern, southeast. *Prevailing westerlies* are the winds blowing northeast in the northern hemisphere, and northwest in the southern hemisphere.

Zones—The world has been divided into five temperature belts or zones. The most northern zone, the *North Frigid*, extends from the North Pole to the *Arctic Circle*, an imaginary circle twenty-three and one-half degrees below the Pole. The most southern, the *South Frigid*, extends north to the Antarctic Circle, a circle twenty-three and one-half degrees north of the South Pole. The Torrid Zone is a belt 47 degrees wide, twenty-three and one-half degrees north and twenty-three and one-half degrees south of the equator, paralleling the equator. The *North Temperate Zone* lies between the Arctic Circle and the *Tropic of Cancer* which is the northern extremity of the Torrid Zone and the *South Temperate Zone* lies between the Antarctic Circle and the *Tropic of Capricorn* which is the southern extremity of the torrid zone.

THE GOVERNMENT WEATHER BUREAU.

The weather is probably our most common subject of conversation. We all speculate upon it and predict the day's wetness or dryness, yet very few of us know anything about it. But there are certain classes of the population to whom the weather is a very vital subject and one that gives them much concern at times. The fishermen as a class, watch very closely the various changes in the atmosphere. The fruit grower, the wheat grower, the transportation companies doing a business in the perishable line—all are very much bound up in the question of general conditions of the thermometer or the barometer.

This then is the job of the weather bureau, to disseminate all the possible information about the elements that can be fairly accurately given. The weather bureau was put under the Dept. of Agriculture in the month of July, 1891. Twice a day at eight o'clock the records of the past twelve hours are brought together—the wind, the weather, air pressure, temperature, clouds, humidity, rainfall, etc. and five minutes after the material has been collated, it is on its way to Washington. From there it is relayed to the 180 Branch Weather Bureaus.

Trained men chart these figures as fast as they come in, so that a complete picture of the weather conditions of the country is produced in a short space of time. Along with all the reports from the various parts of the U. S., there is also much daily information from other various parts of the world, such as the northern part of South America, Central America, the West Indies, Canada, Alaska, and Bermuda. The storms coming in that affect the U. S. very often start in these regions that we have just mentioned and so it is necessary to follow their movements.

Twice daily, forecasts are made from the Weather Bureau districts at Washington, Chicago, Denver, New Orleans, and San Francisco. At nine every morning a bulletin is sent out covering the probable conditions for the next 36 hours. These reports are telegraphed to 1,600 distant points, mailed to 100,000 people, and available to 6,000,000 telephone subscribers.

Now the question arises, who are some of the specific classes that are benefiting from this information? The class of shippers that are dealing in perishable commodities are very careful to scan every bit of weather news in order to protect the merchandise that they are shipping from changes in the temperature or the barometric pressure. A change, however slight, may wipe out the salability of the goods.

The great increase in flying has called to the foreground the need of properly charted lanes and a daily knowledge of the air conditions and pockets. The Bureau has undertaken such a task and gives out information on what they call, "flying weather." These tests are made daily by the means of balloons filled with light gases. The farmer, especially in the semi-tropical regions find sudden frosts one of their great problems and they were at loss as to how to solve it until the Government came along and gave them the assistance of the Bureau and the advance of the cold spell so that smudge fires or oil heaters could be put in.

On the stock ranges where the terrific blizzards come down quite suddenly, the Bureau has been of great help. In the prediction of floods and the probable amount of the rise of the rivers. The raisin growers are most grateful for the Bureau's timely help in giving them enough time to get their crop under cover. The work of the Bureau cost in 1919, $1,880,210 and it has been estimated that the farmers are better off to the extent of $17,580,000 and the commercial interests to the amount of $56,000,000.

COMMERCIAL GEOGRAPHY OF THE WORLD.

ABYSSINIA. A monarchy in east Africa. The country is a high table-land, with high mountains, many flat-topped. The people are dark-skinned, and are Hamites, Semites, and negroes, with Amharic the principal language. Agriculture is poorly handled, and inferior grades of cattle, sheep, goats, small horses, mules, and donkeys are raised. The native products comprise cotton, sugar cane, dates, vines, hides, barley, millet, wheat, and tobacco. There are valuable forests containing rubber trees, etc., and the minerals are iron, some gold and coal, silver, copper, and sulphur. Imports: cotton goods and yarns, textiles, hardware, arms, and ammunition; exports: coffee, hides, wax, ivory, civet, and gums. The capital is Adis Ababa, and the chief port, Jibuti, in French Somaliland, serves as the port for the country.

ADEN. A peninsula and town near the southwestern end of Arabia. A name frequently applied to the whole British territory in that part of Africa. The peninsula proper is of volcanic origin. The rainfall is light, cultivation of the soil is almost impossible, and all the necessaries of life have to be imported. The chief exports are coffee, gums, hides, skins, piece goods, and tobacco. Water is obtained, partly from wells and partly from the hills, where it is collected and conducted into cisterns. The town of Aden is strongly fortified, and the two most populous settlements are Steamer Point and Shaikh Othman, on the mainland. Of the two harbors only Aden Back Bay is of any commercial importance.

ADMIRALTY INLET. The main passage to Puget Sound, in the state of Washington. It is from one to ten miles wide. Seattle, Port Townsend, and Tacoma are the chief towns on it. The channel is several hundred feet deep.

AFGHANISTAN. A monarchy in central Asia between Persia and India. Surface is mostly a desert, relieved by irrigation, there being no navigable rivers, but a few very good roads. There are two harvests, one in the summer of wheat, barley, peas, and beans, and one in the fall of rice, millet, maize, with enormous yield of pears, apples, peaches, cherries, grapes, figs, mulberries, almonds, etc., grown in the irrigated mountain valleys. The minerals are copper, lead, and iron, with some gold and precious stones, notably lapis lazuli. Imports: cotton goods, dyes, sugar, and Chinese teas; exports: valuable quantities of camel and goat hair fabrics, preserved and natural fruits, some drugs, grain, cattle, and hides. The capital is Kabui, a very cold place.

AFRICA. The third largest continent, counting the two Americas as one. In the north from the Atlas Mountains stretches southward the land of deserts, the great Sahara and the Libyan; at the equator is the land of dense forests, savannas, and great rains; in the south spread the prairies or veldts, broad grass lands, with desert patches, the eastern section of which is dominated by the rain of the "trades," forming an agricultural district. The great rivers are the Nile, the Zambesi, and the Kongo, with the great lakes as possibilities for future irrigation. England, France, Italy, and Portugal hold the future development of this continent in their hands.

ALABAMA. An important Southern state. From the northern mountains the land gradually slopes through the plateaus of agriculture, the levels of coal and iron, to the lower valley lands, which run to sea level. There are heavy forests of pine in the south. The leading industry is agriculture, with products of cotton (the fifth largest cotton producing state), maize, oats, fruit, peanuts, sweet potatoes, and sugar cane. It is well watered by the navigable Alabama, Tombigbee, and Chattahoochee rivers. The minerals include large quantities of high-grade coal and iron, aluminium, copper, corundum, various clays (fire, porcelain, etc.), lithographic stone, marble, phosphates, slate, and some tin and natural gas. Leading manufactures are coke, iron, cotton goods, lumber, and cottonseed oil. The principal cities are Montgomery, the capital, Birmingham, and Mobile.

ALASKA. It was bought from Russia for $7,200,000 in 1867. Its area is about double that of Texas. Only the great water courses have been explored to any extent, the interior being practically unknown by reason of a severe climate and difficulties of travel. There is little agriculture, except in the small interior plains and lowlands. The neighboring Pribilof Islands are the richest fur sealing grounds in the world; the great industry of salmon catching and canning is valued at many millions annually. There are immense forests of conifers, birch, poplar, and aspen yet untouched. The minerals are the famous gold deposits in the Yukon valley, and at Cape Nome, etc., rich copper and much coal. The seat of government is now Juneau instead of Sitka; Nome is the largest city. Several thousand miles of waterway are navigable in summer, and many harbors are open through the winter. Southern Alaska consists of many islands, the Aleutian, Sasignan, Rat, and Fox being the principal ones.

ALBANIA. A small principality on the mountainous east coast of the Adriatic Sea, just south of Jugo-Slavia, that declared its independence in 1912 and was agreed to shortly after by the London Ambassadorial Conference. It is a primitive country, wild, rugged and mountainous, few roads and no railroads to mention, barren with the exception of a few fertile valleys and very difficult to rule because of this land contour. The area is about 17,300 square miles. The products are wool, grains, corn, sheep, goats, tobacco, olive oil and fruits near the Adriatic. The mountain land has good forest areas of walnuts, oaks, chestnuts, beeches and firs. Manufacturing consists of simple processes such as flour milling and the making of olive oil. Tirana is the capital.

ALBERTA. A northwest province of Canada, between Saskatchewan and British Columbia, rapidly developing. Principally prairie, with light woodlands at the foot of the mountains. Well watered, having the Athabasca emptying into the Mackenzie, the Saskatchewan into Hudson Bay, and numerous tributaries into the Missouri. A splendid agricultural section, producing wheat, oats, barley, potatoes, hay, clover, sugar beets, some flax, and great quantities of butter annually. Horses, cattle, sheep, and swine are raised in great numbers. Vast coal deposits and some gold are found. Principal cities: Calgary and Edmonton.

ALGERIA. A French colony in north Africa on the coast of the Mediterranean. Largely agricultural; grapes, cereals, tobacco, cattle, sheep, and goats are raised; extensive deposits of phosphates and fine marble quarries are found. Imports: cottons and woolens, clothing, hides, machinery, metal work, and woodwork other than lumber and furniture; exports: large quantities of wine, cereals, sheep, zinc ore, cork, oil, fresh and dried fruits, canned sardines, anchovies, etc. The capital is Algiers, with Oran the chief port.

ALLEGHANIES. The mountain range traversing Pennsylvania, Maryland, West Virginia, and Virginia, parallel to the Blue and Blue Ridge ranges. The general direction is northeast to southwest. Rich in coal and iron. The name is sometimes loosely applied to the whole Appalachian range.

ALPS. A mountain system of southern Europe, including Switzerland, and extending into Italy, Austria, France, and Germany, covering an area of about 80,000 square miles. There are hundreds of peaks over 10,000 feet; Mont Blanc, the highest, is 15,780 feet. There are a number of passes over the range, famous for historical reasons and as roads, Stelvio Pass being the most elevated carriage road in Europe, 9,055 feet above the level. Four railroads cross the Alps: Mont Cenis, between France and Italy; St. Gothard, connecting Lake Lucerne and Lago Maggiore; Simplon, from the upper valley of the Rhone to Lago Maggiore; Brenner, from Munich and Innsbruck to Verona and Venice. Arlberg is the great highway between Austria and Switzerland. The Gornegrat railway reaches an elevation of 9,908 feet near the Matterhorn, highest railway in Europe.

AMAZON. The largest river system in the world, located mainly in Brazil. It is not so long as the Mississippi, or the Nile, being about 3,900 miles long, but it is wider, deeper, and, with its multitudinous tributaries, has more navigable surface. Its name means "boat destroyer," from the tidal bores battling at the mouth, dangerous to navigation, and felt 400 miles up the river. It is two miles wide entering Brazil, but widens to 50 miles at its main mouth, and 150 miles at the sea. Its waters are yellow with washed-out soil, and stain the ocean for 600 miles beyond the river mouth. Its importance in developing Brazil can scarcely be overestimated. It drains the central or coffee and rubber section, called Selvas.

AMERICA. The great land masses occupying the western hemisphere. It was first discovered by Christopher Columbus (1492). The greatest length is over 9,000 miles, exclusive of islands, and its mainland width is 3,300 miles. It is divided into two nearly equal parts by the Isthmus of Panama. North America has a very irregular coast line; is broken by two moun-

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GREAT INDUSTRIES—FISHING AND FISH CANNING

1 Oyster Boats on Delaware River. 2 Drying Fish Nets, Freeport, L. I., N. Y. 3 Fish Cannery, Santa Ana, Alaska. 4 Oysters growing on trees—young oysters found attached to willow branch in Delaware. 5 Cutting fish for canning, Icy Straits, Alaska.

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GREAT INDUSTRIES—FRUITS AND NUTS

1 Grove of seedling orange trees. 2 Orange grove amid snow-capped peaks, California. 3 Orange clusters. 4 Picking oranges. 5 Orange grove in bearing, California 6 Orange grove in bloom. 8 Luscious grapes ready for picking. 7 and 9 Prune orchards in bloom, California. 10 Cultivating orange seedlings.

tain ranges, the Rockies in the west and the Appalachians in the east, inclosing the great Mississippi valley. The highest mountain is Mount McKinley, 20,464 feet. The principal Arctic river is the Mackenzie; in the west are the Yukon, Columbia, and Colorado. The largest rivers flowing into the Gulf of Mexico are the Mississippi and the Rio Grande. The most important eastern rivers are the St. Lawrence, Hudson, and Susquehanna. British North America extends from the Arctic Ocean on the north, and from the Pacific on the west to the Atlantic on the east, and is known as the Dominion of Canada. Below that frontier line, across the middle of the continent, the United States extends to the Gulf of Mexico in the south and from the Pacific to the Atlantic. Mexico lies southwest of the United States. Central America lies between Mexico and Panama; its Cordilleras connect the Andes and the Rockies. South America has an even coast line. The Andes extend along the west coast from Central America to Cape Horn, and the highest peak is Aconcagua, 23,088 feet. In the east are the Brazilian Alps. The great rivers are in the east, including the Amazon, Orinoco, and La Plata, whose basins form three groups of plains: selvas, llanos, and pampas. South America is divided into eleven republics.

ANDAMAN ISLANDS. A group or chain of islands politically attached to British India as a province with the Nicobar Islands, under a chief commissioner. The surface is densely covered with valuable forests, except where clearings have been made. The agricultural products are maize, rice, manioc, tea, potatoes, and artichokes, there being introductory stations growing indigo, cacao, and coffee. Port Blair and Port Cornwallis are two natural fine harbors. Since 1858 the islands have been a penal settlement of India. The Andamanese have inhabited their territory since prehistoric times.

ANDES. The great mountain chain of South America extending from Cape Horn, along the Pacific coast, a distance of 4,500 miles. The average breadth is 150 miles, and the average height 12,000 feet. All countries touched by this great range are rich in minerals: gold, silver, copper, iron, lead, coal, salt, sulphur, asphalt (Venezuela), emeralds (Columbia), platinum, zinc, nickel, and a variety of valuable earths. The Oroya railway crosses the range at a height of 15,665 feet, connecting Lima and Callao with Oroya and Concepcion, and Mollendo with Puno on Lake Titicaca.

ANDORRA. A republic in the eastern Pyrenees, inclosed by mountains, and almost inaccessible. It is semi-independent, under the protection of France and the Bishop of Urgel, Spain. There is much good pasture land; vines and fruit trees flourish on the lower lands, and the mountains are rich in minerals, especially iron. The principal industry is the production of coarse cloth. Exports: wood, metals, ores, cloth, and dairy products.

APENNINES. A spur of the Alps running through Italy with a length of about 800 miles, 25 to 85 miles wide. The highest point is Monte Corno, 9,583 feet; the average height is about 4,000 feet. Some very rich and apparently inexhaustible marble quarries are the principal mineral deposits.

APPALACHIANS. An extensive mountain system in the United States extending from the Gulf of St. Lawrence to northern Alabama. The principal divisions are the Laurentian Plateau in Canada, the White, Green, Catskill, Alleghany and Blue Ridge mountains, which include the Shenandoah, Cumberland, Clinch, Highlands of New Jersey, and the Black Mountains. The highest peak is Mount Mitchell in the Black Mountains (6,711 feet). The system is very rich in coal, petroleum, natural gas, aluminium, iron, zinc, lead, copper, manganese, cement, slate, building stone, and some gold, silver, nickel, and cobalt.

ARABIA. The southwestern peninsula of Asia. Principally desert area without rivers; the limited fertile areas produce coffee, dates, bananas, figs, spices, and drugs; other agricultural products are wheat, millet, barley, tobacco, indigo, cotton, tamarinds, sugar. Irrigation is likely to make a marvelous change in the coming years. Minerals: iron, copper, lead, coal, basalt, and asphaltum, with emeralds, agate, carnelian, onyx, and pearls from the Persian Gulf. Imports: chiefly cotton piece goods; exports: sheep and goat skins, mother-of-pearl, gums, fruits, drugs, and a few very valuable horses. Leading cities: Mecca, Hail, El Riadh, Jiddah, Hodeida, Medina, and Aden.

ARABIAN SEA. The part of the Indian Ocean between India and Arabia, a very busy waterway. The Persian Gulf and the Red Sea are two of its arms. The Indus river flows into it on the east; its chief ports are Bombay, Maskat, and Aden.

ARAL SEA or LAKE. The largest salt water lake in Asia and the fourth largest in the world. It is remarkable for quantities of fish. Navigation is difficult, owing to its shallowness.

ARCTIC OCEAN. The water area lying north of Europe, Asia, and North America, surrounding the North Pole, connected with the Atlantic Ocean through Davis Strait and the open sea between Greenland and Norway, and with the Pacific Ocean through Bering Strait. Its coasts along Europe and Asia are low, having two deep indentations, the White Sea and Gulf of Obi. Along North America it has a most irregular collection of islands called the Arctic Highland, containing many gulfs, bays, and channels. Several large rivers flow into it; from Asia, the Obi, Yenesei, and Lena; from Europe, the Dwina, Onega, and Petchora; from North America, the Mackenzie. Enormous fields of ice and snow cover the land, which break up in the summer and huge pieces pass down every year between Greenland and Iceland. The Arctic current passes out of the ocean southward at the west along the coast of Greenland to Labrador. A few birches, dwarf willows, and juniper trees grow in places; whales, seals, walruses, bears, Arctic foxes, and wolves are plentiful, as well as birds. The people in the Highland are Eskimos. In 1909 the North Pole was reached by R. E. Peary and only "chalky white ice" discovered.

ARGENTINA or ARGENTINE REPUBLIC. The second largest state in South America, on the extreme south of the continent. About one third is under cultivation, the remainder being mountain, water, or arid districts; one fifth is irrigated. The magnificent river system of the La Plata waters the eastern section, but otherwise water is lacking. The principal industry is agriculture, producing wheat, maize, flax, cotton, sugar, varied fruits, creamery products, and there are enormous herds of cattle, sheep, goats, swine, etc., with a heavy percentage of pedigree stock. Minerals: gold, silver, copper, iron, bismuth, lead, galena, lime, salt, some coal and petroleum. Chief imports: machinery, tools, lubricating and illuminating oils, lumber, linens, hemp, jute; chief exports: wool, hides and skins, wheat, frozen mutton, dried beef, and fruits. The principal port, and the capital, is Buenos Aires, with Rosario, La Plata, Cordoba, Tucuman, Mendoza, Santa Fe, and Parana leading cities.

ARIZONA. A Western state in the arid region of the southwest, with only one per cent. of its area water, although the Colorado river divides it diagonally. The upper section is an elevated plateau, and the other is a low elevation. The Colorado runs mainly between steep-sided gorges. Irrigation is accomplishing much, and, while agriculture is limited, stock raising is steadily increasing on the northern plateau. The principal crops are wheat, cotton, alfalfa, barley, and in the south, fruits are also grown, while successful experiments have been made with Egyptian cotton and the date palm. The mineral product is important, rich copper and silver deposits, gold, coal, lead, platinum, quicksilver, tin, nickel, iron, salt, gypsum, with opals, garnets, turquoise, onyx, and sapphires in limited quantities. The capital is Phoenix.

ARKANSAS. A Southern state in the flood plain devoted to agriculture, with nearly one half improved lands. A rich, deep soil, growing maize, wheat, oats, potatoes, forage, cotton, some tobacco, and a wide variety of fruits. The live stock industry is extensive. Forests cover many parts of the state. Its minerals include coal, manganese, lead, novaculite (for whetstones), phosphate rock, bauxite, limestone, sandstone, granite, slate, asphalt, mineral waters, and natural gas. It is famed for its sulphur springs. Its manufactures are lumber and cottonseed oil and cake. The capital is Little Rock.

ASCENSION ISLAND. An isolated island in the Atlantic Ocean. It is of volcanic origin, and has an area of about 35 square miles, one half of which is under cultivation. It is a British coaling and victualing station for the navy.

ASIA. The largest of the great divisions of the globe, comprising about one third of the land surface, and extending from the Arctic Ocean on the north to the Indian Ocean on the south, and from the Pacific Ocean on the east to Europe on the west. It is a territory of extremes, with vast lowlands, immense table-lands, high mountain ranges, fertile valleys, and noxious jungles, ranging from tropical fertility to perennial snow or arid regions. The plateau called the "Roof of the World" is found in the Pamir

Mountains, tying together the mightiest of mountain ranges. Three huge ranges rise above the plateau of Tibet: Kuenlun on the north, Karokoram crosses Tibet, and the Himalayas are on the south. Towards the northeast extends a long range of mountains, under several names, to Bering Sea. The Suliman range extends to the coast and cuts off India from southwestern Asia. The high Hindu Kush chain stretches westward along a border of the plateau of Iran. There are seven great river systems, in order of length, the Obi, Yenesei, Yangtze, Lena, Amur, Hoang-ho, Indus, and Ganges-Brahmaputra. Other streams of magnitude are the famed Euphrates and Tigris.

ATLANTIC OCEAN. This body of water lies between the Arctic Ocean on the north, the Antarctic on the south, between Europe and Africa on the east, and the two Americas on the west. Without its arms and inlets it covers about 34,700,000 square miles, being about 9,000 miles from north to south. The minimum width is between Cape Palmas and Cape San Roque, 1,900 miles, the average width being about 3,000 miles. The average depth between 50° N. and 50° S. is 13,000 feet, with shallows north and south of these limits; greatest depth found by the *Challenger* 27,366 feet, north of Porto Rico. The floor of the ocean temperature varies from 32° F. to 37° F. The average surface water temperature varies from 82° F. in the tropics to 32° F. in polar regions. The speed of ocean currents varies from 20 to 75 miles a day.

ATLAS MOUNTAINS. The great northern system of Africa, stretching northeastward 1,400 miles from Morocco to Tunis, is an irregular mass of land, highest in Morocco. The slopes on the north, west, and south are covered with vast forests of pine, oak, cork, white poplar, and wild olive. The valleys are well watered and capable of high cultivation; rich but unworked mineral deposits are here.

AUSTRALIA. An English commonwealth. The island continent to the southeast of Asia. It is bordered east, north, and west by a belt of fertile land from 30 to 300 miles wide, or about one third of the total area. Beyond this belt lie mountain ranges and divides, and beyond the mountains a vast table-land, sadly lacking in waterways and rainfall, slopes to the cliffs of the shore line. The Murray-Darling is the only large river system. There are many short rivers too shallow for navigation, and on the south are 1,000 miles of coast with no river flowing to the sea. The Murray-Darling is navigable for 1,700 miles, and the Murrumbidgee for 500 miles. The short rivers and inland lakes will be used later for irrigation. There is a large area under cultivation, of which half is wheat. Ranching and agriculture are the two great industries, and there are millions of farm animals, of which over 80 per cent. are sheep. Principal imports are agricultural implements, cars, machinery, cotton, drugs, timber, and oils; chief exports: wheat, wool, gold, copper, silver, frozen meats, butter, hides, tin; minerals: gold, silver, lead, iron, coal, and tin. Pearl fishing is valuable on the north coast. The country is divided into six original states: New South Wales, its capital Sydney, the chief port and a fine naval station; Victoria, Melbourne as capital, the grandest Australian city; Queensland, Brisbane as capital, strong in industrial enterprise; South Australia, its capital Adelaide, the "suburban home" city, and Port Adelaide close by; West Australia, capital Perth; and the island of Tasmania, capital Hobart, the "English" city of the continent, with Launceston its chief port. The new federal capital is in Yass-Canberra.

AUSTRIA. The republic of Austria was proclaimed in 1918, with Vienna as its capital. It was a part of the Austria-Hungarian Empire that was divided up after the late war. The area was reduced from some 115,000 square miles to 32,000 with a corresponding decrease in population. The territory taken away from the Empire includes: Transylvania and part of Bukovina which went to Rumania, Galicia which Poland got, Dalmatia, Bosnia, and Herzegovina now belonging to Jugo-Slavia and Bohemia and Moravia which was absorbed by Czecho-Slovakia. Klagenfurt, to the south, was left to a plebiscite and voted to remain with Austria. Trieste went to Italy. The area remaining is very mountainous to the west, where it runs into the Alps, but the east is mostly in the Central plain, called there the Vienna basin, and quite fertile.

In the west we find grazing an important industry, together with much forest land, especially the chestnut timber. Mineral products in the mountains include iron, lignite, lead, zinc, and mercury. In the Vienna basin we find diversified farming, the crops consisting of potatoes, barley, turnips, rye, oats, and wheat. Textile manufacturing still remains the most important with some tobacco and piano manufacturing. The exports are ores, timber, sugar, fruit, furniture and chemicals. Vienna is the capital and the chief city commercially and industrially.

AZERBAIJAN. A Soviet republic bordering on the Caspian Sea, south of the Caucasus Mountains and east of Georgia, composed of two former Russian provinces, Baku and Yelisavetpal, with an area of approximately 34,000 square miles. The country is primarily agricultural, raising cereal crops, cotton and cattle. There is much fishing in the Caspian Sea. Baku, the chief city, is one of the world's greatest oil producing regions, much of the product being pumped to Batum on the Black Sea and thence distributed to Europe and Egypt by boat.

AZORES. A group of nine Atlantic Ocean islands belonging to Portugal. The largest are St. Michael's, Pico, and Terceira. Angra and Fayal are the two principal harbors, but neither can be called good. The climate is very temperate, the soil fertile, and the principal products maize, pineapples, olives, oranges, grapes, wine, and bananas, all heavily exported. St. Michael's and Fayal are coaling stations. The capital is Ponta Delgada.

AZOF, SEA OF. An inland lake formed by the Crimean peninsula projecting into the Black Sea, and nearly cut off from it. The water is almost fresh and very shallow, but fish are abundant. The Don river flows into it, and Taganrog is its port.

BAHREIN ISLANDS. A small group of islands in the Persian Gulf, under a British protectorate. The capital and commercial center is Manameh. The islands are famous for their pearl fisheries. Quantities of tropical fruits are produced, figs and dates, also grain, cattle, a remarkably fine breed of donkeys, and reed mats.

BALKAN MOUNTAINS. A series of mountain ridges in southeastern Europe extending east and west throughout the country, highest in the west and crossed by more than 30 passes, Shipka Pass being the most noted. The valleys to the south are very fertile, grapes, rice, cotton, tobacco, silk, and roses are grown; at the north wheat, rice, and other grains, and cattle are raised and good timber found.

BALTIC SEA. The great gulf or inland sea bordered by Denmark, Germany, Russia, and Sweden, 850 to 900 miles long, 100 to 200 miles wide, including the gulfs of Bothnia and Finland. Ice hinders navigation three to five months yearly; more than 250 rivers enter it, which, with the lakes, drain about one fifth of all Europe. Several large canals connect with the North Sea, the Kaiser Wilhelm being the largest, and of great value to the commerce of northern Europe. The waters are not very salt. Storms are frequent, causing great losses in shipping, while easterly winds are dangerous, producing huge tidal waves. The greatest ports are Copenhagen, Kiel, Lubeck, Riga, and Stockholm.

BARBARY STATES. These comprise Morocco, Algeria, Tunis, Tripoli, Fezzan, and Barca in northern Africa.

BAVARIA. A state in the new German Republic. It is a mountainous country, almost all its boundary lines being mountain ranges. The surface of the interior is an elevated plateau sloping northward, intersected by low hills and valleys. It is drained by the Danube, the Main, and their tributaries. An important canal connects the tributaries of the Danube and the Rhine, thereby uniting the North and the Black seas. Agriculture is carried to a degree of perfection very rarely surpassed. In almost every department of the industry associations coöperatively buy seeds and machinery, store grain, market products, insure buildings and crops, superintend the improved breeding of domestic animals, etc. Crops: grapes, hay, rye, oats, barley, wheat, potatoes, hops, tobacco, beets, and rape seed. Stock raising is practically the staple industry, Bavaria being the largest cattle-raising country in the German Republic. About 33 per cent. of the total area is forest land, mostly pine and fir, about one half of which is owned by private individuals. Manufactures: malted liquors (it is the largest beer-producing country in the world), coarse linens, woolens, tobacco products, chemicals, earthenware, glass, agricultural implements, leather goods, and wooden ware. Minerals: salt, a government monopoly; coal and iron almost universally mined; some graphite, the famous lithographic stone of Solnhofen, and useful earths. The capital is Munich.

BELGIUM. A small independent European state, having much low-lying level land, of which 60 per cent. is under cultivation. Is well watered, and has good navigable waters on the Meuse and Scheldt, both

of which pass through the country. Mining, extensive manufacturing, and agriculture are the leading industries. Crops: rye, oats, wheat, potatoes, sugar beets, etc. There are large numbers of cattle and hogs, and some good draft horses are produced. Imports: grain, timber, wool, and flax; exports: machinery, firearms, iron, steel, linen, textiles, lace, marble, hops, fruit, and coal. Brussels is the capital, famed as one of the loveliest cities of Europe. Antwerp is the principal seaport. Liege is famous for its ordnance factories; Ghent for its gold and silver goods and its shipping trade; Hainaut, Brabant, Namur, and Val Saint Lambert for their unrivaled glassware; and Charleroi for nails. In 1908 Belgium annexed the Congo Independent State in Africa. Exports: rubber, ivory, white copal, palm nuts, palm oil, cocoa, and crude gold. It has access by water to the river Nile.

BERING SEA. In the extreme northern part of the Pacific Ocean connected by Bering Strait with the Arctic Ocean and extending from Alaska to Asia. The northern half is very shallow, less than 200 feet deep. It contains a few islands famous for seal fisheries. Bering Strait, the narrowest part, about 40 miles wide, lies between East Cape in Asia and Cape Prince of Wales in America. Three uninhabited islands are found about midway. The water is more shallow towards America.

BERMUDA ISLANDS. A group of about 360 islands, 15 or 16 of which are inhabited. Of coralline formation and surrounded by reefs, east southeast of Cape Hatteras, in the Atlantic Ocean. An English possession of great strategic importance and strongly fortified. Imports are mainly food supplies, cotton goods, and apparel: exports: onions, potatoes, early vegetables, lily bulbs, and arrowroot. The principal towns are Hamilton and St. George.

BHUTAN. An independent state of India in the eastern Himalayas. The surface is mountainous, but some parts of the territory are fertile, producing millet, rice, wheat, etc., but not sufficient for the home demand; forests cover the central part. Cattle raising is profitable, and a highly esteemed breed of ponies is exported. The manufactures comprise coarse cloths, silks, arms and musk, highly-tempered swords, lac, chowries, and wax. The capital is Punakha, a strong natural fortress where court is held during the winter; the summer capital is Tasichozong, where is the chief monastry.

BLACK SEA. An inland sea lying between eastern Europe and Asia, connected with the Mediterranean by the Bosphorus, Sea of Marmora, and the Dardanelles; it drains nearly one fourth of Europe, is very deep, has one island; its coasts are high, with good harbors except between the mouths of the Danube and the Crimea. Many large rivers make the water so fresh that it freezes easily. It has no tide, but very strong currents. It is of great importance commercially to Russia and all bordering territory. Odessa is the chief port.

BLUE RIDGE MOUNTAINS. The most easterly range of the Appalachian system in Virginia, North Carolina, South Carolina, Georgia, and Alabama.

BOLIVIA. A South American republic of many provinces united. One of the highest regions in America. The surface ranges from high plateaus, cool, healthful, and rich in minerals, to deep valleys semi-tropical or temperate in character. The north and east are largely unexplored and are respectively rich in rubber and grazing lands. Agriculture only supplies the home demand, and the produce is mainly oats, rice, barley, maize, cotton, indigo, cacao, and rubber. The country is watered by rivers belonging to the basins of the Paraguay and the Madeira, and many of these are navigable. There are practically no manufactures. Imports: apparel, machinery, hardware, and provisions. There being no seacoast, exports go through foreign countries, mainly transported by mule trains; the exports comprise large quantities of tin, rubber, silver, copper, gold, bismuth, wolfram, lead, and antimony, wool, hides, and cattle. There are large forests of ebony, mahogany, rosewood, and cork. The capital is Sucre, but the most important town is La Paz.

BOOTHIA FELIX. A peninsula forming the most northern point of the American continent. It is about 150 miles long by 50 miles wide. Discovered by Sir John Ross (1829–1833), and named after Sir Felix Booth, the greatest contributor to the expedition. Sir James Clark Ross discovered the magnetic pole near Cape Adelaide, on the west coast (June 1, 1831).

BORNEO. The fifth largest island in the world, situated in the East Indian Archipelago. It has been little explored. Its highest peak is Kinabalu, about 13,700 feet. It is rich in forest products, ebony, sandalwood, and teak, and has important industries in gold, antimony, mineral oil, and coal. It exports timber, sago, cocoanuts, rice, gums, rubber, coffee, tobacco, fruits, gutta-percha, nutmegs, spices, rattans, seed pearls, beche de mer, the edible nests of the swallow, and palm products in variety. British North Borneo is in the north, with a chief port of Sandakan, the adjacent districts of Brunei and Sarawak being under British protection. The southern and east part is Dutch Borneo, with Pontianak, Sambas, and Sintang the principal cities.

BOSPOROUS. The narrow channel connecting the Black Sea with the Sea of Marmora and separating Europe from Asia. It is about 18 miles long and is under the control of Turkey which keeps Russia from having a port on the Mediterranean.

BRAZIL. The largest country in South America; an important republic. North and west the surface is plains, and south and east are the Brazilian highlands, supporting three mountain ranges. The great river system of the Amazon, with its magnificent navigation facilities, drains the plains. The climate is almost entirely tropical or subtropical. The highlands are dry and steppe-like; the lowlands on the equator are deluged with trade-wind rains; neither district is much populated. The coastal zone is fairly well populated, and here agriculture is the leading industry, although Brazil has a lower percentage of ground under cultivaton than elsewhere in the world. There are vast mineral resources, but the product is small,—iron, gold, diamonds, silver, petroleum, manganese, monazite (important in Welsbach mantles), mica, etc. Chief imports: foodstuffs, machinery, and provisions; chief exports: coffee, rubber, cotton, hides, sugar, tobacco, brazil nuts, yams, fruits, maize, bananas, black beans, rice, and arrowroot. There are immense forests of mahogany, logwood, and rosewood. It is the largest exporter of coffee and rubber in the world. Many of the railways were built to convey the coffee, and much of the rubber is transhipped from Bolivia. The capital is Rio de Janeiro, with its marvelous harbor about 30 miles in length, and principal cities are Pernambuco, shipping sugar and cotton; Bahia, tobacco; Para, rubber; Sao Paulo, and others.

BRITISH AFRICA. A widespread series of British possessions and protectorates. Basutoland is an elevated but rugged plateau northeast of Cape Colony, well watered, and probably the best grain-producing and grazing area in South Africa; also producing wool, wheat, maize, and having favorable indications of iron, copper, and coal. Has good roads and a great future. The capital is Maseru. Bechuanaland, lying north of the Transvaal, has growing industries of cattle raising and agriculture, and is traversed by the railway from Kimberley to Mafeking. Four provinces joined together, Cape Colony, Orange Free State, Natal and Transvaal form The Union of South Africa. The government is similar to that of Canada. Cape Colony has a considerable fertile area devoted to agriculture, producing wheat, oats, barley, maize, rye, grapes, wine, wool, and mohair, besides farm animals. Imports: apparel and provisions; exports: gold, diamonds, wool, hair (Angora), ostrich feathers, hides, and copper. The Orange River Colony (Orange Free State) is a magnificent grazing country, especially for sheep. It is developing rapidly along scientific lines of farming, dairying, forestry, and stock raising. Has great future in irrigation schemes of immense magnitude. Produces wheat, oats, maize, and tobacco. Has rich minerals and exports diamonds, coal, and some salt. Natal is an important agricultural section, producing and exporting sugar, wattle bark (varied acacia barks used in tanning), maize, oats, citrus fruits, while sugar beets and vegetables are largely grown. It has a steadily increasing wool product. There are large and valuable forests in Zululand. Rich mineral resources in coal, gold, asbestos, copper, fire clay, graphite, gypsum, iron, lead, silver, phosphate deposits, marble, nickel, and others. The Transvaal is a fine agricultural and stock raising territory as yet undeveloped. An interior plateau extends from the northern Drakensberg and Lebombo, across which stretches the famous gold-bearing Witwaterstrand. It is well watered, and drained by the Limpopo, the Vaal, the Olifant, and Komati, but none of the rivers are navigable. The large herds of farm animals are constantly improved by imported stock. Minerals: gold, coal, diamonds, lime, lead, tin, copper, and chrome iron. Imports: apparel, machinery, chemicals, and dynamite; exports: gold, diamonds, wool, horses, and skins. The capital is Pretoria. Nyasaland Protectorate (British

Central Africa). An important native division producing much coffee, tobacco, beeswax, rubber, peanuts, tea, some cotton, and farm animals for export. Has trade ports of Port Herald, Chiromo, and Kotakota connecting with the Lower Shiré and Lake Nyasa. The capital is Zomba, and Blantyre is the largest town. Rhodesia, a territory named for Cecil Rhodes, divided into Southern Rhodesia, and Northwestern and Northeastern Rhodesia. An agricultural and mineral section. Fine grazing land for cattle. Crops of wheat, oats, European fruits, fiber, coffee, and cotton. Chief exports: gold, gold concentrates, hides and skins, chrome iron, and copper ore, tungsten, and zinc ore. Other minerals are silver, lead, coal, diamonds, and some asbestos and antimony. Somaliland Protectorate. On the Gulf of Aden, and is rapidly developing. Chief exports: skins and hides, ostrich feathers, gums, cattle, and sheep. Transport is by camels. Capital is Berbera. Uganda Protectorate has a large area of extremely fertile land, producing sugar, chillies, ghee, maize, peanuts, bananas, sugar cane, and tobacco. Well watered by the great equatorial lake systems, with steamship route to Khartum and a railway to Mombasa. Exports: goat skins, hides, rubber, ivory, chillies, cattle, and fibers. The capital is Uganda. Zanzibar Protectorate exports large quantities of cloves, native textiles, copra, and ivory, with some rubber and gums. There is wireless telegraphy between the islands of Zanzibar and Pemba. West African Colonies and Protectorate comprise Northern and Southern Nigeria, the Gold Coast Colony, with Ashanti and Northern Territories, Sierra Leone and Gambia Colonies and Protectorates, all rapidly developing. Roads are being made, bridges built, and navigation fostered on the Niger and its tributaries. Products of this division are palm oil, palm kernels, rubber, peanuts, hides, ostrich feathers, capsicum, kola nuts, drugs, cotton, tobacco, tanned goat and sheep skins, cacao, gums, cassava, plantains, and ginger. There are rich deposits of tin, and considerable iron, silver, salt, manganese, balena, lignite, and monazite. Kenya Colony and protectorate, south of Abyssinia and bordering on the Indian Ocean, is hot and wet near the coast. None but natives can live there who produce sugar, rice, sweet potatoes, cotton and cocoanuts. In the interior, which is the highland region, grain, cotton and coffee are produced. Mombasa, the seaport, exports grains, coffee, oils and hides and skins. Nairobi is the capital, taken from the Germans and mandated by the League of Nations to the British Government. Tanganyiki Territory on the east coast south of Kenya has great forest areas of ebony and bamboo, and produces sisal hemp, coffee, cotton, rubber and cattle. The mineral products are gold, iron, copper, lead, coal and mica. The capital and chief port is Dar es Salaam, exporting hides, ivory, cotton, copra, wax, sisal and rubber. South West Africa, on the west coast, south of Angola, is principally a stock raising area with big deposits of diamonds and copper. Cammeroon on the west coast north of the French Congo produces much cocoa and palm oil. It has valuable timber lands of ebony and in its mines has gold and iron. Buea is the chief port. Togoland, between the gold coast colony on the west and French Dahomey on the east, is relatively poor, the products being only oils, cocoa and cotton.

BRITISH COLUMBIA. A Canadian province nearly twice the size of France, divided by parallel ranges of mountains stretching from Alberta to the Pacific, leaving long strips of exceedingly fertile land, well sheltered, and is watered by the Saskatchewan, Athabasca, and Peace rivers, and tributaries of the Frazier and Columbia. The province has a great agricultural future, and is rapidly developing. There are fine grazing lands and large areas of forests. Products: wheat, barley, hops, butter and cheese, apples and small fruits, vegetables, poultry, and stock. Has important salmon fishing, and an ocean front of about 7,000 miles. Mining is at present the great industry, and the mineral deposits include gold, coal, copper, and lead. The capital is Victoria, and Vancouver is the largest city.

BRITISH EMPIRE. Includes the British Isles and all the British colonies, representing one fifth of the whole land surface of the globe, and forming the greatest nation in the world, rivaled only by Russia in its extent of territory.

BRITISH GUIANA. A British colony in the western part of Guiana, a territory in the northeastern part of South America. It includes the settlements of Demerara, Essequibo, and Berbice; only the alluvial stretch along the coast has been really developed. Only a small part is under cultivation, of which about one half produces sugar cane. There are rich deposits of gold, and many diamonds are mined. Imports: flour, tissues, tobacco manufactures, machinery, fertilizer, fish, coal, hardware, provisions; exports: sugar, gold, rum, molasses, molasquit, balata, rice, wood, diamonds. The capital is Georgetown.

BRITISH HONDURAS. A crown colony of Great Britain in Central America, on the Caribbean Sea. There is good cattle land but agriculture is primitive, and much of the trade is transit. Exports: mahogany, logwood, cedar, bananas, cocoanuts, coffee, and plantains. The capital is Belize.

BULGARIA. A kingdom of the Balkan peninsula. Agriculture is the prevailing industry, nearly half the land area being in the hands of small proprietors, the remainder being forest. Crops: wheat, tobacco, grapes, cotton, rice. Minerals: extensive coal and iron deposits, gold, silver, lead, manganese, copper, and stone. Imports: textiles, machinery, oils, hides, provisions, and groceries; exports: wheat, wine, tobacco, silk cocoons, attar of roses, cotton, and rice. Manufactures include woolen goods, cottons, cords, and cigarettes. The capital is Sofia.

CALIFORNIA. An important Western state, the second largest in the Union. Magnificently fertile soil in the valley between the Sierras and the Coastal Range, forming one of the finest agricultural and fruit districts in the world. Vast irrigation development is in process. Products: apples, pears, plums, grapes, olives, citrus fruits, figs, roses, sugar beets, wheat, barley, hay, potatoes, and other vegetables. The grain, hay, and potato products are worth annually four times the gold product. There is an enormous area of commercial timber. It has much grazing territory for sheep. Minerals: gold, copper, coal, quicksilver (one half the world's supply), tin, borax, and salt. Manufacturing: mining machinery and sugar refining, flour and grist milling, shipbuilding, etc. The capital is Sacramento. Los Angeles is the largest city and has constructed an artificial harbor whereas San Francisco, the next city in size has one of the best natural harbors on the coast.

CANADA. The Dominion comprising the northern part of North America. An English commonwealth, vast in extent, of greater area than the United States, possessing illimitable natural resources, and developing phenomenally. A broken surface of low elevation is in the east; wide interior plains and mountains in the west; a fertile, well-watered, well-timbered land. Products: wheat, barley, flax, oats, pulse, roots, tobacco, apples, grapes, butter and cheese, lumber, and fish. The finest agricultural area is Manitoba westward from Winnipeg to beyond Regina. Minerals: gold, coal, copper, nickel, silver, cement, lead, asbestos, petroleum, and iron. Imports: iron and steel, manufactures of wool, iron ore, cotton, and drugs; exports: manufactures of wood, wheat, cheese, bacon, silver, flour, cattle, and fruits. Divided as follows: Provinces, Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Prince Edward Island, Quebec, and Saskatchewan; Yukon and Northwest territories. Franklin, Keewatin, Mackenzie, and Ungava are districts. Principal cities: Montreal, Quebec, Toronto, Winnipeg, Ottawa (capital and seat of government), and Vancouver.

CANARY ISLANDS. A group in the Atlantic Ocean, off the northwest coast of Africa, constituting a province of Spain. Products: tomatoes, onions, bananas, potatoes, and the cochineal insect, now almost displaced by anilin. Imports: coal, cottons, woolens, fertilizer, and machinery. The capital is Santa Cruz de Tenerife, and Ciudad de las Palmas is an important fortified city.

CAPES. The important capes of the world are: Cape Breton, on the east coast of Cape Breton Island, Nova Scotia; Cape Clear, the most southern point of Ireland, generally the first land seen by transatlantic travelers; Cape Chelyuskin, the most northern cape of Asia; Cape Cod, the southeastern point of Massachusetts; Cape Farewell, the southern extremity of Greenland; Cape Finisterre, the northwest extremity of Spain; Cape Hatteras, a dangerous point, famed for bad weather, off North Carolina; Cape Horn, the most southerly point of South America; Cape Mendocino, the extreme western point of California; Cape Nome, on the west of Alaska; Cape of Good Hope in South Africa, but Cape Agulhas is the most southern point; Cape Prince of Wales, the point of Alaska nearest Siberia; Cape Race, the southeast extremity of Newfoundland; Cape Sable, the south point of Florida; Cape Verde, the most westerly point of Africa; East Cape, the most eastern point of Siberia; and North Cape, the most northern point of Norway.

CAPE VERDE ISLANDS. A Portugese group west of Africa, Santiago being the largest and most important. Products: coffee, medicinal products, indigo, and fruits, with turtle and whale fishing along the coasts. Imports: manufactures of cotton, wool, and machinery; exports: hides, coffee, and salt. The capital is Praia.

CARIBBEAN SEA. A partly inclosed sea lying between the West Indies and Central and South America, connected with the Gulf of Mexico by Yucatan Channel.

It is very deep, and its waters are affected by ocean currents. Few rivers of importance drain into it, and there are few islands.

CAROLINE ISLANDS. Coral group in North Pacific, belonging to Japan, except Guam, which belongs to the United States. Imports: cotton, machinery, hardware, and provisions; exports: copra, sugar, and fruit. It has valuable but undeveloped mineral resources.

CARPATHIANS. A circular system of mountains separating Hungary from Moravia, Silesia, Galicia, Bukowina, and Roumania, that are noted for deposits of gold, silver, lead, copper, and other ores, which have been worked for centuries. Containing more mineral wealth than any other range in Europe. Rich in forests.

CASCADE MOUNTAINS. A chain of mountains continuous with the Sierra Nevadas, running through Oregon, Washington, and British Columbia, with highest point Mt. Shasta, 14,380 feet. It takes its name from the cascades of the Columbia. Throughout it is heavily wooded.

CASPIAN SEA. The largest inland sea or great salt lake in the world, lying on the boundary between Europe and Asia. It is very shallow in the north, where the water is less salt than the ocean because of the rivers draining into it. It is of immense value to the Russian Empire, as it forms a waterway with the Volga river between the Asiatic and European provinces. Canals connect it with the Baltic Sea, and it has immense salmon and sturgeon fisheries. Astrakhan is the chief port.

CAUCASUS. A great mountain chain extending through the isthmus between the Black and Caspian seas, sometimes treated as the boundary line between Europe and Asia. Parallel chains connected by elevated plateaus containing narrow but deep fissures form the range. The highest peaks are in the center, Mt. Elbruz being the highest. It is densely wooded in parts with great forests of oak, beech, ash, maple, and walnut. Grain is cultivated to a great height, and the lower valleys produce rice, tobacco, cotton.

CEYLON. A large island south of India; an English crown colony. About one fifth of its area is devoted to agriculture and fine grazing pastures. Products: rice and other grains, tea, cocoanuts, rubber, cinnamon, cinchona, cacao, coffee, tobacco, nuts, spices, breadfruit, camphor, fruits, and vegetables. There are large numbers of farm animals. Minerals: large deposits of plumbago, gold, monazite, mica, moonstones, rubies, cat's-eyes, sapphires, etc., there being over 3,000 gem mines in operation; also pearl fisheries, which are a state monopoly. Imports: cotton goods, salt fish, coal, rice, kerosene, hardware, and wines; exports: tea, cocoanuts, rubber, nuts, coffee, spices, plumbago, and cinchona. The capital is **Colombo.**

CHILE or **CHILI.** A South American republic between the Andes and the Pacific. It is about 2,600 miles long, but only 40 to 200 wide. The northern division is a desert, but the great valley immediately below is noted for some of the richest land in the world. Products: wheat, maize, barley, oats, beans, hemp, potatoes, fruits, dairy products, and vegetables. Minerals are the most valuable product: nitrate of soda, coal, gold, copper, cobalt, manganese, borax, salt, sulphur, and quicksilver; also guano. Imports: textiles, machinery, lumber, and illuminating oils; exports: mainly nitrate of soda. The capital is Santiago and the chief port Valparaiso, Iquique being the great nitrate port, and Concepcion having the finest harbor at Talcahuano, eight miles distant.

CHINA. An enormous territory in eastern and central Asia, occupying about one fourth of the continent. It is second of the great republics in size. China proper is about one half the size of the United States without Alaska, yet it contains five times as many people. It is the most populous country, containing one quarter of the world's people. It has a coast line of nearly 5,000 miles, with many inlets and seas favorable to commerce. The surface resembles that of the United States, having a dry interior plateau with lofty mountain ranges to the west and east. It also has a vast plain through which flow the long rivers, Hoang-ho and Yangtze. The staple industry is agriculture, small freehold farms worked with primitive implements and with much irrigation. Products: wheat, barley, maize, millet, peas, and beans in the north, and rice, sugar, cotton, indigo, fruits, and tea in the west and south. There are few forests but much bamboo. The silkworm culture produces nearly one third of the raw silk of the world, being second to Japan. Opium culture is restricted, and is expected to die out. The native manufactures are silk, cotton, linen, bamboo, clay (porcelain), wood, metal work, ivory and wood carving, embroidery, lacquer ware, bronze casting, and, of late years, bricks, matches, guns, cannon, munitions of war, iron, etc., the country being rapidly modernized in several sections. Minerals: gold, copper, coal, silver, quicksilver, tin, salt, and natural gas. Imports: cotton goods, rice, sugar, oils, metals, machinery, and opium; exports: raw silk, tea, raw cotton, hides, and beans. Its dependencies include Manchuria, Mongolia, Tibet, and Chinese Turkestan. Tibet is the highest and largest plateau in the world, cold and mostly sterile. It is the source of five great Asiatic rivers. Agriculture and stock raising are carried on under great hardships, the crops being barley, that most hardy of cereals, wheat, buckwheat, potatoes, turnips, radishes, apples, and, in the south, apricots, peaches, pomegranates, etc. Noted for its swords, guns, saddles, teapots, and bells. Believed to be extremely rich in minerals,—gold, silver, iron, coal, lapis lazuli, and gems,—but is "shut in" from the rest of the world. Chinese Turkestan. A dependency of China, isolated and forbidding. An elevated desert plateau surrounded by lofty ranges and watered by the Tarim. At foot of the frontier ranges are fertile oases where are conducted agriculture, stock raising, manufactures of copper, carpets, felt, leather, cotton, silk, and animal products, mainly to supply and trade with the caravans of the great route. Rich in minerals, but almost totally unexplored. The capital of China is **Nanking,** and the principal ports are **Canton, Tientsin, Chungking, Shanghai,** and **Hankau.**

COLOMBIA. A South American republic adjoining Panama. It has lofty mountains in the west and vast plains in the east, having fertile soil. Products: coffee, tobacco, cacao, cotton, sugar, wheat, maize, bananas, plantains, dyewoods, rich lumber. Wild rubber trees are now being cultivated. Minerals: very rich gold and silver deposits, copper, platinum, lead, cinnabar (14 mines), manganese, emeralds (32 mines), coal, iron, limestone, sand, fire clay, salt. There are rich pearl fisheries. Imports: cotton goods, machinery and metal goods, drugs, and provisions; exports: coffee, minerals, cattle, tobacco, and ivory. Bogota is the capital, connected by boat and mule with the coast, and it has two grand cathedrals. Principal cities are **Barranquilla, Cartagena, Medellin.**

COLORADO. A Western state, traversed from north to south by the Rocky Mountains, containing every variety of surface from level plains to gigantic peaks, of which within the state are more than 100 peaks exceeding 13,000 feet, Mt. Massive being the highest. The central region with its parks, cañons, hot springs, dryness of air, and rich mineral deposits have made Colorado famous. Many important rivers rise in this state—the Colorado, Mississippi, and Rio Grande basins occupying the slopes. Irrigation is extensively employed so that agriculture is remunerative; cereals, hay, vegetables, and fruits are widely raised. Stock raising is more important than farming; mining is the chief industry. The discovery of gold near Pike's Peak led to the first settlement; Cripple Creek is now the principal gold region. Other minerals: silver, lead, coal, copper, zinc, petroleum, cement, fire clay, and manganese. Manufactures: steel, beet sugar, machinery, cars, liquors, butter, cheese, canned meats. Denver is the capital and center of the live stock trade; Pueblo is the second city, noted for its steel works.

CONGO or **KONGO.** An African free state in the Congo Basin founded by King Leopold II. of Belgium and placed under his jurisdiction. Its surface is a depressed plateau, half covered with forests, the remainder being low-lying savannas and arable lands; well watered by the Congo river; forests contain many rubber and other gum yielding trees. Agricultural possibilities are great, but the climate is unhealthful to whites. Products: coffee, cotton, yams, papaws, pineapples, cassava, rice, maize, peanuts, sweet potatoes, bananas, beans, rubber, tobacco, sorghum, and ivory. Trade is hampered by rapids, rendering river communication to the coast impracticable. A railway connects with Stanley Pool and its steamboat traffic. The capital is **Boma.**

CONGO RIVER. The largest river in Africa, with a volume of water far exceeding that of the Mississippi. Flows north (as Luapula) from Lake Bangweolo to Lake Moero, then north and northwest as the Livingstone, and then southwest to the Atlantic as the Congo. With its tributaries it forms a navigable waterway, obstructed by falls and rapids. Above Leopoldville it is navigable for 1,000 miles.

CONNECTICUT. A well-watered, important New England state. The highland region, which commences in Vermont, descends into this state at a considerable height, slowly loses its mountainous character, and ends with low hills as Long Island Sound is approached. While the river valleys are fertile, producing much valuable tobacco and other crops, the leading industry is manufacturing, due to abundant water power, good harbors, navigable rivers, and nearness to large cities.

The manufactures are firearms, ammunition, rubber goods, watches, clocks, sewing machines, textiles, hardware, silks, silver-plated ware, brass goods. The oldest iron mines in the country are here, and other minerals are granite, marble, trap rock, limestone, clay products (bricks, tiles, etc.), quartz, infusorial earth, and tungsten ore. The principal cities are New Haven (the home of Yale University); Hartford, the capital; Bridgeport, Waterbury and New Britain.

COSTA RICA. A Central American state between Nicaragua and Panama. A good agricultural country, but hampered by lack of population and transportation facilities. Products: bananas (the main crop), coffee, cacao, maize, sugar, rice, potatoes, valuable woods. Live stock raising is important. Imports: mainly textiles, machinery, steel, and provisions; exports: bananas, coffee, and gold. The capital is San Jose, and the Caribbean port is Port Limon; the Pacific port is Puntarenas.

CRETE. An autonomous state, returned to Greece in 1913. An island in the Mediterranean. Products: olive oil, grapes, oranges, lemons, and other fruits, chestnuts, and silks. The capital is Canea, and the ports are Candia, Cenea, and Retimo.

CUBA. Largest of the West Indies; an independent republic under the protection of the United States; with a surface of plains, rolling uplands, and forest regions, the latter being estimated to cover nearly one half the island. An agricultural country, with exceedingly rich and fertile soil, in many small holdings. Products: sugar, tobacco (the maximum crop is very large), coffee, oranges, cacao, cereals, vegetables, bananas, pineapples, lemons, limes, cocoanuts, with valuable fish. Over half the cultivated area is in sugar. There are large forests of mahogany, cedar, ebony, dyewoods, and gum producing trees. Minerals: copper, manganese, iron, some gold, silver, lead, and asphalt, but all are little worked. Imports: textiles, provisions, machinery, manufactures, coal, live stock; exports: large quantities of sugar, alcohol, tobacco, cigars, molasses, wines, fruits, iron ore, mahogany and other cabinet woods, gums, resins, and oils. The capital is Havana, and the principal towns Santiago de Cuba, Cienfuegos, Camaguey.

CYPRUS. Third largest island in the Mediterranean, progressing steadily under the administration of Great Britain. Has a large area of irrigation works. Essentially agricultural, with one third of the land under cultivation. Products: wheat, barley, oats, olives, cotton, large quantities of grapes, carobs, fruits, flaxseed, silk, cheese, wool, hides, and some oil of thyme and sponges. Minerals: abundant gypsum and terra umbra, marble, copper, asbestos. Imports: cotton and woolen manufactures, provisions, iron, leather, petroleum, lumber; exports: wheat, barley, carobs, raisins, silk cocoons, hides, wine, wool, flour. The capital is Nicosia, the principal ports Larnaca and Limasol.

CZECHO-SLOVAKIA. The Czecho-Slovakian state came into existence on Oct. 28, 1918. It is a long narrow state just east of Austria and Germany, 500 miles in length and 50 to 100 miles in width with an area of approximately 55,000 square miles, bordered by five countries. The country was organized mostly from what was the old Austrian-Hungarian Empire, the states of Bohemia, Silesia, Moravia, Slovakia and Ruthenia breaking off. The fundamental difficulty of the new state will be that of holding together such a polyglot people in a state unprotected by natural barriers. Practically the entire country is a dissected upland. The agricultural industries are many, one half the land being suited for those purposes. The crops are potatoes, sugar beets, wheat, rye, barley and oats, and the live stock industry, cattle, horses, pigs and sheep, occupying a prominent place. The country around the border has much forested land, estimated at 32% of the area. The state is very rich in mineral products, much coal and iron,—the coal of Teschen being of excellent coking qualities,—nickel, cobalt, copper, silver and garnets. Bohemia is the heart of the industrial and manufacturing region producing, because of her excellent resources, iron and steel, glass, paper, cotton, and woolens, sugar refineries, furniture, etc. The Bohemian glassware is justly famous the world over for its quality and color. Moravia is chiefly agricultural. The exports are glassware, textiles, iron products, wood products and sugar. Prague is the capital and leading industrial center, Brume, noted for wool manufacturing, and Pilsen and Budweis are also manufacturing centers.

DANZIG, FREE CITY OF. Created by the Versailles Treaty in 1920 and governed by a High Commissioner appointed by the League of Nations. The city is located on the Baltic Sea where the Vistula empties into it. Though surrounded by Poland on one side and Germany (East Prussia) on the other, the port is free to all and was made free to take care of the conflicting demands for an outlet to the sea. The city has an area of 754 square miles and is within the Polish Custom's Union. Its chief business is commercial and shipping, grain, sugar, lumber, salt and some manufactured products coming down the river from the hinterland.

DELAWARE. A Middle Atlantic state. The surface is mainly a level coastal plain, well watered, and devoted to agriculture, nearly all on small farms. Products: maize, wheat, hay, oats, with heavy crops of tomatoes, peaches, small fruits, oysters, and fish. The proximity of large coast cities renders vegetable farming profitable. Manufactures: iron and steel, canned goods, railway cars, leather, powder, ships, brewed and distilled liquors, and knitted goods. Minerals: bog-iron ore, clays (brick, terra-cotta, and kaolin), granite, feldspar, glass sand, and marls. The capital is Dover, and the largest city Wilmington on the Delaware river.

DENMARK. One of the smallest countries of Europe. The surface is generally low, penetrated by large lagoons and inlets or fjords far into the interior. Agriculture is the leading industry, over half the population being so engaged. Products: oats, barley, rye, sugar beets, potatoes, live stock, dairy produce, and fish. Imports: provisions, textiles, oil cake, machinery, coal, cotton, metals, hardware, wood and its manufactures; exports: bacon, butter, eggs, hardware, and animals. Manufacturing is increasing, and now gives employment to one quarter of the population. It includes the making of furniture and foodstuffs, distilling, sugar refining, and brewing. There are no metallic ores, but much peat, kaolin, and some poor coal are found. Copenhagen is the capital and chief commercial center. Jutland is a peninsula without hills, lakes, rivers, or minerals, except chalk. Its products are grains, cattle, and dairy products. Greenland is under the control of Denmark, and is the second largest island in the world; only inhabited near the coast lowlands. Industries are principally fishing and hunting, with very little agriculture. There are 12 chief stations for trading, the northernmost being Upernavik.

DISTRICT OF COLUMBIA. A territory of the American Union, lying between Maryland and Virginia. The surface is flat, or gently rolling and hilly. A small part of the total area is in farms, and the crops are principally vegetables. The largest acreage is pasture, and dairying is a prominent industry. The commerce of the District is principally local, excluding the government works and products. It is the seat of government of the United States, and was ceded by the state of Maryland as a site for the National capital, Washington.

EAST INDIES. A group comprising Borneo, Celebes, Java, New Guinea, Sumatra, and the Spice Islands, with a number of smaller ones. The Philippines (belonging to the United States) are an extension of this group. Borneo is the largest island of the group, North Borneo and Sarawak being under British protection. It is rich in jungle produce and mangrove bark, gutta-percha, coal, oil, iron, antimony, and gold. There is little agriculture, but this is being steadily fostered, as the soil is fertile. The south and east of the island are governed by the Dutch through native rulers, and the chief exports are copra, bamboo, gutta-percha, and cocoanut oil. Celebes is governed by the Dutch, and has a main export of coffee, rice, sugar cane, bird skins, cotton, and sago. Java is governed by the Dutch, and is the most important commercial island of the group. It is very fertile and prosperous. There are more volcanoes than on any other equal area in the world. Exports: coffee, sugar, rice, copra, indigo, pepper, spices, tea, teakwood, and cinchona (quinine). The capital is Batavia, also the principal city of the group. New Guinea or Papua is one of the largest islands in the world, administered by Australia and Holland. Products: cocoanuts, rubber, sisal hemp, coffee, fibers, cotton, sago, vanilla, kapok, cacao, tapioca, cinnamon, tea, tobacco, trepang, copra, pearl shell, and pearls. The forests have valuable woods of sandal, ebony, bamboo, with gum-producing varieties. Minerals: copper and gold. Spice Islands, or Moluccas, are a Dutch possession, not so well watered as the westerly islands, but producing large quantities of spices, nutmegs, cloves, betelnuts, etc., with coffee, cacao, tobacco, indigo, rice, and sago. Minerals: sulphur and petroleum, porcelain clays, tin, and coal. Sumatra is a Dutch possession, noted for its large animals, elephant, rhinoceros, tapir, orang-utan, etc. Its principal product is an immense quantity annually of a very thin-leaved, silky, brilliant tobacco, used exclusively for covering cigars. There are many camphor and gutta-percha trees. Exports: tobacco, coffee, spices, bamboo, gutta-percha, copra, and gums. The natives produce exceedingly clever gold and silver filagree work, also native fabrics and household utensils. Minerals: coal, tin, petroleum. Prin-

cipal cities, Padang, Achin, Deli, Benkulen, and Palembang.

ECUADOR. A South American republic on the Pacific coast. Elevated basins form the centers for ideal agriculture, under a spring-like climate. The staple is cacao, besides coffee, rubber, vegetable ivory, brazil nuts, tobacco, sugar, medicinal barks, and fiber. There are known to be rich deposits of silver, copper, iron, lead, quicksilver, and coal, but these are not worked to any extent; some gold, platinum, and zinc exist. Imports: textiles, foodstuffs, ironwork, gold, and silver; exports: cacao, coffee, vegetable ivory, rubber, and Panama hats. The capital is Quito; chief ports Guayaquil and Esmeraldas.

EGYPT. An extensive country bordering on the Mediterranean and Red seas. It is a part of the great African desert zone. Agriculture engages most of the population. Under the extensive irrigation systems it is possible to obtain three harvests a year: cereals in the spring; rice, maize, millet, and vegetables in September and October; cotton, sugar, and rice in October and November. In Lower Egypt crops of cotton, rice, wheat, maize, barley, clover, and vegetables are grown; Upper Egypt produces crops of cereals and vegetables. There are many old and valuable quarries intermittently worked, some salt, soda, alum, and saltpeter, and the ancient gold workings are proving profitable. Imports: textiles, cereals, wood, coal, metals and manufactures, and leaf tobacco; exports: cotton, cereals, and tobacco products, mainly cigarettes. No tobacco is permitted to be grown, the leaf pays a duty in and the manufactured cigarettes a duty out of the country. The capital is Cairo, with chief ports Alexandria and Port Said.

ELBURZ MOUNTAINS. A range in Persia, extending 450 miles along the southern border of the Caspian Sea; its highest peak is Mount Demavend. The northern slopes are very fertile, and have rich tropical vegetation, poppies, tobacco, cotton, grapes, and dates being produced.

ENGLAND. The most important division of the United Kingdom of Great Britain and Ireland. The commercial situation is improved by numerous navigable rivers, such as the Thames, Humber, Tyne, Severn, and Wye. The surface is mainly a low plain broken by gentle slopes and downs, with mountains in the northwest. Agriculture is an important business, but England differs from other countries in the fact that the land is owned by a comparatively small number, and is leased to others. The average farm is not larger than in the agricultural states of America. For many years the competition of foreign grown crops, and foreign reared cattle, has decreased the gross cultivated acreage, but to-day there is a strong trend towards producing finer qualities of vegetables, cereals, and meat for consumption, obtaining the higher prices without difficulty. About one half the agricultural area is in pastures and grazing lands. Products: wheat, hay, clover, barley, oats, beans, peas, potatoes, turnips, and small quantities of high class fruits. Stock raising is important, and about two thirds of the farm animals are sheep, with the remainder cattle. Minerals: iron in large quantities, coal (of which much is exported), tin, gold, silver, zinc, lead, some copper, manganese, uranium, wolfram, and others. The fisheries are extensive. Other industries: manufacturing of textile fabrics, cotton, wool, and lace, metal working, coal handling, etc. Exports: textile fabrics, coal, coke, iron and steel manufactures, chemicals, machinery, ships, etc. Imports: foodstuffs, grain, meat, and tea in immense quantities, cotton, wool, oil seeds, metals, yarns, wood and timber, chemicals, fruits, tobacco, hides, etc. The United States contributes nearly four times the French and six times the German imports into England. The capital is London, the most important port for imports, and the greatest city in the world in population and commercially, setting the prices for wool, tea, hides, and colonial produce, especially those of India. It has absorbed the city of Westminster and numerous manufacturing villages. The Thames, the most important short river in the world, is spanned by 20 bridges, of which London Bridge is the principal, and the port for deep water vessels extends from London Bridge, 50 miles, to the sea. The river is about 800 feet wide at the bridge, and about six miles wide at the sea. The great docks are 20 miles down the stream. Liverpool is the second largest port, and is the principal export center, being about the size of Boston, Mass. Other important cities are Manchester, noted for cotton working; Birmingham, for metal working; Leeds, for cloth; Newcastle, for coal handling; and Southampton and Fishguard, as ports for ocean travel.

ESTONIA. On the eastern coast of the Baltic Sea, south of the Finnish Gulf, is the new state of Estonia, composed of the old province of Esthonia and Livonia. The area is 18,355 square miles; the population is 1,116,474; the capital is Tallinn. Her independence was declared in 1918. The country had for centuries been dominated by other countries, usually Russia or Germany. The industry is primarily agricultural, and the crops are rye, barley, potatoes, hay, and flour, with some cattle and sheep raising. The roads are very poor and there are almost no railroads. Flax, dairy products, and timber are exported from Reval, the chief seaport.

ERITREA. An Italian colony in northeast Africa, under autonomous administration, and having the management of its own finances. The surface is a narrow coast territory of chalk formation which merges into a subalpine region, rising to a moderately high plateau, broken by arid valleys. There is little cultivation except in the highlands, and irrigation is general. There is abundant pasture, but the pastoral population is nomadic. Many camels, oxen, sheep, and goats are raised for local trade. Imports: cotton goods, durra, cattle, wood, wine, and flour; exports: precious metals, animal products, mother-of-pearl, pearls, and hides. There is a considerable transit trade with Abyssinia and the Sudan. The only railway is 15 miles long, connecting Saati with Massaua. The seat of government is at Asmara.

EURASIA. A name frequently given to Europe and Asia combined to form the largest land mass on the earth's surface. It is a triangle in shape, with its base on the east extending from Bering Strait southward to the Malay Peninsula, and having its apex in the west in Portugal. It has every variety of surface, all kinds of fresh and salt water forms, the highest mountains, the most extensive plains, fertile soil, mineral deposits; possesses the heart of commerce and advancement, and a people who have reached the highest form of human development. It is the birthplace of great religions, literature, and art.

EUROPE. The smallest continent except Australia. Including its polar and other islands, it comprises a little more than one twentieth of the land surface of the world. It is bounded on three sides by the sea, and a broken coast line gives it a greater coastal development than any other country, and to this it owes its commercial supremacy. The coast line proper is lengthened by multitudinous islands, channels, and the penetration of deep sea water far into the interior. The surface is as varied as the coast line. The mountains are the Alps, Ural, Pyrenees, Carpathians, Apennines, Jura, Balkans, and Caucasus. The warm Atlantic Ocean, and the heat radiated from the great Sahara desert, give the west, south, and center of Europe a temperate climate; the soil is fertile and well watered; numerous important "mixed" forests, with vast cone bearing growths, are in the north, and there are great mineral deposits. The largest fresh water lakes are the Ladoga and Onega, in Russia. The principal rivers are the Volga, Danube, Ural, Don, Dneiper, Rhine, Rhone, Elbe, Seine, and Tagus.

FALKLAND ISLANDS. A crown colony of Great Britain in the south Atlantic, consisting of two fairly large islands, and about 100 small ones, besides South Georgia. Many of the islands, are practically unoccupied except by penguins. The soil yields little more than grass, and sheep farming is the staple industry. Imports: provisions, apparel, building materials, machinery, and hardware; exports: wool, hides, skins, tallow, and whale oil. Principal town is Port Stanley.

FAROE ISLANDS. A group of about 21 islands, of which only 17 are inhabited, lying midway between the Shetlands and Iceland. The islands are mostly volcanic rock, with basaltic formations, covered with thin vegetable soil yielding pasturage for the numerous cattle and sheep reared. Fierce and very frequent hurricanes prevent the growth of trees and hinder the cultivation of cereals and the ordinary vegetables. The chief products are those of the sheep, and of the multitudes of sea birds whose eggs, feathers, etc., are gathered as a harvest. There are good fisheries and the natives are expert in this industry. Exports: tallow, train oil, feathers, skins, wool, fish, and butter. Minerals: coal and peat are found, and there are traces of iron, copper, and chalcedony. The group is represented in the Danish Parliament by two delegates selected by the people.

FIJI ISLANDS. A group of more than 200 islands in the south Pacific Ocean, a British crown colony. The soil is very fertile, and agriculture is the principal pursuit. The chief crops are bananas, cocoanuts, maize, sugar cane, yams, tobacco, tea, rice, peanuts, and pineapples. There are dense forests containing many valuable woods. Imports: dry goods, machinery, hardware, live stock, breadstuffs, lumber, oils, and iron; exports: sugar, copra, green fruits, turtle shell, pearl

shell, and beche de mer. The capital is Suva. There is good commercial communication with New Zealand, Australia, and Canada.

FINLAND. Most northerly of civilized countries, a bit larger than the United Kingdom, situated between Sweden and Russia, north of the Baltic Sea and the Gulf of Finland. The country, formerly a grand Duchy of Russia, declared itself a republic in 1919. The country is hilly with a great many lakes and swamps and the soil is very stony and poor due to glacial action. The northern part is covered with Finland's most valuable resource, forests, of pine and spruce. There are no minerals in the country with the exception of a little copper and quarry products. About 10% of the land is cultivated, this almost entirely in the south, and the products are wheat, rye, barley, oats, potatoes, and flax. The dairying industry is getting to be very important. The manufacturing concerns itself chiefly with pulp wood, paper, leather goods, textiles and iron and steel. 75% of the exports are dependent upon the forests, lumber, pulp wood, and paper. Then also we have raw materials, hides, meats and dairy products shipped out. Helsingfors is the capital and chief seaport.

FLORIDA. The most southern of the United States. Consists of level coastal lands, often marshy, rising to an interior hilly, well-wooded area. The Florida Keys, stretching 200 miles, are a remarkable example of coral organism. There is an extensive water system of navigable rivers. There is some fertile soil, and irrigation is steadily developing larger areas. Valuable forests cover three fourths of the state; cultivated lands occupy only a small part. There are more pineapples produced than elsewhere in the United States, and the tobacco crop is mainly of the valuable "wrapper" type, amounting to millions of pounds annually, other products being rice, maize, oats, peanuts, peas, cotton, oranges, oak, pitch pine, tar, turpentine, and resin. There is an extensive fishing industry. Minerals: phosphate rock, fuller's earth, lime, besides mineral waters. Large quantities of cigars are manufactured from imported Cuban tobacco at Tampa and Key West. The capital is Tallahassee, and the other cities, **Jacksonville, Pensacola, Tampa,** and **Key West.**

FRANCE. A European republic. The surface is an extensive lowland, almost cut off from other countries by mountains and water barriers. It is well watered, there being over 200 rivers officially reported navigable, including the Loire, Rhone, Garonne, and Seine. The soil is fertile and the climate subtropical. The highlands at the east rise to Mount Blanc, the highest peak of the Alps, which is on French territory. The area is two thirds under cultivation, with one seventh rich forest lands. Fifty per cent of the population are engaged in agriculture on small farms. Products: sugar beets, grapes (in which France leads the world), barley, wheat, rye, maize, oats, fruits, such as apples, pears, plums in the north, and oranges, lemons, etc., in the south. Stock raising is important, and the fisheries, especially sardine and oyster, are extensive. Imports: wool, cotton, silk, coal, oil seeds, lumber, hides, foodstuffs, and machinery; exports: textiles, wines, silk and wool yarns, skins, furs, linens, clothes, and leather goods; the exports are small compared with other leading European countries. The industrial aim has been for quality, rather than quantity, in silks, velvets, cut glass, textiles, fine woolens, fine linens, fine laces, porcelains, tapestry, gloves, and leather ware. France is relatively poor in minerals and metals. **Paris** is the capital, with chief ports of **Bordeaux, Cherbourg, Dunkirk, Havre,** and **Marseilles.** Its colonies and dependencies are many and very widely scattered. In French India are five towns, **Chandernagar, Karikal, Mahe, Pondicherry,** and **Yanaon,** the chief export being oil seeds. **French Indo-China** consists of five states; **Annam** exporting maize, rice, manioc, areca nut, mulberries, spices, sugar, bamboo, rubber, coffee, medicinal plants, raw silk, and some cattle; **Cambodia** exporting salt fish, cotton, tobacco, rice, indigo, and boats; **Cochin-China** exporting rice, fish and fish oil, pepper, shrimps, cotton, copra, silk, isinglass, hides, and spices; **Tonking** exporting rice and animal products, and **Laos** territory producing rice, cotton, lumber, some gold, lead, and precious stones, being worked by French companies. In Africa, the French colony of **Algeria,** bordering on the Mediterranean, is the largest of all French dependencies; the **French Congo** exports rubber, ivory, woods, palm oil, palm kernels, coffee, cacao, kola nuts, piassava, and other products. **Madagascar,** a large island in the Indian Ocean, has great cattle breeding and agricultural industries; sericulture is advancing. The principal article produced is rubber; exports: rubber, gold, and other minerals, hides, rafia, wax, vanilla, some manufactures, and valuable woods; **Mayotte** and the **Comoro Islands** have small exports; **Reunion** exports sugar; the **Somali Coast Protectorate** exports coffee, ivory, and hides; **French West Africa** includes **Senegal, Upper Senegal** and **Niger, French Guinea,** the **Ivory Coast,** and **Dahomey,** the exports being chiefly maize, rubber, wool, copra, skins, fruits, oil, and oil seeds. The **French Sahara** includes practically the whole of the great desert. **Tunis** is a French protectorate exporting large quantities of wheat, barley, oats, olive oil, wine, cork, tropical fruits, copper, lead, and zinc ores, phosphates, sardines, anchovies, and other fish. **Guadaloupe** is in the West Indies, and is a French colony exporting sugar, bananas, tobacco, rum, coffee, vegetables, and cacao. **French Guiana,** in South America, exports cacao, phosphates, woods, gold, rosewood essence, and hides. **Martinique,** in the West Indies, exports rum, coffee, cotton, sugar, and cacao. **St. Pierre** and **Miquelon** are the largest islands in a group off Newfoundland exporting dried and fresh codfish and cod liver oil. **New Caledonia** and dependencies, near Australia, export nickel, cobalt, chrome, and copper ores, coffee, beans, and copra; the **New Hebrides,** jointly administered by France and England, export maize, coffee, and vanilla; the French establishments in Oceania consist of the **Society Islands,** the **Marquesas,** the **Tuamotu group,** the **Gambier, Tubuai,** and **Rapa islands,** the most important being **Tahiti,** with general exports of sugar, molasses, copra, pearls, mother-of-pearl, vanilla, cocoanuts, and oranges.

FRANKLIN. A Canadian district consisting of numerous large and small islands off the mainland, including **Baffin's Land** and **Prince Albert Land** not fully explored, but believed to be almost wholly destitute of animal and vegetable life. There are a few Eskimos on Baffin's Land.

GALAPAGOS ISLANDS. A group of small islands in the Pacific, about 600 miles west of Equador, officially renamed **Celon Archipelago** in 1892, the largest being Albemarle, Indefatigable, Chatham, James, and Charles. They are of volcanic origin. Turtles are chief product, although there is some sugar growing and cattle raising. The group is of extreme interest to scientists and zoölogists, and it was the observation of the peculiarities of the fauna, and the influence of the facts upon the evolutionary history of animals made during the voyage of the Beagle, which is believed to have been responsible for the later speculations of Darwin, Wallace, and other evolutionists. The archipelago is accepted as a most fruitful illustration of insular influences on animal life, and of the effects of isolation.

GANGES. An important river of north India, and one of the 12 great rivers of the world. It rises in the Himalayas, draining the southern ranges, and, after a southern and eastern course, flows into the Bay of Bengal through a multiplicity of channels extending through a delta nearly 300 miles long. The basin of the Ganges is one of the most fertile spots on the earth. Each spring the snow melts and the river overflows, as does the Amazon and Nile, flooding and carrying valuable alluvial mud over an enormous area, rendering fertilization unnecessary—an important feature in Lower Bengal. It is continually changing old channels for new, and the influence of the tides is estimated to extend 240 miles from the sea. It is navigable in sections. The Hindus hold it in high veneration as the holiest of rivers, and as a cleanser from sin.

GEORGIA, (U. S. A.). An important Southern state with surface, soil, and climate so varied that it has been said that "if cut off from the remainder of the world Georgia could supply all the needs of her people." Agriculture is the leading industry, nearly three fourths of the area being under cultivation. It is the second largest cotton state, and is the largest producer of sea island cotton. In the north large quantities of maize are grown, also wheat, and oats; rice in the coast counties; sugar cane, tobacco, peanuts, sweet potatoes, watermelons, and immense crops of fruits, especially peaches, are produced. Forest lands are extensive, mainly pine, cypress, juniper, and some hard woods, and turpentine and resin represent about one half of the total produced in the United States. Stock raising is unimportant. Oyster and shad fisheries are large. Minerals: gold, silver, coal, iron, and manganese ores, iron pyrites, bauxite, graphite, lime, ocher, infusorial earths, natural cement, talc, soapstone, clays, valuable marble quarries, besides mineral springs. There is much water power in the state, and prominent manufactures are textiles, cotton goods, lumber products, fertilizers, cottonseed and oil. The capital is **Atlanta,** the chief ports **Savannah** and **Brunswick.**

GEORGIA, (Europe). A Soviet republic bordering on the Black Sea, south of the Caucasus Mts. and north of Armenia, which is composed of the provinces of **Tiflis, Kutain** and **Batum,** together with the provinces of **Zakataly** and **Sakhum,** having an area of approximately 3500 square miles, and while nominally a republic, is

virtually under the constant influence of the Russian Soviets. The principal crops are grapes for wine, cereals, cotton, and corn. Large quantities of fruit are grown on the hillsides and a good sized animal industry abounds, including cattle, sheep, goats, bee keeping and silk worm production. In this state is found the largest manganese deposits in the world and also some oil, copper, zinc, lead and antimony. The capital is Tifis, an inland city and the port, Batum, on the Black Sea, is a great oil distributing center.

GERMANY. A republic in central Europe formed in 1918 after the abdication of Kaiser Wilhelm. Due to the treaty of Versailles the territory of the old Empire was cut down from 209,000 square miles to 177,000 square miles and the following are among the sections affected: Alsace-Loraine—area of 5600 square miles, taken from France in 1871 and now returned, on the boundary line between France and Germany and because of rich natural resources a source of constant friction. Loraine has richest beds of ore in Europe, 75% of all Germany mined in 1914 coming from there. Alsace has great deposits of potash, salt, oil and land of great agricultural value. While not an actual loss, the separation of East Prussia from the main body of Germany by the so-called Polish Corridor may lead to serious political and economic difficulties. This corridor is a strip 30 miles wide along the Vistula allowing Poland an outlet to Danzig and the sea. Eupen, Malmedy and Moresnet—on the Belgium frontier and ceded to Belgium; only an area of 382 square miles but strategically rather than economically important. Memel—to the north of East Prussia, ceded by the League of Nations over to Lithuania. Posen—and neighboring areas to the east have been given to Poland which are very rich mineral lands and fertile agriculturally, particularly grain and potato land. The Saar Basin, between Germany and France, is an area of great coal resources, estimated at 17,000,000,000 tons. France being poor in coal desired this area and as a compensation for damages done by the Germans to French mines at Lens and Valenciennes, the coal of the Saar was turned over to them for 15 years. The area is to be governed by the League, the final ownership to be decided by plebiscite. East Silesia, ceded to Poland under a plebiscite charge, an area of great mineral resources, one-fifth of all Germany's coal coming from here, together with her lead and zinc in large amounts. Slesvig, between Germany and Denmark, 1,540 square miles, ceded to Denmark. No great loss economically. Germany also lost all of her colonies in Africa, Togoland, Cameroons, German South West Africa, and German East Africa and in the Pacific, Nauru Island, Kaiser Wilhelm's Land, Marshall, Mariaine, Caroline Island, and Samoa. After suffering these losses mentioned, particularly the loss of natural resources, Germany has found it difficult to get back to her pre-war industrial life. The physical divisions of the country from north to south include: the Central Plains to the north, a great agricultural region; the Central Highlands, the area of Germany's mineral deposits and manufacturing establishments; the Middle Rhine Plain, rich, fertile, 20 to 25 miles wide, agricultural region; the North Slope of the Alps, heavily forested. The rivers, very important as commercial arteries, are the Rhine, probably the most important river artery in Europe, 800 miles long, has 20 important cities on it or tributary to it, the Elbe with the great port of Hamburg, the Oder and the Vistula. The canal systems of Germany are remarkable. The agricultural crops are, potatoes (leads the world in production), rye, sugar beets, corn, oats, barley, tobacco, apples, grapes and hops. The live stock industry is very important with horses, cattle, pigs, goats, and sheep showing up well in European comparisons. Her forestry industry is on a scientific basis, trained workers, and a great many state reserves. Ash, birch, oak, and beech are the principle types. The mineral resources have been sadly depleted by the loss of territory, particularly in iron (Alsace-Loraine) and potash (Alsace). In the latter resource she had enough to supply the world for 2,000 years. But now her resources are coal, zinc, lead, copper, silver, and graphite. Germany was and still is a great manufacturing country, but she has lost much of her former prestige. The general products are iron and steel, ships, woolens, cotton, silks, dyes, chemicals, instruments, sugar refining, toys, scientific intruments, copper and brass goods, leather goods, and rubber products. Her foreign trade, once huge, is slowly returning. Exports are, steel products, woolens, silks, cottons, beet sugar, chemicals and dyes, leather goods, toys and glassware. The capital is Berlin, the seaports are Hamburg, Bremen, Stettin and Danzig, and the great industrial cities are Essen, Dussildorf, Dresden, Brelau, and Cologne.

GIBRALTAR. The Rock of Gibraltar is a crown colony of Great Britain, of great strategic importance, commanding the entrance to the Mediterranean. It is a naval base and coaling station, with a good harbor, exporting wine, fruit, and cork.

GILBERT ISLANDS. A British archipelago in Oceania. The group consists of 16 small islands, the largest being Taputeuca, Arorai, Nonuti, Apamama, Maiana, and Maraki. The chief product is copra.

GREECE. The most eastern of the three peninsulas of Europe projecting into the Mediterranean, and once the most highly civilized country. It has a mile of coast line to every ten miles of area, but has few good harbors. A mountainous land with successive narrow valleys; the only great plains are those of Thessaly. The rivers are small and unnavigable. Agricultural cultivation depends on irrigation, which is unequally distributed; one half of the area is pasture land or waste. The farms are small, producing wheat, barley, rye, and maize, but the best crops are currents, grapes, acorns (for tanning), cigarette tobacco, silk, olives, honey, citrus fruits, and figs. Minerals: iron, copper, zinc, lead, with many others in small quantities. Manufactures: cloth, carpets, metal and leather goods, silk, wool, flour, alimentary pastes, etc., mainly for home consumption, but of high quality. Imports: agricultural products, textile raw materials, and machinery. Exports: currents, wines, grapes, raisins, tobacco, olive oil, sponges, and forest and animal products. The capital is Athens, with its port, Piraeus, six miles distant. Other towns are Patras, Corfu, and Volo.

GUATEMALA. The largest of the Central American republics. The greater part of the surface is mountainous, but the upland valleys are very fertile. Coffee is grown extensively, the largest plantations owned by Germans; also wheat, maize, sweet potatoes, beans, indigo, cacao, and some cotton. Gold and silver are worked, salt and other minerals exist. Imports: cotton goods, machinery, ironware, and provisions; exports: coffee, mahogany, cedar, dyewoods, hides, rubber, bananas, sugar, and chicle. The capital is Guatemala la Nueva, the chief port Puerto Barrios, and important towns Quezaltenango, Coban, and Totonicapan.

HAWAII. A group of 12 Pacific islands belonging to the United States. Seven are inhabited, the largest being Hawaii, the most important Oahu, which has the only good harbor, and the capital, Honolulu. The surface is largely mountainous and volcanic, but the soil is very rich. Products: sugar, tropical fruits, rice, coffee, and cattle. Imports: clothes, textiles, lumber, and machinery; exports: coffee, sugar, molasses, rice, bananas, oranges, pineapples, honey, wool, tallow, and hides, in large quantities. Honolulu is a mid-ocean post office, and several lines of steamers on both sides of the Pacific engage in trade with the mainland.

HEBRIDES. A name applied to the islands of the west coast of Scotland, classified as the Outer and Inner Hebrides. The islands of Bute, Arran, and the Cumbraes, lying in the Firth of Clyde, are usually classed with the Hebrides. The total number of islands is about 521, and about 120 are inhabited. Owing to the Gulf Stream they have a mild though humid climate. Much of the area has been converted into sheep walks, and extensive tracts are rented to sportsmen. There is considerable arable land, the remainder is pasture, morasses, peat-mosses, lakes, barren sands, and rocks. The scenery is grand, especially in Mull, Jura, and Arran, with their lofty mountains, peaks, and rugged hills. Staffa is remarkable for its basaltic columns and great cave, and Iona is rich in ruins and historical associations. Industries: sheep, cattle and pony raising, herring fishing, and the manufacture of kelp. Exports: live stock, fish, kelp, wool, and stone. The principal towns are Stornoway in Lewis, Portree in Skye, Tobermory in Mull, and Rothesay in Bute, the latter being a great tourist resort.

HEDJAZ. An independent kingdom on the west side of the peninsula of Arabia, bordering on the Red Sea, with an area of about 170,000 square miles. The chief occupation is taking care of the thousands of pilgrims that come to Mecca. Dates are the chief crop and the exports, wool, grain, and hides. Mecca and Medina are the two chief cities and Jidda the chief port.

HIMALAYA MOUNTAINS. The southern ranges bordering the great Asiatic plateau for a distance of 1,500 miles, the grandest in the world. They radiate from the Pamir plateau, "the Roof of the World," and contain more than 40 peaks over four miles high, Mount Everest being the highest. The southern or snowy region is plentifully studded with glaciers and contains lofty peaks; the northern, forms a watershed in Tibet, which has been little explored, as but one pass is known. Metallic ores exist in almost every part, but gold, copper, iron, and lead are the only ones extracted.

HINDU KUSH MOUNTAINS. They extend westward from Pamir between Afghanistan and Turkestan; are the source of several rivers; their highest point is Tirach Mir. Minerals, especially iron, are very abundant.

HONDURAS. A Central American republic. It is a table-land except along the coast. It is rich in resources, but, lacking capital and population, half its area is rich virgin waste. There is considerable agriculture, some cattle raising, and mining; silver, gold, copper, lead, and other ores are found; the principal manufacturing industry is the plaiting of straw hats. Bananas are the chief product. There are valuable forests of mahogany, cedar, and lignum-vitæ. Imports: cotton, breadstuffs, hardware, and machinery; exports: bananas, ores, bar silver, hides, cattle, cocoanuts, lemons, oranges, indigo, sarsaparilla, maize, cacao, tobacco, and timber. More than half the entire trade is with the United States. The capital is Tegucigalpa; the chief ports are Amapala, Puerto Cortes, and Trujillo.

HONGKONG. A British crown colony, consisting of a number of islands off the southeastern coast of China at the mouth of the Canton River. Hongkong, the largest, lies close to the mainland and contains the capital, Victoria, having one of the finest harbors in the world, with seven dry docks, the largest 700 feet long. It is a free port and is the center of China's foreign trade, handling about 40 per cent. Both exports and imports are resold and reshipped by Hongkong merchants, and include sugar, opium, cotton and yarns, woolens, flour, oil, amber, tea, iron, machinery, copper, coal, flour, ginseng, rice, silks, ivory, betel, and sandalwood.

HUDSON RIVER. The principal river of New York state, and one of the most beautiful and valuable waterways in the eastern states. It rises in the Adirondacks, drawing its waters on both sides of the range, from many attractive lakes, and from springs on the sides of many forested mountains. Its important tributaries are the Sacondaga, the Mohawk, and the Walkill, which unite with the parent stream above Troy, from which point it is navigable to the sea. Connection with the Atlantic and Central states is completed by means of the Erie Canal. The varied beauty of the river scenery has given to the Hudson the name of the "American Rhine."

HUNGARY. An independent republic first, formed in 1918 out of part of the old Austrian-Hungarian Empire, ruled now by a regent, until such time as the people can decide the type of government they want. The country is in eastern Europe, just east of Austria and south of Czecho-Slovakia and is physically two plains, called the big and little Alföld. This Hungary has only one-third of its former area and population and lost territory to Rumania, Czecho-Slovakia and Yugoslavia. The plain area gives the country no military protection and no water power. Agriculture is the only important industry, three-fourths of the people earning their livelihood that way. The crops are wheat, maize, sugar beets, grapes, tobacco, cattle, flax, oats, and potatoes. Practically no mineral deposits exist with the exception of coal at Pecs. The Danube River is the great commercial artery and the only outlet for goods, the country having no seaport. The manufacturing industries are flour, breweries, tobacco, sugar and agricultural implements. Budapest is the capital and the chief industrial city.

ICELAND. Iceland, granted its independence from Denmark in 1919 but under the Danish Custom's Union, is a large volcanic island in the Atlantic Ocean. The only habitable land is along the coasts and in the river valleys; hay and vegetables are the only crops, and some sheep and the small tricolored Icelandic ponies (miscalled "Shetland") are the farm stock. The chief imports are grain and meal, sugar, coffee, salt, cotton goods, tobacco, liquors, hardware, and timber. The chief exports: ponies, Iceland moss, stockfish, wool, eider-down, sea birds' eggs, sulphur, whale and seal oil. The chief port is Reykjavik, the capital.

IDAHO. A Western state. An elevated and mountainous district lying between the Rocky Mountains on the east, the Cascades on the west, with ranges to the north. Much of the land is arid, but great work is being done by irrigation. The climate is severe in the north, with heavy winter snows. Agriculture is limited to the mountain valleys and the basins of the great rivers, where irrigation is rapidly developing the rich alluvial soil. The principal farm products are wheat, oats, barley, hay, fruits, and vegetables. It is good grazing land for sheep, which constitute the leading farm stock. There is considerable lumber acreage. Beet sugar is an increasing product, also butter. The state is rich in minerals—gold, silver, copper, lead, zinc, some coal, iron, nickel, cobalt, mica, phosphate rock, antimony, tungsten, granite, limestone, sandstone, lime, pumice, and salt. The manufacture of lumber and timber, and flour and grist is becoming an important industry. The capital is Boise.

ILLINOIS. One of the great Central states showing rapid improvement during the past fifty years. Illinois lies within the vast prairie area, and has a level surface sloping in an immense plain from the low lying north and northwestern hills. The state is largely agricultural, and it should be noted that over seven eighths of the farm area is classed as "improved." The farm products include maize, wheat, oats, barley, rye, and buckwheat; large quantities of potatoes and hay are produced; some tobacco is grown, and there is a very active live stock industry. It is estimated there are within the state millions of farm animals, such as horses, cattle, sheep, hogs and mules. Very important industries are slaughtering and packing, manufactures of iron and steel, clothing, liquors, flour, agricultural implements, steam railroad cars, electrical machinery, lumber, furniture, and printing. The chief mineral product is coal, this being principally bituminous, giving employment to a large number of people. There are also found petroleum, natural gas, zinc, fluorspar, sandstone, limestone, Portland cement, natural rock cement, and clay products (bricks, tiles, and pottery). Illinois is one the most important manufacturing states west of the Alleghanies and ranks well with New York and Pennsylvania. Important cities are Chicago, Peoria, East St. Louis, Quincy, and Springfield, the capital.

INDIA. The most important commercial country of Asia, governed by England under the title of Empire of India. A vast peninsula of southern Asia, fifteen times the size of England, almost a world in itself, and isolated by the gigantic Himalaya Mountains at the north. The staple industry is agriculture, the native manufactures being mainly handicrafts such as carpets, shawls, rugs, and exquisite metal and ivory work. The chief imports are cotton manufactures, metals, silks, woolens, sugar, liquors, railway plant and rolling stock, apparel, and chemicals; the chief exports are cotton, rice, wheat, seed, cereals, opium, tea, tobacco, hides, jute, wool, lac, and indigo. The country is divided into presidencies and provinces, with the production as follows: Agra is the great sugar producing district; Assam grows the most tea, nearly one third the total crop, and is famed as the "wettest spot on earth," the annual rainfall being 610 inches at Cherra Punji, or practically 61,610 tons of water to the acre; Bengal grows one third of the great rice crop, which ranks next to that of China, also one half the tobacco crop, and nearly one third of the oil seed crop. Berar stands second in cotton production. Burma (Upper and Lower) is second in rice production. Bombay and Sindh grow large quantities of cereals and cotton. The Central Provinces produce large crops of wheat, cotton, rice, oil seeds, and cereals. Madras is a great producer of cotton, rice, tobacco, oil seeds, cereals, and stands at the head of the indigo crop. Oudh has important sugar, rice, wheat, and cereal crops. Punjab grows the most wheat, and is a large seed and cereal grower. The Northwest Provinces, Ajmere-Merwara, Pargana-Manpur, and Coorg are unimportant, except that Coorg contributes to the thousands of acres of coffee grown in Madras, Bengal, and Coorg; there are also many thousand acres devoted to jute. There are abundant mineral resources not developed—coal, iron, gold, copper, saltpeter, rubies, petroleum, and rock salt. Forests produce teak, bamboo, palm, conifers, and oak. Rainfall is heavy but irregularly dispersed, and irrigation is the only channel of ultimate development. Baluchistan is a semi-independent division. There is not much land under cultivation. The crops are cotton, fruits, indigo, and tobacco, and mineral deposits are numerous. Exports: wool, hides, fruits, and tobacco. The capital is Delhi. The six principal ports are Calcutta, metropolis of India, through which passes one third of India's trade; Bombay, capital of Bombay, on the west coast, one of the perfect harbors of the world; Rangoon, in Burma; Madras, the third city of India, has no harbor, only a roadstead, dangerous in cyclones; Karachi, on the northwest coast, and the much less important Tuticorin.

INDIANA. A Central state whose surface is mainly plains and rolling prairies sloping to the north and south, well watered by the Ohio, Wabash, Kankakee, and Illinois rivers, and Lake Michigan. It is largely agricultural, almost the whole area being farms, with over three quarters improved land. The soil is very rich in certain sections, growing wheat, maize, hay, oats, barley, rye, buckwheat, vegetables, tobacco, and fruits. There is a clip of scoured wool estimated at several million pounds annually. Large quantities of coal and petroleum, sand-

stone, limestone, Portland cement, natural rock cement, clays (for bricks, tiles, pipes, pottery, etc.), and mineral springs are found. Industries: meat packing and slaughtering, flour and grist milling, lumbering, and manufacturing of wagons, machinery, glass works, and agricultural implements. The capital is Indianapolis, a great railway center, important also in live stock traffic.

INDIAN OCEAN. One of the five great oceans. Bounded on the west by Africa, the north by Asia, the east by the East Indian Archipelago, and south by the Southern Ocean. It covers over 28,900,000 square miles, and contains many islands. Arabian Sea and Bay of Bengal are two of its arms. The greatest depth is southeast of Java, over 20,000 feet, the average depth being estimated at about 12,000 feet. The mean temperature of the northern portion is estimated at considerably over 80 degrees, the bottom temperature falling to 40 degrees near the equator, indicating cold Antarctic currents. It was traversed as a commercial channel for 2,000 years, while only coasting voyages were known in the Atlantic Ocean.

INDUS. One of the great rivers of the world, separating India from Afghanistan and Baluchistan, rising in Tibet. It is over 1,800 miles long with a source 15,000 feet above sea level. Through the once arid plains of Sindh it splits into numerous channels. It is navigable for about half its length, but the traffic is mainly by native boats, owing to the competition of adjacent railways. Its value in irrigation under British inauguration has marvelously developed the rainless alluvial land of Sindh. It is the "King River" in Vedic poetry.

IOWA. A Central state, noted for its climate, within the great prairie belt, having no mountains, hills, or bluffs. Well watered by the Des Moines and affluents of the Mississippi and Missouri. The greater part of the soil is of almost inexhaustible richness, nearly all of the surface being improved land. Maize and wheat are very important crops, also oats, barley, rye, buckwheat, potatoes, hay, and flaxseed. The state stands second to Texas in cattle. Slaughtering and meat packing, dairying, flour and grist milling, poultry keeping, and lumbering are extensive. Minerals: large coal deposits, iron, lead, gypsum, ocher, sandstone, limestone, and clays, besides mineral waters. Des Moines is the capital, Dubuque an important railway center.

IRELAND. The smaller of the two islands forming the British Isles, divided politically into two parts, to the south the Irish Free State, self-governing yet part of the Empire and to the north, Ulster, called Northern Ireland, an integral part of the United Kingdom. The surface is a central depressed plain almost surrounded by coast ranges, which largely drain inland, forming many bogs and lakes, there being no defined water system. The principal river is the Shannon, which is navigable over a considerable area, connecting with a good canal system. The soil is fertile, having about three times as much pasture as cultivated land. Agriculture is the main industry; large quantities of oats, potatoes, turnips, some wheat, beans, and peas are raised; butter, eggs, and bacon are largely produced. Minerals: iron ore, some anthracite coal, and less copper. Deep sea and inland water fisheries, especially salmon, are pursued. Manufacturing has been greatly hampered by want of sufficient coal and water power. Fine linens, poplins, shirts, porter and beer, ships (the White Star liners, including the Oceanic, Celtic, Cedric, being built at Belfast), and the home products of knitting, embroidery, and lace making are important. Dublin is the capital, and Belfast and Cork are leading ports.

IRISH SEA. Lying between the north of Ireland and the north of England, it is connected with the Atlantic by the North Channel at the north and St. George's Channel at the south. It contains the Isles of Man and Anglesey, both of which are rich in minerals. Liverpool, Dublin, and Belfast are ports.

ISLE OF MAN. An island in the center of the Irish Sea, equidistant from England and Ireland. It is about 32 miles long by 12 miles broad. The scenery is varied and picturesque, consisting of mountains, wooded glens, and undulating plains. Agriculture is followed in the level northern and southern districts, and many cattle and sheep are pastured. There is also a famous breed of tailless cats. Great quantities of lead are extracted annually containing more silver than any other ore in the United Kingdom; considerable copper, iron, and zinc are mined. The manufactures are unimportant, and the principal revenue is derived from large numbers of tourists. It has a constitution and a government of its own, to a certain extent independent of the Imperial British Parliament.

ITALY. A kingdom occupying the "boot-shaped" peninsula of southern Europe, with Sicily, Sardinia, and other islands. The surface of Italy is a mountainous plateau sloping to the east and west; about one third is a plain, watered by the Po, the only large river, with its tributaries navigable about 600 miles. The historic Tiber and the Arno are short rivers connected by a canal system, and contribute to the irrigation system of the great plain. Agriculture is the chief industry, nearly three fourths of the area being under cultivation, employing about one third of the population; a small part is covered with forests, including chestnut plantations, the nuts being used largely as food. Grapes and semi-tropical fruits are the leading crops, the wine production being the second largest in the world; other crops are wheat, maize, olives, rice, and about 11 per cent. of the raw silk of the world, (third in order to Japan and China). Italy is not rich in minerals, producing silver, iron, mineral fuels, copper and zinc in small quantities, asphalt, marble, granite, and alabaster. Sulphur is the great product. The fisheries include tunny, anchovy, and sardine. Its manufactures include silk thread cotton tissues, woolens, glass, and ceramic wares, tobacco, paper, and hats. Imports: wheat, raw cotton, coal, machinery, timber, wrought iron and steel, raw silk, and wool; exports: raw silk, cotton and silk tissues, olive oil, eggs, wines, hemp, dried fruits, sulphur, and cheese. Rome, called the "Eternal City," is the capital, and is one of the oldest cities in Europe, once the capital of the great Roman Empire; the chief port is Genoa, where Columbus was born; other important cities are Naples, Milan, Florence, Venice, and Palermo. Italy includes the independent Republic of San Marino. The Italian possessions in Africa include the colony of Eritrea on the Red Sea, of which Massuau and the Dahlak Archipelago are a part; gold and pearls are products. Italian Somaliland is a protectorate on the eastern coast, exporting timber, hides, butter, and durra. Tripoli was annexed in 1912. Italian Libia on the coast of Africa between Tunis and Egypt was secured in 1919 from France, and Rhodes, an island of the Aegean group in the Mediterranean was annexed from Turkey.

JAPAN. An island empire consisting of about 4,000 islands, 500 inhabited, lying on the east coast of Asia. Honshiu (mainland), Khshiu, Shikoku, and Yezo constitute "Japan proper," the others being regarded as colonies. It is a land of high mountains and deep valleys, well watered but with no river system. The principal occupation is agriculture; more than half of the population are employed on a multitude of small farms not averaging much over two acres, every inch being cultivated. About one third of the total area is under cultivation, and one half is forest. The crops are rice, barley, tea, sugar, wheat, rye, silk (nearly 56 per cent. of the world product, largest producer in the world), and bamboo. Important trees are camphor, mulberry, and the vegetable wax tree. Manufactures are developing rapidly in textiles, paper, lacquer, embroideries, ships, machinery, tools, painted crepes, porcelains, and bronze. Minerals: copper, sulphur, silver, manganese, iron pyrites, coal, gold, antimony, petroleum and lead. Imports: raw cotton, rice, woolens, ironwork, beans, wheat, flour, sugar, oil cake, and petroleum; exports: cotton yarns, raw silk, tea, silk manufactures, matches, camphor, silk waste, rice, matting, and porcelain. The capital is Tokyo, with principal ports and cities of Nagasaki, Kobe, Yokohama, Osaka, and Kioto. Formosa is a large and important island, rich in agricultural products, importing gold, tea, and camphor, the bulk of the trade being with Japan. The Pescadores represent an area of about 50 square miles. Japanese Sakhalin, in the southern part of that island, has important herring fisheries, forests, and minerals. The leased territory of Kwangtung, the southern part of the Liaotung Peninsula, is an agricultural area producing maize, millet, wheat, buckwheat, rice, hemp, tobacco, and vegetables. Salt producing and fishing are important industries. Dairen has a fine, ice-free harbor, protected by a breakwater.

JUAN FERNANDEZ. A small group of islands in the Pacific Ocean belonging to the province of Valparaiso, Chile, also known as Mas-a-Tierra. The islands are of volcanic origin, fertile, well wooded, and differ remarkably from the mainland in flora and fauna. There is little agriculture, but the land is suited to the production of grain, and especially of small fruits. Cattle raising is the staple industry. Alexander Selkirk lived there in solitude for four years, and his experiences are supposed to have suggested the story of "Robinson Crusoe" to Daniel Defoe.

YUGO-SLAVIA. A country of 96,000 square miles in area, one-half the size of Germany, on the east coast of the Adriatic Sea, that set up a union and declared its independence in 1918. The new state is composed of Serbia, Montenegro, Bosnia, Herzegovina, Dalmatia,

Croatia, Slovania, a part of West Bulgaria, and a small section of the Banat of the Temesvar. Physically the country is very mountainous and rough. Montenegro being considered quite the roughest and wildest section of Europe. There is little transportation. The climate is very severe in winter and quite warm in the summer. On the hills we find a good bit of timber, containing beech, oak and fir. Farming methods are crude, the yield per acre is small and very little machinery is used. The crops are corn, oats, rye, wheat, olives, lemons, and grapes, cattle, sheep, and goats are raised to some extent. The mineral resources are a minor factor: a little coal, mostly lignite, iron, copper, gold, chrome, lead and antimony, these in small quantities. What manufacturing is done is of the simplest, such as flour milling, weaving and tanning. Belgrade is the capital and industrial city. Fiume, the port, was given to Italy by treaty in 1924.

KANSAS. A Central state. The surface is rolling prairie, with low hills. The drainage is perfect from the Kansas river in the north and the Arkansas in the south, with their tributaries, leaving no marshy tracts within the state. The Missouri, forming part of the eastern boundary, is here navigable. The bulk of the soil is very rich, with three fifths of the cultivated area improved land; there is irrigation in the Arkansas valley. It is first in wheat growing. The leading crops are maize, fruit, wheat, hay, flax, and alfalfa. Other industries are raising live stock, slaughtering and meat packing, flour and grist milling, car building, and zinc smelting. Minerals: coal, oil, natural gas, zinc, gypsum, Portland cement, limestone salt, and rock salt. The capital is Topeka, and the principal city Kansas City.

KEEWATIN. A district of Manitoba extending from Manitoba and Ontario on the south to the Arctic Ocean. The surface in the interior is rugged, but has no great elevations. It is well watered by the Severn, Nelson, Churchill, Great Fish or Back rivers. There is much good arable and wheat land; the southern half contains dense and valuable forests of spruce, Banksian pine, and aspen poplar. Gold and copper have been found and there is a valuable trade in fur-bearing animals.

KENTUCKY. A Central state, consisting of a plateau sloping gently west and northwest to the Mississippi and Ohio rivers. The Cumberland, Tennessee, Licking, and Kentucky rivers cross it, forming an extensive drainage system to the Ohio, all of which are navigable. The soil is wonderfully rich, two thirds of the agricultural area being improved land. The chief crops are tobacco, in which Kentucky leads, maize, wheat, hemp, hay, potatoes, watermelons, fruits, and some cotton. Stock raising is an important industry, and the state has long been famed for its fine horses, due to its limestone laden earth, which produces the "blue grass" in the finest pasture region in the world. There are important forests of oak, maple, ash, beech, walnut, and pine. Other industries are flour and grist milling, lumbering, mining, distilling, and manufacturing men's clothing. Mineral products: coal, fluorspar, sandstone, limestone, clays, iron, lead, barytes, lime, cement, asphalt, natural gas, besides mineral waters. The capital is Frankfort, and principal cities Louisville, the great tobacco market of the Union, Covington, and Lexington.

KOREA (CHOSEN). A country embracing the peninsula between the Sea of Japan and the Yellow Sea, now a province of the Japanese Empire. The northern half is mountainous and heavily wooded; the southern half is in ridges and spurs, deeply indented. There are no great rivers but the land is well watered. Most of the area is under cultivation. The north grows barley, millet, oats; the south; rice, wheat, other grains, tobacco, and many millions of pound of cotton annually. The fisheries are important; gold, copper, iron, and coal are abundant but undeveloped. Imports: cotton goods and yarns, iron, railway materials, silk goods, timber, tobacco, and petroleum; exports: rice, beans, hides, ginseng, gold, live stock, and fish products. There is poor communication, transport being by porters, pack horses and oxen, or by boats, although railroads are now being built to connect with the Siberian and Chinese lines. The capital is Seoul, with important ports Port Hamilton, Ping-Yang, and Chemulpo.

KUENLUN MOUNTAINS. They extend eastward into China in a curved line from Pamir and form the northern boundary of Tibet, having the higest average elevation in the world.

LATVIA. One of the small Baltic states, just south of Esthonia on the Baltic Sea, composed of part of Livonia and all of Courland, that gained its independence from Russia in 1918. The country is physically a part of the Russian plain and agriculture is the predominant industry. The crops are rye, cereals, flax and barley. There is a good bit of timber land to the north. 80% of the exports are flax and timber. Riga is the capital and one of the chief seaports on the Baltic Sea, a port that Russia desires greatly, causing constant friction.

LIBERIA. A negro republic on the west coast of Africa, founded as a permanent provision for freed American slaves. Only the coast line to a depth of about seven miles is developed to any extent. There are no railways. The country has rich agricultural, mining, and industrial possibilities. It would make a splendid coffee country, and some little is grown, also cacao, cotton, kola, peppers, and seed for home consumption. There are immensely valuable forest lands. There are gold, copper, zinc, corundum, and other minerals, but unworked. Imports: cottons, provisions, hardware, clothing, boots, and shoes; exports: rubber, piassava fiber, cacao, ivory, palm oil, palm kernels, coffee, ginger, camwood, and arnotto. The capital is Monrovia, the only port.

LIECHTENSTEIN. A principality of 65 square miles lying between Austria and Switzerland, governing itself since 1921 but belonging to the Swiss Custom's Union. It uses the Swiss post office, and the telegraph service, the diplomatic and consular service are taken care of by Switzerland. It is primarily agricultural, raising cattle, grapes, fruit, corn and timber. The capital is Vaduz.

LITHUANIA. To the north of Poland on the Baltic Sea. The country declared her independence from Russia and Prussia in 1918. Lithuania was formerly about 54,000 square miles in area but is now less than half that or 20,550. There are no mineral resources, agriculture and lumbering being the chief industries. The timber areas are mostly of pine. The agricultural products are cereals, flax, potatoes, wheat and rye with some animal husbandry. The means of transportation within the country are very poor and have retarded the development. The exports are mainly flax, rye, butter, eggs, hides and timber. Kovno is the capital.

LOUISIANA. A Southern state, noted for its immense flood plains and deltas. The rich soil is protected from the river overflow by great levees extending over 1,500 miles. The climate is semi-tropical, and the crops include large quantities of maize, rice, cane sugar, cotton, cottonseed, oats, potatoes, hay, and tobacco. There is a large forest area with important lumbering industries. The oyster fisheries are very valuable. Minerals: sulphur, rock salt, petroleum, clays, and marls. Refining of sugar and molasses, and manufacture of cottonseed oil preparations are important. It is the central point of commerce of the whole Mississippi system, and has an immense foreign trade. Exports: cotton, cottonseed products, sugar, cereals, beeves, mules, and horses. The capital is Baton Rouge, and the chief city New Orleans, the metropolis of the South.

LUXEMBURG. An independent grand duchy of Europe, linked to Belgium for economic unity and using their currency. The surface is a plateau with many valleys which are well wooded. Agriculture is the staple industry, and about one half of the total area is arable land. Large quantities of cereals, grapes, and fruits are grown, and stock raising is important. Other leading industries are connected with the mineral production, and the manufacture of woolens, gloves, pottery, paper, beer, and leather. The imports are principally coke, coal, and grain; the exports, minerals and manufactures. The capital is Luxemburg.

MACKENZIE. A Canadian district extending from Saskatchewan, Alberta, and British Columbia on the south to the Arctic Ocean, and from Keewatin on the east to Yukon. It is the largest division of Canada, but has not been fully explored. It contains the great Mackenzie river system in the west, whose deltas of great fertility are suitable to potatoes and vegetables grown during the short, warm summers. The forests are valuable in pine, spruce, tamarack, birch, and aspen poplar, the Douglas fir growing on elevations. Coal, salt, and iron are known to exist. The region is sparsely settled.

MACKENZIE RIVER. One of the longest streams of North America. It rises in the Rockies as the Athabasca river, falls into Lake Athabasca, emerges as Slave river, emptying into Great Slave Lake, from which it continues as the Mackenzie, navigable from that point to the Arctic Ocean during the summer. Its upper course is through a fertile and well wooded land.

MAINE. A New England state in the extreme northeast. The surface is generally hilly, becoming mountainous in the west and north. Its serrated coast line gives it the name of "the hundred harbored Maine." There are over 600 lakes and ponds, mostly in the plateau region, the south being well watered by the Saco, Androscoggin, Kennebec, and Penobscot rivers. They are of

little use in navigation, but invaluable for water power. Agriculture is limited, owing to forest lands on more than three fourths of the area, but the soil is exceedingly fertile in the Aroostook valley. The principal crops are oats, potatoes, sweet corn, buckwheat, hay, and apples. The lumber is mainly spruce, white birch, poplar, and cedar. Fisheries are valuable. The manufacturing industries are cotton and woolen textiles, paper and pulp, lumbering, varieties of canning, ice cutting, and shipbuilding. Minerals: feldspar, silica, granite, limestone, slate, tourmaline, some gold, copper, silver, iron, tin, and manganese, besides 26 mineral springs of importance. The railways connect with the Canadian systems. The capital is Augusta, with Portland the chief port, a great distributing center for meat products, cattle, cereals, and lumber.

MALAY ARCHIPELAGO. The largest system of island groups in the world, separating the Pacific from the Indian Ocean (exclusive of New Guinea). The principal groups are the Sunda Islands, including Sumatra, Java, Bali, Lombok, Sumbawa, Flores, Timor, and neighboring islands; Borneo, Celebes, the Philippines, Moluccas, and the western division of New Guinea. The archipelago practically belongs to the Dutch, with the exception of the Philippines, belonging to the United States, the British northern part of Borneo, the British island of Singapore, and the Portugese part of Timor.

MALAY STATES, THE FEDERATED. A large portion of the Malay Peninsula, consisting of Perak, Selangor, Negri Sembilan, Pahang, and Trengganu, a British protectorate. The staple products are cocoanuts, rice, rubber, sugar, tapioca, coffee, pepper, gambier, and nipa palm. There are valuable forests with good lumber, besides gutta-percha, oils, resins, canes, and fruits. Minerals: tin, some gold, lead, iron, bismuth, copper, mercury, arsenic, manganese, plumbago, silver, and zinc. Imports: rice, petroleum, opium, bran, flour, and sugar; exports: tin, padi (unhusked rice), rubber, copra, tapioca, gambier, and coffee.

MALTA. An island in the Mediterranean belonging to Great Britain, one of the most important ports of call in the world, and the repair and refitment base for the British fleet in the Mediterranean. The grand harbor is at Valetta, the capital. The staple industries are agriculture and cattle raising; oranges, figs, grapes, mandarins, onions, honey, and maize being grown. Cotton goods, silver filagree, and matches are manufactured. Minerals: marble, alabaster, and building stone.

MANCHURIA. The northeastern part of the Chinese republic. It was formerly of much greater extent, but the encroachments of Russia have reduced it. The eastern part consists of huge mountainous masses with many fertile valleys. To the south is the great plain of the country, the surface of which is varied by hills and valleys, and some swampy districts, but is of great agricultural value, having only about one fifth of its area under cultivation. There are large crops of pulse, barley, wheat, millet, maize, rice, cotton, indigo, tobacco, sesame, opium, ginseng, and rhubarb. The immense grazing lands would support tremendous herds of cattle, but stock raising is totally undeveloped. The mountains are still covered with forests. Manufacture of oil, oil cake, and the manipulation of wild silk are pursued. Gold is found in all the provinces, and is mined by the government in several places. Silver, copper, and lead exist, and coal, iron, and soda are worked to a limited extent. Mukden is the capital; the commercial ports are Niuchang, Port Arthur, and Dalny.

MANITOBA. A Canadian province, north of the American states of Minnesota and North Dakota; a part of the Great Prairie region, broken into hills in the northeast, gradually wooded to the north; terminating in dense pine forests in the northwestern parts, and watered by the Red river and its tributaries. There is poor soil in the east and in the hills to the west, but the Red river valley, and a great portion of the western plain are extremely fertile, and famous for their enormous production of fine wheat. The leading crops are wheat, oats, barley, flax, hay, and clover (the area of the grain crops increasing phenomenally); poultry and dairy products are important. It is the smallest in area but most advanced in development of the western divisions of the Dominion. Winnipeg is the chief city.

MARAJO ISLAND. A large island formed by the estuaries of the Amazon and the Para, and the network of river arms connecting them. It is about 165 miles long and about 120 miles wide. There are excellent grazing lands and large forests of rubber trees. There is little cultivation of any kind, the inhabitants being mainly hunters.

MARYLAND. A Middle Atlantic state. The surface consists of a coastal plain, the Piedmont plateau, and a part of the Blue Ridge Mountains in the west. It is drained by the Potomac, Patapsco, and several other rivers. It is an agricultural state, having four fifths of its area under cultivation, mostly farmed by the owners. The soil is light and loamy, unsuited to grass, but ideal for vegetables and small fruits. The staple crops are maize, wheat, hay, potatoes, fruit; about half of the tomatoes canned in the United States; also great dairy and poultry produce. The fisheries are valuable, producing more oysters than any other state. Other industries: canning (fruit, vegetables, oysters, etc.), copper smelting, meat packing, shipbuilding, petroleum refining, flour and grist milling, manufacturing iron, tobacco, textiles, cotton duck, lumber products, and fertilizers. Minerals: coal, building stone, iron ore, sand, talc, slate, lime, and natural rock cement. Baltimore is one of the best ports on the Atlantic coast, exporting wheat, flour, meat, provisions, cattle, cotton, and dried fruits, mainly from the Central and Western states. Annapolis is the seat of the United States Naval Academy and the capital of the state.

MASSACHUSETTS. A New England state, having an irregular coast line of about 300 miles. The surface of the western half of the state is mountainous, sloping eastward to the Connecticut river and undulating to the ocean. Rivers are numerous, unimportant to navigation, but valuable for water power. The soil is the débris of granitic hills, and yet too new for general cultivation, although extremely fertile areas exist in the Connecticut valley, and alluvial sections—therefore agriculture is limited. Nearly one quarter of the total crop is vegetables, with small fruits; tobacco is extensively grown in the Connecticut valley, and floriculture is yearly more important. This state leads in fishing, and the manufacture of boots and shoes, cotton and woolen goods. Other manufacturing products are foundry and machine shop products, paper, wood pulp, leather, bricks, pottery, and clay products. Few minerals are worked, including some coal, asbestos, talc, soapstone, infusorial earth, emery, granite, sandstone, trap rock, marble, and limestone. The capital is Boston, and it is one of the largest ports for valuable foreign trade, exporting provisions, cattle, oats, cotton, breadstuffs, leather, iron and steel manufactures, paper goods, and apples. Worcester, Fall River, Cambridge, Lowell, Lynn, are also important.

MAURITIUS. An island in the Indian Ocean which, with its dependencies, is a crown colony of Great Britain. The surface is mountainous, but has a fertile, if somewhat stony soil. Cane sugar is the agricultural staple, with minor products of cereals, spices, indigo, drugs, and tea. Imports: cotton goods, coal, machinery, fertilizers, ironwork, and soap; exports: unrefined sugar, rum, vanilla, aloe fiber, molasses, cocoanut oil, and hemp. The capital and chief port is Port Louis.

MEDITERRANEAN SEA. The largest inclosed sea in the world. It is 2,300 miles long by 100 to 600 miles wide; is connected with the Red Sea by the Suez Canal, and by the Strait of Gibraltar with the Atlantic. Gulfs, bays, and seas indent its coasts, of which the Adriatic Sea is the largest. Shallow banks below Italy, with the peninsula divide the sea into two basins, the various parts of which have special names. There are many islands, including Sardinia, Corsica, Balearic, Lipari, Sicily, Malta, Cyprus, Crete, the Ionian and Grecian archipelagoes. It is frequently visited by earthquakes, and Vesuvius, Stromboli, and Etna are active volcanoes. Few great rivers enter it. Its African coast is regular, the European extremely broken. It is usually called a tideless sea. Extensive red coral and sardine, tunny, and sponge fisheries exist. This inland sea is commercially the most important waterway of the world. The Adriatic Sea between Italy and the Balkan peninsula has an even, low western coast, a marshy northern coast, and a steep, rocky, barren eastern coast with many inlets and rocky islands. Its navigation is safe, and rich fisheries are worked. Venice and Trieste are the chief ports.

MESOPOTAMIA. The territory lying between Persia and Arabia on the Persian Gulf, an independent state under the mandate of Great Britain. The country depends upon irrigation for its moisture and if money could be spent on projects, the area between the Euphrates and the Tigris rivers would again "blossom like the rose." As it is now, parts of the country are very barren. The crops are wheat, cereals, clover, dates, rice and cotton. The area is one of the great oil regions of the world. Carpets and grain are the chief exports. Bagdad is the chief city on the Tigris river and its capital.

MEXICO. A federative republic immediately south of the United States, between the Pacific Ocean and the Gulf of Mexico. The surface is mainly an immense table-

land rising steeply from the coast lands, but gradually from the lower Rio Grande, to an interior plateau dominated by mountains at each coast. The rivers are unimportant to commerce, the longest being the Rio Grande, forming part of the boundary with the United States. The climate varies according to location; one may start from Puebla with green wheat shoots showing in March, farther along the railway finding ripened wheat, and farther still, threshing. Agriculture is important, but very primitive. Crops: wheat, maize, henequen (fiber), sugar, oranges, coffee, beans, cotton (dependent on irrigation), dyewoods, and rice. Farm animals are raised widely. Metallurgical works and cotton and tobacco manufactures are important. It is one of the largest mining countries in the world. Silver is found in 24 out of 31 divisions, either alone or in combination, and other minerals are gold, copper, lead, zinc, quicksilver, tin, and antimony. Imports: iron, steel, coal, carriages, wood manufactures, locomotives, and foodstuffs; exports: silver, gold, henequen, hides, and manufactures. The capital is **Mexico**, and the chief ports **Vera Cruz, Acapulco, Tampico, Progreso, Mazatlan, and Tehuantepec.**

MICHIGAN. One of the Central states, divided by Lake Michigan into two peninsulas. It has a long coast line and many good harbors. The surface is level, except in the north, and well watered by small rivers. The soil is very fertile, except in the northern portions, and about two thirds of the cultivated area is improved land. Crops: maize, wheat, oats, sugar beets, hay, rye, with large quantities of vegetables and fruits, peaches, plums, apples, etc. Stock raising is still important. There are large forests of white pine, hemlock, maple, elm, basswood, ash, and white oak in the north. Lumbering is the second great industry. Metal working, machine making, slaughtering and packing, milling, and dairying are important. Minerals: immense deposits of iron ore, copper, and asbestos, salt, gypsum, clays, Portland cement, graphite, sandstone, and limestone occur, besides mineral waters and some petroleum. The capital is **Lansing**, with important cities of **Detroit, Grand Rapids, and Saginaw.**

MINNESOTA. A Central state lying on the border line of Canada. The surface is rolling in the north, covered with dense forests of pine; northeast lie swamps and lakes, and to the south, prairie. The drainage system includes the Mississippi, Red, Minnesota, and St. Louis rivers. The soil is a rich, black loam, except in the northeast and north central counties. About one half of the total area is farms. Crops: maize, wheat, oats, barley, and flax. Stock raising is considerable. Manufacturing boots and shoes, clothing, metal goods, and machinery; milling and dairying are valuable. Minerals: iron ore, rich in red hematite, good granite, sandstone, limestone, and clays. The capital is **St. Paul**, and leading cities are **Minneapolis**, important as a grain center, **Duluth, Winona, and Stillwater.**

MISSISSIPPI. A Southern state. The surface is mountain ridges in the north, grading to rich alluvial river bottoms, which constitute some of the finest cotton land in the world. It is well drained by the Mississippi and its tributaries. The climate is semi-tropical, with agriculture the staple industry. Crops: cotton, maize, rice, wheat, oats, tobacco, and vegetables. It is the third cotton state. The fisheries are mainly oyster and shrimp. There are considerable forest areas not yet exploited. Manufacturing is not well developed, and mainly lumber, cottonseed oil and cake, canned oysters, and fertilizers are the products. There are practically no mining enterprises, but there exist hydraulic limestone, coal, gypsum, and clays. The capital is **Jackson**, with leading cities of **Vicksburg, Meridian, and Natchez.**

MISSISSIPPI RIVER. The principal river of North America, including the Missouri, is the longest river in the world. It rises in the Minnesota highlands in Lake Itasca and empties into the Gulf of Mexico, over 1,400 feet below its source. It drains the entire western slope of the Appalachians, and nearly all the eastern slope of the Rockies. Its drainage basin covers about one third of the total area of the United States. It is navigable to the Falls of St. Anthony at Minneapolis, about 2,100 miles. Its navigable tributaries are the Missouri, for about 2,300 miles in the flood period, the Arkansas, the Red, and the Ohio rivers. The total navigable length of the river and its tributaries is about 20,000 miles. The Missouri River is formed in southwest Montana by the confluence of the Jefferson, Madison, and Gallatin rivers. It flows across Montana, North Dakota, South Dakota, and Missouri, joining the Mississippi 20 miles above St. Louis. It is a swift, muddy stream, navigable only by flat-bottomed steamboats.

MISSOURI. A Central state whose surface is mainly rolling plains, rising gradually south of the Missouri river, which divides it. The southeastern part of the state is marshy bottom lands, protected by levees. The entire state is well drained; the climate is mild, but subject to long droughts. Agriculture is the chief business. Crops: maize, wheat, hay, oats, rye, sorghum, cotton, flax, tobacco, vegetables, and small fruits, peaches, and apples are increasing in product phenomenally. There is considerable stock raising, especially hogs and sheep. Dairying interests are important in milk, butter, and cheese, and much honey is gathered. The forests are cypress and white oak. Slaughtering and packing, tobacco manufacturing, milling, brewing, printing, lumbering, and machine making are valuable industries. Minerals: coal, red and brown hematite iron ore in quantity, zinc, lead, Portland cement, cobalt, nickel, barytes, limestone, granite, etc. There is important water and railway traffic all through the state. The capital is **Jefferson City**, and the chief cities **St. Louis, Kansas City, and St. Joseph.**

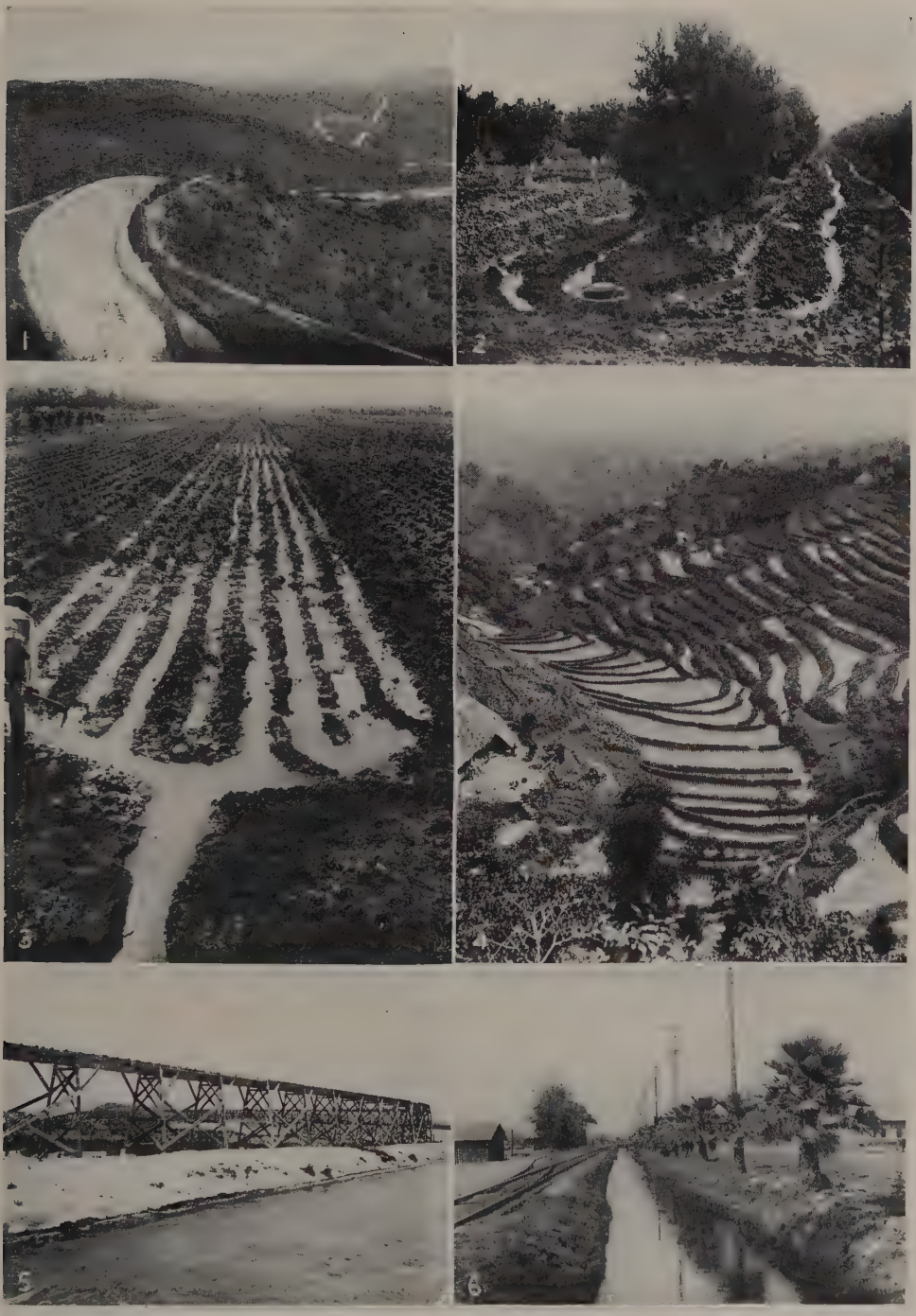
MONACO. An independent principality, and the smallest state in Europe. Its area is about eight and one half square miles, and practically consists of the capital, **Monaco**, of **Monte Carlo**, and of the village of **Condamine**, which lies between the two towns.

MONGOLIA. A colony of the Chinese republic in central Asia, extending over a large area. It is mainly a vast gravelly plain, intersected by low hills. In the west and in the northeast sections are wide, grassy plains, which merge into the rich pasture lands and wooded country. In the south it is fertile, rolling, and well forested. With the exception of the sterile Gobi plateau the country is well watered and drained, some of the lakes being brackish, from which thousands of tons of salt are obtained. In southeast Mongolia are grown crops of indigo, rice, cotton, opium, and cereals, but in central Mongolia only small quantities of wheat, oats, buckwheat, and millet are produced, and in the northwest there is little agriculture, except in the vicinity of the lakes and along the lower courses of the rivers. There are many fur bearing animals, and also droves of wild camels, ponies, asses, and mules. The chief industry is the breeding of horses and the rearing of cattle and sheep. Felt and certain woolen goods are produced, and there is some silk weaving. Chief exports: wool, skins, hides, furs, etc. **Urga** is the chief town.

MONTANA. A Western state, bounded on the north by Canada. It is the third largest in size. The eastern three fifths is rolling plain, sloping to the mountain ranges, which are intersected by broad valleys. The state is drained by the Missouri and Columbia rivers, but in many sections irrigation is necessary, and the government is equipping nearly 500,000 acres with irrigation facilities nearing completion. The rainfall is only 12 inches per annum, and agriculture is somewhat undeveloped. Crops: wheat, barley, oats, potatoes, and much small fruit. Cattle raising and ranching are important in the valleys, and the wool clip is the greatest in the country. Other industries are copper smelting and refining, lumbering, flour and grist milling, brewing, and slaughtering. Minerals: copper, coal, silver, gold, stone, and iron ore, zinc, tungsten, corundum; mineral waters and sapphires are valuable products. The capital is **Helena**, with chief cities of **Butte, Great Falls, and Anaconda.**

MOROCCO. A Mohamedan Empire, acknowledging protection of France except in Tangier which is internationalized. The surface is generally mountainous, with depressions. The agriculture is primitive with some stock raising. Crops: maize, barley, wheat, olives, dates, oranges, figs, and numerous vegetables. Minerals: rich in copper and iron ore, some antimony and rock salt, but all unworked, owing to prejudice against foreigners. Manufactures: textiles, carpets, metal goods of copper, brass, and silver filagree. Imports: cotton, sugar, tea, flour, hardware, wines, and candles; exports: barley, hides, beans, fruits, olive oil, wool, eggs, slippers, canary seed, flaxseed. The capital is **Fez**; chief port **Tangier.**

NEBRASKA. One of the Central states. It is a part of the great plateau east of the Rockies, with much soil of a rich, black mold, drained by the Missouri and tributaries. Irrigation is necessary in many sections, and large Federal plants are nearly completed. The eastern part of the state produces most of the crops, which are maize, wheat, oats, sugar beets, chicory and fruits. Large herds of cattle, sheep, swine, and horses are nourished on the bunch grass, which withstands the drought. Slaughtering and meat packing, brewing, flour and grist milling, and dairying form nearly seven eighths of the total manufacturing, the lack of cheap fuel being a handicap, besides the fact that there are no minerals except clays and some building stone. **Lincoln** is the capital, and **Omaha** the chief town.



Photos 1 from Brown Brothers; 2 by Burton Holmes, from Ewing Galloway; 3, 4 and 5 from Ewing Galloway; 6 by Elmendorf from Ewing Galloway.

IRRIGATION—I

1 Los Angeles aqueduct, 233 miles long; 60 miles in open canal, 98 miles covered conduit, 43 miles of tunnel, 12 miles of steel siphon. Cost $24,000,000. 2 Irrigation ditches, orange groves, California. 3 Irrigation ditches, Australia. 4 Gravitation irrigation on hill slopes in China. 5 Flume and canal paralleling each other, Boise, Idaho. 6 Large irrigation feed ditch, Riverside, California.

Photos 1 and 2 by Burton Holmes, from Ewing Galloway; 3 and 4 from Ewing Galloway; 5 by De Cou, from Ewing Galloway.

IRRIGATION—II

1 "Shadufs" or bucket lifts, Nile, Egypt. 2 Horse-pump, Budapest, Hungary. 3 Bamboo water-wheel, China. 4 Treadmill cup belt, Soochow, China. 5 "Sakieh" or chain bucket pump, Karnak, Egypt.

NEPAL. An independent state on the southern slope of the Himalayas. The southern portion, called the "terai," a strip of level land, is partly covered with forests and well cultivated. The remainder of the country merges into the Himalayas, and contains some of the highest mountains in the world, such as Mounts Everest and Dhaulagiri. It belongs to the basin of the Ganges. Agriculture is the staple industry, but is carried on under the most primitive methods, owing to the scarcity of agricultural land. Hill slopes, ledges, even when difficult of access, are utilized, and the irrigational methods are exceedingly ingenious. Crops: rice, wheat, pulse, maize, sugar cane, and vegetables in the central valleys, and in the "terai" region tea, cotton, tobacco, etc. Many European fruits have been successfully introduced. Imports: cotton and woolen piece goods, raw silk and cotton, leather, silver, brass, copper, iron, spices, salt, sugar, petroleum, cattle, sheep, and goats, many of which are re-exported to Tibet; exports: rice, oil seeds, cattle, hides, opium, resins, jute, dyes, saltpeter, drugs, tobacco, timber, and ghee. Manufactures: coarse cloth, paper, brass bells, and utensils. The capital is Kathmandu.

NETHERLANDS or HOLLAND. A European country bordering on the North Sea. It is the flattest part of the continent, a region of plains broken only by dunes and low hills. One fifth of the area is unproductive, the most fertile tracts being reclaimed from the sea. There are many small streams, but the important rivers are all in the south,—the Rhine, the Meuse, and the Scheldt; many canals connect the rivers, so it is possible to travel throughout Holland by water. There is little forest land. Crops: rye, potatoes, oats, wheat, beets, large quantities of bulbs, and shrubs. Cattle raising and dairy farming are almost without an equal. Fisheries are important, especially for oysters. There are a few coal mines. Imports: cereals and flour, iron and steel, textiles and copper; exports: textiles, iron and steel, copper, vegetables, dairy produce, distilled spirits, cereals and flour, paper, honey, eggs, and horses. Manufacturing industries: distilling, sugar refining, salt refining, brewing, and diamond cutting. The capital is Amsterdam, built on 90 islands, connected by many bridges, with chief ports of Rotterdam and Flushing. The colonial possessions in the East and West Indies are extensive. The Dutch East Indies represent the southern and eastern part of Borneo, the Celebes, Java, the western part of New Guinea, Sumatra, Timor, and other islands in Malaysia. Exports: sugar, coffee, tea, rice, indigo, tobacco, tin, cacao, trepang, copra, pearl shell, sandalwood, gold, and pearls. The Dutch West Indies include Curacao with neighboring islands, Bonaire, Aruba, St. Martin, St. Eustache, and Saba, exporting orange peel, salt, phosphate of lime, and hides; Dutch Guiana, or Surinam, exporting coffee, rum, molasses, and gold, is on the north coast of South America. Paramaribo is the capital.

NEVADA. A Western state, mainly in the Great Basin between the Sierras on the west and the Wasatch on the east. The Humboldt is the principal river, but much of the south central and southwestern portions are without rivers. The soil is fertile under irrigation, and Federal plants supplying over 160,000 acres are to be at work soon. The rainy season covers the level plains, for hundreds of square miles, with water up to two feet deep, producing hardened mud flats. Agricultural development has been retarded by lack of transportation facilities, and of local markets, but there are good stock raising ranches. Manufacturing: flour and grist milling, car making and repairing, dairying, and brewing. Minerals: immensely rich deposits of silver and gold, including the Comstock lode; copper, lead, zinc, coal, and iron ore are mined. The capital is Carson City.

NEW BRUNSWICK. An eastern province of the Dominion of Canada on the Gulf of St. Lawrence. The surface of the eastern half is a low triangular plain inclosed by ridges, much of the western and southern areas being plateau. The river St. John, and numerous small lakes and streams connect with the Gulf of St. Lawrence. The soil, especially in the valleys, is generally fertile, but agriculture is not fully developed. Crops: oats, buckwheat, wheat, potatoes, turnips, and other roots; there is considerable stock raising, dairying, poultry raising, fruit growing, bee culture, lumbering, manufacturing of wood pulp, and shipbuilding. Large forest areas include spruce, pine, tamarack, maple, beech, ash, birch, and elm. Excellent salmon fishing is found in several of the rivers. Minerals: iron, nickel, antimony, manganese, gypsum, plumbago, grindstone, limestone, and valuable freestone, with some coal. The capital is Fredericton, and the chief port St. John.

NEWFOUNDLAND and LABRADOR. A British colony in North America, distinct from Canada, comprising the island of Newfoundland and its dependency, Labrador. The surface is an undulating plateau of moderate elevation, traversed by ridges. It is well watered, but the rivers are not navigable except by canoes. There is a very large area of good agricultural land, but only a small part under cultivation. Crops: potatoes, turnips, hay, barley, oats. There are good pine forests at the north. Industries: fishing and making paper and pulp products. The country is rich in minerals: iron ore, copper, coal, gold, silver, and lead. Imports: flour, textiles, coal, salt pork, and molasses; exports: dried fish, fish oils, iron ore, canned fish, sealskins. The capital is St. John's.

NEW GUINEA or PAPUA. A large island north of Australia, the southeast portion being British, the northeast, formerly German, (Kaiser Wilhelm Land) is now administered by Australia and the larger portion in the west, Dutch. British New Guinea has many thousand acres leased to planters. Crops: cocoanuts, rubber, sisal hemp, coffee, Murva fiber, cotton, vanilla, kapok, tapioca, cinnamon, tea, and tobacco. There is much valuable forest land producing sago palm, sandalwood, cypress, ebony, gums, and rattan. Minerals: gold and copper are worked. Imports: foodstuffs, cloth, and hardware; exports: copra, pearl shells, gold, copper, pearls, and woods. Port Moresby is the chief port. Dutch New Guinea has no towns or centers.

NEW HAMPSHIRE. One of the New England states. The surface is rough and mountainous, culminating in the romantic White Mountains. The state is well watered and drained, supplying tremendous water power to cities. About three fifths of the area is forest. The valleys are very fertile. Agriculture, quarrying, and manufacturing are leading industries. Crops: hay, corn, potatoes, oats, great quantities of apples, and some tobacco. Manufactures: boots and shoes, cotton and woolen goods, carriages, and paper. Minerals: granite, mica, scythe stones, copper, ores of lead, zinc, tin, arsenic, iron, and some gold and silver. The capital is Concord, with leading cities of Manchester, Nashua, and Dover. Portsmouth is the only seaport.

NEW JERSEY. An important Middle Atlantic state. The surface slopes from the northwest corner to the coastal plain of the Atlantic. The principal rivers are the Passaic, Hackensack, and Raritan. The valley soil is fertile but only about three fifths of the area is under cultivation. Agriculture, market gardening, fruit growing, horticulture, and forestry are pursued. Products: maize, wheat, oats, vegetables, fruits (especially peaches), small fruits, particularly strawberries, and flowers. There are valuable fisheries of trout, perch, black bass, shad, sturgeon, menhaden, and oysters. Minerals: magnetic ore, granite, trap rock, sandstone, limestone, Portland cement, clays (fine porcelain, tile, and brick), talc, soapstone, also mineral waters. Manufactures: textiles, silks, worsteds, cottons, woolens, canned goods, felt hats, porcelains, machinery, jewelry. The capital is Trenton, with chief ports of Hoboken, Jersey City and Newark. Jersey City is the terminus of several great railroad and steamship lines.

NEW MEXICO. One of the new Western states. The entire surface lies very high, only a small section in the south lying below 4,000 feet. Through the western part stretches the great plateau of the Continental Divide; the eastern part belongs to the Great Plains, the land rising westward of the Pecos valley into the front range of the Rockies. The soil is fertile, but needs irrigation, which is extending; the total area will finally cover about one million acres. Crops: alfalfa, cereals, vegetables, fruit, cotton. It is a great sheep grazing country, and also has many cattle. The national forest area includes an enormous tract of sycamore, cottonwood, oak, pignon, dwarf cedar, while extensive forests of pine, spruce, and cedar cover the higher lands. Other industries: car construction and railroad repair work, lumbering, flour milling, manufacturing woolens, cement preparing, and wool scouring. Minerals: copper, coal, silver, gold, lead, zinc, kaolin, turquoise, etc., but all comparatively undeveloped. The capital is Santa Fe.

NEW YORK. A Middle Atlantic state. The wealthiest and most populous state. The greater part of the surface is plateau and rolling plains, with the Adirondack Mountains in the east; south of these are the Catskills cut by the Hudson river, the vast plain covering more than one third of the state. There are many small rivers supplying the main systems of the St. Lawrence and Hudson. The state has large agricultural interests, including large truck farms, important fruit growing, and extensive floral culture. Crops:

maize, wheat, oats, potatoes, hay, tobacco, some sugar beets, fruit, hops. The value of the fisheries is decreasing, but is still large, and oysters constitute about one half the total. Other industries: clothing and textile manufacturing, sugar refining, foundry and machine shop work, slaughtering, printing and publishing, mining and quarrying. Minerals: iron, talc, petroleum, natural gas, clays, granite, trap rock, sandstone, marble, limestone, slate, Portland cement, salt, infusorial earths, emery, and garnet. The capital is Albany. The chief city is New York, the largest shipping port in the world, and the metropolis of the United States with one of the finest harbors in the world; the upper and lower bays covering about 100 square miles. There is a water front of 22 miles on Manhattan Island, but the total water front of the port is several times larger. There are five bridges connecting with Long Island, two tunnels to Jersey City, and the ferry system is the best in the world. Exports are largely grain, flour, cotton, tobacco, apples, fruits, preserved provisions, meats, and cattle. Other important cities are Buffalo and Rochester.

NEW ZEALAND. A British dominion in the South Pacific Ocean, consisting of two large islands, one small island, and a group of outlying islets attached to the colony. The surface of North Island is gently undulating, with a number of volcanic peaks. South Island has no volcanoes, but has a rugged range of the Southern Alps along the western coast, with magnificent scenery. The rivers are small and unimportant. Agriculture and grazing are the staple industries, sheep being a great factor. Crops: oats, wheat, barley, hay. Dairying is by the factory method, through the co-operation of small farmers. Imports: clothing and materials, iron and steel goods, sugar and fruit; exports: wool, frozen meat, kaurigum (resin), dairy products, gold, hides, horns, bones, and a native grass fiber. Other industries: meat freezing, wool scouring, tanning, saw and grist milling, dairying, manufacturing of clothing, boots and shoes, iron and steel. Minerals: gold, coal, some silver and silver lead. The capital is Wellington, which, with Auckland, is one of the two chief ports. Attached to New Zealand are the uninhabited Auckland Islands, Chatham Islands, the Cook, and other islets, producing copra, pearl shell, fruit, hats, and lime juice.

NICARAGUA. The second largest Central American republic. The surface is divided into distinct zones by two mountain ranges, between which lies the great interior basin where population and industries are centered. It is well drained. The soil is fertile, but agricultural development is hampered by the scarcity of labor. Crops: coffee, bananas, cacao, sugar, tobacco, cotton, cocoanuts, black beans, rubber, maize, indigo, rice. The forests are valuable, containing cedar, mahogany, dyewoods, gum trees, and medicinal growths. Minerals: gold, coal, and oil are worked to some extent, and a number of other minerals have been located. Imports: cottons, food products, ironwork; exports: coffee, timber, gold, rubber, bananas, cattle, and hides. Manufacturing industries are unimportant. The capital is Managua, with other important cities of Bluefields, Corinto, and Greytown.

NILE. The longest river of Africa, and the second longest in the world, being about 3,670 miles long, with a source estimated at 6,114 feet above sea level. The area of the Nile basin is estimated at about 1,780,000 square miles. Little of its enormous volume of water reaches the sea, but is spread over the low lands of Egypt, fertilizing them with sediment and supplying moisture. It is divided into four sections: the Upper, Middle, Lower, and the Delta, receiving the Blue and the White Niles at Khartum. It is dammed just below Cairo, and at Assuan, to regulate the distribution of the water in the dry seasons. It has turned Egypt from an arid desert into a rich agricultural land, supporting about 600 inhabitants to the square mile, thus acquiring the name of "the gift of the Nile." Cairo is the chief city.

NORTH CAROLINA. A Southern state. The surface consists of the Appalachian Mountain region in the west, well-forested, which slopes from the foot of the Blue Ridge to the coastal plain, sandy and flat. It is intersected by rivers of valuable water power. There is abundant rainfall and good drainage. Agriculture is the staple industry. Crops: cotton, tobacco, maize, wheat, peanuts, potatoes, oats, and rye. There is some stock raising, with dairying industries on the increase. The shad and oyster fisheries are valuable. Manufactures: cotton goods, tobacco products, lumber, and flour. More cotton is manufactured than raised. The minerals are not important, mainly corundum, mica, bismuth, clays, granite and talc. The capital is Raleigh, and the chief port Wilmington.

NORTH DAKOTA. A Central state. The surface of the eastern part is level, watered by the Red river and its tributaries; it merges westward into rolling prairies, rising to a small forest-covered plateau. The soil is fertile and easily worked, but needs irrigation. Agriculture is the chief pursuit, and immense fields of wheat are cultivated, also oats, barley, flaxseed, potatoes, and hay; large numbers of horses, cattle, and sheep are raised. Flour and grist milling and dairying are limited in extent. Minerals: coal, clays, and cement, with some lime, salt, and iron. The capital is Bismarck.

NORTH SEA. A southern extension of the Arctic Ocean lying between Great Britain and the continent. It is connected with the Baltic Sea through a series of narrow channels, and with the Atlantic Ocean through a wide opening at the north, and southward through the Strait of Dover and the English Channel. It is 600 miles long and 400 miles wide, the greater proportion being less than 600 feet deep. At the south and east, the coasts are low and flat; at the north and west, the water is deeper and faced by high, bold cliffs. It has a very irregular bed containing many shoals and sand banks, made by the many rivers it receives, among which are the Thames, Humber, Forth, Rhine, Weser, and Elbe. From earliest times it has been one of the most important highways of the world, surrounded by some of the greatest nations. The fisheries, which provide employment for thousands of fishermen, are among the foremost in existence. The chief ports are Hamburg, Bremen, The Hague, Rotterdam, Antwerp, London, Hull, Newcastle.

NORWAY. A long, narrow coast country of Europe, which, with Sweden, makes the Scandinavian Peninsula. The deeply serrated coast presents about 12,000 miles of coast line. The surface is a rugged plateau. In the southeast and middle north are great forests of pine. Only a very small part of the area is under cultivation. Crops: oats, rye, barley, and potatoes, but not nearly sufficient for home demands. There are good grazing lands for sheep, cattle, horses, goats, swine, and reindeer. Lumbering is the great industry, and fisheries produce cod, herring, mackerel, salmon, sea trout, lobsters, oysters, walrus, seal, and shark. There is much valuable water power, but the country lacks industrial development. Minerals: silver, copper, and pyrites in small quantities. Imports: animals, breadstuffs, minerals, textiles, ropes and yarn, tallow, oils, exports: timber and wooden goods, animal products, fish, wood pulp, tar, paper and pulp, ice. The capital is Oslo, chief ports Bergen, Christiansand, Drontheim, and Hammerfest, the most northern town of Europe.

NOVA SCOTIA. A province of the Dominion of Canada. The surface is undulating, traversed by broken ranges of hills. It is adequately drained by a number of short rivers running southward. The valley lands are extremely fertile. Crops: oats, potatoes, hay, barley, wheat, buckwheat, rye, turnips, with large fruit areas. There are important progressive dairying, and increasing poultry products. One half the population is engaged in the valuable fisheries, deep sea, inshore, and inland. There is much rich timber, which is being extensively cut. Coal mining, manufacturing of coke, iron and steel, textiles, dairying, tanning, and canning are important. There is valuable water power. Minerals: rich coal, iron, gold, gypsum, limestone, and lead deposits. Cape Breton Island is part of the province, and Sable Island is a dependency. The capital and chief port of Nova Scotia is Halifax, exporting coal, lumber, fish, cattle, flour, potatoes, apples, butter, furs, and oils.

OHIO. A Central state. The surface is a low plateau, with a series of hills extending to the southwest. It is well drained and watered, and has a very fertile soil. Agriculture is one of the principal industries. Crops: maize, wheat, hay, potatoes, sugar beets, tobacco. There are extensive orchards, vineyards, and truck gardens. Horses, cattle, and sheep of a high quality are raised, and dairying is important. Other industries: manufacturing iron and steel goods, machinery, furniture, carriages, chemicals, flour and grist milling, and slaughtering. Minerals: coal, petroleum, iron ore, valuable clays, limestone, sandstone, Portland cement, salt. The capital is Columbus, and the chief cities Cleveland, Cincinnati, and Toledo with its good harbor facilities.

OKLAHOMA. A Western state which is rapidly developing. The surface is a rolling plain rising to an elevation on the western boundary; a range of hills runs through the central portion. It is well watered and drained by the Red river, the Arkansas river, and their tributaries. The soil is good, especially in the valleys. It is preëminently an agricultural and stock raising state. Crops: maize, wheat, cotton, potatoes, hay, flax, sorghum, barley, rye, broom corn, castor

beans, and fruits. The extensive cattle ranches are in the west. There is little manufacturing, mainly flour and grist milling, cotton ginning, making cottonseed oil and cake. Minerals: coal, petroleum, asphalt, gypsum, salt, limestone, sandstone, and granite. The capital is Oklahoma City.

OMAN. An independent sultanate at the southeast end of Arabia. It has a mountainous coast with rich central valleys extending to the desert. Dates are the chief crop. Imports: rice, coffee, sugar, piece goods, silk and silk goods, twist and yarn, cereals, arms, and ammunition; exports: dates, fruits, fish, mother-of-pearl, and pearls. The capital is Maskat, which has a large caravan traffic with the interior.

ONTARIO. The most populous province of the Dominion of Canada, containing about two fifths of the total population. The surface in the north is a plateau which divides the Hudson Bay system from that of the Great Lakes; in the south it is lowlands broken by a spur from the north uplands which forms the Thousand Islands and the high northern bluffs of Lakes Huron and Superior. It is well watered, has abundant water power, and an exceedingly fertile soil. It is an agriculutral state, with extensive fruit orchards and vineyards, besides important stock raising and dairying interests. Crops: oats, hay, wheat, peas, maize, barley, rye, buckwheat, roots. Valuable fur producing areas are in the north. The fisheries of the Great Lakes produce cod, herring, trout, whitefish, pickerel, etc. Minerals: immense nickel deposits, iron, copper, gold, silver, petroleum, natural gas, clays, limestone, sandstone, and building stone and marble. It is largely engaged in manufacturing farm implements, machinery, wagons, cottons, woolens, leather goods, etc. The capital is Toronto, with chief cities of Ottawa (the seat of government), and Hamilton.

OREGON. A Western state lying on the Pacific slope. It is a semi-arid area, there being good rainfall west of the Cascade Mountains, producing much highly fertile land, but east of the range irrigation, private and Federal, is being largely used, and further planned. It is traversed by the Columbia river and its tributaries, the Willamette, the Snake, and several small streams; the Columbia is navigable for ocean ships to Portland. It is largely given up to agriculture and lumbering. Crops: wheat, hay, oats, barley, flax, hops, sugar beets, potatoes. There are extensive orchards. There is active stock raising and also valuable fisheries of salmon (in the Columbia), sturgeon, halibut, and oysters. Manufactures: lumber and timber products, flour and grist, canned meat and fish, machinery, and wood pulp. Minerals: gold, copper, silver, coal, granite, and some quicksilver, gypsum, nickel, cobalt, lead, garnet, and opal. The capital is Salem, with Portland as the chief city and port.

ORINOCO. The smallest of the three great South American rivers, with a source about 1,000 feet above sea level. The total navigable length of the system is about 4,300 miles, but is little used, and the great natural wealth along its course is practically untouched. The main stream is almost wholly within Venezuelan territory, and periodically floods the country adjacent to the lower reaches. The plains through which it flows are called llanos, on which great herds of cattle are raised. This is also the cacao section.

ORKNEY ISLANDS. An archipelago lying to the north of Scotland. The island of Hoy is mountainous, but the surface of the remaining islands is low with irregular, rocky coast lines. There is an adequate rainfall, the climate is fairly mild, owing to the Gulf Stream, and the soil is fertile, producing barley, oats, potatoes, and turnips. Considerable cattle, sheep, and poultry are raised, and fishing is an important local industry. Exports: live stock, sea food, eggs, and poultry. The only towns are Kirkwall, the capital, and Stromness, which has a fine harbor for large vessels.

PACIFIC OCEAN. The largest of the five great oceans; lies between America and Asia, connecting with the Arctic by Bering Strait and to the south merging into the Southern Ocean. It is the deepest and the largest ocean, and has an area of about 67,570,000 square miles, about one half of the water surface of the globe. It has less land than the Atlantic draining into it. The largest American rivers are Yukon, Columbia, and Colorado; the Asiatic are Amur, Hoang-ho, and Yangtze. The greatest depth, 31,614 feet, is off the Island of Guam, reported by U. S. ship Nero. The currents are much less marked than in the Atlantic. The American and Australian coasts are mountainous and regular, the Asiatic low and fertile with numerous gulfs, bays, and seas, including Bering, Okhotsk, Japan, Yellow, South, and East China, with many volcanic islands. To-day many steamship lines and cables connect the two great continents and commerce is developing most rapidly.

PALESTINE. The coast land east of the Mediterranean, a part of Syria, occupied by the Philistines and later called the Land of Israel. A territory about 150 miles from north to south, 35 miles broad at the north and 110 miles at the south. Within this are the Sea of Galilee about 682 feet below sea level, the Dead Sea about 1,292 feet below, the bottom of which is estimated at 2,592 feet below the Mediterranean. The surface consists of hills and mountains to the west of the Jordan with its depressed valley and a plateau region lying east. It is poorly supplied with rivers. There is little settled population. Irrigation is necessary to produce fertility in most regions, and the herding of goats and sheep is the principal industry. Cotton, hemp, indigo, grapes and other fruits are raised in very rude fashion. Roads are being made, wagons replacing camels and mules, the railroad is appearing, and changes seem imminent. Jerusalem is the chief city; Jaffa the port.

PANAMA. A republic of seven provinces on the narrow strip of land between North and South America. The surface is mainly low mountains, divided by valleys, with some level, treeless plains, and lofty mountains to the west. The ranges are covered with dense forests. The soil is fertile and produces caoutchouc, bananas (the chief product), fruits, coffee, cacao, cocoanuts, copaiba, sarsaparilla, ipecac, sugar cane, indigo, rice, cotton, and vanilla. Industries: cattle raising, agriculture, and working on the Canal. It is claimed that every mineral but coal is found. Imports: woolens, cottons, coal; exports: cattle, hides, bananas, pearls, turtleshell, valuable woods, rubber, ivory nuts. The capital is Panama, an important Pacific port, Colon being the Atlantic port. The Canal Zone is a tract of land ceded by the republic to the United States, extending five miles on either side of the central Canal line, together with several islands in the Bay of Panama.

PARAGUAY. An inland, central republic of South America. The surface is a low, undulating plateau, crossed by chains of low ridges covered with dense vegetation. Between the ranges flow innumerable streams, the Parana, one of the largest rivers of the world, but of minor commercial importance, and the Paraguay river, navigable from Asuncion, the capital, to Buenos Aires. Agriculture is primitive, with important cattle raising. Crops: maize, wheat, rice, tobacco, oranges, manioc, beans, sugar cane, with some coffee, cotton, and ramie. Manufactures: brick and clay products, leather, furniture, and cigars. There are abundant but unworked deposits of iron ore, marble, copper, and other minerals. Imports: textiles and ironware; exports: hides, yerba maté or Paraguay tea, tobacco, animal products, lumber, and quebracho extract.

PENNSYLVANIA. A Middle Atlantic state. The surface to the southeast is a rolling upland adapted to agriculture, and north and west is a mountain system with many parallel ridges and valleys. It is well watered by the Delaware, Susquehanna, and Ohio rivers. Agriculture (market gardening), fruit growing, horticulture, stock raising, and forestry are pursued. Crops: maize, wheat, tobacco, oats, vegetables, and fruits. There is a considerable and varied forest area consisting of white oak, hickory, chestnut, walnut, cherry, sugar maple, white pine, hemlock, pitch pine, maple, beech, birch, spruce, balsam fir, and larch. It has immense iron, steel and rolling mill plants, is the largest leather center, the second largest woolen and silk center in the Union, and the largest carpet making center in the world; there are important locomotive works, textiles, coke, glass and publishing establishments, sugar refineries, and breweries. It is the most important mining state in the Union. Minerals: coal, iron, limestone, petroleum, slate, stone quarries, sandstone, clays, Portland cement, metallic paint, salt, also mineral waters. The capital is Harrisburg, with chief cities of Philadelphia, Pittsburgh, Scranton, Reading, Erie, and Wilkes-Barre.

PERSIA. The most important native kingdom of southwestern Asia, between the Caspian Sea, Persian Gulf, and Arabian Sea, called Iran by the natives. The surface is mainly a desolate arid plateau with exceedingly fertile mountain and coast valleys in addition to the plain of the Caspian. The Karum is the only navigable river, and then only for 150 miles. Agriculture depends on irrigation. Crops: wheat, barley, rice, fruits, silk, opium, gums, cotton, and tobacco. Domestic animals include good horses, the Persian lamb, goats, and camels. The country is rich in lead, copper, tin, iron, coal, salt, etc., but undeveloped by reason of poor transportation and the scarcity of fuel and water.

Manufactures are mainly carpets, rugs, and shawls, made by private individuals. The ancient ceramics were magnificent, but the art is almost obsolete. There is some good copper, glass, filagree work, and carving. Imports: cottons, woolens, sugar, iron and steel, cotton yarns, tea, gold, and petroleum; exports: wool, opium, fish, fruits, rice, rugs, carpets, shawls, woolens, silk cocoons, hides, and skins. The capital is Teheran, with chief commercial centers, Ispahan and Tabriz.

PERU. A progressive republic of South America crossed by the Andes, the Cordilleras, and the Sierras; the Montaña plain being extremely fertile and highly developed. It is well drained, but agriculture is largely dependent upon a good and steadily increasing system of irrigation. Crops: sugar, cotton, coffee, rice, sugar cane, tobacco, maize, ramie, and olives. It is the "home of the potato." The forests are large, and have important growths, rubber, valuable medicinal trees and plants, such as the cinchona, cacao, and coca. Manufactures are still unimportant. Imports: minerals, metals, cotton, woolens, wheat, coal, machinery, timber, and drugs; exports: wools of the alpaca sheep, llama, and vicuña, ores, sugar, coffee, hides, cocaine, and borax. The capital is Lima, with its port of Callao.

PHILIPPINE ISLANDS. The northern group of 1,725 islands in the Malayan Archipelago, ceded by Spain to the United States (1898). The interior is mountainous, with valleys and narrow plains, which broaden toward the coast, enriched by alluvial deposits. The drainage is a maze of rivers. It is a splendid agricultural area, but at present crudely developed by the use of poor tools. Farm animals and labor are scarce. Products: Manila hemp, sugar, coffee, rice, fruits, copra, tobacco, cacao, cocoanuts, indigo. There are wide areas of important forests containing valuable cabinet and other woods, timber, gums, dyewoods, spice growths, palm, and bamboo, these being under the supervision of the United States Forestry Bureau. Manufactures: cigars and cigarettes, fabrics of wool, hemp, cotton, silk, and piña fiber worked on hand looms. Imports: cotton, rice, meats, dairy products, cattle, flour, coal, iron, and steel; exports: hemp, copra, tobacco, cigars, gums, and resins. The capital is Manila, with a very good harbor, and the chief ports are Cebu and Iloilo.

POLAND. An independent state formed in 1918, just east of Germany and composed of three areas, Upper Silesia ceded by Germany, Galicia turned over by the Austrians and Congress Poland from Russia. With such a division the great difficulty will be in keeping unity within and protection without, because of no natural barriers. The country physically lies in the Great Central Plain of North Europe and is therefore a farming country. It lies in the heart of the rye-potato-sugar-beet belt. It raises also wheat, oats, flax and barley. The raising of swine and cattle is very important. About 25% of the land is forest covered and adds much to the national wealth. The country is rich in natural resources, large salt mines, one of the largest oil fields of Europe, potash, lead, zinc, and iron ore. Poland is a great textile manufacturing area, particularly at Lodz and Warsaw, wool, linen and jute comprise the major types with woodworking, metal working industries, oil refineries, in Galicia, and the refining of the beet sugar. Danzig, while an internationalized city is the only port that Poland has. The chief cities are Warsaw, the capital, Lodz, Posen and Cracow.

PORTO RICO. The smallest of the West Indies, ceded by Spain to the United States (1898). A low range of mountains runs through the center of the island, from which the land slopes north and south to the broad, level, fertile, alluvial coastal plains. The country is well drained, and there is abundant water for power and irrigation. Agriculture occupies more than half of the population on small farms crudely worked. There is poor transportation, but a steady improvement in every direction. Crops: coffee, sugar, tobacco, fruits, and vegetables. There are forests containing cedar, ebony, sandalwood, laurel, willow, dyewoods, and resins. There are large and unworked deposits of gold, silver, iron, copper, bismuth, limestone, tin, building sand, quicksilver, clays, guano, phosphates, etc. Imports: cotton, rice, provisions, flour, and wooden ware; exports: cigars and cigarettes, coffee, molasses, straw hats, hides, and fruit. Manufactures are mainly tobacco, cigars, and hats. The principal cities are San Juan, Ponce, Mayaguez, and Arecibo. Culebra has been made a naval base.

PORTUGAL. A small republic on the southwestern part of the Iberian Peninsula between Spain and the Atlantic Ocean. The surface in the north and northwestern part is mountainous and elevated, but south of the river Tagus (which divides the country from northeast to southwest) it is a succession of plains, hills, thinly-wooded lands, and coastal tracts suitable for agriculture. The country is well watered and drained by Minho, Douro, Tagus, and Guadiana rivers, most of these being navigable to the Spanish frontier. About half of the land is unproductive. Crops: wheat, barley, oats, maize, flax, rice, fruits, and vegetables. Manufactures: cotton, wool, and silk goods, wine, and olive oil. Minerals: important copper deposits, with arsenic, gold, lead, iron, manganese, wolframite, zinc (not greatly worked), gypsum, lime, and marble. Imports: wheat, codfish, iron, coal, raw cotton, sugar, machinery, hides, and rice; exports: wine, cork, copper, ore, fish (salmon, lampreys, sardines, and cod), olive oil, hides, fruits, tobacco, skins, salt, and vegetables. Lisbon is the capital, also a leading port; other ports are Oporto and Setubal. The possessions of Portugal in Africa are: Angola, exporting coffee, rubber, and dried fish. Large quantities of malachite, copper, iron, petroleum, and salt are obtained. Railroads are now being built to develop transportation; Cape Verde Islands, exporting coffee, hides, medicinal produce, and salt; East Africa, exporting rubber, various ores, wax, and ivory; Guinea, exporting rubber, wax, oil seeds, ivory, and hides; Prince's and St. Thomas Islands, exporting cacao, coffee, rubber, and cinchona. Possessions in Asia are Damao, Diu, and Goa, exporting grain, pulse and salt; Macao, an island on the southern coast of China, exporting tea, oils, silk, and rice; Madeira Islands, near Morocco, exporting Madeira wine; and the eastern part of Timor, in the Malay Archipelago, exporting coffee, wax, sandalwood, and sandalwood root.

PRINCE EDWARD ISLAND. The smallest province of the Dominion of Canada. It is situated in the Gulf of St. Lawrence, and has an undulating surface, a variable coast line of lowland and bluff, several good harbors, and only short tidal rivers. Two thirds of the land is cleared, and there is little unproductive soil. Crops: wheat, oats, turnips, hay, potatoes, barley, and buckwheat. There is considerable stock raising, dairying, poultry farming, and fishing. The manufactures are unimportant, and there are few minerals. The capital is Charlottetown.

PYRENEES. The mountain chain dividing France from Spain, 270 miles long, 15 to 70 miles wide, highest in the central part. It sinks on both sides to plains in a series of terraces, the steeper are on the Spanish side and contain many beautiful waterfalls. In the valleys are forests, grasses, vineyards, and olive groves. Minerals are not abundant, but there are many mineral springs.

QUEBEC. An eastern province of the Dominion of Canada. It has a good coast line on the Gulf of St. Lawrence, a strip of Labrador shielding it from the open sea. North of the St. Lawrence river the surface is rocky and broken; on either side the river run narrow lowlands, and to the eastward broken, hilly country. The land is well drained by the St. Lawrence system. Agriculture and dairying are the chief industries in the fertile valleys. Crops: oats, hay, wheat, buckwheat, potatoes, peas, turnips, and tobacco. Stock raising is being developed, and also fruit orchards producing high-class apples, etc. There are valuable forest lands of maple, oak, beech, elm, pine, cedar, spruce, and birch. There is a great fur industry, and the fisheries consist of cod, herring, lobster, and salmon in large quantities. Quebec unfortunately has no coal, but iron ore and copper are found, also plumbago, lead, platinum, limestone, granite, peat, some gold, pyrites, and graphite. There is an extensive tanning industry, besides a production of boots and shoes, wood pulp, cottons, matches, etc. The capital is Quebec. The chief port is Montreal, receiving over one third of the Dominion shipping, now center of the dairy product export trade, and reaching out to develop the future wheat supply of the world.

RED SEA. An arm of the Indian Ocean separating the Arabian peninsula from northeastern Africa, 1,300 miles long, 100 to 200 miles wide. The Suez Canal unites it with the Mediterranean and the Straits of Bab-el-Mandeb with the Indian Ocean. The Arabian coasts are sandy deserts with barren mountains behind; the Egyptian coasts are flat, sandy plains to the north and high table-lands to the south. Each shore is marked by high coral reefs, which have produced numerous islands. No rivers flow into it, little rain falls, so its waters are extremely salt. The Red Sea has been a highway of commerce between India and the Mediterranean countries since ancient times, lessening its trade when the direct route to India was discovered, but regaining it when the Suez Canal opened, so that it is the main route between Europe and the East.

RHODE ISLAND. A New England state, the smallest in the Union. The greater part of the surface is rough and hilly, and the state limits include a number of beautiful islands, on one of which is Newport. Agriculture claims more than half of the total area, with crops of maize, oats, hay, forage, fruits, and vegetables. It is a manufacturing state, with manufactures of worsteds, cotton, woolen, rubber, and elastic goods, silverware, jewelry, foundry and machine shop products, and dyes. Oysters are a valuable fish product, and minerals are graphite, talc, limestone, and building stone. The capital is Providence.

RIO DE LA PLATA. One of the twelve great rivers of the world, in the southeastern part of South America, where it drains the pampas, the vast grass and grain region. It is the outlet for an enormous body of water during the heavy floods of the section. It is 143 miles wide at the mouth, and decreases in width for 200 miles inland, extending about 2,300 miles to its source. The quantity of alluvial matter brought down by the floods is slowly choking the estuary through which the waters of the Parana and Paraguay rivers sweep to the sea. Its best natural harbor is at Montevideo, with artificial harbors at La Plata and Buenos Aires.

ROCKY MOUNTAINS. The eastern ranges of the great western plateau and mountain system in North America, stretching continuously from the southern border of the United States through Canada to the Arctic Ocean. In the United States these ranges are divided by cañons and flexures into many plateaus. In Wyoming they are divided into a northern and a southern group; in this divide are the sources of the Colorado, Columbia, and Mississippi rivers. The ranges of the southern group are the higher, and contain several elevated valleys in Colorado, called "parks," which furnish excellent pasturage. Near here are more than 40 peaks 14,000 feet high, which give rise to the Platte, Arkansas, Grand, and Rio Grande rivers. The mountains of the northern group are wider and less accessible, but not so high. Yellowstone Park is located there. Mount Hooker and Mount Brown are the highest peaks beyond the Canadian line. The highland gradually descends to 800 feet near the Arctic Ocean. Gold, silver, lead, and copper abound, while petroleum and natural gas are obtained.

ROUMANIA or **(RUMANIA).** A kingdom of Europe. The northeastern Balkan state. The surface consists of rugged mountains and highly fertile plains of black loamy soil, well drained and watered by the Danube. Three quarters of the population are engaged in agriculture. Crops: maize, wheat, oats, barley, grapes, plums and small fruits, some colza, flax, hemp, and sugar beets. Stock raising is extensive. Forests cover one fourth of the country, with oak, beech, and pine predominating. Minerals are mainly rich deposits of coal, petroleum, and salt, with many unworked and valuable varieties. Imports: textiles, metal manufactures, colonial produce, hides, wax, oil, cereals, and animal products; exports: cereals, woods, petroleum, vegetables, and chemicals. The capital is Bucharest, with chief ports of Braila, Constantza, and Galatz.

RUSSIA. Once the great eastern empire of Europe, still the largest state, Russia became a Soviet republic in 1917, governed by the All Russian Congress of Soviets. The country before the war had an area of approximately 8,420,000 square miles but is about 15% less now through the loss of Finland, Esthonia, Latvia, Lithuania, Bessarabia and part of Poland. Besides these above, Georgia, Ukraine and Azerbaijan have declared themselves republics but are really still under the Soviet influence and jurisdiction. From a physical point of view the country can be divided into four provinces, the tundra, the northern area, frozen, uninhabitable, and economically unimportant, the forest area, from the southern edge of the tundra to Moscow, dairying, agriculture and timber area, the steppe region, from Moscow to the Black Sea, the famous black earth region, great wheat and farming area and the region around the Caspian Sea, arid or semi-arid, part of it below sea level. Practically the entire area of Russia is a plain, about 1000 ft. above sea level. The climate is continental, that is great extremes, the rainfall decreasing as we go toward the east. There are a great many lakes and swamps due to glacial action. The Volga, in the east, the longest river in Europe, flowing into the Caspian Sea, the Don, the Dneiper and the Dneister in the south all flowing into the Black Sea and the Dvina in the northeast, flowing into the White Sea—all these and many smaller ones help to make the river transportation very good and to help the country commercially. One great drawback that Russia has, is the lack of ice free ports on the open sea. The north is closed in winter, Vladivostok to the east is kept open with difficulty only and to the south, the Black Sea outlet is controlled by Turkey through the Bosphorous. Russia is probably more thoroughly an agricultural nation than any other European nation, three-fourths of its people earning their livelihood by the soil. The crops are wheat (the second largest producing country in the world), rye, oats, potatoes, sugar beets, hay, barley, hemp, and tobacco. Russia produces a great many horses, sheep, goats, cattle and hogs. If Russia would once wake up and really cultivate her land intensively on a modern scale, she would soon outstrip all her competitors in a great many lines. About forty-five per cent. of the entire area of Russia is forested, mostly conifers and is one of the great resources that up to the present is undeveloped. There are two important mineral areas in the country, the Caucasus Mountains to the south and the Ural Mountains region to the east. In the south is located the great Baku oil field, one of the greatest in the world, also copper, zinc, managanese and iron, and to the east the Ural Mountains, with their gold, copper, a little coal, and platinum (95% of the world's supply). Manufacturing is very backward due to type of people and lack of technical education. The list of products includes iron, machinery, textiles, clothing, coal, oil, food products, glass, pottery and leather goods. The exports are almost wholly raw materials and natural resources, timber, food products, flax, ores, hides, and skins. The chief cities are Petrograd, the former capital, on the Neva River, Gulf of Finland, Archangel, oldest port in Russia, mouth of the Dwina on the White Sea, Moscow, the capital on a tributary of the Volga, the central inland city and an industrial center manufacturing cottons, linens, and woolens, Tula, south of Moscow in the coal fields, and Nizhnii Novgarod, in the eastern part of Russia, famous for its yearly fairs.

SAHARA. The great African desert, which extends east and west between the Atlantic Ocean and the Nile, is equal in area to about two thirds of Europe. The west and central parts are mountainous and rocky, while the Libyan desert in the east is composed largely of sandstone. There are many deep valleys, some short streams, and a number of wells in the oases, which constitute about one fortieth of the total area. It is almost devoid of vegetation. Large quantities of dates are raised in the oases, with some wheat, barley, and vegetables. The esparto fiber, dates, and large quantities of salt are exported. It is crossed in all directions, but principally from north to south, by caravan routes, which follow the line of oases, where there are occasionally towns of considerable size. The leading routes center at Timbuktu. A very active trade, by which ivory, ostrich feathers, gums, spices, gold dust, indigo, cotton, and palm oil of the interior lands are exchanged for manufactured goods from European countries, is transacted.

ST. LAWRENCE. One of the great rivers of North America, issuing from Lake Ontario, flows northeast—part of the way forming the boundary between Canada and the United States—and falls into the Gulf of St. Lawrence through a broad mouth. The name is applied to the whole system of the Great Lakes and their connecting streams. It rises as the St. Louis, empties into Lake Superior, whence it finds its way to Lake Huron through St. Mary's river. Lake Michigan enters from the south, and from Lake Huron through St. Clair river, St. Clair lake, and Detroit river, the descent into Lake Erie is slight. Niagara river and falls descend into Lake Ontario, thence to the St. Lawrence proper, with its lake-like expansion, such as Thousand Islands lake, proceeding as a river, then as an estuary into the gulf. The rapids throughout the course have been overcome by a system of canals. The Ottawa and Richelieu are its chief branches. Steamers now convey their cargoes from Liverpool to Duluth without breaking bulk. Duluth, Chicago, Detroit, Buffalo, Hamilton, Toronto, Montreal, and Quebec are great ports along its course.

SAKHALIN or **SAGHALIN.** An island off the eastern coast of Siberia, covering an area of about 29,000 square miles. The surface is largely mountainous and densely wooded. The climate and the soil are not favorable for agriculture; herring fishery is the chief industry. The principal use of the northern part of the island is for a Russian prison settlement and naval base. The southern part of the island, with adjacent islands, was ceded to Japan in 1905.

SALVADOR. The smallest republic of Central America, and the most densely populated. The surface is an elevated table-land between mountain ranges and lofty valleys. The soil is extremely fertile and is well watered. Agriculture is the staple industry. Crops: coffee, sugar, indigo, rice, tobacco, cotton, and some wheat. Minerals: gold, silver, copper, iron, quicksilver, lead, etc. Imports: cotton, drugs, hardware, flour, silk goods, and yarns; exports: coffee, sugar, indigo, balsam, gold, and other minerals. The capital is San Salvador, with ports of Acajutla, La Libertad, and La Union.

SAMOAN ISLANDS. A group of islands in the Pacific Ocean, between Hawaii and New Zealand, formerly known as the Navigator Islands. The Island of Tutuila, and other islands east of longitude 171 degrees west, came into the possession of the United States in 1900. They are all volcanic and mountainous, with luxuriantly fertile coast lands and many mountains well wooded. The soil is well watered and drained. The staple product is copra; fruit is extensively cultivated, the production of cacao is increasing, and other products are taro, breadfruit, yams, cocoanuts, and bananas. The principal export is copra. Pago Pago is a valuable naval and coaling station of the United States. Upolu, Savaii, and the adjacent islands, once German possessions, have been turned over to New Zealand under a mandate of the League of Nations.

SAMOS. An island under the sovereignty of Greece off the west coast of Asia Minor. It is about 30 miles long by 8 miles in width. The surface is well wooded, with a fertile soil to the east and south, rising into mountains on the north. It exports quantities of wine, raisins, leather, oil, cigarettes, carob beans, distilled spirits, grapes, beans, and hides. It is very rich in minerals: marble, zinc, lead, iron ore, emery, lodestone, manganese, antimony, copper, and ocher, but there is little mining. It was here that archæological excavations discovered the celebrated Temple of Hera, one of the largest Greek temples, known to Herodotus.

SAN MARINO. A republic in Italy, 38 square miles in area. It is the oldest state in Europe and one of the smallest states in the world. The surface is hilly, with fertile valleys and slopes on which are multitudinous vineyards. The staple products are cattle, wine, and raisins. Stone is also exported.

SASKATCHEWAN. A province of the Dominion of Canada. The surface is a rolling prairie sloping to the east, broken at intervals by groups of hills. A grand agricultural district, with a very fertile, well-watered soil. Crops: wheat, oats, barley, flax, and hay, all showing phenomenal increases each year. The raising of live stock is extensive. Lakes Winnipeg and Winnipegosis have valuable fisheries. There are good forests of aspen, poplar, pine, and spruce. The enormous beds of coal, with copper, gold, iron, and natural gas are as yet undeveloped. The capital is Regina.

SAXONY. A state in the German republic. The surface is a series of moderate elevations, the highlands in the southeast merging into the plains of the north, and about one half the total area is under cultivation. Along the Bohemian frontier are the Erzgebirge, with the Elster Mountains at the south, and the Lusatian group at the extreme east. The river Elbe enters in the east, where is found the famous "Saxon Switzerland," a region of mountains with wonderfully castellated rock formations, forests of pine, and a narrow, curving river valley of great beauty. The Elbe is the great commercial waterway of the country. About one fifth of the population is engaged in stock raising and agriculture, although about one fourth of the total area is forest land, with almost all of the trees conifers. Crops: rye, oats, potatoes, and hay; small fruit raising is steadily increasing in importance, but sheep raising and the quality of the wool are reported to have declined. For many years Saxony has been a famous manufacturing country, highly developed in the production of textiles, linens, cottons, woolens, silks, worsteds, muslins, hosiery, laces, embroideries, paper of all kinds, damask ticking, clothing, tobacco pipes, watches, cutlery, glass, machinery, pianos, and the celebrated Saxon or Meissen porcelain. Saxony is said to have originated tin plating. Sugar industries are increasing, and also the production of chocolate. Milling and smelting are important industries. It is the center of the transit trade of mid-Germany, and the book trade of Leipzig leads the world. Minerals: silver has been mined since the twelfth century, there is coal (mainly lignite), and iron, lead, tin, marble, and precious stones are all being mined. There are many famous mineral springs. The principal cities are Dresden, the capital, noted for its museums and china; Leipzig and Chemnitz.

SCOTLAND. The northern part of Great Britain. The surface is divided into the north and the central highlands, the lowland central plain, and the hills. There is much magnificent scenery, and the finest grazing lands in the British Isles. Agriculture is confined to the lowlands, the oat crop constituting three fourths of the cereal production, with large crops of hay, turnips, potatoes, and other roots. Scotland has long been famed for its Cheviot sheep, its Ayrshire, Galloway, and Polled Angus cattle, its Clydesdale horses, and Shetland ponies. Over one fourth of the population is engaged in manufacturing cotton, linen, hemp, jute, lace and silk products, liquors, and iron and steel. Scotch woolens and threads are famed all over the world. The Clyde is the largest shipbuilding center in the world. There are valuable fishing interests. Minerals: coal, shale oil, iron ore, granite, fire clay, limestone, slate, and lead ore. The capital is Edinburgh, but the principal city and chief port is Glasgow, an important manufacturing center, with a good harbor.

SEYCHELLES. A group of small islands in the Indian Ocean belonging to Great Britain. They are the summits of a submarine mountain range. The soil is fertile and well cultivated. Exports: cocoanut oil, vanilla, soap, guano, salt fish, tortoise shell, coffee, cloves, pepper, cacao, drugs, and some rubber. The capital is Port Victoria, on Mahe, the largest island.

SHETLAND ISLANDS. A group of about 100 islands off the north of Scotland. The largest is Mainland, the total area being about 550 square miles. The surface is rugged and wild, and the climate moist and variable. There is some little agriculture, but the cultivation is mainly by the spade. Small crops of oats and barley are grown, potatoes, and turnips. Fishing for cod, ling, and herring is the principal industry, and seals and bottle-nosed whales are frequently caught. Great attention is given to the raising of the typical small cattle, sheep, and the world-famous Shetland ponies—a solid colored, shaggy, good-natured, small pony, totally distinct from the smooth, piebald and skewbald Scandinavian ponies which so frequently are miscalled "Shetlands," owing to their being registered with the Shetland blood stock. Imports: oatmeal, flour, tea, tobacco, spirits, sugar, cottons, woolens, timber, tar, and salt; exports: hosiery and shawls (comprising the principal manufactures), cattle, fish, and eggs. The chief town is Lerwick, on Mainland.

SIAM. An independent kingdom of southeastern Asia, in the central part of Indo-China. The surface is mountainous in the north, sloping south and southeast to the gulf, descending in great terraces to Bangkok. The lowlands are fertile, but there is only about one twentieth of the area under cultivation, owing to the extremely high price of labor following the abolition of slavery. Great quantities of rice are grown on the flood plains of the Menam river; pepper, hemp, cotton, tobacco, coffee, fruits, dried fish, cattle, and sesame are other products. Minerals: gold, salt, rubies, sapphires, copper, tin, coal, iron, zinc, manganese, and antimony. Imports: kerosene, machinery, hardware, silk, and apparel; exports: teak and other woods, pepper, salt, hides, soap, and rubber. The capital and chief port is Bangkok.

SIBERIA. An Asiatic possession of Russia embracing more than one-half of the area of the republic. It is divided into Western and Eastern Siberia, and the Amur and Maritime provinces. Western and Eastern Siberia have been in possession of Russia for centuries; the Amur lands, and the southern part of the littoral, were Chinese until 1858, and are still sparsely populated by Russians. Most of the surface slopes gently from south to north, draining to the Arctic Ocean. The coast lands of the Pacific frontage are fringed by mountain ranges covered with forests, producing long stretches of comparatively straight coast line, free from indentation. It has few islands, chief of which are Sakhalin and New Siberia. The Yenisei river divides Siberia into two halves south of the Arctic, the western part is level plains covered in the northwest with the greatest swamp region of the world, embracing the government of Tobolsk and the northern part of Tomsk; the eastern part to the Pacific, and especially in the south, is a land of low plateaus, surmounted by many moderate mountain ranges, which give the country a rugged appearance. In the far north the ranges are absorbed, and the great plains stretch without interruption to Bering Sea. The southern part of the western plains is the agricultural region, and the center of population, although the eastern mountain valleys are well under cultivation; the mountains are rich in minerals. The four great rivers are the Obi, Yenisei, Lena and Amur, which, with their tributaries, give about 30,000 miles of interior navigation. Nine tenths of the population of Western Siberia are employed in agriculture, while mining and hunting are the industries in Eastern Siberia. In the south crops of grains, potatoes, onions, melons, etc., are produced; the southern belt, extending to Lake Baikal, has an extensive area of good farming land with alluvial soil, well adapted for wheat, oats, rye, and barley. The summers in the east are too moist for cereal crops, but fruits and vines flourish. Horse, cattle, and sheep raising is steadily being developed, butter factories have been opened, and it is interesting to note that milk supplied to the factories costs 25 cents for 18 quarts. Manufacturing: leather and tallow, distilling, brick making, ore smelting, and sugar refining, flour milling, carpet weaving, making clothing, porcelain, furniture and utensils. The magnificent river systems

are the principal transportation routes, but the Trans-Siberian railroad is developing agriculture and creating a business of its own. Minerals: gold, silver, coal, iron, lead, copper, tin, graphite, the best graphite mines being controlled by German lead pencil manufacturers. Vladivostok has a magnificent harbor, and is the terminal of the Trans-Siberian railway, which connects it with Petrograd.

SIERRA NEVADA MOUNTAINS. These form, with the Cascade and Coast ranges, the western border of the western highlands in the United States. They are in California, extending 450 miles from northeast to southwest, and contain Mounts Whitney, Shasta, and Tyndall; their sides are covered with forests, and both gold and silver are found.

SOUTH CAROLINA. A South Atlantic state. The surface is a continuous plain rising towards the northwest and merging into the Blue Ridge. It is well watered by the Great Pedee, the Santee, the Savannah rivers and their branches, which furnish considerable water power. More than half the total area is woodland, but agriculture is the chief occupation. Crops: sea island and other staple cotton, tobacco, wheat, maize, oats, and rice. There are active fisheries contributing oysters, whiting, shad, and sea bass. Manufactures: cotton goods, cotton-seed oil and cake, lumber products (turpentine, resin, and timber), distilled spirits, carriages, and tobacco products. Minerals: phosphate rock, clays, granite, some gold, silver, manganese, iron ore, lime, and monazite. The capital is **Columbia**, and the chief port **Charleston.**

SOUTH DAKOTA. A Central state. The surface is a rolling upland plain, in the southwest the "Bad Lands," the west a region of buttes and ridges, and the prominent feature of the state is the famed Black Hills, "the richest hundred square miles on earth," by reason of its minerals. It is watered by the Missouri and numerous tributaries, but irrigation is necessary for the land now under cultivation. Crops: maize, wheat, oats, barley, rye, flax, hay, fruits, and vegetables. There is much live stock raising and poultry farming. Other industries: flour and grist milling, dairying and lumbering. Minerals: gold, silver, copper, lead, stone of various sorts, and clays. The capital is **Pierre.**

SOUTHERN or ANTARCTIC OCEAN. The great belt of water extending round the world, broken only by the southern end of South America, situated about and within the Antarctic circle. The winds sweeping over this area produce the gigantic waves of the "roaring forties." It is also regarded as a "clearing house" of the hydrosphere, where all inequalities and irregularities in the waters of the separate oceans are corrected. Its greatest known depth is 18,000 feet. Table-like icebergs are characteristic of this region. The land is of volcanic origin, and no vegetation or land animals have been observed.

SPAIN. A kingdom occupying about six sevenths of the Iberian Peninsula. The surface is full of contrasts, plateau ranges, extensive river valleys, small rivers, and low plains, which contain some of the most fertile soil in Europe. Most of the rivers are deficient in water, of little value for navigation, and too low for irrigation purposes. The principal rivers are the Tagus, Minho, Douro, Guadiana, Ebro, and Guadalquivir. Agriculture is the main business, nearly the total area being under cultivation by primitive methods. Crops: wheat, barley, rye, grapes, maize, flax, hemp, esparto, oranges, olives, pulse, nuts. There is extensive stock raising in sections, principally merino sheep. The sardine and other fisheries are valuable. Silk is produced. Manufacturing is insignificant, and does not nearly supply the demand, the leading production being iron, cotton goods, tobacco, paper, wines, leather, glass, and olive oil. Spain is exceedingly rich in minerals, and has much iron, coal, zinc, copper, cobalt, lead, quicksilver, salt, sulphur, phosphorus, etc. Imports: provisions, cotton and manufactures, chemicals, drugs, animals and animal products, machinery, stone, minerals, and pottery; exports: provisions, stone, minerals, glassware, pottery, metals, animal products, timber, and cotton manufactures. Wine is frequently one third of the total export. The capital is **Madrid**, and the chief ports are **Barcelona, Bilboa, Cadiz, Santander, Alicante, Malaga**, and **Valencia.** Included in the kingdom are the **Balearic Isles** off the coast, exporting vine products, olives and fruits, and the **Canary Islands**, near Africa, exporting tomatoes, bananas, cochineal insects (used in dyeing), and potatoes. The colonies are confined to the north and west of Africa: **Rio de Oro Colony** and **Adrar**, the **Rio Muni** and **Cape San Juan**, and **Fernando Po, Annobon, Corisco, Elobey Chico**, and **Elobey Grande.** They have a low coast but contain vast forests. They have no harbors.

STRAITS SETTLEMENTS. A crown colony of Great Britain, consisting of some British possessions on the Malayan Peninsula, and the adjacent islands of Singapore, including **Labuan**, the **Malaccas, Dindings, Penang**, the **Province of Wellesley**, the **Cocos or Keeling Islands**, and **Christmas Island**—the "key to the Chinese Sea." The products are cocoanuts, rice, sugar, coffee, tapioca, sago, pepper, gambier, and nipa palms. Valuable forests produce much fine timber, oils, resins, and rattans. Minerals: tin, gold, lead, iron, bismuth, quicksilver, arsenic, manganese, plumbago, silver, and zinc. Imports: rice, cotton goods, coal, machinery, petroleum, opium, and sugar; exports: padi, nearly half the tin used in the world, sugar, tapioca, gambier, coffee, rubber, copra, spices, gums, and gutta-percha.

SUDAN. The great region between the Atlantic and the Red Sea in northern Africa, and between the Sahara on the north, and the Gulf of Guinea, the Nile, and the Congo rivers on the south. It has been known as "the Black Zone," most of the territory being under the control of Great Britain, Egypt, and France. Agriculture and cattle raising are the chief occupations. Imports: clothing, coal, machinery, and railway materials; exports: gum, ivory, ostrich feathers, cereals, cotton, dates. One of the great trade centers is **Timbuktu**, on the southern edge of the Sahara, whence radiate five important caravan routes. The capital is **Khartoum.**

SWEDEN. The eastern and larger part of the Scandinavian peninsula. The surface is mountainous along the western frontier, with a plateau sloping to the Baltic Sea in three terraces. The northern end of the first terrace has forests which cover nearly one half of the total area of the land; in the second is the rich mineral belt; and the lower terrace is the fertile farm section. The country is well watered, and rich in lakes. The largest river is the **Klar Elf.** Although only a very small part of the total area is under cultivation, nearly three fourths of the population are agriculturists. Crops: oats, rye, barley, wheat, pulse, great quantities of potatoes, some sugar beets, flax, and tobacco. There is considerable cattle and sheep raising; timber and wood working is of great importance, also the manufacture of wood pulp, iron products, flour, and sugar. Minerals: large and famous "Swedish" iron deposits, silver, lead copper, zinc, manganese, sulphur pyrites, and some coal. Imports: minerals, metal goods, machinery, textiles colonial wares, maize, and flour; exports: timber products, live animals, dairy products, metal works, machinery, and paper products. The capital and one of the chief ports is **Stockholm**, and other ports are **Goteberg, Malmo**, and **Helsingborg.**

SWITZERLAND. A republic known as "the playground of Europe." About two thirds of the surface is lofty mountains forming the watershed of Europe. The deep valleys are extremely fertile. It contains the headwaters of the Rhine, Rhone, Po, and Danube, which are almost useless for navigation, but have great water power value. Agriculture is pursued. Crops: hay, rye, barley, fruits, and vegetables. Manufactures: furniture, watches, metal and textile products, lace, ribbons, cheese, condensed milk, and wine. Minerals are of little importance except salt and cement. Imports: textiles, cereals, minerals, iron products, colonial produce, and machinery; exports: silk, cotton, woolen goods, dairy products, machinery, watches, chemicals, food products, and hides. The capital is **Berne**, and chief cities are **Zurich**, the railroad center, **Basel**, noted for ribbons, and **Geneva**, for watches.

SYRIA. A tableland bordering on the Mediterranean Sea and sloping eastward to the Arabian desert. The country is governed by two mandates, the north under the French and the south under the English. The soil along the coast is very fertile but as we go toward the interior the fertility declines, due to less moisture and lack of irrigation. Not more than 10% of the land is used. The crops are, near the coast, olives, lemons, grapes, and oranges, further inland, cereal crops, wheat, tobacco, hemp, sugar cane and silk. The mineral products are iron, lead, phosphate, copper, antimony, and building stones. Manufacturing is simple rather than complex, flour, oil, soap and silk thread. The cities are **Beirut**, the capital, **Aleppo** and the ports of **Tyre** and **Sidon.**

TAHITI. The largest of the Society Islands. It consists of two unequal, nearly circular portions of land connected by an isthmus of volcanic origin, the surface rising in concentric terraces to a final height of 7,668 feet. The rainfall is abundant, and the island is very fertile, but agriculture is conducted under the most primitive methods. The chief town is **Papeiti**, the capital of the French establishments in the eastern Pacific, with a cathedral, arsenal, hospital, etc.

TENNESSEE. A Southern state. The surface falls into marked regions of plateaus, slopes, valleys, and plains. It is well watered by the Mississippi, Tennessee, and Cumberland rivers, all navigable. The soil is much diversified, and is of great fertility. Crops: maize, wheat, oats, cotton, hay, tobacco, potatoes, peas, sorghum, peanuts, and small fruits. There is considerable stock raising; lumbering is extensive in the large forest areas of pine, hemlock, maple, ash, red and swamp cedar, cypress, larch and papaw. Manufactures: flour and grist, iron and steel products, cottonseed oil and cake, leather, textiles, and tobacco products. Minerals: coal, iron (one half being brown hematite), copper, zinc, barytes, phosphate rock, sandstone, limestone, marble, and clays. The capital is Nashville, with leading cities of Memphis and Chattanooga.

TEXAS. A Southern state and the largest of the American Union. From the coast the surface rises gradually by terraced slopes to the Plateau Region, a rugged mountainous region with arid valleys lying southwest of the Pecos river, which are perfectly adapted for grazing. Agriculture is confined mainly to the eastern and central parts. Crops: cotton, oats, wheat, maize, rice, tobacco, cane sugar, sorghum, vegetables, and fruit. It has the largest live stock interests in the United States. There are valuable forest areas of yellow pine and oak, cottonwood, ash, gum, etc. Manufactures: flour and grist, cottonseed oil and cake, lumber and meat products, railroad cars, and petroleum. Minerals: petroleum, coal, clays, iron ore, natural gas, salt, gypsum, cement, granite, sandstone, limestone, some gold, silver, asphalt, etc. The capital is Austin, with chief cities of San Antonio, Houston, Dallas, and the great seaport of Galveston.

TIAN-SHAN MOUNTAINS. These "Celestial Mountains" of several parallel ranges extending from Pamir into Turkestan form the boundary between Russian and Chinese territory in Asia. They are very high and noted for the abundance of snow and glaciers. The southern slopes are treeless, the northern are covered with pines.

TIERRA DEL FUEGO. An archipelago off the extreme end of South America, consisting of the large main island of King Charles South Land and the islands adjacent. The total area is about 27,000 square miles, of which the main island occupies more than four fifths. The Andean Mountain system extends through them. In the east is good soil and pasture land, with extensive forests of beech and pine along the mountain base. There is considerable sheep farming.

TONGA or FRIENDLY ISLANDS. A Polynesian group in the Pacific Ocean, a native kingdom controlled by Great Britain. The area is small, and only about one fifth of the islands are of any importance. The most fertile island is Tonga-tabu, which has about one half of the total population of the group. The rainfall is heavy, and the land area covered with luxuriant vegetation. The land is leased not sold, and, as its tenure is not assured for any length of time, few improvements are made. Imports: foodstuffs, cotton goods, and draperies; exports: copra, fungi, and native mats and tapa.

TURKEY. Once a great European power, driven practically out of Europe by the treaty of Versailles and then back again under the treaty of Lausaune, the country now comprises eastern Thrace and Adrianople, Constantinople, all of Asia Minor and the islands of Imbros, Tenedos and Rablut. The entire country is poor and very backward, both agriculturally and industrially, especially in Anatolia, the seat of the government. The major portions of this area is a plateau region surrounded on three sides by mountains and the fourth slopes down to the Mediterranean coast. Nuts and almonds, olives, dried fruits, silk, tobacco, cereals, figs, opium, wheat, skins, and hides, linseed and licorice form the main bulk of the agriculture products. The minerals are many but have been little worked and in many cases not even the amounts are known or estimated. They include chrome ore, silver, antimony, copper, lead, zinc, lignite and asphalt. Woolens, cottons and carpets, are the main manufactured products. The exports are nuts, carpets, opium, woolens and tobacco. Constantinople is the chief city and historically famous as the meeting place of the East and the West. It is the key city to the Near East. Angoria in Anatolia is the capital.

UKRAINE. A republic, east of Poland and north of the Black Sea with an estimated area of 20,000 square miles. It was recognized as a republic in 1921 but in reality the state is under the influence of the Soviet government. It is a part of the great Central Plain of Europe having continental climate, moderate rainfall, and very fertile soil. 65% of the land is arable and was the agricultural and economic heart of Russia. The crops are wheat (the second largest producing area in the world), barley, rye, sugar beets, and tobacco. The mineral products are coal and iron, iron particularly in the Don and the Donetz basins. The cities are, Kiev on the Dnieper river, an industrial and commercial center, particularly in the refining of sugar, and Odessa, the chief seaport on the Black Sea, one of the greatest grain shipping ports in the world.

UNGAVA. A district of the Dominion of Canada, lying north of Quebec and west of Labrador. It is the fourth largest in area, but is undeveloped, and was unexplored until 1892–4. There are large forests of spruce and birch in the south, extending in the valleys to the fifty-seventh parallel, north of which are no trees, although there is a scrub area producing gooseberries, cranberries, currants, and huckleberries. It is known there is a large area of iron ore, and there are also indications of gold, copper, and nickel.

UNITED STATES. The vast area in the central part of North America lying between Canada on the north, the Gulf of Mexico on the south, and stretching from the Atlantic to the Pacific Ocean, the richest and most populous section. It is composed of 48 states united in one great federal nation, with territories and island dependencies, besides the District of Columbia. Compared with Europe the coast of the United States has very few projections or indentations, but, though few in number, they are of special commercial importance. **Long Island** is the largest island. Two great mountain systems, one on each border, form the framework of the physical structure, which may be divided into four distinct sections. Beginning at the east are the coastal plains and plateaus between the Atlantic Ocean and the Appalachian Mountains. Narrow in Maine they grow gradually wider towards the south. In New England they form a rough lowland; in the middle higher, but very productive; from New York to Florida they slope gently to the sea with a sandy soil and many large swamps. The next section includes the Atlantic Highlands or **Appalachian Mountain** system. Between this and the western mountain system and extending from the Gulf of Mexico to Canada is the Great Central Valley or Plain. It rises gradually from the gulf towards the north, east, and west, its evenness broken only by the Ozark Mountains. This great valley occupies about one half the entire area of the United States, and its fertility makes it the most important agricultural basin in the world. The western system of mountains is a great plateau with the **Rocky Mountains** on the eastern border, **Cascade, Sierra Nevada,** and **Coast Ranges** on the western, between which is a series of broad valleys, inclosing the Great Basin, much of which is occupied by the American desert. Besides the Great Lakes on the border there are thousands of smaller ones in New England, Minnesota, and the Western states. The drainage areas are classified as the St. Lawrence, Atlantic, Mississippi or Gulf, and the Pacific. With its great extent and varied topography the United States has every variety of climate characteristic of the temperate zone. Its rainfall varies greatly. The eastern part is well wooded and great forests occur along the western and northern borders, following closely the distribution of rain. Industries: manufacturing, agriculture, including stock raising and dairying, mining, lumbering, fishing and shipbuilding. The principal products are cereals, cotton, minerals, textiles, tobacco, cattle, timber, oil, and fish. Imports: silk and its manufactures, sugar, hides and skins, chemicals and drugs, coffee, cotton goods, fiber, rubber and gutta-percha, wool and its manufactures, iron and steel and their manufactures; exports: raw cotton, meat and dairy products, breadstuffs, iron and steel and their manufactures, mineral oils, copper and its manufactures, wood and its manufactures, animals, leather, and tobacco with its manufactures. The United States ranks first in the value of domestic commerce, but second in foreign commerce. **Washington** is the capital, **New York, Boston, Philadelphia, Detroit, Cleveland, Baltimore, Chicago, Pittsburgh, New Orleans, Galveston,** and **San Francisco** are the great commercial centers. Island dependencies: **Guam,** the largest of the Ladrones, a naval station, the **Hawaiian** group, **Philippine Islands,** and **Tutuila** with others of the Samoan group are in the Pacific Ocean; **Porto Rico** in the West Indies. **Alaska** in the extreme northwest, is the largest territory.

URAL MOUNTAINS. They separate the lowlands of European Russian from those of Siberia, and consist of several parallel ranges 2,000 miles long, running southwest to northeast, the highest summits reaching 5,000 feet. They are extremely rich in all kinds of minerals, especially gold, platinum (90 per cent. of the world's supply), iridium, osmium, and other rare metals; also iron, cobalt, copper, quicksilver, nickel, and zinc; much the greater part of the iron ore of Russia is obtained in the Ural mountains. The coal beds are little mined.

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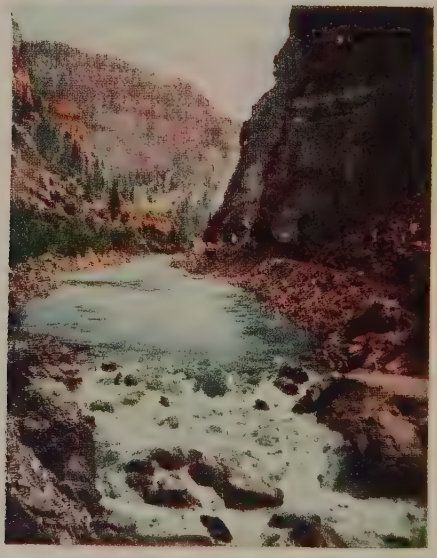
SCENIC AMERICA—I

Lower Falls of the Yellowstone, Wyo.
Horseshoe Falls, Niagara
Royal Gorge, Colo.
The Devil's Slide
Echo Cliffs, Grand River Canyon, Colo.
Inspiration Point, Canyon of Yellowstone



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SCENIC AMERICA—II

Moccasin Bend from Lookout Mountain, Tenn.
Shoshone Falls and Grand River Canyon, Colo.
Bright Angel Canyon, Grand Canyon of Arizona

Great Fountain Geyser, Yellowstone National Park
Yosemite Falls, Yosemite Valley, California
Pulpit Terrace, Yellowstone National Park

Precious stones are abundant, those for which this region is famous being the emerald and topaz from the mines of Murzinsk, the diamond, malachite, azurite, and jaspar. Many towns have sprung up in consequence of the mineral wealth. These mountains form a watershed for the rivers of Russia; immense forests of conifers, birch, and beech grow in the center and south. Telpös-is (5,526 ft.) is the highest summit.

URUGUAY. The smallest South American republic. Much of the surface is rolling, grass-covered plains, well watered by the Rio Negro, the Uruguay, the Rio de la Plata, and a plentiful rainfall. Agriculture and stock raising are leading occupations. Crops: wheat, flaxseed, oats, barley, birdseed, and tobacco. There are immense numbers of sheep, and a heavy wool clip is obtained; many horses, cattle, swine, mules, and goats are raised. Other industries: flour and grist milling, slaughtering, packing, and extracting of beef. Gold is worked, and there are also silver, copper, lead, magnesium, and lignite. Imports: raw and manufactured materials, soft goods, foodstuffs, and beverages; exports: animal products, live stock, wool, minerals, and agricultural produce. The capital is **Montevideo**, with ports of **Colonia, Maldonado, and Minas.**

UTAH. A Western state whose surface in the west is a vast, dry basin; in the east, irrigation has made the plateau of corresponding altitude a garden of fertility. Eastern Utah is drained by the Colorado and Green rivers. Agriculture is the staple industry, but it is only possible under irrigation. Crops: wheat, oats, hay, maize, barley, rye, sugar beets, vegetables, and fruits. There are large numbers of sheep and other farm animals, and dairying is being rapidly developed. Manufacturing industries: smelting and refining copper, flour and grist milling, making and repairing cars, butter and cheese making, salt evaporating, and fruit canning. There are valuable deposits of gold, silver, copper, coal, manganese ores, gypsum, petroleum, sulphur, quicksilver, and salt. The capital is **Salt Lake City. Ogden**, is the second largest city in the agricultural district. Meat packing, fruit and vegetable canning are the chief industries.

VENEZUELA. A republic in the northern part of South America. Its surface is divided into three sections: the north and northwestern are mountainous districts, where agriculture is chiefly pursued; the valuable grazing lands between the mountains and the Orinoco, and the section of forest lands containing many important woods, medicinal plants, gums, etc. Crops: sugar cane, coffee, cereals, caoutchouc, tonga beans, copaiba, cacao, and vanilla. The farming methods are primitive and wasteful, but stock raising of oxen, goats, asses, horses, swine, sheep, and mules is very extensive. There are no important manufactures. There is abundant gold, silver, copper, salt, and iron, with some sulphur, coal, asphalt, lead, kaolin, and tin. Imports: cotton goods, wheat flour, lard, rice, and butter; exports: coffee, cacao, cattle, hides, dividivi, fustic, rubber, and gold. The capital is **Caracas**, chief ports **La Guaira and Maracaibo.**

VERMONT. A New England state. The Green Mountains practically cover the surface of the state. The land suitable for cultivation is in the valleys and western lowlands. The hills, slopes, and summits of the mountains are covered with rich herbage. Crops: hay, oats, maize, potatoes, wheat, barley, tobacco, and fruits, especially fine apples. The live stock interests are large in milch cows and other cattle, sheep, swine, and horses. There are valuable forests. Manufactures: lumber and timber products (including pulp), flour and grist, foundry and machine shop products, cheese, butter, maple syrup and sugar, and woolens. More marble is quarried than in any other state; granite, slate, and talc, with other minerals, and found in small quantities. The capital is **Montpelier**, with leading cities of **Burlington and Rutland.**

VIRGINIA. A middle Atlantic state. The surface is divided into the coastal plain, the Piedmont plain, and the Appalachian Mountain region. The state is well watered by the James, Potomac, Rappahannock, and other rivers. Agriculture is an important industry. Crops: maize, wheat, oats, potatoes, hay, cotton, tobacco, peanuts, and small fruits. There are important stock raising interests in cattle, swine, sheep, horses, and mules. The oyster and other fisheries are important. There is much good forest area. Manufactures: tobacco, cigars, cottons, iron products, paper, railway cars, leather, etc. Minerals: coal, granite, limestone, iron, manganese, talc, soapstone, titanium, etc. The capital is **Richmond**, with **Norfolk, Petersburg, and Newport News** as leading cities.

VOLGA RIVER. Largest river of Russia as well as of Europe, being 2,293 miles from its source in Valdi Hills to its 70 mouths in Caspian Sea. It has two large tributaries, one each from the east and west. The whole system waters 22 Russian provinces with a total navigable length of 9,000 miles. Traffic ceases for three months in the winter, but it is enormous. Timber, grain, salt, and naphtha are the principal articles carried. The fisheries (sturgeon, carp, and pike) are of great importance. Chief ports are **Astrakhan and Nizhni Novgorod**, the latter noted for its great annual fairs. Canals connect this river with the White, Black, and Baltic seas.

WALES. A historic division of the United Kingdom projecting westward from Great Britain. It is a mountainous country of wonderful beauty. Its highlands are unavailable for agriculture, and are not good grazing land. It is well watered by tributaries of the Severn, and by the Dee, Wye, Usk, and many other small streams. Crops: barley, oats, rye, vegetables and hay. There are great flocks of the famed Welsh sheep, and other farm animals. About one fifth of the coal of the United Kingdom is mined in Wales. **Cardiff** is a great coal shipping port of the world. Other minerals are iron, tin, lead, zinc, copper, and some gold.

WASHINGTON. A Western state, divided by the Cascade Mountains into a smaller western and a larger eastern section. About one fifth of the total area is under cultivation, and the irrigated area is constantly being increased. The Columbia river drains the eastern part of the state, and the west is drained by small streams. Crops: wheat, oats, barley, hay, and fruits. It is a great sheep grazing country. There are valuable forests of fir, cedar, spruce, and hard woods. Fisheries are important, salmon and marine fish being taken in large quantities. Other industries: lumbering, flour and grist milling, canning fruits, slaughtering and packing. The coal and clay deposits are valuable; gold, copper, granite, sandstone, limestone, iron ore, lead, zinc, antimony, arsenic, are mined in small quantities. The capital is **Olympia; Seattle and Tacoma** are the largest cities.

WEST INDIES. A large archipelago in the Atlantic Ocean between the North and South American continents. The British possessions are by far the most important, and comprise the **Bahamas**, capital **Nassau**, exporting fresh and canned fruits, lumber, pearl, and shell; **Barbados**, capital **Bridgetown**, exporting sugar and cotton; **Jamaica** (including **Turks, Caicas, and Cayman Islands**), capital **Kingston**, exporting sugar, coffee, bananas, rum, turtles, cocoanuts, maize, and cacao; the **Leeward Islands** (including **Antigua, St. Kitts, Dominica, Montserrat**, and the **Virgin Islands**), exporting sugar, cotton, cattle, pineapples, coffee, lime juice, and arrowroot; **Trinidad**, capital **Port of Spain** (including **Tobago**), exporting sugar, cacao, coffee, cocoanuts, asphalt, and rubber; the **Windward Islands** (including **Grenada, St. Vincent, Grenadines**, and **St. Lucia**), exporting sugar, cacao, rum, cotton, coffee, fruit, nutmegs, and spices. The islands are purely agricultural. **Haiti** is a republic, exporting logwood, coffee, cacao, cottonseed, cotton, hides, hemp, various woods, shell, and some minerals. **Cuba** is a republic. **Porto Rico** is owned by the United States. The French, Danish, and Netherlands possessions are included under those countries.

WEST VIRGINIA. A Middle Atlantic state. The surface is uneven, and in the east and south is mountainous. West of the mountains is a belt of flat hills, grading into a rolling country that slopes to the Ohio river. It is well drained by tributaries of the Ohio, and by the Potomac, Monongahela, and the Kanawhas. There are extensive forests of chestnut, oak, hickory; locust, maple, tulip, birch, spruce, pine, and hemlock. Crops: maize, wheat, oats, tobacco, hay, buckwheat, potatoes, and fruits. It is a great sheep and milch cow grazing country. Manufactures: lumber, iron, steel, foundry and machine shop, leather and clay products, coke, glass, flour and grist. Minerals: coal, petroleum, natural gas, iron, sandstone, limestone, salt, and clays. The capital is **Charleston**, the largest city is **Huntington.**

WHITE SEA. A branch of the Arctic Ocean penetrating 350 miles into northern Russia. It consists of an inner and an outer portion joined by a narrow strait. It receives the Dwina and Onega rivers, besides many lakes. It is icebound from September to June, nevertheless with the canals direct communication is made through the Dneiper and Volga rivers with the Caspian and Black seas, so that the volume of trade is considerable. **Archangel** is the chief port.

WISCONSIN. A Central state, a part of the lake plain of the northwest. It is well drained, and most of the land is fertile. Agriculture and dairying are very extensive. Crops: maize, oats, barley, wheat, hay, potatoes, sugar beets, and tobacco. The orchard area is steadily

increasing. There are large herds of milch cows and other cattle, horses, sheep, and swine. The forests are valuable, and great quantities of white pine, hemlock, and spruce are marketed. Manufactures: lumber products, cheese, butter, condensed milk, foundry and machinery products, flour and grist. Minerals: iron ore, lead, granite, limestone, sandstone, natural rock cement, graphite, petroleum, also mineral waters. The capital is Madison, and the principal city is Milwaukee.

WYOMING. A Western state. The surface is a lofty plateau. The soil is arid and irrigation is used wherever agriculture is practiced. There are great grazing areas suitable for stock raising, and the state is second to Montana in the production of wool. Crops: hay and forage, with some wheat, oats, and small quantities of other cereals, and roots. Manufacturing industries are limited mainly to products for local consumption. Transportation facilities are very poor. The rich iron ore and petroleum resources constitute a good basis for development. Minerals: coal, iron, copper, limestone, gypsum, some gold and silver. The capital is Cheyenne.

YANGTZE RIVER. The longest and most important river of China. Its source is a number of tiny streams far above sea level. It is known by different names in varying sections, drains whole provinces, and receives the waters of many important streams. It pours into the yellow sea an immense volume of water, depositing annually an enormous amount of sediment. It is navigable for ocean steamers 600 miles, and 500 miles farther for light-draught steamboats. Its importance to China's commerce is vast.

YENISEI RIVER. Longest river in Asia and fourth longest in the world. It rises in the mountains of northern Mongolia and flows 3,250 miles across the center of Siberia into the Arctic Ocean. With the Obi and Lena rivers it flows in parallel courses and through its tributaries is so closely connected with them that a continuous waterway through Siberia is formed; goods are sent from the Caspian Sea by the Ural river into a branch of the Obi, then up the Obi to the Yenisei and the Lena, a distance of 6,000 miles, the journey being broken by only two short portages. The middle course of the river runs through forests of pine, birch, and larch. Three months of the year it is frozen in the south, but in the north it is icebound all but six weeks.

YUKON. A northwestern territory of the Dominion of Canada, bounded on the extreme north by the Arctic Ocean. Very little was known of the surface until the close of the nineteenth century, when it was found to be a succession of rolling hills and mountain ranges penetrated by large rivers, the navigable head streams and branches extending in every direction. It is one of the coldest districts in the world. The agricultural possibilities are limited, although rye, barley, potatoes, cabbage, peas, lettuce, and roots have been raised during the brief summer. It contains some of the richest gold deposits; beds of lignite coal are known to exist, but have not been thoroughly surveyed.

YUKON RIVER. One of the largest rivers of North America, and in the extreme northwestern part extending through Alaska. It is formed at Fort Selkirk by the junction of the Lewes and Pelly rivers, emptying into Bering Sea through a large delta. Throughout its total length, including the Lewes, it is navigable at least for small boats. The delta is very broad, and the discharge of water is estimated at two thirds the volume of the Mississippi. During three months its waters swarm with salmon.

ACREAGE, PRODUCTION, AND VALUE OF THE CROPS OF THE UNITED STATES

Crop	1000 Acres	1000 Bushels Production	$1000 Value
Corn	100,829	2,081,048	1,378,874
Winter Wheat	38,608	604,337	338,627
Spring Wheat	15,902	190,963	103,667
All Wheat	59,153	850,965	517,407
Oats	41,598	1,402,026	453,973
Barley	12,437	325,893	129,137
Rye	3,722	50,234	20,895
Buckwheat	658	8,975	7,588
Flaxseed	3,946	23,682	33,097
Rice (5 states)	960	41,367	31,623
Potatoes	3,394	361,090	326,457
Sweet Potatoes	838	71,154	64,480
Hay—Tame	58,473	82,656 Tons	1,048,205
Hay—Wild	14,136	12,111 Tons	87,089
All Hay	72,609	94,767 Tons	1,135,294
Tobacco	2,110	1,510,308 Lbs.	216,895
Cotton	45,218	14,243 Bales	674,044
Cotton Seed	.....	6,328 Tons	136,789
Clover Seed	1,017	1,459	17,354
Sugar Beets	799	9,175 Tons	65,561
Beet Sugar	799	1,185 Tons	.....
Cane Sugar (La.)	171	222 Tons	.....
Maple Sugar—Syrup	14,421 Trees tapped	2,588 Lbs.	781
Sorghum	384	24,132 Gals.	19,920
Peanuts	1,827	1,183,025 Lbs.	38,276
Beans	2,181	22,137	53,098
Cabbage	156	1,035 Tons	19,600
Hops	19	23,447 Lbs.	3,462
Cranberries	28	570 Bbls.	5,789
Apples	.....	163,543	152,548
Peaches	.....	53,286	42,340
Pears	.....	25,703	19,611
Oranges (7 states)	.....	47,691 Boxes	100,447

Table I. VALUE OF ALL THE CROPS BY STATES

State	Value	Rank	State	Value	Rank
Alabama	$146,725,000	17	Nebraska	$257,020,000	5
Arizona	36,938,000	37	Nevada	7,484,000	47
Arkansas	90,987,000	30	New Hampshire	12,118,000	45
California	431,036,000	2	New Jersey	54,303,000	34
Colorado	121,453,000	22	New Mexico	19,539,000	44
Connecticut	29,061,000	40	New York	212,969,000	9
Delaware	11,917,000	46	North Carolina	240,206,000	6
Florida	109,795,000	27	North Dakota	120,007,000	23
Georgia	200,721,000	11	Ohio	183,504,000	13
Idaho	76,750,000	31	Oklahoma	132,248,000	20
Illinois	309,334,000	4	Oregon	68,554,000	32
Indiana	162,086,000	16	Pennsylvania	194,424,000	12
Iowa	367,171,000	3	Rhode Island	2,392,000	48
Kansas	203,840,000	10	South Carolina	132,824,000	19
Kentucky	109,926,000	26	South Dakota	115,908,000	24
Louisiana	107,808,000	28	Tennessee	130,559,000	21
Maine	50,881,000	35	Texas	434,512,000	1
Maryland	42,907,000	36	Utah	29,757,000	39
Massachusetts	28,209,000	42	Vermont	28,127,000	43
Michigan	173,081,000	14	Virginia	93,608,000	29
Minnesota	233,263,000	7	Washington	110,640,000	25
Mississippi	134,460,000	18	West Virginia	35,404,000	38
Missouri	164,104,000	15	Wisconsin	225,428,000	8
Montana	61,256,000	33	Wyoming	28,571,000	41
			Total	$6,274,824,000	

Table II. CORN

State	1000 Acres	1000 Bushels	$1000 Value Dec. 1st Price	State	1000 Acres	1000 Bushels	$1000 Value Dec. 1st Price
Alabama	2,810	29,505	28,325	Nebraska	9,171	235,695	120,204
Arkansas	1,788	8,404	8,068	New York	657	19,710	17,739
Colorado	1,516	37,142	23,028	North Carolina	2,530	51,865	48,234
Georgia	3,729	45,494	39,125	North Dakota	1,089	19,058	10,101
Illinois	9,345	238,298	147,745	Ohio	3,483	88,816	59,507
Indiana	4,206	110,197	67,220	Oklahoma	3,141	36,436	23,683
Iowa	11,100	360,750	209,235	Pennsylvania	1,322	29,084	27,630
Kansas	6,347	76,164	44,937	South Carolina	1,635	26,978	24,280
Kentucky	2,909	31,417	28,904	South Dakota	4,965	76,958	36,170
Louisiana	1,109	12,199	11,345	Tennessee	2,915	41,102	38,225
Michigan	1,384	28,372	21,846	Texas	4,941	91,408	66,728
Minnesota	4,380	135,780	71,963	Virginia	1,568	18,032	18,934
Mississippi	1,730	19,895	19,497	Wisconsin	2,035	79,365	57,143
Missouri	5,922	72,841	54,631	Total for U. S.	100,829	2,081,048	1,378,874

Table III. WHEAT

State	1000 Acres	1000 Bushels	$1000 Value Dec. 1st Price	State	1000 Acres	1000 Bushels	$1000 Value Dec. 1st Price
California	620	13,020	11,067	New York	263	4,800	3,809
Colorado	1,459	21,780	11,595	North Dakota	9,336	99,807	51,038
Idaho	1,027	28,223	14,676	Ohio	1,613	28,716	21,818
Illinois	2,296	41,952	28,772	Oklahoma	3,547	33,696	19,881
Indiana	1,615	29,058	20,630	Oregon	1,017	23,391	13,615
Kansas	11,775	158,862	88,945	Pennsylvania	1,122	25,236	20,201
Michigan	824	19,336	14,118	South Dakota	3,420	40,840	18,929
Minnesota	1,301	21,525	12,367	Texas	2,570	28,270	19,789
Missouri	1,420	19,880	14,699	Virginia	644	9,982	9,683
Montana	3,913	33,698	16,332	Washington	2,445	40,065	22,627
Nebraska	3,810	73,275	38,656	Total for U. S.	59,153	850,965	517,407

Table IV. COTTON

State	Acreage	Bales of 500 lbs.	Value	State	Acreage	Bales of 500 lbs.	Value
Texas	17,743,000	5,106,000	$446,775,000	South Carolina	2,361,000	726,000	66,792,000
Oklahoma	4,245,000	1,205,000	103,630,000	Louisiana	1,990,000	691,000	61,844,000
Mississippi	4,029,000	1,475,000	136,438,000	North Carolina	1,860,000	838,000	77,330,000
Arkansas	3,618,000	1,246,000	113,386,000	Tennessee	1,157,000	428,000	38,520,000
Georgia	3,725,000	1,130,000	106,097,000	U. S. Totals			
Alabama	3,534,000	1,109,000	100,919,000	(All states)	45,341,000	14,297,000	1,301,796,000

Table V. TOBACCO

State	1000 Acres	1000 Pounds	$1000 Value Dec. 1st Price	State	1000 Acres	1000 Pounds	$1000 Value Dec. 1st Price
Georgia	127	104,994	10,814	South Carolina	129	94,170	11,300
Kentucky	507	331,699	47,433	Tennessee	151	120,903	19,465
North Carolina	779	535,195	73,322	Virginia	174	88,200	8,996
Ohio	48	46,376	5,704	Wisconsin	43	52,900	7,935
Pennsylvania	39	38,118	4,955	Total for U. S.	2,110	1,510,308	216,895

COMMERCIAL STATISTICS

Countries	Area Sq. Miles	Population	Population per Sq. Mile	Owning or Ruling Power	Capital	Agricultural Products
*Abyssinia (Ethiopia)	350,000	10,000,000	28.5	Italy	Addis Ababa	Cattle, sheep, cotton, coffee, sugar, tobacco.
Afghanistan	250,000	10,000,000	40	Kingdom	Kabul	Sheep, many fruits, nuts.
*Albania	17,374	1,003,068	57.7	Kingdom	Tirana	Wool, corn, sheep, goats, tobacco, olive oil.
Algeria	222,180	7,234,684	32+	France	Algiers	Cattle, sheep, vineyards, cereals, flax, fruit, tobacco.
Argentina	1,153,418	13,129,723	11+	Republic	Buenos Aires	Sheep, cattle, pigs, oats, wheat, maize, flax, linseed, sugar, tobacco.
Armenia	15,140	1,109,200	73+	Soviet Republic	Erivan	Maize, cotton, tobacco, sheep, goats.
Australia	2,974,581	6,997,326	2+	Britain	Canberra	Wheat, hay, oats, sugar, potatoes, barley, maize, cattle, sheep, butter, cheese.
*Austria	34,064	7,009,014	205+	Republic	Vienna	Rye, barley, wheat, oats, potatoes, cattle, horses.
*Belgium	11,752	8,386,553	713+	Kingdom	Brussels	Maize, rye, cattle, tobacco, potatoes, wheat, barley, sugar.
Bolivia	537,792	3,426,296	6+	Republic	Sucre	Cocoa, rubber, rice, coffee, barley.
Brazil	3,285,319	44,115,825	13+	Republic	Rio de Janeiro	Coffee, maize, tobacco, rubber, sugar, rice, cattle, sheep.
*Bulgaria	42,808	6,549,664	153	Kingdom	Sofia	Wheat, rye, barley, oats, fruits.
Canada	3,690,043	11,012,734	3−	Britain	Ottawa	Wheat, oats, barley, rye, flax, potatoes, fruits, wool, dairying, forestry.
Chile	296,717	4,634,839	16+	Republic	Santiago	Wheat, sheep, cattle, barley, oats.
China	4,277,170	457,835,475	107+	Republic	Nanking	Soy beans, rice, sorghum, cotton, tea, silk, timber.
Colombia	482,400	8,701,816	18+	Republic	Bogota	Cotton, coffee, cocoa, sugar, tobacco, rubber, bananas.
Cuba	41,634	4,228,000	101+	Republic	Havana	Tobacco, sugar, coffee, fruits.
*Czechoslovakia	38,190	9,807,000	257−	Republic	Prague	Rye, wheat, sugar, hops, potatoes, livestock, fruit.
*Denmark	16,570	3,805,000	230−	Kingdom	Copenhagen	Wheat, oats, rye, barley, livestock, butter.
Ecuador	118,627	3,200,000	27+	Republic	Quito	Hay, grain, coffee, sugar, cocoa, rubber.
Egypt	347,840	15,904,525	45+	Kingdom	Cairo	Cotton, wheat, sugar, beans, rice, millet, barley.
England	50,325	37,354,917	742+	Kingdom	London	Corn, hops, wheat, barley, rye, sheep, cattle.
*Estonia	18,355	1,134,000	62−	Republic	Tallinn	Rye, barley, potatoes, wheat, cattle.
*Finland	131,588	3,834,662	21+	Republic	Helsingfors	Dairying, lumber, pine and spruce, rye, barley, oats, flax, potatoes.
France	212,659	42,014,594	198+	Republic	Paris	Cereals, (wheat, oats, corn, rye), grapes, sugar beets, sheep, cattle, dairy products.
Georgia (Europe)	25,668	3,110,000	121+	Soviet Russia	Tiflis	Fruit, silk, corn, grapes, cereal, cotton.
Germany	182,471	79,375,281	435+	Republic	Berlin	Potatoes, rye, sugar beets, corn, oats, barley, tobacco, cattle, sheep, pigs, forestry.
Greece	49,022	7,196,900	147−	Republic	Athens	Dairy products, tobacco, barley, rice, figs, wheat, maize, oats, almes.
Honduras	46,332	1,000,000	22−	Republic	Tegucigalpa	Bananas, cocoanuts, rubber, coffee, tobacco, cattle.
*Hungary	59,830	13,507,993	226−	Kingdom	Budapest	Wheat, maize, sugar beets, grapes, tobacco, cattle, flax, potatoes.
India	1,808,679	352,837,778	195+	Britain	Delhi	Rice, wheat, cotton, cane sugar, jute, castor beans, flax, tea, millet, livestock.
Ireland (Eire)	27,137	2,965,854	109+	Republic	Dublin	Grain, wheat, oats, barley, flax, cattle, pigs.
Italy	119,744	44,557,000	371+	Kingdom	Rome	Wheat, barley, corn, vineyards, olives, lemons, silk, forests, cattle raising.
Japan	148,756	72,222,700	492+	Empire	Tokio	Rice, wheat, silk (56%), barley, tea, horses, sheep.
Korea	84,738	22,633,587	267+	Japan	Seoul	Tobacco, cotton, rice, barley, wheat, beans, fruit, silk.
*Latvia	40,856	1,950,502	47+	Republic	Riga	Rye, cereals, flax, barley, timber.
*Lithuania	20,550	2,910,000	131+	Republic	Kovno	Pine, cereals, flax, potatoes, wheat, rye, dairying.
*Luxemburg	999	301,000	301+	Grand Duchy	Luxemburg	Oats, potatoes.

Mineral Products	Manufactured Products	Exports	Total Imports in Dollars	Total Exports in Dollars
Iron, gold, coal		Hides, coffee, ivory, wax		
Copper, lead, iron		Wool, hides, fruits, nuts		
	Flour, olive oil	Wool, olive oil, hides		
Petroleum, zinc, copper, lead, antimony		Wine, wheat, sheep, tobacco		
Gold, silver, copper, tin	Food products, flour, furniture	Wheat, maize, livestock, linseed, wool	649,333,000	1,020,841,000
Marble, iron, copper, lead, gold	Rugs, tobacco			
Gold, copper, silver, coal, tin	Iron, boots, shoes, food products	Meat, fruit, wool, hides, lead, timber, wheat, flour	390,711,000	545,084,000
Salt, zinc, iron ore, lignite, anthracite coal, copper	Textiles, tobacco, motor cars	Timber, furniture, chemicals, sugar	340,063	182,176
Coal, zinc, lead	Iron, steel, glass, lace, linen, gloves	Iron, steel, glassware, wool, cotton yarn	748,440,000	531,639,000
Zinc, copper, tin, silver, lead	Iron, cotton cloth, refined sugar	Silver, tin, rubber	19,544,000	45,307,000
Coal, monazite, iron, gold, diamonds	Cotton, silk, wool, sugar, flour, tobacco	Coffee, rubber, sugar, tea, leather, meat	470,664,000	394,520,000
Coal	Textiles	Fruits, dairy products		
Lead, nickel, copper, zinc, silver	Paper, timber, chemicals, food products, iron and steel, textiles	Wood and wood products, beef, hides	1,102,675,000	1,057,333,000
Nitrate, copper, coal, iron	Textiles, fertilizers, iron, steel	Nitrate, iodine, wool, copper	160,807,000	282,675,000
Coal, tin, antimony, gold	Textiles, silk, iron products, milling of rice	Raw silk, beans, cotton, tea, tin, vegetables	937,568,000	666,207,000
Gold, emeralds, salt, copper, lead, manganese	Panama hats, sugar refining, iron and steel	Gold, coffee, hides, bananas	34,225,000	70,273,000
Manganese, iron, copper, asphalt, oil	Liquors, sugar refining, cigars, cigarettes	Sugar, tobacco	438,189,000	855,138,000
Coal, iron, gold, copper, lead	Iron, steel, textiles, paper, furniture, sugar	Coal, iron, steel, woolens, glass, sugar	363,400,000	428,900,000
	Distilleries, beet sugar, oleomargarine, textiles	Butter, cheese, eggs, dairy products, textiles	511,706,000	250,990,000
Petroleum, copper, lead, coal, sulphur	Panama hats, flour, breweries, sugar refining	Cocoa, hats, coffee, hides, rubber	11,284,000	20,314,000
Phosphate, manganese, gold, talc, petroleum	Textiles, chemicals	Cereals, vegetables, textiles and yarns	388,540,000	329,650,000
Iron ore, salt, limestone, sandstone, coal, chalk	Textiles, iron, steel	Livestock, coal, iron, steel, textiles, cutlery	3,207,801,000	2,556,106,000
	Lumber products and paper	Timber, flax, paper, potatoes, dairy products	120,078,000	196,126,000
Copper, quarry products	Pulpwood, paper, leather goods, textiles, iron and steel	Lumber, pulpwood, paper, hides, meats	1,867,823,000	1,628,000,000
Alumine antimony clays, potash, iron ore	Textiles, silk, cotton, lace, jewelry, cut glass, iron, steel	Textiles, silk, cotton, clothing, wine, leather, automobiles	1,755,633,000 (1921)	1,606,870,000
Manganese, oil, copper, zinc, lead				
Coal, zinc, lead, copper, silver	Iron, steel, textiles, chemicals, dyes, toys, copper and brass goods, beet sugar	Steel products, textiles, beet sugar, chemicals, toys, leather goods	1,708,722,000	1,206,902,000
Iron, magnesite, salt, emery, zinc, lignite, chromite	Textiles, olive oil, wines, soap	Silk, cotton, liquors, cereal, agricultural products	235,650,000	309,088,000
Gold, silver, zinc, coal, lead	Cigars, straw hats, iron	Food stuffs, gold, livestock	16,723,000	5,429,000
Coal	Flour, breweries, agricultural implements, sugar, tobacco	Flour, hardware, livestock, wine, electrical machinery, wool	12,604,800	4,457,800
Coal, petroleum, gold, manganese	Cotton, jute mills	Jute, cotton, tea, hides, textiles	1,109,569,000	787,879,000
Chalk, iron, sandstone, gypsum	Linen, shipbuilding, twine, tobacco, spirits			
Coal, zinc, lead, mercury, iron, sulphur	Iron, steel, textiles, chemicals, food products	Cotton, silk, fruit, wines, automobiles, hides, hats	1,803,366,000	887,213,000
Copper, coal, lead, zinc	Silks, woolens, paper, matches, leather, porcelain articles, toys	Cotton, raw silks, coal, matches, copper, iron	1,176,685,000	981,367,000
Gold, copper, iron, coal	None	Rice, beans, hides, gold ore	49,069,000	10,143,000
Brown coal (lignite)		Flax, timber	18,550,000	9,679,000
	Textiles, turpentine, bricks	Foodstuffs, rye, butter, eggs, hides, timber	219,218,730	150,000,000
Iron ore				

Countries	Area Sq. Miles	Population	Population per Sq. Mile	Owning or Ruling Power	Capital or Chief City	Agricultural Products
Madagascar	228,707	3,797,936	16+	France	Tananarive	Sugar, rice, vanilla bean, rubber, clove woods, gums, rosin, cattle breeding.
Mesopotamia (Iraq)	140,000	3,670,000	26+	Kingdom	Bagdad	Wheat, barley, dates, rice, cotton.
Mexico	767,198	19,478,791	25+	Republic	Mexico City	Corn, beans, wheat, tobacco, vanilla, cattle, sheep.
Morocco	231,500	7,848,922	34−	France	Rabat	Barley, maize, linseed, cattle, vineyards, olives, dates, wheat.
*Netherlands	13,208	8,728,569	660+	Kingdom	The Hague	Rye, oats, wheat, potatoes, beets, bulbs, etc.
Newfoundland	42,734	294,800	7−	Britain	St. Johns	Hay, potatoes, oats, turnips, horses, sheep, forests.
New Zealand	103,862	1,640,901	15+	Britain	Wellington	Cattle, sheep, horses, pigs, wool.
Nicaragua	49,200	1,172,324	23+	Republic	Managua	Bananas, cocoanuts, fruit, rice, coffee, sugar cane, corn, beans, forests (mohogany, cedar).
*Norway	124,964	2,937,000	23+	Kingdom	Oslo	Wheat, barley, oats, corn, potatoes, horses, cattle, goats, forests.
Palestine	10,429	1,466,536	140+	British Mandate	Jerusalem	Wheat, barley, olives, sheep, camels, goats.
Paraguay	174,854	1,000,000	5+	Republic	Asuncion	Cattle, sheep, tea, oranges, oil, sugar, cotton.
Persia (Iran)	628,000	15,055,115	24−	Kingdom	Teheran	Fruit, rice, wool, cotton, barley, wheat, opium.
Peru	482,258	6,672,881	14−	Republic	Lima	Wool, coffee, cotton, skins, hides, sugar, cocoa, rice.
*Poland	150,470	34,775,698	224+	Republic	Warsaw	Wheat, oats, flax, barley, swine, cattle, forests.
Portugal	35,490	6,825,883	192+	Republic	Lisbon	Fruit, maize, wheat, olives, wines, tobacco, figs, swine.
Rhodesia So.	148,575	1,385,560	9+	Britain	Salisbury	Corn, tobacco, cotton, wheat, fruits.
Rhodesia No.	291,000	1,376,325	5−	Britain	Livingston	
*Rumania	77,425	14,098,850	182+	Kingdom	Bucharest	Wheat, oats, barley, tobacco, rye, horses, goats, forests.
Russia (U.S.S.R.)	8,819,791	192,695,710	22−	Soviet Republic	Moscow	Wheat, rye, oats, potatoes, hemp, hay, sugar beets, tobacco, horses, sheep, hogs.
Scotland	30,405	4,842,980	159+	Britain	Glasgow	Wheat, hops, oats, corn, forage crops.
Siam (Thailand)	200,148	14,976,000	75−	Kingdom	Bangkok	Rice, livestock, lumber (teak wood).
Spain	196,607	26,000,000	132+	Kingdom	Madrid	Grapes, olives, citrus fruit, silk, flax, hemp, cane sugar, livestock.
Sweden	173,157	6,310,214	36+	Kingdom	Stockholm	Lumber products, hay, oats, corn, wheat, rye, barley, dairy products.
Switzerland	15,940	4,218,000	264+	Republic	Berne	Dairying, sheep, cheese, condensed milk, grapes, forests.
Syria (Lebanon)	57,900	3,630,000	62+	French Mandate	Beirut	Tobacco, cereals, cotton, wheat, fruit-vines, silk.
Tunis	48,313	2,608,313	54−	France	Tunis	Olives, lemons, dates, wheat, rye, barley, almonds, livestock.
Turkey	294,416	16,158,018	54+	Republic	Angora	Tobacco, mohair, figs, silks, olives, opium, timber, wools.
United States	3,026,789	131,669,275	43+	Republic	Washington	Corn, cotton, wheat, barley, flax seed, potatoes, forests, rice, hay, cane sugar, cattle, sheep, horses, tobacco, dairy products.
Uruguay	72,153	2,093,331	29+	Republic	Montevideo	Grapes, tobacco, wheat, oats, corn, linseed.
Venezuela	393,976	3,491,159	9−	Republic	Caracas	Rubber, coffee, cocoa, vanilla bean, maize, sugar, livestock, cotton.
*Yugo-Slavia	95,558	16,200,000	169+	Kingdom	Belgrade	Timber, corn, oats, rye, wheat, olives, lemons, cattle.

* Statistics of these countries subject to change due to war conditions.

Mineral Products	Manufactured Products	Exports	Total Imports in Dollars	Total Exports in Dollars
Gold, lead, copper, zinc, graphite, nickel, sulphur...	Silk and cotton weaving, Panama hats.....	Hides, rice, gold dust, raffia fibre.....	.....	.....
Petroleum, asphalt.....	Carpet manufacturing.....	Carpets, grain	.....	.....
Petroleum, copper, silver, lead, zinc, gold.....	Textiles, cotton.....	Petroleum, gasoline, fuel oil.	178,239,000	202,664,000
Copper, iron, lead, antimony, sulphur, phosphate.....	Leather, rugs.....	Eggs, barley, beans, linseed, wheat, almonds.....	£31,107,028	£9,498,656
Coal.....	Sugar refining, brewing, distilling, diamond cutting...	Sugar, coffee, copra, diamonds, pearl shell, tin....	.....	.....
Iron ore, copper, silver, lead.	Pulp mills, lumber products.	Dried cod, pulp, paper, iron ore, oils, seal skins.....	£3,971,708	£4,307,800
Gold, silver, tungsten.....	Meat packing, butter, cheese, condensed milk, lumber products, breweries, woolen mills.....	Meats, tallow, butter, cheese, gold, timber.....	£42,726,249	£35,021,561
Gold, silver, copper.....	.....	Coffee, rice, sugar, fruits....	£1,626,223 (1922)	£1,054,219
Iron, copper, silver, nickel...	Pulp and paper, nitrates and carbide, electrical products.	Animal products, yarn, hair, skins, tallow oils, lumber products, wood products..	249,780,000	838,260,000
Limestone, sandstone, gypsum, petroleum.....	Wines, olive oils, soap making, brick.....	Soap, fruit, wine, wheat, barley.....	£5,428,146	£1,376,649
Iron, copper, manganese....	Meat packing, textiles, lumber products.....	Hides, tobacco, yerba, grain, meat products, cattle.....	5,908,000	6,839,000
Oil, lead, coal, iron, nickel, cobalt.....	Carpets, textiles.....	Carpets, opium, cotton, fruits, gums, petroleum.....	98,300,000	158,791,000
Petroleum, copper, silver, coal, guano.....	Tobacco products, Panama hats.....	Cotton, sugar, copper, petroleum, silver.....	88,670,000	170,519,000
Salt, oil, potash, zinc, lead...	Textiles, metal products, oil refining, jute, wood working	Cotton, woolens, oil, wheat, timber products.....	.....	.....
Coal, oil, manganese, antimony, lead, tin.....	Textiles, paper making.....	Corks, resin, raw wool, sardines, chemicals.....	89,313,000	35,873,000
Gold, zinc, copper, coal, lead.	.....	Lead, gold, copper.....	27,000,000	29,000,000
Lignite, salt, iron, copper, petroleum.....	Flour milling, liquors.....	Livestock, cereals, rubber, vegetables, fibre, petroleum, chemicals.....	286,636,000	8,311,000
Oil, copper, zinc, manganese, iron, gold, platinum.....	Iron, textiles, oil, glass, forged products.....	Raw material, timber products, flax, ores, hides.....	432,654,000	152,696,000
Iron, coal.....	Iron, steel, textiles, food products.....	.....	.....	.....
Coal, zinc, manganese, antimony, iron, tin.....	.....	Rice, teak, tin.....	55,677,000	25,042,000
Iron, copper, quick silver, zinc, lead, manganese.....	Cotton, wools, paper, corks, glass, wines, olive oil.....	Wines, wool, glassware and pottery, animal products..	141,256,000	239,414,000
Iron ore, silver, lead, manganese, copper.....	Woodpulp and paper products, iron and steel, cotton, wool, flour, tobacco, shoes.	Wood products, pulp, iron and steel.....	647,228,000	402,404,000
Little coal and iron.....	Watches, clocks, musical instruments, optical goods, silks, embroidery, milk chocolate.....	Cotton, silks, watches, clocks, condensed milk.....	398,498,000	371,399,000
Iron ore, lead, copper, marble	Soap, silk, cotton goods, flour, oil.....	Ores, tobacco, wines, fruit...	.....	.....
Lead, iron, phosphate, zinc..	Carpets, leather, embroidery, silk, pottery.....	Grain, marble, textiles, fruit, wine.....	£34,251,080	£17,787,160
Salt, emery, chrome, silver, zinc, copper, manganese, antimony.....	Cotton, tobacco, carpets, wools.....	Tobacco, carpets, wool, mohair, hides.....	.....	.....
Iron, coal, gold, silver, copper, lead, zinc, alumin, quarry products.....	Food products, textiles, iron, steel, leather, motor vehicles.....	Tobacco, machinery, food products, leather, textiles, iron and steel, copper, petroleum.....	2,509,148,000	4,378,928,000
Gold, lead, copper, lignite...	.....	Live animals, meat products, wool, hides.....	65,281,000	48,061,000
Gold, salt, coal, asphalt.....	Textiles, glass, matches.....	Coffee, rubber, cocoa, sugar, vanilla.....	24,464,000	13,652,000
Coal, iron, copper, gold, chrome.....	Weaving, tanning, flour milling.....	Maize, cattle, timber, wheat, swine.....	No export or	Import figures.

Name of State. Date of Admission. Area and Population.	First Settlement. By Whom. Date.	How Acquired.	Origin and Meaning of Name.	Motto and Meaning. Emblem. State Flower.
Alabama (1819). 51,998 sq. miles. 2,832,961 pop.	Fort St. Louis by French in 1702.	Part of Mississippi territory.	Indian, meaning here we rest.	Here we rest. Goldenrod.
Alaska (ter.) (1868). 586,400 sq. miles. 72,524 pop.	Three Saints by Russians in 1784.	Purchased from Russia in 1867.	*Al-ay-es-ka,* meaning the great country.	Forget-me-not.
Arizona (1912). 113,956 sq. miles. 499,261 pop.	Tucson by Spaniards about 1580.	Part of Mexican Cession and Gadsden Purchase.	Indian, meaning sand hills.	*Ditat deus:* God enriches. Sahuaro Cactus.
Arkansas (1836). 53,335 sq. miles. 1,949,387 pop.	Arkansas Post by French in 1685.	Part of Louisiana territory.	From a tribe of Indians. French and Indian word, meaning bow of smoky waters.	*Regnant populi:* The people rule. Apple blossom.
California (1850). 158,297 sq. miles. 6,907,387 pop.	San Diego by Spanish in 1769.	Part of Mexican Cession.	Spanish, meaning hot furnace.	*Eureka:* I have found it. Golden poppy.
Colorado (1876). 103,948 sq. miles. 1,123,296 pop.	Auraria by Americans in 1859.	Part of Louisiana Purchase and Mexican Cession.	Spanish, meaning colored red.	*Nil sine numine:* Nothing without God. Columbine.
Connecticut (1788). 4,965 sq. miles. 1,709,242 pop.	Windsor by the English in 1635.	Part of New England; one of the 13 original states.	Indian, meaning long river.	*Qui transtulit sustinet:* He who transplanted still sustains. Mountain laurel.
Delaware (1787). 2,370 sq. miles. 266,505 pop.	Near Wilmington by the Swedes in 1638.	One of the 13 original states.	Named in honor of Lord Delaware.	Liberty and independence. Peach blossom.
District of Col. (1791). 70 sq. miles. 663,091 pop.	Rome by English in 1663.	Territory ceded to government by Maryland and Virginia.		*Justitia omnibus:* Justice to all. American beauty rose.
Florida (1845). 58,666 sq. miles. 1,897,414 pop.	St. Augustine by Spanish in 1565.	Purchased from Spain in 1821.	Spanish, meaning blooming.	In God we trust. Orange blossom.
Georgia (1788). 59,265 sq. miles. 3,123,723 pop.	Savannah by English in 1733.	One of the 13 original states.	Named in honor of George II.	Wisdom, justice, moderation. Cherokee rose.
Hawaii (ter.) (1900). 6,407 sq. miles. 423,330 pop.	Spanish sailors, 1527.	By annexation.	Hawaii, meaning big island.	
Idaho (1890). 83,888 sq. miles. 524,873 pop.	Cœur d'Alene by Americans in 1842.	Part of Oregon territory.	Indian, meaning gem of the mountains.	*Esto perpetua:* May it last forever. Syringa.
Illinois (1818). 56,665 sq. miles. 7,897,241 pop.	Kaskaskia by French about 1720.	Part of Northwest territory.	Indian, meaning the men.	State sovereignty—national union. Wood violet.
Indiana (1816). 36,354 sq. miles. 3,427,796 pop.	Fort Vincennes by French about 1730.	Part of Northwest territory.	Means Indians' ground.	No motto. Tulip tree blossom.
Iowa (1846). 56,147 sq. miles. 2,538,268 pop.	Fort Dubuque by Americans in 1833.	Part of Louisiana Purchase.	Indian, meaning beautiful land.	Our liberties we prize and our rights we will maintain. Wild rose.
Kansas (1861). 82,158 sq. miles. 1,801,028 pop.	Fort Leavenworth by Americans about 1827.	Part of Louisiana Purchase.	Indian, meaning smoky water.	*Ad astra per aspera:* To the stars through difficulties. Sunflower.
Kentucky (1792). 40,598 sq. miles. 2,845,627 pop.	Harrodsburg by Americans in 1774.	Part of Virginia.	Indian, meaning dark and bloody ground.	United we stand, divided we fall. Goldenrod.
Louisiana (1812). 48,506 sq. miles. 2,363,880 pop.	Iberville by French in 1699.	Part of Louisiana Purchase.	Named in honor of Louis XIV.	Union, justice and confidence. Magnolia.
Maine (1820). 33,040 sq. miles. 847,226 pop.	Pemaquid by English in 1625.	Part of Massachusetts; one of the 13 original states.	Called the Mayne land in a charter from Charles I, 1639.	*Dirigo:* I direct. Pine cone and tassel.
Maryland (1788). 12,327 sq. miles. 1,821,244 pop.	St. Mary's by the English in 1634.	One of the original states.	Named in honor of Queen Henrietta Maria.	*Fatti maschii parole femine:* Manly deeds and womanly words. Blackeyed Susan.
Massachusetts (1788). 8,266 sq. miles. 4,316,721 pop.	Plymouth by English in 1620.	Massachusetts Bay Colony; one of the 13 original states	Indian, meaning the land of great hills.	*Ense petit placidam sub libertate quietem:* With the sword she seeks quiet peace under liberty. Mayflower (trailing arbutus).
Michigan (1837). 57,980 sq. miles. 5,256,106 pop.	Sault Sainte Marie by French in 1668.	Part of Northwest territory.	Indian, meaning great lake.	*Si quaeris peninsulam amoenam circumspice:* If thou seekest a beautiful peninsula, behold it here Apple blossom.
Minnesota (1858). 84,682 sq. miles. 2,792,300 pop.	At mouth of St. Croix and Minnesota rivers by Americans in 1805.	Part of Louisiana Purchase and Northwest territory.	Indian, meaning sky-tinted water.	*L'étoile du nord:* The star of the north. Moccasin flower.
Mississippi (1817). 46,865 sq. miles. 2,183,796 pop.	Biloxi by French in 1699.	Part of Louisiana and Georgia.	Indian, meaning great river, or father of waters.	*Virtute et armis:* By valor and arms. Magnolia.
Missouri (1821). 69,420 sq. miles. 3,784,664 pop.	Sainte Genevieve by French about 1735.	Part of Louisiana Purchase	Indian, meaning muddy.	*Salus populi suprema lex esto:* Welfare of people is the supreme law. Hawthorn.

Popular Name of State and People	Altitudes: Highest—Lowest		Capital and Population	Persons Per Sq. Mile	Products
	Where	Height			
Cotton State. Yallerhammers.	Cheaha Mountain Gulf of Mexico	2,407 ft. Sea level.	Montgomery 78,084	55+	Maize, oats, wheat, cotton, sugar, iron, lumber, manufactures.
	Mt. McKinley Pacific Ocean	20,300 ft. Sea level.	Juneau 5,748	.03—	Seals, salmon, gold, copper, silver, lumber, tin.
Baby state. Sunset state. Apaches.	San Francisco Peak Colorado R., Yuma Co.	12,611 ft. 100 ft.	Phoenix 65,414	4+	Copper, gold, silver, alfalfa, fruits, live stock.
Bear state. Toothpicks.	Blue Mt., Magazine Mt. Ouachita R., Ashley-Un Co.	2,800 ft. 55 ft.	Little Rock 88,039	37+	Cotton, lumber, maize, wheat, fruits, wool, coal, tobacco.
Golden state. Gold hunters.	Mt. Whitney Death Valley, Inyo Co.	14,496 ft. — 276 ft.	Sacramento 105,958	45—	Gold, silver, copper, lead, petroleum, borax, lumber, fruits, wine, olives.
Centennial state. Rovers.	Mt. Elbert Arkansas R., Prowers Co.	14,420 ft. 3,350 ft.	Denver 322,412	11—	Gold, silver, coal, copper, vegetables, fruits, live stock, wheat, beet sugar.
Nutmeg state. Land of steady habits. Wooden nutmegs.	Bear Mt. Long Island Sound	2,355 ft. Sea level.	Hartford 166,267	354+	Manufactures: Woolen, cotton, notions; tobacco, iron, granite.
Diamond state. Blue hen state. Blue hen's chickens.	Centreville Atlantic Ocean	440 ft. Sea level.	Dover 5,517	135+	Maize, wheat, tomatoes, fruits; manufactures: Leather, iron, steel, machinery.
	Tenleytown Potomac River.	420 ft. Sea level.	Washington 663,091	9,472+	Locally flour.
Everglade state. Land of the flowers. Fly-up-the-creeks.	Iron Mt. Atlantic Ocean	325 ft. Sea level.	Tallahassee 16,240	34+	Pineapples, oranges, tobacco rice, cotton, lumber, turpentine, resin, fish.
Empire state of South. Cracker. Buzzards.	Brasstown Bald Atlantic Ocean	4,768 ft. Sea level.	Atlanta 302,288	55—	Cotton, maize, rice, tobacco oysters, marble, clay; manufactures: Cotton, lumber, fertilizers.
	Mauna Kea Pacific Ocean	13,823 ft. Sea level.	Honolulu 154,476	66+	Sugar, fruits, rice, coffee hides.
Gem of the Mts.	Borah Peak Snake R.,Nez Perce Co.	12,655 ft. 720 ft.	Boise 26,130	6+	Gold, silver, copper, lead, lumber, flour, wheat, live stock.
Sucker state. Prairie state. Suckers.	Charles Mound Miss. R., Alexander Co.	1,241 ft. 279 ft.	Springfield 75,503	141—	Maize, wheat, oats, potatoes, hay, live stock, wool, meat, machinery, tools.
Hoosier state. Hoosiers	Greensfork Top Ohio R., Vanderburg Co.	1,240 ft. 316 ft.	Indianapolis 386,972	95+	Maize, wheat, tobacco, vegetables, fruits, wool, coal, clay, flour, machinery, cement.
Hawkeye state. Hawkeyes.	On W. boundary, Osceola Co. Mississippi R., Lee Co.	1,675 ft. 477 ft.	Des Moines 159,819	45+	Maize, wheat, potatoes, hay, live stock, butter, coal, lumber.
Sunflower state. Jayhawkers.	On W. boundary, Wallace Co. Verdigris R., Montgomery Co.	4,135 ft. 700 ft.	Topeka 67,833	22+	Maize, wheat, hay, live stock, fruits, coal, salt.
Blue Grass state. Dark and bloody ground. Corncrackers.	Big Black Mt. Miss. R., Fulton Co.	4,150 ft. 257 ft.	Frankfort 11,492	70+	Tobacco, hemp, wheat, cotton, live stock, lumber, coal.
Creole state. Pelican state. Creoles.	N. W. part of county Claiborne Gulf of Mexico	400 ft. Sea level.	Baton Rouge 34,719	52+	Cotton, maize, rice, sugar, lumber, oysters, salt.
Pine tree state. Old Dirigo. Foxes.	Mt. Katahdin Atlantic Ocean	5,267 ft. Sea level.	Augusta 19,360	28+	Hay, grains, dairying, potatoes, wool, granite, ice, lumber, manufactures, apples.
Old Line state. Crawthumpers.	Backbone Mt. Atlantic Ocean	3,340 ft. Sea level.	Annapolis 13,069	182+	Wheat, hay, maize, vegetables, fruits, fish, coal, wool, canned fruits, and vegetables.
Bay state. Old Colony. Bean eaters.	Mt. Greylock Atlantic Ocean	3,505 ft. Sea level.	Boston 770,816	537—	Manufactures: Woolen, cotton, boots, shoes; fish, tobacco.
Wolverine state. Auto state. Wolverines.	Porcupine Mts. Lake Erie	2,023 ft. 572 ft.	Lansing 78,753	92—	Maize, wheat, oats, fruits, vegetables, iron, copper, clay, lumber, machinery.
Gopher state. North star state. Gophers.	Mesabi Range Lake Superior	1,920 ft. 602 ft.	St. Paul 287,736	34+	Maize, wheat, oats, barley, flaxseed, wool, live stock, flour, iron, lumber.
Bayou state. Eagle state. Tadpoles.	Near Iuka Gulf of Mexico	780 ft. Sea level.	Jackson 62,107	47+	Cotton, maize, rice, tobacco, oysters, shrimps.
Ozark state. Iron Mt. state. Pukes.	Taum Sauk Mt. St. Francis R., Dunklin Co.	1,800 ft. 230 ft.	Jefferson City 24,268	55+	Maize, wheat, oats, cotton, swine, honey, zinc, lead, tobacco.

Name of State. Date of Admission. Area and Population.	First Settlement. By Whom. Date.	How Acquired.	Origin and Meaning of Name.	Motto and Meaning. Emblem. State Flower.
Montana (1889). 146,997 sq. mi. 559,456 pop.	Yellowstone River by Americans in 1809.	Part of Louisiana Purchase.	Named from the Spanish, meaning mountain land.	*Oro y plata:* Gold and silver. Bitter root.
Nebraska (1867). 77,520 sq. mi. 1,315,834 pop.	Bellevue by Manuel Lisa in 1805.	Part of Louisiana Purchase.	Indian, meaning shallow water.	Equality before the law. Goldenrod.
Nevada (1864). 110,690 sq. mi. 110,247 pop.	Genoa by Americans in 1849.	Part of Mexican Cession.	Spanish, meaning snow-clad.	All for our country. Sagebrush.
New Hampshire (1788). 9,341 sq. mi. 491,524 pop.	Little Harbor by English in 1623.	Part of Massachusetts; one of the 13 original states.	Named from Hampshire, England.	No motto. Purple lilac.
New Jersey (1787). 8,224 sq. mi. 4,160,165 pop.	Elizabethtown by English in 1664.	Part of New Netherlands; one of the 13 original states.	Named in honor of the governor of Jersey Island.	Liberty and prosperity. Violet.
New Mexico (1912). 122,634 sq. mi. 531,818 pop.	Santa Fe by the Spanish about 1537.	Part of Mexican Cession.	Spanish, from Mexico, the place of Aztec, God of War.	*Crescit eundo:* It grows as it goes. Yucca.
New York (1788). 49,204 sq. mi. 13,479,142 pop.	New York by the Dutch about 1613.	One of the 13 original states.	Named in honor of the Duke of York.	*Excelsior:* Higher. Rose.
North Carolina (1789). 52,426 sq. mi. 3,571,623 pop.	On the Albemarle Sound by English in 1653.	One of the 13 original states.	Named in honor of Charles II.	*Esse quam videri:* To be rather than to seem. Goldenrod.
North Dakota (1889). 70,837 sq. mi. 641,935 pop.	Pembina by English in 1810.	Part of Louisiana Purchase.	Indian, meaning allied.	Liberty and union, now and forever, one and inseparable. Wild prairie rose.
Ohio (1803). 41,040 sq. mi. 6,907,612 pop.	Marietta by Americans in 1788.	Part of Northwest territory.	Indian, meaning beautiful river.	*Imperium in imperio:* An empire within an empire. Scarlet carnation.
Oklahoma (1907). 70,057 sq. mi. 2,336,434 pop.	Guthrie by Americans in 1890.	Part of Louisiana Purchase.	Indian, Choctaw, meaning red people.	*Labor omnia vincit:* Labor conquers all things. Mistletoe.
Oregon (1859). 96,699 sq. mi. 1,089,684 pop.	Astoria by Americans in 1810.	Part of Oregon territory.	Indian, river of the west. Spanish, wild marjoram.	*Alis volat propriis:* She flies with her own wings. Oregon grape.
Pennsylvania (1787). 45,126 sq. mi. 9,900,180 pop.	New Gottenburg by the Swedes in 1643.	Granted to Penn by Charles II; one of the 13 original states.	Latin, meaning Penn's woods, in honor of Wm. Penn.	Virtue, liberty and independence. Mountain Laurel.
Philippines (1899). 115,026 sq. mi. 16,356,000 pop.	Discovered by Magellan, 1521. Annexed to Spain, 1569.	By cession from Spain.	Spanish for Philip II. of Spain.	
Puerto Rico (1899). 3,435 sq. mi. 1,869,255 pop.	Discovered by Columbus, 1493. Ponce de Leon first settled, 1510.	By cession from Spain.	Spanish, meaning rich port.	
Rhode Island (1790). 1,248 sq. mi. 713,346 pop.	Providence Plantations by English in 1636.	Providence and Rhode Island Plantations.	Rhodes, an island in the Aegean Sea.	Hope. Violet.
South Carolina (1788). 30,989 sq. mi. 1,899,804 pop.	On the Ashley River by English in 1670.	One of the 13 original states.	Named in honor of Charles II.	*Animis opibusque para:* Prepared in spirit and wealth. Yellow Jessamine.
South Dakota (1889). 77,615 sq. mi. 642,961 pop.	Southeast part by Americans in 1859.	Part of Dakota territory.	Indian, meaning allied.	Under God the people rule. Pasque flower.
Tennessee (1796). 42,022 sq. mi. 2,915,841 pop.	Fort Loudon by English in 1756.	Part of North Carolina.	Indian, meaning river with the great bend.	Agriculture, commerce. Passion flower.
Texas (1845). 265,896 sq. mi. 6,414,824 pop.	Taleta by Spanish in 1682.	By annexation.	Named from tribe of Indians.	Friendship. Bluebonnet.
Utah (1896). 84,990 sq. mi. 550,310 pop.	Salt Lake City by Americans in 1847.	Part of Mexican Cession.	Named from tribe of Indians.	Industry. Sego lily.
Vermont (1791). 9,564 sq. mi. 359,231 pop.	Fort Saint Anne by French in 1665.	New Hampshire Grants.	French, meaning green mountain.	Freedom and unity. Red clover.
Virginia (1788). 42,627 sq. mi. 2,677,773 pop.	Jamestown by the English in 1607.	One of the 13 original states.	Named in honor of Elizabeth, the Virgin Queen.	*Sic semper tyrannis:* Thus always to tyrants. American dogwood.
Washington (1889). 69,127 sq. mi. 1,736,191 pop.	Columbia River by English in 1811.	Part of Oregon territory.	Named in honor of George Washington.	*Al-ki:* By and by. Rhododendron.
W. Virginia (1863). 24,170 sq. mi. 1,901,974 pop.	Upshur Co. by Americans in 1764.	Part of Virginia.	Named from Virginia.	*Montani semper liberi:* Mountaineers always freemen. Rhodòdendron.
Wisconsin (1848). 56,066 sq. mi. 3,137,587 pop.	Green Bay by French in 1745.	Part of Northwest territory.	Indian, meaning wild, rushing channel.	Forward. Violet.
Wyoming (1890). 97,914 sq. mi. 250,742 pop.	Fort Laramie by Americans in 1834.	Part of Louisiana Purchase and Mexican Cession.	Indian, meaning large plain.	*Cedant arma togae:* Let arms yield to the gown. Indian paintbrush.

Popular Name of State and People	Altitudes: Highest—Lowest		Capital and Population	Persons Per Sq. Mile	Products
	Where	Height			
Mountain. Stub Toe. Bonanza.	Granite Peak	12,850 ft.	Helena 15,056	4—	Wheat, wool, live stock, fruit, oats, lumber, copper, lead, silver.
Bug eaters.	Kootenai R., Flathead Co.	1,800 ft.			
Antelope. Black water state.	S. W. part of County Banner.	5,300 ft.	Lincoln 81,984	17+	Maize, wheat, oats, live stock, chicory, sugar beets, fruits.
Antelopes. Cornhuskers.	S. E. corner of state, Richardson Co.	825 ft.			
Silver state.	East Peak	13,145 ft.	Carson City 2,478	1+	Gold, silver, copper, zinc, wool, live stock.
Sagebrush state.	Colorado R., Clark Co.	470 ft.			
Sage hens.					
Granite state.	Mt. Washington.	6,288 ft.	Concord 27,171	54+	Hay, maize, potatoes, oats, apples, granite, manufactures.
Granite boys.	Atlantic Ocean.	Sea level			
Jersey blue state.	High Point.	1,805 ft.	Trenton 124,697	554—	Market gardening, fruits, fisheries; manufactures: Textiles, machinery, iron, steel.
Garden state.	Atlantic Ocean	Sea level			
Jersey blues.					
Clam catchers.					
Sunshine state.	North Truchas Peak	13,306 ft.	Santa Fe 20,325	4+	Cereals, fruits, vegetables, live stock, lumber, copper, coal, turquoises.
Spanish state.	Red Bluff	2,876 ft.			
Empire state.	Mount Marcy	5,344 ft.	Albany 130,577	283—	Market gardening, fruits, maize, wheat, dairying; manufactures: Clothing, textiles.
Excelsior state.	Atlantic Ocean	Sea level			
Knickerbockers.					
Old North state.	Mount Mitchell	6,684 ft.	Raleigh 46,897	73+	Cotton, maize, tobacco, wheat, shad, oysters, lumber.
Turpentine state.	Atlantic Ocean	Sea level			
Tar Heels.					
Flickertail.	Black Butte	3,468 ft.	Bismarck 15,496	9+	Wheat, oats, barley, flaxseed, live stock.
Sioux state.	Pembina	790 ft.			
Tuckoes.					
Buckeye state.	Campbell Hill	1,550 ft.	Columbus 306,087	169+	Maize, wheat, oats, tobacco, live stock, wool, coal, iron, petroleum, salt; manufactures.
Buckeyes.	Ohio R., Hamilton County	425 ft.			
Sooner.	Black Mesa	4,978 ft.	Oklahoma City 204,424	33+	Maize, wheat, oats, cotton, flax, live stock, petroleum.
	Red R., McCurtain Co.	300 ft.			
Beaver. Web foot.	Mount Hood	11,253 ft.	Salem 30,908	11+	Lumber, live stock, wheat, hay, fruits, hops, wool, salmon, gold, silver.
Web feet.	Pacific Ocean	Sea level			
Keystone. Steel. Coal.	Negro Mountain	3,213 ft.	Harrisburg 83,893	220+	Manufactures: Steel, machinery, textiles; coal, petroleum, natural gas, iron, grains, wool.
Pennanites.	Delaware R.	Sea level			
Leatherheads.					
	Mount Apo	9,610 ft.	Manila 623,362	142+	Hemp, sugar, coffee, rice, fruits, tobacco, valuable woods.
	Pacific Ocean	Sea level			
	Luquillo Mountains.	3,532 ft.	San Juan 114,715	544+	Coffee, sugar, tobacco, fruits, vegetables, valuable woods.
	Atlantic Ocean	Sea level			
Little Rhoddy.	Durfee Hill	805 ft.	Providence 253,504	668+	Manufactures: Worsted, cotton, jewelry, machinery, rubber.
Plantation state.	Atlantic Ocean	Sea level			
Gunflints.					
Palmetto state.	Sassafras Mt.	3,548 ft.	Columbia 62,396	62+	Cotton, tobacco, rice, oysters, turpentine, maize, lumber.
Weasels.	Atlantic Ocean	Sea level			
Sunshine state.	Harney Peak	7,242 ft.	Pierre 4,322	8+	Maize, wheat, oats, flax, potatoes, live stock, wool, gold, silver, tin.
Coyote state.	Big Stone Lake	962 ft.			
Volunteer state.	Clingman's Dome	6,642 ft.	Nashville 167,402	74+	Maize, wheat, cotton, tobacco, live stock, coal, iron, marble.
Butternuts.	Mississippi R., Shelby Co.	182 ft.			
Lone star. Beef.	El Capitan	8,700 ft.	Austin 87,930	24+	Cotton, corn, oats, wheat, petroleum, citrus fruits, vegetables, cattle, wool, rice.
Beefheads.	Gulf of Mexico	Sea level			
Deseret. Beehive.	Kings Peak	13,498 ft.	Salt Lake City 149,934	6+	Gold, silver, copper, lead, coal, vegetables, fruits, wheat, oats, live stock, wool.
Mormon state.	Beaverdam Ck., Wash. Co.	2,000 ft.			
Green mountain.	Mount Mansfield	4,393 ft.	Montpelier 8,006	39+	Hay, cereals, potatoes, lumber, marble, dairying, maple sugar, syrup, manufactures.
Green mountain boys.	Lake Champlain	95 ft.			
Old dominion.	Mount Rogers	5,719 ft.	Richmond 193,042	62+	Maize, wheat, oats, tobacco, cotton, oysters, coal, iron.
Mother state.	Atlantic Ocean	Sea level			
Beagles.					
Evergreen.	Mount Ranier	14,408 ft.	Olympia 13,254	24+	Lumber, coal, wheat, oats, fruits, salmon, live stock.
Chinook.	Pacific Ocean	Sea level			
Panhandle state.	Spruce Knob.	4,860 ft.	Charleston 67,914	79+	Maize, wheat, fruits, cattle, sheep, lumber, coal, petroleum, natural gas.
Mountain state.	Potomac R., Jefferson Co.	240 ft.			
Panhandlers.					
Mountaineers.					
Badger state.	Rib Hill	1,940 ft.	Madison 67,447	57—	Maize, oats, barley, wheat, hay, potatoes, fruits, dairying, iron, lumber.
Copper state.	Lake Michigan	581 ft.			
Badgers.					
Equality state.	Gannett Peak	13,785 ft.	Cheyenne 22,474	2.5	Wool, timber, coal, copper, petroleum.
	B. Fourche R., Crook Co.	3,100 ft.			

State	Area Sq. Miles	Population	Total Imports	Total Exports	Imports from United Kingdom	Exports to United Kingdom
**United Kingdom*	94,297	46,213,169	£945,000,000	£760,000,000	.....	.....
Asia:						
India	1,808,679	352,837,778	300,000,000	270,000,000	47,681,000	92,939,000
Ceylon	25,332	5,312,548	26,000,000	25,000,000	10,322,000	3,673,000
Cyprus	3,572	376,529	1,500,000	1,000,000	169,000	384,000
Bahrein Islands	250	120,000	.....	.....	.....	.....
Straits Settlements	1,356	1,372,568	70,000,000	600,000,000	11,961,000	6,725,000
Federated Malay States	27,540	2,125,274	12,000,000	16,000,000	2,323,000	893,000
Other Malay States	22,276	1,739,999	.....	.....	.....	.....
North Borneo	29,500	270,233	2,500,000	3,000,000	218,000	61,000
Hong Kong	391	1,028,619	82,000,000	86,000,000	666,000	6,358,000
Sarawak and Brunei	52,226	473,035	.....	.....	.....	.....
Palestine	10,429	1,466,536	14,632,000	5,020,368	.....	.....
Aden	112,000	48,338	.....	.....	.....	.....
Africa:						
Cape Province	277,169	3,635,100			11,309,000	12,125,000
Transvaal	110,450	3,535,100			53,000	6,728,000
Natal	35,284	2,018,000			4,785,000	6,361,000
Basutoland	11,716	660,650	58,000,000	66,000,000	.....	16,000
Orange Free State	49,647	790,800			.....	565,000
South West Africa	317,725	292,401			5,000	21,000
Bechuanaland	275,000	265,756			40,000	4,000
Rhodesia	440,653	2,761,885	6,000,000	5,000,000	493,000	959,000
Tanganyika	360,000	5,270,484	1,730,000	1,300,000	365,000	371,000
Kenya	224,960	3,365,880	7,000,000	5,000,000	1,295,000	1,567,000
Uganda	110,300	3,745,165	1,300,000	2,000,000	184,000	116,000
Nyasaland	37,374	1,679,977	600,000	500,000	586,000	294,000
Zanzibar	1,020	235,428	3,000,000	3,000,000	400,000	319,000
Sudan, Anglo-Egypt	969,600	6,342,477	6,000,000	2,000,000	1,149,000	812,000
Somaliland	68,000	344,700	300,000	350,000	.....	5,000
Cameroons	34,081	857,675	.....	.....	.....	.....
Nigeria	372,559	20,588,840	11,000,000	8,000,000	6,510,000	7,015,000
Gold Coast	90,122	4,038,917	8,000,000	7,000,000	1,921,000	4,322,000
Sierra Leone	27,925	1,768,480	2,000,000	2,000,000	795,000	917,000
Gambia	4,068	199,520	1,000,000	1,000,000	534,000	306,000
Mauritius	720	415,462	9,000,000	11,000,000	3,908,000	1,015,000
Seychelles	156	31,486	100,000	120,000	68,000	33,000
St. Helena	47	4,474	50,000	15,000	19,000	34,000
Ascension	34	159				
America:						
Ontario	412,582	3,690,000				
Quebec	594,434	3,140,000				
Nova Scotia	21,068	512,846				
New Brunswick	27,985	408,219				
Prince Edward Island	2,184	92,000				
British Columbia	366,255	761,000	160,000,000	159,000,000	54,895,000	27,935,000
Manitoba	246,512	700,139				
Alberta	255,285	772,782				
Saskatchewan	251,700	921,785				
N. W. Territory	1,309,682	9,723				
Yukon Territory	207,076	4,230				
Newfoundland	42,734	294,800	4,000,000	5,000,000	1,938,000	598,000
Labrador	110,000	4,716	.....	.....	.....	.....
Jamaica	4,450	1,173,645	6,000,000	4,000,000	.....	.....
Bahama Islands	4,404	67,720	1,000,000	400,000	22,000	937,000
Leeward Islands	727	92,726	1,600,000	2,000,000	.....	.....
Windward Islands	821	256,637	700,000	650,000	.....	.....
Barbados	166	193,082	3,000,000	1,500,000	.....	.....
Trinidad and Tobago	1,976	490,247	7,000,000	5,000,000	.....	.....
Bermuda	19	31,380	1,400,000	250,000	3,000	397,000
British Guiana	89,480	337,521	4,000,000	4,000,000	851,000	1,010,000
British Honduras	8,598	57,767	700,000	650,000	119,000	192,000
Falkland Islands and Georgia	5,618	3,908	1,000,000	3,500,000	374,000	152,000
Australasia:						
New South Wales	309,432	2,770,348				
Victoria	87,884	1,887,278				
South Australia	380,070	597,045				
Queensland	670,500	1,015,927	101,000,000	130,000,000	64,863,000	65,732,000
West Australia	975,920	465,916				
Tasmania	26,215	241,576				
New Zealand	103,934	1,640,901	43,000,000	45,000,000	43,522,000	16,701,000
Northern Territory	523,620	6,973	.....	.....	.....	.....
New Guinea	93,000	666,000	.....	.....	.....	.....
Papua	90,540	300,000	500,000	180,000	9,000	13,000
Oceania:						
Fiji	7,083	210,518	1,700,000	2,500,000	203,000	209,000
Pacific Islands	17,186	211,863	1,000,000	1,000,000	60,000	16,000

* Includes only Northern Ireland.

EMPIRE.

Agricultural Products	Mineral Products	Manufactured Products
Sheep, wool, wheat, barley, oats.	Manganese, sandstone, iron, coal, chalk, gravel, sand.	Pottery, cotton, woolens, iron, steel, machinery, cutlery.
Cotton, rice, tea, cane, rubber, livestock.	Salt, coal, mica, silver, petroleum.	Shawls, carpets, cotton, silk.
Cocoanuts, tea, rubber, cocoa.	Gold, plumbago, gems.	Weaving, jewelry, pottery, lacquer work.
Grapes, silk.	Marble, gypsum, asbestos.	Wine, cotton cloth, linseed oil.
Rice, coffee, sugar.	Pearl fishing.	Sailcloth.
Tapioca, sugar, rubber, pepper, rice, spices.	Tin, gold, iron, copper, lead.	.....
Rice, sugar, spices, rubber.	Coal, petroleum, iron, gold.	Rope, sugar, shipbuilding, knit goods.
.....	.....	.....
Sago, pepper, rubber, rice.	Petroleum, gold.	.....
Olives, figs, fruits, grapes.	Salt, gypsum.	Wine, soap, olive oil, cement.
Tobacco.	.....	Cigarettes.
Sheep, cattle, maize, mohair.	Diamonds, gold, copper.	.....
Tobacco, livestock, cattle, maize, sheep.	Gold, diamonds, coal, tin, copper.	Pottery, iron, brass, bricks, breweries.
Sugar, fruit, tea, vegetables.	Silver, coal, asbestos, gold, lead.	Sugar, woolens.
Kaffir corn, sheep, horses, wheat.	.....	.....
Oats, rye, cattle, sheep, wheat.	Coal, diamonds.	Flour, soap, salt.
Cattle, sheep, goats.	Copper, iron.	.....
Cereals, maize, cattle.	Gold, diamonds, coal, copper.	.....
Maize, fruit, lemons, wheat, sheep.	Gold, coal, chrome, asbestos, antimony.	Dairy and meat products, oil pressing.
Ivory, rubber, cotton, coffee.	.....	.....
Coffee, sugar, cotton, cattle.	Copper, gold, coal, lead, salt, mica, iron.	.....
Sugar, cotton, rubber, cocoa.	Iron ore, quartz, copper.	.....
Tobacco, tea, cotton, sheep, pigs.	.....	.....
Cloves, coconuts, copra.	.....	.....
Sorghum, ivory, cotton, dates.	Copper, iron ore, lignite, gold.	.....
Skins, hides, sheep, cattle, gum.	.....	.....
Cocoa, coffee, vanilla, spices.	.....	.....
Hides, livestock, palm oil, rubber.	Tin, lead, iron ore, coal, silver.	Tanning, iron and lead works.
Timber, oils, rubber.	Gold, manganese, diamonds.	.....
Ginger, palm oil, cola nuts.	Gold, diamonds.	.....
Palm oil, nuts.	.....	.....
Sugar, coconut oil, hemp.	.....	.....
Vegetables, fruits.	.....	.....
Fruits, flax, vegetables, sea turtles.	.....	Lace making.
Alfalfa, dairying, cereals, sheep, swine.	Gold, nickel, copper, iron, silver.	Iron, cement, wood products, oil refining.
Timber, livestock, potatoes, cereals.	Stone, feldspar, asbestos, mica.	Clothing, chemicals, tanning, grist products.
Apples, timber, cereals, potatoes, fishing.	Coal, gypsum, gold, limestone.	Canning, iron, steel, coke, oil refining.
Livestock, potatoes, hay, cereals, timber.	Antimony, gypsum, nat. gas, coal, iron.	Food, timber, stone products, glass.
Silver foxes, potatoes, dairying, oats, barley.	.....	.....
Timber, wheat, oats, vegetables, barley.	Gold, coal, iron, copper.	Wood and dairy products, wood pulp.
Wheat, timber, dairying, cereals.	Gypsum, copper, quarry products.	Wood and dairy products, food, glass.
Timber, grains, livestock, wool, cattle.	Natural gas, coal, petroleum.	Meat packing, flour, cement.
Livestock, wheat, potatoes.	Gold, petroleum, coal.	.....
Timber, hay, cabbage, turnips.	Coal, copper, iron ore.	.....
Rye, barley.	Gold, silver, radium, bauxite.	.....
Fishing, timber.	Iron ore, copper, pyrites, coal, lead.	Canning, sawmills, paper, pulpwood.
Fishing, timber.	.....	.....
Fruits, coconuts, sugar, coffee.	.....	Rum, dairy and food products.
Sisal, sponges, tomatoes, sugar, pineapples.	Salt.	Pineapple canning, sisal factories.
Fruits, sugar, cotton, cocoa, tobacco.	Salt.	Sugar refining, molasses.
Sea island cotton, arrowroot, nutmeg, mace.	.....	Sugar refining, molasses, rum.
Sugar, cotton, tamarinds.	.....	Sugar refining, rum, molasses.
Cotton, rubber, cocoa, tobacco.	Asphalt, petroleum.	Gasoline, kerosene, asphalt.
Onions, lily bulbs, potatoes, tomatoes.	.....	Food products.
Sugar, rice, copra.	Mica, gold, diamonds, manganese.	Breweries.
Chicle, bananas, oranges, sugar, mahogany.	.....	Tortoise shell, lumber products.
Sheep, wool, seals, whales.	.....	Wool products, whale oil and products.
Wheat, sheep, wool, dairy products, coffee, bananas, fruits, cattle, swine, horses, sugar, vineyards, hay, corn.	Gold, coal, iron, copper, silver, antimony.	Meat packing and products, hides, tallow, leather products, chemicals, boots, shoes, iron, steel, dairy products.
Wheat, fruits, oats, hay, wool.	Copper, gold, silver, lead, tin.	
Timber, cattle, sheep, cereals.	Coal, silver, gold, tungsten.	Lumber, meat and dairy products, shoes.
Sheep, wool, cattle.	Unexplored mineral wealth.	.....
Coffee, coconuts, cacao, fruits, sugar, rubber.	Gold, silver, copper.	Mats, nets, pottery.
Rice, rubber, sisal, bananas.	.....	Sugar, lumber, sisal fibre.
Pineapple, copra, rubber, sugar.	.....	Food products.

FIFTEEN LARGEST CITIES OF THE UNITED STATES

NEW YORK CITY.

New York City, located on the banks of the Hudson river on New York bay is probably the mecca of more people in the United States than any one other place on the globe. Here, we find the largest population—7,454,995—of any city in the country; a great polyglot people, 40% foreign born from sixty different nations; the greatest skyscrapers of iron, brick and cement in the world; the richest financial center in the United States, ranking with London; a great commercial city controlling roughly 40% of the imports and exports of the country; a workshop that produces goods equal to one-third of all goods of our land; and a great social, civic and art center.

The city is located at the mouth of the Hudson river. This being a sunken river, gives it one of the best harbors in the world. The city, which was once concentrated on the small tip of Manhattan Island, the point of land between the Hudson river and the East river has now spread up the mainland to West Chester and Yonkers, the Bronx and especially over to Brooklyn which has been one of the areas for taking care of New York's fast growing population. In 1898, the city was reorganized and the following five boroughs were created:

Manhattan Island, lying between the Hudson, Harlem and East rivers, which includes the heart of the business, financial and social section of the city, together with Blackwells, Randalls, Wards, Governors, Beddoes and Ellis islands.

Bronx on the mainland of Manhattan, extending to Mt. Vernon and New Rochelle, including the islands of Brothers, North and South Rickers, Hunters City and Harts.

Brooklyn, the third city in population in the U. S., is on the southwest extremity of Long Island.

Queens running from Brooklyn north and northeast, embraces the smaller municipalities of Long Island City, Newton, College Point, Corona, Whitestone, Flushing, Jamaica, and Far Rockway.

Richmond is composed of Staten Island, Shouter Island, Poalls Island and Meadow Island.

The first white man ever known to have touched this area was Giovanni da Verrazano, an Italian, in 1524. In 1609, Henry Hudson, an Englishman in the service of the Dutch East India Company, sailed to this country in the search for a shorter passage to India and because of icebergs to the north, he pressed South, and in September of that year his ship, the Half Moon, sailed up the river that now bears his name. Because of the possibilities for fur trading, companies were formed and sent over to this country, one of the first under the leadership of Adrian Block. In 1623, thirty families settled on the island of Manhattan, which they had bought from the Indians for $24 in beads, cloth and trinkets. In the meantime, the English were claiming this area because of the explorations of John Cabot, and in 1664 in the reign of Charles II, a force was sent over that took the town and fort, ran up the English flag and called it New York, after the king's brother, James the Duke of York, to whom the land had been granted.

In 1665, the city government was organized and by 1746 the population numbered 12,000. The early growth of New York City was slow, in contrast to such cities as Philadelphia and Baltimore, which were surrounded by land better adapted to agriculture. In 1825, however, the Erie Canal was completed, connecting the Great Lakes with the Atlantic Ocean by the way of the Mohawk and Hudson rivers. The raw products of the West came East to be exchanged for manufactured products and food. New York City became the trading counter and re-shipping port, thus laying the foundation for the present commercial supremacy of the city.

The city is the banking center of the United States and ranks with London as a money market. It is the central stock and bond exchange of our country. In the city are the great banking houses of Morgan, the National City Bank, Guaranty Trust, and a host of others—the figures being 44 national, 48 state, 54 savings and 35 trust banks, these numbers not including branches.

The harbor facilities include 578 miles of water frontage and excellent dock facilities. Figures show a yearly total of 74,182 ships entering the harbor with 99 ocean steamship lines having headquarters in the metropolis. In 1924 the foreign trade figures of the city were $1,657,685,331 for exports and imports to the value of $1,689,998,112, which compares favorably with the figures for the entire country, exports $4,590,981,958 and imports $3,610,552,566. The principal products shipped are: iron and steel products, copper, meat, bread stuffs and mineral oils.

As well as being a commercial city, New York is a great manufacturing city, for it fabricates more goods than any other city in the United States. The goods produced are not so much for world consumption as to feed the needs of the great metropolis. The clothing industry is one of the exceptions to this rule, one-half of the clothing worn by the people of the United States is made on the island of Manhattan and neighboring boroughs. In 1921, the figures were $326,837,298, for men's cloth, and the value on women's was $759,627,929. There are in the city 26,801 establishments turning out products valued at $4,328,187,499. Other important industries with their values are: printing and publishing—$252,475,386; bread and bakery products—$166,147,715; millinery—$163,481,725; tobacco and cigarettes—$147,498,906; slaughtery and meat packing—$132,264,732; fur goods—$100,217,230; and boots and shoes—$68,283,896. Other industries are sugar refining, preparation of coffee and spices, oil refining, drugs and chemicals, etc.—all the industries that make for the well being of a large city.

The problem of transportation is a very serious one due to the congestion on Manhattan island, where the business district is, and due also to the fact that it is a narrow island. Four bridges connect Long Island with the city proper,

as well as three pairs of tunnels. The bridges are Brooklyn Bridge, 6,016 feet long, Manhattan Bridge, 6,855 feet, Williamsburgh Bridge, 7,308 feet and Queensborough Bridge, 7,499 feet. The other bridge is the Hell Gate Bridge from Long Island back to the mainland at the northern edge of the city, which enables trains from New England to proceed directly west. Tubes connect New York with the Jersey side, a vehicle tunnel is in process of construction and plans are now proposed for a traffic bridge over the Hudson which will be an outstanding engineering feat. To take care of the thousands of commuters pouring in and out of the city, subways have been built honeycombing the entire island, greatly relieving surface traffic.

With the growth of the city commercially, centres of education, art and amusement have been created, bringing in its train, beautiful parks and public buildings, such as the Zoological Gardens, the Art Museum, the Custom's House, the Morgan Library, the New York Public Library, the Library at Columbia, the American Museum of Natural History; schools, such as the College of the City of New York, New York University, Columbia University, Hunter College, Fordham College, Manhattan College, College of St. Francis Xavier, Union Theological Seminary, College of Physicians and Surgeons and the Rockefeller Institute; churches of the type of St. Patrick's or the Cathedral of St. John the Divine; monuments on the order of Grant's Tomb, the Soldiers and Sailors Monument, statue of Jeanne D'Arc, and the Washington Arch; amusement places of such fame as the Hippodrome, Madison Square Garden, or any of the many newer theatres; holsteries such as the Waldorf-Astoria, the Ritz-Carlton, or the Plaza; restaurants of such fame as the Delmonico's or Sherry's; and parks of which the city has many, Central Park on Manhattan, Riverside Park along the Hudson, Prospect Park in Brooklyn and Pelham Bay Park to the north of the city.

New York is a city of huge finances, many industries with large total value, the tallest office buildings in the world, large and well known educational institutions, the art, literary, and dramatic centers on this side of the Atlantic, the amusement center of the States—it is a city of great heights and depths—a city of great contrasts.

New York will continue to grow, to expand out in the suburbs and up into the air and her foreign trade will lessen in percentage of expansion but the city for a long time, will be the most important in this United States and probably in the world.

CHICAGO.

Chicago bids fair to become not only the largest city in the United States, but also the world. This city is situated in the heart of our great agricultural, forestry and mineral resources, and on the greatest body of fresh water in the world, the Great Lakes. The Welland Canal around Niagara Falls now has a depth of fourteen feet, but plans and appropriations have been made by Canada, awaiting now similar action by the United States, to deepen it to thirty-five feet, which will make Chicago a seaport, open to ocean going vessels. Then, with an ocean harbor, proximity of natural resources and manufacturing industries, and the railroad center of the United States, it must necessarily mean rapidity of growth.

In order to get from the Great Lakes to the Mississippi river, it was necessary to portage over the area now Chicago and thus it became a fairly well traveled route. Joliet and Pere Marquette went over this route in 1673 and again in 1674. In 1830, Chicago was a hamlet of log houses, with a population of about one hundred persons, engaged in fur trade with the Indians and outfitting the trappers. In 1837 came the Illinois and Michigan canal which gave the city its first big boom and in 1833 came the Congressional appropriation for harbor improvements. Shortly after this came the first railroads, short lines at first which stimulated lake traffic, and then the through lines which enabled the western producer to get his product to market quickly. In 1871 came the big Chicago fire, starting Sunday evening and extinguished by a rain on Monday evening, burning over 2,024 acres of buildings, destroying property valued at $187,000,000 and taking the lives of 300 or more people. A new and much finer Chicago rose from the ashes in a little over two years, a tribute to the spirit of the West. The city grew naturally on the west bank of Lake Michigan until in less than 100 years, it has expanded from a small town of 100 persons to the second largest city in the United States with a population of 3,396,808.

The city is both a great commercial and industrial center. The great mass of raw materials which are produced within a radius of a few hundred miles are concentrated on Chicago as a distributing point. It is the greatest live stock center in the world and the city from which our great slaughtering and meat packing houses carry on their business. The wheat elevators here, cannot be equaled in size and number anywhere else in the world. The Chicago Board of Trade is the great buying and selling organization for wheat and other grains of the country. Other products distributed from here are corn, oats, barley, rye, hay and forage crops, lumber and lumber products, iron and copper ore from northern Minnesota and Michigan and the smaller fruits and vegetables. Then, it also serves as a wholesale and jobbing center for the middle west, as witnessed by the large number of mail-order houses that do a tremendous business.

Chicago is probably the greatest rail center in the world; no east to west line in the northern area of the country but what has a terminal in this city. There are twenty-seven companies and thirty-two main lines and terminals located in the town and it is estimated that 1,500 trains go in and out of the city daily. The harbor facilities are excellent and the yearly tonnage ranks well with many seaport cities.

Industrially the city is very active, has 8,860 establishments and a total yearly product value of $2,485,918,374. Some of the chief products with their values follow; slaughtering and meat packing—$452,571,889; men's clothing—$165,429,346; women's clothing—$42,896,568; printing of books—$126,517,808; of periodicals—$90,702,894; foundry and machine shop products—$91,-

981,082; bread and bakery products—$75,694,250; electrical machinery—$74,114,877; car and steam railroad supplies—$60,013,700; iron and steel (products not rolled)—$50,514,337; and furniture $42,309,167.

One of the reasons for the great growth of Chicago from a civic as well as from an industrial point of view is due to the energy, the push and the aggressiveness of the people who have gone after and accomplished those things which they desired for their city and state. The great park system of 39,154 acres with its 74.25 miles of connecting boulevards, attests to this spirit. There are twenty-four parks with city play grounds, and the city has acquired land outside the corporate limits to provide for future breathing spaces for its fast increasing population. A municipal pier costing $3,000,000 with a huge auditorium was built by the people to house big conventions that come to the city.

The public buildings include the great Chicago Public Library with 650,000 volumes, which cost around $2,000,000, the Newberry Library, that exceeds the Public Library in cost and beauty and the Historical Society building. Among the educational institutions are the Chicago Art Institute, the Chicago Law Institute, the University of Chicago, Northwestern University, Lewis Polytechnic Institute, Armour Institute and Loyola University.

This great city is bound to progress, so thoroughly is it based on the natural factors of raw material, transportation and nearness to market combined with the indominable energy and push of the middle-westerners.

PHILADELPHIA.

The "Quaker City" is one of the World's Greatest Workshops, producing manufactured goods that are sold in both hemispheres. The city is located on the Delaware River and the "fall line," that territory where the harder rock of the Piedmont merges into the softer soil of the Coastal Plain and rivers flowing from one to the other have worn away the softer material and a water fall is the result. These small falls have laid the basis for much of the manufacturing in the area. Philadelphia is a great overgrown town, spread out in three directions with an area of 132.7 sq. miles.

Originally the home of the Delaware Indians, the area was settled by the Swedes and the English (mostly Quakers) about 1680. In the next year William Penn obtained his charter as a proprietor and under his guidance and jurisdiction the town grew rapidly as a grain and lumber market. With the good agricultural background the city prospered and was even with New York City until the opening of the Erie Canal in 1825 but Philadelphia being shut off from the West by the Alleghanies suffered in comparison. The original settlers were artisans of the first class and the textile industry soon started and Germantown, a suburb of the city, was the home of the knitting industry in the U. S. With the discovery of iron ore and the discovery of anthracite coal as a fuel the iron industry developed, which is one of the important manufactured products of the city. The first and second Banks of the United States were both located in Philadelphia in 1782 and 1816 respectively. This city with its old traditions, both in industry as well as the social life, has grown into a great workshop but all the while maintaining these same traditions. There probably is no city where the son follows the footsteps of his father and where industry is carefully protected and handed down from one generation to the next, as in Philadelphia. This has been bad oftentimes in a business way because it has meant stagnation.

The factors that have made Philadelphia a city of 1,931,334 people and a great manufacturing city are the Delaware River with its 90 foot channel, skilled labor, especially the Scotch and English artisans and their descendants, and power consisting of water power, anthracite and bituminous coal. The number of industries are listed at 6,788 and the total value of products $1,537,327,972. Among the leading industries is the textile industry; this city producing more than any other city with 1/9 of the hosiery, 1/3 of the carpets, 1/5 of the hats and ⅛ of the woolens and worsteds of the United States; with values of $77,605,380 for knit goods; $64,453,298 for worsteds and woolens, and $33,785,499 for cotton goods. Iron and steel products comprise the second group of products particularly the fabrication of products, such as Baldwin Locomotives, Diston's saws and tools and Brill's street cars, the largest factory of its kind in the world. Foundry and machine shop products have a value of $51,564,593 and electrical machinery at $31,919,081.

Ship-building is a third important industry, some of the firms being New York Ship Co., Cramp's, League Island and Hog Island. Among the other yearly values are: printing and publishing $75,953,877; men's clothing $57,415,069 and women's $49,807,335; sugar refining $91,759,263 and slaughtering and meat packing $43,886,788. Other industries are oil refining, leather goods, automobile bodies and paper.

The city is not primarily a commercial nor a distributing center but it does have plenty of banking and transportation facilities to take care of the needs of business. The Delaware River furnished an ocean port up to 1910 but the growth in size of our large boats and the sandbar which forms constantly down the river, impedes shipping. At low tide this bar gives a channel of only 29.6 ft. The government is constantly dredging, yet the river fills up. It was in 1912 that the Government switched a number of coaling contracts for its battle ships from Philadelphia to Newport News and Norfolk. In spite of this handicap in 1924 the city had imports to the value of $202,604,289 and exported $106,439,234 worth of products.

Philadelphia has clung to its old, so long, that new buildings come slowly and the show places are the historic rather than the great structures which cost millions, so prominent in other cities. Independence Hall, where the first Congress met and where the Liberty Bell now hangs, is an example of this, situated in the downtown district on Independence Square along with many other buildings of the same period. New buildings of importance include a new Art Museum located at the entrance to Fairmount Park and a new central Library. Fairmount Park, with an area of 3,546 acres and 37 acres of water surface besides 1,200 acres to be added soon, is probably

one of the most beautiful city parks in the United States. The park borders on either side of the Schuykill River and then includes the beautiful Wissahickon Valley which has been kept almost intact in its original natural state with no attempt at making it the least artificial. Other parks are League Island, Pennypack, Tacony and Cobbs Creek.

Philadelphia is a great educational center itself together with the fact that the outlying suburbs are filled with schools of both secondary and college rank. The institutions of higher learning in the city are Girard College, Drexel Institute, The University of Pennsylvania with 13,000 students, Temple College, Jefferson Medical College, The College of Pharmacy and the Pennsylvania Academy of Fine Arts.

DETROIT.

Detroit is indelibly fixed in the mind as the home of the automobile industry and the great growth of this city is due to this one cause. From a city, that a few decades ago was just a hamlet, the town has increased to a position of fourth city in the United States with a population of 1,623,452. The city is located on the Northwest bank of the Detroit River, one end fronting on Lake St. Clair and the other end 18 miles from Lake Erie, giving Detroit one of the finest harbors on the lakes with an 11 mile river front.

Detroit was started, as so many of the western cities were, as a fur trading and outfitting post. The first settlement here was started in 1704 by De la Mothe Cadillac for a permanent post, in order to carry on the trade and to keep up the military prestige of the French Government. As a result he built Fort Pontchartrain, manned it with 50 soldiers and settled 50 colonists around it. During the French and Indian Wars, Major Robert Rogers captured the fort and held it for the British Crown. In 1778 the hamlet had a population of 300 inhabitants, in 1802 it was incorporated as a town, captured by the British in 1812, evacuated in 1813 and incorporated as a city in 1824. The automobile industry has been responsible for the great growth of this city from 1890 up to the present day.

The factors which threw the motor industry to Detroit were in part, the fact that they were already manufacturing marine engines, were making carriages and wagons, had foundaries and machine shops and made a specialty of bronze, brass and copper castings. With these forces, an early start and a host of inventions and promoters in this area, one of our great industries was localized. After 1900, the automobile ceased being in a purely experimental stage and its manufacture became a nation wide industry. In 1921 the industry ranked sixth in value of products as compared with total value of all others. From an industry of 57 establishments in 1899, employing 2,241 wage-earners with products valued at $5,000,000, it had expanded in 1921 to 3,590 establishments, 281,350 wage-earners and a product value of $2,508,665,000. Detroit is the city, producing the largest number of automobiles, having a value in 1921 of $102,896,470 for motor vehicle parts, and $236,758,047 for motor vehicles.

The values of other manufactured goods produced in the city are: foundry and machine shop products, $30,780,669; slaughtering and meat packing $30,176,867; brass, bronze and copper castings, $22,410,124; and engraving and plate printing, $10,565,495

Civically, the city is quite active and new public buildings and park projects are constantly being undertaken, particularly within the last few years. Public buildings and monuments now include the Soldiers and Sailors Monument, costing $75,000; the City Hall in Italian Style, some magnificent office buildings, a new auditorium, a Public Library and an Art Museum. There are 31 parks in the city, the largest one Belle Isle in the Detroit River, with an area of 707 acres and the other large ones, Palmer Park, Clark Park and Voigt Park. The schools of higher education in the city are Detroit University, Detroit College of Medicine and only 25 miles away is the University of Michigan.

CLEVELAND.

No other city in the United States stands out, in civic pride, better and cleaner systems of politics, good living conditions and greater activities of its public men than does Cleveland. The city is located on the south shore of Lake Erie, with easy access by rail and water to the sources of mineral and agricultural wealth which have made the town a great manufacturing center.

This area was a part of the western territory of Connecticut, which was conveyed to the Connecticut State Land Company in 1796. Moses Cleveland was sent out to survey and to establish a new Connecticut in the then western wilderness. Cleveland was fixed as the Capital and the town and streets laid out. For some time there was no increase in population because of the poor agricultural background and no chance for commerce. In 1810 the town had 600 people. However, in 1827 the Ohio Canal was opened up to Akron and then extended to Portsmouth at the mouth of the Scioto River in 1832. By 1830 the population was 1,000 and 6,000 in 1840. Then came the railroads and the lake traffic in iron ore and coal. During the Civil War the great demand for steel products boomed the town and it has kept on growing ever since. The city lies at the break where iron ore from Lake Superior and coal from Pennsylvania must be loaded and unloaded and thus the wheels of industry hum. These natural factors of raw materials and natural resources have made Cleveland the sixth city in the United States in population (878,336) and in the value of its manufactured products.

Cleveland has some 2,256 industries with a yearly production value of $682,948,388. Of the various products and their values some of the following stand out: foundry and machine shops, $46,253,574; bolts, nuts, washers, iron and steel products not of the rolling mill, $39,972,725; electrical machinery, $43,542,579; motor vehicles, $63,359,204; slaughtering and meat packing, $38,764,509; men's clothing, $16,848,289; women's clothing, $25,438,242. 45% of the city's industry is iron and steel and the town also produces 4.6% of the motor vehicles of the United States, ranking after Detroit. Among the other industries are printing and publishing, bread

and bakery products, copper, tin and sheet iron products, hosiery and knit goods.

This city on the Lake is quite active commercially with a good harbor, including a breakwater 5¾ miles long protecting a harbor frontage of 14.2 miles. Seven trunk line railroads pass through or have their terminals in the city and give it ample rail shipping facilities. The roads included are the New York Central; the Pennsylvania; the Chicago, Cleveland, Cincinnati and St. Louis; the Erie; the Wheeling and Lake Erie. Ores, both copper and iron, lumber and grain all comes east and part of it is unloaded at this port, which in turn sends back bituminous and anthracite to the ports at the western end of the lake. Other products dealt in are oats, barley, rye, wheat, flour, cattle and sheep.

The city has 2,428 acres in parks with 44 miles of well paved road, the parks including Wade Park, Garden Park, Edgewater Park,—6,000 feet along the lake front containing 125 acres of playgrounds—and Shaker Lake Park just outside the city limits. The city has twenty playgrounds, four public baths, two municipal dance halls, forty-five baseball diamonds, six football grounds, seventy tennis courts and fifteen skating rinks.

The few notable buildings in Cleveland are the Cleveland Athletic Association, the Young Men's Christian Association, the Cleveland Public Library and the new Auditorium. There are three schools of higher education in the city, Western Reserve, Case School of Applied Science and the John Carrol University.

ST. LOUIS.

The great growth of this city has been due, in large part, to its being central in the United States, where at a point on the Mississippi River, it gets the benefit of the confluence of the Missouri River above the city and the Ohio River below. Again, its location is in the heart of our agricultural belt, the center of many of our natural resources and it benefits by the through lines of traffic both east and west, as well as north and south, most of which pass through the city.

In 1764 Laclede Linquest, a French trader, established a trading post here on a bluff overlooking the Mississippi River which had made the city safe from the danger of the wearing away of part of its territory and the ever constant flood danger. The town's growth was started by the early fur trade with the Indians, this city doing business exclusively at one time with twenty-eight Indian tribes, in open competition. The industry has grown until today St. Louis is the greatest raw fur center in the United States. With the Louisiana Purchase in 1804, the territory came under our jurisdiction. The discovery of iron ore nearby in close proximity to coal, boomed the iron and steel industry until it was thought that it would become the steel center of the United States, but that illusion was shattered with the opening up of the Lake Superior iron mines, taking the city out of line with the major ore and fuel traffic. The city was incorporated in 1823 and today it has a population of 816,048.

The city's industries can be divided into two parts, those relating to manufacturing and those having to do with its commercial and distribution activities. Industrially, the city has 2,470 industries, with a total yearly value of $665,518,816. The products and values include, slaughtering and meat packing $64,221,640; boots and shoes $44,984,050; foundry and machine shop products $27,084,543; steam cars $23,972,324; electrical machinery $16,852,932; motor vehicles $37,890,340; men's clothing $16,811,603; women's clothing $11,847,097; bread and bakery products, $19,716,110; bags (not paper) $12,503,345; coffee grinding and roasting $13,414,646; chemicals $11,296,770.

Located in this central position in the United States, the city soon came to be a receiving and distributing point for raw materials and a jobbing center for the retail trade in the district and the great Southwest. In live stock collection and shipments this city stands third with 1,000,000 head of cattle; 3,000,000 hogs; 268,000,000 pounds of dressed beef and 300,000,000 pounds of dressed pork. One hundred and forty thousand head of horses and the same of mules were shipped from this city with a value of $25,000,000. 26,200,000 bushels of wheat (the fifth city in the production of flour), 25,000,000 bushels of corn and one-tenth of the cotton crop were marketed from this city. At the fur auctions, skins to the value of $60,000,000 were sold and 120,000,000 feet of board lumber was shipped in from the Ozarks and shipped out again. In 1920 manufactured goods to the value of $1,600,000,000 were distributed to the central, southern and southwest areas, including dry goods, boots and shoes, food products, drugs, chemicals and hardware. Lead and zinc in great amounts are taken care of through the distributing channels.

From a civic point of view the city is well laid out and has some very beautiful and costly buildings; the new Post Office costing $1,250,000, the Public Library of white marble, the City and Art Museum and the Missouri Botanical Gardens of 120 acres, including 15,000 varities from all parts of the world are examples. Forest Park, the largest of the fifty-three parks, has an area of 266 acres and the Fairground Park of 128 acres has one of the largest open air swimming pools in the country.

The educational establishments include St. Louis University, Washington University, College of Christian Brothers and Forest Park College.

BOSTON.

Boston, the "hub" of the universe, has the appeal of the historic as well as the commercial. It was one of the centers of early colonial activity and the men from that region had much to do in forming our earlier national policies. The city was settled in 1630 by the Massachusetts Bay Company, who settled on the west shore of the bay and then crossed to the other side where it was higher, for better water and timber. The city got its name from an old Lincolnshire town in England. It was here in 1636 the General Court provided for Harvard College, the first college in the United States. A feeling that the town was getting too independent and that there was too much religious intolerance,

prompted Charles II to revoke the colony's charter in 1686, which was instituted again in 1692 after a bloodless revolution.

The fishing industry with Europe was the main source of trade in the earlier days, supplying the Catholic countries. Then in succession came the acts which caused the Revolution, the Stamp Act in 1765, the Boston Massacre in 1770 and the Boston Port Bill which closed the port to all outside trade. The Revolutionary events followed in rapid succession, Paul Revere's ride in April 1775, the skirmishes at Lexington and Concord, the Battle of Bunker Hill, June 17, 1775, the seizure of Dorchester Heights and the final signing of the Declaration of Independence.

Trade was badly crippled by the Revolutionary War and again by the War of 1812 and the New Englanders turned to something else for their livelihood. In 1814 F. C. Lowell established the first power loom at Waltham and shortly after that the city of Lowell was founded on textiles, a foundation which has lasted even to the present day. Before and during the Civil War New England played an important hand with her anti-slavery agitation, led by William Lloyd Garrison. On November 9–10, 1872, a great fire wiped out 776 buildings, 2,000,000 square feet of area with a loss of $75,000,000 and when the fires subsided a newer and a better Boston was built in its place.

Boston is the center of this great manufacturing area within a radius of fifty miles, where 25% of the cotton industry of the United States is concentrated, in such cities as Fall River, New Bedford, Lowell and Manchester. They manufacture 45% of the boots and shoes of the U. S. in Lynn, Haverhill, Brocton, Boston and Manchester. Clothing, organs, and pianos are made in this district also. Boston is the wholesale wool center of the United States, besides being the center of these other jobbing activities. Boston's port is excellent and ranks next to New York. Boston imported in 1924, goods to the value of $253,851,533, a good part of which was raw material, and exported goods worth $57,355,646. The population is now 770,816.

Boston's points of interest are as in Philadelphia, historical rather than the ornate type. Christ's Church (1723), Fanuel Hall (1742), Old State House (1748), Kings Chapel 1749), Old South Meeting House (1792) and the Bunker Hill Monument all attest to this point. The more modern buildings are the Museum of Fine Arts, the Copley Square Hotel, the famous Boston Public Library and the Widener Library at Harvard.

Boston has 3,574 acres devoted to parks. Included in this area are the far-famed Boston Commons and the Public Gardens, situated in the heart of the city. In the lines of higher education there is the New England Conservatory of Music, Boston University, Massachusetts Institute of Technology, Lowell Institute and Harvard University.

The downtown district of Boston is badly congested, the streets narrow and crooked which are said to have followed the cowpaths of earlier years which makes traffic very bad during rush hours. Boston's future is at least uncertain. Her only factor in industry left now is skilled labor and it is a question how long she can keep that as the cotton trade is fast moving south, the woolen industry is scattering and the boot and shoe industry is going west—all nearer the source of raw material and the market.

BALTIMORE.

Baltimore is a great city located at the commercial head of the Atlantic seaboard on Patapsco Bay, an arm of the Chesapeake, 174 miles from the Atlantic Ocean. The city has a natural harbor of twenty-four foot depth which now has been dredged to thirty-five feet. The water power from the "fall line" has helped decidedly in getting industries started.

The first settlement was made on the present site in 1662. The province of Maryland was founded in 1534. Charles Calvert was made governor of the province and small settlements grew up all along the bay. Looking for a central site that would allow growth, the present location of the city was picked and the Colonial Assembly in 1729 passed an Act to lay out the town. The Revolutionary War brought much prosperity to Baltimore due to the crippling of trade in other ports farther north. It was during this period that the famous Baltimore clipper sailed the seas and dominated trade. The British attempted to capture the city in 1814 but were repulsed and it was during that night of the repulse that Francis Scott Key wrote the Star Spangled Banner. During a good part of the Civil War the city was filled with regiments passing through and the town was constantly under martial law. The city has grown from the small number of 5,934 in 1775 until today when it has 859,100, the seventh city in the United States.

Baltimore's industrial and commercial growth has depended upon some of the following factors, the water power from the "fall line," a good harbor at the head of a large and branching bay, the agricultural products from the fertile Piedmont and the sandy Coastal Plain, and its location and nearness to Pennsylvania and West Virginia coal.

The industries are many and diversified, 2,033 establishments with a total yearly product value of $469,508,296. Among the leading industries with their values are: Men's clothing, $47,729,947; women's clothing, $12,675,419; slaughtering and meat packing, $32,056,367; bread and bakery products, $16,933,790; fertilizer $18,810,570; foundry and machine shop products, $17,031,784; tinware, $15,258,660; printing and publishing, $22,329,387; straw hats, $6,441,771; (the greatest straw hat manufacturing city in the United States) and men's furnishings, $17,324,958. Besides these major industries there are many others, canning (first city in the United States), sugar refining, paper manufacturing, flour milling and cotton duck (ranking first in the United States).

Commercially the city is very active due to its seaport position, its central location on the Atlantic Coast and its good transportation facilities. The city is a great center for the flour and wheat trade, second to New York in the receipt of flour and surpassed in bushels of wheat only by New York and Montreal. In the export of flour and grains the city is only exceeded by New York. Other food products that Baltimore acts as a clearing house for, are corn, potatoes, tomatoes and truck products. The exports in-

clude copper, cotton, iron and steel, oats and tobacco and the imports include manganese, nitrate of soda, copper ore, tin, oil, molasses, licorice root and wood pulp. The total value of imports in 1924 was $100,494,922 and exports $100,171,916.

As a distributing center Baltimore looms up, including in its business 1,000 wholesale and jobbing houses; 350,000 accounts in the South alone and the annual jobbing trade averaging $400,000,000 with commission business at least $175,000,000. The products distributed are dry goods, notions, clothing, millinery, boots and shoes, drugs, groceries, food products, hardware and confectionery.

Among the more important of the public buildings and parks are the City Hall of white marble costing $2,400,000, the Post Office in Italian Renaissance, the Wallen Art Gallery, Druid Hill Park, Clifton Park, Patterson Park and Caroll Park. The educational institutions include Peabody Institute, Morgan College, Goucher College, Baltimore City College and Johns Hopkins University.

PITTSBURGH.

This city is better known as the "Smoky City," the "Steel City," or the "City of Hills," titles which it well deserves. Pittsburgh is an industrial town, created through nearness to coal, coke, limestone, iron ore and good transportation, and due to the confluence of the Monongahela and Allegheny rivers to form the Ohio, the city was located at the point of juncture. The surrounding area is of horizontal sandstone structure and the eroding forces have caused these great number of hills and valleys which make building and local transportation difficult.

The territory around Pittsburgh was originally claimed by the French through virtue of the explorations of La Salle but at the same time Virginia insisted that it was a part of the territory granted to her. In 1749 the French army occupied the area and stayed that winter at Venango, Pa. The Virginians sent George Washington to warn the French and also to build a fort. The fort was started the next year but the English were badly defeated and Fort Duquesne rose in its place but that, in turn, was captured by the English in 1758 and burned. A new fort was raised, Fort Pitt, by General Forbes, who had defeated the French and the town of Pittsburgh was laid out around it in 1764. In 1794 the village was incorporated as a town and in 1816 a city. With the discovery of oil, coal and the Lake Superior iron ore, Pittsburgh developed rapidly until now it leads the world in the production of steel.

This district produces 48% of the coke of the world, 10% of the bituminous coal of the world, and a great deal of natural gas and petroleum. The city has 1,694 industries and a total yearly value of $393,430,540. The industries with values are: iron and steel (rolled products), $71,886,789; foundry and machine shop products, $29,111,178; iron and steel blast furnace products, $110,886,789; iron and steel bolts, nuts, washers, not made in rolling mill, $13,429,783; pickles, preserves and sauces, $20,527,635 (Heinz's plant, the largest establishment of its kind); and slaughtering and meat packing, $30,352,649. Beside these, Pittsburgh stands out as the greatest glass city in the world, producing plate, window and all kinds of glass lighting fixtures due to the sand in the Juanita Valley and the eastern section of Ohio and the natural gas from Pennsylvania and West Virginia. 90% of the World's radium is extracted in this city from ores shipped in. The Westinghouse Manufacturing Co., employs 35,000 men, and is one of the largest single establishments in the city, producing airbrakes and all kinds of electrical equipment. The city manufactures aluminum, brass-ware, copper, bronze, corks (the largest plant in the work), sanitary and table ware and the refining of oil and it has been estimated that 46% of the materials for the automobile industry, 44% for the agricultural implement industry, 45% for the hardware industry and 37% for the machinery industry are made in this city.

Traffic on the Allegheny, the Monongahela and the Ohio Rivers was, a couple of decades back, very large, then it took a slump but now the steel mills are shipping huge amounts down the Mississippi on barges to the various ports along the way.

The city has many educational institutions. Mellon Institute, Duquesne University, Pennsylvania College for Women, University of Pittsburgh and Carnegie Institute of Technology, are among those of first rank. Among the public buildings are the Carnegie Institute, a building covering 6 acres and housing a library, an art gallery of pictures and sculpture, a museum of National History and large auditorium with an endowment of $30,000,000 to carry on its work, The Masonic Temple, Memorial Hall, The Pittsburgh Athletic Club, St. Paul Cathedral and Calvary Episcopal Church, the latter considered to be one of the finest pieces of Gothic architecture in the country.

The industrial future of the city is still a matter of doubt. The city's greatness was builded upon natural resources and those resources are diminishing. The city can't expand under the present situation and it seems as if it must lose its place in the scale of cities. However, it was still tenth in size in 1940 with a population of 671,659.

LOS ANGELES.

This noted city in Southern California is far famed as a winter resort and is located in one of the two most fertile counties in the United States, Lancaster, Pennsylvania being the other one, and is not far from the great petroleum industry of that state.

The city is growing fast as a manufacturing city with a total of 2,210 establishments and a yearly product value of $313,589,985. Some of the more important products and values follow; slaughtering and meat packing, $20,569,745; motion pictures, $31,595,817; foundry and machine shops, $19,388,039; cars and general shop construction, $14,907,783; printing and publishing, $19,683,846; tobacco, cigars and cigarettes, $13,431,263; lumber mill products, $12,912,315; furniture, $11,551,095; copper, tin and sheet work, $11,055,132.

Commercially the city markets and ships citrus fruits and petroleum. The California Fruit Growers Association is famous throughout this country for the splendid advertising and excellent

methods of handling the distributive side, which has built up for them tremendous sales.

Los Angeles is fifteen miles from the Pacific and desiring a harbor, one was created at the mouth of the Los Angeles River by the government at a cost of $3,500,000, with a breakwater 2½ miles long. The harbor is municipally controlled and owned, including the 2½ miles of municipal wharfage. The fruit and trucking industry has led to much canning and drying. Sugar beets, beans, deciduous fruits, walnuts and grain are the principal crops of this area.

The appeal of the climate, the atmosphere and the scenery have been a huge factor in the fast growth of the city. The locality covers an area of 3,511 square miles and is one of the most beautiful residential sections in this country. The city has twenty-five public parks, covering 4,000 acres and is the seat of the University of Southern California and Occidental College. In 1940 it had a population of 1,504,277.

BUFFALO.

This city has developed due to the break in transportation from rail to water or vice versa. The Niagara River tumbles over a rock ledge 160 feet in height and thus closes transportation to Lake Ontario, so that all the commerce going East must be unloaded at the eastern end of Lake Erie for New York, Pennsylvania or New England. Buffalo thus started and developed as a manufacturing city.

This area, where the city is today located, was the hunting and fishing ground of the Indian tribes. In 1687 Baron La Houtan recommended it as a site for a fort and a center for the fur trade. Two of the eastern colonies claimed it, New York under a grant of Charles II and Plymouth from a charter signed by James I. As a result of the controversy the Holland Company was given rights to the area. With more trade the town increased and in 1810 the place was incorporated. In 1810 the town was burned by the British, and was rebuilt again in 1815. The Erie Canal, connecting Lake Erie at Buffalo with New York City through the Mohawk Valley and the Hudson River was finished in 1825 and the town boomed, the increase in population within five years was from 2,000 to 8,000.

The factors for manufacturing in Buffalo are power, coal from Pennsylvania and electric power from Niagara Falls, nearness to raw material, the agricultural and mineral resources of the Middle West and good transportation both by boat and rail. The city has 1,513 establishments with a yearly value of $431,383,131. The products are: flour milling, $56,036,758; foundry and machine shop products, $23,316,580; iron and steel from the blast furnace, $9,044,430; motor vehicles, $42,295,420; slaughtering and meat packing, $35,807,251; car and car repair shops, $13,422,089; chemicals, $10,818,490; lumber and beaver board products, $4,951,767; and enameled ware $3,585,032. Other products are fabricated iron and steel, such as the products of the American Radiator Company and the great aluminum, graphite and carborundum industries which have developed with plenty of cheap electricity.

Buffalo, located at this eastern end of Lake Erie, ranks as one of the great ports of the United States, shipping yearly over 25,000,000 tons of grain, flour and provisions, huge numbers of horses and sheep, large quantities of fish, and a great deal of lumber, iron ore, copper and coal. In 1940 it ranked fourteenth in size with a population of 575,901.

The parks, of which there are six large ones, comprise 230 acres and have 28.46 miles of boulevards. The larger parks are Delaware Park, the area of twenty acres around the State Hospital, and Humbolt Park.

Of public buildings and monuments little can be said except to mention a few of the better ones, the huge marble shaft to William McKinley, the Buffalo Historical Society Building with an estimated cost of $2,000,000, the Federal building and the Albright Art Gallery. Three schools of importance should be mentioned, the University of Buffalo, Canisius College and the Fine Arts Academy.

SAN FRANCISCO.

San Francisco is located at the back-door of this continent, one of the key cities to our future trade with the Orient, in the center of one of the richest agricultural regions in the country. San Francisco is situated about 600 miles northwest of San Diego and approximately 865 miles by water from Seattle.

Under Spanish regime, the city was called Yerba Buena. The city was firmly established in the autumn of 1769 upon the founding of a mission and a presidio, representing both the military and religious authority. In 1846, when really only a Mexican village the place was taken over by the United States. Two years later gold was discovered by James W. Marshall and the town went through the boom stages of a gold rush with exorbitant prices and high rents, neglected business, trade waned, ships rotted at the wharfs and a general lawlessness crept in. The rush subsided within a few years and the city returned to normalcy and trade. The town was incorporated in 1850 and in 1851 was made a city.

The agricultural regions around and back of the city began to develop, the silver mines of Nevada began to pour out their treasures, the transcontinental railroads were finished and the East was connected with the West by telegraph and telephone. Couple these factors with an excellent harbor and facing the Orient, no city could help but develop. In 1906 came a great earthquake and fire, demolishing 28,188 buildings covering an area of 497 city blocks, killing 500 people and doing damage estimated at $1,000,000,000.

The city is more commercial than industrial, as is true of all west coast cities. The city is situated on San Francisco Bay, ninety miles long and five to fifteen miles wide, having a surface of 450 square miles with a shore line of 300 miles. The entrance is through the famous Golden Gate, a narrow strait separating the Bay from the Pacific Ocean. The manufactured products with values are motor vehicles, $21,594,871; coffee and spices, $21,465,506; slaughtering and meat packing, $17,417,652; bread and bakery products, $15,119,595; printing and publishing, $29,750,097; ship building, $12,114,825 and tinware, $8,330,808. Other industries are the can-

ning of fruit and vegetables, the refining of sugar and the building of ships. There are 1,986 manufacturing establishments in the city with a total yearly value of $327,499,417.

The city stands fifth in the United States in imports, most of this trade coming from the Orient,—Japan, Australia, New Zealand and the Philippines——where there exists potential markets of 400,000,000 people. The list of imports include rice, sugar, coffee, copra, tin, vegetable oils, and silk and the exports, canned goods (fruit and salmon), raw cotton, iron and steel, fuel oil, leather and lumber.

After the great fire, extensive plans were made for a civic center and a bond issue of $8,000,000 was raised, half of it was spent on a City Hall, a Public Library, and an Auditorium, all of these being grouped around a central plaza. Other buildings include the Hall of Justice, the Palace of Fine Arts, and the Mint. The city has 32 public parks covering 1,400 acres including the famous Golden Gate Park stretching from the center of the city down to the shores of the Pacific, with magnificent boulevards all the way. In 1940 the population was 634,536.

MILWAUKEE.

Milwaukee, the largest city in Wisconsin, is located on the west shore of Lake Michigan, with an area of twenty-six square miles, is eighty-five miles north of Chicago, and has a population of 578,249. The city has developed as a manufacturing and shipping center for the products of the interior.

The first permanent settlement was made in September, 1818, by L. S. Juneau, who received grants from the Indians. The location was a commercial outlet for the interior and thus, as the territory opened up and trade developed, the town progressed. It was incorporated as a town in 1838, and as a city in 1846. In 1840 the city had a population of 1,717, in 1900, 285,315 and in 1940, 587,472.

The advantages of location are water transportation and nearness to raw material, consequently the manufactured products follow very closely that lead and include the following with their values; foundry and machine shops, $33,-851,969; knit goods, $32,073,463; boots and shoes, $22,557,380; slaughtering and meat packing, $25,777,286; electrical machinery supplies, $13,688,286; clothing, $11,478,929; motor vehicles, $9,969,913 and lumber, $5,146,208.

The principal product received from the East is coal and the goods shipped in and out are flour, wheat, corn, oats, barley, rye, and lumber.

The park area covers ninety-four acres. The public buildings of any note are, St. Paul's Church, the Jesuit Church of the Gesu, the Post Office and the Public Library. The schools are Marquette University, Milwaukee Downer Seminary and Milwaukee Downer College

WASHINGTON, D. C.

The city of Washington is without doubt the most beautiful city in the United States and one of the finest in the world, with the great number of public buildings, its magnificent parks, the absence of slums, the exclusive residential districts and the six hundred miles of streets, lined with trees on both sides.

In 1790 Congress appointed a Commission to select a site for a capitol, the present location was chosen and the seat of the Government was moved from Philadelphia to Washington in 1800. In 1814 the Capitol, the White House and other governmental buildings were destroyed by the British. In 1871 a territorial form of government was instituted whereby Congress passes all laws and collects the taxes for the area, the people having no say in local affairs. The city has no industries except those that are necessary to take care of the immediate needs of the population, such as bread and bakery products, printing and publishing and slaughtering and meat packing.

The fact that the seat of our National Government is here in Washington has meant the natural gravitation of a large number of public buildings, not of a political character to this city. The most notable building in the city is, of course, the Capitol, which covers 153,112 square feet, is 350 feet high, cost $4,000,000 to build, and houses the two great legislative bodies, the House in the south wing and the Senate in the north wing along with the Supreme Court, and numberless private offices and committee rooms that take care of the business of the Government.

The White House, the home of the President, down Pennsylvania Avenue can best be described in the words of another as,—"That distinguished little white building." Some of the others are the Library of Congress completed in 1897 at a cost of $6,347,000; the National Library with 2,200 000 volumes; the Treasury Building of pure Greek design made out of freestone and granite at a cost of $7,000,000; the Lincoln Memorial of white marble and one of the world's purest architectural gems; the Washington Monument, a shaft of marble blocks sent from almost every country in the world, 555 feet high; the new Corcoran Art Gallery; the Red Cross Building; Continental Hall built by the Daughters of the American Revolution; the beautiful Pan-American Building; the Union Station; the Post Office and the National Cathedral, now in the process of construction by the Episcopal Church, to be a really national religious shrine. President Wilson was buried in this Cathedral.

The Mall is a great park bordering in part on the Potomac River where are planted the cherry trees, the gift of the Japanese nation and which in the springtime makes one of the most enchanting spots in the world. The other parks of note are Rock Creek Park of 1,609 acres, the Zoological Park 166 acres and Potomac Park.

The educational institutions are many and include, Georgetown University, George Washington University, Howard University (colored), Catholic University and the New American University of Research. The population in 1940 was 663,091.

NEW ORLEANS.

Most important city of Louisiana and metropolis of the Gulf States, located in Southeastern part of the state on the Mississippi River and Lake Ponchartrain, 110 miles from the mouth of the river. The city was originally built along a bend of the river and became known as the "Cres-

cent City." Completion of the Inner Harbor Navigation Canal in 1923 added 11 miles of water front for shipping facilities. This canal extends 5 miles from the Mississippi River to Lake Ponchartrain, which has been dredged so that ocean-going vessels have direct access from the Gulf of Mexico to the city.

Founded by LeMoyne Sieur de Bienville in 1718, the city was named for the Duke of Orleans, the French regent, and served as the capital of Louisiana from 1723 until after the famous Louisiana Purchase by Jefferson in 1803. In 1849 the capital was moved to Baton Rouge.

The city lies below the level of high tide and is protected by levees 25 or more feet high. The glamour of early colonial days still survives in the annual Mardi Gras. Evidences of French and Spanish influence abound in wrought-iron balconies overhanging narrow streets, while in the old French quarter are dwellings 100 years old, built in the fashion of Southern Europe.

New Orleans, with a population of 494,537, is connected with all ports of the world by over 100 steamship lines. Nine railroads enter the city. Its geographical location makes it accessible to all central United States by water and rail. The harbor is one of the safest in the world, and by 1940 New Orleans ranked 21 among the worlds' greatest ports. It is a leading market for cotton, rice, burlap, cigars and timber.

FOREIGN CITIES HAVING AT LEAST 100,000 POPULATION

(From census or official estimate)

City and Country	Year	Population
Aachen, Germany	1939	165,710
Aberdeen, Scotland	1931	167,259
Adelaide, Australia	1939	322,990
Agra, India	1931	229,764
Ahmedabad, India	1931	313,789
Ajmer, India	1931	119,524
Aleppo, Syria	1935	177,313
Alexandria, Egypt	1937	682,101
Algiers, Algeria	1936	252,321
Allahabad, India	1931	183,914
Altona, Germany	1932	234,000
Amoy, China	1931	234,159
Amritsar, India	1931	264,840
Amsterdam, Holland	1939	793,526
Ankara (Angora), Turkey	1935	122,720
Antung, Manchukuo	1938	210,759
Antwerp (Anvers), Belgium	1938	273,317
Astrakhan, Russia	1933	225,400
Asuncion, Paraguay	1938	107,010
Athens, Greece	1938	392,781
Auckland, New Zealand	1939	221,500
Augsburg, Germany	1939	185,704
Bagdad, Iraq	1935	499,410
Bahia, Brazil	1936	363,726
Baku, Russia	1939	809,347
Bangalore, India	1931	306,470
Bangkok, Thailand	1927	550,000
Barcelona, Spain	1934	1,148,129
Bareilly, India	1931	144,031
Bari, Italy	1936	196,747
Barranquilla, Colombia	1938	152,348
Basel, Switzerland	1939	165,000
Batavia, Java	1932	307,606
Beirut, Syria	1935	134,655
Belem (Para), Brazil	1936	293,036
Belfast, North Ireland	1937	438,086
Belgrade, Yugoslavia	1931	266,849
Benares, India	1931	205,315
Berlin, Germany	1939	4,332,242
Berne, Switzerland	1939	125,000
Bilbao, Spain	1934	175,898
Birmingham, England	1931	1,002,603
Bochum, Germany	1939	303,288
Bogota, Colombia	1938	330,312
Bologna, Italy	1936	269,687
Bolton, England	1931	177,235
Bombay, India	1931	1,161,383
Bordeaux, France	1936	258,348
Bradford, England	1931	298,041
Bremen, Germany	1939	342,113
Brescia, Italy	1936	123,332
Breslau, Germany	1939	615,006
Brighton, England	1931	147,426
Brisbane, Australia	1939	326,000
Bristol, England	1931	397,012
Brno (Brunn), Czechoslovakia	1930	264,925
Brunswick, Germany	1939	201,306
Brussels, Belgium	1938	912,774
Bucharest, Rumania	1939	648,162
Budapest, Hungary	1939	1,585,678
Buenos Aires, Argentina	1938	2,317,755
Cairo, Egypt	1937	1,307,422
Calcutta, India	1931	1,161,410
Camaguey, Cuba	1938	188,295
Canton, China	1931	861,024
Cape Town, South Africa	1936	173,412
Cardiff, Wales	1931	223,589
Casablanca, Morocco	1936	257,430
Catania, Italy	1936	244,972
Cawnpore, India	1931	243,755
Cebu, Philippine Is.	1939	142,912
Changsha, China	1931	606,972
Chemnitz, Germany	1939	334,563
Chinkiang, China	1931	199,776
Chorzow, Poland	1938	109,100
Christchurch, New Zealand	1939	135,400
Christiana. See Oslo, Norway		
Chunking, China	1931	635,000
Clermont-Ferrand, France	1936	101,128
Cologne, Germany	1939	768,426
Colombo, Ceylon	1931	284,155
Constantinople (Istanbul), Turkey	1935	741,148
Copenhagen, Denmark	1935	843,168
Cordoba, Argentina	1938	288,916
Coventry, England	1931	167,046
Cracow, Poland	1938	254,600
Crefeld, Germany	1939	169,485
Croydon, England	1931	233,032
Czernowitz (Cernautzu), Rumania	1939	109,698
Dacca, India	1931	138,518
Dairen, China	1931	282,665
Damascus, Syria	1935	193,912
Danzig, Free State of	1939	415,000
Debreczen, Hungary	1939	122,517
Delhi, India	1931	447,442
Derby, England	1931	142,406
Dnieperpetrovsk (Ekaterinoslav), Russia	1939	500,662
Dortmund, Germany	1939	537,000
Dresden, Germany	1939	625,174
Dublin, Irish Free State	1939	482,300
Duisberg, Germany	1939	431,256
Dumbarton, Scotland	1938	156,000
Dundee, Scotland	1931	175,583
Dusseldorf, Germany	1939	539,905
Edinburgh, Scotland	1931	438,998
Eindhoven, Holland	1939	111,179
Erivan, Russia	1933	111,500
Erfurt, Germany	1939	166,661
Essen, Germany	1939	659,871
Ferrara, Italy	1936	119,265
Florence, Italy	1936	322,535
Fortaleza, Brazil	1936	143,277
Foochow, China	1931	322,725
Frankfurt, Germany	1939	546,649
Fukuoka, Japan	1935	291,158
Galati (Galatz), Rumania	1939	102,232
Gelsenkirchen, Germany	1939	313,003
Geneva, Switzerland	1939	120,000
Genoa, Italy	1936	634,646
Ghent (Gand), Belgium	1938	162,858
Glasgow, Scotland	1931	1,088,417
Gomel, Russia	1933	121,200
Gothenburg, Sweden	1939	275,753
Granada, Spain	1934	124,681
Graz, Germany	1939	210,175
Guadalajara, Mexico	1930	179,556
Guayaquil, Ecuador	1938	180,000
Haarlem, Holland	1939	137,576
The Hague, Holland	1939	495,518
Hakodate, Japan	1935	207,480
Halle, Germany	1939	220,364
Hamburg, Germany	1939	1,682,220
Hamilton, Canada	1931	155,547
Hangchow, China	1931	506,930
Hankow, China	1931	777,993
Hanover, Germany	1931	472,527

City and Country	Year	Population
Harbin, Manchukuo	1938	467,483
Havana, Cuba	1938	568,913
Havre, France	1936	164,083
Helsingfors, Finland	1937	293,237
Hiroshima, Japan	1935	310,118
Hongkong, China	1938	1,028,619
Honolulu, Hawaii	1939	154,476
Huddersfield, England	1931	113,475
Hull, England	1931	311,366
Hyderabad, India	1931	466,894
Irkutsk, Russia	1933	158,500
Ispahan (Isfahan), Iran	1935	100,000
Ivanov, Russia	1933	188,500
Jaipur, India	1931	144,179
Johannesburg, S. Africa	1936	257,671
Jubbulpore, India	1931	124,382
Kabul, Afghanistan	1929	150,000
Kagoshima, Japan	1935	181,736
Kanazawa, Japan	1935	163,733
Karachi, India	1931	263,565
Karlsruhe, Germany	1939	189,850
Kassel, Germany	1939	217,085
Katowice, Poland	1938	132,900
Kawasaki, Japan	1935	154,748
Kazan, Russia	1933	258,700
Kharkov, Russia	1939	833,432
Kiel, Germany	1939	272,311
Kiev, Russia	1939	846,293
Kiren, Manchukuo	1938	132,272
Kishinev, Rumania	1939	112,500
Kobe, Japan	1939	1,006,100
Konigsberg, Germany	1939	368,433
Kumamoto, Japan	1935	187,382
Kure, Japan	1935	231,333
Kyoto, Japan	1939	1,177,200
Lahore, India	1931	429,747
La Paz, Bolivia	1936	200,000
La Plata, Argentina	1938	190,577
La Spezia, Italy	1936	106,119
Leeds, England	1931	482,809
Leicester, England	1931	239,169
Leipzig, Germany	1939	701,606
Lemberg (Lwow), Poland	1938	317,700
Leningrad, Russia	1939	3,191,304
Liege, Belgium	1938	162,229
Lille, France	1936	200,575
Lima, Peru	1936	370,000
Linz, Germany	1939	131,423
Lisbon, Portugal	1930	594,390
Liverpool, England	1931	855,688
Livorno (Leghorn), Italy	1936	124,963
Lodz, Poland	1938	665,200
London, England	1937	8,655,000
Lubeck, Germany	1939	153,630
Lucknow, India	1931	274,659
Lyons, France	1936	570,622
Madras, India	1931	647,230
Madrid, Spain	1934	1,048,072
Madura, India	1931	182,018
Magdeburg, Germany	1939	334,358
Mainz, Germany	1939	158,971
Malaga, Spain	1934	203,844
Malmo, Sweden	1939	151,247
Manchester, England	1931	766,278
Mandalay, India	1931	147,932
Manila, Philippine Islands	1939	623,362
Mannheim, Germany	1939	283,801
Marseilles, France	1936	914,232
Marakesh, Morocco	1936	190,314
Meerut, India	1931	136,706
Melbourne, Australia	1939	1,046,750
Messina, Italy	1936	192,051
Mexico City, Mexico	1930	1,029,068
Middlesbrough, England	1931	138,274
Milan, Italy	1936	1,115,848
Minsk, Russia	1933	180,900
Montevideo, Uruguay	1937	682,664
Montreal, Canada	1931	1,000,159
Moscow, Russia	1939	4,137,018
Mukden, Manchukuo	1938	772,017
Mulheim, Germany	1939	136,805
Munchen, Germany	1939	127,115
Munich, Germany	1939	828,325
Munster, Germany	1939	143,748
Murcia, Spain	1934	166,341
Nagasaki, Japan	1935	211,702
Nagoya, Japan	1939	1,082,816
Nagpur, India	1931	215,165
Nancy, France	1936	121,301
Nanking, China	1936	1,019,148
Nantes, France	1936	195,185
Naples, Italy	1936	865,913
Newcastle-on-Tyne, England	1931	283,156
Nice, France	1936	241,916
Nictheroy, Brazil	1936	125,247
Nikolayev, Russia	1933	141,400
Ningpo, China	1931	218,774
Nizni-Novogorod (Gorky), Russia	1939	644,116
Norwich, England	1931	126,207
Nottingham, England	1931	268,801
Novosibirsk, Russia	1933	278,000
Nurnberg, Germany	1939	430,851
Odessa, Russia	1939	604,223
Oldham, England	1931	140,309
Omsk, Russia	1933	227,000
Oporto, Portugal	1930	232,280
Oran, Algeria	1936	194,746
Orenburg, Russia	1933	144,600
Osaka, Japan	1939	3,394,200
Oslo, Norway	1938	275,000
Ostrava, Czechoslovakia	1930	125,347
Otaru, Japan	1935	153,587
Ottawa, Canada	1931	126,872
Padua (Padova), Italy	1936	138,709
Palermo, Italy	1936	411,879
Paris, France	1936	2,829,746
Patna, India	1931	159,690
Peking (Peiping), China	1936	1,556,364
Pernambuco. See Recife, Brazil		
Perth, Australia	1939	224,800
Peshawar, India	1931	121,860
Pilsen, Czechoslovakia	1930	114,704
Pingyang, Korea, Japan	1938	185,419
Pireus, Greece	1938	198,771
Plauen, Germany	1939	110,342
Plymouth, England	1931	208,182
Poona, India	1931	250,187
Porto Alegre, Brazil	1936	321,628
Port au Prince, Haiti	1936	115,000
Portsmouth, England	1931	252,421
Posen, Poland	1938	268,800
Potsdam, Germany	1939	136,165
Prague, Czechoslovakia	1930	848,823
Preston, England	1931	119,001
Puebla, Mexico	1930	114,793
Quebec, Canada	1931	130,594
Rangoon, India	1931	400,415
Rawalpindi, India	1931	119,284
Recife, Brazil	1936	472,764
Reims, France	1936	116,687
Revel. See Tallinn		
Riga, Latvia	1939	393,211
Rio de Janeiro, Brazil	1936	1,711,466
Rome, Italy	1940	1,327,000
Rosario, Argentina	1938	511,007
Rostov-on-Don, Russia	1939	510,253
Rotterdam, Holland	1939	612,372
Roubaix, France	1936	107,105
Rouen, France	1936	122,832
Saarbrucken, Germany	1939	135,080
Saigon, French Indo-China	1936	110,577
St. Etienne, France	1936	190,236
Sakai, Japan	1935	141,286
Salford, England	1931	223,442
Salonika, Greece	1938	236,524
Samara (Kuibishev), Russia	1933	259,100
Santa Fe, Argentina	1938	142,327
Santiago, Chile	1930	696,231
Santiago, Cuba	1938	107,125
Sao Paulo, Brazil	1936	1,120,405
Sapporo, Japan	1935	196,541
Saratov, Russia	1933	327,000
Saseho, Japan	1935	173,283
Sendai, Japan	1935	219,547
Seoul, Korea, Japan	1938	706,396
Seville, Spain	1934	238,727
Shanghai, China	1936	3,489,998
Shashi, China	1931	113,526
Shiraz, Iran	1935	119,000
Shizuoka, Japan	1935	200,737
Sholapur, India	1931	144,654
Singapore, Straits Settlements	1932	596,602
Smyrna (Izmir), Turkey	1935	170,959
Sofia, Bulgaria	1934	327,798
Soochow, China	1931	260,000
Soerabaja (Surabaya), Java	1931	255,124
Soubatitza (Subatica), Yugoslavia	1931	100,058
Southampton, England	1931	176,025
South Shields, England	1931	113,452
Srinagar, India	1931	173,573
Stalingrad, Russia	1933	388,000
Stalino (Yuzovka), Russia	1933	285,500
Stettin, Germany	1939	268,915
Stockholm, Sweden	1939	570,771
Stockport, England	1931	125,505
Stoke-on-Trent, England	1931	276,639
Strasbourg, France	1936	193,119
Stuttgart, Germany	1939	459,538
Sunderland, England	1931	185,870
Sverdlovsk, Russia	1933	400,800

City and Country	Year	Population
Swansea, Wales	1931	164,797
Swatow, China	1931	178,636
Sydney, Australia	1939	1,305,040
Szeged, Hungary	1939	131,893
Tabriz, Iran	1935	219,000
Taihoku, Formosa, Japan	1935	274,157
Tallinn (Revel), Estonia	1939	145,000
Tarentum (Taranto), Italy	1936	117,722
Tashkent, Russia	1939	585,005
Teheran (Tehran), Iran	1935	360,000
Tientsin, China	1936	1,292,025
Tiflis, (Tbilisi), Russia	1939	519,175
Tokyo, Japan	1939	6,581,100
Toronto, Canada	1931	808,864
Toulon, France	1936	150,310
Toulouse, France	1936	213,220
Trichinopoly, India	1931	142,843
Trieste, Italy	1936	248,379
Tsinan, China	1932	621,039
Tsingtao, China	1936	514,769
Tula, Russia	1933	199,500
Tunis, Tunis	1936	219,578
Turin, Italy	1936	629,115
Utrecht, Holland	1939	163,559
Valencia, Spain	1934	352,802
Valparaiso, Chile	1930	193,205
Vancouver, Canada	1931	246,593
Venice, Italy	1936	264,027
Verona, Italy	1936	153,708
Vienna, Austria	1939	1,918,462
Vilna (Wilno), Poland	1938	208,500
Vladivostock, Russia	1933	206,000
Wanhsien, China	1931	210,837
Warsaw, Poland	1938	1,265,700
Wellington, New Zealand	1939	157,900
Wenchow, China	1931	631,276
West Ham, England	1931	294,278
Wiesbaden, Germany	1939	172,039
Winnipeg, Canada	1936	215,814
Wolverhampton, England	1931	133,212
Wuhu, China	1931	135,385
Wuppertal, Germany	1939	398,099
Yokohama, Japan	1939	866,200
Zagreb, Yugoslavia	1931	185,581
Zaragoza (Saragossa), Spain	1934	189,062
Zurich, Switzerland	1933	312,600

CENTER OF POPULATION IN THE UNITED STATES.

1790 23 miles east of Baltimore, Md.
1800 18 miles west of Baltimore, Md.
1810 40 miles northwest by west of Washington, D. C.
1820 16 miles north of Woodstock, Va.
1830 19 miles west-southwest of Moorefield, W. Va.
1840 16 miles south of Clarksburg, W. Va.
1850 23 miles southwest of Parkersburg, W. Va.
1860 20 miles south of Chillicothe, O.
1870 48 miles east by north of Cincinnati, O.
1890 20 miles east of Columbus, Ind.
1900 6 miles southeast of Columbus, Ind.
1910 in Bloomington, Ind.
1920 8.3 miles southeast of Spencer, Owen County, Ind.
1930 2.9 miles northeast of Linton, Greene County, Ind.

COUNTRY OF BIRTH OF FOREIGN-BORN WHITES.

State.	Austria.	Canada.	Cz'cho-Slovak.	England.	Germany.	Hungary.	Ireland.	Italy.	Norway.	Poland.	Russia.	Sweden.
Ala.	583	892	232	1,942	2,427	372	809	2,732	215	394	1,582	748
Ariz.	486	1,962	148	2,882	1,516	210	1,206	1,261	337	261	816	859
Ark.	636	880	492	1,137	3,979	108	676	1,314	99	529	662	331
Cal.	13,264	59,562	3,377	58,572	67,180	5,252	45,308	88,502	11,460	7,082	27,224	31,925
Colo.	5,722	7,621	1,953	9,584	11,992	1,157	6,191	12,579	1,525	1,867	16,669	10,112
Conn.	12,699	24,631	6,558	22,708	22,614	13,222	45,464	80,322	1,414	46,623	38,719	17,697
Del.	615	446	122	1,497	1,632	226	2,895	4,136	65	3,847	2,244	316
D. of C.	525	1,688	122	2,990	3,382	219	4,320	3,764	219	716	5,181	481
Fla.	525	4,121	189	4,451	3,534	383	1,304	4,745	610	428	1,243	1,399
Ga.	401	955	123	1,593	1,936	246	1,112	700	132	917	3,452	299
Idaho	781	4,954	420	4,451	4,143	233	1,410	1,323	2,482	287	1,458	5,112
Ill.	46,457	38,375	66,709	54,247	205,491	34,437	74,274	94,407	27,785	162,405	117,899	105,577
Ind.	9,100	5,096	3,941	8,522	37,377	9,351	7,271	6,712	544	17,791	7,673	4,942
Iowa	4,334	8,929	9,150	13,036	70,642	747	10,686	4,956	17,344	2,028	7,319	22,493
Kan.	5,183	5,019	3,466	7,899	23,380	622	4,825	3,355	970	2,418	12,050	10,337
Ky.	906	885	240	1,863	11,137	1,084	3,422	1,932	75	1,037	2,736	214
La.	725	1,165	302	1,819	5,147	305	2,000	16,264	555	377	1,928	522
Me.	305	74,150	410	5,149	932	72	5,748	2,797	581	1,717	3,763	2,026
Md.	3,620	1,864	3,553	5,095	22,032	1,947	6,580	9,543	536	12,061	24,791	630
Mass.	8,098	262,021	2,238	86,895	22,113	1,387	183,171	117,007	5,491	69,157	92,034	38,012
Mich.	22,004	164,502	11,161	47,149	86,047	22,607	16,531	30,216	6,888	103,926	45,313	24,707
Minn.	11,550	33,732	12,626	10,958	74,634	4,277	10,289	7,432	90,188	18,537	16,100	112,117
Miss.	136	397	63	590	929	47	412	1,841	97	318	828	247
Mo.	8,676	6,503	4,971	10,400	55,776	8,080	15,022	14,609	610	7,636	18,769	4,741
Mont.	3,298	14,316	1,895	8,159	7,873	935	7,260	3,842	9,962	1,219	5,203	7,179
Neb.	4,551	5,758	15,818	6,000	40,969	810	5,422	3,547	2,165	4,615	15,718	18,821
Nev.	190	1,178	85	1,271	1,069	46	970	2,641	206	104	124	545
N. H.	389	52,274	75	4,367	1,714	66	7,908	2,074	427	3,997	3,467	1,886
N. J.	36,917	10,292	16,747	46,781	92,382	40,470	65,971	157,285	5,343	90,419	73,527	10,675
N. M.	423	732	113	888	1,178	130	434	1,678	128	153	254	310
N. Y.	151,172	111,974	38,247	135,305	295,650	78,374	284,747	545,173	27,573	247,519	529,240	53,025
N. C.	149	650	20	967	703	66	301	453	70	210	932	170
N. D.	2,059	15,550	2,056	2,287	11,960	2,519	1,660	170	38,190	2,236	29,617	10,543
Ohio	48,073	24,176	42,121	43,140	111,893	73,181	29,262	60,658	1,487	67,579	43,690	7,266
Okla.	1,393	2,475	1,825	2,686	7,029	311	1,321	2,122	297	1,253	5,005	931
Ore.	2,798	13,774	1,132	7,953	13,740	909	4,203	4,324	6,955	1,480	6,979	10,532
Penn.	122,755	14,828	68,869	90,666	120,194	71,380	121,601	222,764	2,446	177,770	161,124	19,847
R. I.	1,307	36,412	264	25,782	3,126	176	22,253	32,241	545	8,158	8,055	6,542
S. C.	206	268	45	491	1,079	56	442	344	85	351	1,187	133
S. D.	1,151	4,453	2,819	2,943	15,674	585	1,954	413	16,813	792	11,193	8,573
Tenn.	398	972	82	1,665	2,159	326	1,291	2,079	63	841	2,262	305
Tex.	6,441	4,175	12,819	7,685	31,062	949	4,333	8,024	1,740	5,047	7,057	4,536
Utah	987	1,466	163	14,836	3,589	179	1,207	3,225	2,109	240	684	6,078
Vt.	283	24,868	108	2,197	630	264	2,884	4,067	106	1,726	1,333	1,123
Va.	921	1,923	897	3,752	2,802	1,203	1,732	2,435	491	1,103	5,421	664
Wash.	6,494	42,988	1,792	20,806	22,315	1,056	8,927	10,813	30,304	3,906	11,124	34,793
W. Va.	5,115	957	1,549	3,433	3,798	6,260	1,459	14,147	51	5,799	3,911	326
Wis.	19,641	19,331	19,811	10,834	151,250	10,016	7,809	11,187	45,433	50,558	21,447	22,896
Wyo.	1,183	1,438	518	2,505	2,292	349	956	1,948	651	544	1,482	2,042

Population of the United States, 1930 and 1940.

STATE	Population, 1940	Population, 1930	Percent of Gain 1940	Total Area	Land Area	Water Area
Alabama	2,832,961	2,646,248	7.1	186,713	51,279	719
Alaska	72,524	58,758	22.3	13,246		
Arizona	499,261	435,573	14.6	63,688	113,810	146
Arkansas	1,949,387	1,854,482	5.1	94,905	52,525	810
California	6,907,387	5,677,251	21.7	1,230,136	155,652	2,645
Colorado	1,123,296	1,035,791	8.4	87,505	103,658	290
Connecticut	1,709,242	1,606,903	6.4	102,339	4,820	145
Delaware	266,505	238,380	11.8	28,125	1,965	405
District of Columbia	663,091	486,869	36.2	176,222	60	10
Florida	1,897,414	1,468,211	29.2	429,203	54,861	3,805
Georgia	3,123,723	2,908,506	7.4	215,217	58,725	540
Hawaii	423,330	368,336	14.9	54,994	6,449	
Idaho	524,873	445,032	17.9	79,841	83,354	534
Illinois	7,897,241	7,630,654	3.5	266,587	56,043	622
Indiana	3,427,796	3,238,503	5.8	189,293	36,045	309
Iowa	2,538,268	2,470,939	2.7	67,329	55,586	561
Kansas	1,801,028	1,880,999	−4.3	−79,971	81,774	384
Kentucky	2,845,627	2,614,589	8.8	231,038	40,181	417
Louisiana	2,363,880	2,101,593	12.5	262,287	45,409	3,097
Maine	847,226	797,423	6.2	49,803	29,895	3,145
Maryland	1,821,244	1,631,526	11.6	189,718	9,941	2,386
Massachusetts	4,316,721	4,249,614	1.6	67,107	8,039	227
Michigan	5,256,106	4,842,325	8.5	413,781	57,480	500
Minnesota	2,792,300	2,563,953	8.9	228,347	80,858	3,824
Mississippi	2,183,796	2,009,821	8.7	173,975	46,362	503
Missouri	3,784,664	3,629,367	4.3	155,297	68,727	693
Montana	559,456	537,606	4.1	21,850	146,131	866
Nebraska	1,315,834	1,377,963	−4.5	−62,129	76,808	712
Nevada	110,247	91,058	21.1	19,189	109,821	869
New Hampshire	491,524	465,293	5.6	26,231	9,031	310
New Jersey	4,160,165	4,041,334	2.9	118,831	7,514	710
New Mexico	531,818	423,317	25.6	108,501	122,503	131
New York	13,479,142	12,588,066	7.1	891,076	47,654	1,550
North Carolina	3,571,623	3,170,276	12.7	401,347	48,740	3,686
North Dakota	641,935	680,845	−5.7	−38,910	70,138	654
Ohio	6,907,612	6,646,697	3.9	260,915	40,740	300
Oklahoma	2,336,434	2,396,040	−2.5	−59,606	69,414	643
Oregon	1,089,684	953,786	14.2	135,898	95,607	1,092
Pennsylvania	9,900,180	9,631,350	2.8	268,830	44,832	294
Rhode Island	713,346	687,497	3.8	25,849	1,067	181
South Carolina	1,899,804	1,738,765	9.3	161,039	30,495	494
South Dakota	642,961	692,849	−7.2	−49,888	76,868	747
Tennessee	2,915,841	2,616,556	11.4	299,285	41,687	335
Texas	6,414,824	5,824,715	10.1	590,109	262,398	3,498
Utah	550,310	507,847	8.4	42,463	82,184	2,806
Vermont	359,231	359,611	−0.1	−380	9,124	440
Virginia	2,677,773	2,421,851	10.6	255,922	40,262	2,365
Washington	1,736,191	1,563,396	11.1	172,795	66,836	2,291
West Virginia	1,901,974	1,729,205	10.0	172,769	24,022	148
Wisconsin	3,137,587	2,939,006	6.8	198,581	55,256	810
Wyoming	250,742	225,565	11.2	25,177	97,548	366
Guam	22,290	18,521	20.4	3,781	210	
Panama Canal Zone	51,827	39,469	31.3	12,360		
Philippines	16,356,000	12,604,100	21.0	2,843,000		
Puerto Rico	1,869,255	1,543,913	21.1	325,342		
Samoa (American)	12,908	10,055	28.4	2,853		
Virgin Islands	24,889	22,012	13.1	2,877	77	

Cities of the United States.

NAME	Census 1940	Census 1930	Land Area Acres	NAME	Census 1940	Census 1930	Land Area Acres
Greater New York	7,454,995	6,930,446	191,360.0	Newark, N. J.	429,760	442,337	14,912.0
Boroughs				Kansas City, Mo.	399,178	399,746	37,395.0
Bronx	1,394,711	1,265,258	26,240.0	Indianapolis, Ind.	386,972	364,161	28,893.9
Brooklyn	2,698,285	2,560,401	45,440.0	Houston, Texas	384,514	292,352	23,338.0
Manhattan	1,889,924	1,867,312	14,080.0	Seattle, Wash.	368,302	365,583	37,478.4
Queens	1,297,634	1,079,129	69,120.0	Rochester, N. Y.	324,975	328,132	20,569.8
Richmond	174,441	158,346	36,480.0	Denver, Colo.	322,412	287,861	37,085.0
Chicago, Ill.	3,396,808	3,376,438	123,382.9	Louisville, Ky.	319,077	307,745	14,348.8
Philadelphia, Pa.	1,931,334	1,950,961	81,920.0	Columbus, Ohio	306,087	290,564	14,472.2
Detroit, Mich.	1,623,452	1,568,662	49,838.5	Portland, Ore.	305,394	301,815	40,442.0
Los Angeles, Cal.	1,504,277	1,238,048	232,908.0	Atlanta, Ga.	302,288	270,366	17,131.4
Cleveland, Ohio	878,336	900,429	36,089.0	Oakland, Cal.	302,163	284,063	31,591.0
Baltimore, Md.	859,100	804,874	50,560.0	Jersey City, N. J.	301,173	316,715	8,320.0
St. Louis, Mo.	816,048	821,960	39,040.0	Dallas, Texas	294,734	260,475	14,957.4
Boston, Mass.	770,816	781,188	27,634.8	Memphis, Tenn.	292,942	253,143	14,994.0
Pittsburgh, Pa.	671,659	669,817	25,529.5	St. Paul, Minn.	287,736	271,606	33,388.0
Washington, D. C.	663,091	486,869	38,408.4	Toledo, Ohio	282,349	290,718	18,010.0
San Francisco, Cal.	634,536	634,394	26,880.0	Birmingham, Ala.	267,583	259,678	31,346.6
Milwaukee, Wis.	587,472	578,249	16,290.3	San Antonio, Texas	253,854	231,542	22,860.5
Buffalo, N. Y.	575,901	573,076	24,894.0	Providence, R. I.	253,504	252,981	11,388.0
New Orleans, La.	494,537	458,762	113,920.0	Akron, Ohio	244,791	255,040	16,120.0
Minneapolis, Minn.	492,370	464,356	31,834.0	Omaha, Nebr.	223,844	214,006	23,634.0
Cincinnati, Ohio	455,610	451,160	45,529.6	Dayton, Ohio	210,718	200,982	10,107.0

NAME	Census 1940	Census 1930	Land Area Acres
Syracuse, N. Y.	205,967	209,326	11,849.0
Oklahoma City, Okla.	204,424	185,389	10,869.8
San Diego, Cal.	203,341	147,995	50,458.1
Worcester, Mass.	193,694	195,311	23,781.8
Richmond, Va.	193,042	182,929	15,360.7
Fort Worth, Texas	177,662	163,447	10,553.4
Jacksonville, Fla.	173,065	129,549	9,824.0
Miami, Fla.	172,172	110,637	
Youngstown, Ohio	167,720	170,002	15,902.0
Nashville, Tenn.	167,402	153,866	11,563.0
Hartford, Conn.	166,267	164,072	10,162.9
Grand Rapids, Mich.	164,292	168,592	11,211.0
Long Beach, Cal.	164,271	142,032	9,308.7
New Haven, Conn.	160,605	162,655	11,460.0
Des Moines, Iowa	159,819	142,559	33,597.2
Flint, Mich.	151,543	156,492	18,140.0
Salt Lake City, Utah	149,934	140,267	32,701.3
Springfield, Mass.	149,554	149,900	20,286.6
Bridgeport, Conn.	147,121	146,716	9,370.0
Norfolk, Va.	144,332	129,710	4,800.0
Yonkers, N. Y.	142,598	134,646	12,880.0
Tulsa, Okla.	142,157	141,258	5,002.4
Scranton, Pa.	140,404	143,433	12,361.7
Paterson, N. J.	139,656	138,513	5,157.0
Albany, N. Y.	130,577	127,412	11,924.1
Chattanooga, Tenn.	128,163	119,798	4,531.2
Trenton, N. J.	124,697	123,356	4,707.0
Spokane, Wash.	122,001	115,514	24,819.0
Kansas City, Kan.	121,458	121,857	10,600.0
Fort Wayne, Ind.	118,410	114,946	9,953.0
Camden, N. J.	117,536	118,700	4,915.0
Erie, Pa.	116,955	115,967	12,486.7
Fall River, Mass.	115,428	115,274	21,051.5
Wichita, Kan.	114,966	111,110	12,526.0
Wilmington, Del.	112,504	106,597	4,495.1
Gary, Ind.	111,719	100,426	25,223.3
Knoxville, Tenn.	111,580	105,802	17,094.4
Cambridge, Mass.	110,879	113,643	4,002.4
Reading, Pa.	110,568	111,171	6,090.7
New Bedford, Mass.	110,341	112,597	12,152.9
Elizabeth, N. J.	109,912	114,589	6,191.0
Tacoma, Wash.	109,408	106,817	25,168.0
Canton, Ohio	108,401	104,906	7,894.4
Tampa, Fla.	108,391	101,161	4,633.6
Sacramento, Cal.	105,958	93,750	8,774.0
Peoria, Ill.	105,087	104,969	6,027.5
Somerville, Mass.	102,177	103,908	2,517.8
Lowell, Mass.	101,389	100,234	8,565.8
South Bend, Ind.	101,268	104,193	9,839.7
Duluth, Minn.	101,065	101,463	39,916.8
Charlotte, N. C.	100,899	82,675	8,167.0
Utica, N. Y.	100,518	101,740	10,404.0
Waterbury, Conn.	99,314	99,902	17,981.0
Shreveport, La.	98,167	76,655	4,985.6
Lynn, Mass.	98,123	102,320	6,705.3
Evansville, Ind.	97,062	102,249	5,577.0
Allentown, Pa.	96,904	92,563	6,280.4
El Paso, Texas	96,810	102,421	7,742.0
Savannah, Ga.	95,996	85,024	4,473.0
Little Rock, Ark.	88,099	81,679	10,154.4
Austin, Texas	87,930	53,120	10,240.0
Schenectady, N. Y.	87,549	95,692	5,018.7
Wilkes-Barre, Pa.	86,236	86,626	3,325.6
Berkeley, Cal.	85,547	82,109	5,280.0
Rockford, Ill.	84,637	85,864	6,839.9
Lawrence, Mass.	84,323	85,068	4,316.9
Harrisburg, Pa.	83,893	80,339	3,765.5
Saginaw, Mich.	82,794	80,715	10,368.0
Glendale, Cal.	82,582	62,736	
Sioux City, Iowa	82,364	79,183	28,020.0
Lincoln, Neb.	81,984	75,933	7,944.0
Pasadena, Cal.	81,664	76,086	9,670.0
Altoona, Pa.	80,214	82,054	2,316.9
Winston-Salem, N. C.	79,815	75,274	4,853.0
Bayonne, N. J.	79,198	88,979	2,544.0
Huntington, W. Va.	78,886	75,572	7,892.9
Lansing, Mich.	78,753	78,397	6,810.0
Mobile, Ala.	78,720	68,202	8,915.2
Binghamton, N. Y.	78,309	76,662	5,991.0
Montgomery, Ala.	78,084	66,079	4,371.0
Niagara Falls, N. Y.	78,029	75,460	5,900.0
Manchester, N. H.	77,685	76,834	20,520.0
Quincy, Mass.	75,810	71,983	10,567.6
Pawtucket, R. I.	75,797	77,149	5,494.0
St. Joseph, Mo.	75,711	80,935	8,480.0
East St. Louis, Ill.	75,609	74,347	8,672.0
Springfield, Ill.	75,503	71,864	5,532.5
Portland, Maine	73,643	70,810	13,808.0
Charleston, S. C.	71,275	62,265	2,873.6
Springfield, Ohio	70,662	68,743	7,296.0
Troy, N. Y.	70,304	72,763	6,630.4
Hammond, Ind.	70,184	64,560	
Newton, Mass.	69,873	65,276	11,457.0
Roanoke, Va.	69,287	69,206	15,360.0
Lakewood, Ohio	69,160	70,509	3,474.0
East Orange, N. J.	68,945	68,020	2,516.0
New Britain, Conn.	68,685	68,128	8,519.0
San Jose, Cal.	68,457	57,651	
Charleston, W. Va.	67,914	60,408	
Topeka, Kan.	67,833	64,120	4,941.0
Madison, Wis.	67,447	57,899	
Mt. Vernon, N. Y.	67,362	61,499	2,644.4
Racine, Wis.	67,195	67,542	3,858.0
Johnstown, Pa.	66,668	66,993	3,488.0
Pontiac, Mich.	66,626	64,928	
Davenport, Iowa	66,039	60,751	10,393.0
Oak Park, Ill.	66,015	63,982	
Augusta, Ga.	65,919	60,342	6,012.0
Phoenix, Ariz.	65,414	48,118	
Evanston, Ill.	65,389	63,338	
Cicero, Ill.	64,712	66,602	3,678.5
Atlantic City, N. J.	64,094	66,198	7,362.0
Dearborn, Mich.	63,584	50,358	
Medford, Mass.	63,083	59,714	6,400.0
Terre Haute, Ind.	62,693	62,810	5,377.0
Columbia, S. C.	62,396	51,581	
Brockton, Mass.	62,343	63,797	13,677.9
Cedar Rapids, Iowa	62,120	56,097	7,805.0
Jackson, Miss.	62,107	48,282	
Covington, Ky.	62,018	65,252	3,837.0
Passaic, N. J.	61,394	62,959	2,001.7
Lancaster, Pa.	61,345	59,949	2,530.0
Springfield, Mo.	61,238	57,527	
Wheeling, W. Va.	61,099	61,659	6,508.4
Galveston, Texas	60,862	52,938	4,985.6
St. Petersburg, Fla.	60,812	40,425	
Fresno, Cal.	60,685	52,513	5,434.5
Durham, N. C.	60,195	52,037	
Greensboro, N. C.	59,319	53,569	
Decatur, Ill.	59,305	57,510	4,626.3
Chester, Pa.	59,285	59,164	3,020.0
Beaumont, Texas	59,061	57,732	7,360.0
Bethlehem, Pa.	58,490	57,892	11,172.0
New Rochelle, N. Y.	58,408	54,000	
Malden, Mass.	58,010	58,036	3,252.0
Macon, Ga.	57,865	53,829	5,966.0
Corpus Christi, Texas	57,301	27,741	
Arlington County, Va.	57,040	26,615*	
Upper Darby Twp., Pa.	56,883	47,145*	
York, Pa.	56,712	55,254	2,220.0
Union City, N. J.	56,173	58,659	
Waco, Texas	55,982	52,848	
McKeesport, Pa.	55,355	54,632	2,240.0
Irvington, Va.	55,328	56,733	
Cleveland Heights, Ohio	54,992	50,945	
Stockton, Cal.	54,714	47,963	

* Classified as urban under special rule.

20 Largest Cities of the World

NAME	Year of Census or Estimate	Population
London, England	1937	8,655,000
New York, U. S. A.	1940	7,454,995
Tokyo, Japan	1939	6,581,100
Berlin, Germany	1939	4,332,242
Moscow, Russia	1939	4,137,018
Shanghai, China	1936	3,489,998
Chicago, U. S. A.	1940	3,396,808
Osaka, Japan	1939	3,394,200
Leningrad, Russia	1939	3,191,304
Paris, France	1936	2,829,746
Buenos Aires, Argentina	1938	2,317,755
Philadelphia, U. S. A.	1940	1,931,334
Vienna, Austria	1939	1,918,462
Rio de Janeiro, Brazil	1936	1,711,466
Hamburg, Germany	1939	1,682,220
Detroit, U. S. A.	1940	1,623,452
Budapest, Hungary	1939	1,585,678
Peking (Peiping), China	1936	1,556,364
Los Angeles, U. S. A.	1940	1,504,277
Rome, Italy	1940	1,327,000

ECONOMIC GEOGRAPHY

ABRASIVES. There are many forms known in manufacturing. Used in scouring and polishing wood, stone and other hard surfaces and substances.

Natural abrasives or abradants include the common grindstone, made from material found in various places, mainly Ohio, New York, Colorado, New Hampshire, and recently the best forms from Arkansas. Diamond abrasives are used in polishing the hardest surfaces, also corundum, a natural form of which is emery, quartz and talc. Ontario furnishes our main supply of natural corundum, while South Africa supplies most of the rest of the world. Natural emery is found in New York, Greece, and Asia Minor. Artificial corundum is made from bauxite, the best of which is mined in Arkansas. Other hard abradants are glass, mineral wool, steel shavings, zinc, gold and tin.

Carborundum, the hardest abradant next to the diamond, is an artificial product first made in 1891. This is crystallized carbide of silicon formed by heating coke and sand in electric furnaces to enormously high temperatures. Combined with several other substances like shellac, rubber, porcelain, carbide of silicon appears under various other trade names such as crystolon, carbolon, and samite.

Softer abrasives are pumice, rotten stone, chalk, rouge, putty in powdered form, sawdust, cloth fibers, and gutta percha, all used chiefly in polishing woods. Clay, bakelite, other forms of treated rubber, and crushed fibers find increasing favor as soft abrasives.

AGRICULTURE. When primitive man found his food supply hard to obtain from nature, he began to lay up in store for times of famine, and to try by using implements to eke out his living. Nomadic tribes once followed the food supply from place to place. Yet as early as 3500 B. C. grains attained high cultivation, as the tombs of Egypt, Mesopotamia, and other oriental lands now demonstrate to us.

Early centuries of farming. Undoubtedly man early learned to choose the best grains, plants and berries for growing better crops. For centuries, however, work was done by man power alone. The American Indian, for instance, did not have the horse until the Spaniards came. Yet in the eastern hemisphere, dogs, horses, sheep and oxen seem to have been tamed by man in early times. Grains found in Egyptian tombs showed a high degree of development.

The Romans developed agriculture, as they did the law and the arts, and left little for the early Christian ages. Methods of farming in Asia have changed very little since the days of Christ, until recently. Saracens introduced rice, cotton, sugar, and peas into Spain, and these, with other domestic crops, reached England in the course of westward migrations.

About 1400 the English looked to Flanders, Italy, and the Orient for better ways of growing things. Merchants and pilgrims brought back many new grains and seeds from their travels in the east. After the fall of the feudal system, lands were more and more enclosed, the soils were improved by drainage, and some rudimentary practice of rotation of crops was attempted. Yet grains yielded little more than 10 bushels an acre, and for centuries little was known about keeping animals free from disease and the effects of poor feeding. By 1500 turnips, clover, fruit trees, hops, carrots, cabbages, cauliflowers, and other green vegetables were transplanted into England, some of them from Flanders. Over a century later, some choice grasses, tobacco, Indian corn or maize, squash, and a few other Indian products were introduced from across the Atlantic.

After 1750 England turned to better methods. Lord Townsend in 1760 introduced a new system of crop rotations for wheat, turnips, barley, clover and other grass. Each farmer had to keep enough cattle and sheep to suit his acreage, to use only a certain amount of artificial fertilizer, and not to sell the manure from his place. Thus, under government fostering farms produced fivefold, and man for once came nearer having all he needed for food. Until this time the fear had been that drouth and pests might cause famine in any season. It was not until in the modern industrial and machine age that any surplus of food became troublesome. Bakewell, in 1750, produced a sheep that could be made ready for market in two years, instead of three or four as formerly.

Early farm machinery. Jethro Tull invented a grain drill (1731) and also used a horse-hoe. Since then some of the important helps to farming have been the Newbold cast-iron plow (1797), Lane mouldboard for plows (1833), Deere plow (1837), Pitts thresher (1834), Marsh harvester (1858), the Locke grain-binder (1870), the combination harvester and thresher (1878), three-wheel sulky plow (1884), combined husker and cornstalk shredder (1885), Babcock cream tester (1890), Hart and Parr gasoline tractor (1902), corn picker (1910), and rotary hoe (1928). These immensely increased production and lower costs per unit of crop. In 1850 it took 50 hours to do by hand labor what machines now do in 12—to grow an acre of corn. Great tracts of land have been opened by irrigation, and the whole west of the United States has been brought into production of some degree. The result has been a great surplus of grains, and recently of corn and cotton. Methods are now being tried to place lands back into forests in cases where they produce at too great labor and cost. One recent attempt of the federal government has been to get people to move from poor land to regions that promise abundance.

Improved farming. Many ways have been tried to improve crops, to make the lot of the farmer more fortunate, and to secure the greatest productivity from the soil. Vast irrigation projects in the western states, also in some isolated eastern and southern regions have reclaimed millions of acres. Forestation has helped to bring back the soil to its former level of fertility. Recent projects include the planting of trees in submarginal areas. Among the plans recently proposed to improve rainfall and to conserve moisture is an immense tree-belt reaching from Montana to northern Texas. Authorities now urge that lakes and ponds be left on the land so that the evaporation will produce sufficient rainfall and so prevent drouths. *Dry farming* has also been greatly advanced of late. Crops like kafir corn, sorghum, alfalfa, and notably durum wheat have been planted in sandy or clay soils. Nearly a third of our wheat crop is durum. Sometimes the land is left fallow for a season or two, while it is covered with something to keep both the hot sun and harsh wind from drying it out.

Federal aid to farmers. More than fifty acts have been passed by Congress to aid the farmer. The Morrill Act was among the first, by which nearly every state, and three territories, have "land grant" colleges, where better methods of agriculture are fostered. Of late, these have become the center of the government administration of farm relief in the various areas. Over 700 colleges and schools teach agriculture of some sort. In 1914 the Smith-Lever Act provided for teaching by correspondence at various centers. The Smith-Hughes Act helped the state provide funds and teachers for local schools. Other legislation: Plant and Stock Quarantine (1912); Federal Farm Loan Act (1916); Grain Standards (1916), to provide for better grading of grains; Agricultural Marketing Act (1929), setting up the Federal Farm Board, which spent huge sums in efforts to raise prices of farm produce; Agricultural Credit Act (1933); and the Agricultural Adjustment Administration (1933) to relieve farmers in danger of bankruptcy, and to curtail production by paying bonuses for reducing acreages in cotton and wheat, and for reducing the stock of cattle and hogs.

Farmers cooperatives. Producing and marketing organizations of the farmers themselves have grown up in many lands. Russia, Germany and India are outstanding examples. Australia, Brazil, Canada, France and New Zealand some years ago tried to stabilize production and stimulate selling farm products. Under the N. R. A. in the United States the various code authorities have led to greater concentration. Australia and Canada organized gigantic wheat pools, managed largely by farmers. Production organizations in Denmark (home of this type of cooperation) have been very effective. Brazil tried, without success, to keep up the price of coffee by destroying eight million bags of inferior grade. Examples in the United States are the 20,000 raisin growers of California, a very successful pool; milk dealers within a radius of 400 miles of New York City; three million farmers in the wheat and corn belt.

Statistics on total production in the world are often hard to obtain. Taking as a basis the figures for the last ten years or more, the average annual production of wheat appears to be 4 billion bushels; of corn nearly the same; oats 250 millions less; barley fully a billion and a half; rice about 200 millions; and cotton average, for the world, about 25 million bales. Europe grows a third of the wheat; somewhat more of oats; three-quarters of a billion bushels of rye; and a half billion of barley. Asia furnishes 450 million bushels of wheat, and 125 of barley. For the United States, the yearly average is two and a half billion bushels of corn (mostly consumed where produced); somewhat less than 830 million of wheat; over a billion of oats; 250 millions of barley; 350 millions of potatoes; about 40 each of rye and rice; 12 million bushels of buckwheat; and 15 million bales of cotton. Horses still total for the world, 100 millions; cattle of all kinds, 550 millions, except sheep, 650 millions; and swine, 250 millions; United States claims 15 million horses; 60 million cattle, of which 24 are cows and calves; 60 million swine; and 50 of sheep. Great Britain has 12 million cattle, and 30 million sheep.

ALLOYS. Any combination of metals is an alloy, save for mere physical mixtures and chemical combinations of the ordinary type. Alloys are made in three ways: 1, fusing together; 2, electrolysis; 3, mere pressure. Often alloys differ from their components. Sometimes they are lighter than the average of their components, and sometimes they change when reheated. They must be combined usually in definite proportions, else results vary not a little. Some alloys are made of both metallic and non-metallic elements. They are of two general types: the pure metal alloys, such as those having iron bases, called ferrous; and, second, all others or the non-ferrous.

1. Ferrous alloys appear in hundreds of combinations, and frequently under a bewildering lot of trade, common or patent names. *Steel* itself is a true alloy of iron and carbon. Before 1910 steel alloys were not very common. Now we have them in rods, bars, plates, tubes, wires, forgings, and in scores of other useful products, increasing rapidly. Nickel and chromium, with steel, are used for crank shafts, axles, and other friction surfaces. *Stainless steel*, made of iron, carbon, and from 1 to 15% of chromium, is used for knives and metal surfaces easy to tarnish or dull. *Manganese steel* resists heat, heavy blows, and the efforts of burglar tools. The *non-magnetic* types can be used for precision instruments and in certain laboratory equipments. *Invar*, made of carbon, manganese and iron, resists changes in temperature as in watch springs, pendulum rods, and other parts normally subject to expansion or contraction. This form of nickel-steel is non-corrosive. *Platimite*, another nickel-steel, is much used in making light bulbs. *Tungsten* is composed of iron and chromium, and resists heat from friction up to at least 700 degrees centigrade. Indeed, the chromium-nickel alloys are becoming daily more useful and important. Various proportions of the components give rise to various trade names. *Tantiron* is made of iron and silicon. *Permalloy*, a nickel-steel, containing about 25% also of iron, is much used for submarine cables. Various combinations of steel and tungsten make tough, wear-resisting, keen-edged tools. Chromium and molybdenum sometimes replace the tungsten in such tools. One of the recent developments in alloys leads to cold-rolled steel and other metals, now promising great utility and economy in manufacture.

2. Non-ferrous alloys. Though not so important as the iron and steel alloys, yet hundreds of compounds are becoming more and more useful. Only a few of these may be mentioned here. *Copper* is the basis of numerous alloys, some of which are metal for pennies, gun-metal, bell-metal, brass, bronze, nickel-silver, and others in varying proportions mainly of tin, zinc, nickel. *Mirror metal* contains one-third tin, *constanten* about 40% of nickel, which in other proportions with copper make alloys that can be worked cold or forged at very high temperatures, and *manganin* has 17% of manganese, less than 2 of nickel, and the rest copper. Bronze, already an alloy of copper and tin, if mixed with phosphorus makes *phosphor bronze*, much used in bearings.

Nickel is combined with iron for boiler plates, with chromium to make rust-proof metal, such as that recently introduced for automobile fenders, and as a base for silver-plated ware or for cheap knives and forks without plating. *Chrome-nickel* compounds are used for window sashes, store fronts, and other "fixtures"; in its qualities it resembles stainless steel alloys. *Monel metal*, used extensively in marine fittings, has 60% of nickel. *Permalloy*, a combination including nickel, made in 1927 by G. W. Elmer, proved to be many times more magnetic than iron.

Aluminum alloys have grown tremendously important in recent years. Some of them are for electric power wires instead of copper, for magnalium used in huge quantities in frame construction work, and especially *duralumin*, for air-ship frames and for cooking utensils. Though platinum has grown much more rare and expensive than gold, it is used for alloys in dental work, for ring settings, with 20% of gold for laboratory crucibles, and as a small component with gold in a new alloy called *rhotanium*, used in jewelry. *Cerium* is used with iron to make pyrophoric alloys. *Frary metal* is made of lead, barium, calcium, and a dash of mercury. Canada has recently produced for cutlery a valuable alloy of chromium, cobalt, and iron. *Tungsten* replaced *tantalum* for electric light filiments, and now it is giving way to *molybdenum*, much used also as a hardener in making steel. Twenty or more "rare earth" elements as yet have not been used commercially.

ALUMINUM. The trade or American name for the element aluminum, not found except in combinations in nature, such as in the oxides like corundum, ruby, and sapphire; in hydrates like gibbsite, bauxite, and others; and various compounds like spinell, chrysoberyl and cryolite. The mineral bauxite is the chief supply, coming mainly from Arkansas and three other southern states, Germany, Switzerland, Norway, Canada, and France. Though known to the Romans in salt form, Humphrey Davy, H. C. Oersted, Bunsen, and others failed to isolate aluminum. Paul Heroult of France and C. M. Hall of America about 1886 succeeded in making marketable aluminum, the latter's experiments leading to the present developments in the United States. The common practice is to dissolve molten cryolite in purified alumina at about 950° C., but the solution has to be electrolyzed. See under *Alloys* for combinations with other metals.

Sheet aluminum is familiar to every one in cooking utensils, vats, aluminum foil for wrappings, covers for bottles, tubes for cosmetics, and many other uses. Aluminum castings are extensively used in automobile parts, radiator tops, magneto bodies, brackets, housings, parts of pianos, typewriters, gasoline tanks, and other objects where lightness is desired, combined with great strength and toughness. Duralumin is now largely used in heavier-than-air flying machines, especially for wings, framework, and containers for liquids. Aluminum paints are used more and more, and aluminum bronze powder has long been employed in the arts. For electrical conductors, wires and insulations, because certain forms are non-magnetic, alone or alloyed with copper, aluminum is quickly replacing the latter alloy. It is especially good for containers likely to be affected by sulphur and its compounds. New processes of coating and hardening aluminum render this product of much greater usefulness when lightness, wearing qualities, and looks are imperative.

ANILIN. See under *Coal Tar Products* and *Dyes*.

ARTIFICIAL ICE. See under *Refrigeration*.

ASBESTOS. This mineral product, now found in several varieties, was known as early as the Roman Pliny, who describes it as "the funeral dress of kings." Commercial asbestos is a tough, infusible, fibrous silicate. It is spun and moulded into various coverings where heat would destroy other substances. Some of the chief uses are for brake linings, gaskets, electric insulations, water and steam piping, and fireproof coverings of all sorts. Canada supplies about 80% of the fiber, with Rhodesia, Russia, South Africa making up most of the remainder. Since 1868 the annual output has risen from 200 to about 240,000 tons. The United States takes much of the Canadian raw supply.

AUTOMOBILE. First was made by Cugnot, a French surgeon (1769); fashioned from a gun carriage and a coffee boiler. Murdock, an assistant of James Watt, ran a road wagon by high-pressure, non-condensing steam (1784); Symington and Trevithick improved, until Evans, the American, drove his mud scow overland to the Delaware, taking it thence by water to the Philadelphia docks (1803). From 1820 to 1833 many steam coaches were made by W. James, J. Anderson, Walter Hancock, and Goldsworthy Gurney, all using steam, which gave way to the period of modern development about 1894. Steam and electric automobiles, in their original forms, are now seldom used, since gasoline has proved more convenient, safer, and cheaper than either. For the mechanism of an automobile, see the article on page 913.

Today the process of assembling an automobile illustrates the wonders of mechanics and efficiency. At first, when automobiles were made by hand one by one, parts had to fit through a system of choice. Now the workman in the factory picks up the first one he reaches, knowing that it will go where it belongs; this is the result of interchangeable parts, as developed in the last thirty or forty years, and especially during and since the World War. Standardization leads to cost reduction. Manufacturers of automobiles, for instance, try to reduce their make to a few fundamentals; the Ford has but two styles of chassis,—the pleasure car and the truck. Upon these quite a variety of bodies are made, but these two are standardized, so that special fitting is not necessary. Precision is absolutely required. Quantity production also reduces time and costs, but few companies make more than a fourth of the parts they use. Tires are made by one firm, brake drums by another, lights by another, ignition by others, the body by one firm, the fenders by another, and so on.

Division of labor. Since the process is continuous, but coordinate in all its branches, different large units must be assembled at one time. Endless platforms move down the shop, carrying the part. On one there is nothing but radiators, and the single man has to do a bit of soldering, or put on a nut, or tighten something. On another conveyor moves the chassis, each man doing his small part as it goes by. The body of the car is made ready at another point or in a different room, and in another the tires are fitted to the wheels. All these collected parts meet at one point, or are united in one department. One car every five minutes has been the record of a large factory. The Ford Company made a record of receiving at the River Rouge docks, Michigan, the ore on Monday, and a finished car was made from the material and delivered to a customer on Thursday of the same week. In the meanwhile, these processes were necessary: Moving the ore to the blast furnace, smelting the ore in the furnace, taking sixteen hours thus far; resmelting, four hours; molding the cylinder blocks, five hours; machining, 44 operations in about three hours; then the assembling in line, and the car is finished on Tuesday about 1 p. m. Then it was shipped to the branch dealer, where it arrived on Wednesday, and was delivered the next day to the buyer,—52 hours after the ore reached the dock. Assembly itself has been reduced to 120 minutes for the single car.

Previous to 1912 one million motor cars were made in the United States. By 1935 the total had risen to nearly 45 millions. From 1923 to 1932 the yearly average was about 3 million; in 1933 it was slightly over 2 million, and automobile registration that year was nearly 23,720,000. With meat packing and oil products, the automobile industry leads in America, being first in 1932.

BEVERAGES. All people have their favorite beverages, fermented and non-alcoholic. Though *tea* was known to the Chinese before the dawn of modern history, it was uncommon in England as late as 1666, having been mentioned first in 1615, in a letter from the Orient to an official of the East India Company in London. This is brewed from the leaves of the tea bush, grown in China and neighboring lands, cured by the natives, and now sold in most of the world.

Teas are known as green or black according to the method of preparing them for market. Substitutes are made from various shells, maté, kola nut, sassafras, and partridge berries.

Coffee, first mentioned in eastern lands before 1400, was introduced into England about 1650, grown in Arabia, Java and the eastern Orient, until introduced into Jamaica, West Indies, in 1718. Now the New World, chiefly Brazil, is the main source of supply. The coffee tree grows from seeds to about 6 to 10 feet high, produces about the fifth year a good crop, which is called "cherries," since the outer covering looks red. The whole is dried and the two beans or berries of coffee are removed; or, as now more common, it is soaked in water several times, and the beans are released mechanically by rolling machines. Chief substitutes are chicory,—which some prefer to mix with coffee,—soy beans, roots, seeds of ochra, and cereals, and there are other adulterants. Of the world supply of coffee, Brazil provides about 69%, the average crop being about 13 million sacks of 132 pounds each. Though 2 million pounds were destroyed between June, 1931, and June, 1933, the supply remained beyond the demand in 1934.

Cocoa or cacao, another popular beverage, is produced from the fruit of trees that grow about 20 feet tall. The numerous seeds, resembling somewhat almonds in looks, are extracted from cucumber-shaped fruit, which itself is edible. They are wet, allowed to ferment a little, dried, screened, roasted, and broken up into "nibs," which later are ground fine. Chocolate is a derivative from cacao. Both are highly nutritive and assimilable. Cocoa butter, extracted from the cocoa nibs, or powder, is largely used in making milk chocolate, first prepared by M. D. Peter at Vevay, Switzerland, in 1876. English milk chocolate contains a high proportion of milk, less its water content. Chocolate, though long known in Mexico, was introduced into England as late as 1650. The annual world production is about one-fourth that of coffee.

Mineral waters occur in nature in alkaline, alkaline-saline, saline, and acid combinations. Of the 10,000 natural mineral springs in the United States, about 900 are developed commercially. Such water results from rain water and minerals of the earth coming into contact, the resulting water coming to the surface through fissures, or drilled holes. Many mineral springs produce water above blood-heat in temperature. Famous springs are those at Saratoga, N. Y., good for skin, nerve, and digestive disorders; Berkeley and White Sulphur Springs in West Virginia; the Hot Springs of Arkansas, Wyoming, New Mexico and California, the rich calcic springs at Waukesha, Wis., and certain ones in Texas which liberate free sulphuric acid. Other states have different kinds of healing waters. Apollinaris is imported from Germany, vichy from France, hunyadi janos from Hungary, and kissingen from Bavaria. The Carlsbad Springs in Czecho-Slovakia have been world famous for centuries.

Carbonated beverages in form of soda waters, ginger ales, fruit syrup drinks, waters flavored with synthetic products, are more in demand in the United States than in any other land. About 1807 the fruit juice carbonated water was prescribed by a Philadelphia doctor for his patients. Carbon dioxid is used to impregnate ordinary drinks, ginger ale having a much higher volume, sometimes four and a half volumes of gas. Natural fruit juices and coal tar derivatives are mainly used to flavor, and sugar or syrup to sweeten, for saccharin is forbidden by most states. Consumption of these beverages has grown tremendously in recent years.

BOOKMAKING. Earliest records are the clay tablets of Babylonia and Assyria, 3000 years before Christ, next came the Egyptian priestly writings on paper made of reeds or papyrus 500 years later, and at last the written scroll of early Christian time. The king of Pergamos in the second century prepared the skins of sheep and calves for writing surfaces, named in his honor *pergamenta*, and finally in English *parchments*. Writing material made from rags was introduced in the tenth century. Before modern printing the monks and scribes of the Middle Ages laboriously copied many long manuscripts on parchment and other materials, and some of these were beautifully illustrated and illuminated in colors by hand. Title pages were unknown. The first of these was printed by Füst and Schoeffer at Mainz shortly after 1460. Gutenberg, with money lent by Füst, had printed a Latin Bible and some smaller works before 1455. In 1477 William Caxton, an Englishman who had been on the continent, brought out in England the *Dictes and Sayings of the Philosophers*, now said to have been the first book printed in our language. Caxton followed this with many others, some rather well printed. Printed cuts appeared first in 1461, paging and headlines in 1470, covers of wood for books about this time, small folio and quarto books about 1500.

Aldus of Venice introduced the type we call *italic* in small books, greatly admired and imitated for a century. Before 1600 pasteboard covers replaced the wooden variety, prices of books became reasonable, paper was improved, and printing became a business, so that by 1750 good books were sold for moderate sums. Pope made great sums from his books, which sold as low as one shilling each. The rise of the novel, and the great vogue of poetry, by 1800 dignified and improved the printer's art. Modern bindings, lettering in colors on the backs of books, and new fonts of type gradually evolved. Certain printing houses became known for a distinctive style of work, like the Kelmscott Press of William Morris, the Doves Press, the Ashendale Press, the Curwen Press, the two university presses in England, and those of DeVinne, Updyke, Rogers, Gillis, and the Grolier Club in the United States. Thus typography at last became both a science and almost a fine art.

Process of bookmaking. If the typewritten manuscript or copy is to be printed in the general form, it is placed in the hands of operators of linotype or monotype machines, which machines automatically cast the type and deliver it in column form on a narrow tray called a galley. If the typewritten matter is to be put in tabular form such as found in the history outlines in this book, it must be hand set. The type is then inked and an imprint or proof is made. These "galley" proofs are then sent to the author for whatever corrections he may desire.

Electrotypes. The galley type is then made into page proof with proper title headings inserted. If this proof is satisfactory to the author, an *electrotype* is then made of each page. This is done by pressing the type upon a wax surface plate so that each letter leaves its impression on the soft surface. The wax mold is then dusted with graphite so as to conduct electricity, connected with the negative pole of a battery or dynamo, and placed in a plating solution where it receives a thin coating of copper. To strengthen this thin copper shell, which is an exact duplicate of the type for one page, the wax is then removed and the back is filled with electrotype metal chiefly composed of lead. Anywhere from sixteen to sixty-four of these electrotype pages are locked in a large iron frame (make-ready) and placed on the printing press so arranged that when a sheet of paper is printed on both sides and folded, the pages will be in proper sequence.

Folding and pressing. When the sheets are received from the presses they automatically pass to folding machines which cut them apart and deliver them in folded sections called signatures, which are compressed in bundles by machinery in order to remove the air and to make each section firm.

The printed pages are gathered in order; the "end papers" and the "fly papers" added, and the sheets or pages sewed together. If the book is illustrated, the plates are arranged prior to the sewing. Certain sections are secured by sewing to cords, tapes, or strips of vellum, the projecting ends of which are used to secure the mass of paper to the cover. After the sewing, and the arrangement of cords, etc., the head bands (which give strength to the back) are affixed, and the actual covering of the book is done by gluing or pasting the material upon the boards at the side and back. The final operation is decoration by "tooling" or "stamping." In casing, two stiff sides and a flexible back are made; the sheets are sewed and glued into the case by canvas glued fast to the back, with projecting strips for attaching to the covers. Decorations consist of ornamental textile material, or impressed patterns without color, or in one or more colors, in infinite variety. See also page 811 in Literature for early development of alphabets, writing, and materials.

BRICKMAKING. The clay obtained is cleared of vegetable soil, is tempered or mixed perfectly by hand, in the "pug mill," or the ring pit. Pressed bricks are tempered by hand; the clay is spaded into a pile with water thrown over it, and the next day it is worked over with a spade, cut through with a "slasher," and spaded again. The pug mill is an arrangement of knives to slice the clay, and a "pusher" to drive it again and again through certain orifices, by steam or horse power. The ring pit has a wheel moving from the outer circumference to the center, thoroughly "working" the clay.

When well worked the clay is molded, dried, and burned in a kiln. Hot air and combinations of air and gas are also used. There are two brick machines—one forcing the clay into molds; the one that sends the clay from the pug mill in a continuous oblong which is automatically cut into bricks, carried to the drying rooms, and later to the kilns. The color depends on the amount of iron in the clay; the Milwaukee brick made from clay with a small percentage of iron is of a light cream color. Buff-colored bricks are obtained by mixing ground chalk with the ferruginous clay. Ornamental bricks are colored by the use of metallic oxids, red, yellow, buff, blue, green, white, black, or brown.

Recent improvements in brickmaking include quantity production by use of large hoppers, scoops, and cranes to handle the material and the finished product. Rapid drying of bricks in "tunnels" or long passages, instead of in the old round kilns, and by humidity driers, have proved successful. The semi-dry process also reduces the amount of water needed in mixing the original clays, and a dry process is being perfected under tremendous pressure which forces the particles together.

Though the common building and paving bricks still lead in quantity production, ornamental face bricks, vitrified and enameled varieties, hollow tile bricks for interior constructions, and many special types of artistic bricks are gaining in popularity.

BRUSH. An instrument, also termed broom, for sweeping or rubbing surfaces to remove dirt, or to apply paint, blacking, etc. A bunch of fibrous matter attached to a handle. Of very ancient origin and of universal use. Materials used are bristles, feathers, whalebone, rubber, hair of camel, Russian squirrel, badger, bear, goat, rattan, and also split cane, broom corn, and coir, the husk of the coconut, which is largely superseding hog's bristles for coarser brushes. The crude form is the paint brush with bristles bound together with twine, and a coating of glue; artist's brushes are made from Russian squirrel and camel hair, forced into a wet quill that contracts on drying and holds them fast. The cheaper scrubbing brushes simply have the bristles or fiber pushed through a hole in a piece of wood, and cemented with glue. The Woodbury process (American) trepans the back, the bristles not going quite through, rendering an extra or false back unnecessary.

Machine assembling and stapling of the bristles, and the use of twisted wire, are now largely employed in addition to the older methods of setting by hand, gluing, or trepanning. Wooden fibers, imitation badger hair, and metal holders have recently been used as substitutes. Scouring balls made of metal filings or shavings are often employed where stiff brushing is necessary. Wire-held bristle brushes are used for cleaning bottles, flues, boilers and other hard surfaces.

The well-known long-handled broom and the whisk broom are essentially American developments made from broom corn, a staple product of the Middle West. The long-handled broom of Europe, made from finely split cane, and considered very expensive, was used mainly on carpets. The American broom is within reach of all. The broom corn is run through machines which grade the fibers according to length; it is tied into bundles to bleach, or be dyed, and is secured to the handle by grouping and winding with wire by hand. Revolving brooms for street use were used in 1835, and the modern carpet sweeper is an evolution in miniature.

BUILDING. There has been a revolution in handling building material during the past few years. Labor-saving and time-saving devices have been introduced; bricks, mortar, etc., are raised by elevators instead of by hod, with derricks and hoists for the heavier bodies. About 1890 steel construction attracted attention in New York, and since then "sky-scrapers" have run riot. What is termed "mild structural steel," rolled to size specified in the form of I-beams, L's, Z's, etc., are riveted together to form a skeleton by the contractor, the cranes and hoists bringing everything to position as desired. As the building progresses the "erecting plant" goes up story by story. For the foundations and floors concrete is generally used, composed of one part cement, three parts sand, and five parts broken stone; it is used for filling in spaces between girders and pillars, and for protecting the steel construction; for which terra cotta, brick, and stone are also used. The problem of these buildings lies in the possibility of incessant vibration cutting off the rivet heads, and in the difficulty of finding by inspection the dangerous oxidation of iron when it occurs.

With the decrease in quantity and increase in price of lumber, various substitutes have been devised. Cement, brick, stone, and other naturally hard substances, besides being used more extensively for frame-work, are taking the place of wood at many points. Window casings, furniture, and other interior fittings are now made of metal. It is possible now to construct a large building with 95% or more of material other than wood. Ornamental cement, brick, metal lath, and reconstructed woods become more popular for houses. Cellulose (q.v.) is also rapidly being utilized in finishing interiors.

BUTTONS. Ancient peoples used thongs, girdles, and other means of fastening clothing. As ornaments, buttons were worn in England shortly before 1400; next loops were added before 1600; and last of all the buttonhole. For centuries the Chinese used buttons on hats as a mark of relative ranks. B. Sanders, a Dane, introduced at Birmingham, England, in 1807 the buttons made of two metal disks, with cloth or felt between them, the edges being brazed over to hold this. Since then buttons have been made by machinery. Sanders' son introduced in 1825 buttons having a canvas instead of a metal shank, and in 1827 manufacture of covered buttons began in Massachusetts. Bassot about 1850 invented a machine to stamp buttons from hoofs of cattle, softened by boiling. Porcelain buttons came into use in England about 1840, and glass ones in Bohemia before that date. Birmingham, England, center of button making, manufactured brass buttons in 1689, steel buttons in 1767, horn in 1777, and pearl buttons before 1850.

Ivory, metal, and horn buttons were made at Waterbury, Connecticut, as early as 1812; vegetable ivory buttons at Leeds, Massachusetts, in 1859; composition buttons at Springfield, Mass., in 1875. Beginning at Muscatine, Iowa, after 1890 huge quantities of buttons were made at various towns along the Mississippi River from "niggerhead" shells found in the water. Celluloid picture and campaign buttons have long been popular. In the two varieties, those with metal or cloth shanks and those with holes drilled in the button itself, scores of other substances have been used as raw material.

BY-PRODUCTS. One of the vital questions which confronted industry was the disposal or use of its waste products. Through the efficiency of modern industry this waste has now become more valuable, in many instances, than the product itself. These are now known as by-products. A few representative examples are here mentioned:

Coal. The new process of coking gives not only a better grade of coke, but gas, coal tar, explosive materials, dyes, chemicals, perfumes, acids such as phenol (carbolic), creosote, pitch, and numerous others. In the old bee-hive coke oven all this was lost. Coal is largely used in smelting furnaces. Not only is the smoke of the coking plant used, but now the smoke of the smelting furnace yields vast quantities of arsenic, trioxid, sulphur dioxid, antimony, lead, and copper. Even from the *slag* of the furnace, which was dumped in great slag heaps throughout the country, we now obtain cement, fertilizers, dyes, and other useful products.

Meat packing. Today the phrase is used that everything except the squeal and the curl in the tail of the hog is used. Here we obtain glue, leather dressings, fertilizer, soap, glycerine, pepsin, gelatine, buttons, sausage casings, and other products. In point of fact, however, there are considerable losses in meat packing—in some departments as great as 20% or more.

Cotton seed. Once a great nuisance and always in the way, the cotton seed now yields many valuable by-products such as cellulose from the fuzz or "linters," felt, twine and rope, meal for animals, hydrogenated oil for use in baking, feed, cosmetics, washing powder, putty, artificial leather, paint, and nitroglycerin.

Lumber. Besides countless articles of commerce, lumbering has given us paper pulp, valuable oils, resins, turpentines, wood alcohol, and acetic acid.

Petroleum. We obtain various lubricating oils, paraffin, vaseline, wax, benzol, kerosene, and gasoline, which was once largely considered waste, and now has become one of the most valuable of products. Even certain medicines such as Nujol and Petrolagar are now made as by-products of petroleum.

Sugar beets. These yield alcohol, potassium compounds, and methyl chloride.

Industry has indeed become so specialized and efficient that the dye industry, once a German monopoly, has become one of America's outstanding industries as a result of by-products. Chemistry is performing marvels in the development of by-products to such a degree that even the humble peanut has been made to yield a score of useful products.

CABLES, TRANSMISSION. Rope and links of metal have long been used as cables to hold objects in place. Electric power transmission cables, however, present other difficulties and methods. These latter are for air, surface, or underground lines for telegraph, telephone, submarine communication, and power transmission lines. Two chief classes are *straightway* and *twisted cables.* Only the latter needs special mention, since the ordinary telephone or telegraph wire is familiar enough to all. Twisted cables are now of tremendous business importance.

Transmission cables usually have three layers or parts: (1) Twisted wire cores; (2) insulation of each separate wire in the group; (3) outer armor or insulated covering. Ocean telegraph and telephone cables have an additional armor of iron wire.

Insulation is of two types: 1. The strands or nests of wire are insulated with a rubber or bitumen material. Often a number of wrappings are used, careful attention being given to diagonals to cover over the joints. Next lead is used as a covering, mainly as protection from shocks or cuts. Finally, in some cases, the whole cable is encased in some other covering. 2. Jute, hemp, oiled paper, or wax may be used as the first covering, but this must be coated with lead or some other insulating material. Then, strips of rubber tapes are bound round the cable, vulcanized to seal the edges, pressed and molded firmly into place, and finally covered with some external coating. Most long, air transmission lines are uninsulated; short ones are treated somewhat as the underground cables are. Aluminum and other lighter wires are now replacing copper and heavy alloys. Sometimes cables are grouped together. One in New York City is composed of three parts, as just described, the lot being covered again with insulating material. Cables are often two inches or more in thickness.

CARPETS. Woven carpets were known in the Orient while Western nations had rushes, straw, etc., to cover the floor. The first carpets of the Western nations were used as tablecloths. A carpet factory was established in France (1607), and fugitive French Protestants conveyed the industry to England (1685). In the United States carpet making began with the old rag carpet; every village had its weaver; even in 1890 there were 854 rag weavers' shops. Axminster looms were established in Philadelphia (1791); Erastus Bigelow of Boston introduced the power loom (1844) for weaving ingrain carpets, and secured a patent for a power loom with a Jacquard attachment for weaving Wilton and Brussels carpets (1850).

Since 1855 Smyrna rugs and carpets have been manufactured on the power loom. Two types are produced, these being pile carpets having a surface of raised loops, cut or uncut, such as Turkish, Axminster, Wilton, moquette, tapestry-velvet, body Brussels, and tapestry Brussels; and the woven ply carpets, of which the three-ply is but little used, and the two-ply or ingrain is in general use. Indian and Persian carpets closely resemble the Turkish type. A linen or cotton chain, a linen filling, and a colored worsted yarn warp are used in making Wilton and Brussels carpets. Tapestry Brussels has a cotton chain, a linen or jute filling, a jute yarn backing, and a worsted warp of a single yarn, on which is printed the pattern in colors. Carpets are also woven in a solid color, and the pattern is printed on it afterwards. Velvet carpets contain more wool than tapestry and the face loops are cut. In moquette the back is of heavy jute and cotton with short pieces of woolen yarn continually cut and fastened to the warp thread to increase the "pile." Axminster is an imitation of Turkish and is made with a linen or hempen warp and a chenille filling. Four warp threads of wool, or three on a soft filling thread, are woven together producing the fluffy appearance. Ingrain or Kidderminster has a flat surface woven of a cotton or worsted warp and a wool filling; the pattern is the same on each side, but with colors reversed.

Before 1900 wide pieces of carpet (upwards of 27 inches) were available only in chenille, art squares, and a few odd varieties. Since then looms have been perfected that weave seamless rugs up to 9 feet or more in width. Wilton, Brussels, Axminster, and tapestry carpets have greatly improved in design and pattern. Axminster is now made with an improved knot (the Ghiordes), which resembles the hand-made oriental method. Oriental rug and carpet designs are also reproduced with fair success by machinery.

CELLULOSE PRODUCTS. Over one-third of all vegetable matter is cellulose, the fibrous cell-walls of most plants and trees. Modern society finds cellulose useful in many scores of familiar products.

Cotton is almost pure cellulose; so is flax. *Wood pulp* made into paper is a common transformation. Unglazed paper treated again by sulphuric acid becomes a *parchment* largely used as a substitute for vellum for diplomas, documents, and ornamental novelties. Drinking cups, towels, yarn, cloth-like matting, bags, waste-baskets, gas mantles, and even neckties are made from some form of cellulose. Manila, sisal, kapok, straw boards, material for papier-mâché, raffia, cereal straws are some other forms.

Artificial silk. When cellulose is treated with certain chemicals as described below, it becomes a pasty semi-fluid mass called viscose. From this product much "artificial silk" is made. *Rayon* is a common name for one important variety. Since wood, a natural product, is the basis of this, it can hardly be called a true artificial, and since wood is a *carbon* product and not a protein substance, it is, therefore, not silk at all. Chardonnet of France in 1884 first made an artificial silk, using nitro-cellulose, alcohol, and ether. A second process uses a caustic soda solution treated with copper oxid of ammonia. The kind that is most used is a result obtained by treating sulphid wood pulp with sodium hydroxid. John Mercer of England in 1844 treated cotton with a solution of caustic soda, shrinking the cloth or yarn by a third. H. A. Lowe in 1889 made the process effective, producing a mercerized silk (really cotton) of remarkable luster.

Celluloid. Hardened viscose is called *viscoid.* From this originates scores of products, the most familiar being celluloid, sold under such names as artificial ivory, pyroxylin ivory, and zylonite. Since ordinary celluloid is highly inflammable, a safer form has been developed by using *chlorid* instead of nitrate with cellulose. Celluloid was first demonstrated by A. Parkes of England in 1855; it was independently discovered, perfected, and named by J. W. and I. S. Hyatt of the United States in 1868.

Uses. Later forms include coloring by use of coal-tar dyes and moulding into numerous attractive and artistic designs. The viscous celluloid can be heated, pressed, and cast into any desired form; the finished product can be cut, polished, shaved, or otherwise treated mechanically. It replaces ivory, amber, agate, ebony, and other natural substances. Among the countless uses are for toys, toilet articles, novelties, boxes, transparent screens, films, dental plates, telephone mouth-pieces, handles for forks and knives, book bindings, frames for pictures and glasses, playing cards, chessmen, curtains, and buttons. Chemical adaptations of cellulose are most valuable and sometimes spectacular.

Cellulose treated in certain ways with nitrates produces *collodion* or the liquid court-plaster, which has also been much used for making photographic dry-plates. Nobel, the eminent Swedish inventor, one day cut his finger. To protect it from infection, he painted it with liquid gun-cotton; this hardened, giving him the first form of collodion. Again, he mixed collodion with nitroglycerine, and so made for the first time a *dynamite safe to use.* Nitro-cellulose has since been used in making many types of high explosives. See article on *Explosives.*

Celanese. More recent combinations of cellulose and certain chemicals are stranger than fiction itself. Cellulose acetate, one commercial form of which is called celanese, makes a fine composition for non-inflammable films; for making artificial hair and bristles; for imitation tortoise shell; for non-inflammable "dope" used to cover airplane wings; and for safety or non-breakable glass.

Safety glass is a three-ply product consisting of two sheets of glass with an acetate or nitro film cemented between them.

Cellophane is an extremely thin cellulose product used as wrapping paper. Lacquers are usually nitro-cellulose products, which can be used in a patented sprayer or "paint gun" for automobile bodies, or for use with a brush as ordinary paint. One of the strangest products of all is print paper made from cornstalks, a recent arrival in the cellulose family.

CEMENTS. The history of various cements is lost in the mists of past ages. Various sorts were known to Greeks, Romans, and to Europe at large in the early centuries. "Roman" cement was introduced into England in 1796, into the United States for the Erie Canal in 1818, and into France about 1825; this is a common hydraulic cement, which dries under water. Portland cement, named from Portland Isle of England, was perfected in 1824. Many other varieties have followed, but all are usually grouped under several headings.

Adhesive cements of industry, commerce, and the home are varied and important. Some common forms are made of skim-milk cheese and quicklime; of rosin, wax, and a little plaster of Paris; of quicklime, Canada balsam, white of egg, and mastic varnish for mending china and crockery; shellac and spirits of wine for small articles; linseed oil, litharge, and melted glue for wood; beeswax, ochre, and Indian red for mending mahogany; brick-dust and rosin for setting knives in the handles; iron turnings, sulphur, and sal ammoniac for making pipe joints liquid and gas proof; isinglass and mastic or other gum for jewelers; and of rice-flour and water for making Japanese cement for papers. Common solder is made of tin and lead mainly; putty of carbonate of lime and linseed oil; glue from hoofs of animals, fish refuse, or by treating starch with caustic soda; and plaster of Paris from calcined gypsum or calcium phosphate.

Lime cements, for use in dry places, are made of limestone burned to drive off the carbonic acid. Lime slaked in water is used as whitewash, and with 2 parts of sand it becomes common mortar, useful only when exposed to air for drying out. Gray lime, less pure than ordinary white, may also be spread with the trowel and given a smooth, permanent finish. Selenitic cement is lime mixed with a little plaster of Paris. Cement made of pozzuolana is much employed in Italy. Other forms containing silica, like trass, pumice, tufa, and slag have various uses, and even slag from coal mines, burned and ground up, has interesting possibilities in making building blocks, roads, and hard surface structures. Gypsum cements, other than plaster of Paris, have been much used in Europe for interior work.

Hard lime cements, though little used in America, have long been famous in Europe. They resemble softer limes, except for the addition of silica and alumina, but they harden under water, and so resemble the Portland and other hydraulic cements. Chlorides of magnesium and other various metal oxides attain great hardness; one form called Sorel cement is used for making carborundum grinding stones, for binding sawdust and other wood products to make monolithic floors, and for making artificial marble and other ornamental stones.

Hydraulic cements, chief of which is the familiar Portland, differ from common lime cements, in that they have a calcareous or argillaceous foundation. Natural *Portland cement* material occurs in varied forms, such as in marls, certain limestones, chalk, and some clays. The original mixture is burned to a clinker and removed when it begins to vitrify. Grinding is most important, for the resulting powder, save for a residue of 5% or less, must pass through a sieve having 30,000 meshes to the square inch,—so fine that special bags must be made to hold it. Demands for Portland and other hard cements are now incredibly large for ordinary building, for reenforced bridges, aqueducts, water towers, swimming pools, monuments, paving blocks, telegraph poles, roads, massive furniture for outdoor use, pillars, moulds for conduits, and in many more artistic forms. From 1918 to 1930 in the United States, the amount of cement annually made rose from over 71,000,000 to nearly 161,000,000 barrels. Much of the cement goes toward making *concrete,* now usually reenforced with iron or steel bars, plates or rods. Concrete is a mixture of cement, sand, and stone in varying proportions from 1:3:6 respectively to 1:1:2, depending on what strength and degree of protection from intruding moisture is desired.

CHEESE. Natural cheese, the coagulated part of curd separated from the whey of sour milk, was known as early as 1400 B. C. The Romans had kinds similar to our Limburger and sage. Now we have over 150 distinct varieties, classed as hard, soft, and semi-soft cheeses. As to composition they are called full cream, skim milk, or filled, which last is really normal cheese adulterated with fats, oils, lard, or synthetic products made from vegetables and seeds. Canada, some European countries, and several states forbid filled cheeses.

Cheddar is the most famous of *hard cheeses;* it forms over

Photos 1, 2, 4, 5, 6 and 7 from Keystone View Company; 3 copyright by Underwood & Underwood.

GREAT INDUSTRIES—COTTON

1 Picking cotton. 2 Boll breaker. 3 Cotton bolls and blossoms. 4 Cotton "picker." 5 Card sliver. 6 Warping yarn. 7 Weaving cotton cloth.

Photos 1, 3, 5, 6, 7 from Keystone View Co.; 2, 4, 8, 9 from Ewing Galloway.

GREAT INDUSTRIES—SILK

1 Silk worms feeding on mulberry leaves. 2 Mating tables for silk moths. 3 Harvesting cocoons from bamboo wattle. 4 Butterflies depositing eggs. 5 Silk cocoons. 6 Picking mulberry leaves. 7 Mulberry orchard-leaves used as food for silkworms. 8 Warping raw silk. 9 Raw silk in bales and method of skeining.

80% of American manufacture. Other old English cheeses are Cheshire, Stilton, Wiltshire, and Dorset, named for the district or town where perfected first. Cheddar making in Somerset was reduced to an exact science before 1800. Other continental hard cheeses are the Dutch, Edam, Swiss schweitzer, French Gruyère, and Italian Parmesan. A few of the European *soft cheeses* are Camembert, Brie, Limburger, and Neuchâtel, some of which depend on bacterial fermentation. Peasants sometimes allow their cheese to "ripen" in caves. America now makes foreign types of some soft cheese, a few of them with varying success, and others like Munster, Swiss, and some other hard varieties besides the familiar Cheddar or American. Some common names for hard cheeses are American Cheddar, Canadian, flats, long horns, brick, young americas, and various trade designations; for softs are cream, Neuchâtel, pot, process, baker's. Loaf cheeses, mostly wrapped in packages weighing from one to five pounds each, have become staples since 1920, so that the annual volume now is upwards of a hundred million pounds, over one-fourth of the total.

Rome, N. Y., started the first common cheese factory in 1851, and by 1900 most cheese was no longer made at home. Now Wisconsin and New York are chief producers. It takes about 300 cows to give milk enough for 8 or 10 cheeses daily, and most factories do not exceed that output, though some go to 20 or more. Besides cooperative creameries and larger production, some other recent developments are blended, mild cheeses, quick ripening by new methods instead of the old one of waiting for the natural process, and the encasing of limburger cheese in tin foil or other wrapping, by which the offensive odor has been reduced to a minimum.

CLOCKS. Date from the sundial, and the clepsydra, of the ancients, the latter being a small vase with water dropping through the lower end, somewhat as sand runs through an hourglass. In the fourteenth century Henry de Vick built the first clock recorded for Charles V of France; working by weights and wheels. The pendulum appeared in the seventeenth century. Clocks are run by the automatic falling of a weight, or by the uncoiling of a spring, regulated by the oscillations of a pendulum.

The works consist of a "train" of wheels, each moving after the other. The axle of a wheel bears cogs on its edge. Where a weight is used, the largest wheel has the string of the weight wound around the axle, and its speed is adjusted to each of the others, the final one being connected with an escapement wheel transmitting to the pendulum the power to swing. The escapement wheel with its 30 teeth revolves once a minute; another wheel revolves once an hour and moves the minute hand; the third revolving once in twelve hours moves the hour hand. A weight governs the striking of most clocks. The minute wheel releases a catch, and the weight on the cylinder runs down a little, forcing a hammer to strike a bell. Two pieces of mechanism, a "snail" and a "rack," determine the number of strokes.

Electric clocks are impelled or governed by the current. In the first the clocks are automatically wound by an electromagnetic attachment; in the second a primary clock is connected with a circuit of other clocks, and regulates or runs them. *Pneumatic* clocks are run by compressed air, the movement of the central clock compressing the air in tubes connected with the system, moving the hands by forcing a bellows at each dial to expand. *Astronomical* clocks are carefully and simply constructed, great care being taken to preserve them at an unvarying temperature, and to protect them from outside disturbances.

CLOTHS. The name is applied to any textile made of wool, hair, cotton, flax, or other fibrous product. The word *clothes*, once the plural of *cloth*, after 1800 took on its modern meaning of manufactured clothing. Three kinds of cotton and woolen cloth are recognized; *gray goods*, the material exactly as it leaves the loom; *white goods*, material after bleaching; and plain *dyed goods*, material after being dyed or colored, and also printed fabrics and raised goods.

Finishing of cotton cloth. Processes differ somewhat for the three types of cloth. *Gray goods* are left without further treatment, or they are sized, stiffened, or calendered. Sometimes they are dampened mechanically; then given a smooth finish on one or both sides by calendering; and finally dried, softened, and stretched. *White goods* may be left untreated after bleaching; or stiffened with some mixture like starch; or so treated on one side alone. They may also be calendered, dampened, stretched and dried. Different mills vary widely in the treatments. Though plain *dyed goods* are given many types of finish, the machinery is less complicated than that for white goods. Damping, stretching, calendering, and drying machines are the chief ones, but cloth for window blinds or for books need special treatments. Different finishes are given by changing the number of bowls for damping, of rolls for calendering, or of cylinders for drying. *Raised goods* like flannels are treated with brushing and lustring machines.

Finishing of woolen cloth. Worsted fabrics require clearer finish since the fibers are longer than other wool types, and the threads are often left untreated; in other wool fabrics, the threads are given a felted or denser effect mechanically. Wool cloths are often repaired by hand to remove slight imperfections in weaving. Next they are given the *wet operations*, which include running over rollers, through which jets of steam are forced, to set the cloth; scouring to remove any grease or other foreign substance; impregnated with a soap solution and run through rollers or "milled"; dried, wrung out, and hence "set"; and, finally, some wools, like velours, have to be treated with acids to remove any excess of vegetable material. The *dry operations* include cutting to make the pile uniform in height; blowing with steam to make the fabric "set" permanently; steaming to raise the fiber up somewhat; raising by mechanical teasles; pressing to give uniformity and luster; and shrinking so that the fabric will maintain its size approximately when it is made up.

COAL. Correctly applied, the name designates various forms of fossil fuels originally vegetable matter subjected to structural changes and great pressure, the oxygen, hydrogen, and nitrogen being gradually expelled until the carbon in increased volume remains. Coal has been produced chiefly from plant matter deposited in swamps during former geological ages, mainly of the Carboniferous period. The change from decaying vegetation to coal has been so gradual that the dividing lines between the various stages are not easily discernible. Coals also contain sulphur in various forms, silica, alumina, and magnesia, the latter three tending to make it incombustible and forming the ash and clinkers. When it contains 90% carbon it is termed *anthracite;* when less it is termed *bituminous* or soft coal. Coals contain gases, principally carbon dioxid, methane, and nitrogen, frequently causing great explosions. (See coal gas and after damp.) Successive stages in the process of carbonization are represented by *peat, lignite, bituminous* and *anthracite.*

Peat is not properly a true coal. It consists of a spongy mass of vegetable matter largely sedges, rushes, water lilies, and other forms of aquatic vegetation. It is extensively quarried for use as fuel and when well dried has a higher heating value than wood though inferior to coal. It is largely used in countries of Northern Europe and especially in Ireland.

Lignite ranges from brown to light black. Careful examination will afford evidence of its vegetable origin. Lignite has a low number of *British thermal units*, the standard measure of heat value, is easily breakable, burns with too much ash and smoke. Much of the coal in the Rocky Mountain region is lignite or semi-lignite.

Cannel coal represents the stage between lignite and bituminous. It is compact, hard, and does not soil. It burns with a long smoky flame and is used chiefly for grate fires and is believed to have been produced largely from the spores of giant fern-like plants.

Bituminous coal is the most important variety of all coal. It is black, soft, brittle, and opaque, and used for steam raising and household purposes throughout the civilized world, having less than 10% ash. Artificial or coal gas is made by heating bituminous or soft coal in closed ovens which process leaves coke, coal tar and ammonia as valuable by-products. From coal distillates are made naphthalene, phenol (carbolic acid), creosote, benzine, naphtha and a number of dyes and drugs. See *By-products.*

Many local trade or geological names are given to coal, but these have little delimiting value except to indicate the source rather than the particular kind. England and Wales have about thirty distinct coal regions, the Yorkshire, Durham, Northumberland, Lancashire, Derbyshire and South Wales being the chief ones; and in Scotland the chief fields being the Fifeshire, Lothian, Ayrshire, and Dumfries. All but sixteen states of our Union have produced some coal. Among the chief states may be mentioned West Virginia, Pennsylvania, Kentucky, Illinois, Ohio, Indiana, Alabama, Virginia. Coal production of all kinds annually throughout the world runs to about one billion and a half tons, nearly 40% of which is mined in the United States. The total world reserve is estimated to be about eight trillion tons.

Anthracite contains the maximum carbon and the minimum volatile qualities. It is hard, does not soil and gives off little smoke, burns with a blue flame but with great heat. The chief anthracite fields are in Wales and Belgium. Pennsylvania produces about 60,000,000 tons annually, practically all being found in seven counties: Lackawanna, Luzerne, Schuylkill, Northumberland, Carbon, Columbia, and Dauphin.

Production. The United States leads first in the production of coal with from 400,000,000 to 500,000,000 short tons produced each year, anthracite representing about 65,000,000 short tons (see state production table). Great Britain stands second with about 40% less production. The coal fields of China and Russia are enormous and will some day be a potent world factor. Contrary to public opinion the supply of coal is unlimited. Consumption is actually decreasing and even the United States has unlimited supplies in Alaska. Unless other uses are found for coal the continual development of the hydroelectric power throughout the country will see a gradual decline in coal consumption. Science will undoubtedly come to the rescue of the coal industry and develop new uses. This already has taken place in the development of hundreds of uses for by-products of coal. See article on *By-products.*

Mining methods in coal fields have shown great improvements. Only in the small individually owned mine is the pick and shovel now used. Cutting, loading, and transporting of coal to the surface is now largely done by electrical machinery. There are three prime methods used in gaining access to the coal vein: *shaft*, *drift*, or by *stripping* operations. *Shafts* are largely used where the veins are comparatively far below the surface. In the anthracite fields there may be more than one shaft in different levels of the vein. *Drifts* are generally used where the coal vein outcrops and is quickly reached from the surface. In both instances passages are properly "timbered" to replace the natural support of the earth. In *stripping* operations huge steam shovels are used to remove the top soil exposing the coal which in turn is ripped off by the steam shovel direct into the coal cars ready for shipment. This is the cheapest method of securing the coal but when immense areas of splendid farm land are devastated in this manner to secure the coal it is in the ultimate end uneconomical.

Accidents in mines have been decreasing steadily. In France the ratio is less than one man per thousand; in the bituminous fields of the United States nearly five per thousand and in the anthracite nearly four per thousand. Safety lamps, treating of dust to make it non-explosive, blowers to remove gases, safety blasting compounds, the use of electricity, and the safety campaigns conducted among the miners have greatly reduced the mortality.

COAL TAR PRODUCTS. Today the chemist is more skilled than any wizard of the *Arabian Nights*. He utilizes products once a nuisance to mankind. Once coal tar refuse left after the making of coke was allowed to flow into the streams, there to kill both the fish and the vegetation. Besides coke and gas, coal now yields up hundreds of products by distillation, many of which are of great adaptability and commercial value. Entire industries are now founded upon what was once troublesome refuse, the chief of which possibly is *coal tar*. Since W. H. Perkin made the first anilin dye in 1856, more than two hundred different substances have been wrested from coal tar. One ton of coal yields 100 pounds of tar, the annual output being 6,000,000 tons, nearly one-half produced in the United States. By distillation or fractionation in air-tight containers or retorts, coal tar gives up eight groups of primary products, the chief being crude naphtha, light oil, middle oil, heavy creosote oil, anthracene, and pitch. Leaving dyes for a special article, we now consider the practical applications of these and their derivatives.

Light oil, which comes from the retort at a temperature of about 110° C., gives up anilin, toluene, benzene (not to be confused with benzine, a light petroleum oil), and xylols. Toluene is extensively used in compounding explosives, and for making saccharine, a substance 500 times sweeter than sugar, but of no nutritive value. Benzene and toluol, as benzol when mixed, make a good motor fuel of the anti-knock type. Benzol is also used as a solvent for varnish, and for dry cleaning of clothes. *Naphtha products* are used in making varnish, rubber goods, and for burning outdoors. Cumarone and indene, heavy naphtha products, are valuable in various resins. Pyridine, another naphtha derivative, is used for solvents, and for making alcohol unfit for drinking.

Middle oil, fractionated at 180°-230° C., yields up carbolic acid or phenol, valuable in antisepsis and surgery, for making picric acid to be used in lyddite, a high explosive. Baser forms of phenol go into different resinous compounds like bakelite. Middle oil gives off naphthalene for making moth balls, for fire-lighters when compounded with sawdust, and for synthetic indigo.

Creosote oil, given off at 240°-300° C., makes valuable preservatives for railway ties, bridges, and other wood substances. When slaked with lime, creosote oils make disinfecting powders; with soap the antiseptic "dip" for sheep and other animals; with sulphur for tanning agents; and alone in dilute form for treating cattle diseases. Light creosote is the basis of lysol, creolin, and other disinfecting products which pass under a variety of trade names.

Anthracene oil, at 270°-350° C., gives off a crystal form much used in artificial alizarin dye. *Pitch*, the last remaining substance to come off from coal tar by fractionating or distillation, has been extensively used for roads, for joints between paving stones, for composition roofings, and for making briquettes from coal dust. Some of the coal tar products,—like toluene, benzene, phenol, and anthracene,—are the starting point or intermediates for the manufacture of about 1,500 different things, there being 300 of the intermediates themselves.

COPPER. One of our common metals, known from primitive ages, especially as our earliest alloy when combined with tin to form bronze, which was so much used in a certain prehistoric period that ethnologists named this the bronze age. Alone it is a brilliant metal, dull red in color, taking on a pinkish or yellowish color when broken and a purplish when combined with iron. In 1850 the world output was but 52,000 short tons; in 1929 the United States alone produced nearly 900,000 tons, nearly four times that of Chile, the nearest in volume. Other producing areas in order of volume are Africa, Japan, Canada, Spain, Portugal, Mexico, Peru, and Australasia. Copper ores are numerous, but only a few are commercially important, such as the combinations with sulphur, with oxygen, and native or almost pure copper ore. Some of the special names for copper ores are chalconite, bornite, enargite (found at Butte, Mont.), cuprite, melaconite (found in the South), malachite, and azurite. Native copper, as found in the Lake Superior region, is from 30 to 94% pure. Ores range from a trace of copper to nearly 80%, the Butte ores having nearly 50%. Open or strip mines occur in Michigan, Montana, and Nevada, where sometimes huge cranes and scoops lift 8 tons of ores and dirt in a single operation.

Smelting and refining copper accounts for the great bulk of total production. Blast furnace smelting resembles that described in the article on *Iron and Steel*. Reverberatory furnace smelting resembles somewhat the other processes described for iron. Copper has to undergo a further purifying by electrolytic means or by some other process, the former in America accounting for 80% of the total refined copper. By electrolysis electricity is passed through a copper sulphate solution from one set of copper plates to another. Impurities and other material are thus driven out. Standards of purity of copper are most exacting, less than 1% of foreign material being allowed, and that mainly oxygen.

Uses of copper. Two main uses absorb nearly all copper in the United States, the electrical trades, and the making of various alloys like those described in the article under *Alloys*, such as bronze, copper-zinc, copper-zinc-nickel, copper-nickel, and a host of others. Production in the world is over a million and a half short tons yearly, of which the United States consumes about two-thirds. In order some important uses are: electrical manufacture, transmission lines of all sorts, automobiles, railway cars, wire and rods for varied purposes, buildings, bearings, valves, and ammunition. Single articles are too well known to be specified.

COTTON. Mentioned in India in 700 B. C., as a product long known there, cotton has literally circled the globe during man's efforts to produce better and cheaper clothing. It was introduced into China about 700 A. D., as a decorative plant, into Japan about 800, Spain before 900, brought to Europe in several varieties by the Crusaders before 1300, found growing in the Bahamas by Columbus in 1492, reported in Brazil by Magellan about 1520, made into cloth in England in 1600, grown in Virginia in 1619, exported to Liverpool from South Carolina in 1764; 3,138 bales grown in America in 1790, 379 being exported, and from then on the chief land staple of the South. Various inventions hastened cheap cotton goods: the flying-shuttle in 1733, the spinning jenny in 1764, the spinning frame in 1769, the spinning mule in 1779, the cotton gin in 1793, and the method of ring spinning in 1832.

Since cotton is the greatest fiber crop of the world, its *commercial importance* is beyond estimate. Production has increased from over 17,000,000 bales in 1902-3 to nearly 25,000,000 in 1932, of which latter total the United States produced a little more than half, with India, Egypt, China, Russia, and Brazil coming next in order. New *uses for cotton* and its derivatives are being discovered year by year. Some of the latest are gun cotton for use in making explosives, as a basis for celluloid and other cellulose products (see article on *Cellulose*), for making webbing, fabric for artificial leather, insulating material for electric wires, airplane wings, artificial silk, paper, window shades, medicinal cloths, collars (instead of linen), and many others. Like the coal tar years ago *cotton seeds* once were great nuisances, having no value or commercial importance. Now they are made into various products, the chief of which are cotton seed oil, from which table and cooking products are made; cotton seed cake and bran for cattle feed; fertilizer and bases for making soap; cellulose acetate and cellulose nitrate, using the linters; oil for lamps used by miners; and for grinding pigments in making commercial paints. Nineteen states produce some cotton, the belt extending north as far as southern Illinois and west as far as Texas, and in New Mexico, Arizona, and California under irrigation methods. Finest cotton once came from the islands just off the Carolinas, but the boll weevil there has reduced the crop; also in the Bahamas, in the South Sea islands, and in Egypt. Attempts are being made to grow new varieties in the United States, in an effort to produce a crop that will resist the weevil and other pests, to eradicate which millions have already been spent.

Preparing cotton involves several processes. Over 150 different kinds and grades are known. Modern buyers sometimes test the plant and its product during the growing season, using chemical and microscopic means. Though 30 gradations are known, *three broad classes* are sufficient to mention here: 1, Long staple, all over 1¼ inches such as Egyptian and Sea Island; 2, medium, all between staple and ¾ inch in length, grown in America mainly; 3, short, all under ¾, Indian chiefly, owing to careless methods of growing. Shorter lengths still are made into cotton waste. *Harvesting* includes picking, ginning, and baling. One man can grow 30 acres of cotton, but it takes five to pick the same area. Mechanical pickers are developing. One worker can gather 150 to 200 pounds daily. *Ginning* is the separation of the seed from the lint, one machine being able to separate the equivalent of 500 bales a season, each weighing 478 pounds. Most of the ginning is done at central stations or

plants. The gin is a machine having sets of saws, 70 or fewer, which revolve 400 times a minute, pulling the cotton away from the seed, which falls into a trough and is carried away by mechanical means. Bailing is done by machines in principle not unlike hay presses.

Cotton yarn is now spun mostly by machines, which are the results of many inventions. Spinning is a series of six major operations, rather complicated, but may be roughly described. After the fiber is taken from the bales, it is allowed to expand for a few days; next the impurities are removed; and the material is arranged into boluses or slivers by placing the fibers parallel. The card sliver next makes soft skeins of the cotton; then these are drawn out and compressed, to even up the mass; next they are again drawn, also being twisted, making a much finer mass; and finally three additional processes increase the smallness, strength, and uniformity of the thread. Threads are polished, treated with chemicals, or otherwise perfected in looks and tensile strength.

Weaving cotton cloth is a special process. It is the interlacing of two sets of threads at right angles to each other; the long one is called the warp, the cross one is the woof or weft. Variations occur, such as plaiting, which is arranging the sets in diagonals; netting, tying them when they intersect; looping them as in making hosiery; lacing, or putting one thread through a loop of the other, as in lace. According to coloring and style of weave, cotton cloth is divided into many classes, such as calicos, ginghams, duck, grenadine, lawn, dimity, denim, longcloth, mull, muslin, sateen, piqué, sheeting, shirting, twill, voile, and zephyr. See articles on *Cloth* and *Weaving*.

CUTLERY. Instruments for cutting, such as knives, razors, and their accessories, have developed marvelously in the last few decades. Man has used in succession stones, flint, bronze, iron, steel, silver, and now various alloy products. Sheffield, England, has long been noted for its high grade of steel cutlery of great lasting value. New England towns, mainly in Connecticut, have excelled in this country. Cutlery varies from the thinnest safety razor blade to great butchers' knives and blades used in machines.

Recent developments have included refinements in the type of steel used, the chromium and other alloys that produce a "stainless" knife blade, improved methods of hardening, and machine grinding so that knives hold their edge. Vinegar is the severest test on stain-proof cutlery, for which carborundum or severe polishing wheels and sticks should be sparingly used.

DYES AND DYESTUFFS. Until about 1856 all dyeing used natural products, which were of two sorts, vegetable and mineral. Since then gradually *anilin dyes* have taken the place of most of the old products; these are artificial or synthetic chemicals obtained by the refining of coal tar. Probably the most ancient of dyes is indigo, found in garments of Thebes dating from at least 3,000 years before Christ. The "blue" dye of *Exodus* XXV. 4 was a form of indigo; so the purple mentioned in the Bible and in many ancient works; and the royal or Tyrian purple. Merchants of Tyre sailed on long journeys over the sea to gather myriads of the little animals whose powdered shells made the dye. Today this has been largely replaced by synthetic indigo.

Natural dyes still used somewhat are logwood, fustic, cutch, Persian berries, all vegetable in origin; cochineal, animal in origin; and Prussian blue, iron buff, metallic oxide khaki, chrome yellow and orange, and manganese bronze, all mineral in origin. *Logwood* from the West Indies, used for blacks and browns, still is cheaper, spreads more easily, and looks better than corresponding synthetics, and yet it fades, is sensitive to some acids, and may not be used in some of the more recent dyeing methods. *Fustic* from wood of a tree is also cheap and levels well on long wool; *cutch* from India for browns is still much employed for modifying other dyes; *Persian berries* are most suitable for calicos; and *cochineal*, made from carminic acid obtained from a female insect of Mexico, is still used for dyeing red hunting coats. Favorite once, now obsolete, are Brazil wood for reds; saffron for yellows; lac from an Indian tree, and kermes made from a Mediterranean insect.

The minerals mentioned are used mostly because of superior spreading, fastness, or suitability to vegetable fibers, as khaki for superior lasting qualities under severe tests, like those subjected to soldiers' suitings. Both in variety and color range, natural dyestuffs have great limitations. On the contrary, synthetic dyes have already produced no fewer than 50,000 distinct shadings, tints, and variations according to fabric or proportions used.

Anilin dyes are those made from one of the several results of fractionating or distilling coal tar in closed retorts. Anilin is merely the name of the intermediate from which all the thousands of synthetics derive. It dates from the accidental discovery in 1856 by the English chemist W. H. Perkin of mauve or anilin purple, while he was seeking an artificial quinine product, later actually produced. Next followed magenta (1859), then spirit or rosanilin blues (a great simplification in the process), including Nicholson or water blues still favorites, and finally others in order. Possibilities are still being discovered for new anilines.

Alizarin or synthetic turkey red, once secured from the natural madder, was made by Perkin and also in Germany in 1869, after which 50,000 acres in France for raising madder had to be devoted to other services. Baeyer of Germany isolated anilin indigo in 1880, commercially developed first only in 1897. Amount rose from 4 million pounds in 1900 to 80 in 1913, and now about 100 yearly; while in 1913 the madder production of indigo was but half a million pounds, which has now risen to about 4 millions yearly.

Classes of dyestuffs are made on the basis of composition and uses. All come from the lighter oils, through anilin, after the distillation of coal tar is well under way, as described in the article on *Coal Tar Products*. From a single ton of coal we get these divisions: 12,000 feet of artificial gas; 7–30 pounds of sulfate of ammonia; 1,200 pounds of coke; and at least 100 pounds of coal tar, the basis of dyes and numerous other modern things. Chemical methods vary considerably, and so do the products corresponding. One type is good for cotton, another for wools, a third for felts, and still others for mixed goods, fibers, and so on. Names are legion, one book of a single type for cotton dyeing lists 20 general combinations, and these divide into scores of individual variations of colors—200 yellows, 400 blues and violets, and many others.

One class is called basic dyestuffs, of eight different chemical compositions, including magenta colors, auramine, acridine yellow, indamine blue, Meldola's blue, methylene blue, safframine, and Bismarck brown. In this class fall many of the early discoveries. The acid dyestuffs include the nitros, azos, naphthaline, and quinoline forms, the basis of which is acid, and most are extremely fast in color, durable, and good for leveling. The alizarin dye leads the class of mordants, those which must be used in connection with some fixing solution, such as a metallic salt. These are most suitable for fastness in cottons, wools, and silks of the better class of yarn. Particular ones are alizarin or Turkey red, para red, diamond black, chrome violet, and cerulein. At present the most popular class is the direct cotton dyes, dating from the making of Congo red in 1884, which lacked fastness and was supplanted by benzopurpurine 4B, a name which illustrates how the chemists designate these products, most of which have no common or popular name. Sulphur dyestuffs are numerous and good for fastness and durability. Vat dyestuffs are those into which the fabric is dipped directly, including various indigos and other blues. Azo dyes are peculiar in that the color is formed in the yarn itself, through which at first a carbolic acid (phenol) solution is passed, followed by the diazo solution or a second component. It is extensively used on piece goods, seldom on yarn, and has been a great favorite in Russia for dyeing calicos.

Before 1914 Germany controlled 95% of the synthetic dye industry; but in 1932, Germany made 60,000 tons and exported 25,000, while the United States made 30,000 and exported 10,000 with France, Great Britain, and Switzerland coming next in order. See also the articles on *Explosives*, *Coal Tar*, *Drugs*, and *Resins*.

ELEVATOR. A mechanical appliance to transport passengers or freight to different levels. Usually a car, designed to run at six to eight hundred feet a second, or at any less speed desired. Safety from accident is provided for by clutches thrown into operation when the car exceeds a certain speed, and which stop the car by gripping guides at the sides of the elevator shaft; also by air cushion devices which break the shock of falling. The air cushion device works by making the lower portion of the shaft tight fitting, so that a falling car acts as a piston in a cylinder, and is brought to a slow stop by the compressed air. A car dropping 287 feet did not break eggs, or fracture the electric light bulbs, on stopping. Another device has the air cushion at the top of the shaft; the car carries two grips whose jaws loosely encircle two steel cables studded at intervals with buttons. These cables connect with a yoke carried on a piston-rod and piston working in a steel cylinder. When the car falls it closes the grips on the studded cables and liberates the piston, which, sliding down the cylinder, compresses the air and stops the car.

EXPLOSIVES. Gunpowder was probably the first, and its invention is credited to the Chinese; later to Roger Bacon (1249). Formed by a mechanical mixing of about 75 parts of saltpeter (potassium nitrate), 15 of charcoal, and 10 of sulphur. When exposed it absorbs the oxygen necessary for combustion from the air; when confined, from the saltpeter. Schwartz, a German monk, is said to have originated the use of large grains, increasing explosive force. Percussion caps, invented by Alex John Forsyth, a Scotch clergyman (1807), were followed by brass and copper shells of succeeding periods, Joshua Shaw being the first to patent them in the United States (1842); solid headed shells patented by Hotchkiss (1869).

Gun cotton was discovered by Schonbein (1846); nitroglycerine by Sobero (1847); the former is made by dipping cotton in mixed nitric and sulphuric acids, the latter by treating glycerine with nitric and sulphuric acids. *Dynamite*, patented by Nobel (1868), is nitroglycerine absorbed by inert, infusorial earth, making it safer to handle and use. *Wood* or *white* gunpowder, invented by Schultz (1863),

is granular wood treated with nitric and sulphuric acids, the grains produced being soaked in a solution of saltpeter. *Tonite* (1874-1876) is made from gun cotton and nitrate of barium. *Rackarock* (1881) is prepared from potassium chlorate and nitrobenzene. *Bellite* (1885 and 1891) is ammonium nitrate and nitrobenzene. *Melinite* (1885) is picric acid and gun cotton. *Lyddite* is believed to be substantially the same as melinite. *Cordite* (1889) is made from nitroglycerine, gun cotton, and mineral oil or jelly. *Indurite* (1893) is prepared gun cotton and nitrobenzene. *Maximite* (1899) is composed mainly of picric acid, used in other high explosives, including *Dunnite* (1900). *T. N. T.* (tri-nitro-toluene), much used since first made in Germany (1902), is made of toluene and acids. *Amatol* is T. N. T. and ammonium nitrate.

FIBERS, INDUSTRIAL. Besides cotton, silk and wool, which are noted elsewhere, several fibers are important economically. *Flax* is spun into linen for coarse fabrics, twine, canvas, laces, and finer textiles greatly prized. Flax seed is used for healing inflammations, and the oil for mixing paints. Our Middle West, Argentine, Russia, Belgium, and Ireland furnish the main supply. Russia, the Philippines, and Italy are large exporters of hemp; the United States and Argentine are large consumers. China uses its own supply. *Hemp* and *jute* are used for cheaper grades of rugs and carpets, and for linoleums, and tarpaulins. India exports mainly to the British Isles, Germany, and the United States; Glasgow, Scotland, makes up the raw material. *Sisal* for rope is grown in Yucatan and other semi-tropic places. *Zapupe* promises to be much used as a silk substitute. *Pita* is used for seines, lariats, and hammocks. *Kapok* or silk cotton from Java is extensively used for filling. The panama hat palm fiber is well known; others are coming into use. *Raphia* for cloth making comes from Madagascar. Straws for hats, Spanish moss, bamboo, and ramie or China grass are imported in quantity.

FIREPROOFING. Several factors demand that modern public and large residence structures be freed from fire hazards. Yet in the United States, the loss is nearly half a billion a year from fires, one-half of which are preventable. Laws of cities demand fire prevention, or the use of positive fireproof materials in buildings. For instance, London requires that all stage scenery must be rendered proof from fire hazard; the American Board of Fire Underwriters specifies that ordinary wood must not be used in buildings higher than 150 feet. New York City forbids all such in certain areas. With the decrease also in the available supply of lumber, different building materials become imperative. The loss also from forest fires is almost incalculable, fully as much as from building fires.

Fireproof materials, unknown till 1801 in England, consist of brick, stone, cement, and artificial products. Asbestos of late has come into its own, especially as used by the Johns Manville and Carey companies for pipe wrappings, composition woods, curtains, screens, and many types of insulations. Electric wiring is cased in metal, free from contact with inflammables. Practically no public building and relatively few modern office buildings now have inflammable floors, and many have steel or other alloy window sashes and casings. Even desks in buildings and homes are now made of ornamental steels that look much like fancy woods. Beginning with the old-style iron I beams, with or without coverings of bricks, now the framework of large buildings is made of tempered steel, and all the plastering, cement, terazzo floors, and finishings are impervious to fire. If it were not for advancement in fireproofing, skyscrapers would be impossible. Hollow tiling, ornamental brick work, artistic cement objects now make structures not only safe but beautiful.

Fireproof wood is fairly effective. Ordinary timbers and boards are rendered moderately fire safe by giving them a coating or a bath of phosphate of ammonia, asbestos paint, or other mineral substance. Creosote and other materials are used as antiseptics for wood, and they also retard fires somewhat. Some of the chemicals are forced into the wood under great artificial pressure.

FLOUR. When the name of the grain is not prefixed, the name "flour" indicates a product made from the varieties of wheat. Winter wheat is sown in the autumn and harvested in early summer; spring is sown early and harvested in the autumn. Of the total of flours in America, wheat makes up 60%, corn 30%, and the rest is divided among several kinds of grains and roots. The output of breakfast foods, either in a crushed or ground state, has become tremendous, the chief varieties, besides wheat foods, being oats, corn, rye, and barley. The average wheat crop in bushels in the United States is about 830 millions, three-fourths being made into flour. Buckwheat is utilized in Russia, Holland, and the United States, in the last notably for pancakes; millet is the staple crop in southeastern Europe; durra in China and India; meal of tapioca in South America. Peas, beans, potatoes, rice, and other products of the soil, vine, or tree are often made into flour. Processed sawdust was used in certain parts of Europe during the World War as a substitute in bread, but the world does not take kindly to it now.

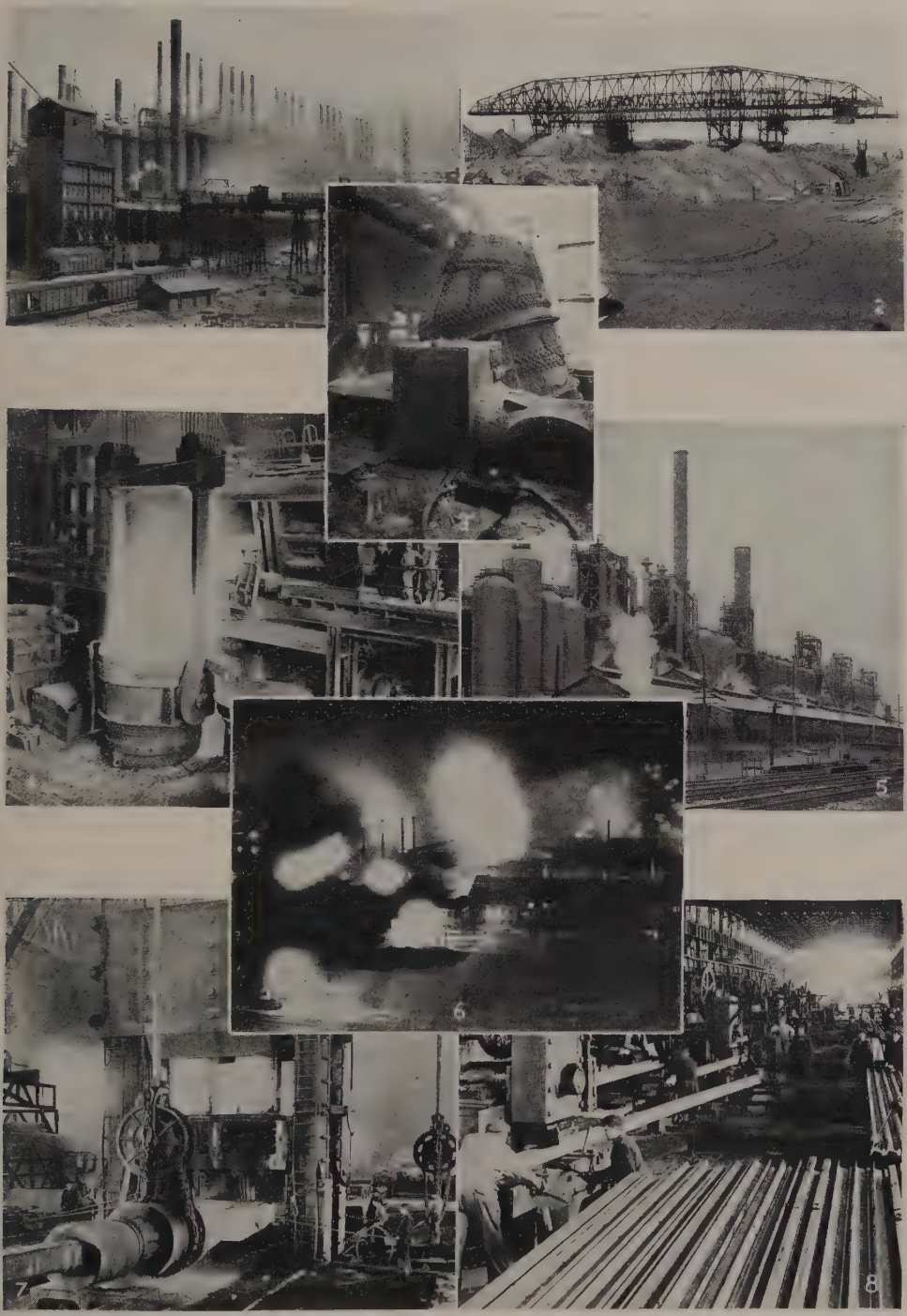
Grinding, bolting, or sifting, purifying with air blasts or other means, and bleaching are the chief elements in *making flour*. For many centuries primitive man used stones to grind his wheat by hand, a method still employed in various lands. Then came the two large mill stones, operated by animal power or water. In 1840 iron rollers were introduced at Pesth, Hungary, and in 1868 into the United States. Now huge flour mills use steel or porcelain rollers, in a series of machines or units, each one of which advances the whole process of dividing the wheat berry into several parts. Delaware, Maryland, and Connecticut were once famed for their flouring mills, though every hamlet and town had at least one in early days. By 1800 Wilmington exported 20,000 barrels a year, and Baltimore about 50,000. When the Hessian fly came, the flour industry on a large scale moved westward into non-infected territory. Cincinnati had a flour mill in 1815 and Minneapolis in 1854. Rochester, Chicago, and especially Minneapolis later built huge mills. When Rochester was outdone by Minneapolis, and became the home of a great many greenhouses, the popular name was changed from the Flour City to the Flower City. Richmond, Va., once exported great quantities to South America. In volume of output Minnesota, New York, and Kansas now lead among the states.

Ordinary flours are highly nutritious and digestible, the composition being about 70% of starch, 13% of water, 12% of protein, and the rest cellulose, fat, sugars, and minerals. Wheat flours above all take yeast or baking powder easily, and so leavening is well accomplished, making good bread light and palatable. Milling now carefully separates the five component layers or parts of the wheat kernel. *Bran* is the outmost coat, giving way to two less coarse, then the main starchy part, and within at last the germ or part that grows when the berry is planted. The whitest flour is composed of the starchy part with a little of the third coat. Patent flour, in three gradings, is most highly prized; and next the baker's, so called. *Shorts* are bran and some of the fine flour. *Middlings* are the bran and extraneous material ground up for cattle. Other trade names exist to designate different combinations for man and beast. *Graham* flour is made from the whole kernel without any bolting; that is, without removing any part of the berry. Patent flour takes away both the bran and the germinal part. *Whole wheat* removes a portion of the bran. *Gluten* flour has the starchy part wholly or partly removed, being used for dyspeptics who react unfavorably to starch. Though graham and whole wheat are less easily digested, they are often prescribed for those suffering from sluggish elimination. *Self-rising* flours are those treated with yeast, baking powders, or otherwise to save the user the trouble of adding these in preparing the dough. Common soda crackers are one form of unleavened bread, that is, bread without yeast.

Consumption of wheat in England is over 220 pounds a person every year; in the United States from the figure of 225 in 1879, the total has gradually declined until now it is about 170, due probably to the wider use of fruits and other foods and a more diversified diet today. Though the statistics show that there are still nearly 10,000 flour mills in the land, only a third of these produce quantities large enough to enter into general competition. Recent statistics show that nearly 550 million bushels of wheat are annually made into 120 million barrels of flour, each weighing 196 pounds.

FORESTRY. The conservation of forest products has of late become a world problem. Estimates show that wood is being taken from world supplies at the rate of 56 billion feet yearly, whereas only 38 billion are grown. *Forest reserves* are now estimated at about 7 billion acres or 22% of the land area of the globe, not including polar regions. Of the total acreage, Asia has about 28%; South America, 28; North America, 19; Africa and Europe slightly over 10 each; and Australia, about 4. Russia has, of the total world acreage, 21%; the British Empire, about the same; Brazil, 13; United States, 9; Argentina, 4; Netherlands, 3.4; Peru, 3; China, 2.5; Belgium and Columbia, about 2, and all others less than 2% each. Since 1850 Great Britain has increased its lumber demands by six times, the United States by at least seven, Germany about double, and others in relative ratio. Of the total consumption, fire wood and saw timber are almost equally divided. Though the amount of wood, especially in America, used for fuel is steadily decreasing, and lath, shingles, and several other wood products are much lower in volume than formerly, wood is now used for many more articles. Huge quantities are employed for transmission line poles, railway ties, newsprint pulp, various articles of furniture, and cellulose for several uses.

Timber supply. Once the United States and possessions had a million acres of forest reserves, growing at least 5 trillions of board feet of lumber. The national forests in 1934 had about 160 million acres, 85 million in actual planting or suitable for planting. Annual uses of lumber are about as follows: rough and planed, 13 million feet; mill finished, 5 million; sash, doors, and blinds, about 3 and a third. Nine million feet are used for buildings other than houses; one and a quarter for railroad ties; 380,000 feet for laths; 393,000 tons of bark, small wood, and other by-products for many uses. Once the northeastern states supplied over half the lumber. Recently the South, Rocky Mountain and Pacific



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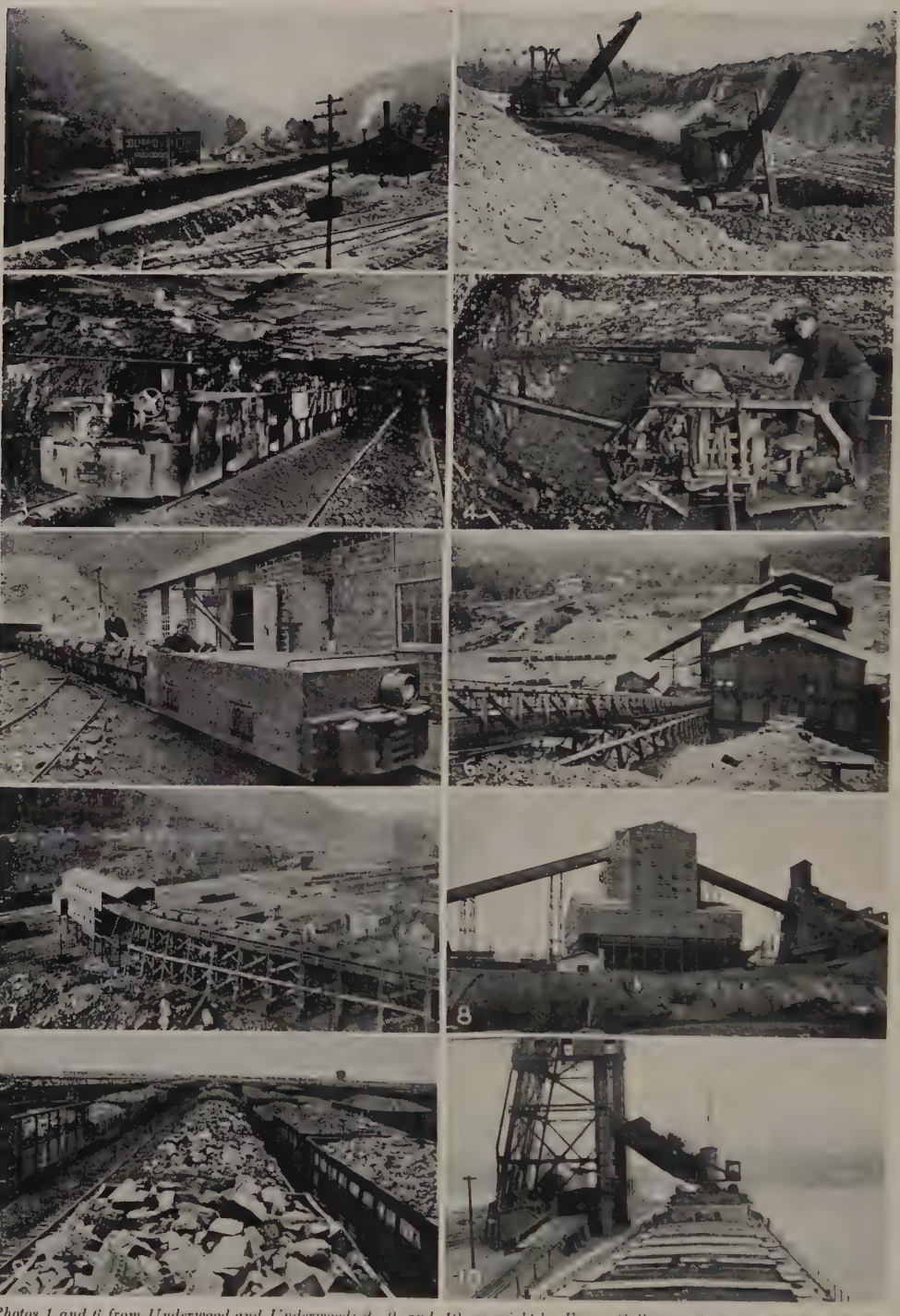
GREAT INDUSTRIES—STEEL

1 Steel Mills, Birmingham, Ala. 2 Gigantic Bridge Crane, Bethlehem Steel Co. 3 Converter, Pittsburgh, Pa
4 Open hearth furnace, pouring—Bethlehem Steel Co. 5 Blast Furnaces, Pittsburgh. 6 Steel Mills at night.
7 14,000 ton Hydraulic Forging Press. 8 Rolling Steel Rails.



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GREAT INDUSTRIES—COAL

1 Coal mining, West Virginia. 2 Strip mining (open-pit), Danville, Illinois. 3 Electric locomotives used in mines. 4 Electric coal cutter at work. 5 Typical hillside mine entrance with train emerging. 6 Anthracite breaker house. 7 Coal Tipple, Bottom Creek, West Virginia. 8 The huge D. L. & W. breaker. 9 Hocking Valley R. R. coal yards for Great Lakes shipping. 10 Loading coal barges, Toledo, Ohio.

regions have furnished the chief amounts. Today the smallest supply lies in the middle states, then in the north and northeastern states, next in the south, and the greatest in the Pacific. For different woods and their uses, see table on *Woods*, pages 577-79.

Progress in forestry. For fifty years economists have complained that forest supply was diminishing too fast. Though other products have in many cases replaced wood, the need for more forests still remains acute. Forests conserve the soil, hold back the rainfall from running off too rapidly, and temper the climate somewhat. Yet 60% of the world supply receives no scientific care. Shortly after 1900, President Theodore Roosevelt and others, notably Gifford Pinchot, who became the United States Chief Forester, began to urge conservation of all natural resources, especially the trees. New laws were passed, states like Pennsylvania, Maine, New York, Massachusetts, several in the South, and some in the northwest began to restrict cuttings and stimulate growths. Today the Forestry Service is a most important agency. In recent years the ratio of growth to cutting of timber has become more favorable. Uncle Sam's forest rangers are ever on the alert to detect and stamp out fires, but the toll is beyond calculation, as shown by the fact that in Washington and Oregon nearly a fourth of the magnificent douglas firs have suffered in some degree from forest fires. Private initiative has also done much to increase the respect for trees. Tree surgeons like the late John Davey (q. v.) have saved millions of trees in parks and private grounds; and the arbor day movement, fostered by J. Sterling Morton of Nebraska, did much to get children interested in growing beautiful trees. Recent campaigns by the government, the American Legion, the depression and relief agencies, have all tended to make the American more tree-minded. The idea is gaining in favor also that trees conserve moisture, prevent drying out of the land, and render the air about more suitable for growing crops of all sorts. The American farmer begins to look upon a tree as a help, and no longer merely something that prevents him from cultivating a small space of land.

Chief principles of forestry. No longer is the growing of trees left to nature or to chance. Once the birds planted the seeds, or the wind blew them about, and trees grew where seeds lodged and survived. Today many areas are being withdrawn from other cultivation to be put into trees. Foresters are carefully studying how to reduce forest pests, how to conserve soil and rainfall, how to check forest fires, how to cut off the smaller trees to give others a fair chance, how to introduce and cultivate more rapidly growing trees, and how to utilize every part, even to the tip top of the tree for our children at Christmas. Objectives are: 1, production of more woods, more varieties; 2, saving the by-products and every tree, small or large; 3, forest economy, such as planting, fostering, watering, and harvesting our forests.

FUR. The Chinese highly valued furs over 3,500 years ago; most aboriginal people, notably the Indians, especially in cold climates, have used furs as chief articles of clothing. Modern man follows with fur as an ornamental or secondary clothing. Medieval Europe used fur for hats and smaller articles, but had no large supply, the main source being the countries about the Baltic and North Seas. North America soon opened up to new settlers an immense field for exploitation, and the Hudson Bay Company dates from 1670. John Jacob Astor and early pioneers in the United States built up fortunes mainly in fur trade with the Indians. As settlements increased fur trading was pushed back into primitive regions. At present the chief natural supplies from North America are the beaver, skunk, rabbit, muskrat, opossum, mink, marten, ermine, foxes, seal, raccoon, bear, and lynx. Louisiana leads all our states in fur production, largely because of the enormous number of muskrats trapped. The United States exports about 18 million pieces of fur annually. North Europe and Siberia supply squirrel, Russian sable, ermine, various kinds of foxes, marmot, stone marten, otter, and musquash. Moleskin comes from the British Isles, Holland, France, and some from Africa. From Asia the chief furs are marmot, goat, lamb, moufflon, tiger, stone marten, and others. Australia and New Zealand provide huge quantities of rabbit for London auctions several times a year. South America supplies nutria, chinchilla (rather scarce now), foxes, and skunk. Seals from the North and South Atlantic and the North Pacific, since they were placed under international protection in 1898, have grown now to about half a million, a five-fold increase.

Fur farms have become increasingly important. Certain parts of Canada, Minnesota, North Dakota, New York, Louisiana, and other states have developed extensive ranges for producing and marketing furs. Much of the world product is sold at auction to jobbers,—in Europe at London and Leipzig; in Canada at Montreal, Edmonton, and Winnipeg; in United States at New York, Seattle, and St. Louis, the latter being the world center for the Alaska seal catch. Copenhagen takes the Greenland furs; Leipzig those from Russia; and New York those from South and Central America. Paris and Vienna originate style in Europe, with London following with modifications, and New York also adding original touches and creations.

Fur imitation is extensively practiced. Several methods are in vogue: Dyeing, blending, and otherwise preparing a low-grade fur to make it look like a rare one; using names that often confuse, if not deceive, the buyer; and imitating fur from cloth products, this last being easily detected. Real nutria, for instance, comes from one of the rat family of South America, but rabbit and other cheaper skins are dyed in imitation; muskrat may pass for seal; squirrel for chinchilla squirrel of South America; Australian rabbit for Baltic leopard; and muskrat for Hudson seal. Some of the fancy names for furs are Kit cony, leopard cony, bisam mink (muskrat), chinchilette, French leopard, Baltic white fox, nutria, red river seal, Russian taupe fox, ermiline. Certain laws are designed to protect the public against misbranding; in a combination, for instance, often the last name designates the kind of fur and the rest a designation, trade name, or process label. Thus seal dyed muskrat is, of course, a muskrat trying to look like seal; black dyed fox is an inferior fox dyed to resemble a costly one; stone marten opossum is our old elusive friend rechristened; beaver cony, nutria cony, and such names are designations for rabbit, cony being another name for a rabbit.

GAS, ILLUMINATING. William Murdock at Redruth, Cornwall, England, in 1792 made and utilized coal gas for lighting his own cottage, and ten years later for lighting the streets of Soho. Beginning in 1804 various companies sprang up in London; the London Gas Light and Coke Company, survivor of nearly all of them, in 1928 employed 20,000 men and sold 46 billion cubic feet of gas, with by-products of coke of a million and a half tons; coal tar 27 million gallons; ammonia 23,000 tons; and creosote 7 and a half million gallons. For these 2 million 600 thousand tons of coal were transformed.

In America, Philadelphia first experimented with gas, but David Melville lighted his house at Newport, R. I., as early as 1805. Baltimore (1812), Philadelphia (1815), Boston (1822), and New York (1825) were the first large cities to use artificial gas for street lighting. Not until about 1835 in England and 1855 in the United States was this fuel used for domestic cooking. Within a decade ending in 1930, gas consumption grew by 400%, while population in America gained only 16%. Industries use tremendous quantities of both made and natural gas. One Ford plant (River Rouge, Mich.) burns about 50 million feet a day, enough for a city of 5 millions. Even skyscrapers are now heated by gas.

Coal is heated in retorts; the heavy gas driven off passes, by a pipe termed a hydraulic main, through curved pipes or condensers, in which process coal tar and ammoniacal liquor condense and fall into a well. The gas passes to purifiers, over slaked lime, which takes up sulphureted hydrogen and carbonic acid; it is then headed downward to the gas holder, a large tank whose base rests in water, and from which the gas is distributed to the customers. The by-products, today, are stated to be much more valuable than the gas obtained, and include coke, ammonia, anilin, phenol, or carbolic acid, naphthalene dyes, various artificial drugs, and basic perfumes.

Acetylene gas is a compound of two atoms of carbon and two of hydrogen; discovered by Edmond Davy (1836). Its modern method of preparation from calcium carbid was discovered by Thomas L. Willson, a Canadian, in 1893. Calcium carbid is formed by exposing a mixture of lime and carbon to the action of an electric arc. Calcium carbid treated with water gives off acetylene gas, which burns with a dazzling white light; used in isolated places remote from electric or gas lights. *Water* gas is made by decomposing water as steam; its hydrogen is mixed with a heavier carbon gas derived from oil, and the mixture made stable by subjecting it to a high temperature. Its cheapness of production is its chief recommendation; apparently now offset by its lack of by-products. Ibbetson acted on Fontana's discovery (1824) and developed it; first United States experiment tried at Girard House, Philadelphia (1858); process revolutionized by Lowe (1875), who received the Franklin gold medal of honor (1886). *Welsbach burner* improves the quality of gas light and saves combustion. Invented by Carl Auer von Welsbach (1885); being an application of the Drummond light; a mantle of fabric is dipped in refractory earth salts; the flame from mixed gas and air heats the mantle, which glows with brilliant incandescence of pure white quality. *Drummond light* or *Lime light* is a piece of quicklime subjected to the heat from an oxyhydrogen blowpipe, emitting an intensely brilliant light. Discovered by Lieutenant Drummond of England (1826). *Pintsch* gas is made from oil and stored in a highly compressed state in cylinders for ease of transportation. Its chief use is for lighting railway cars. Artificial gas is now stored in tanks for use like acetylene and Pintsch gas at points remote from the source of ordinary supply.

Natural Gas. No development industrially has been more spectacular than that of natural gas in recent years. From a few isolated sources of supply in 1910, now great fields in several states are opened, notably in Pennsylvania, West Virginia, Oklahoma, Texas, California, and Louisiana. Middle western and southern states have shown greatest

development in production. The value of the product is now over 300 millions annually, and the total production is over 1 billion and a half thousands of feet. Ohio, California, and Pennsylvania are leaders in numbers of single consumers. Natural gas heating of shops, offices, and houses, which are remote from good coal supply, has shown great increases in recent years. The total production of the natural product doubled in six years, ending in 1929. Great pipe lines convey it hundreds of miles—from the Kettleman fields to San Francisco; from West Virginia to Baltimore and Philadelphia; and from mid-continent fields to Chicago and St. Louis. States like Nebraska and Iowa, having no local source of supply, are now served by huge lines from the Kansas, Oklahoma, and Texas oil regions. Recent line extensions include Kansas City, Memphis, Tenn., New Orleans, San Antonio, Texas, and Salt Lake City.

GASOLINE. No processes illustrate the trends of modern chemical science more forcefully than the numerous productive treatments of coal, crude oil, and gas, all of them similar in general composition. Kerosene, gasoline, fuel and lubricating oils, and such by-products as asphalt, paraffine, petroleum coke, petrolatum, and medicinal oils are only the chief refinements of petroleum or crude oil. Gasoline in the last generation has come into increasing prominence as a fuel for many types of internal combustion engines. Before the advent of the gas engine, and even until modern automobiles became numerous, gasoline was treated as a waste product from coal oil or petroleum, and it was usually destroyed or thrown away. Technically gasoline is the lighter distillate of petroleum, within the range of .629 and .667 specific gravity, ranging between 95° and 80° according to the Baumé scale, the one used to measure petroleum products. Gasoline in Europe passes under the name of *petrol*, a short form of the word *petroleum*. Once laws had to be passed by states to keep manufacturers from adulterating kerosene with gasoline; but now every effort is made to force out of petroleum the last vestige of gasoline.

Kinds of gasoline. For years the only commercial type of gasoline was that derived from refining kerosene and other petroleum products. This is now called *natural* or *straight-run gasoline*. Since only a part of the gasoline can be extracted from petroleum at low temperatures, this type is now not so common in view of the great demand for more and more of the product. Methods of distillation are quite similar to those for making alcohol, and the apparatus consists essentially of a container for the "crude," a series of coils, usually in part at least copper, and a cooling series at the end, or some means of cooling the vapor and condensing this into the liquid gasoline, the final result of distillation. Gasoline of about 90° is highly volatile, hard to contain, gets through wood with some ease, and so cannot be used to any extent. Another type is *casing-head gasoline*, perhaps better named *natural-gas gasoline*, since it comes from natural gas at the casing head or top of the pipe that conveys gas from the ground. This is highly volatile, is often mixed with much heavier kinds or even oils, and in United States production has increased from over 280 million gallons in 1918 to nearly one and one-half billion yearly of late.

Cracked gasoline has been on the market since 1913, the processes of manufacture for a time being jealously guarded. Though several methods are now extensively used, one of the oldest is the Burton, a patent of the Standard Oil Company of Indiana. The cracking is literally breaking or bursting the composition into different or smaller units. Since gasoline is not a single compound, but a series of related ones, it can be broken up, or the molecules may be rearranged or reduced. Cracking is essentially a thinning process or really a series of processes. Thus, oils may be cracked several times.

The process is accomplished in stills or retorts under various pressures of from 50 pounds up, and at temperatures from 500° F. up. One method consists of having a container lined at the top and sides with steel balls, which get intensely hot and so cause the oil or crude gasoline to be highly vaporized. The resulting product is collected in tanks placed above the still or apparatus. Gasoline, then, is a series of compounds ranging all the way from the lightest, most volatile to the heaviest types or "end-products," beyond which burning in an engine or quick starting is not easily accomplished.

Production of cracked gasoline is at lease one-third of the total at present, the exact amount being hard to estimate. Almost every refining firm handles this type of product. In 1919 the total output of all gasolines was nearly 818 million barrels, and the number of automotive cars was 7 and a half millions. Now the output is mounting toward 600 million barrels, with more than 30 million cars in use.

Anti-knock gasoline. In winter motors need a more highly fractionated or cracked gasoline. Easy starting gasoline is lighter, more volatile; it is sometimes called high compression gasoline or by other trade names. Knocking in the car indicates that the gasoline is being too rapidly consumed; or that combustion is too rapidly taking place for greatest service in pushing the engine pistons. Various conditions affect this, including the type of gasoline used, the mixture of gas and air, presence of carbon in the cylinders, and so on. That greater efficiency is needed is shown by the fact that only a small percentage of the actual power of the gasoline is really utilized in giving power to the engine. Some mixtures of gasoline help engine performance. The idea that straight run or only a single type should be used is now claimed to be erroneous. Benzol, when added to some gasolines, greatly improves the product. Sometimes a small portion, less than one per cent of tetra-ethyl, is added to gasoline to retard the speed of combustion. Several other "anti-knock" compounds are now on the market. The problem will be solved by a more complete removal of the surplus hydrocarbons from gasoline, or reducing the liquid to a state so that every drop may be combusted easily and quickly, but at the same time not too fast for utilization in the engine.

GLASS. This chemical product is normally composed of silica, as found in common sand, soda as found in sodium carbonate (soda ash), lime as found in calcium carbonate; and other products in small degree, including old glass, known as *cullet*. Sometimes oxidizing agents are used, such as sodium or potassium nitrate, or reducing agents, such as carbon; decoloring materials; or coloring or opaque producing materials. These various components (and in certain cases others) must be proportioned accurately. Glass ingredients are first thoroughly mixed, and then molten either in pots or in tanks. Machinery has replaced hand labor in most of the processes, including even the "blowing" of glass bottles and the like. Tanks are of variant sizes and types for different glass mixtures, the tendency being to reduce the size somewhat, and to use pots less and less, because of the economic advantages obtained from the use of continuous tanks.

Glass articles are made in several ways, the chief being these: 1, hand work; 2, blowing in moulds; 3, pressing mechanically; 4, drawing; 5, rolling. Hand work, now almost superseded, is still used in making lamp chimneys, tumblers, and some highly artistic and ornamental glasses. *Moulded glasses* include many common varieties now popular. The operator gathers a mass (sometimes as much as 60 pounds) on a long iron rod. This is blown in the air, next lowered into a mould, which is firmly closed, and finally rotated in the mould if a certain form is sought. Machines now make many types of bottles, formerly blown by workers. The Westlake machine for blowing electric bulbs has 24 moulds with an automatic blowing head or orifice for each. It works automatically, making 120,000 bulbs a day. The Owens machine, an American vacuum blower, will produce with ten arms or units about 30 jars of two pounds each every minute it runs; and by multiple moulds on each arm, the capacity can be greatly increased. Such devices automatically measure the precise amount of red-hot glass needed for each bottle, and a scissor arrangement cuts it off at the right point from the needle or jet of material. Three different designs of machine provide, like the Owens, for arms mounted on a central pillar; or, like the Edward Miller and Hartford, for molds on a single flat table; or, like the O'Neill and Lynch, for two molds—on separate tables—one to make the body of the bottle, and the other to finish it. Of the latter, late types carry at least six parison or body molds and eight finishing moulds in the same machine. After the bottles are cast, they are conveyed by hand or on rotating belts to the annealing leer, which provides for cooling under fixed conditions, the process taking several hours at least.

Pressed glass is made by pouring the molten material into a mould, and after it is properly distributed, an upper mould or plunger is forced or pressed down upon it. This type of simple machine makes glass dishes of all sorts, thick-walled tumblers, reflectors and lenses as for automobile lights, and flat or curved glass of various types. The patterns can be plain or ornamental on one or both sides. Plates are usually plain on top, and ornamented with varied designs on the under side.

Drawn glass is used mainly for common "window" or flat glass and also for rolled or tubing glass. The Libbey-Owens machine draws the flat glass through a machine that sends it through the annealing furnace which is several hundred feet long; so the process is continuous. The machine draws the glass continuously from 19 to 27 feet each minute. Later the sheets are divided into the right sizes. The Danner and Libbey-Owens, both American machines, draw out rods and glass hollow tubes in somewhat similar ways at the rate of 100 to 500 feet each minute; a Holland machine, the Philips resembles these in general form.

Rolled or plate glass, familiar in many uses, is quite a different product from common or so-called "window" glass. The material is melted sufficiently in a molten pot, which is transferred by crane to a casting table, where the glass is poured out evenly. Then iron rollers pass over it, regulated to a certain thickness, usually about one-half inch. Later it is cut, treated, and polished. Plate glass may be roughened or made semi-transparent on one or both sides; or it may be waved; or it may be reenforced with wire for strength. It is superior to other types in clearness, freedom from bubbles, or other defects, and low reflective power as applied to windows. It is used chiefly for mirrors, store fronts, showcases, automobiles, hanging signs, and special constructions. Prism glass is especially made to cast light at a certain point;

it is familiar in the upper ranges of store fronts, modifying or deflecting the light. Wire glass, of various patterns, is made by introducing the wire reenforcement or screen into the molten glass before annealing starts. Curved glass is bent while hot.

Special glass. Stained or art glass is carefully treated with chemicals, such as oxides of iron, making the greens and browns; copper, making reds; cobalt oxides, blues; tin and zirconium, the milky or opaque varieties. Optical glass requires the purest materials and the most clever manipulations, of which only a few firms are capable. One telescope disk, 70 inches in diameter and 12 thick, took ten months to cool. Recently, attempts have been made to cast a lens as large as 200 inches across and corresponding thickness. The familiar cut glass requires great patience and experience, as it is turned under wheels of emery upon which water mixed with sand is constantly running. Glass may also be etched with acids or engraved with tools, or moulded into many beautiful forms.

Safety glasses are of two types. First, a mesh of wire can be used as in the common wire glass, but this obscures the vision, though it saves particles from flying when the glass is shattered. Second, a sandwich can be prepared. The most common form recently developed has two thin layers of glass, between which a film of cellulose product is placed. Then the three are united firmly under pressure and heat. This kind has been much used in automobile windshields, and in armored car constructions. When the glass is broken, the pieces are held by the cellulose or celluloid film between the layers, and so they do not fly. Special glasses to transmit the ultra-violet rays are now produced by the exclusion of all iron oxides and of lead composition in the glass. Corex, an American type, allows most of the rays to penetrate, a condition impossible with ordinary glass. *Pyrex* and *Oven Glass* are trade names for products which resist changes in temperature when these might cause cracking. *Quartz glass*, made of pure sand, transmits the violet rays almost perfectly, but this is expensive at present.

Glass producing centers today are western Pennsylvania, West Virginia, and Ohio, central Indiana, Oklahoma, California, and at various single points in New York, New England, and the South.

GRAPHITE. As one of the forms of carbon, graphite has been known for centuries, plumbago, black lead, and drawing lead being other names for it. In nature it occurs in crystalline rocks; in manufacture it results from making pig iron, being known as *kish;* in artificial form it is allied to carborundum, both products being patented by E. G. Acheson of Niagara Falls, N. Y., graphite in 1896. Artificial graphite is made in electric furnaces from moulded carbons, and from anthracite itself. K. W. Schell first (1779) discovered its composition chemically, and A. G. Werner, another German, invented the name (1789) from the Greek word meaning "I write." Graphitic veins in rocks seem related somehow to metal veins in crystalline material. Important supplies in nature are found in the Laurentian rocks of New York, Ontario, the famous Alibert mine at Irkutsk, Siberia, a mine in Cumberland, England, others in Sonoma, Mexico, and great deposits also occur in Bavaria, Austria, and some in Australia. Owing to the difficulty of dividing graphite from impurities in rocky material, certain sources are not used at present. Sometimes it appears in flaky form, and at other points it is amorphous, or formless.

Uses of graphite. Since 1425 graphite has been used for pencils for drawing in Italy, and from 1775 or before at Nuremberg, Germany, where the celebrated Faber pencil works are now situated, for which the chief supply is the Alibert mine. Much of the material for use in the United States comes from Mexico and New York; since 1890 we have exported great quantities of finished pencils. For softer "lead" or graphite pencils, little clay is mixed with the pure form; for harder, varying degrees of clay are intermingled. Proportions vary from two of graphite, to three of clay for common rather soft leads to twenty-six of graphite, sixteen of clay, eight of antimony, and six of lampblack. Though pencils illustrate the most familiar use of graphite, more than one-third of the total world product goes into the making of crucibles, retorts, furnace linings, stirrers, and other articles which must be made to withstand very high temperatures. For crucibles in the manufacture of gold and silver and for containers of acids, graphite is highly suitable.

Mixed with clay and sand certain forms have immense hardness, toughness, and heat resistance. Crucible graphite may have quite a proportion of impurities, but pencil graphite must be very pure, flake graphite being unsuitable for the latter. Flake graphite, however, is most suitable for making lubricating substances. It will adhere to highly polished surfaces, and, mixed with oil or grease, proves highly effective in reducing friction. Ticonderoga flake from New York is adapted to these uses. High speed steel journals, engine cylinders, and sliding objects in contact with others are treated with graphite. In paint graphite forms an important component for use on rough surfaces, such as factories, ships, chimneys, steel containers like gas-holders, roofs, machinery, and the like. It is also largely used for facings to keep hot castings from adhering to the sand of these moulds; here by slow combustion it liberates a gas that protects the metal. Since 1827 graphite has been used in stove polish, and the artificial form since 1895 in making commutator brushes for dynamos. Some of the incidental uses are these: in pipe cement, in electroplating, in giving tea and coffee color and glaze, in protecting gunpowder, in preventing boiler scale.

GYROSCOPE. A comparatively heavy rotating wheel, mounted on its own axis, and also so that it can turn in two other directions. It was first made practical by Bohenberger (1810), demonstrated and named by Foucault (1852), improved by G. M. Hopkins (about 1900), and applied in numerous inventions by E. A. Sperry (q. v.). It made possible a monorail car by stabilizing the mass in rounding a curve, and in keeping the car on the track at all times. The simplest gyroscope consists of a rotating wheel, which attains great speed, and applies the principles of inertia and precession. By utilizing inertia it secures rigidity and stability; by applying precession, it secures resistance to change of position with regard to the axes. Sperry's gyrocompass was first used in the United States Navy in 1911, and now it is installed on most ocean craft. Sperry also designed gyros for directing torpedoes, for automatic control of ships, for preventing ships from "rolling," and for recording depressions either in the road-bed or in the rails of railroads. Other applications by inventors are to the "autogiro," a plane with rotating wings, perfected by Cierva in Spain; a turn and bank indicator much used in modern airplanes; and even a gyroscopic device to fly a plane automatically. Within two decades the gyro, in different forms, replaced many of the old stabilizing, steering, and direction recording devices.

HEATING AND VENTILATION. Primitive man in temperate zones either went cold or used sticks for fires for heating. Until long after the settlement of America, the *fireplace* was the main method; and this is still largely used in England. Though elaborate and ornamental fireplaces were developed, efficiency was less than 20%. Thus, even today with fireplace heat, one may roast on one side toward the flame and freeze on the other; yet for sentimental and ornamental value, many homes retain fireplaces as secondary heating devices.

Benjamin Franklin invented (1744) a *cast-iron stove* set out into the room from the fireplace and allowing heat radiation from all sides. Some form or development of this is extensively used today. The efficiency of this type, however, is 50% or less of the fuel burned. Franklin also thought of a device resembling our hot-air furnace, but it was 1835 before one was installed in New England at Worcester, Mass. Meanwhile (1830) the base burner was developed; but this, too, wastes from 20 to 30% of the calorie value of the fuel.

The *warm-air furnace* is economical, reduces the fire hazard, and, being usually in the basement or cellar, does not devitalize the air in living rooms so rapidly as either the fireplace or the common stove of all types. Pipeless furnaces, where the heat easily distributes itself to the rooms above, by rising directly from the heating drums through a large register, are economical and popular. If the circulation of cold and warm airs is properly arranged, the warm air furnace works well. Sometimes a blower in the pipes sends the air up more quickly.

Hot water heating was known to the Romans. The Marquise de Chambon developed a type in England (1816), and Canada, and the United States somewhat tardily fell into line. This is ideal for low buildings, totally unsuited to high ones because of pressure of the water in the pipes, and a lasting heat. Its disadvantages lie in mechanical defects, stoppages, delay in heating the water, but the radiators retain the heat a long time. Steam piping cools off sooner, but heats more rapidly. Some steam systems are provided with a continuous return to the boiler; in others the steam must condense into water and run back by the same pipes. Collection of water in the single unit leads to disagreeable pounding by the fresh steam behind it. Combination systems of steam and hot air have proved fairly effective. Warm air plants retain their great popularity because of low initial cost, simplicity of operation, and the fact that some heat is always available when there is any fire in the furnace itself.

Good *ventilation* is a requisite of good heating. Warm air plants draw the cold air by piping from the outside or from near the floors. Circulation of good air is thus provided. Oxygen forms about one-fifth, nitrogen about four-fifths of the air; and of this mixture each adult breathes about 2,600 gallons or 425 cubic feet in each 24 hours. Freedom from gases like carbon dioxide, found in vitiated air, is a test of purity; air should not contain much more than four parts of this gas in 10,000 of pure air. Bad air has a depressing effect on the skin as well as on the lungs, a fact demonstrated fully in 1913. Humidity, odors, dust, and other foreign substances in air render it less comfortable to man. Complete ventilating systems now imply good heating, clean air of sufficient humidity, the removal of vitiated air by a fan system. The fan may provide for both heating and ventilation; for ventilation and part of the heating; for ventilation solely.

Systems of washing and filtering the air are used in theaters, halls, and some office buildings. In modern theaters and schools the air may be completely changed in a few minutes. Filtering is accomplished by passing the air through a screen or some retainer wet with oil, which collects the dust and other foreign particles upon the screen. To save discomfort or excessive "drafts," air is introduced from above and withdrawn from vents near the floor. Each person should have about 30 cubic feet of new, fresh air each minute.

INK. Any liquid or viscous material used in writing or printing. Early peoples used various material for making ink; Pliny mentions the cuttlefish as furnishing ink basis. *China ink* and *India ink*, still much used in the arts, are of ancient origin for use with a brush. Like many modern inks they contain lampblack highly refined and mixed with glutinous substances, not given to fading, and easily transported in tubes or squares, which are melted in water.

Tannin inks contain galls from Asia in powdered form, mixed with tannin, salt of iron, chopped straw, and some glue substance, the whole being fermented and otherwise processed. Black and colors are made by mixing different pigments. Logwood is used in some copying inks. Brazil wood is used for red ink; prussian blue for blue, and both have anilin competitors. Indeed many *anilin inks* are on the market, such as nigrosin or black, which is non-corrosive, runs well, and does not readily fade. *Marking* ink is a compound of salt of silver, water, ammonia, with some thickening, and this is the familiar type for marking linen and other fabrics. *Indelible* inks have as a basis lampblack mixed with some material which sets the color. Sympathetic inks, of little use except in stories, are those made of some solution and are readable only when exposed to light, heat, or some particular chemical. Varnish, pigment, and oil, with anilin color, now make up most of the *printer's inks*. Writing fluid, or the familiar "fountain pen ink" is made of a base of pigment combined with some watery fluid made to flow easily by thinning and special treatment.

IRON AND STEEL. Though iron makes up 4% of the earth crust, it is rarely seen in pure form save in meteors. Next to aluminum, iron is the most abundant of metallic elements. Iron ore is pure iron combined with one or another substance, chiefly oxygen, carbon, silica, and sulphur. In the United States, only the oxides of iron are commercially important, save the sulphide ores in Pennsylvania. Magnetite, hematite, limonite or brown ore are the chief commercial types. Magnetite, known for its magnetic properties, is found in purest form in Sweden, containing about 72% of metallic iron and 28% of oxygen. Because they contain chromium and titanium oxides, many deposits of magnetite are unfit for working. Red hematite, öolithic hematite, and fossil ore are the main varieties of hematite, the best form of which is found in the Messaba district in Minnesota, where it varies from 39 to 67% of pure iron from the surface or strip mines. Limonite or brown ores, found in many regions, are richest in southern Virginia, and yet they seldom compete with the ores of the Lake Superior district.

Huge shovels in the Minnesota strip mines lift up the ore, load it upon cars, which are taken to Lake Superior ports, and thence to Cleveland, Chicago, Buffalo, and on to Youngstown, Pittsburgh, Wheeling, Gary, and other destinations for refining and making into pig iron. Birmingham in the South, Baltimore on the eastern seaboard, and Denver for western production of iron ore, are other chief smelting centers. States leading in casting of pig iron are, in order of rank, Pennsylvania, Ohio, Illinois, Indiana and Michigan, Alabama, Wisconsin, and Minnesota. For the crude iron ore, before it is refined and made into pigs, Minnesota leads Michigan by three to one, and then follow in order Alabama, Pennsylvania, New York, New Jersey, Wyoming, and Tennessee. The combined Lake Superior regions yield about 60 million long tons a year; Alabama next with only 6; and the rest of the land, 3 million. Leading foreign regions are the north of England; the Lorraine in France and adjacent areas like the Saar; fairly good supplies in Sweden; and huge unestimated quantities in Brazil and in China and other parts of Asia; others in and near the Ural Mountains. Newfoundland of late has built up important developments, and Cuba has shipped much iron ore for refining in Baltimore.

Early smelting of iron ore. Centuries before Christ men worked iron into various designs. Because of oxidation or rusting few of them have survived when exposed to the air. Tubal-cain, in the early dawnings of human history, was described as "an instructor of every artificer in iron and brass." Herodotus asserts that iron tools were used in making the pyramids. Iron recently found in Egyptian tombs shows a high degree of skill in fashioning implements. China, Chaldea, Assyria, Babylonia, India, even Africa knew iron making in early times.

Yet the aboriginal settlers in America seem not to have known the use of this metal. Coal first replaced wood and charcoal in the refining of iron in 1611, but became general only about 1700, and coke was used first about 1750. Iron was found in North Carolina in 1585, Virginia exported ore in 1608, and Massachusetts in 1642. By 1790 machines were introduced to make nails and tacks. Hot air was first used to hasten the smelting operation in 1828, giving rise to the blast furnace well known today. Henry Cort in England in 1784, by using a system of rollers to press the iron forms, invented the first "puddling" process. Not long afterward American furnaces were turning out 35 tons of iron a week. Today a modern large furnace makes at least 500 tons a day. Though the extension of railways after 1830 created a large demand for the native products, it was not until after the Civil War that importation of wrought iron from England wholly ceased.

Making pig iron. It requires two tons of ore, one of coke, and about one-half ton of limestone to turn out a ton of pig iron, of which thirteen different classes are recognized, according to use and type. The production of pig iron is a highly specialized affair, requiring definite apparatus, the chief elements of which are blast furnace, with stack blower, hoisting machinery, track to bring up the ores, and ingenious system of two bells inside the furnace to permit charging or filling with ore while the furnace is in operation or in blast. The little bell is above the larger, and both are like inverted funnels. The ore is dumped on the little bell, which is lowered to allow the ore to drop upon the large bell, which remains fixed in place, so that no gas can escape. Ore and limestone are alternated with loads or "skips" of coke, usually two of each in succession.

Air at from one thousand to twelve hundred F. is blown in from the bottom of the furnace and up through the mixture, and the process of refining continues until the furnace is shut down for repairs or other causes. Certain chemical combinations take place, and limestone takes up the impurities originally in the ore, and at last the molten metal filters down through the mass to the hearth of the furnace at the bottom. The impure portion called "slag," being lighter than iron itself, floats on the top, and then is skimmed off and so removed from the upper of two holes in the bottom of the furnace, while the pure molten iron is allowed to run out when the clay holding it back is removed from the hole lower down.

Two kinds of iron. Thus we see that pig iron is iron ore separated into the iron itself and the impurities, the latter of which are discarded.

Cast iron, as it is called, is simply pig iron made into serviceable sizes and shapes by placing it in molds. Though not malleable, it is of great service for foundations for machines, canal lock gates, and other heavy uses. *Wrought iron*, the second type, may be made crudely by melting the ore and forcing, hammering, or pressing it into shape while it is not fully cooled, or when it is pliable or workable into forms desired. A better way is to place pig iron in a furnace, already lined with oxide of iron, and in this manner the iron becomes a pasty mass, the impurities are removed, and it is afterwards treated or pressed to make it still more pure. Wrought iron is tough, very malleable, and soft, good for plates, sheets, bars, wire, tubes, and many other forms. The Bessemer converter process, described below, was used for many years, but more recently the Ashton process has been adopted, though even by this the cost of making wrought iron is higher than the cost of making steel.

Steel making. When man began to purify pig iron, to combine it with other metals, and to refine the manufacture of a myriad number of articles, the modern industrial world was possible. Steel is pig iron rather fully purified, unlike wrought iron that is made while the product is partly heated, but rather purified while completely molten. Steel is often named according to the ways of making it, such as Bessemer, open hearth, electric, or crucible steel. Again, steel is named according to the metal with which it is alloyed, such as vanadium, copper, molybdenum, chrome, and nickel steel. Next the four ways of making steel will be briefly described.

First, the *Bessemer process*, named for Henry Bessemer of England, who introduced it in 1855. In this process a large pear-shaped converter, while in a horizontal position, is charged with molten pig iron. Then it is moved into a vertical position, while air is blown through the iron, oxidizing the entire mass and converting it into steel. Today such a converter, with a capacity of from 5 to 25 tons at a charge, turns the iron into steel in approximately ten minutes.

Second, the *open hearth process*, of which two varieties have been developed. By one of these, all the phosphorus of the original pig iron,is still retained in the finished steel, and so only materials of rather low phosphorus content may be used. This acid open hearth method, as it is called, is gradually giving way to the basic open hearth type of refining. Since 1866 the open hearth furnace has been pushed to its present high state of development. The basic process may be compared to drawing heat from some source over a huge saucer to bring the contents of that saucer to molten state. Though this method is slower than the other, added advantage is gained in that the oxidation of the ingredients of the pig iron proceeds in a way more easily controlled by man. Thus the chemical composition of the steel is more uniform.

Third, *crucible steel*, of special hardness and strength, is made by fusing wrought iron and scrap together in graphite-lined crucibles. To this mass, alloying elements like vanadium, chrome, and others may be added. Only com-

paratively small ingots of steel may be made at a time in the crucible.

Fourth, *electric steel* furnaces now are superseding the crucibles, since they maintain higher temperatures, can use larger and cheaper quantities of material, and give a greater range of alloying with other metals. Again, the electric current is more under control of the metallurgist, higher temperatures can be attained quickly, and the various elements are more easily handled.

Some steel products. Steel pieces or ingots can be rolled or flattened into desired shapes. They first pass through a "blooming mill," which makes the basis of all steel products. The resulting "bloom" is then rolled between horizontal cylinders or rolls, decreasing the space between the rolls as the steel piece goes back and forth between them. More modern mills now have continuous rollers, each set of which reduces the thickness, or modifies the original piece in some manner, until the right size or type of steel is obtained. Some of these numerous individual products or forms are rails for railroads; I-beams and others for all sorts of building, from bridges to sky-scrapers; sheet steel, in forms varying all the way from the kitchen skillet to automobile bodies; all sorts of pipes, wires, roofing and bridge floor materials, fences, and—well, look about and your eye cannot travel long without seeing some modern steel product.

Steel sheets are made of various thickness and lengths; up to 60 inches wide. Pipe has long been made by bending sheets and welding the seam together. Now seamless tubing bids fair to replace this older method although it has not yet done so to any appreciable degree. Seamless pipe is made by passing a mandrel or piercing instrument through a hot billet. Steel rods are made by a series of rolling operations, then the rods are drawn through dies while cold to make wire. This drawing is done while the steel is cold because it greatly increases its strength. Steel is adapted to being formed while cold, consequently most of it is pressed into shape without heating. Automobile bodies, office furniture, frames for stoves, electrical fixtures, car wheels, heaters, washing machines, typewriters, and thousands of other articles are all made from this metal which is almost universal in its adaptability and usefulness.

LACE. Ornamental work of flax, linen, cotton, silk, metal, or other fibers, looped, twisted, or braided, is called lace. Though hand-made lace is still more highly prized, machine products have gained tremendously in number and practical uses. Egypt had fine laces by 100 A. D., and early forms of weaving centuries earlier; the Romans may have made lace by machines or by bobbins; Italy in the middle ages made noble specimens; but England lagged much behind the continent, though embroidery before 1300 attained an excellence never surpassed in modern ages.

Four methods of lace making are distinguished: needle, bobbin, crochet, shuttle. Needle lace is well known in drawnwork, consisting of taking out certain threads from the original pattern or cloth. If the threads are cut, the product is called cut-work. Bobbin lace is made with bobbins, pins, and a pillow or cushion. The pattern is pinned on the cushion, pins are stuck at intervals in this, and then the bobbins plait the threads around them, the result being a definite pattern. Crochet lace is made by putting one thread through a loop of another by means of a crochet hook. Shuttle lace, either made by hand or machine, is woven by passing a shuttle back and forth to make a pattern.

Venice and Genoa once led in fancy laces, the "point" of Milan also being famous from 1500 to 1700. Louis XIV of France imported skilled workmen from Italy, Belgium, and Holland who invented many fine needle work patterns, later imitated or imported by England. In time families developed special techniques, which were handed down through several generations. Certain patterns thus created now bring great sums from those who prize old laces. Irish laces also have led in linen patterns, the chief types being Carrickmacross, Limerick, and Irish point. Celebrated continental types are Flemish needlepoint, point de France, Valenciennes, point d'Angleterre, Venetian point, and Milan point.

LACQUERS. See under *Varnishes*.

LEATHER. Primitive man was well versed in methods of tanning or making leather from hides of various animals. Long ago the American Indians, for example, made leather goods which are hardly excelled in beauty and usefulness today. Chinese, Egyptians, and Romans had processes that were most effective. For centuries man clothed himself in skins and furs, long before modern tools were available for dressing them, and yet the product survived long after the original owners had passed from earth. The American colonies all had important legal and trade enactments to govern tanning. Massachusetts led in tanning, with Virginia a close second. Once laws forbade the same men from tanning, currying, and making shoes from leather, each of these processes being confined to one separate group. New England had most of the tanneries until about 1860. Of about 450 tanneries at present, Massachusetts has one-fifth, with Pennsylvania, New York, Missouri, and New Jersey next in number of plants. St. Louis, Boston, New York, Cincinnati, Rochester, and Philadelphia have had large plants. Illinois, Wisconsin, Ohio, and California tend toward a few large plants, the eastern ones being smaller, but at times more active. One-fourth of all tanneries are large enough to turn out products worth at least a million a year. The large countries of the world lead in order—India, United States, China, Germany, Argentine, Italy, France, Great Britain, and Australia.

Tanning is sometimes an elaborate process, having as its chief motives the preserving, softening, waterproofing, and beautifying of the original hides or skins. Among simpler methods are drying, with or without adding chemicals or oils or salts; dry salting or covering with salt or salted earth; and wet salting or immersing in some watery or preserving substance. Tanning usually implies a more careful process, however. Both acids and alkalis have been used in tanning. *Tawing*, an older process less used now than real tanning, consists of treating skins with oils, fats, albumens, or alum. American "morocco," once popular for shoe uppers, was a product of the tawing process; so was French chamois for gloves, and other leathers treated with egg yolks, alum, salt, flour, and other substances. *Currying* is a process to soften leather, left hard after tawing and similar methods. Oils are scraped, rolled, or beaten into the leather. Tanning proper used to be accomplished entirely by use of various barks containing tannin, hemlock being the chief kind used. The tanner submerged the skin in a series of vats, each having a stronger solution than the previous one, and the entire process often took a whole year. Now by the chrome process, by use of stronger and often different acids, the time is reduced to a few days, or hours even, in some instances. Tanning materials are of two kinds at present: crude vegetable woods or chips, like hemlock bark, oak bark, chestnut wood, myrobalans, nuts, wattle bark, valonia cups, mangrove bark, sumac leaves, quebracho wood, and a few others; vegetable extracts derived from chestnut, quebracho, oak, sulphide cellulose, hemlock, logwood, gambier, sumac, wattle, and mangrove. In each class the order is that of importance of the material. Various chemical or synthetic tannins are now made, the chief components being sulphuric acid, phenols, and formaldehyde.

Special processes vary somewhat from the general methods. Sole leather is prepared by coloring, immersing the skins in a series of strong liquors, and finally dusting them with dry tanning material and leaving them in stronger solutions for a long time. In any case the skins are first freed from hair, surplus flesh, and are treated with lime or other material. Calfskins are suspended in a liquor like those mentioned above, and later treated with a more mild solution to improve the color or reduce the shade. Sumac is usually employed for sheep skins, which are tanned in a short time, sometimes not over 12 hours. Chrome tanning is accomplished by pickling the skins in sulphuric acid and common salt, and then by forcing into them a solution of bichromate of soda and acid. Oil tannage removes the natural greases from sheep skins that have been split by machinery, after which fish oil or some other is forced into the fibers, followed by further treatments, partial drying, and heating. After the main processes of tanning, a further currying or oiling or greasing is accomplished. Finally, the dyeing by direct brushing or staining, dipping, running the skin over a drum or paddle, or spraying.

Uses of leather. Hides for making leather are chosen from the entire animal world: from animals like cattle, sheep, goats, deer, pigs, seal, antelope, whales, sharks, elephant, kangaroo, and rabbits; from reptiles like snakes, lizards, alligators; from birds like ostriches, swans, and at one time chickens. Fur-bearing animals are made into wraps and clothing, without removing the hair, and by tanning one side only. Heavy leather goes into soles, belts, and harness; calf into uppers, book bindings, and ornamental work; sheep into linings, gloves, aprons, and parchments; goat into shoes for ladies and gloves; pig into bags, saddles, and bindings; dog into gloves for rough wear; and horsehide into strongest gloves; others for special, fancy, or art uses.

Leather substitutes. Man looks for cheaper or greater supplies. Scarcity and high price of leather drove inventors to look for cheap leather substitutes, known to us since 1850. The World War stimulated ingenuity. Even before, various rubber products were used for soles, and synthetic products have had a great vogue for several years now. Basic fabrics are impregnated with imitation substances that look like leather. Coating substances are of cellulose nitrates, oily compositions, coloring material, pigments, and plastics of considerable variety. Belting is now made of fiber, cloth, rope, or wire. Three-fourths of the shoes now have rubber heels. Popularity of low shoes, use of cloth for uppers, and the use of the automobile have decreased the demand for leather. Among the varied uses for artificial leather are these: notebook covers, automobile tops and seats, luggage, water proof materials, wall coverings and other decorative articles, and various kinds of wrappings. The United States alone produces almost 100 million yards of artificial leather material a year, mostly in fabric form.

LINOLEUM. As the name implies, a combination of linen (really jute material) with oil to make a floor covering, as designated by the inventor Frederick Walton (1860).

Previously woolen cloth (1636) had been treated with oil and some other components; and with India rubber or gum lastic (1751), and with resin, pitch, beeswax, and linseed oil (1754). Galloway (1844) mixed cork dust with softened India rubber, and at last Walton solidified oxidized linseed oil, a process still largely employed.

Details of making linoleum. Items in the process include these: preparing the oil, making a cement, mixing this with ground cork, applying the component mixture to a canvas of jute, seasoning the product, and making it into suitable sizes. Linoleum is of two kinds, plain and inlaid, the material itself being similar, while the after printing or treatment varies. Patterns are laid on the linoleum, the inlaid having them printed deeply by blocks, the components being fused under pressure and heat, and later treated to make a fine, polished surface. Nitrocellulose has also been extensively employed in place of linseed and cork materials. One prominent substitute for linoleum is felt treated with heavy bituminous material and then printed about as linoleum is. Patterns vary according to the designs of the artists employed and the vogue of the different types.

LITHOGRAPHY. Alois Senefelder, a Bavarian actor, discovered in 1796 the process of surface or relief printing from stone or metal. His invention received royal favor in Germany, where his printing shop at Munich (1808) became famous, and by 1810 also in England, and France. Artists took up the art, which had a great vogue until photography became a rival about 1860, but it was revived once more thirty years later, and flourishes now.

The process described. Lithographic crayon is composed of varying parts of soap, wax, oil, and lampblack, and the stone is blue or hard, gray or medium, and yellow or soft, Kelheim stone being a favorite class. Designs drawn, written, or otherwise outlined on transfer paper are placed carefully face down on the lithographic stone, after they have been softened between wet blotting or other paper for from 20 to 60 minutes. Backing or some hard material is placed for a time upon the top of this paper, from which the design appears on the stone, and is allowed to dry. Transfer to zinc or aluminum plates is made in a similar manner. Etching of the design is accomplished by a solution of gum arabic and nitric acid for a stone, and of gum arabic, chromic acid, and phosphoric acid for zinc, and the same less the chromic acid for aluminum. The etch solution eats away the part of the stone free from the drawing or design, which is left for printing; after further cleaning and treating with asphaltum, ink may be applied. *Lithographic ink* is a product of dry color and linseed oil, softened up somewhat, and applied with a roller, from which the impression must be uniform and free from foreign substances. Various colored inks are used.

Printing is accomplished by a sliding motion on paper that has been especially prepared. Though a flat-bed press is still much in favor, a rotary type has been a success. Metal is also taking the place of stone, the weight of which calls for more convenient mediums. *Photolithography* is printing from designs without the help of handwork, as in the Vandyke method. By this a line drawing or other form may be transferred directly to the stone without being first photographed, the drawing itself being used as a negative as in printing pictures. The direct method, a more advanced one, prints the negative directly on the stone or metal plate coated with albumen and bichromate. *Rotogravure* is a similar process of rapid printing of pictures from plates etched on copper cylinders. The negative is exposed to light in a partial vacuum, the plate is rubbed with cotton-wool, further treated, etched, and gummed for the press. *Chromolithography* or color printing is the process of transferring to stone the artist's designs, taking many good proofs on fine heavy paper, coloring them for printing, so that the lot together will reproduce the color and design of the original picture. See article on *Printing*.

LUMBERING. This term is now applied to extensive felling and cutting trees into material for use in building. Various methods are used, necessitating a crew of a few men or as many as 12 or 15 in a single gang. In large-scale lumbering one man marks the trees, two follow and cut them, others divide the trunk into logs, another group clears away the branches, and one or more clears up the forest after the main crew has passed. Directing the fall of a tree is important to save it and others from damage. This is accomplished by cutting a notch in the tree on the side toward which it should fall, and then by sawing through on the opposite side, while wedges are driven into the cut behind the saw to relieve pressure on the saw itself.

Transportation to mills. Logs are snaked to the roads, mills, or branch railways; now a snow locomotive or tractor with immense power is often employed in large forests. Logs are loaded on huge sleds by means of cables. Sometimes they are fed into sluices and carried by water for many miles, one in California being 53 miles long with branchings, the whole being handled by only two men. Often logs float singly down water courses to dams or mills, and when they get tangled "in a jam," drivers at great risk have to climb upon them, or stand in their path, and disentangle those holding the mass back. Laws forbid this method on navigable streams. Logs are held in ponds, small lakes, or behind dams sometimes till spring floods come to move them. Hundreds or thousands of logs are sometimes lashed together by chains to form immense rafts, often made up of sections or groups. Rafts 840 feet long, 50 wide, drawing 30 feet of water, and helped by chains weighing 175 tons have been successfully handled. Hard woods must be handled carefully lest they sink.

Sources and uses. Once the eastern states supplied ample quantities of lumber, and wood was lavishly used for fuel and incidental building, even for "corduroy" roads. With emigration westward the industry followed. Michigan, Minnesota, Colorado, Oregon, Washington, and California became in turn the source of large supplies. More recently the South, Maine, and certain scattered areas have been tapped. White pine, spruce, hemlock still are cut in the northeastern states; yellow pine and cypress in the South; redwood, pine, and other conifers in the west and northwest. Hard woods like ash, poplar, oak, hickory, hard maple are staples of the regions east of the Mississippi.

One of the oldest sawmills in the United States is at Lewiston, Me. (1770); several times destroyed by fire, but now a magnificent plant. Logs are sawed into lumber by circular or rotary saws, or by a number of up and down saws known as a "gang"; the mills are run by steam or water power. There are many portable sawmills which can be located where desired; heaps of sawdust reveal their visits. When cut the lumber is planed, the rough edges taken off and the boards matched, tongued, or grooved by machinery. There are machines for window sashes, wood molding, tenoning, mortising, boring, band and swing saws, sandpapering, and carving, there being little handwork in modern finished lumber. This has revolutionized interior decoration, placing artistic carving and scroll work within reach of almost every one. Lumber is also seasoned artificially, thus avoiding its lying idle for long periods at compound interest, and this still further reduces the cost of decorative work. See article on *Forestry*.

MATCHES. In nature and method of making, few products have changed as radically as matches have in 30 or 40 years. Early forms consisting of threads, tapers, or mere splinters of wood, need not be described. An alchemist at Hamburg discovered phosphorus in 1670, but the modern friction match was invented by John Walker, a druggist of Stockton, England, in 1827. The latter contained chlorate of potash, sugar, and gum arabic, but lighting was difficult and accomplished only by rubbing or drawing the match through sandpaper. "Lucifer" matches attempted to provide a striking surface on the box or container. In 1831 phosphorus was used in a match which could be lighted anywhere, but this had two disadvantages—it was too easy to ignite, and workers in factories were attacked by a terrible face disease caused by yellow phosphorus poisoning. The convention at Berne in 1906 agreed to abandon this type in all member lands.

Since 1900 a non-poisonous form (sesquisulphid of phosphorus) has been largely used. American matches now are made of pine and aspen wood, impregnated with a boric solution, and tipped with a small lighting surface, protected around it by material not easily set off. Birds-eye matches describe this tip in one species. Matches are now seldom made by hand or in simple units, but in large machines capable of turning out 50,000 to 100,000 a day. These automatically cut the splints, dip the heads twice in solutions made up of six or more components, and place them in boxes. The containers are made by other machines, in two parts, boxes and slide outsides, at the rate of 6,000 to 10,000 an hour. Truly the machine that makes the humble match is one of our most wonderful combinations of units, one type being 53 feet long, 10 wide, and 9 high, the weight of which is about 20 tons.

Safety matches were first made in 1855. Some elements are in the match head, and the inflammable or striking element is on the box itself, so that no other substance or surface will light the match head. Sweden has long had a government monopoly of the familiar small type, used almost entirely there and also exported in great quantity to all parts of the globe. The American types of book-matches, encased in cardboard for the use of smokers, are safety matches of quite similar make.

MINING. The delving of metals from the earth, existing from the earliest times. *Prospecting* is the searching for deposits of ore by examination of the surface and surroundings: samples obtained are assayed, and the probable value of the "find" estimated. *Staking claims* is a legal step to secure protection; consisting of marking out a patch of ground, varying in area according to the individual State provisions; averaging 1,500 feet along the vein, and 300 feet along either side, in most western states, and in the east a square 1,500 feet. *Working* a claim is developing it either by surface clearing, or by digging down into the ground forming a *shaft* and its corollary of passages, or tunnels, which follow the "lead" or direction of the vein; these passages are properly "timbered" to replace the natural support of the earth, ore, or water taken away; there must also be adequate ventilation. In *placer* mining the loose gold is washed from the gravel, sand, or mud, containing it, and in

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GREAT INDUSTRIES—OIL

1 Signal Hill Derricks, Long Beach, Calif. **2** Warren Wagonner Oil Well, Range, Texas. **3** Oil Stills in Sinclair Refinery, East Chicago, Ind. (End of Oklahoma and Texas pipelines.) **4** The Jesse Willard Gusher Well at Eureka, Kan. **5** Oil Well on Fire, Texas. **6** Famous Goose Creek Oil Field, Texas. **7** Car loading racks, Sinclair Refinery, East Chicago, Ind. **8** An Oil Refinery, Sinclair Refinery, East Chicago, Ind.

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GREAT INDUSTRIES—WHEAT

1 Harvesting wheat, Saskatchewan. 2 100,000 sacks of wheat, Henrietta Ranch, California. 3 Harvester and Thresher drawn by 33 horses, Pacific Northwest. 4 Enormous Pennsylvania Railroad grain elevator, Canton, Maryland. 5 An old waterpower mill, New Jersey. 6 Unloading grain by gravity, car tilting device in Pennsylvania Railroad elevator. 7 Unloading barge by suction, New Orleans, Louisiana.

the *quartz* mining the rock is *crushed* and *stamped*, and treated by the cyanid or by the chlorin process. The cyanid process consists in the use of a weak solution of cyanid of potassium when oxygen is present, while the chlorin gas is used after the ore has been pulverized, roasted, and moistened in tanks. Surface or *strip mining*, especially for iron, coal, and copper, is the process of removing the thin top soil, leaving the ores exposed, and these are lifted out by large steam or electric scoops, after which they are loaded in cars and transported to smelting centers.

Coal mining is somewhat different. Being deep underground as a rule, anthracite has to be mined by the shaft method. Softer coals are obtained by strip mining in a few instances, or by entering a hill from the side, or by shafting. All coal is graded by being passed over large sieves, but sometimes soft coal is marketed as it comes from the mine in a form called *mine run*. Anthracite is divided into several classes according to size and quality. Formerly impurities like slag and rock were sorted out by mine boys, but now in most mines special machines, delicately adjusted, do much of this work.

Quarrying is mining for marble or stone. The first marble quarry in the United States is said to have been at Dorset, Vt., in 1785; Marbledale, Conn., opened in 1800; Stockbridge, Mass., in 1802. The largest are Rutland, Vt. Marble produced annually in the United States exceeds $10,000,000 in value. *Marble* is a crystalline rock of lime, or lime and magnesia carbonates. There are many gradations and varieties in texture, capacity to "take polish," and color. The best American deposits are in Vermont at West Rutland, Proctor, Brandon, etc; at Lee and Pittsfield, Mass.; the marble for structural work coming from St. Lawrence and Westchester counties, New York, Maryland, and Georgia; black marble was once quarried at Glens Falls, N. Y. Nearly 80% of monumental marble comes from Vermont; the marble for furniture tops and interior decoration is largely from Knoxville, Tenn.; white and gray marble from California; the verde marbles from Pennsylvania, and the wonderful onyx from Arizona, and California, not true onyx but travertine, found in caves, or formed by the action of calcareous springs.

Ornamental marbles are largely imported; the black and gold from Italy, the yellow and red clouded Brocatelle from the Pyrenees, the white Carrara from Italy, the Giallo antico, a yellow type, and Griotte, a bright red, from the Pyrenees, although some of this is found in Vermont. The fossil trees much used in decoration have the wood cells replaced by silica of various colors, preserving the wood to a remarkable degree, and giving beautifully colored surfaces capable of taking a high polish. This silication was probably accomplished by hot alkaline waters carrying dissolved silica; there are usually evidences of volcanic activity in the region. The fossils are found in Maryland, south of Baltimore, along the bay front; in the Bad Lands of the Little Missouri; in the valley of the Yellowstone; in California, Arizona, New Mexico, and in Great Britain, Prussia, Egypt, and Antigua in the West Indies. There are many forsaken granite quarries in the United States, and some of these are being re-utilized by crushing the granite into meal and shaping it into cement bricks, urns, bowls, and for general building purposes. This granite is the "split blocks" which had been rejected as useless.

OILS. From the chemical point of view, oils are divided into three main classes: 1, petroleum and similar oils, resulting from destructive distillation of crude oil, shale oil, or coal; 2, fixed oils, fats, and waxes; 3, essential and volatile oils. The first class has been treated under *Petroleum;* the third, under *Perfumes*, in which they are chiefly used.

Fixed or fatty oils are all glycerides, of which the most common types are stearin, palmatin as found in tallow, and olein as in olive oil. In consistency they range from pure liquids like linseed oil to solids like beeswax. During the World War the glycerides became increasingly important and relatively scarce, for they form one basis of explosives, many remedies and medicines, preservatives, ointments, plastics, soaps, and textiles. Fats naturally subdivide into animal and vegetable. Their importance is shown by the statistics of world usage, many attaining a total of not less than 100,000 tons, and several of over 1,000,000. They are valuable in that they do not dissolve in water or alcohol, but may be reduced in ether, gasoline, chloroform, and other solvents.

Vegetable fatty oils divide into three classes—drying, semi-drying, and non-drying. Of this first sub-class, linseed oil compressed or extracted from the flaxseed, has long been a main ingredient of paint and varnish, has been used for poultices, and for making artificial and synthetic products like rubber and leather. It comes from Russia, India, Argentine, Canada, and the United States. Very similar is perilla oil, a product of India, Japan, and parts of north China. Great quantities of tung oil find their way into paints, varnishes, linoleum, and a kind of artificial rubber. Slightly different forms are known as China wood oil, Japan oil, and even India oil. Florida now produces a supply, which in time may be adequate to the needs of the United States.

Hempseed oil, common to parts of Asia, Europe, and America, is often used in paints, soft soaps, and low-grade varnishes. Poppy oil from Asia and Russia in Europe is used in salads and for making artists' colors; and sun-flower oil, produced on a big scale in Russia, Hungary, and China, is much used in soap and varnish. *Slowly drying* oils are numerous, the chief being cottonseed, soya bean, sesame, croton, and castor. Cottonseed passes under a number of aliases in salad or table oils, in oleomargarine, lard substitutes, in laundry soap, and in cattle feeds. In China, Manchuria, and Japan, soya or soja bean oil serves similar purposes to some degree, and attempts have been made to acclimate the plant in America. Sesame is used for food and soap; croton in druggist products; castor oil as a purgative (except in cases of chronic constipation and appendicitis), in making artificial leather, and other synthetics. *Non-drying* oils include almond, both the sweet and the bitter. Sweet oil is used for food, but it yields prussic acid, glucose, and oil of almonds. Olive oil is the familiar table product used for salads, soaps, and technical purposes. Peach kernel oil, peanut oil, and others are used in similar ways or as substitutes for more costly oils.

Animal oils include menhaden, salmon, and sardine, the first of which is so useful that 400,000 tons are produced in the United States yearly, most of it on the New Jersey coast. They are used in finishing leather, making linoleums, and in the steel industry. Cod liver oil has long been known as good for pulmonary ailments and in finishing leather; neat's foot oil for a high-grade dressing is the product of the hoofs of cattle; whale oil for fuel and arts; porpoise and dolphin for lubricants for delicate machinery.

Vegetable fats include cocoa butter, used in confectionery, medicine, perfumery, and soaps; cocoanut oil for food, soap, and illuminating; palm oil, best known in soaps, but also used in some lands for food; vegetable tallow, a curious product of a tree of China; and Japan wax, used in polishes.

Animal fats include butter, the chief substitute for which, however, is the product oleomargarine, made of both animal and vegetable elements. Tallow, lard, and horse's fats are used in varied ways, the first two mainly in food products, soap, perfumes, and salves. Certain liquid and solid waxes are also classed as fats. These include sperm oil (which contains no real glycerin), used for lubricants and leathers and sometimes for fuel; carnauba wax, used for polishing, for lubricating phonograph cylinders, and for candles; japan, chinese, bayberry, beeswax, montan, and others are used variously in making floor polishes, binders for some paint products, lithographing inks, and ointments.

Hydrogenated and special oils. Of late the process of hydrogenating oils has been adopted to reduce them to any desired degree of consistency. This method is useful to obtain more suitable oils from classes that do not readily harden. For edible products, soaps, and medicinal preparations where original odors might be unpleasant, hydrogenation reduces them. Cotton seed is made much more useful in this manner. *Intarvin*, a commercial trade product of synthesis, has been prescribed for diabetic patients. Oils for certain purposes are known in varied industries. Dolphin and blackfish oil are used for watches and clocks; the thinnest kind of oil for spindles (spindle oil); pure minerals emulsifying little for crank cases; paraffine or cotton seed oils for cutting-screws; rosin or mineral oils free from impurities for transformers; stainless lard or neat's foot oils for spindles.

Commercial oils. Of the many oils produced by one of the three processes for making perfumery, several will illustrate. *Bay oil* from trees in the West Indies is treated with alcohol, and the well-known bay rum results. *Eucalyptus* oil is much used in medicine, especially in dilute form, since its odor when pure is unpleasant. *Chaulmoogra* oil is a cure for leprosy in mild cases. *Geranium* oil is much used in perfumery and soap; it is a valuable source for terpene alcohols. *Cedar oil* is often distilled from shavings left after the manufacture of pencils. *Citronella* oil is much used for perfuming soaps, in technology, and for driving away insects like mosquitoes because of its strong odor. *Coumarine* is interesting in that it is found in the herb known as deer tongue, gives the odor of new-mown hay, and can be made from carbolic acid (phenol). It is much used in cheap perfumes, soaps, and as a substitute for vanilla. *Vanilline*, resembling natural vanilla, but not as complex a flavor, has been largely used as a substitute.

Artificials and synthetics. Practically all the odors of flowers, roots, and beans have been imitated. A substitute is the use of one material for another; it may or may not resemble the original. An *artificial* is a substance parallel to a real one, and so we have imitation or artificial perfumes and fruit compositions, like banana, cherry, pear, peach, apricot, raspberry, and many others. A *synthetic* is a chemical restoration of the elements of the natural product; it is the same except that it is made by man and not by nature. Sometimes, as in jasmine which is very costly, the real is mixed with the imitation. A few typical chemical synthetics with real products named in parentheses are these: amyl salicylate (clover), beta naphthol esters (orange blossom), coumarin (tonka bean), heliotropin (heliotrope), gamma undecalactone (peach), terpineol (lilac). Many of these

names, like other technical ones in chemistry, are the scientists' shorthand for telling what the composition contains.

PACKING. Ranking first in the value of products, the slaughter and marketing of meats at central points take on increasing importance. Many cattle are still slaughtered, cured, and eaten not far from where they are raised. Yet more and more the industry is centered at a few points, the greatest being Chicago, St. Louis, Kansas City, Omaha, St. Paul, St. Joseph, Milwaukee, Indianapolis, and Cincinnati, at which place packing began in 1818 and attained large proportions by 1860. Now the cattle are collected, herded into cars, transported long distances to market, the average for beef at Chicago being 700 miles. Cattle raising gradually has gone westward, so that now most meat is grown west of the Mississippi, but is consumed east of this river.

Slaughtering process. After resting the cattle about one day, the stock yards men follow a quick routine, so that the individual animal at Chicago, for instance, is handled at some point by over 200 butchers at a cost of less than 50 cents a head. It would take a single man 120 to 150 hours to perform the same labor, now divided into most minute gradations and at varying rates of skill and pay. The hides are cured and then sold to tanners. The carcass is split, the halves are washed, dried and then passed to cooling rooms, tremendous in size, and there held just above freezing. The parts are next put on cutting tables, moved slowly along, while each man does his part. Of the whole, 40% or more will be fresh meat, sent within two or three weeks to the trade, about 10% canned meat; 6% hide; and the rest various by-products.

Eventually there is 20% shrinkage, and 10% waste. Tongue, brain, heart, sweetbreads, and other portions are specially refined and prepared for some use. Glands and sinews are often used in pharmacy, hoofs for making glue and gelatine, hides for leather, hair for brushes, and so on down to the last useful ounce. Fat goes into soap, and some of the tallow into oleomargarine, which was first made in Paris in 1871, and now is produced in large quantities in Holland, where some of the oleo oil from the United States is utilized.

PAINTS. For centuries artists have made their own uses of paints. Ordinary commercial coverings for buildings of wood, stone, or iron were mentioned early, but until within the last two generations they were made without much scientific skill. Now great factories turn out paints in huge amounts that are true to analysis as to materials and color.

Common paints. Pigment, oil, and a drier compose most of our ordinary commercial paints. The pigment or material that gives the color comes from mineral, vegetable, or animal substances. The white varieties are made mainly from white lead, zinc oxide, gypsum, china clay, asbestine, silica, or lithophone. The chief kinds of blacks are lamp, drop, graphite, and ivory black. Blues come from ultramarine, prussian, smalt, cobalt, copper, and Chinese blue material. Ultramarine is used chiefly for violet. Some of the reds are chrome, lead, ochre, venetian, vermilion, carmine. For yellows we have the chrome, yellow ochre, cadmium, litharge, and gamboge. For orange the antimony, chrome, or other orange material; and for browns, the umbers, vandyke brown, and sepia. These natural or mineral substances, however, are gradually being superseded by the artificial or synthetic colors. The latter is the same in chemical composition, can be refined and stabilized better, and can be controlled more readily as to shade, consistency, and wearing value.

Linseed oil is the old reliable kind made from pressing the seeds of the flax plant, because it is cheap, relatively easy to keep, and is safe to use and apply. Uniting with the oxygen of the air, it soon becomes a pasty mass, and then gradually hardens to form a coating that protects the rest of the paint material. Other kinds of oil now used for certain types of paint are tung (china wood oil), largely employed in lacquers and other quick-drying paints. Artists often use poppyseed oil or walnut, because it does not readily crack when dry.

When we want paint to dry quickly, some additional drier is used. This is made by boiling oxides of lead and manganese in linseed or resin, after which the mass is thinned with spirits. Cheaper driers are made of resin, lime, and lead oxid, thinned with benzine or some other substance to thin the resin. Turpentine both thins and helps to dry paints. When 5% of lead oxide is mixed with the linseed oil in paints, they will dry in less than eight hours; otherwise, it takes two or three days.

Some special paints. Among the many other types of paints are enamel, anti-rust, anti-fouling, metallic, fire-resisting, and the lacquers. Ordinary enamel contains varnish, and some have resin, for indoor use; and for outdoor and slow-drying types, linseed oil and some copal varnish. The more varnish is used, the more glossy the paint looks; flat or non-glossy paint contains more turpentine. See the article on *Varnishes.* For bridges, steel beams, and other iron that needs protection from rust, graphite, bitumen, red lead, or some similar substance is mixed with a coal tar solvent. Poisonous material like white arsenic, mercury oxid, or some copper compound, is often used on the bottoms of ships to prevent the formation of barnacles. Metallic paints like aluminum, gold, silver, and bronze are made by combining powdered metals or alloys with either copal or celluloid varnish. Fire-resisting paint, of which the metallic is one kind, has asbestos, borax, or some other mineral in it that will not burn. Lacquers, which dry with a fine luster in a short time, are composed of fine pigments ground in some form of nitrocellulose. Though these are highly inflammable, they are now in great demand.

PAPER. Material on which to write was made of the papyrus by the Egyptians and other eastern peoples long before the Christian era. Before 100 A. D. the Chinese learned how to make paper from rags, their source of information being possibly India. China had printed books before the year 1000, long prior to the invention of Gutenberg, Füst, and their companions. The Arabians passed on the art of making paper to the Spaniards, thence to Holland and nearby lands, notably Germany where mills appeared before 1400. England issued the first patent in 1665. William Rittenhouse, a Mennonite bishop of Philadelphia, set up the first mill not far from Germantown, Pa., and contracted with William Bradford of Philadelphia and later of New York to sell his entire output. Until about 1700 the Rittenhouse family had a virtual monopoly. Philadelphia long led in the industry. By 1783, the close of the Revolution, there were about 80 mills, and in 1810 possibly 200. Massachusetts, Connecticut, and even far-away states took up the industry, located in the great river valleys for the most part, where supplies of water and material were good.

Commercial importance. From these rude beginnings, paper has become a basic, nation-wide product, illustrating the literacy of the nation. The United States consumes over 150 pounds annually per capita, Great Britain, 75 pounds, Germany 43, Scandinavia, 33, Japan, 11, and Russia only 5. In 1780 we had 38 daily papers, circulating but 48,000 copies a day, and now we have nearly 20,000, of which every fourth person buys a copy each day. For one Sunday edition a large metropolitan newspaper of 18 pages requires 170 tons of paper, enough to fill five freight cars; and one New York paper uses up over 2,000 acres of forest every year in furnishing material for newsprint. Scarcity of forests is almost upon us, and greater production or substitution may be a real problem for the next generation. Scores of uses of various kinds of papers increase the demand for good stock or paper material.

How paper is made. All paper is essentially a fibrous product, as a minute examination of a sheet shows many hair-like fibers bound together into a mass. Formerly it was made of rags, such as the cotton once used by the early Moors of Spain; but be it of linen, cotton, or any other rag basis, it is fibrous. Since 1844, when the first wood pulp was made into paper in Saxony, the decline of rags has been gradual, and the rise of different direct wood types most rapid. Still the finest papers today are made of linen stock. All natural fibers potentially may be materials for paper. At present, cotton, linen, and wood pulp make up the bulk; but others have proved a possibility. Unlike most products, little is left from paper for remanufacture, only less than a fourth being returned to the mills in form of waste. Besides the fibers already noted, paper can be made from flax, jute, hemp, mulberry, manila, corn, wheat, bamboo, sugar cane, and cotton. Interesting developments are newsprint paper from corn stalks and from cotton seeds, possible sources of supply when wood materials become too scarce and too expensive. Copies of newspapers and magazines have been printed with some success on corn-stalk paper. Woods commonly used as basis for paper are spruce, pine, hemlock, and poplar. Peat also, in its original mossy form, has been used for making stock. Cheap grades of wrapping paper are made on commercial scales from wheat, rye, and oat straw.

Wood pulp paper. Two processes in making pulp paper are in common use, the mechanical and the chemical, the former being responsible for nearly two-thirds of the total output. In both the logs are first dried for a time, sent to the mills by rail, water, or other means, and cut into portions. For the mechanical process the bark is removed and the logs then cut into two-foot lengths; for the chemical, the logs are mechanically cut or broken up into small chips. In the former, the lengths are held by hydraulic rams against swiftly revolving stones which grind the wood into finest fiber; water is kept running on the stones and wood to to prevent heating by friction.

After impurities are removed by sluicing and screening, the mass is moved on to the digesting process, which from now on is the same for both the chemical and the mechanical kinds. In successive stages it is beaten, ground, and separated until the finest texture of the mass is obtained. Then it is ready for the refining, which consists of further beating to make all fibers of uniform texture, then dyeing, sizing, and processing to make the different grades of paper stock.

Paper machines consist of a series of rollers or cylinders, designed to perform these operations: Collecting the pulp

on a felt or wire screen, draining off the water, pressing the mass firmly together to make the texture even, making a thin continuous sheet comparatively free from specks, or other impurities. Now the ribbon of paper passes through three sets of drying rollers, one to smooth out the marks of the felt or wire, one to press it tighter together, and a third to put on the smooth, polished finish, which is accomplished under tremendous pressure. Machines are set to produce the thickness of paper required, as indicated by the weight per ream, as 12, 14, 16, 20, and 24 pounds to the ream. These machines are well-nigh human, the commonest one being the Fourdriner, which is about 180 feet long, 18 wide, and 16 high, with a capacity of 500 feet of ribbon paper a minute. A man without such machines can make 200 sheets of fine paper, or 1200 of coarse a day. Some reducing companies make only the pulp, which is sent in pressed dried sheets or boards to the makers of paper. Of the chemical pulp, the reducing agents are sulphite, soda, and sulphate. The sulphite contains sulphur, pyrites, lime, and limestone; the sulphate contains lime, salt cake, and caustic soda; and the soda contains lime, soda ash, and caustic soda. Fillers for paper are clay, chalk, and talc, these being used to bind the fibers together. Bleachers are bleaching powder, salt, lime, and liquid chlorin. Sizing materials are resin, soda ash, alum.

Kinds and uses of paper. Newsprint contains a high proportion of mechanical or the cheaper pulp. Book papers are more carefully made of a larger part of chemical pulp, some of which may be specially treated, bleached, and coated. Fine paper is made almost or entirely of chemical pulp; but the best grades for bank books, bonds, checks, and documents are made from rags. Common wrapping paper is made of a combination of wood pulp, jute, old rope, straw, and waste products from making higher grades. It varies in texture and color according to the material or artificial coloring or bleaching agents. Paper board is made from material like those of wrapping paper. Building papers are fibrous compositions of sugar cane refuse, corn stalks, and sometimes other coarse stuff. Tissue paper for use by jewelers is made of old rope, and other types from pulp high in mechanically prepared wood. Papier-mâché is a composition of wood pulp, glue, oily material, and other substances, which are pressed into forms and molds. Vegetable parchment is made by running unsized paper through strong sulphuric acid and then drying and pressing it on rollers after it has been thoroughly washed in water. It is used for diplomas and other documents in imitation of the real sheepskin or natural parchment. Cellophane or extremely thin transparent wrapping paper for candy and other products is made by precipitating the cellulose hydrate of viscose or paper pulp. Vulcanized fiber is produced by a similar process, but several layers are pressed together to form a thick sheet, such as used in making waste baskets and other containers. For other materials made from pulp, see the article on *Cellulose*.

PERFUMES. Among the interesting products of nature are perfumes, the odors of which are intricate, chemically elusive in many cases, and often hard to imitate. Fragrance is sometimes located in the flower of a plant, as in carnation, clove, hyacinth, rose, and lavender; sometimes in the stem and leaves, as in peppermint, geranium, and verbena; sometimes in the wood, as in camphor, cedar, cinnamon, and sandal; or in the root, as in sassafras; or in the fruit, as in lemon and orange. Wherever the odor may be, it is due to some essential oil, which seems to be going through some chemical changes. Perfumes might be divided arbitrarily into four classes,—vegetable, animal, imitation, synthetic.

History and production. From the dawn of civilization certain odors or perfumes have been mentioned. India used the cus-cus or vetiver grass, which today is used in azurea or other "bouquet" or combination perfumes. Confucius mentions perfumes in 480 B. C. Incense, as of joss sticks, has been known in China since ancient times. Egypt was lavish in perfumes, ointments, and essences. Greeks and Romans, like the rest, had perfumes, which in all these ancient lands consisted of drug or other substances not distilled. Avicenna, an Arab sage, is said to have invented the distillation process in the tenth century, when he made rose water and rose oil, still produced in Bulgaria, Persia, and France. Early it was known that fats take up certain odors and perfumes, but little was made of this in practice, one old method being to collect steam from heated plants in wool and squeeze out the oils.

Modern methods include distillation of steam, maceration or crushing, and extraction. Modern plants provide for use of a ton of lavender flowers or peppermint leaves in a single still. Citrus fruits are treated by some form of crushing or rolling. In many instances, heating or maceration would injure the perfumes. In France *enfleurage* is a favorite method. This consists of painting both sides of glass with a fatty or oil substance, usually beef or pork fat, and on this is laid the petals when they are fresh. Others replace these when the first lot becomes wilted. The process is used especially for jasmine and tuberoses, one ounce of the former being worth from $15 to $30, according to the crop of flowers. When the fats, which are called pomades, are saturated, the oil is extracted from them. In many cases, however, volatile solvents are used in retorts for extracting the essence; alcohol is often used, and when this is distilled off in a vacuum, the remaining oil is called absolute flower oil.

Particular perfumes may be used to illustrate these processes. Acacia is prepared by macerating, with olive oil, and then extracting with alcohol. Carnation is extracted by the pomade or fat process. Natural hyacinth oil is extracted by means of volatile solvents. The absolute oil of lilac is not used, and its form is not known in chemistry; the odor we buy is really an imitation. Mimosa tree perfume is highly prized, and the oil is obtained by the volatile solvent method. Orange flower perfume comes from the flowers by use of the extraction by pomades or by solvents. Rose is commercially known as otto or attar of roses, but this is not a pure extract.

Animal perfumes. Musk is the best known perhaps of these, it being a product from the musk deer of high altitudes of mountains in Asia, and prepared in certain districts of China. Ambergris, valuable in fixing odors in perfumes, is a calcareous morbid secretion of the intestines of the sperm whale. Sometimes it is found floating on the water, and sometimes it is taken from the dead animal. Because of its value, sailors are constantly looking for pieces. Civet is a glanular secretion of civet cats of Asia.

PETROLEUM. The industry may be divided into four divisions: Producing, refining, transporting, and marketing. Prior to keen competition within the industry, each division was more or less a separate unit. Competition has compelled the different organizations to unite so that the successful firm today carries on all four operations.

Petroleum is a mineral oil which varies in color from yellow to black, usually a dark green liquid which may be as thin as kerosone or as thick as molasses. There are two theories of petroleum origin: hydrogen and carbon united under great heat and pressure; or oil is of organic origin, the remains of minute vegetable life of historic times. The latter theory is the opinion of the majority. It is found in many parts of the world, occurring undergound in porous layers of sand or limestone. The porous layer is always covered by a hard layer such as shale which prevents the oil from escaping. Petroleum consists of two elements, carbon and hydrogen. While simple in constituents, it is complicated in structure inasmuch as the molecules combine in so many different ways that crude oil yields gas, gasoline, kerosene, lubricating oils, and many other by-products. The advent of the automobile changed kerosene to gasoline as the principal product.

Oil is sometimes found floating on the surface of certain springs, and in the early days both the Indian and white man believed that it had medicinal properties. The first successful well was sunk at Titusville, Pennsylvania, by Col. C. E. Drake, August 28, 1859, and now the United States average production approximates 870 million barrels a year, about 70% of the world totals. Since the first well was struck in 1859, the United States has supplied 65% of the world total in the aggregate of all years. The chief fields in the United States in order of size of production are the Mid-Continental, California, Gulf, Appalachian, Rocky Mountain, Illinois, and Lima-Indiana. The chief states are Texas, Oklahoma, California, Kansas, Arkansas, Louisiana, Wyoming, and Pennsylvania. The total yearly production in all states is over 40 billion gallons.

Producing. The modern prospector has various detecting instruments such as the *seismograph*. By setting off a charge of nitroglycerine on the earth's surface, the progress of the sound waves as they go underground are reflected on the seismograph. Perfection of the seismograph in the last year or two enables the prospector for oil to know conditions ten thousand feet below the ground. When surface indications are lacking, the simplest method is the drilling of a test well. The driller examines all samples of the earth through which the drill passes. This describes to him the rock formations he is penetrating. The drill itself is a heavy piece of carbon hardened steel culminating in a cutting blade. One common form is the *fishtail* shaped drill which is particularly efficient in cutting through softer rock. The most modern drilling is performed with a *rotary* drill which spins as it bores and might be compared to a propeller except that it revolves through sand and rock. In the United States oil was first struck at 69½ feet; in recent California fields it has been struck as deep as 7,210 feet. The cost of a well ranges from less than $2,000 to more than $500,000. In 1859, the first year of oil drilling, two wells were completed. Since that time nearly 800,000 have been sunk. In 1928 there were 22,331 new wells completed: 56% found oil; 12% found gas; 32% were dry.

The crude petroleum as it comes from the wells may be used for making water gas, for oiling roads and for fuel, but it is the refining process which gives oil its great value. The principal products from the distillation of crude oil are naphtha, gasoline, kerosene, paraffin, white oils, gas oil, fuel oil, grease stock, pitch, asphalt, and wax.

Refining. The process of extraction may be separated into two divisions, natural refining and forced refining. Natural refining is a simple process of distillation. If you put a mixture of alcohol and water in a kettle and apply

heat, all the alcohol will boil off before the water boils because alcohol, more volatile than water, has a lower boiling point. The same principle applies to the various types of molecules which compose petroleum. When crude is heated the lighter molecules, those with a higher proportion of hydrogen, are the first to vaporize. The first substance to be given off is the *natural gas* contained in oil, then *gasoline*, then *kerosene*, then *gas oil* and then *lubricating distillates*. The residue is still fuel oil, asphalt or coke, or in the case of certain high grade crudes, cylinder stock is the residue. The main question now confronting the refiners is the proportion of gasoline that can be extracted from a given amount of crude. As the distilled vapors are given off from the boiling oil, they go through a cooling system and are again condensed into liquids. A "still man" can tell by the size and color of the liquid stream, also by frequent sampling, when it is time to decide that what is going through has ceased to be gasoline and has become kerosene. The line of differentiation is variable as gasolines differ sharply according to their end points.

Cracking process is based on the fact that heavy molecules of petroleum, the molecules in turn being made up of many atoms of carbon and hydrogen, when subjected to sufficient heat (825° to 925°) and pressure, crack up into lighter molecules. The percentage of gasoline molecules that are thus split off vary with the efficiency of the various cracking processes. The Holmes-Manley process used by the Texas Corporation yields considerably better than 50% gasoline to every barrel of crude.

Hydrogenation. This is the most interesting development in the refining field today. This process involves the addition of hydrogen to carbon to make a synthetic hydrocarbon. In other words, a synthetic gasoline. It is claimed by the promoter of this process that from hydrogenated crude an amount of gasoline can be extracted equal to the amount of crude. No hydrogenation process has as yet reached a stage of commercial importance.

Transportation. This considers the question of transporting the crude oil from the wells to the refineries and further transportation of the refined products from refineries to the whosesale and retail points of distribution. Transportation is carried on by three methods, *pipe lines*, *tank cars*, and *tank ships*. Inasmuch as the refinery may be miles from the oil field, the oil is of no particular value until the well is connected with the pipe line through which it is forced by pumps erected at different stations along the pipe line to the refinery. The pipe line is by far the cheapest form of overland transportation and some idea of its extent can be made by comparison with the Pennsylvania Railroad which controls approximately 26,000 miles of track while the petroleum industry as a whole operates approximately 100,000 miles of pipe lines. Originally, pipe lines were solely used for the purpose of transporting the crude oil to the refineries, and the flow was entirely eastward to the great centers of population along the Atlantic Coast. With large cities developing in the midwest it has now been found that these pipe lines can in turn be used to transport the refined product, gasoline, from the east to the west. The large refineries and consuming centers being on the Atlantic seaboard, tank ships were found more economical in the transportation of crude from the Gulf and California fields and from South American fields.

Marketing. With the increase of automotive transportation, methods of distribution have kept pace with demand. The corner filling station is as familiar as the road itself. One company boasts that no person need be more than ten miles from one of these stations in making a tour across the country by the Lincoln Highway. Marketing of the many by-products of the oil industry has also become efficient and highly developed.

POTTERY AND PORCELAIN. Sun-dried objects of clay were made in Babylonian times. Ancient inscriptions were on clay tablets. China, Egypt, Greece, and all other progressive nations early had their beautiful designs molded, colored, and carefully baked. Egypt developed from unglazed types to reds, blacks, vitreous copper glazes, and finally to superb turquoise blues. Greece excelled in both form and color; the Chinese in porcelain; the Romans in a peculiar outer red coating, not now explained as to process. About 1580 the Florentines imitated the older Chinese pottery, and also developed a style not unlike opaque glass. Though the Romans claimed to have invented the potter's wheel, in western Europe its use became general only after 1800.

Wood and pewter utensils were popular in America before 1800. After 1825 firms sprang up in eastern Pennsylvania and New Jersey, and this industry followed settlements westward across the country, until now some of the best works are in West Virginia, Ohio, Illinois, Wisconsin, Arkansas, Colorado, and the Pacific states. Common white earthenware is still the staple product; but artistic china dishes, bathroom fixtures, now many of them in color, electrical supplies, cabinets for medical and surgical use, and a host of little objects make up other established classes.

The potter's art. Little modern change has been made in the wheel used by the potter, known in Biblical times, for it is still a circular disk, propelled by hand, a foot treadle, or by machinery. This whirls the clay around, while the hand of the potter fashions it into the pattern he chooses, sometimes by the use of instruments like spatulas, sticks, or other small objects. Other methods are by jiggers or molding machines, by pressing mechanically, or by casting. Sometimes designs are treated in lathes, are embossed, carved, or colored while in the wet or damp state, and sometimes they are treated again after being fired.

Common white ware. In America the common white dish, cup, or plate is composed of about 40% white clay, 12 of ball clay for consistency, 33 of flint for porosity of the ware, and 15 of feldspar as a flux for glazing. These materials are ground finely with utmost care, stirred, strained, and then compressed, and finally made into balls or rolls, ready for the potter to work, press in molds, or cast as his particular art requires.

Glazing of pottery is accomplished in varied manners. Once alkaline glazes were common, especially in the orient. Lead is most common today, but feldspars are used in hand-fired porcelains, and even common salt in some cheaper wares. Coloring is by using clays of different natural hues, by mixing with artificial dyes, by glass glazing in blue, green, yellow, or almost any other tint or hue at will of the makers. Special enamels, and metals like gold, silver, and platinum are now fired into the piece of pottery in making it.

Names for *styles of pottery* are numerous. Some wares have geometrical figures on them, like red on black or other darker backgrounds. Other named kinds are *bucchero*, or Etruscan black; *Arretine*, or red with figures upon it in different colors; Italian or other majolica; or earthenware coated with opaque tin glaze upon which colored designs were baked; various Chinese wares named for the dynasties in which they flourished; *faience*, a florid, polychrome and figured type, often found in large figures and plate designs; *grès*, resembling somewhat the best dark porcelain; and various stonewares. Particular names are the earthenware or Delft of Holland; the Staffordshire and Wedgewood china and porcelain of England; the Sèvres of France.

REFRIGERATION. In its different phases, this includes the storage and preservation of foods as in packing plants and refrigerator cars, the making of artificial ice by any method, and air cooling and purifying in buildings. Mechanically it is the process of removing heat or of transferring it to some other form or substance. Heat is both sensible and latent, and refrigeration disposes of both kinds. Some substance is needed to evaporate quickly, and by so doing to carry away heat from a substance nearby.

Agents and methods. Refrigeration is accomplished by ammonia, carbon dioxide, sulphur dioxide, methyl chloride, and air to some degree. Both gases and brines are used. Though ammonia has been most popular, it is explosive at times, corrodes copper, and must be tightly contained. Though carbon dioxide has none of these faults, it must be highly compressed, requiring elaborate machinery. In the common household machines sulphur dioxide is most often used. All refrigeration is accomplished by a compressor, the object of which is to make the gas effective at a temperature about equal to that of the atmosphere. There must be also a condensing system, which usually consists of pipes or tubes, the object of which is to cool down the air and the liquid used as a refrigerant. The whole process is similar to that of a steam boiler, only reversed; the object is to remove heat rather than to inject it into the water to be heated. Water is usually reduced in temperature by aerating in the open. Refrigerating machines are automatic, being controlled by a thermostat. Brine is sometimes used in large tanks, into which metal containers of water are placed, and the cakes after freezing are removed from the cans and stored in rooms at constant temperatures. Calcium and sodium chloride are commonly used.

Uses. Cold storage is typical of refrigeration. Temperatures in warehouses, cars, and iceboxes are kept down to a minimum according to the product being preserved. Large cars now hold complete animal carcasses, or packing products in any form. Nearly 7,000 car loads of refrigerated foods are consumed in New York each week. At least 80% of carcasses in packing plants require refrigeration for a short period before they are cut up or shipped. Meats to be kept for a long time—months or even years—are frozen solid. Liquids like cider and other fruit juices may be kept for months in a frozen condition and then melted for sale when needed.

Air conditioning is accomplished by making the proportion of moisture, heat, and air most comfortable for human beings in a room. Air is humidified mechanically by two or more processes. Sometimes a fine mist is sprayed into a room; a better method is to pump into a room a quantity of saturated air. Drops of water are removed by special metal plates which refuse to allow them to pass, and so only the vapor gets into the air. Dust is often removed from the air by cloth filters moistened with some liquid or viscous substance. Several systems for treating the air in theaters, office buildings, and other places were crowds congregate have been patented. Some of these are built so that air is cooled several degrees and humidified in a very few minutes.

Household refrigerators are of two types, those supplied with ice directly, and those cooled by circulation of brine. In either case the chambers should be relatively tight. The refrigerant is circulated through coils, taking the heat from the air just the same as in large systems, after which the liquid leaves the box and goes back to the supply tank through a condenser coil, which removes the heat again.

RESINS AND PITCHES. For the sake of convenience, several substances not truly resinous will be included in this article. Certain gums, for example, are easily distinguished from true resins, in that they char and smell like burned sugar when ignited, whereas resins burn with smoky flame and aromatic odor; they also form jelly in water, but unlike resins are enacted upon by spirit and turpentine.

Kinds of resins. These consist of exudations from trees, fossil remains, or artificial or synthetic combinations. Most true resins come from tropical Africa and the East Indies. Fossil amber from fifty or more species of coniferous trees of past ages are found in Prussia, Courland, and in very small quantities not commercially important in New Jersey and Maryland. When resins are mixed with oil of a tree or other growth, they are called oleoresins, such as benzoin, tolu, and storaz. The *copals* are important recent or fossil resins, derived from trees or from earth deposits, of pale or yellow tinge, insoluble in alcohol, partly in ether, slightly in oil of turpentine. The various forms, like most resins, are much used in making paints. See article on *Varnish*. *Dammar* is valuable because of its light color, easy solubility, and use in turpentine preparations, thus making a good spirit varnish. *Mastic* from the shores of the Mediterranean, like others being gum from a tree, is much used by artists for picture varnish.

Lac is supposed to be an exudate from insects that live on certain Indian trees like acacia, mimosa, and ficus. Lac red dye is secreted by the female insects. In various forms like lac-stick, seed lac, shellac, garnet, and other lacs, it finds many uses. The word *lac* in Indian means 100,000, referring to the myriads of insects that exude this substance. *Shellac*, as we know it, is related to lac itself just as flour is to wheat; for it is a manufactured product, often diluted, imitated, and changed. It is made from seed lac, placed in bags and heated, and the molten lac exuding is drawn out into thin sheets of orange color. *Cumarone* resins, artificial products, are sometimes used for cheap varnishes.

Gum resins. Gum arabic and similar forms come from the acacia trees of Africa. *Myrrh*, so often mentioned in Scripture, is a gum resin, like all kinds composed of gums and resins, with some particular treatment. *Agar-agar* from algaic plants has been extensively used for sizing cloths and for making cultures in laboratories for growing bacteria. *Iceland moss* and *Irish*, often used for food and in textile and leather making, come from jelly produced by a seaweed. *Gum tragicanth*, another gummy exudate, much used in making pastes and in calico printing, comes to us in white, wavy flakes. Particular oleoresins are Canada balsam from the Canadian pine and Strasburg turpentine from the silver fir.

Turpentine is a chief oleoresin product, derived from pines from North Carolina to Texas and also in France. In America the trees early in the season are scored every week with a U-shaped iron tool, and the liquid flows down to the bottom where it is collected in a "box," which fills in a month or so. The product at last is gathered in barrels. Turpentine substitutes are made of petroleum mixed with some real turpentine. Spirits of turpentine is distilled from the crude liquid. Resin or colophony remains in the stills after the oil of turpentine is left; it is a solid, brittle, and acid product, of which there are at least 150 varieties, each derived from a different product or in a different manner.

Pitches. Asphalt or bitumen is the most familiar of the natural pitches, the chief supply of which comes from a lake on the island of Trinidad, 135 feet deep at the center and covering 127 acres, the total being estimated as several million tons. Smaller deposits in Venezuela, Cuba, Syria, Colombia, Oklahoma, and Utah are of less value. The main uses of natural asphalt are for roads, resilient surfacing, insulations, weather-proofing, paints, and japans.

Ozokerite pitch mined in Galicia is an earth wax much like ordinary paraffin, supposed to be the result of evaporation of petroleum pools. Several artificial pitches are used in commerce, obtained by destructive distillation of coal tar, petroleum, wood, vegetable oils, wool fat, and bones. They often closely imitate natural pitches. *Coal-tar pitch* results finally from the process of distilling or fractionating at very high temperatures. *Petroleum pitches* resist acid and alkalis, have good sheen, adhere well to surfaces, have high electric resistance, and excellent insulating properties. *Stearine pitches* from fatty acids, vegetable or mineral oils, are often used in waterproofing paper; bone pitch, always intensely black, is used in varnishes; wool grease pitch is used mainly for lubricating.

ROADS. Usually a way through the country or a thinly settled territory is called a *road;* an improved way in the town or city is a *street.* Ancient roads were tracks through the sand. Greece lacked good highways and could not hold remote provinces together, but Rome learned to build fine roads for military strength. In modern Italy, France, and England are certain Roman roads still in excellent preservation. The famous improved road, the Appian Way, running south from Rome, dates from 312 B. C. In the last decade in England certain old Roman roads have been repaired and improved, and a few have been restored to use; some have needed little upkeep for two thousand years. Roman roads in Britain consist of a deep layer of common stones; then one of rubble or masonry, not unlike modern concrete; then a third layer of finer mixture; and finally a topping of blocks of stone carefully fitted together. Such roads are almost eternal, some being three feet or more thick.

No fundamental improvement was made in new highways until almost 1800. Most English roads remained about as they were, except for the effect of travel and crude local improvements. For a vivid picture of the terrible state of roads, read chapter 3 of Macaulay's *History*. Between 1783 and 1815, a Scotch engineer, J. L. McAdam, put into practical use a system of using broken stone, covered with a binding material, and then topped with some finer substance. He was allowed to try this near Bristol between 1815 and 1818. Success led to formation of over 1,000 distinct local road corporations before his death in 1836. Greatest improvement has been made in Great Britain since 1909, for in England especially, several great trunk lines have been improved, some being 30 feet wide, with bypaths for pedestrians, and shoulders beyond.

Early transportation in America was largely by horseback. It required weeks to journey from Georgia to Washington, D. C., or from Maine to New York. In 1754 it took a stage seven days to go from Boston to Philadelphia, and as late as 1794 travel from Albany to Canada had to be made largely by water, which in most early settlements was a chief route of travel. Next came the worn trails, many of them following Indian paths, followed by plank, log or "corduroy," and brush roads, and in some remote districts today plank, log, brush, bark, or hay roads are being used. By 1830 about 20 main roads were in use east of St. Louis and south of the Great Lakes, but they did not reach what is now Chicago. From New York to Boston two roads were finished, two across southern Pennsylvania, and one across the northern part of New York; one from Washington northwestward through Cumberland, Maryland (the Cumberland Road, now part of the National "Pike"); two southward and west, branching to New Orleans and St. Louis.

Beginning in 1792 Pennsylvania constructed 68 miles of stone road from Lancaster to Philadelphia, and by 1828 had 3,100 miles of improved roads. New England, New York, Virginia, and South Carolina early voted large sums for road improvements. Gradually by national appropriations, the Cumberland Road was pushed to Wheeling, West Virginia, where for years a great trade in wagons ensued (5,000 in first five years), then into Ohio, and finally to southern Illinois, the last appropriation being made in 1838. This then was the great artery on land to the west, ending at St. Louis. Meanwhile the railway became a competitor, and the building of stone, permanent roadways—except in scattered places—ceased till the days of the bicycle and automobile.

Western Trails. For several years after the purchase of the Louisiana Territory, exploring parties penetrated beyond the Missouri, and Missouri became a state in 1821. In 1822 a wagon train passed from the Missouri to Santa Fé, the beginning of the road known as the Santa Fé Trail, establishing once for all communication with the great southwest and making possible new possessions in 1846. St. Louis was terminus of all western roads, the center of the fur trade, a distinction still held by that city. The Oregon Trail originated at Independence, and pushed through what are now parts of Nebraska, Wyoming, and Idaho, on to Oregon and Washington. The Mormon Trail from Council Bluffs, Iowa, joined this one in Wyoming and went on to Utah; and the California Trail, branching off in what is now southern Idaho, passed on to San Francisco. Trade in furs and the gold rush helped develop these highways. From the days of the Conestoga wagon on the National Highway from Pennsylvania westward to those of the covered wagon on the plains, highways were beaten down by hoofs of faithful horses and eager men seeking homes toward the setting sun.

Modern highways. Of course, there were other trails and roads, more or less passable—in bad weather very much less—in eastern states. Today Uncle Sam has a network of 3 million miles of roads, enough to belt the earth 120 times. Traveling at 35 miles an hour continuously, an automobile would need 10 years to cover all of them once. Already hard surfaced roads include 150,000 miles of national and state improvements, and 500,000 or more local roads that are at least graded and quite good except in bad weather. States that lead are Indiana, Ohio, Wisconsin, New York, Minnesota, Illinois, Michigan, Texas, North Carolina, and California. Illinois, which has a wonderful system of pavements, in six years completed 4,760 miles of surfacing, 1,246 miles of other grading, and 1,106 new bridges. Other states have followed, though on a smaller scale.

Road Upkeep. Naturally the common *dirt roads* require considerable upkeep in a single season. They are improved in numerous ways. In olden times local men worked the

roads instead of paying a poll tax, and in most cases little more was done than to fill the holes or renew ditches. Now various devices are used: Roads are scarified, scraped, leveled, crowned, and finally dragged until they are smooth. Twenty or more smoothing machines are used, all the way from one or more simple planks or boards to elaborate and expensive patent highway machines. Both Wisconsin and Minnesota, for example, have adopted a standard form of drag, not elaborate but rather efficient. Some counties in other states use different types side by side. Dirt roads are also treated sometimes with gypsum, clay or gumbo, screenings, cinders, or other material, without digging them out or laying a solid foundation.

Next come *gravel roads* of various sorts. Sometimes the roadbed is carefully prepared by scraping and leveling, and the different courses of gravel and fine stones are mixed, the whole being topped with dust or fine dirt, and now and then with an oil or tar surface. Draining is important for all-weather roads, which must be covered deep enough so that the soil or sand may not work to the surface in rainy weather. Binders or tops are made of iron oxide, silica, gypsum, stone dust, or suitable hard clays. If the traffic is not too heavy, and the binder is kept in place by dragging or some other means, a good gravel road compares quite favorably with some harder surfaces.

Next in order comes *macadam*, harder than gravel, and carefully made at greater expense. Next to gravel, of the better roads, it is least expensive to build, but at times deteriorates too rapidly under severe usage and bad weather. Modern macadam roads should be tight enough to keep all surface water from penetrating the foundation or subsurface. Best construction removes the top entirely; builds a foundation four or five inches deep with stones, which are rolled down mechanically or beaten down by traffic; and finally tops the whole with some tar product, covers this with sand or dirt to absorb the excess, and then rolls all again.

Bituminous roads are a form of macadam, oiled, or surface treated highways. Sometimes dirt roads are oiled or tarred. New England, for instance, has built a very satisfactory road with a foundation of gravel or small stones, scarifying the surface, rolling, covering with a coat of light tar, allowing this to penetrate for several days, surfacing again with tar, and then covering with dust or fine gravel to take up the excess. Such a road is like a macadam, save that the undersurface is not prepared with stones. It will last as long as heavy traffic will not break through. Wisconsin has tried a similar but heavier mixture. *Asphalt* is a form of bitumen, very familiar in city pavements, but not so common in the country. It has been used, however, in carpet form over macadam or even over gravel. Sheet asphalt is composed of the pure tar and some fine binding mineral substance. Asphalt is frequently used as a cover for brick pavements to protect them, or between bricks to bind them together, or in patching concrete temporarily.

Block pavements are of several types, such as brick, wood, stone, or rubber. Wooden pavements, once popular, are now seldom laid in city or country construction. Good brick pavement is now laid on some firm base, the most common one being cement or concrete; once it was laid directly on the ground or sand, but this type does not hold up under modern, heavy traffic. Other bases for bricks are gravel, macadam, bitumen, or heavy non-porous clays.

When concrete is used as a foundation, cushions are laid of sand, sand-cement, mastic (sand and bitumen together), or asphalt preparation. Brick is the most common block pavement today, though it is giving place to concrete. It was first tried at Charleston, West Virginia, in 1872, next at Champaign, Illinois, after which it became tremendously popular for both town and country roads. It is of various sizes, shapes, and compositions, and on straight-ways is laid perpendicular to the direction of traffic, or at any convenient angle on curves or at intersections. Fillers for brick pavements consist of sand, bitumen, asphalt, mastic, or grout (sand, portland cement, and water). Rubber blocks are being tried on bridges like the Michigan Avenue Link in Chicago; durex cubes of granite, other stones, concrete, asphalt, and even other materials are now used for certain purposes.

Concrete. Because of its strength, lasting qualities, and small cost of upkeep, concrete seems destined to become the favorite paving for streets and roads. Much of the new trunk-highway construction is now in concrete. This is single or double course. The single, the more common type, is one slab resting on a carefully prepared stone foundation. Double course concrete has a first layer or course resting on the foundation and this is later topped with a second of finer, better mixture. Concrete is a standard product made in rather definite proportions of material. The formula is 1 part of cement to 1¼ of sand to 2½ of gravel, in one extreme; or 1: 2½: 4, in the other extreme. Mixing must be thorough and careful, so that the texture may be uniform. On jobs of any importance, machines now do this most efficiently. To save cracking of the slabs of concrete, joints of felt, wood, or tar are placed at regular intervals cross-wise; and recently lengthwise also to mark the division between two tracks or halves of the pavement. Sometimes at corners, near other material, or where traffic is most heavy, certain reenforcements are used.

Costs of roads. Recent statistics indicate that the average costs per mile in the United States are as follows: About $35,000 for the highest type of roads (including concrete, brick, bituminous concrete, macadam or other permanent paving); $17,000 for medium type (including treated gravel, low grade macadam, etc.); and $8,600 for the low type (including gravel, sand-clay, or earth). Massachusetts led with $60,000 a mile for high type and $20,000 for low type; Mississippi was lowest with $23,000 and $4,000 respectively. Revenues are varied and hard to separate from the totals, yet in one year over a billion and a quarter is spent on roads. This is equal, however, only to about half the tire and fuel bill of automobiles. Money is derived from taxes on automobiles by states and towns, gasoline taxes (over 800 millions a year), federal aid funds, direct taxes, floating of bonds, and other incidentals.

Nearly 100,000 miles of road yearly are improved in some manner other than by mere upkeep, over one-third being new surfacing. Legislation provides for Federal aid to road building equal to 50% of the cost not to exceed in all $10,000 a mile from the government, with fully 100% in certain definite instances, especially in states where public land lies. Thus we have nearly 100,000 miles of improved road in the Federal-aid highways, half the total so designated; and the state highway mileage is 200,000 of improved roads in addition, and, finally, over 2,700,000 of county and local roads not improved by either Federal-state or state money.

ROPES. This article will include ropes made of fiber, animal products, and metals. Cordage is rope made of yarns, twines, and cables, including only those of at least one-half inch in diameter. Common twine, smaller than rope, is made by laying or twisting strands together; large rope is often made by a process quite similar.

Early history of rope. Early man did not have fiber ropes, but used leather, barks, hair, and other materials. Yet the American aborigines used yucca, agave, and native vegetable fibers for rope. Egyptians used papyrus for rope and paper, with hides, and palm fibers. Greeks and Romans had enormous cables of rope material. Little progress, however, was made until modern machinery replaced hand-made ropes after 1820. Material was combed with wires, laid lengthwise, and bound by hand or by a crude wheel into stranded products. In colonial days and after, many communities had walks made of rope.

Modern materials and methods. Hemp from Russia, Italy, and the United States, and flax from many lands, were the chief materials till after 1900, and the former is now used extensively for marine ropes and fittings. Manila fiber (the real name is abaca) comes from the Philippines as the most suitable material for strong rope cables today. Henequen, a Mexican and Cuban product, resembling the real sisal of Asia and Africa, jute, and cotton are other important fibers, but the latter is used mainly for braided cords and small ropes. Whatever process is used in making ropes, the operation consists of five parts: selecting the fiber, preparing the sliver (bundles of fiber laid lengthwise), spinning the yarn, forming the strands, and laying the strands in cables. Making the sliver consists of several acts of combing the threads, cleaning them, and treating them with steel pins in sets. The result is a heavy stream or mass, the sliver, fed into a machine which compacts the whole, next into the machine which twists the threads or yarn, the different ones being twisted in opposite directions alternately; and so any tendency of either set to unravel is balanced; finally, the three or more large strands are woven together and laid on a drum or wound into piles.

Uses of ropes. Besides many different uses for cables, bridges, anchors, supports, and pulleys, ropes are used for transmission of power instead of leather or cloth belts or other means. This means was adopted first by James Combe of Belfast, Ireland, in 1856, and the rope is arranged singly or in several strands, going in the latter instance to different parts of a mill. A large percentage of rope goes into the marine industries, much of it into drilling wells of varied types, and smaller sizes into the farm and home activities. Bending over sharp machinery or pulleys harms rope, or exposing it to acids, dampness, or sudden changes in climate.

Wire rope has many interesting features and uses. Before 1870 wire strands were used in collieries and for hauling generally, but since then numerous uses have developed. Wire rope is superseding fiber in some marine uses, cranes, derricks, air or power cables, telephone wires, and for supporting bridges. In some cases 400 single wires go to make up one cable. Smaller types in great demand include 6 strands of 7 wires each; hauling rope of 6 strands containing 9 wires made over a core of 7 smaller wires; flexible steel hausers made of 6 strands of 12 wires each, the whole wound around a core of hemp; and copper, aluminum, or alloy strands separated by some non-conducting material like vulcanized bitumen and bound in large bundles or cables. Such wire ropes are made by a process somewhat similar to that in making fiber ropes.

RUBBER. Since 1900 no product has gained more in importance than rubber. Though it was known centuries ago,

little was made of it until after 1800. Erasers and waterproof cloth were introduced before 1825, but the rubber melted when it became hot. Charles Goodyear (q. v.) in 1842 discovered that sulphur when heated with rubber made the combined product stable and easily handled. With the advent of the soft tire for vehicles, extended uses in the electric industry, in making various products, rubber became of world importance. Supplies now come from South and Central America, mainly from Brazil, from Ceylon and other South Asia points, Africa, and other places in the tropics. It can grow farther north, probably even in the United States, and certainly in the Philippines. In 1870 we imported 5,000 tons, in 1911 only 72,000 but in recent years, an average of about 500,000 long tons. This indicates the gain of rubber commercially.

Nature and production. Many trees exude juices which become resilient when hardened. Chemically the name is caoutchouc; industrially the modified form is rubber; originally the fluid is latex. The juices are brought out by scoring or tapping the trees, at the bases of which the fluid collects in a cup or other container. Different species of shrubs and trees yield the latex, the finest being the Para from Brazil; Asiatic rubbers differ from those of South America. All rubbers are hydrocarbons, having complicated structures, and varying in resinous content, the chief value of rubber. *Guayle* rubber contains about 20% of resins, but *hevea* has only less than 3%. Commercially the fact that rubber may be vulcanized with sulphur gives it chief value. Physical properties of rubber are these: pale color, great stretching, highly adhesive, pliable, not easily affected by water or gases, easily combined with minerals. Best rubber will absorb by vulcanizing at least 33% of sulphur. *Para* rubber reaches the market in form of masses called hams because of size and peculiar odor due to smoking, and it loses in weight nearly 20% on washing and cleaning. Some African rubbers, however, lose 50% in bulk during refining operations. The United States takes about two-thirds of the total world output. Market values of rubber are determined relatively by tackiness, tensile strength, age, softness, cleanness, acidity, and skill in smoking. Great acreages of rubber have been planted in late years, which promise adequate supplies, barring unforeseen contingencies.

Preparing rubber. First, washing is accomplished by passing the crude rubber through rolls under sprays of water. Drying, which is extremely important, is done by natural methods or by a vacuum mechanical process, the latter having superseded the drying, though that is said to excel in making pure rubber goods, elastic bands, and threads. Drying in a kiln promises more uniform results when it is fully developed, for when humid air is introduced the rubber dries first internally and then on the surface, making a better product. Next the rubber is broken down by being run through warm rollers, after which it is mixed into a dough or batch. The batch is passed between three or more sets of rollers and made into sheets of the same thickness. Vulcanizing or mixing with sulphur is accomplished in varied ways according to the product to be made from the rubber. Thus tires, hose, belting, toy balloons, overshoes are all differently treated. Steam, dry heat, pressing, cold, and vacuum cures are the chief methods employed in vulcanizing.

Rubber products. Little unvulcanized rubber is employed. In the form of rubber cement or adhesives it is quite familiar in electrical insulating tape, surgeon's tape, and in the newer crepe-soled footwear. Because it resists wear, it is useful for tires, heels, conveyors and belts in factories, and in lining machines where abrasion must be avoided. Because of its resiliency, it is used for tires, hoses of many sorts, machine rolls, including those for wringers, joints, valve disks, elastic webbing, and various types of shock absorbers. Its ability to resist diffusion of gases makes it adaptable for couplings, balloons, bladders for footballs, rings for jars, gas masks, tennis balls, and many others. Because it does not hold so well when wet, it is sometimes used for bearings in pumps and in propeller shaftings. Because it is waterproof, it finds hundreds of uses in caps, coats, gloves, footwear, bathing caps, and dams used by dentists. Because of its electrical resistance it is employed in scores of insulations, gloves for handling live wires, and protective coverings.

Sheet rubber is much used for tobacco pouches, hot-water bottles, elastic stockings, and the like. Elastic or *rubber thread* is used for braces or suspenders, garters, and products where a small tensile cord is needed.

Other rubber and near rubber products. When rubber is specially vulcanized for a long time (6 hours instead of 2 or 3), with excess of sulphur, ebonite, and vulcanite are produced, a hard but yielding substance which resists chemical action, and so it is much used for laboratory containers. *Chicle*, the chief component of chewing gum, is a latex much like rubber proper, and like rubber exudes as a pale milky sap from trees in Central America. It is elastic, aromatic, and tenacious. *Gutta-percha*, another resinous latex from trees in the East Indies, has been in great vogue for insulating submarine cables, for temporary fillings by dentists, as the core or center of golf balls, and in certain types of dress shields. Laid between thin layers of fabric it has also been used as mending tissue by tailors. *Balta* is a substitute for gutta-percha, especially in dress shields.

Imitations of rubber. High cost of rubber at times has led men to experiment with substitutes. Some of these include products made of linseed, rape seed, or castor oil combined with sulphur; or gelatinous substances and some acid. *Shellastic* is now made of oyster shells, chemicals, and oils. This and other substances have the properties of rubber, but are not synthetic products. Some chemists say, however, that man may find another artificial substance that will outdo rubber itself. After many years of experimenting, chemists have discovered the true nature of rubber. As early as 1879 a Frenchman claimed to have changed isoprene to rubber by use of hydrochloric acid. Synthetic rubber has been described as "isoprene polymerized to a rubber-like substance." Thus far processes attempted by a dozen firms in different lands have proved that synthetic rubber may be made, but it is too costly to compete as yet with the natural products, which in bulk are constantly increasing.

SAFES. Small movable metal containers with doors rather than lids are called safes; large rooms of similar type are called vaults; and boxes are called coffers, safety-deposit boxes, and other names. Since 1888 solid safes, with rounded corners, cast in a single piece, except the doors, have proved valuable against fire and burglary. Previous to 1800 many artistic containers were used, but none were fireproof. In England though several patents had been secured, the earliest real safes date from about 1846, made by Thomas Milner of Liverpool. Various devices were adopted to prevent burglarizing: Double thicknesses, filled with resistant material, slanting doors that could not be jimmied or opened by bars; and hard plate steel of high carbon content not easily drilled. Modern safes refine these measures.

To resist boring, blasting, melting, or other operations, safes must be made of high-proof steel; to resist slow charring, the fireproof interiors must be ample, the walls of sufficient thickness, so that the safe may be buried under hot metal for hours or days without great harm except to looks; and to make it proof against falls of floors, the safe must be very solid and non-cracking. The oxy-acetylene blow-torch must be resisted, or the blow-pipe mode of attack by burglars; locks must be in combination of two or more, so that, should one fail, the others will delay entry, and the timing arrangements must be encased so that they cannot readily be destroyed. Time clocks of two, three, or even half a dozen chronometers are now employed. Modern safes have burglar alarm attachments or secret methods of resisting attack. By all means the most effective alloy yet discovered is a recent patent in which copper is used. This metal resists heat, explosives, drilling, and blasting. It would take burglars hours to penetrate with the strongest torches a safe made of 20 inch metal, including 12 inches of copper.

SALT. Sodium chloride or common salt has been known by all tribes and nations, for it is common throughout the world. It occurs in all waters, notably in the sea, in natural brines of certain lakes or pools, and in the mineral form called halite, or rock salt. Sea water averages about 3% more for inland seas like the Mediterranean and in tropical waters than elsewhere; the Dead Sea of Palestine has about 10%, and the Salt Lake in Utah nearly as much. The River Jordan, it is estimated, washes down 850,000 tons of salt yearly into the Dead Sea. Natural salt brines are most common in Austria, France, Germany, India, and in the United States chiefly in Michigan, New York, West Virginia, Ohio, and Pennsylvania. Some natural brines of England, obtained at great depth by boring, contain chlorides of barium and strontium, interesting variations from normal brines; and in America in West Virginia and Ohio certain other substances are present in salt brine from wells. Rock salt or halite, in paying quantities, is mined in Louisiana, Kansas, Colorado, Nevada, Oklahoma, Texas, and New Mexico, and in some degree elsewhere; abroad it is found in the Punjab of India, Saxony, Tyrol, near Cracow of Poland, and in England. Gypsum, carnallite, sylvine, and other minerals occur with rock salt at some points, and the theory is that these all result from the drying up of prehistoric salt lakes.

Preparing salt. The Louisiana mines have shafts, galleries, and elaborate blasting like that of coal mines. In Colorado rock salt at one spot forms a crust over a lake of brine, and the surface is cut into cakes as ice is sawed. In New York the rock salt is dissolved by forcing water down through pipes and pumping the solution out in others. All salt must be evaporated, dried, and refined. Rock salt is broken up by rollers. California and Utah especially carry on the process of drying the brine in pans or wooden troughs as once in New York and Michigan. Artificial heat is now applied in many plants to long, shallow pans, the salt rises to the surface, is fished out, whizzed in containers and so dried. The vacuum method is not possible, since unpleasant results follow. New methods are now being sought. Rock salt of good quality, as in the United States, is broken up, dried, and put upon the market without further

treatment. In England various purifying agents are used.

Salt in commerce. Various kinds of salt in the home and food plant are well known. Common table salt is of highest purity; it is sometimes treated with enough sodium carbonate or other product to keep it from getting damp and sticky. Coarser varieties are used in manufacturing and the arts. Salt used in curing fish is still coarser and often contains other minerals. Bay salt, the coarsest of all types, is used largely in refrigerating processes. Meat packers use huge quantities of various salts. As an intermediate salt is used extensively in the making of sodium carbonate, the common washing soda, sometimes known as sal soda, caustic soda (sodium hydrate), often made by electrolysis, much used in making artificial silk, in hard soaps, and in mercerizing textiles, in making hydrochloric acid, chlorine, bleaching powder, glass, as a glazing agent, and in tanning, refrigerating, chlorinating, pottery, and metallurgy. So one sees the common, humble salt of everyday use pass out into a multitude of forms and products.

SEWING MACHINES. Various inventions from time to time have brought the sewing machine to a high state of efficiency. Some important steps are these: double-pointed needle by C. F. Weisenthal (1755); other essential features except eye-pointed needle by Thomas Saint of England (1790); B. Thimmonier, a Frenchman, made eighty or more machines that worked (1830), but he died unrecognized in 1857.

American invention began with Walter Hunt (about 1833), who devised an eye-pointed needle and double-thread machine, but failed to win a patent. Elias Howe (1846) patented the lock-stitch, his machine having also Hunt's main ideas, arrived at independently; and Howe unsuccessfully tried to introduce the machine into England, finally allowing his rights to pass out of his hands, but later by complicated litigation winning them back, after Isaac M. Singer (1851) had patented a machine. Alan B. Wilson (1849) invented the rotary hook and bobbin devices, and a new type of feed for moving the cloth along; his machine gave rise to the modern Wheeler and Wilson make. William O. Grover of Boston (1851) patented the double chain-stitch action; James A. E. Gibbs of Virginia (1856) made the machine, which, as improved by J. Willcox, is known as the Willcox and Gibbs. All modern machines are improvements or variations in some slight degree from these early types. The same principles have been applied to heavy machines for sewing carpets, leather in shoes, and various kinds of cloths.

Over 1,500 varieties of machines have been used. Some special forms are those for sewing bottoms on shoes, leather into felt hats, sewing silk initials on cloth in one operation, and machines in multiple units for making parallel rows of sewing. They are fitted with special treads, motors, electric lights, and special devices.

SHOES. Footwear has gone through an interesting evolution from the sandal to the fashionable lady's boot today. Sandals of grass, bark, or other natural substance, bound on the foot with a thong, willow, or similar tie, are still worn by many primitive and desert folks. Indians developed a foot-covering from skins, no thick soles being used. Modern shoes are sandals and uppers combined in one. Boots extend to the knee or nearly so, but rather high shoes are sometimes so designated. Wooden shoes are much used in Holland and other north European lands; and clogs or pattens have wood soles fitted to leather uppers.

Cobblers were once highly important and respected craftsmen, their art being designated as the gentle craft, and their shops being centers of intellectual, religious, and literary gatherings. From St. Crispin, patron of shoemakers, to Henry Wilson, eighteenth vice-president of the United States, shoemakers often became famous. In 1629 Thomas Baard set up his shop at Salem, Massachusetts; Henry Elwell at Scituate in 1634; and Philip Kertland at Lynn in 1635. Many early towns gave shoemakers special grants of land; farmers welcomed them and prepared leather for uses at home. Itinerant shoemakers were quite familiar till after 1860. Their tools consisted of a lap-stone, hammer, assortment of nails, several awls, and thread, for the patrons usually supplied the leather. When Salem and Boston became ports of note, Lynn turned to shoes,—for a century headquarters of the best makes. Gradually New England became almost one single shoe factory. Home sewing of parts grew up, and even sailors made shoes while on long voyages. By 1761 exports of shoes to Nova Scotia alone amounted to 13,000 pairs a year. Until after 1783 the price was about a dollar a pair. Danvers specialized in cheap brogans; after 1860 Brockton vied with Lynn for finer types.

New York, New Jersey, and Philadelphia took up the trade, as many other communities did later, but New England supplied most of the cheap shoes for home use and exportation to the West Indies and South America. Lefts and rights, definite gradation of sizes, and quantity production were Yankee ideas. Hand labor continued till after 1800, though machines had entered the cotton and other industries by 1750. Meanwhile from 1600 or before, machine-made wooden pegs had been used for shoe heels, but not until 1815 was a machine invented to make pegs for soles. Samuel Preston (1833) made a mechanical pegger; before 1860 Howe's invention was adapted to sewing shoes; Lyman R. Blake (1858) perfected the machine to bind soles to uppers, which was developed by Gordon McKay of Pittsfield, Massachusetts; Jan E. Matzeliger invented a machine laster; and finally Charles Goodyear perfected a mechanical way to turn out welt soles (1871). Between 1850 and 1900 more than 4,000 patents were granted for shoe working machinery alone. Factories sprang up in the middle and western states, each one tending to make a particular style or kind of shoe. Large corporations developed, and yet the small shop at certain points held its own fairly well.

Shoemaking is largely team work,—uppers, liners, facing and tongues, backstays, top pieces, and the vampers attaching the top to the vamp. Then the lasting machine attaches the insole and last, and the shoe goes to the stitching machine. The welter stitches the insole and upper to the welt; the bottom of the shoe is covered with cement; the outer sole is pressed and the edges cut to the shape of the shoe in the trimming machine, which also cuts a groove so the stitching may be hidden, and another sewing machine with curved needles stitches the soles to the welt. The new "double clinch" machine drives a wire through the inner and outer soles, clinches it, making and closing the stitch channel. This process gives great flexibility. Machinery levels the sole, the heeling machine feeds leather and just so many nails, and a single blow drives them into place. Minor smoothing and finishing complete the shoe.

Recent developments. Styles in shoes, expressly in women's footwear, perpetuate many small concerns, though large uniform scale production seems to be gaining. Style changes relate to colors, leather combinations, shapes, and decorative effects. Maine and New Hampshire have attracted many mills from Lynn, Haverill, and other towns. St. Louis and Brockton now lead in output, with Milwaukee, Chicago, and Cincinnati rapidly increasing centers. New York City supplies its tremendous local trade with over 250 separate factories. Milwaukee has outdistanced Lynn, and is now only just below Brockton, St. Louis, Haverill, and New York. The largest shoe company, resulting from mergers, now makes nearly 200,000 pairs daily when business is brisk; the next largest turns out over 125,000 a day, each of these also making about that number of pairs of rubber heels.

SILK. Until about 550 A. D. China was the only home of the silk-worm, where the industry of making silk was jealously guarded. One empress as early as 2640 B. C. developed the culture and is credited with having invented the primitive loom. After 300 A. D. the secret got to Korea, thence to Japan, and finally by two monks was carried to southern Europe. In Mediterranean lands it has flourished since then, and it was introduced into Europe in the reign of Henry VI. Today the total world production is about 100 million pounds, nearly two-thirds being exported. Japan leads with about 25 millions, China with over 8, Italy a little more than half that, France, Spain, and Indo-China furnishing the rest so far as exporting is concerned. Recently the handloom has commenced to give way to the mechanical, the number in Europe being now about 20,000 compared with 150,000 formerly. The United States now has over 85,000 or nearly 35% of the power looms of the world. Chief centers of the trade in finished silks are Lyons for France, Krefeld for Germany, Genoa for Italy, Zurich for Switzerland, and Macclesfield for England. China of late has developed a great export trade in silks because power looms have become rather numerous there.

Production of raw silk. Several species of moths or caterpillars yield silk fiber, the chief moth being one that feeds on mulberries (the *Bombyx mori*). In warm countries these grow more or less continuously, but in Europe they reproduce but once a year. Tussak silkworms are those which grow wild. The worms have two glands running lengthwise of the body, from which thin viscous liquid exudes, and this hardens almost at once into a fiber, which is the most elastic and most durable of all textile fibers. Compared with steel wire of the same size, the silk filament is much stronger. This thread forms the cocoons of the worm, and these are used in spinning silk thread.

Eggs of the *silk worm* (in the trade called "silk-seed"), are about the size of a pin head. They are hatched artificially by warming, usually now by incubators in Europe, but under primitive, natural conditions in Asia. Finely chopped mulberry leaves are the food, placed on shelves conveniently arranged about a room. Nothing grows faster than a silk worm. In a few days he can consume a whole leaf, the feeding period lasting about 40 days in all, but meanwhile the worm passes through four sleep periods of about a day each. Each time the worm emerges with a new skin. After about the 27th day, he begins a new feeding period of 10 days or more, during which he eats twenty times his weight of leaves, which must be fresh and only a little wilted, for a worm will not touch dried leaves. At hatching the worm weighs but one-hundredth of a grain, and is about one-twelfth of an inch long; at maturity he weighs ten grains and may be three inches long.

Now he is ready to spin his house or *cocoon*. Oak, bamboo, or other wood branches are introduced; the worms mount

up into them; and at once begin to exude the glutinous fiber. In exactly eight days the cocoons are picked by hand,—it being most important that all worms of a batch develop exactly in unison, so that all cocoons may be ready at the same time. Next, the *chrysalis* (or worm about to become a moth or butterfly) must be killed without injuring the silk fiber, or without disarranging the threads. Methods of killing are by exposure to sunlight, by steam, or by hot air,—the last now being preferred. For about six weeks the cocoons now lie on frames, but they must be turned over twice each day to prevent heating, while the dead chrysalis gradually dries up. Some of the chrysalids are allowed to mature into butterflies, which lay eggs for the next crop. The life cycle from egg to finished cocoon is about 60 days. One female moth lays about 300 to 400 eggs, and 100 will produce enough to weigh a single ounce. In cooler climates between seasons the eggs are now often kept in cold storage; in Asia they develop continually under natural, warm conditions, going through several cycles a year.

In Africa in late years "wild" silk from the spinnings of the Anaphe worm has gained considerable notice. The worms make communal houses of great size, covering them over with a substance as hard and tough as parchment. This outer fabric seems to promise interesting developments.

Making spun silk. Perfect cocoons must be selected, only those free from injury, foreign substance, holes, or other features that break or deteriorate the threads. By hand sorting they are divided into five grades. Since a single fiber is not strong enough, six or more have to be twisted or rolled together. Masses of the cocoons are placed in warm or hot water, to make the surface of the fibrous threads viscous. They are twisted when they come out, and the resulting threads are wound over steel or other drums. The object is to make a strong cable of several fibers. The Chinese in most cases do not kill the chrysalis in the cocoon but wind the silk before the worm develops into a moth. Silk produced in this way is unexcelled, however, for luster and strength. Some waste collects from the cocoons in the reeling operation, and this is used for grades of fabrics.

Silk threads are classified according to weights, the unit being called a dernier, or the weight of a thread 450 meters long. Different threads weigh according to size and texture. A dernier is .05 of a gram in weight. Taffeta, for example, 13 to 15 derniers for every 450 meters of length; georgette, from 16 to 20; and so on for the different kinds.

Throwing of silk is twisting the strands into yarn. This is made by twisting the threads together, a much simpler process in silk making than in making cotton or other yarn where the fibers are irregular in size and length.

Thrown silk is of three classes,—singles, tram, and organize. *Singles* are raw silk threads, twisted or not, and they are used for warp of chiffon and like fabrics of very fine texture. About one-fourth of silks of American manufacture is of this type. *Tram* is two or more raw threads twisted about two to four times for each inch of thread, a slack type used for filling in cloth. The processes of throwing tram include soaking of the fiber, winding, doubling, spinning, and reeling. *Organize*, which is used mainly as a warp, consists of doubling two or more threads already twisted, and then again twisting them in the opposite direction at least eight or ten turns to the inch. The processes are soaking, winding, spinning, doubling, spinning the second time, and reeling.

Silk cloths. Making of cloth fabrics from silk resembles that of other fibers. Thrown silk is wound on spools or bobbins, tram being put on shuttle bobbins called quills, and organize being made into warps. Iridescent silks are made by alternating wefts and warps of different tints or hues. Silks are commonly dyed in the yarn. Finishing is accomplished by many varied processes, among which are singeing in gas flame to get rid of loose fibers, over steam cylinders to straighten them, and in starch or other solutions to stiffen them. They are ironed, stretched, pressed, "watered," embossed, and otherwise treated. Though over two hundred ways to waterproof silks have been patented, few of them are anything like a success without injuring the fabric in some manner. Waving or watering (technically called moire) is done by engraving rollers under high pressure, so that light is reflected differently at various angles. Embossed silks are made by running them through rolls with designs engraved on them at corresponding points, a process used for both thin goods and velvets. Ribbons of varied kinds are made on special looms. These and thread for years were the chief silk products of the United States. Floss silk consists of singles very lightly twisted, while embroidery silk is a group of singles, doubled, and again twisted lightly in reverse direction. Machine twist is three-ply, while ordinary thread is two-ply, and "sewing silk" is two threads twisted from left to right. For artificial silks, see article on *Cellulose*.

Some silk fabrics. Scores of names have been used to describe the texture, color, weight, or process of making silk fabrics. Some of the chief silk cloths will be described to illustrate. *Baronet* satin is high-luster, artificial silk and cotton, summer wear goods. *Bandanna* (from Hindustani word meaning to tie) is made by dyeing cloth blue, red, yellow or some other color, leaving certain spots white by binding them off before dipping in the dyes. *Bombazine* has warp of silk and weft of worsted. *Brilliante* is light, sheer, brilliant, raw-silk fabric. *Brocade* has raised patterns or figures. *Chenille* is a fluffy surfaced cloth made of silk yarn, with warp of worsted or cotton. *Chiffon* is made of very fine threads,—8 miles of thread to the pound. *Crêpe* is thin, loose, sized or gummed heavily, and crimped or crêped in dyeing. *Foulard* is often made of twill, with small designs. *Habutae* is a celebrated japanese pure silk in plain, close weave, usually dyed or printed in the piece. *Pongee* is a fine, unbleached, washable silk made by the wild worm which feeds on oak leaves. *Poplin* has silk warp and filling of wool heavier than the silk, which gives the fabric a corded effect. *Satin* is a special weave with the filler binding the warp as seldom as possible, a fact which leaves the surface very smooth. *Taffeta*, old type of skein-dyed silk of plain weave, with cross-ribbed appearance. *Terry* cloth has face or both sides made with loops like turkish toweling. *Velour* resembles velvet, having a coarse, stiff pile, somewhat like plush; once made of linen, it is now also made of jute, cotton, or worsted. *Velvet* is all silk, silk face, or even all cotton, the best quality being wholly of silk. It has a short, thick smooth pile, with plain backing. *Voile* is made of well twisted yarn of light weight, with a plain weave, and dyed in the piece.

SOAPS. For convenience we include also soap powders, metallic soaps not soluble in water, and glycerine, an interesting product from soap-manufacture. Most soaps are chemical compounds of fats and fatty oils with alkalis. Progress has been slow until recent years. Man first evidently used goat's tallow and beach ashes, then potash derived from plants, kelp, and barilla from 1200 down to nearly 1800, after which the Leblanc process of making soda from brine gave rise to new methods of utilizing soda for soaps.

Nature and Methods. How soap cleans is not fully explained, but it seems to be due to the soap part, and not to the alkali, for the mixture in water loosens the dirt, then seems to act as a lubricant to prevent it from adhering again to fabric or skin. Soaps are either hard or soft, but usage prompts many other classifications. Nearly all fats may be used; such, for example, as tallow and grease for many toilet soaps; vegetable oils like coconut and cottonseed for marine soaps; olive for common textile and toilet makes; and palm and castor for transparent soaps. Linseed oil, soya bean, and resin are used in washing soaps, with tallow and bone fat in the cheaper brown kinds. For the alkalis caustic soda, potash, and sodium carbonate are commonly employed.

Manufacture is rather complicated, and methods vary for different types, the main ones being the boiled, semi-boiled, or cold process soaps. Let us take the making of *boiled process soaps* to illustrate: Melted fat, oil, and a small amount of 18° caustic soda lye are run into a vat by three different spouts, the lye being added after the others are heated by steam. Next is the graining process,—removal of about 10% of bulk of glycerine in free state; this is done by putting in salt until the mass is a curd from which lye flows freely. When the steam is at last shut off the soap rises to the top of the kettle; the lye and glycerine residues, if any, sink. The soap is again boiled, with a dash of added caustic soda until proper alkalinity is attained. Now water is added, and the soap should be "flattened," that is, look smooth. Additional processes include settling for a few days (during which impurities settle toward the bottom), mixing for "crutching" in a machine; pouring into molds or "framing," and cutting into sizes. After further drying the cakes are pressed and then wrapped, when all trace of surface moisture has been obliterated.

In the *semi-boiled process* the soap is hydrated, treated by boiling, and then cooling and pressing. In this method nothing is removed from the kettles, and so the original ingredients must be of exceptional purity. The Twitchell process now seeks to remove the glycerine from the fats before it reaches the soap kettle. The *cold process* is simplest of the three, being adapted to coconut oil materials, which saponify easily when mixed with lye. Cheaper toilet and transparent soaps are made in this manner. The mass is simply melted, stirred or crutched, and finally poured into molds to cool. Tallow soaps need some agent to make them lather quickly, and oil is used in toilet soaps, resin in common laundry soaps.

Special kinds of soaps. Soft soaps are made with potash and an oil rich in oleic acid, linseed oil, red oil, cottonseed oil being the chief selections. *Liquid soaps* differ from soft in that coconut oil is often used, the lye is well settled, and either glycerine or alcohol is added to keep the product from hardening. *Floating soaps* are made like others, except that the stirring or crutching is done at great speed, so that minute air bubbles enter. This type is never pressed or milled, but cooled directly in the frames or containers. *Castile soap* consists of olive plus some other oil mixed with the ordinary soda lye by the cold or semi-boiled process Difference in color is due to the use of white or green oils. *Mottled soaps* are colored with some iron sulphate, ultramarine, black, or other pigment material. *Transparent soaps* are made of soda mixed with alcohol, the excess spirit being removed along with any impurities or solids, leaving a

transparent jelly. The cold process requires more glycerine with the alcohol. *Shaving soaps* are usually made of the highest grade stocks of coconut oil, soda, or potash, stearic acid to give a body, and some gum to keep the lather from quickly drying. The *shaving cream* contains coconut oil, potash and stearic acid. *Soap powders* are good soaps pulverized, and toilet powders usually contain talc, calcium or other stearates, and often some antiseptic like boric acid, *Medicated soaps* contain healing, antiseptic or other solutions, such as the creosol product called lysol. Phenol or carbolic acid, borax, thymol, mercury salts, and for skin troubles zinc, copper, mercury, and lead soaps are much in demand. *Metallic soaps* made of alkaline earths and metals are used in the arts. So lime soaps are components in many lubricating greases, aluminum oleate is used as a paint thickener and for waterproofing textiles and paper, and some other oleates are used for driers in varnish and paints.

Glycerine. This valuable product used in making explosives, skin lotions, some medicines, and in the arts is exclusively a by-product of soap making. The supply, therefore, depends on the amount of soap manufactured. When the fat is saponified by the caustic soda, the resulting soap is separated when salt is added, leaving a liquor which contains glycerine. Fats contain about 10% for tallows, and 13% for coconut oils. Glycerine is produced in sugar fermentation, but no way has been devised to conserve it. The United States, therefore, imports great quantities of glycerine, the world output being about 850,000 gallons yearly, about 60,000 tons.

STARCHES. Along with sugar, gums, and cellulose, starch belongs to the carbohydrate group, since it is composed of the elements carbon, hydrogen, and oxygen. Yet it is a very complex substance, existing mainly in granules of varying sizes, the various starches each having a distinct character. Pure starch is white, glistening, tasteless, not soluble in cold water, and constant when exposed to air. In hot water starch forms a viscous, jelly-like starch paste, as it is named. When heated in acids and subjected to hydrolysis, it changes into sugars, mainly dextrin, maltose, and glucose. In a solution with iodine, starch turns bluish, a very valuable identification characteristic.

Manufacture. Many plants contain enough starch for collection commercially. Those high in starch content include in order rice, maize or Indian corn, wheat, millet, lentils like peas and beans, rye, oats, arrowroot, and potato. Those persons seeking to "reduce" should notice that potato contains the least and rice the greatest of fat-forming starches. Starch is often made from roots and tubers in the country where these grow. Maize and wheat are largely used in North America, England, France, and Germany; corn in the United States; arrowroot, cassava, and tapioca from plants grown in the West Indies and South America; sago from the East Indies and Borneo; and potato mainly in Europe. Manufacture of starches consists of breaking of cell walls containing plant cells, from which the starch content is separated by shaking or beating. The details include washing, pulping, collection of the starch liquor in vats, filtering by gravitation or by hydro extractors, and drying the cake or mass resulting.

Uses. Starches are used in commerce, in making food, and in laundering. They are employed extensively to size cloth, yarn, in thickening colors for printing, painting, and dyeing, in making various types of edible syrups, and for sugars in fermentation. Besides extensive uses as food in breakfast preparations, flours of all kinds, and similar products, starch in powder form is used to make "cornstarch" pudding, blanc mange powders, macaroni, cocoa, and in certain types of confectionery. What we call tapioca is made from moist starch from the manioc roots, dried in small granules, or clusters, and then run through rollers and graders. Pearl sago for food is made from drying starch in plastic dough form, by which the granules are collected, and then dried in the air. Various corn syrups are starch changed chemically into sugar, and then into liquid form. Laundry starch in powder or crystal forms, mostly from corn or rice, is made from blocks that result from the drying process and filtering; then completely dried in lump form.

SUBMARINES. The normal type of under-water craft is submerged when certain "ballast tanks" aboard her are filled with water. Submarines are single or double hull, the latter being costly and used now largely in big ships alone. Hulls are either circular, semi-elliptical, or elliptical, with ballast tanks between the two hulls in some cases or at the bottom and partly at the sides. Each tank has a water inlet at the bottom, and air outlet at the top, and also an intake for compressed air, which, by forcing out the water, causes the boat to rise to the surface. Spaces for the crew, fuel, torpedo room, engine room, oil room, batteries, and stores make up the rest of the main part, the rooms now being specially fitted with bulkheads and made water tight, a safety feature in case of accident. The super-structure contains a conning tower, above which protrudes a periscope, the only part of the boat visible to an enemy, when the craft is not far under water. In times of emergency, the submarine must be in "ballast trim," or instantly able to submerge by beginning to fill the tanks with water. Compensating tanks, besides the main ballast ones, are provided, for instant use, in case pressure is added or released anywhere in the craft; and these must be constantly watched. As fuel oil is burned, the containing tanks are filled with sea-water from the bottom, and difference in gravity is compensated. This is true of all items on the ship, a tank being provided for each, as for food, fresh water, ammunition, one or more torpedoes. Mine-laying boats have special tanks to compensate for the release of the mines.

Important accessories. Compressed air used in blowing out the water from the ballast or submerging tanks must be stored in bottles or other containers under tremendous pressure,—sometimes as high as 2,500 pounds a square inch. These are recharged by compressors when the boat is riding on the surface. The pumping system has at least two good units, capable of pumping against any pressure of water to which the submarine may be subjected. Each boat has a rudder and two hydroplanes at either end, the object being to keep the craft stable at all times. Recent types of periscopes consist of long tubes, some of them 35 feet high, fitted with a glass window and a prism at the top, and various lenses within the tube so that as clear and as wide a view as possible may be carried to the observer's eyepiece. The original field of about 15 degrees may be increased by moving the periscope by means of two handles. Submarines are now fitted with special Diesel engines and also with electric motors, the latter being used to drive the twin propellers when the craft is submerged. Displacement is now from 1,000 tons upward to 3,000, and the surface speed is about 17 to 20 knots an hour, this being cut one-third at least under water. Batteries of the lead-plate type supply power for propelling, and running rudder and hydroplanes. These batteries must be recharged at the surface of the water, but they last for 30 hours under water at 2 or 3 knots speed. The armament consists now of as many as six torpedo tubes of 21 inch type, the largest conveniently handled by a man. They are discharged by air-pressure.

SUGAR. Technically the name applies to more than 100 different substances of varying natures and names, the chief ones being sucrose, glucose, lactose, and maltose. Sucrose is the common variety, including cane, beet, and maple sugars, and those made from corn, sorghum, and palm. These when refined are colorless, odorless, and the same in sweetening power.

Cane sugar. This product of the sugar cane grass or stalk is produced in tropical and in some sub-tropical lands, the chief centers being Cuba, both coasts of Central and South America, India, Egypt, and the eastern coast of Australia. The canes grow at least 12 feet high, mature in about 13 months, and the stem is hard within and soft at the very surface. They are cut at the ground, leafed, and sent to the factory, or sometimes as in Louisiana, stored for some time in the fields. The root again sends out stalks for a new crop. Recent culture has produced improved varieties.

Making sugar is an elaborate process. The stalks are ground or shredded by machinery, and water is added to the resulting mass now called bagasse. Several millings are usually necessary to get all the sugar content. In the dry process no water is added up to this point. Next follows several purifications, first straining through brass containers with 400-500 holes to the square inch; then the defecation or changing the sugar from an acid to an alkaline, which is accomplished by using lime, phosphoric acid, or other defecator. Impurities also are thus removed, and the sugar juice is whitened. The mixture is then heated, water is driven off, and the juice is reduced to a sticky mass, after which it is placed in vacuum evaporators, which reduce it to crystals. By centrifugal action the crystals are again separated from the remaining liquor, from which in turn some sucrose is finally extracted.

By-products remaining are the crushed cane, used for fuel; press cakes, used for fertilizer; molasses, used in making alcohol, fertilizer, food or fuel.

At this point, however, the sugar does not test high enough, the standard being 89 for poorer grades and about 95 for better. Low selling price of poorer grades discourages manufacturing them. Further refining consists of dissolving the sugar crystals again in water, spinning the resultant liquor in centrifugal containers, after lime is added to defecate it; filtering the liquid through bags or through animal charcoal or boneblack (this removes all coloring matter); finally, evaporating off the water from the syrup in vacuum pans somewhat as before. The sugar is now left in the crystal form familiar to us as granulated sugar. Cube, loaf, or slab sugar is made by pressing the grains in molds before they are perfectly dry.

Beet sugar. Sugar beets are extensively grown in Europe, in some states of our union west of New York, and in southwestern Canada. Seed is sown closely in rows, the young plants are thinned to about 6 inches apart, and the best grown beet is small, weighing about one pound, and looking like a top. Machines cut the roots, the beets are pulled by hand, topped, and sent to the factory, or flushed there in flumes; sometimes they are left in the field, in covered or protected piles, for a time, for some freezing does not harm

them. Juice is extracted by diffusion in 12 or more cylindrical vessels, after the roots are cut into V-shaped slices. These containers are connected, and the juice is run from one to another by water pressure from beneath. Finally, the juice is drawn from the last one or ones filled, tested, and sent to the refinery. Pulp is also finally removed, and every six to ten minutes one of the containers is filled anew with sliced beets. Next the pulp is strained from the juice, lime carbonate is added for the defecation, and then comes a further treatment by carbonation, accomplished by injecting one or more charges of carbonic acid. Next comes the purification by a second carbonation, and the drying, and crystallizing about as in refining cane sugar. Granulated sugar of fine texture is the usual product of the American beet refineries.

Maple sugar. In early colonial days the New England farmers made maple sugar, since cane was hard to get or too expensive. This product is still extensively made, the total production yearly being about 30 million pounds, about 90% being in the form of syrup, one gallon equalling about 8 pounds. The chief source is the sugar maple, which is found from Newfoundland to South Dakota and south as far as South Carolina. New England, especially Vermont, New York, Ohio, Michigan, and Minnesota are the chief centers of production, the first three named furnishing three-fourths of the total output. Each maple tree will make from 2 to 3 pounds of sugar a year. The forest is tapped early in the spring, the sap is collected, taken to the boiling plant or refinery, and here is reduced to thick viscous fluid by successive boilings. Kettles are still used, but mechanical evaporators have replaced them largely in large-scale production. The syrup is reduced to sugar by additional boiling and cooling. In color the sugar runs from light, whitish yellow to dark brown, depending on purity, the lighter kinds being most free from coloring matter or impurities.

Other commercial sugars. Glucose is extensively made in the United States from corn or Indian maize. The process is quite similar to that of ordinary sugars. It is used in table syrups, in about the proportion of 85% glucose, and 15% of cane sugar. Enormous quantities are used in filling sole leather and in making tan extracts, in jellies, preserves, and in brewing. Molasses, a by-product of sugar refining, is a dark fluid, used in cooking and liked by children to put on bread, the term in England usually being treacle. *Fructose,* quite similar to glucose, is derived mainly from fruit juices, and is used as sweetening, and often prescribed for diabetic patients who cannot use ordinary sugars. *Dextrin* is produced from starch, along with glucose or grape sugar and maltose or malt sugar. It is used in making glues and in sizing cardboard. Various chemical sugars, like sugar of lead, have specialized uses in arts or medicine. *Saccharin* is really not a sugar and has no food value, but is 300 times sweeter than real sugar, and so is often used as an adulterant sweetener. It is derived from refining coal tar, and there are several varieties.

Sugar statistics. About 30 million short tons of raw sugar are produced annually, cane leading by somewhat more than half. In order, the main producers are Cuba, British India, Java, Germany, Russia, Czechoslovakia, and the United States. The amount has almost doubled since 1900, and consumption in the United States has kept pace accordingly, yet United States production is only somewhat more than one-twentieth of the world total. The British Dominions produce one-fifth, and consumption in the United States, United Kingdom, and India includes about one-half that of the world at large. Australia, New Zealand, the United States, and Denmark lead in per capita consumption, in the United States its being about 105 pounds yearly, an increase from 79 pounds since 1910, and from 91 since 1920.

SYNTHETICS. Man is always looking for easier and cheaper materials in commerce. These often appear in three forms,—imitation, substitution, and synthetic creation. An imitated product is one which resembles another, but really does not have all, or sometimes even the essential characteristics; substitution is the use of one article or product for another, as oleomargarine for real butter. Synthetic products are those which chemically are the same as the natural, or only slightly differing. Here the modern chemist has opened a book of magic more wonderful than any devices of the *Arabian Nights.* Rubies and emeralds are now made in the laboratory. To list even the main classes of synthetics would take several books if they were described at all. Here we mention only a few that are typical, and some that are spectacular.

Synthetic plastics are already touched upon in the articles on *Cellulose, Leather, Resins, Rubber, Silk,* and *Wood.* Besides celluloid already described, many useful plastics are made of phenol or carbolic acid and formaldehyde, gums, resin, coal tar, oil, and others. *Bakelite* is one of a large group of compounds of phenol and formaldehyde, treated with an alkaline, the result being a viscous mass, which by heat becomes intensely hard and insoluble. It is the invention of L. H. Baekeland (q. v.) a Belgian professor and chemist. Among the many substances, some familiar ones are insulating material for electric connections, tops for bottles, substitutes for ivory, lubricant for gears, and lacquer. Products in the same class are formin, redmanol, halowax, condensite (quite familiar in the Edison phonograph discs). Megramite, one of the same class, was much used during the World War in Australia as a material for containers. S. Sato of Japan has excelled celluloid in his product named satolite. Other resinous or similar compounds are glyptol, of which glycerine is a base; acrolite, made of glycerine and phenol; bettle resin, much used in England for making decorated ware, and pallopas in Germany, used instead of glass for automobile wind-shields.

Medicines, dyes, and *perfumes* are increasingly made by synthetic chemistry. *Analysis* tears down, *synthesis* is just the opposite,—it builds. The chemist takes two or more natural elements, combines them, and a new product results. Among the medicines that do not occur as such in nature, but are compounds made by the chemist, are chloroform, which results from treating alcohol with bleaching powder; ammonia, made by the dry distillation of animal or or vegetable substance, or by the action of water on magnesium nitride or some similar product; camphor, refined by distilling a natural product; menthol, a crystalline compound derived from peppermint. Other medicinal or antiseptic derivatives are ether, salol, chloral hydrate, salversan and its improved forms, Bayer 205 (powerful internal disinfectant), picric acid (this used as antiseptic, dye, and one component for explosives), aspirin, antipyrin. Some of these are derived from coal tar. Others help us run our automobiles, roof our houses, flavor our drinks, color our clothes, perfume our buildings,—and the list can be extended much farther.

Thus our modern chemical wizards far exceed the wildest dreams of the ancient sages and medieval alchemists. Already over 50,000 dyes (shades and tints of colors) not found in natural state have been developed in the laboratory. Every day new surprises seem to await the worker in this field of synthetics. First the coal or other natural product, then the coal tar, then the intermediate, and finally from this the myriad of special products. For other illustrations see the article on *Dyes.*

Synthetic perfumes. The delicate odors of commerce, once the results of arduous toil or extensive travel, now can be produced at our doors by the modern chemist. All he has to do is to analyze the natural odor or essence of the flower, find its chemical sign and secret, with its formula, and he can ordinarily produce it in the laboratory. Synthetic perfumes are not imitations; they are the real thing,—same delicate fragrance, same chemical compound and probably even purer than the older, hand-made varieties. So we have attar of roses, as choice as ever produced in the fields of France, jasmin, lilac, cinnamon, musk, narcissus, orange flower, carnation, gardenia, peach, tonka bean, vanilla, and scores of others.

Commercial importance of these products can hardly be exaggerated. Though men may be thrown out of work by the laboratory process, others share the benefits of cheapness and abundance. The United States government, in the operations at Muscle Shoals, Alabama, intends to produce nitrates rivaling those found in natural state in Chile and other remote lands. Before 1910 huge quantities of natural nitrates were imported by Germany, and now that country can export larger quantities of nitrates made by skilful chemists. Once Japan had the natural monopoly of camphor from the island of Formosa; when the synthetic product came on the market, the price fell from about $2 to 30 cents a pound. Six million pounds are required annually for cellulose products alone. Menthol from carefully and laboriously collecting and pressing peppermint for the oil once cost $20 a pound, and now it can be made in the laboratory or chemist's shop for less than $4. These are mere samples of the value of synthetic products.

TOBACCO. Columbus found the Indians called a native plant tobago, named perhaps from an island off South America. Seeds were carried to Spain, thence to France later by Jean Nicot (whose name is given to nicotine, the alkaloid poison, the active principle of tobacco), and by 1565 Sir John Hawkins or others had introduced some of this weed into England. Today it is known around the world. Eighteen of our states produce it extensively, leading in order North Carolina, Kentucky, Virginia, Tennessee, South Carolina, Pennsylvania, Georgia, Ohio, Wisconsin, Connecticut, and Maryland. North Carolina grows about 400 million pounds, Maryland only about 30, and 7 other states less. Other countries are Brazil, China, Dutch East Indies, Mexico, Algiers, and in Europe, Russia, Greece, Turkey, Italy, Bulgaria, Germany, France, Hungary, and Belgium. In the British Empire the chief countries are South Africa, India, North Borneo, and Canada. Of the total world crop of about 4 billion pounds, the United States grows about two-fifths. Cigars, cigarets, smoking tobacco, each in about equal amount, comprises nearly two-thirds of the total usage; chewing tobacco, snuff, and nicotine by-products such as sprays to kill plant pests make up the remainder.

Growing tobacco. This plant grows rank and tough, requires a good soil rich in potash, lime, magnesia, iron, and other elements, and must have right proportions of both moisture and sunlight. In Connecticut and elsewhere fine types are grown under canvas or glass. Of the nicotine

family, to which tobacco belongs, among fifty varieties are such well-known products as the red pepper, tomato, potato, eggplant. Some soils require artificial fertilizing, notably so unless crop rotation is practiced to give the soil a rest from the heavy drain tobacco makes from it. *Seeds for propagation* must also be carefully chosen from the matured blossoms left on some hardy stalks for this purpose. If every seed could be matured, one typical plant would grow enough of the small individuals to plant 200 acres of land. Seeds must be planted early in hot-beds or other most favorable places, and much attention is required for transplanting, developing, removing the surplus branches called "suckers," removing the top unless seed is desired, and finally in cutting, curing, and marketing. Hail, insect pests, excess of rain, or of sun with dryness, will spoil the nicest leaves. Altogether this crop requires skilful and constant watching and tending. In the southern states certain areas produce a fine heavy, sweet and fragrant leaf; in most northern regions, it is lighter, has no pronounced odor, and is more delicate. Cuban, Turkish, East Indian, and other varieties have also their own characteristics. Yet claims made for one region or another as to excellence and aroma are often exaggerated and unduly stressed commercially. The same might be said as to mildness, freedom from "pull" or "burn" and other qualities, though naturally tobaccos have their peculiar traits and values the same as all other natural or artificial products.

Tobacco products. Curing takes place out of doors, or now in this country in barns for the purpose, with open sides for circulation of air. All tobacco improves by fermentation and ageing. When it is sufficiently dried on the stalks, it is stripped off, usually bound into bundles for the curing process, a process of days, months, or even of years as practiced by dealers and manufacturers in different lands. Sometimes it is sweetened, treated with steam, or in several other ways. Cigars are often made of grades or types of tobacco, often grown hundreds of miles apart. The wrapper necessitates long and perfect leaves; the inside or filler, a different kind or smaller parts. The wrapper may be from Connecticut, the filler from Cuba or Turkey or Java. Some of the foreign makes have acquired great reputation, whether deserved or not is probably a matter of personal taste. Cigarets are fine-cut tobacco, dried, often pulverized, and slipped into parchment cylinders. Great Britain uses much Virginia tobacco; so do the northern states, as well as leaf from Kentucky, the celebrated Burley kind, and from remote parts of the world in much smaller quantities. *Snuff* is tobacco ground or finely pulverized for use in the nostrils, a custom declining, but before 1800 greatly in fashion.

Machinery now rolls cigars, cigarets, and other forms. Of the cigarets, one machine may make 250,000 a day, and one-tenth that number of cigars, replacing many individual cigar makers. Indeed, the complete process, including placing them in boxes, is now done largely by mechanical means.

TURBINES. Windmills are propelled by intermittent gusts of wind; turbines are similar, but are propelled by constant jets of water, steam, or any fluid. Hydraulic or *water turbines* are of two classes, the Pelton and the Francis, the first of these being a simple form with one nozzle that delivers water to or upon the wheel, or upon buckets that are fastened upon it. The Francis type has many guide vanes or openings for forcing the water, under great pressure, so that it turns the turbine or wheel. The Pelton or simple type has attained a force of 30,000 horse power; the Francis more than double that, and both could be increased.

Steam turbines, as developed by Sir Charles A. Parsons to great efficiency, now promise considerable development in the future. The DeLaval cream separator was an early form of steam turbine. Parsons introduced the idea of compounding the pressure by arranging a series of simple one-wheel turbines, so that all energy would be utilized, and the steam leaves one unit for another still under some of its original force. Though demonstrated first in 1884, it was not till about 1900 that Parsons' principle was applied in any degree. He built the first practical steam turbine ship in 1894, but not until 1907 did he succeed in convincing the skeptical. In the Diamond Jubilee Naval Review, he attained a speed of 34 knots, then an incredible performance. The *King Edward*, 1901, however, was entered in the merchant marine; and the *Carmania* in 1905 in passenger service. The *Lusitania*, the *Mauretania*, holder of a transatlantic speed record, the *Olympic*, *Otaki*, and other ships have demonstrated the superiority of steam turbines for driving ocean liners. Of late, however, the internal combustion Diesel engine seems to promise to be a formidable rival.

TYPEWRITER. Many attempts were made to perfect a mechanical writing machine before Christopher L. Sholes (q. v.) of Milwaukee, Wisconsin, between 1867 and 1873, experimented with different models until on March 1, 1873, the Remingtons of Ilion, New York, bought his rights. Henry Mill in England in 1714 made a model that might have been made effective, had he followed it up. William A. Burt of Detroit in 1829; Charles Thurber of Worcester, Massachusetts in 1843; Alfred R. Beach of New York in 1856; Dr. Samuel R. Francis also of New York the next year; and Sir Charles Wheatstone of England in 1858 were some pioneers in attempting to make a practical machine.

Though the first machine of Sholes looks crude today, it had some features that never have been essentially changed, such as the paper cylinder, line spacing and form of carriage, printing through an inked ribbon, the position of the letters in the bank, and the key lever and releasing wires. Yet the first machine printed only in capitals. Later an extra set of lower case or small letters were added, and on some machines still a third or set of figures. Most machines now have two keys on each type bar.

Further developments. The Hammond typewriter introduced a usable *type wheel* on which the characters are placed. This wheel can be changed for others that have different styles of type, characters, or languages, a great boon to those who want to write in more than one style of type or in more than a single tongue. Some other models like the Burt in 1829 and the Pratt in 1866 tried the wheel, and more recent ones have experimented with the shuttle, on which the various letters are placed, so that the wheel or the shuttle moves to the right place when a key is depressed. *Visible writing* machines, introduced first in 1883, did not become popular until well after 1900. Early models provided for a down stroke of the type on the ribbon; successful ones now have adopted the regular up-stroke as in the regular machines. *Portable machines* have been made in models having either two or three sets of letters on each type bar. Finally, the model requiring two shift keys was replaced by a single one, and additional type bars, which add weight to the machine, but the portable models weigh less than half the weight of regular ones. The *noiseless typewriter*, varying the other types, has a weight on the type-bar which gives it momentum as it comes up, and the impetus is given directly to the type-bar, without the intervening arm or double joint, always a source of noise. *Electric typewriters* have long been projected, and some have been tried, but as yet they are not offered to the public in any quantity.

Special adaptations of typewriters have greatly facilitated moden business. Tabulating devices on regular machines, and special and larger tabulating typewriters, provide for arranging series or columns of figures. Tabular keys allow the carriage to be run forward to appropriate places as provided by tabular stops, adjustable at will of the operator. One of the latest developments is the special *adding typewriters*, which perform simple mathematical operations, such as adding, subtracting, and multiplying, with utmost efficiency. In fact, some machines perform the ordinary operations of bookkeeping. A special form of the *book writing machines* is adjusted so that it will take in an entire ledger or a library book in which any sort of printed notation may be made. *Telegraph printing machines* have long been projected, and only recently perfected, though the familiar stock ticker was an early type. Now it is possible for a person to sit at a typewriter and send messages hundreds of miles and have them typed at the receiving end just as they are sent. Such a process obviates the use of a telegraph code. Even Morse himself, inventor of the telegraph, predicted some such development, first with the dot and dash system, and now in regular letter and word formations. Systems like the Western Union Simplex machine and others like the Morkrum Telegraph Printer use a wheel or other device, with a code arrangement, so that letters may be typed from this on paper. In one of the "five-unit" codes, the 26 English letters and certain other forms up to 31 are arranged so that each character has its own place on a wheel, and the wheel is moved by electric magnet to the proper space at the printing end to correspond with depression of the type keys at the receiving end. The dot and dash printers seem destined to give way to these newer modes, a number of which are now patented and on the market. Elisha Gray (q. v.) long ago invented the *telautograph*, a similar device for transmitting handwriting by electricity. The transmitter writes on a metal plate with a stylus or device having a metal point, and his exact handwriting is duplicated on the receiving end. Sending a series of impressions by wire now transmits photographs, or allows artists to make them according to the numbers or arrangements of a code.

VARNISH. Resinous material, various oils, and turpentine or benzine or some other liquid are the chief components of varnish, to which often a special drier is added. For ordinary uses, three classes of varnish are recognized: 1, oil varnishes; 2, spirit varnishes; 3, insulating varnishes. Ordinary varnishes are thin and glossy or flat, transparent, black, or colored according to design of the makers. Black japan is a type of varnish. Colored varnishes are made by adding some aniline dye or pigment. Good varnish dries easily to a smooth, hard, and firm finish, which never cracks, pits, turns white, wrinkles, bubbles or blisters. Varnish must not be polished or washed with any gritty, sticky, oily substance. Clean, cold water and a good soap free from too much alkali should be applied with a soft cloth or a light sponge. Likewise varnished floors should be treated only by some light dusting or polishing, and never must be pounded, scraped, or scrubbed.

Oil varnishes. Linseed oil, with some tung or Chinese oil in certain cases, may be used when free from all water or other liquids. The resin is of fossil origin, except asphaltum, and some natural or tree gums also, such as kauri from New Zealand, animi and copals from Africa, and manilla gums from the East Indies and Philippines. The turpentine is distilled from resinous trees. Lead, manganese, or some similar salts are used as driers. All these ingredients must be mixed with great care, first the gum parts, then the oil, and finally the drier. Turpentine is added when the whole has cooled somewhat. Though the proportions greatly vary, to every 50 pounds of gum, from 4 to 14 gallons of oil are used, and from 10 to 15 of thinner. Better grades have more oil, highest quality gum, and not so much thinner perhaps. White spirits from distilling turpentine, or coal tar naphtha, shale spirit, and other liquids are used sometimes as substitutes in poorer products.

Spirit varnishes. Soft gums are used for these, liquefied in alcohol, turpentine, ether or some other solvent. Shellac, sandrac, damar, and mastic are the chief gums or resins used. *Gum shellac* is made from the natural bark or stick-lac of Asiatic trees, and it is mixed with water or other liquids, to which are added coloring matter if the product is not to be clear or transparent varnish. The original colors of the product, however, are first removed. White shellac is the natural product bleached with chlorine, the original or yellowish substance being called orange shellac. Petroleum benzine is a cheap substitute. The name lacquer for certain quick-drying varnishes has become popular. *Pyroxylin* varnishes have cellulose as a base, acetate as a solvent, and benzol for quick drying. If the solvent evaporates quickly, the varnish will harden soon; and for this reason various quick driers are used to hasten the process. The old asphaltus varnish, once very famous, dries less quickly, but it is not likely to crack as are those which dry rather fast.

Insulating varnishes. These types resist wear, are used for insulation of fire, to protect surfaces from rust, to treat certain kinds of paper and fabrics. Collodion or "liquid court plaster" is used in making photographic films, cellulose or pyroxylin for floor fillings, spirit or copal varnish for cementing, pitch varnish for heavy insulations. Such may be used on leather, iron, electric wires, or in preservative paints.

Special purpose varnish. One large firm makes over 200 varieties of varnish for many different surfaces. Not the range in cost but more definitely the particular use or purpose determines what kind of varnish should be used. One gentleman bought piano varnish at $5.50 a gallon for exterior work on the supposition that this would necessarily be better than spar or marine varnish at $4. Not being for outside wear, the fine piano varnish went bad in a few months. Nor does thickness make the best varnish. Some excellent types take about 750 coats to build up one inch of surface, and they are suitable for particular purposes, probably not for outside wear. With suitable materials and woods, even the thinnest may often be the best. Furniture varnish, or coach as it was once called, is thin, hard, and highly decorative. Rubbing varnish or flatting is dull, tough, and durable. Baking varnish, often called japan, is for metal work, and some black types are for preserving only. Other varieties are linoleum, leather, piano (but sounding boards must have a different type), motor car, the last fine, thin, and unlikely to change color; and the list could be greatly multiplied. Japan goldsize contains only 4 gallons of oil to 50 pounds of gum and 12 gallons of thinner.

WASTE PRODUCTS. See under *By-products.*

WATCHES. Before 1400 portable timepieces were unknown. Earliest watches were like small clocks, carried at the belt and not in the pocket, and one popular kind was named Nuremberg egg, from the shape and from the town where it was made. Changes in temperature and differences due to slackening of the spring tension, as the watch begins to "run down," for three centuries made watches somewhat unreliable. Thomas Tampion about 1700 invented the "dead-beat escapement," and this helped to keep timepieces more regular, and yet the hairspring still varied as temperature changed, causing loss or gain in time. This was corrected late in that century by Pierre LeRoy, and perfected by Thomas Ernshaw, by using different metals in the rim of the wheel, to cause compensation enough to offset any changes due to weather variations. Today a recent alloy, called invar, fulfills the same purpose. Except for refinements and mass production, explained later, not many important changes have been made in a century. Refinements consist of more and better jewels, all sorts of sizes and varieties of case, wrist watches, striking watches, other special purpose ones. Watches for use on railroads must not vary more than one or two seconds a day. Recently, palladium has replaced steel in hairspring, for the latter often became magnetized when near a dynamo.

Special types of watches. Apart from the usual refinements, changes in models by different companies, and other style variations, a number of special purpose watches have been developed. The *chronometer*, first described in 1714, is a variety of large watch for marine purposes, much used for determining positions of ships at sea. This form differs from ordinary watches in that it is set so as to remain horizontal, no matter what angle the ship strikes, and in that it has a helical balance-spring, special escapement, and requires no oiling. Such instruments must not vary in any appreciable degree, and not enough even in a month to make more than 10 miles difference in the measure of the whole voyage. The *stop watch* is like others, except that it has an added hand, which indicates fractions of seconds in terms of fifths. The hand may be started in motion by pressing the top stem of the watch once, and may be returned to zero by pressing again, and finally set in motion a second time by pressing once more. Such watches are used in determining athletic records and scientific data.

Mass production. Once all parts were made tediously by hand. In 1828 Henry Pitkin at Hartford, Connecticut, began quantity and standardized production. Nowhere is the influence of modern machines better illustrated than in making watches. Ten or a dozen inventors have been kept occupied making the machines and tools that, in turn, produce the watch parts. Six chief United States factories now turn out a combined total of 8,000 timepieces a day, or nearly 3 millions in a single year. Mass production began at other Connecticut points before 1890, the result being both better and in some cases cheaper watches, even to "the watch that made the dollar famous." The New Haven Clock Company first made standardized parts on a great scale. The Waltham Watch, however, was the original American make, but now there are a score of companies producing in 30 different establishments, such as Hamilton and Elgin. Watches made in Switzerland, notably Neuchâtel, have long been famous. Sizes have been reduced two-thirds, and in most models still more in recent years. Nicholas Facio, in the eighteenth century, introduced jewels for the pinions to run in, and diamonds, rubies, and some artificial stones recently have been much used, while the number has increased from a few to a score in the best types. Frames are plated with chromium now, besides the different kinds of gold, silver, and other metals long used. Frame plates are stamped out at the rate of 30,000 a day; wheels, 50,000 or more; screws, 800 to 2,000; pinions, 2,000 or more; and dials, from 5,000 to 8,000. One make of watch requires 117 separate pieces, all or most of them made by automatic machinery; while the back plate, taking 17 operations, requires 25 men for this one part, and others in proportion. An entire watch is turned out every 36 seconds.

WEAVING. Before the dawn of authentic history weaving had reached a high state of perfection. Every age has contributed something, either in the way of material, style of weave, or coloring. Modern decades have found men ransacking the entire earth for vegetable, animal, and mineral raw materials. Rayon, other types of process silk, and other imitations have of late come upon the market.

Types of weaves. The art of weaving, no matter of what sort, consists in interlacing one lengthwise thread, called the warp, with another running crosswise, called the woof, or sometimes weft. In this respect at least weaving differs from plaiting, netting, felting, hose and lace making. Yet the varieties of threads and shades and tints have been varied in countless ways since mechanical looms came into usage. Four classes of weaves will now be explained and illustrated.

1. This type consists of one warp and one woof, each set being arranged in parallel lines. Simple illustrations include plain cloth, or the different checker-board kinds; alternating thick and thin threads, which give the washboard or hill and valley effects, such as in repps, poplins, and cords; and diagonals or twills. By varying and reversing the warp and the woof in diagonal patterns, various effects of lozenges, zigzags, and the like are formed. Satin has the bulk of the warp on the face of the pattern; sateen differs in having the bulk of the woof on the face, making it smooth and continuous. Brocades have floating sets of both kinds of threads on the surface.

2. This includes all backed or reversible fabrics, those decorated with extra stuff, and compound weaves. Either warp or woof may be on the backing, hidden by the face or main weave. Reversible patterns have the same pattern on both sides. Compound weaves excel the backed. Other variations include single thread effects, united texture patterns, variation of colors at intervals as in Kidderminster carpets, tapestries made by looms, and even repps with figures.

3. This includes the piled fabrics, in which some threads stand out, or at right angles to the rest. This effect is produced by cutting some of the threads after the cloth has left the loom, so that the severed ends stand up from the background. Chenille patterns are woven twice, first to make the warp threads rather far apart, with woof of several colors passed from side to side, and, second, to lay the colors, so that the pile projects on both sides of the cloth. Some variations occur. Colors are sometimes printed on the yarn, sometimes on the fabric after it leaves the loom. Tapestry carpets are of the first variation. In Wilton or Brussels carpets, at least one-fifth of the pile warp is hooked on a wire, removed successively from each loop.

4. Type four includes the crossed weaving, as in gauzes,

by intertwisting the threads. After two warp threads are twisted together, spaces are left, but the fabric is very strong. Alternating from left to right, one of the pair of threads in each set is made to cross the other. Lapped weaves add a pattern of some sort or a figure to the ordinary crossed gauze. All these patterns, no matter how intricate they seem, are easily made by machines in modern days, and many more too complicated to explain here.

WOOL. Ancient literatures, even before Biblical ages, refer frequently to tending and keeping sheep for food or for clothing. Until cotton goods came into use in England toward the close of the eighteenth century, wool was described as "the flower and strength and revenue and blood of England." Today it is still a basic article of commerce in many lands. Primitive and remote peoples are still in the pastoral stage, given much to tending herds and flocks. Some of the finest of modern wools are grown by the Indians of the southwestern states. Long and shiny staple wools have long come from certain districts in England, such as Lincoln, Leicester, Nottingham, and Devon. Most of the mountainous regions of the United States produce their own grades and kinds of wool. For centuries Spain has grown the finest merino or Moorish wools. Merino sheep were early imported into Australia, South America, and more recently into South Africa. Australasia for many years marketed huge quantities of native wool, but since 1890 the tendency has been to grow sheep for mutton, and to discard the lean and small merinos that are good for wool. In back or more infertile regions, the small, lean sheep still hold their own as producers of fleeces. Since 1895 Australia has doubled the weight of the fleece clipped from a single animal, the average now being about 7 pounds.

United States census of wool. Sheep were introduced at Jamestown, Virginia, as early as 1609. Massachusetts Bay Colony began to establish the industry at Rowley in 1643. Later and before 1870 the merino seems to have been the favorite kind, but more recently English animals have gradually gained in importance. Yet we still import, on the average, about 40% of the wool we use. Manufacturing centers for making up wool into garments shifted somewhat in the last generation, and still show this tendency, but not as much, of late, as the cotton industry has moved about. In the making of cloth (not in wool production), New England still leads, the Central Atlantic states account for about a third of the cloth, and the western states only about 5%. Thus about 90% of the suitings, overcoatings, and dress goods are still woven east of the Mississippi; and yet the chief centers of blankets, some yarns, and knit goods are moving westward, some important ones now being in Wisconsin, Minnesota, Tennessee, and Oregon. Boston, Chicago, and New York are trade centers for wool for carpets, and with Philadelphia are also trade centers for the raw wool. A recent report of the National Association of Woolen Manufacturers, an organization to standardize wool articles, reports that the clip of fleeces for the entire world in a single normal year is well over 3½ million pounds.

Cloths from wool. United States buyers of wool recognize mainly three grades of the raw product: fine, from 1 to 4 inches in length; medium, 2 to 5; and long, from 5 to 15. The fine or short is used largely for suitings, dress goods, and fine broadcloths, the amount being over 40% of the total production. Medium length is for blankets, tweeds, and flannels, the amount being over 54%. Long wool, less than 4% in the last census, is for lustrous yarns, braids, and goods for dresses. As to kinds of wool, however, many classifications exist. Australia recognizes over 800 varieties. The choicest wool comes from the breast, shoulders, and sides of sheep; underneath the animal it is worn short, dirty, and often of inferior grade otherwise. Sorting is the first step; cleaning, the second; blending, the third in getting wool ready for spinning. Potash soap or a naphtha solution in the first stage of cleaning, is the popular solvent; after which burrs and other vegetable matter are carbonized by sulfuric acid, followed by a neutralizing bath to take out any remaining acid. After blending, the fourth step is carding, and then the wool is ready for the spinners. Carding is the process of pressing the fibers in some manner or pulling them out and making them lie lengthwise, and somewhat flat, but the tendency for wool is to curl and to stick together, due to minute hooks of the product itself. This tendency is used to advantage in the final making. Usually, the wool is washed in olive oil to facilitate the carding, and sometimes it is run through rollers. Spinning machines or "mules" are extremely intricate, automatic, and nearly human in their skill and intelligence. Scores, sometimes hundreds of individual spindles make up a single unit or mill. Spinning is the process of drawing out the little threads and combining them into small units. The yarn often goes through other processes, before it is made into cloth, and some of these are sizing or coating with some liquid substance to stiffen the yarn, drawing it in, making it into warp, and winding it onto a loom beam.

Weaving and finishing. Though this process itself is simple, the machinery to accomplish it is very elaborate. Weaving is the process of making the threads mesh together vertically and horizontally, or up and down, and across from side to side. Wool, being much harder to weave than cotton, requires some other treatments. These are mainly scouring, dyeing in bulk or in separate pieces, shrinking, napping, and shearing. Shrinking leaves the surface solid or like felt, and so napping is employed to make the surface stand out or up by running over it a roller fitted with wires or a teasle. Shearing is accomplished much on the principle of a lawn mower cutting the grass. During these processes, often burls or other imperfections appear, and some mending, adjusting, or other special finishings are needed.

Types of yarns. In ordinary *woolen yarns* the fibers intercross; in *worsteds*, they are the longer kinds and run parallel. Woolen is easily felted or matted down; worsted is usually spun on a frame into compact thread. In worsted yarns most of the shorter fibers are combed out by a special process. Woolen cloths attain density by a shrinking, worsteds attain density by the original yarns. Finer lengths taken out in making worsteds are called *noils*, and they are used as fillers for inferior weaves of cloth. The name *shoddy* has been employed to short fibers, which are not necessarily poor ones. Another application of the name shoddy is for processed or remade wool from clothing already used and returned to the manufacturers. In making worsted yarns, the Bradford process requires longer yarns of greater strength and drawing power. The Continental process makes softer and finer yarns.

Some recent tendencies have greatly improved the making, finishing, and more especially the marketing of woolen products. Fluctuations in demand and price have been great draw-backs in past years. Direct selling to the trade, without the intervening medium of jobbers or middlemen, has stabilized the industry to some degree. Greater uniformity in machines and methods has also helped. Other elements are reduction in weight of men's clothing from about 20 ounces to 17 or even fewer, frequent changing of styles or types of fabrics, and steady stimulation of demand, which is about 20% higher than it was 25 years ago.

USEFUL NATIVE WOODS.

WOOD.	Weight. Pounds per Cubic Foot.	Pounds per Square Inch.		REPRESENTATIVE USES.
		Crushing Strength.	Breaking Strength.	
Alder	28-35	5,000	10,000	Manufacture of furniture.
Arbor Vitæ	20	4,400	7,300	Posts, railway ties, etc.
Ash, White	41	7,300	14,000	Wagon building, axe handles.
Ash, Hoop (Black Ash)	35	6,100	11,500	Agricultural implements, carriages, furniture, tool handles, and interior finish for houses.
Ash, Mountain	34-37	5,500	6,300	Flooring.
Ash, Oregon	36	7,500	9,500	Furniture, carriage frames, wagons, cooperage.
Ash, Prickly	31-37	6,500	10,000	
Basswood (Linden)	25-26	5,900	8,000	Cheap furniture, wooden ware, paper pulp, inner soles of shoes.
Bay, Loblolly	29	5,500	9,400	Cabinet making.
Bay, Red (Isabella Wood)	40	8,000	12,800	Cabinet making, interior finish for houses. Formerly shipbuilding.
Bay, Rose (Great Laurel)	39	6,300	9,300	Tool handles, engraving.
Beech, American	43	7,000	16,300	Shoe lasts, plane stocks, shipbuilding, handles, and fuel.
Birch, White	36	5,000	11,900	Spools, shoe pegs, hoops for barrels, and wood pulp.
Birch, Black	47	5,600	11,500	Furniture and occasionally shipbuilding.
Birch, Yellow	41	8,900	17,700	Furniture, boxes, and hubs for wheels.
Birch, Canoe	37	7,000	14,000	Spools, shoe lasts, turnery, wood pulp, and occasionally lumber.
Box Elder	27	6,400	11,300	Cheap furniture, interior finish for houses, paper pulp, etc.
Boxwood (Flowering Dogwood)	51	7,700	12,800	Cabinet making and turnery.
Buckeye	27-28	4,500	7,000	Artificial limbs, paper pulp, and occasionally lumber.
Buttonwood (Sycamore)	35	6,500	9,000	Tobacco boxes, butchers' blocks, manufacture of cheap furniture.
Cedar, Red	31	6,000	10,500	Interior finish for houses, linings for closets and chests, and manufacture of lead pencils.
Cherry	36	7,800	11,700	Cabinet making, and interior finish for houses.
Chestnut	28	5,500	9,800	Cheap furniture, interior finish for houses, railway ties, etc.
Chinquapin	37	6,200	10,400	Agricultural implements, railway ties, fence posts, and rails.
Coffee Tree	43	5,800	10,900	Cabinet making and fence posts.
Cypress, Bald	27	6,000	9,100	Lumber for construction, railway ties, and fence posts.
Elm, White	40	6,300	12,100	Hubs of wheels, saddle trees, flooring, cooperage, and boat and ship building.
Elm, Red (Slippery Elm)	43	7,700	12,300	Fence posts, railway ties, sills for buildings, hubs for wheels, and agricultural implements.
Elm, Cork (Rock Elm)	45	8,500	15,100	Agricultural implements, frames for chairs, hubs of wheels, sills for buildings, etc.
Elm, Winged (Wahoo)	47	6,300	10,200	Hubs for wheel and handles for tools.
Eucalyptus (Blue Gum)	61-65		13,000	Rollers, paving blocks, shipbuilding, and carriage making.
Fir, White	24	5,600	7,000	Interior finish for houses, packing cases, wooden ware.
Fir, Yellow (Oregon Pine) (Red Fir)	32	7,500	12,500	All kinds of construction, railway ties, piles, and fuel.
Gum, Cotton	29	5,200	9,300	Wooden ware, broom handles, and vegetable boxes.

WOOD.	Weight. Pounds per Cubic Foot.	Pounds per Square Inch. Crushing Strength.	Pounds per Square Inch. Breaking Strength.	REPRESENTATIVE USES.
Gum, Sour.....	40	6,700	12,000	Hubs of wheels, rollers in glass factories, wharf piles, and ox yokes.
Gum, Sweet..... (Red Gum)	37	6,700	11,100	Outside finish for houses, cabinet making, paving blocks, wooden dishes, fruit boxes.
Hackberry.....	46	7,000	12,200	Fencing and cheap furniture.
Hemlock.....	26	5,500	10,200	Outside finish for houses.
Hickory..... (Pig Nut)	51	8,300	15,400	Similar to those of Shell Bark Hickory.
Hickory..... (Shell Bark)	50-52	9,000	17,000	Agricultural implements, carriages, wagons, baskets, etc
Honey Locust.....	42	7,200	13,100	Fence posts and rails, hubs of wheels, and construction.
Hornbeam..... (Blue Beech)	45	7,200	16,300	Levers, handles for tools, etc.
Ironwood..... (Hop Hornbeam)	51	7,800	16,000	Fence posts, handles for tools, and other small articles.
Laurel, Cal.....	40		11,400	Shipbuilding, cabinet work, crosstrees, etc.
Laurel, Madroña..... (Madroña)	43		12,000	Gunpowder, charcoal, and furniture.
Magnolia, Mountain. (Cucumber Tree)	29	6,000	9,400	Cabinet making, cheap furniture, broom handles, pump logs, etc.
Maple, Hard..... (Sugar Maple)	43	8,000	13,600	Furniture, cabinet making, interior finish of houses, shipbuilding, turnery, flooring, saddle trees, etc.
Maple, Oregon..... (Broad-leaved)	30	5,500	9,700	Furniture, broom handles, etc.
Maple, Red.....	38	6,600	11,500	Chairs, cabinet making, turnery, gun stocks, etc.
Maple, Soft.....	32	6,900	14,500	Furniture and flooring.
Mesquite.....	47	8,500	6,800	Flooring, turnery, and largely for wooden pulp.
Mesquite, Screw-pod	47	9,600	12,700	Furniture, fellies of wheels, paving blocks, and charcoal.
Mulberry.....	37	6,000	10,900	Fencing, cooperage, shipbuilding.
Oak, Burr.....	46	7,000	13,900	Same as White Oak.
Oak, Live..... (Virginia)	59	7,800	14,400	Occasionally for shipbuilding.
Oak, Live..... (Western)	53	7,800	18,000	Agricultural implements, wagons, etc.; most valuable oak of Pacific coast.
Oak, Post.....	52	7,000	12,400	Fencing, railway ties, fuel; also for cooperage, construction, etc.
Oak, Red.....	41	8,600	16,900	Construction, interior finish for houses, and furniture.
Oak, White.....	46	7,400	12,800	Shipbuilding, construction, carriages, agricultural implements, cabinet making, cooperage, etc.
Osage Orange.....	48	11,600	16,000	Fence posts, railway ties, wheel stocks, and paving blocks.
Pecan.....	45	6,200	8,200	Fuel and occasionally for wagons and agricultural implements.
Persimmon.....	49		12,400	Plane stocks, shoe lasts, etc.
Pine, Red..... (Norway Pine)	30	6,400	11,300	Used for all purposes of construction.
Pine, White.....	24	4,100	7,000	Construction, cabinet making, matches, etc.
Pine, Yellow or Spruce (Eastern Short-leaved)	38	6,800	14,700	One of the most valuable timbers for lumber.
Pine, Yellow or Southern..... (Long-leaved)	44	9,000	13,600	Masts, bridges, railway cars, etc.
Pine, Yellow..... (Western)	29	5,400	10,200	Largely for lumber; one of most important lumber trees of the West.

WOOD.	Weight. Pounds per Cubic Foot.	Pounds per Square Inch. Crushing Strength.	Pounds per Square Inch. Breaking Strength.	REPRESENTATIVE USES.
Plane Tree (Sycamore)	35	6,500	9,000	Furniture, interior finish for houses, tobacco boxes, ox yokes, and butchers' blocks.
Poplar (Cottonwood) (Big Cottonwood)	24	5,300	10,800	Interior finish for houses.
Poplar, Yellow (Tulip Tree) (Whitewood)	26	5,000	9,300	Construction, interior finish for houses, boatbuilding, shingles, brooms, and wooden ware.
Quaking Aspen	25	4,700	9,600	Flooring, turnery, and largely for wood pulp.
Redwood	26	6,000	8,500	Lumber, fence posts, railway ties, etc. Most valuable building material of Pacific coast.
Sassafras (Ague Tree)	31	5,500	8,500	Fence posts and rails, construction of light boats, ox yokes, and in cooperage.
Spruce, Black	28	5,800	10,600	Construction of houses, sounding boards, and paper pulp.
Spruce, White	25	4,900	12,900	Construction of buildings.
Tamarack (Larch)	39	7,900	12,800	Upper knees of small vessels, fence posts, telegraph poles, and railway ties.
Walnut, Black	38	8,300	12,100	Interior finish for houses, cabinet making, shipbuilding, etc.
Walnut, White (Butternut)	25	5,700	8,500	Interior finish for houses and furniture.
Willow	27-31	3,800	7,800	Fence posts and fuel.

USEFUL FOREIGN WOODS

WOOD.	Weight. Pounds per Cubic Foot.	Pounds per Sq. Inch. Breaking Strength.	REPRESENTATIVE USES.
Bamboo	19-25	27,400	Posts, poles, utensils, troughs, pipes, roofing, and paper.
Boxwood	64.8		Engraving and mathematical instruments.
Cedar, Spanish			Cigar boxes.
Ebony	74.2		Inlaid work, piano keys, etc.
Eucalyptus, Jarrah (Mahogany Gum)	65	8,900	Marine work, exposed positions, shipbuilding, bridge timbers, street paving.
Eucalyptus, Karrie (White Gum)	63	8,000	Construction, railway ties, piles, marine work, pavements, masts, lumber.
Greenheart	72	10,000	Ship keels, frames, rollers, turnery, beams, planks, piles, tops of fishing rods, veneers.
Mahogany, Spanish (Mexican Mahogany)	45	14,000	Cabinet work, veneers; formerly shipbuilding.
Mahogany, White (Prima Vera)			Cabinet work, furniture, veneers.
Oak, English	51	10,000	Shipbuilding, beams, cabinet work; formerly carpentry.
Pine, Northern	34	7,000	Carpentry, construction, planks, beams, masts, heavy timbers.
Rosewood	64.2		Furniture, piano cases, burial caskets, piano work.
Sandalwood	58		Rich furniture, fine carvings for small objects, as jewel boxes and fan handles.
Satinwood	59.9		Cabinet work and odd sets of furniture.
Teak (Indian Oak)	50	15,000	Furniture, shipbuilding, timbers, backing for armor plates.
Yew	46.1-50.5		Chairs, canes, and whips.

THE MOST IMPORTANT DAMS

Date	Name and Location	Height	Capacity in Million Gallons
1912	Assuan, Egypt	144	1,322,955
1937	Bonneville, Oregon-Wash.	170	.....
1936	Boulder, Arizona-Nevada	726	10,000,000
1934	Cauvery-Mettur, Br. India	215	5,978,750
1930	Conowingo, Maryland	105	107,000
1930	Coolidge, Ariz.	250	400,000
1932	Dneiper River, Russia	200	300,000
1916	Elephant Butte, N. Mex.-Texas	305	860,000
1939	Fort Peck, Missouri	242	6,350,000
1914	Gatun, Panama	105	1,370,000
1941	Grand Coulee, Wash.	553	3,131,000
1925	Harrodsburg, Ky.	275	100,000
1923	Hartebeestpoort, S. Africa	193	410,000
1937	Hetch Hetchy, California	430	1,466,000
1936	Norris, Tennessee	265	1,108,000
1930	Osage, Bagnell, Mo.	148	500,000
1932	Owyhee, Oregon	405	233,000
1922	Pathfinder, Neb.-Wyo.	218	350,000
1911	Roosevelt, Arizona	280	533,000
1910	Shoshone, Wyoming	328	144,000
1938	Tygart River, West Va.	232	106,600

IMPORTANT TUNNELS

Date	Description	Length in Miles
1930	Appenine, Italy	11.3
1884	Arlburg. Innsbruck, Austria	6.36
1898	Boston Subway. Boston, Mass.	3.1
1928	Cascade, Washington	7.79
1916	Connaught. Rogers Pass, B. C.	5.00
1890	Croton. N. Y. City water supply	31.00
1909	Gunnison. Montrose, Colo.	5.8
1924	Holland. N. Y. to N. J.	1.61
1876	Hoosac. N. Adams, Mass.	4.73
1911	Loetschberg. Switzerland	9.04
1900	London Tube. First Lond. Subway	3.5
1928	Moffat. West of Denver, Colo.	6.1
1871	Mont Cenis. Italy to France	7.98
1913	Mont D'Or. France to Switz.	3.75
1907	N. Y. Subways. First in City	24.3
1903	Otiro. Arthur's Pass, N. Zel.	5.37
1940	Pennsylvania turnpike, 7 bores	6.7
1927	Rove, France	4.5
1887	St. Gotthard. Italy to France	9.33
1886	Severn. England to Wales	4.33
1905	Simplon. Italy to Switz.	12.40
1928	Somport. France to Spain	4.1
1911	Transandine. Chile to Argentina	5.00

PRINCIPAL BRIDGES IN THE UNITED STATES.

Location	Date	Total Length or Channel Span	Details, Features
Albany, N. Y.	1890	360	First cantilever arch.
Arlington, D. C.	1932	216	Double leaf bascule, 4 concrete arches.
Bayonne, N. J.	1931	1,675	Exceeded Hell Gate, N. Y. and Sydney, Australia, as longest arch span.
Bear Mtn., N. Y.	1924	1,632	Suspension, six spans, highway.
Boone, Iowa	1882	2,685	Longest ry. viaduct when built; 185 feet above water line.
Boonville, Mo.	1901	408	6 span, with electric vertical lift, longest ry. lift in world; raises 30 feet in 70 sec.
Brooklyn—N. Y. City ("Brooklyn Bridge")	1882	1,596	3 spans, suspension, 135 feet clearance above water; total length, 5,189; cost $18,000,000.
Cabin John, D. C.	1864	220	For years longest masonry arch in world.
Cairo, Ills.	1889	523	Truss; 12 spans, 10,500 feet in all; once longest bridge in world.
Cairo, Ills.	1929	700	Steel truss cantilever on reenforced concrete piers; seven spans.
Carquinez, Calif.	1927	1,100	Cantilever, 5 span; steel viaduct approaches.
Castleton, N. Y.	1924	1,008	Ornamental spans, railway bridge.
Chicago, Ills. (16th Street)	1920	260	Modern bascule.
Cincinnati, Ohio	1867	1,057	Longest suspension, before Brooklyn Bridge; repaired 1898.
Delaware River, Pa.	1926	1,750	Suspension, Philadelphia to Camden, N. J., 2 spans, 6 lane roadway, 2 sidewalks; cost $36,000,000.
Detroit, Mich.	1930	1,850	Suspension span, longest in world, before George Washington Bridge, New York, 1932.
Dixville, Ky.	1910	864	Lune shaped, two hinged arch, 3 spans, double deck.
Eads, St. Louis, Mo.	1874	520	Cast steel tubing, 3 arches; built by J. B. Eads; cost $5,300,000.
Fort Snelling, Minn.	1927	304	Concrete arch, 13 two-rib spans, 5 trestle spans.
Geo. Washington, N. Y. C.	1932	3,500	Single span suspension to Fort Lee, N. J., 8,700 feet in all; cost $50,000,000.
Geo. Westinghouse, Pittsburgh, Pa.	1933	560	Longest concrete arch in America at time; 5 arches in all; 180 feet cut at one end.
Golden Gate, Cal. (San Francisco)	1937	4,500	Suspension, from city to main peninsula, 8,940 feet in all.
Hastings, Minn.	1895	375	Unusual spiral approach.
Hell Gate, N. Y. City	1915	977	Single arch span, reverse curve in top chord, like imperial Chinese bridge; 4 ry. tracks.
Jersey City, Newark, N. J.	1932	3 m.	Viaduct, most elaborate to date.
Kill von Kull, N. Y.	1932	1,675	Single span, high arch, longest of type; Staten Is. to N. J.
Kinzua, Pa.	1900	2,053	Ry. steel viaduct; replaced iron bridge of 1882.
Louisville, Ky.	1886	360	Suspension, central span, 2 cantilever arms, and 2 side spans.
Manhattan, N. Y. City	1909	1,470	Artistic suspension bridge, New York City to Long Island.
Memphis, Tenn.	1916	790	Cantilever, 5 span, highway and railway.
Metropolis, Ill.	1917	720	Simple truss, 7 spans, nickel-steel girders.
Mid-Hudson, N. Y.	1930	1,500	Suspension, across Hudson at Poughkeepsie, N. Y.
Mingo Junction, Ohio	1910	769	Cantilever, with two anchor arms.
Minneapolis, Minn. (Cappelen Memorial)	1923	400	Longest single concrete span in America to date.
Niagara, N. Y.	1898	840	Arch, 3 spans, elec. ry.
Oakland, Calif.	(1937)	1,700	Suspension, 22,720 feet in all; double deck, 6 lanes for fast, 4 for slow traffic; from San Francisco to Oakland Cost $70,000,000.
Pecos River, Tex.	1891	2,180	Central cantilever, 48 spans, 320 feet above water, for ry.; rebuilt, 1910.
Pittsburgh, Pa. (Smithfield St.)	1933	475	First use of aluminum, with asphalt floor; arch, saving 751 tons weight.

PRINCIPAL BRIDGES IN THE UNITED STATES—*Continued.*

Location	Date	Total Length or Channel Span	Details, Features
Portland, Ore. (St. John's)	1931	1,207	Suspension; over Willamette River; 2 side spans; longest twisted rope-strands in world.
Rockville, Pa.	1901	70	Early use of concrete fill for masonry; 48 spans, 70 ft. long each.
Poughkeepsie, N. Y.	1889	548	Fixed iron cantilever; 7 spans, for two-track railway; strengthened, 1906.
Royal Gorge, Col.	1930	400	Highest bridge above water, 1,050 feet.
San Antonio, Texas	1932	101	Longest one-span rigid frame bridge.
Sault Ste. Marie, Mich.	1913	330	Largest bascule to date; bell, twin type.
Sciotoville, O.	1918	775	Cantilever; two continuous spans of record length.
Tanana Ry., Alaska	1923	700	Single span of special steel.
Tunkhannock, Pa.	1915	180	Viaduct, 12 concrete arches, long held record for such types.
Wabasha, Wis.	1932	396	Unusual type of pontoon.
Wheeling, W. Va.	1862	1,010	Suspension; once longest span of any kind.
Williamsburg, N. Y. City	1904	1,600	First great suspension bridge to use steel instead of stone towers; 3 levels; 7,308 total length.

PRINCIPAL FOREIGN BRIDGES.

Location	Date	Length of Total or of Channel Span	Details, Features
Auckland, N. Z.	1910	3,203	Solid concrete; replaced light suspension.
Avignon, France	1188	108	Remarkably curved arches; 3,000 feet in all; ruined in 1680.
Ayr, Scotland ("Auld Brig o' Ayr")	1236	53	Four segmented arches, recently strengthened, and now used for passengers only. See "The Twa Brigs" by Robert Burns.
Benares, India	1889	356	Simple truss, 16 spans, lattice girders; total, 3,568 feet.
Berwick, Scotland	1928	361	Concrete, 3 main arches..
Blois, France	1724	68	Eleven eliptical arches.
Bonn, Germany	1895	614	Central braced arch, 4 smaller arches.
Bow, England	about 1110	66	Earliest recorded English stone bridge; replaced in 1838 by a stone arch.
Brest, France	1930	612	Concrete arch of novel design and construction; railway, and on upper deck a roadway.
Bridge of Sighs, Venice, Italy	1597	100	Arched, double passageway, between ducal palace and prison; hence name.
Broomielaw, Glasgow, Scotland	1836	58	Seven segmented stone arches; widened from 58 to 80 feet, 1899.
Budapesht, Hungary	1849	666	Chain suspension, 1 central and 2 side spans, 1,250 feet, connecting Buda and Pesht.
Chester, England	1833	200	Single stone arch, longest in England.
Coblenz, Germany	1864	348	First braced, wrought iron arch, with beautiful lattice ribs.
Cologne, Germany	1915	605	Suspension, replacing old pontoon.
Connel Ferry, Scotland	1903	524	Cantilever, with triangular anchor arms, and piers near shore.
Conway, Wales	1826	327	Suspension, harmonized with neighboring castle; improved, 1904.
Conway, Wales	1848	400	First tubular bridge finished.
Crumlin, Wales	1857	150	Tressle, 7 spans, in 2 parts, supported on hollow cast-iron columns, 210 feet high.
Curzon, India	1905	211	Double deck, 15 spans, 3,160 feet.
Dizful, Persia	about 350 B.C.	1,250	Pointed arches, early type; winding; recently repaired, and central span now modern suspension type.
Düsseldorf, Germany	1898	595	Arch, 6 spans, 2,094 feet.
Florence, Italy (Ponte Vecchio)	1362	105	Covered, wood, 3-span bridge, with jewelers shops on sides, and upper footwalk between.
Florence, Italy (Holy Trinity)	1570	96	Remarkable for beautiful curve and flat arch; made of white marble; total length, 322 feet.
Florianopolis, Brazil	1926	1,114	Chain suspension from isle to mainland.
Forth, Scotland	1890	1,710	Two continuous, equal spans and 2 shore arms; 5,330 in all.
Frankfort, Germany	1869	262	Chain suspension, part cantilever.
Fribourg, Switzerland	1834	870	Four iron wire cables, 2 added in 1880; for many years longest span in Europe.
Garabit, France	1885	541	Highest iron arch in world, 406 feet above water; 5 side spans.
Grand' Mere, Quebec	1929	948	Cable suspension.
Hagwilget, B. C.	1931	460	Longest government suspension to date in British Columbia.
Hawkesbury, Australia	1889	416	Seven equal, independent, fixed spans.
Hamburg, Germany	1909	678	Largest cantilever at time in Germany, over 2 canals, harbor basin, and Rhine, five spans, 2,085 feet.
Ironbridge, England (Coalbrookdale)	1779	100	Single arch, 5 cast-iron ribs, first of this material in England.
Kioto, Japan	very old	250	Two complete circles; vertical curved roadway.
Leithbridge, Canada	1909	5,327	Remarkable viaduct, 314 feet high.
Limerick, Ireland	1827	410	Unusual, 5 circles, segmented.
London Bridge (early)	1209	940	Covered gallery, lined with shops, 20 arches from 9 to 20 feet apart; replaced 1830.
London Bridge, "old."	1831	152	Five arches, 926 feet long; 130,000 people and 30,000 vehicles pass over it daily; widened from 53 to 65 feet in 1904.
London Bridge (new)	1894	200	Side spans suspended by braced chains; steel towers; opening span is in two leaves or bascules.
London, Blackfriars	1768	120	Nine elliptical arches, 995 feet in all; failed by scouring of foundations; replaced by cast iron bridge in 1865.
London, Waterloo	1817	120	Oldest of 14 London bridges now in service; 9 elliptical arches, piers on wooden piles.
London, Westminster	1862	120	Cast and wrought iron, 7 arches; replaced stone-arch bridge of 1750.
Lucerne, Switzerland (Spreuerbrücke)	1871	200	Picturesque, covered wood bridge.

PRINCIPAL FOREIGN BRIDGES—*Continued.*

Location	Date	Length of Total or of Channel Span	Details, Features
Luxemburg, France	1901	277	Largest stone arch when built.
Mannheim, Germany	1890	620	Artistic cantilever, replacing old suspension of 1845.
Menai Straits, Wales	1850	459	Called Britannia Bridge; 2 independent tubular-beam passageways, 4 spans.
Menai Straits, Wales	1826	580	Chain suspension bridge of central span, 2 side spans, and 7 stone arches at ends, 1,710 feet in all.
Miampimi, Mexico	1900	1,030	Cable suspension.
Montrose, Scotland	1931	216	Unusual cantilever of concrete, replacing older suspension bridge.
Narni, Italy	14 A.D.	142	One remaining arch from bridge built by Augustus Caesar; perhaps oldest Roman true bridge work; once 367 feet long.
Neuilly, France	1774	128	Five elliptical stone arches, 766 feet in all.
Newcastle-on-Tyne	1928	531	Largest arched bridge in England to date.
Nimes, France (Pont du Gard)	19 B.C.	885	Aqueduct, 3 stories with 6, 11, and 36 arches respectively; 160 feet high; in 1743 roadway added on one side, still used, but no water flows in top.
Oporto, Portugal (Luiz I)	1885	566	Unusual iron span construction; one roadway 160 feet above a second, which is 44 above water.
Paderno, Italy	1889	492	Single span, parabolic, open web type, 265 feet high, one of highest and longest in world.
Paris, France (Alexander III)	1900	353	Remarkable for width (131 feet), flat rise of arch, and decorations.
Paris, France (Pont Neuf)	1607	775	Oldest of bridges across the Seine; long arm, 7 spans; short arm, 5 spans.
Paris, France (Concord)	1791	102	Very slender piers, 10 feet thick; new section built in 1931 on each side.
Peiping, China	Unknown	100	Camel-back arch, said by some to be most beautiful stone bridge in world.
Peterboro, Ont.	1900	2,620	Pontoon bridge, fixed approach 913 feet; pontoon 2,620; draw 105.
Plauen, Germany	1903	295	Surpassed Luxemburg as longest stone arch in the world.
Prague, Czechoslovakia (Karlsbrucke)	1507	69	Ornamental, 16 arch spans; gate towers at ends; repaired 1895.
Quebec, Canada	1927	1,800	Cantilever; high tension steel used in suspended span; first forms wrecked, 1907 and 1916, during building.
Ratisbon, Germany	1135	53	Fifteen semi-circular arches, 994 feet.
Richmond, England	1774	.....	Most famous classical example of Georgian bridge architecture in England.
Rome, Italy (Pons Sublicius)	140	600	Wood, no nails or iron being used; on piles; ruins removed, 1879, for modern bridge.
Ronda, Spain	17th cent.	280	Viaduct, 460 feet high, with center opening 46 feet wide, and cross arch 230 feet above water.
Segovia, Spain	115	2,500	Aqueduct, 2 stories, 102 feet high; 109 arches built by Emperor Trajan of stone without mortar.
Shuster, Persia	350 B.C.	1,700	Brick, zig-zag bridge, with something like the Gothic arch; fairly well preserved, and said to be oldest bridge still used, next to Dizful.
Smyrna, Turkey	B.C.	40	Single span, pavement and parapets only two centuries old; rest very ancient; caravan bridge.
St. Esprit, France	1309	114	Twenty-six stone arches, 1,700 feet total.
Stockholm, Sweden	1934	585	Concrete arch.
Sukkur, India	1889	820	Cantilever, suspended part, 200 feet; side arms, 310 feet.
Sydney, Australia	1932	1,650	Steel arch, for heavy loads, similar to Kill von Kull bridge, N. Y. N. J. Cost $35,000,000.
Tempoalo, Mexico	1570	58	Small aqueduct, 68 semi-circular arches, 124 feet high.
Tokyo, Japan	1930	300	Suspension of unusual design, Japan-made.
Toulouse, France	1626	737	Foundations on bed rock; 7 arches; commenced in 1542.
Venice, Italy (Rialto)	1591	94	Ornamental bridge, with 24 shops on sides, and passage way between.
Verrugas, Peru	1872	575	First large wrought-iron viaduct over gorge, 256 feet high; once highest bridge in world; replaced by cantilever, 1889.
Villefranche, France	1904	220	Cantilever, with no usual suspended span; 520 feet total.
Viaur, France	1898	721	Steel arch cantilever; 2 side spans; total, 1,509 feet; once second longest in world of type.
Vienna, Austria	1828	334	First use of steel for bridging; replaced by 225-foot span, 1860; and this by iron arch, 1885. The 1860 bridge was first railway suspension in Europe.
Wandipore, Tibet	1650	112	Wood cantilever with wooden pegs and no iron; three roadways.
Wearmouth, England	1796	236	Single iron arch; strengthened, 1859.
Weston, Ont.	1860	650	Plate girders on high masonry piers.
Zambezi, Africa	1935		33 spans, 2 mi. in length. Longest railroad viaduct in world. Cost $10,000,000.

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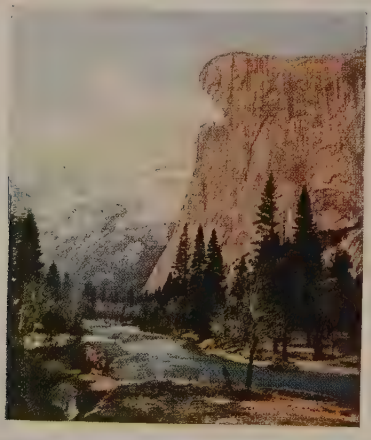
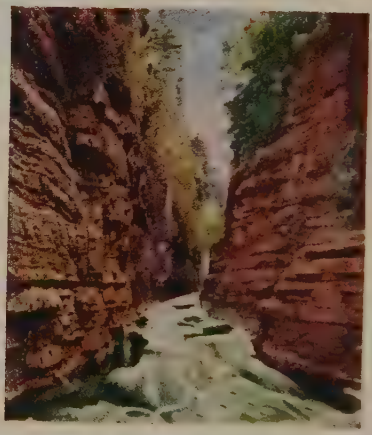
SCENIC AMERICA—III

Mt. Sir Donald, Selkirk Mts.
Three Brothers, Yosemite Valley
Mt. Shasta, California

Mt. Hood, Oregon
Mt. Assiniboine, Alberta
Pike's Peak and Gateway Garden of the Gods, Colo.

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SCENIC AMERICA—IV

Lake Louise, Banff, Canada
El Capitan, Yosemite Valley
Grand Canyon, Arizona
Delaware Water Gap, Penna.

Mt. Popocatepetl, Mexico
Ausable Chasm, New York
Mt. Rainier, Washington
Palisades, Hudson River, New York

NATIONAL PARKS AND MONUMENTS OF THE UNITED STATES.

The United States possesses more scenery of natural beauty, more diversified and more inspiring than probably any other country. We have mountains of great height and beauty, lakes of vivid color and unknown depths, glaciers pouring out their streams and covering the scarred backs of the mountains with a kind of picturesqueness, canyons of dizzy depths, forests of height, age and verdure not to be found anywhere else in the world and waterfalls of such misty softness that they are not surpassed even by the beauty of the Rhine or the valleys of the Alps. All this and more can be found in the National Parks that have been set aside for public use as the playgrounds of America.

These parks will be given in chronological order of their creation by Congress. **Hot Springs Reservation.** This is located in Middle Arkansas, near the picturesque slopes of the Ozarks and created to preserve the areas of medicinal springs for public use at a nominal cost. It is a health and recreation center of 1½ miles square, set aside by Congress in 1832, and contains some 46 hot springs. Probably the most celebrated and best known of our Parks is the **Yellowstone** in northwestern Wyoming, with an area of 3,348 square miles, created in 1872. It is best known for the geysers (there are more here than in the rest of the world put together). In addition to the geysers there is also a great wild animal reservation and an unrivalled wilderness of scenic beauty.

In 1890 **Yosemite National Park** was created in middle-eastern California with an area of 1,125 square miles and known far and wide for its incomparable waterfalls,—the Yosemite Falls, with two drops of 1,430 feet and 320 feet respectively, Vernal Falls with a drop of 320 feet, Bridal Veil of 620 feet and Nevada Falls of 594 feet—, its huge rocks cut by the glacier, Cathedral rock rising 2,600 feet, El Capitan 3,600 or Half Dome 5,000 feet, and its small glaciers, crystal lakes and everlasting snows.

Sequoia and General Grant National Parks, were both acquired in 1890 for the purpose of preserving our big trees. These parks contain the biggest living thing and the oldest living thing alive in the so-called General Sherman and General Grant trees, the first with a height of 279.9 feet and the other of about the same height, but probably older. The General Grant tree is 3,500 years old, 1,500 years old when Christ was a youth and a sapling when the pyramids of Egypt were being built. The Sequoia Park contains some odd 1,156,000 trees of this kind only on a smaller scale. Four hours from Tacoma to the southeast, we find **Mount Rainier National Park** created in 1899, with an area of 324 square miles. The Park encloses Mount Rainier, an extinct volcano, that towers three miles above the level of the sea and carries on its back 38 glaciers. The glacial flowers that grow in the small valleys, left free by the melting snow and ice, are a sight that no tourist ever fails to thrill over. **Crater Lake,** the lake of mystery, formed by the complete falling into itself of the giant volcano, Mount Mazama, forming one of the most unique phenomena of the world, has been made into a national park, **Crater Lake National Park,** to perpetuate this natural monument for future generations. It was created in 1902, has an area of 249 square miles, and is located in southwest Oregon. In order to preserve the traces of our prehistoric ancestors the **Mesa Verde National Park** was set aside in 1906 in southwestern Colorado, with an area of 77 square miles. Here among the Mesas or isolated plateaus can be found the traces of the old cliff dwellers, their homes, temples, pottery and tools. This makes it a park of special educational and scientific value.

The famous curative springs of southern Oklahoma were preserved for public use with the creation of the **Platt National Park** in 1906 with an area of 1½ square miles. Bought originally from the Indians for the copper industry and then redesignated when no copper was found, this is the history of the **Glacier National Park,** in northwestern Montana close to the Canadian boundary line and known far and wide for its rugged scenery, massive precipices, glacial lakes and many glaciers. We have in one place a triple divide, waters flowing into Hudson Bay, the Gulf of Mexico and the Pacific Ocean. Within this area of 1,534 square miles can be found 60 glaciers advancing down the sides of the mountains.

The Rocky Mountain National Park, a short four hour run north of Denver, was set aside to preserve a part of the Rockies in all their natural beauty without any possible defacement by man. The area is about 358 square miles and is one of the most rugged parts of the mountains.

Mount McKinley National Park was created in 1917 enclosing the great Mount McKinley, the loftiest mountain in America, towering 20,300 feet above the tide, the very climax of the Alaskan range. This area is in the interior of Alaska, but the government is building railroads to make it accessible. It has an area of 2,200 square miles. Two recent creations, are the **Zion National Park** in southwest Utah, an area of 120 square miles, enclosing great colored cliffs and **The Grand Canyon National Park** in northern Arizona, probably the most impressive and awe-inspiring spectacle in this country. Due to the erosion, the Colorado has cut this great gorge—, "like a gigantic statement seemingly too great for even nature to make all in one mighty word." The colors of the rocks and cliffs probably will remain forever indelibly impressed upon the visitor's mind.

Certain parks of lesser importance are the **Hawaii National Park,** containing three volcanoes, Kilauea, Mauna Loa and Mauna Kea, **Lassen Park** in northern California housing the only active volcanoes in the United States, **Wind Cave Park** in the Black Hills of South Dakota, **Casa Granda Ruin** and **Sullys Hill Park** near Devil's Lake, South Dakota.

National monuments are parks on a smaller scale with no appropriation from Congress for maintenance. Among our better known ones are **The Mukutuweap,** canyons of a brilliant hue in southwest Utah, the **Muir Woods** of 300 acres of superb red-woods outside San Francisco,

the **Devil's Tower,** a mass of igneous rock, towering 1,200 feet above the Black Hills of eastern Wyoming, **National Bridges,** five of them in San Juan County, Utah, the **Chaco Canyon** in New Mexico, noted for its Indian relics, **Colorado Monument** of highly colored monoliths, **Lewis and Clark Caverns,** huge limestone caves in Montana, **Rainbow Bridge,** a natural bridge on the Navajo Indian Reservations in southern Utah, the **Papago Saquaro,** tropical desert flora east of Phoenix, the **El Morro Monument,** and an eroded sandstone rock in the shape of a castle, the **Petrified Forests** of Arizona, the **Sitka Monument** one mile from the steamboat dock at Sitka, Alaska, held for historical shrine. **Tumocacori** in Arizona and **Gran Quivira** in New Mexico, both to preserve old Spanish Mission Churches and the **Navajo National Monument,** enclosing three prehistoric puebloes or cliff dwellings. The **Dinosaur** National Monument in Utah containing deposits of fossil animal remains, **Katmai,** in Alaska, including "Valley of Ten Thousand Smokes," **Lehman Caves** in Nevada, **Walnut Canyon** in Arizona and **Wheeler** National Monument in Colorado all have much scientific worth as well as being highly interesting to tourists.

State Parks.

In addition to the national parks and monuments there are over 200 state parks with a total of nearly 180,000 acres. The states having the largest park acreage are as follows: New York leads with 26 parks, having an acreage of 35,500; Minnesota, 12 parks, 35,068 acres; Idaho, has but two parks, is third in amount of acreage with 19,814 acres. On the other hand Pennsylvania has the largest number of parks of any state, being 36 in number, but with an acreage of only 4,381. The other leading states may be mentioned as Michigan with 26 parks, 16,882 acres; Wisconsin with 8 parks, 15,000 acres; Massachusetts with 8 parks, 13,000 acres; and California with 2 parks and 11,400 acres. They are noted either for their historical associations or their scenic beauty.

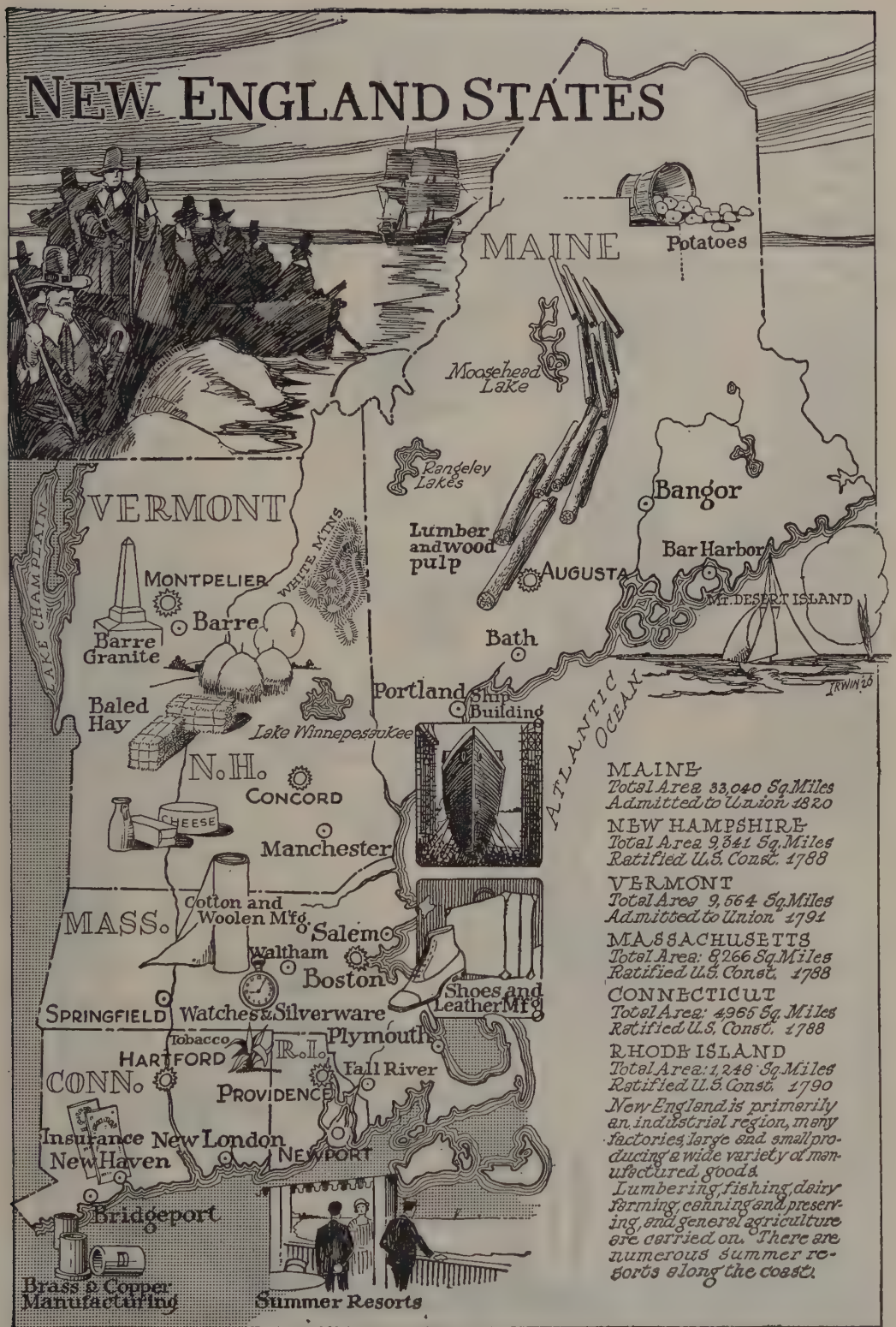
National Forests.

The ruthless destruction of the forests of the United States with its resulting consequences in floods, and with the rising importance of electro-hydro power and Western irrigation which could only be successfully carried on by conservation of our national forests thereby preserving the source of water supply, led Congress, in 1891, to empower the President to create forest preserves. In accordance with the new law, President Harrison created the Yellowstone Park reserve, the first of our national forests.

The total number is now about one hundred and fifty, with approximately 157 million acres distributed over twenty-nine states. These are equal in area to the following states: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and West Virginia. They are under control of the forest service of the department of agriculture. Forest conservation was given great publicity and impetus during the Ballinger-Pinchot affair of Taft's administration. The importance of retaining water for electro-hydro power and irrigation has not only stimulated the government to the importance of this question, but private individuals and corporations have taken great interest so that hundreds of thousands of seedlings are now being planted yearly by large corporations.

State Forests.

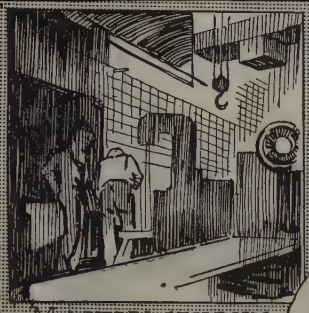
In addition to the National Forests, there are almost 6,000,000 acres set aside by the various states in forest reservation. New York State leads with a total of nearly two million acres in two reserves; Pennsylvania second, with twenty reserves and nearly one and a quarter million acres; New Hampshire with thirty-five reserves has only sixteen thousand acres; Massachusetts has nineteen reserves and forty-five thousand acres, while Michigan with the same number of reserves has an acreage of 341,611. Other states and their acreage are as follows: Arizona, 31,132; Connecticut, 6,529; Idaho, 685,000; Indiana, 2,700; Louisiana, 6,240; Maryland, 3,550; Montana, 566,000; Minnesota, 381,000; New Jersey, 16,504; New Mexico, 170,000; North Carolina, 300 acres; Ohio, 19,721; South Dakota, 61,440; Vermont, 30,000; Wisconsin, 300,000.


NEW ENGLAND STATES
MAINE
Potatoes
Moosehead Lake
Rangeley Lakes
Bangor
Lumber and wood pulp
Bar Harbor
AUGUSTA
MT. DESERT ISLAND
VERMONT
LAKE CHAMPLAIN
WHITE MTNS
MONTPELIER
Barre
Barre Granite
Bath
Baled Hay
Portland
Ship Building
Lake Winnepesaukee
ATLANTIC Ocean
IRWIN '26
N.H.
CONCORD
CHEESE
Manchester
MASS.
Cotton and Woolen Mfg.
Salem
Waltham
Boston
Shoes and Leather Mfg.
SPRINGFIELD
Watches & Silverware
Plymouth
Tobacco
HARTFORD
R.I.
Fall River
CONN.
PROVIDENCE
Insurance
New London
New Haven
NEWPORT
Bridgeport
Brass & Copper Manufacturing
Summer Resorts
MAINE
Total Area 33,040 Sq. Miles
Admitted to Union 1820
NEW HAMPSHIRE
Total Area 9,341 Sq. Miles
Ratified U.S. Const. 1788
VERMONT
Total Area 9,564 Sq. Miles
Admitted to Union 1791
MASSACHUSETTS
Total Area: 8,266 Sq. Miles
Ratified U.S. Const. 1788
CONNECTICUT
Total Area: 4,965 Sq. Miles
Ratified U.S. Const. 1788
RHODE ISLAND
Total Area: 1,248 Sq. Miles
Ratified U.S. Const. 1790
New England is primarily an industrial region, many factories, large and small producing a wide variety of manufactured goods. Lumbering, fishing, dairy farming, canning and preserving, and general agriculture are carried on. There are numerous summer resorts along the coast.

NEW YORK
Total Area 49204 Sq. Mi.
Adopted Fed. Con. 1788
New York is first in the Union in manufactures commerce and population.
The manufactures include machinery of all kinds, machine tools, motor cars, foundry equipment, fire arms, electrical goods, cutlery &c.
There are shipyards oil refineries and textile mills, foundries, locomotive works and numerous other industries.
Agriculture is extensively engaged in dairy farming and fruit growing.
Large vineyards are situated in the lake regions.
New York City is the largest port in the U.S. for transatlantic shipping.
West Point
Southern Continuation of N.Y.
Hudson River
Connecticut
Long Island Sound
New York City
Brooklyn
Long Island
Atlantic Ocean
Statue of Liberty
St. Lawrence River
Adirondack Mountains
Lake George
Dairy Cattle & Products
Apples
Lake Ontario
Niagara Falls
Rochester
Oneida Lake
Syracuse
Utica
Radio & things Electrical
Buffalo
Canandeigua Lake
Cayuga Lake
Schenectady
Albany
Lake Erie
Vineyards
Seneca Lake
Lake Chautauqua
Transatlantic Shipping
Hudson River
Agriculture
Manufacturing

NEW JERSEY

Total Area 8,224 Sq. Mi. Adopted Federal Constitution 1788.
The manufacturing interests are of great diversity and importance. Machinery of all kinds, ship-building, oil refining, silk, woolen and carpet mills. Thread mills, soap making, pottery, tile glass ware and other products. Farming, poultry and truck growing. Fish, oysters and clams are abundant. The coast line resorts entertain millions of visitors annually.



MANUFACTURING

Silk Mills

Paterson

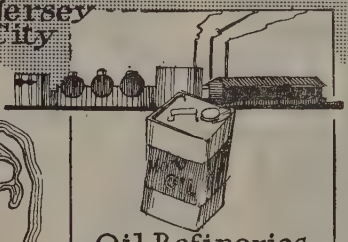
Thread

Newark

Jersey City

Elizabeth

Soap



Oil Refineries

DELAWARE RIVER

SHIP BUILDING

TRENTON

Potteries

Camden

GLASS MANUFACTURE

Fruit and Produce

Oysters and Clams

IRWIN 26

Atlantic City

Ocean City

DELAWARE BAY

Wildwood

Cape May

MARYLAND and DELAWARE

Hagerstown

Potomac River

Men's Clothing

Baltimore

Wilmington

Dover

Explosives & Ammunition

Annapolis

Cumberland

Washington

District of Columbia

Chesapeake Bay

Fruit and Produce

Atlantic Ocean

Dome of the Capitol at Washington

The Canning Industry

Transatlantic Shipping

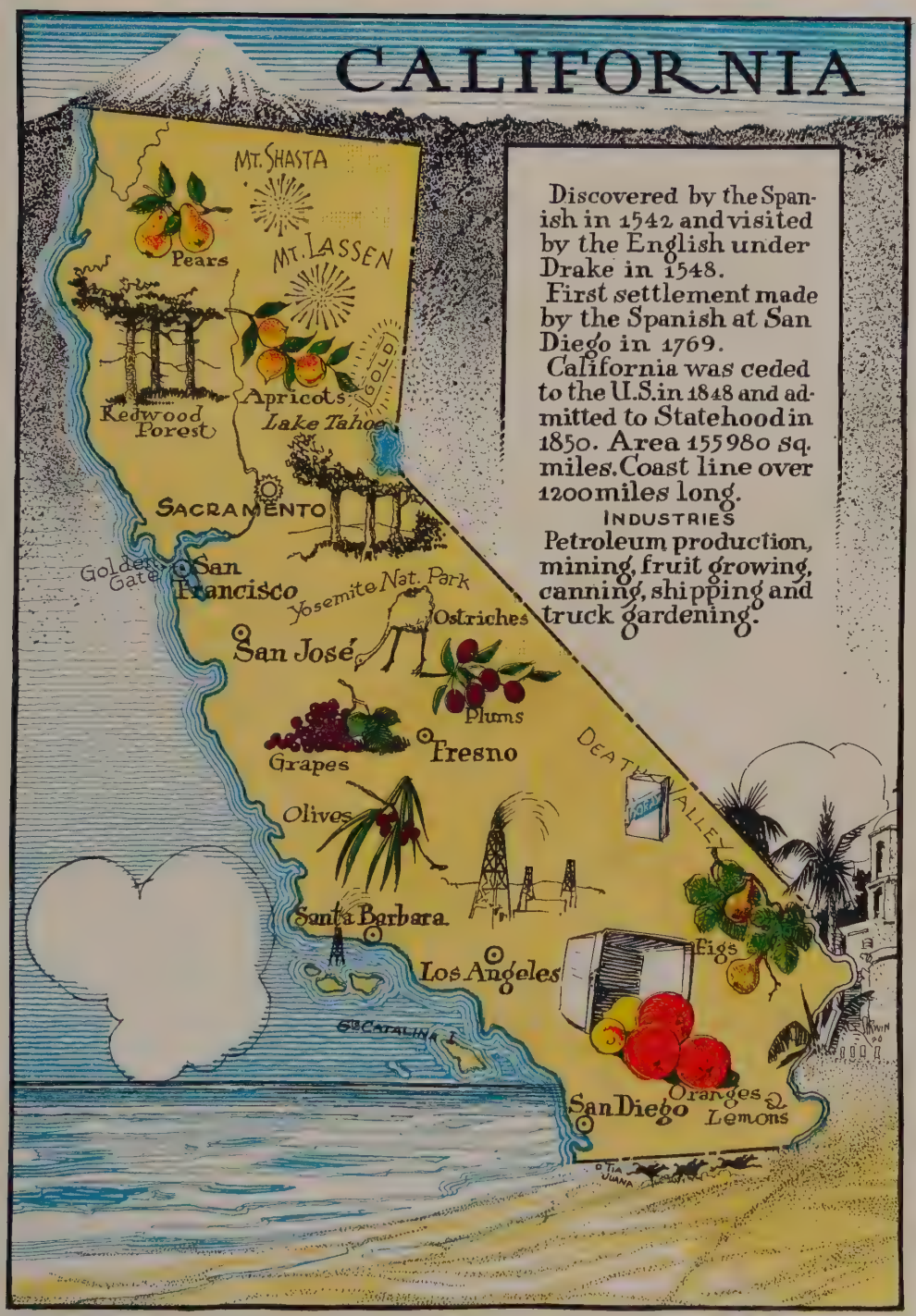
Fish and Oysters

MARYLAND

Total Area: 12,327 Sq. Miles
Adopted Fed. Constitution in 1788.
Canning factories, manufacture of copper, tin and sheet iron products. Men's clothing
Fisheries and oyster beds.
Farming and truck growing.

DELAWARE

Total Area: 2,370 Sq. Miles
First to adopt Fed. Con.
Farming and fruit growing, trucking, fish and oysters.
Largest powder & munition factories in the world.
Important ship yards.



Drawn by Selden Irwin

CALIFORNIA

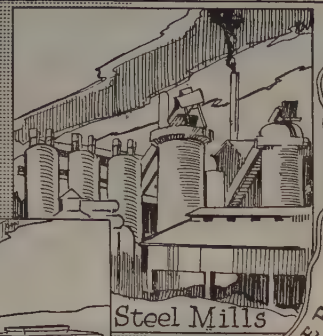
PENNSYLVANIA
LAKE ERIE
Erie
Rail Road Yards
Dairy Products
Agriculture
Scranton
Anthracite Coal Mining
Wilkes Barre
DELAWARE RIVER
Steel Mills
Pittsburgh
Altoona
Manufacturing
Johnstown
Harrisburg
Tobacco Cultivation
Philadelphia
Allentown
CEMENT
Petroleum Production
Bituminous Coal
Locomotives
Independence Hall
Shipping
Pennsylvania was one of the original thirteen colonies and was part of the territory granted in the year 1681 to Wm Penn, who colonized it.
Philadelphia was the capitol of the federated colonies during the Revolutionary war, and was the scene of many of the events which made National history.
Area: 45,126 sq. miles.
Pennsylvania has extensive and diversified manufactures and is first in the production of coal and coke, building stone & other minerals.
The state stands high in agriculture, stock-raising and dairying.
Drawn by Selden Irwin

PENNSYLVANIA

WEST VIRGINIA & VIRGINIA

Total Area: 24,170 Sq. Mi. Admitted to U. 1863. Iron and steel mills, pottery, tile and glass ware. Bituminous coal mining, petroleum and natural gas. There are numerous manufacturing establishments throughout the state. Farming & sheep raising is carried on. Lumber, especially the hard woods, is produced.

Total Area 42,627 Sq. Miles. Ratified U.S. Constitution 1788. Coal, iron, copper, gypsum, zinc and manganese are the principal minerals. Agriculture is carried on in all parts of the state. Corn, wheat, tobacco and peanuts are grown and the cultivation of apples has become a large industry. Fish and oysters are marketed. Ship yards at Norfolk and Newport News.



Steel Mills

Glass Factories

Coal Mines

Wheeling

Parkersburg

OHIO RIVER

WEST VIRGINIA

POTOMAC RIVER

Apples

Alexandria

Manassas

Washington's birthplace

Fredericksburg

Spotsylvania

CHESAPEAKE BAY

ATLANTIC OCEAN

CHARLESTON

Huntington

Petroleum

Soft Coal

Roanoke

VIRGINIA

RICHMOND

Cigarettes

Petersburg

Peanuts

Tobacco

Norfolk

OHIO

Total Area: 41040 Sq. Miles
Admitted to Union 1803

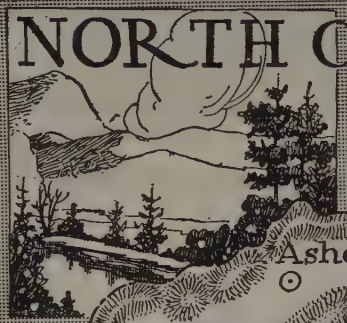
Agriculture, manufacturing and coal mining, production of iron ore, cement, lime, salt, clay and sand-stone.

Second in manufacture of motor cars and first in the rubber industry.

Glass ware, china, tile and brick making give employment to thousands. The iron and steel mills are among the largest in the country and a great variety of manufactured goods are produced throughout the state.

Sheep raising and breeding of dairy cattle is extensively carried on.

NORTH CAROLINA and SOUTH CAROLINA



Asheville

Tobacco

Winston Salem

Grapes

Raleigh

Mica

Pamlico Sound

Atlantic Ocean

Charlotte

Spartanburg

Anderson

Cotton

Wilmington

Columbia

Sugar Cane

Peanuts

Savannah River

Charleston

Tobacco Cultivation

Making the warp - Cotton Mill

NORTH CAROLINA

Total Area: 52426 Square Miles
Adopted Nat'l. Constitution 1789.
Agriculture, cotton and tobacco cultivation, fruit and grapes. Some minerals, particularly mica. Atlantic coast fisheries supply a large market.

SOUTH CAROLINA

Total Area: 30,989 Square Miles.
Ratified U.S. Constitution 1788
Cultivation of cotton, tobacco, sugar cane and peanuts. There are large cotton textile mills and the manufacture of cotton seed products, cane-sugar and molasses. Lumber, turpentine & naval stores.

KENTUCKY and TENNESSEE

Covington

OHIO RIVER

Louisville

FRANKFORT

KENTUCKY

Tobacco

Petroleum

Mammoth Cave

CUMBERLAND RIVER

Paducah

MISSISSIPPI RIVER

TENNESSEE

NASHVILLE

Coal

Knoxville

Lumber & Millwork

Memphis

Iron and Steel manufacture

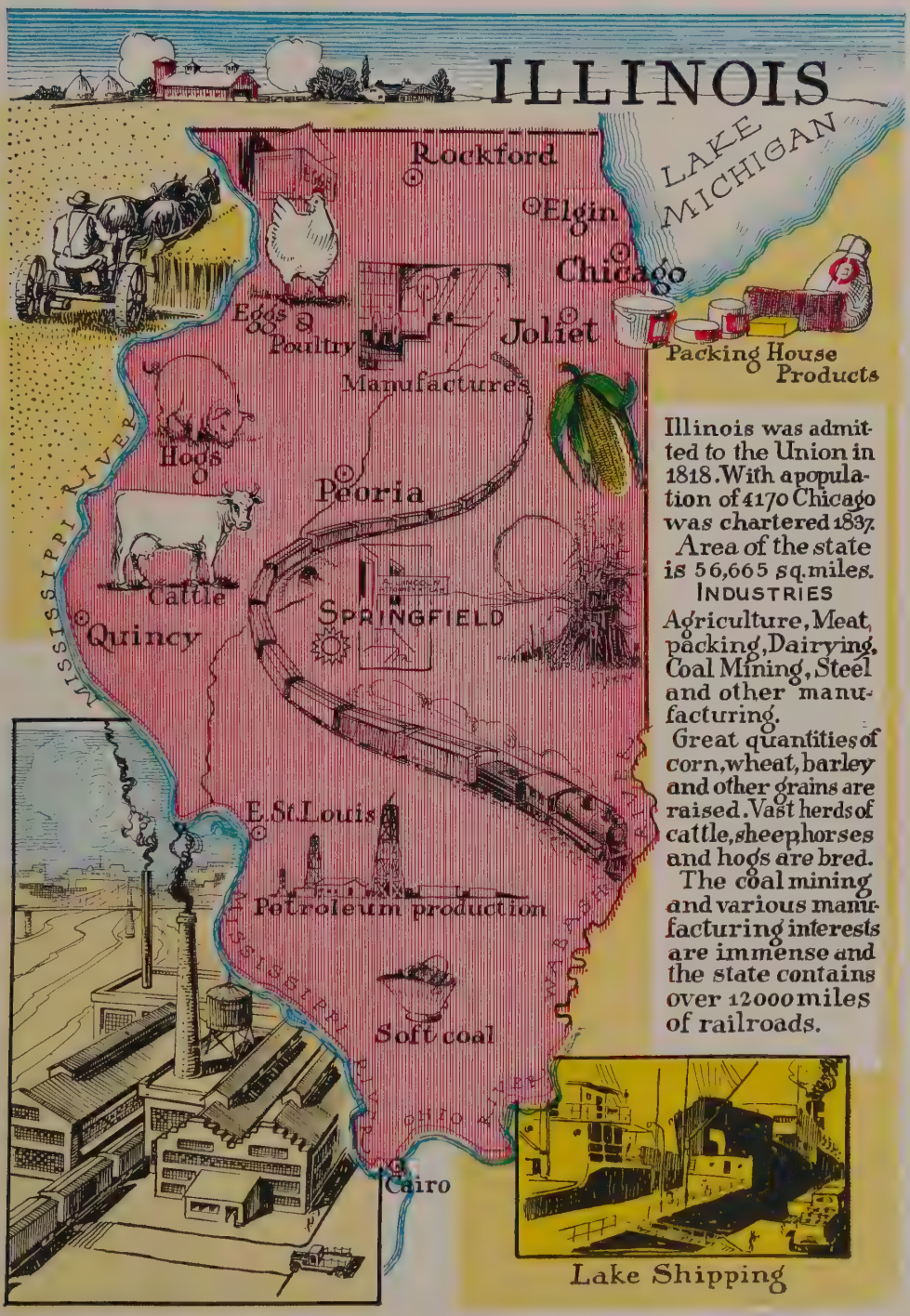
Chattanooga

KENTUCKY

Total Area 40,598 Sq. Miles.
Admitted to Union 1792
Carriage and wagon works, harness and leather manufacture, cordage and the lumber industry.
Horses, hogs, sheep and other livestock are bred. Hemp is an important crop. There are marble and lime-stone quarries, coal, petroleum and large deposits of sulphur.

TENNESSEE

Total Area: 42,022 Sq. Miles
Admitted to Union 1796
The manufacture of iron and steel, production of bituminous coal and lumbering are the chief industries.
The natural products and crops are similar to those of Kentucky, and some cotton is grown.


ILLINOIS
LAKE MICHIGAN
Rockford
Elgin
Chicago
Joliet
Eggs & Poultry
Manufactures
Packing House Products
Hogs
Peoria
Cattle
SPRINGFIELD
Quincy
MISSISSIPPI RIVER
E.St.Louis
Petroleum production
Soft coal
Cairo
Lake Shipping
Illinois was admitted to the Union in 1818. With a population of 4170 Chicago was chartered 1837.
Area of the state is 56,665 sq. miles.
INDUSTRIES
Agriculture, Meat packing, Dairying, Coal Mining, Steel and other manufacturing.
Great quantities of corn, wheat, barley and other grains are raised. Vast herds of cattle, sheep, horses and hogs are bred.
The coal mining and various manufacturing interests are immense and the state contains over 12000 miles of railroads.

Drawn by Selden Irwin

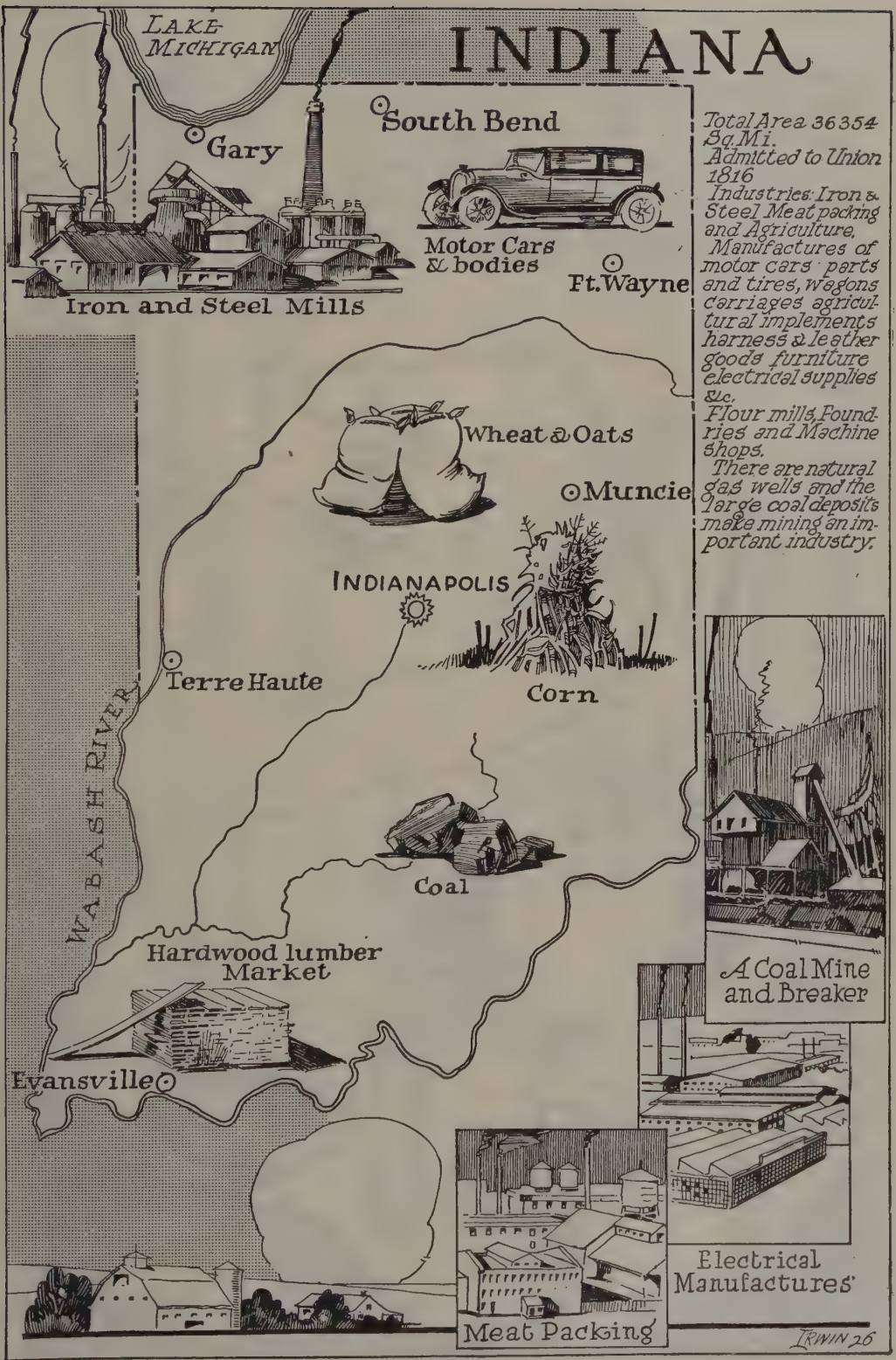
ILLINOIS

FLORIDA
Jacksonville
TALLAHASSEE
Cotton
St. Augustine
GATEWAY AT ST. AUGUSTINE
Sponge Fishing
(WESTERN END OF FLORIDA)
Pine Apple
L. George
Daytona
L. Apopka
Phosphate Rock
Pensacola
Winter Resort Hotels
Tampa
L. Kissimmee
Lemons
Oranges
Lake Okeechobee
Palm Beach
Ft. Myers
CANALS
Grapefruit
Miami
Key West
Dry Tortugas
FLORIDA was discovered in 1513 by PONCE de LEON who came ashore near the southern end of the peninsula and made explorations.
DeNARVEZ followed in 1528.
De SOTA entered Tampa Bay in 1539 and MENENDEZ founded St. Augustine in 1565.
Florida was ceded to the U.S. by Spain in 1819 and admitted to the Union in 1845.
Area: 58,666 sq. miles
Peaches, pears and cotton are grown in the north; pineapples tobacco, mangoes and guavas in the central parts; oranges, lemons, grapes and grapefruit in the south. There are large canneries, and lumbering, fishing and sponge fishing are important industries.

Drawn by Selden Irwin

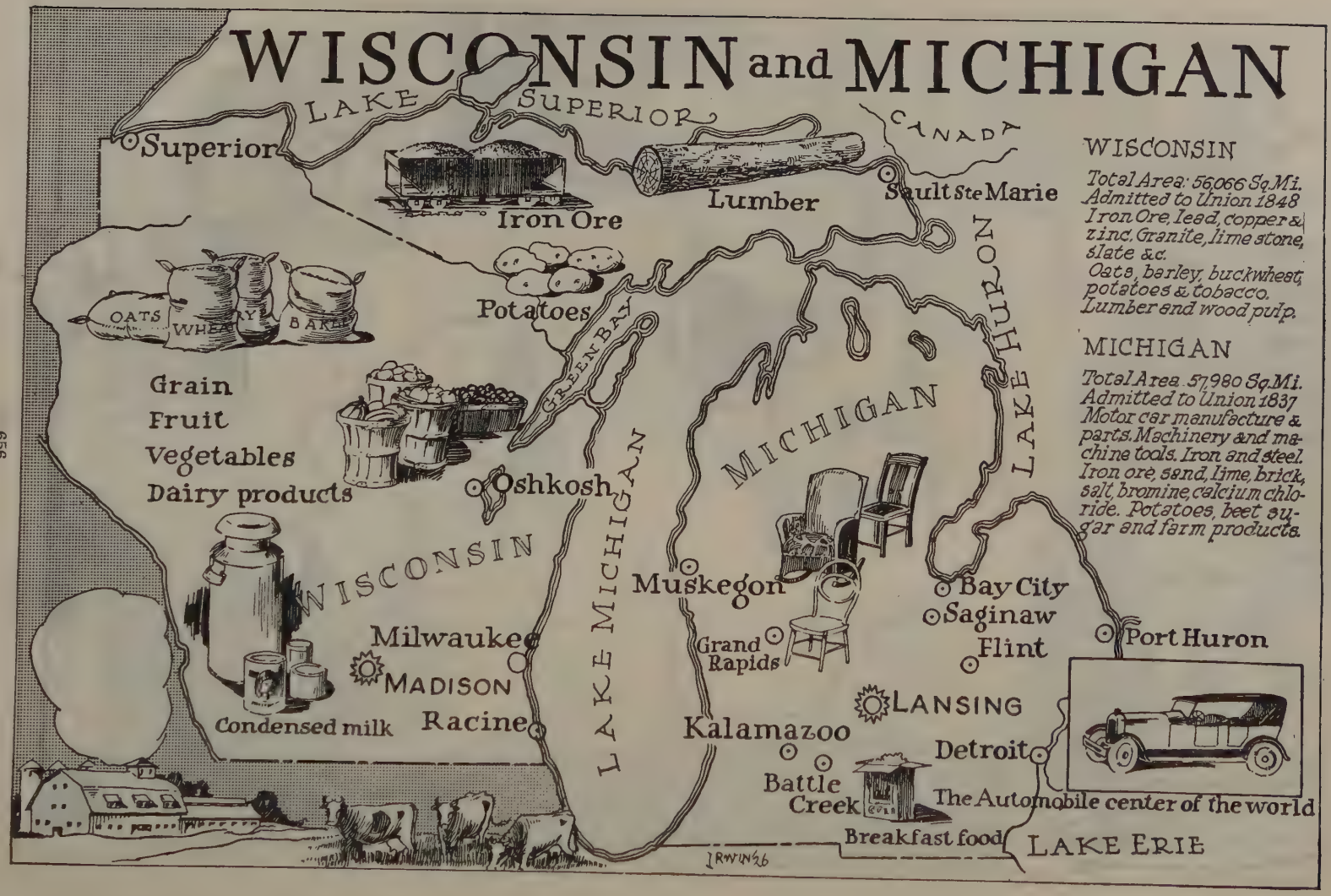
FLORIDA

INDIANA



Total Area 36354 Sq. Mi.
Admitted to Union 1816
Industries: Iron & Steel Meat packing and Agriculture.
Manufactures of motor cars parts and tires, wagons carriages agricultural implements harness & leather goods furniture electrical supplies &c.
Flour mills, Foundries and Machine shops.
There are natural gas wells and the large coal deposits make mining an important industry.

WISCONSIN and MICHIGAN



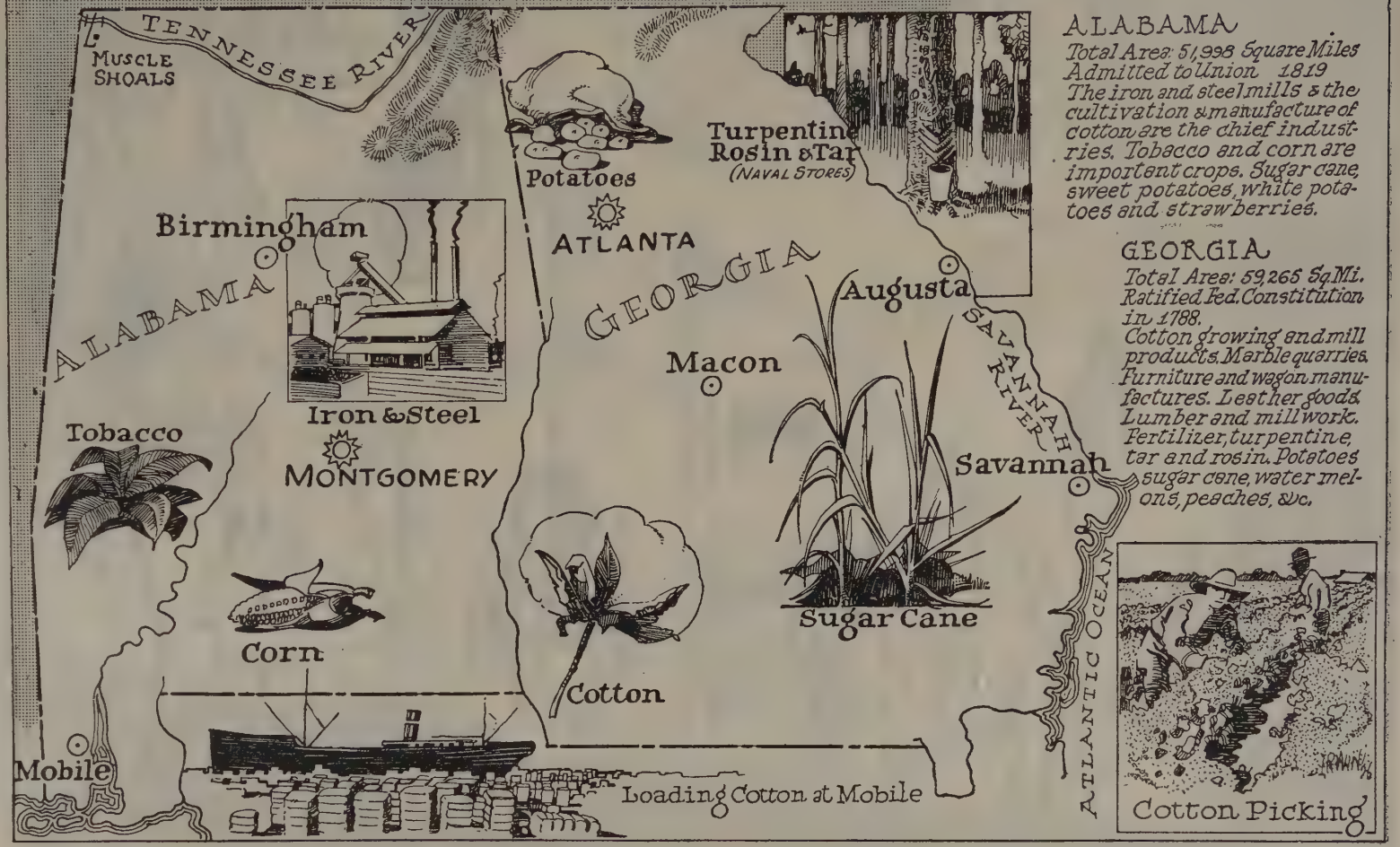
WISCONSIN

Total Area: 56,066 Sq. Mi.
Admitted to Union 1848
Iron Ore, lead, copper & zinc, Granite, lime stone, slate &c.
Oats, barley, buckwheat, potatoes & tobacco.
Lumber and wood pulp.

MICHIGAN

Total Area 57,980 Sq. Mi.
Admitted to Union 1837
Motor car manufacture & parts. Machinery and machine tools. Iron and steel. Iron ore, sand, lime, brick, salt, bromine, calcium chloride. Potatoes, beet sugar and farm products.

ALABAMA and GEORGIA

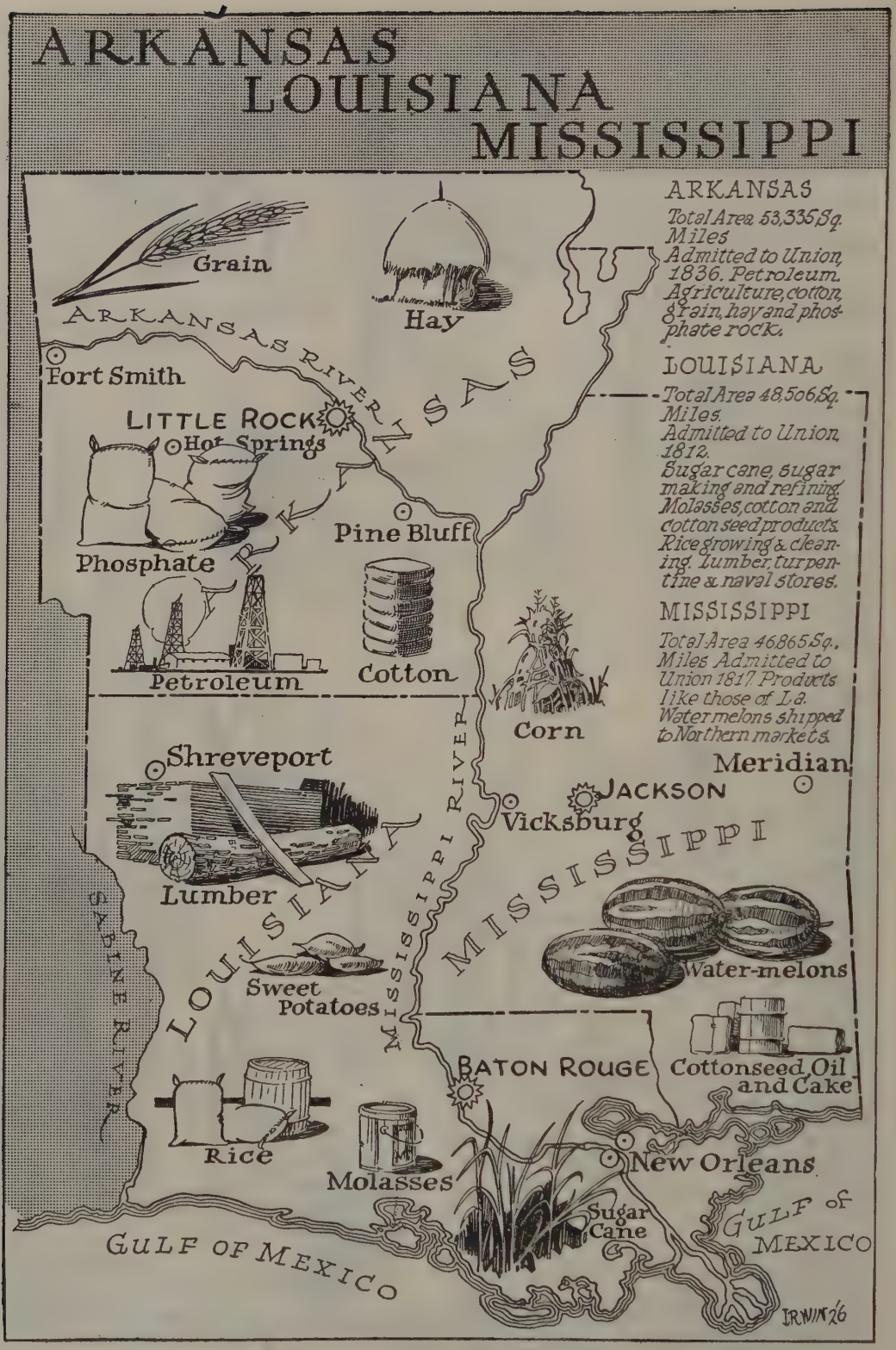


ALABAMA

Total Area: 51,998 Square Miles
Admitted to Union 1819
The iron and steel mills & the cultivation & manufacture of cotton are the chief industries. Tobacco and corn are important crops. Sugar cane, sweet potatoes, white potatoes and strawberries.

GEORGIA

Total Area: 59,265 Sq. Mi.
Ratified Fed. Constitution in 1788.
Cotton growing and mill products. Marble quarries. Furniture and wagon manufactures. Leather goods. Lumber and mill work. Fertilizer, turpentine, tar and rosin. Potatoes sugar cane, water melons, peaches, &c.


ARKANSAS
LOUISIANA
MISSISSIPPI
Grain
Hay
ARKANSAS RIVER
ARKANSAS
Fort Smith
LITTLE ROCK
Hot Springs
Phosphate
Pine Bluff
Petroleum
Cotton
Corn
ARKANSAS
Total Area 53,335 Sq. Miles
Admitted to Union, 1836. Petroleum. Agriculture, cotton, grain, hay and phosphate rock.
LOUISIANA
Total Area 48,506 Sq. Miles.
Admitted to Union, 1812.
Sugar cane, sugar making and refining. Molasses, cotton and cotton seed products. Rice growing & cleaning. Lumber, turpentine & naval stores.
MISSISSIPPI
Total Area 46865 Sq., Miles Admitted to Union 1817. Products like those of La. Water melons shipped to Northern markets.
Shreveport
Meridian
JACKSON
Vicksburg
MISSISSIPPI RIVER
LOUISIANA
MISSISSIPPI
Lumber
Water-melons
SABINE RIVER
Sweet Potatoes
BATON ROUGE
Cottonseed Oil and Cake
Rice
Molasses
New Orleans
Sugar Cane
GULF OF MEXICO
GULF OF MEXICO
IRWIN '26

MINNESOTA and IOWA

Lake of the Woods

CANADA

Red Lake

MINNESOTA

Lumber

Iron Ore

LAKE SUPERIOR

LAKE FISH

Duluth

Mille Lacs

Wheat

Grain Elevator at Duluth

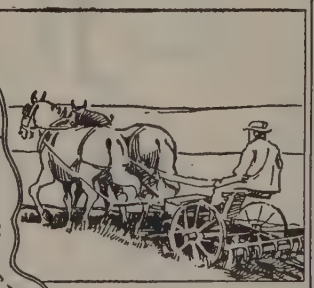
MINNESOTA

Total Area 84682 Square Miles
Admitted to Union 1858
Red hematite iron ore, granite, lumber and flour mills. Wheat and other grain. Farming and stock raising. Lake fisheries.

Minneapolis ST. PAUL

Flour Mills

MISSISSIPPI RIVER



Sioux City

Corn

Cabbage

Dubuque

IOWA

Cedar Rapids

DES MOINES

MISSOURI RIVER

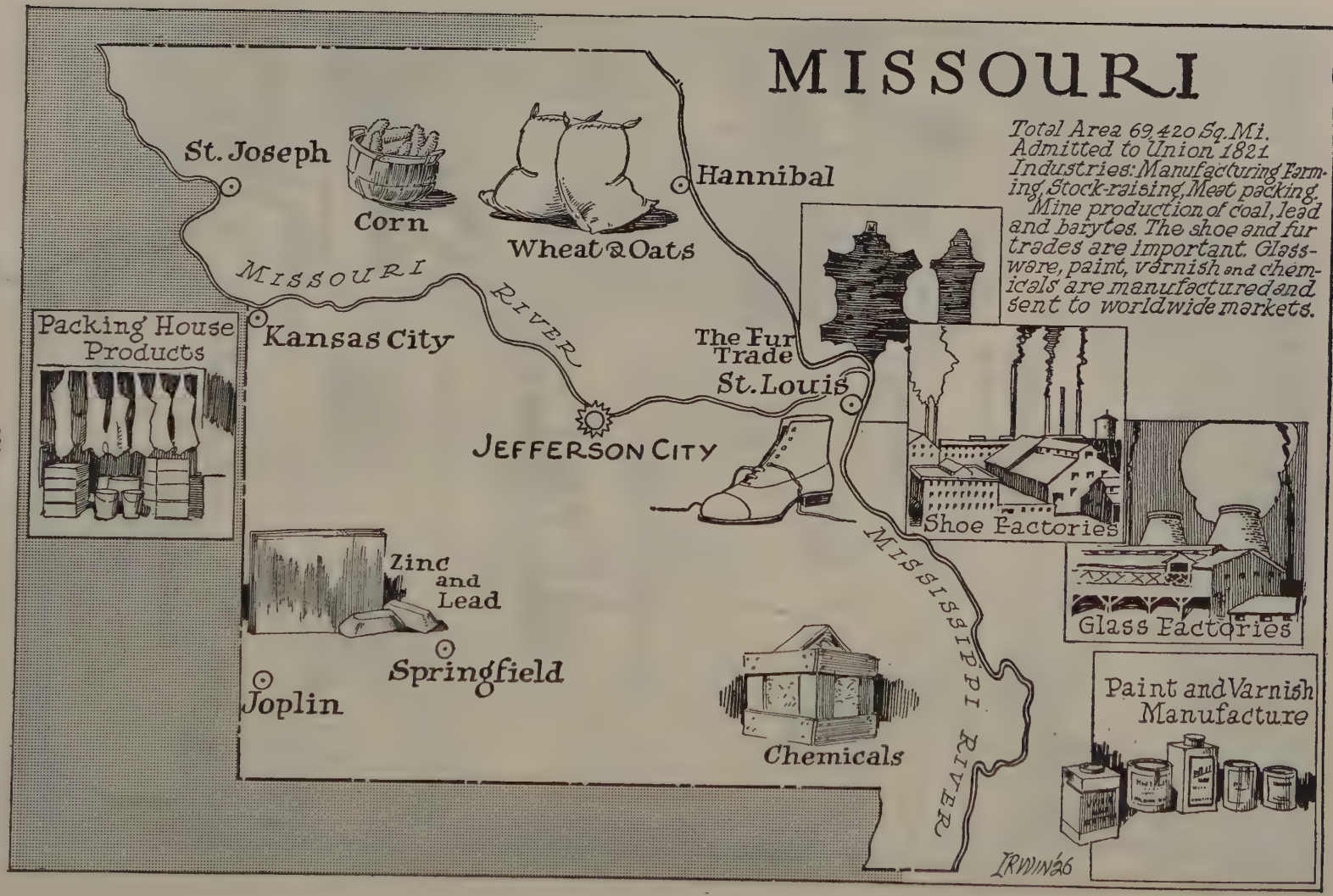
Potatoes

Burlington

IRWIN '26

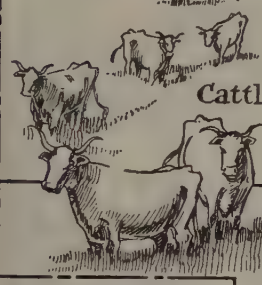
IOWA

Area: 56,147 Sq. Mi.
Admit. to U. 1846
Agriculture, live stock. Lumber & planing mills. Manufacture of harness and saddlery. Grain, potatoes, cabbage and some fruit.
Corn is the largest grain crop.

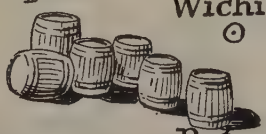

MISSOURI
Total Area 69,420 Sq. Mi.
Admitted to Union 1821
Industries: Manufacturing Farming, Stock-raising, Meat packing.
Mine production of coal, lead and barytes. The shoe and fur trades are important. Glassware, paint, varnish and chemicals are manufactured and sent to worldwide markets.
St. Joseph
Corn
Wheat & Oats
Hannibal
MISSOURI RIVER
Kansas City
Packing House Products
The Fur Trade
St. Louis
JEFFERSON CITY
Shoe Factories
Glass Factories
Zinc and Lead
Springfield
Joplin
Chemicals
MISSISSIPPI RIVER
Paint and Varnish Manufacture
IRWIN'26

KANSAS and OKLAHOMA

Wheat and Corn



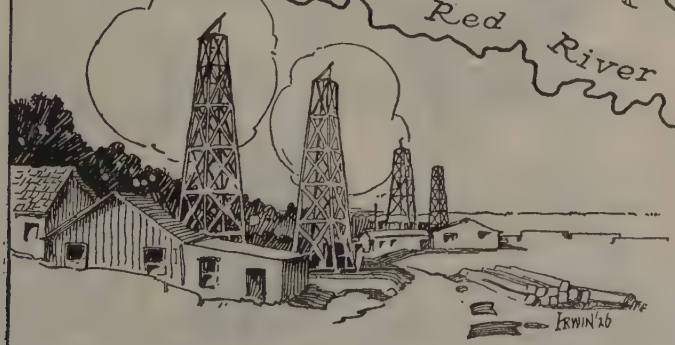
Cattle Raising



Coal

Petroleum

Wheat and Corn



Cotton

Meat Packing

Hutchinson

Topeka

Kansas City

Missouri River

KANSAS

Wichita

Arkansas River

Tulsa

Guthrie

OKLAHOMA CITY

Muskogee

McAlester

Washita River

OKLAHOMA

Red River

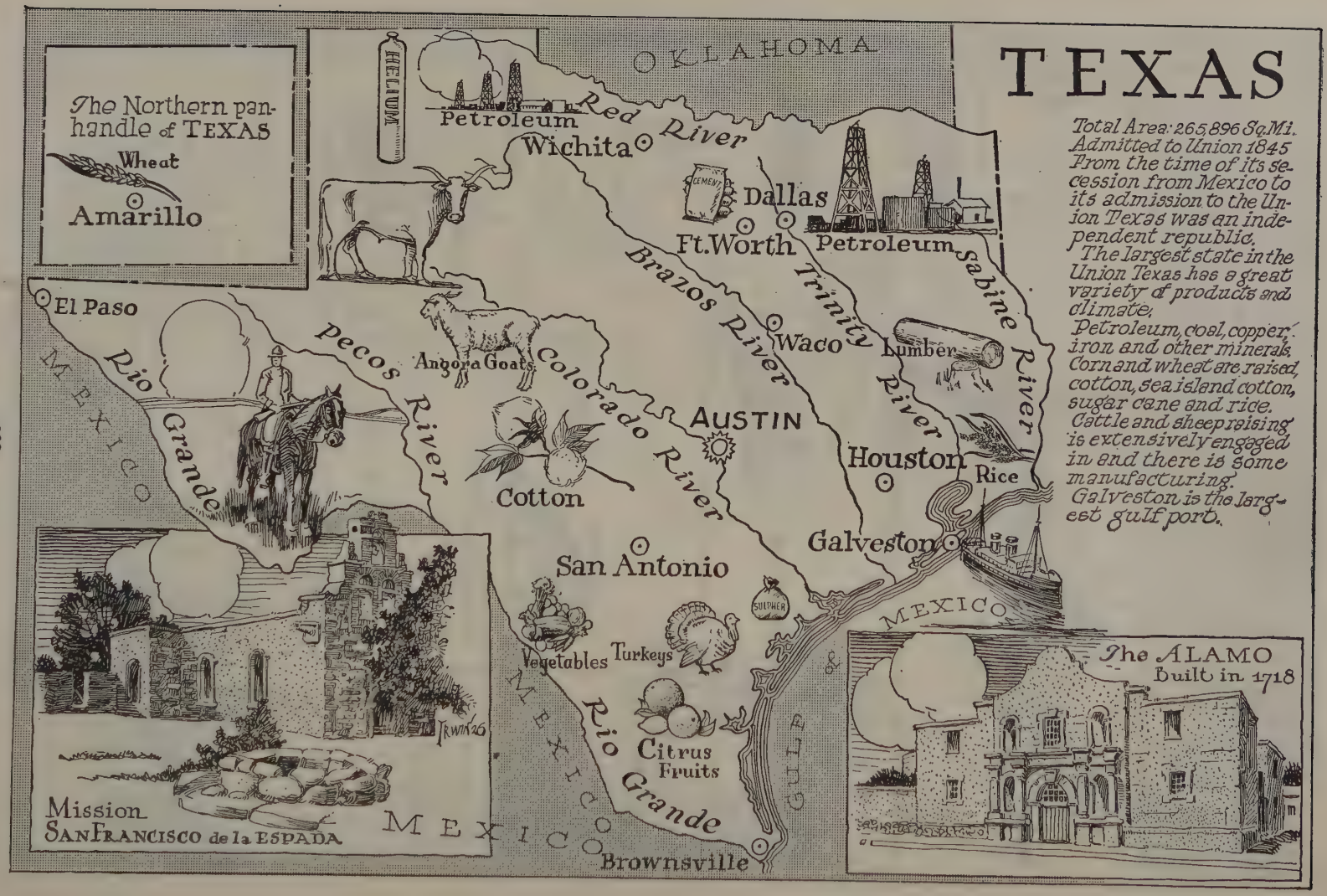
KANSAS

Total Area: 82,158 Sq. Miles. Admitted to Union 1861

Farming, meat packing, flour mills. Corn, wheat & other cereals. Coal mines, petroleum and extensive salt beds.

OKLAHOMA

Total Area: 70,057 Sq. Miles. Admitted to Union 1907. Corn, wheat, cotton, alfalfa hay and broom-corn. Coal, petroleum, gypsum, salt and asphaltum. Cattle raising & beef packing.


TEXAS
Total Area: 265,896 Sq.Mi.
Admitted to Union 1845
From the time of its secession from Mexico to its admission to the Union Texas was an independent republic.
The largest state in the Union Texas has a great variety of products and climate.
Petroleum, coal, copper, iron and other minerals.
Corn and wheat are raised, cotton, sea island cotton, sugar cane and rice.
Cattle and sheep raising is extensively engaged in and there is some manufacturing.
Galveston is the largest gulf port.
The Northern panhandle of TEXAS
Wheat
Amarillo
OKLAHOMA
HELIUM
Petroleum
Wichita
Red River
CEMENT
Dallas
Ft. Worth
Petroleum
Brazos River
Trinity River
Sabine River
El Paso
Rio Grande
MEXICO
Pecos River
Angora Goats
Colorado River
Waco
Lumber
AUSTIN
Houston
Rice
Cotton
Galveston
San Antonio
SULPHER
Vegetables
Turkeys
Citrus Fruits
Rio Grande
MEXICO
GULF
Brownsville
MEXICO
The ALAMO
Built in 1718
Mission
SAN FRANCISCO de la ESPADA
IRWIN '26

NORTH DAKOTA SOUTH DAKOTA and NEBRASKA

Baled Hay

Grand Forks

RED RIVER

N. DAKOTA
Total Area 70,837 Sq. Mi. Admitted to Union 1889. Agriculture, mining. Cattle raising. Cement & building stone, salt, baled hay and dairy products.

NORTH DAKOTA

Fargo

Bismarck

MISSOURI RIVER

SOUTH DAKOTA

A gold mine at Lead, S.D.

Total Area 77,615 Sq. Mi. Admitted to Union 1889. Cereals and dairy farms. Gold and other minerals, building stone, mica, clay products & mineral water.

Shaded areas indicate Indian Reservations

PIERRE

Sioux Falls

Yankton

NEBRASKA

Corn & Wheat

Packing House Products

Omaha

PLATTE RIVER

LINCOLN

Hastings

NEBRASKA *Total Area 77,520 Sq. Miles Admitted to Union 1867. Farming, grain and cattle raising. Meat packing. Potash deposits.*

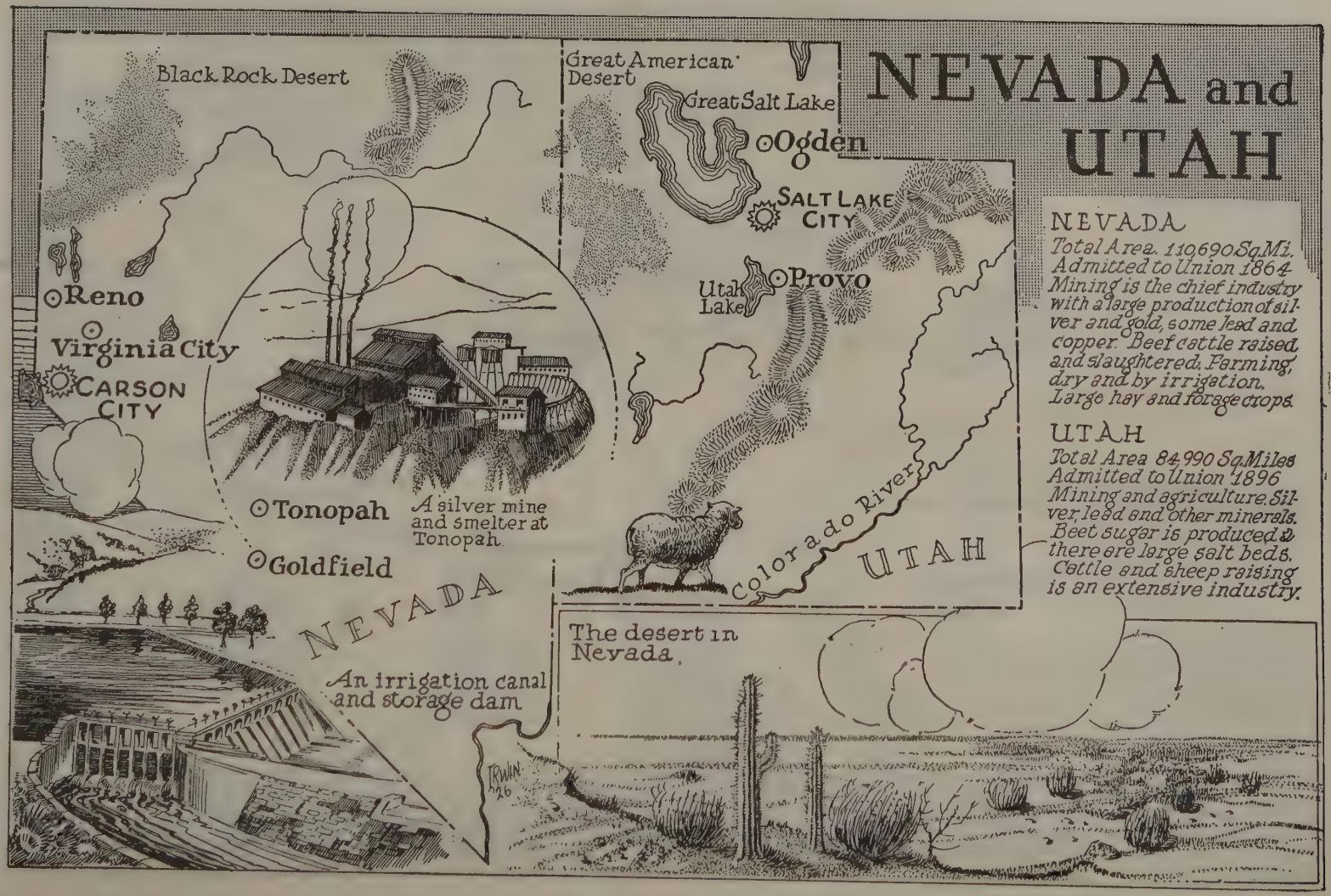
IRWIN '26

WYOMING & COLORADO

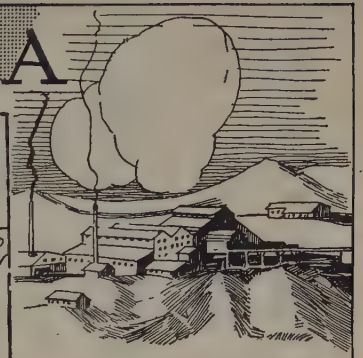
Area 97,914 Sq. Miles. (This does not include Yellowstone National Park)
Admitted to Union 1890.
Agriculture, mining and stock raising
Petroleum is an important product.
Alfalfa is grown in great quantities.

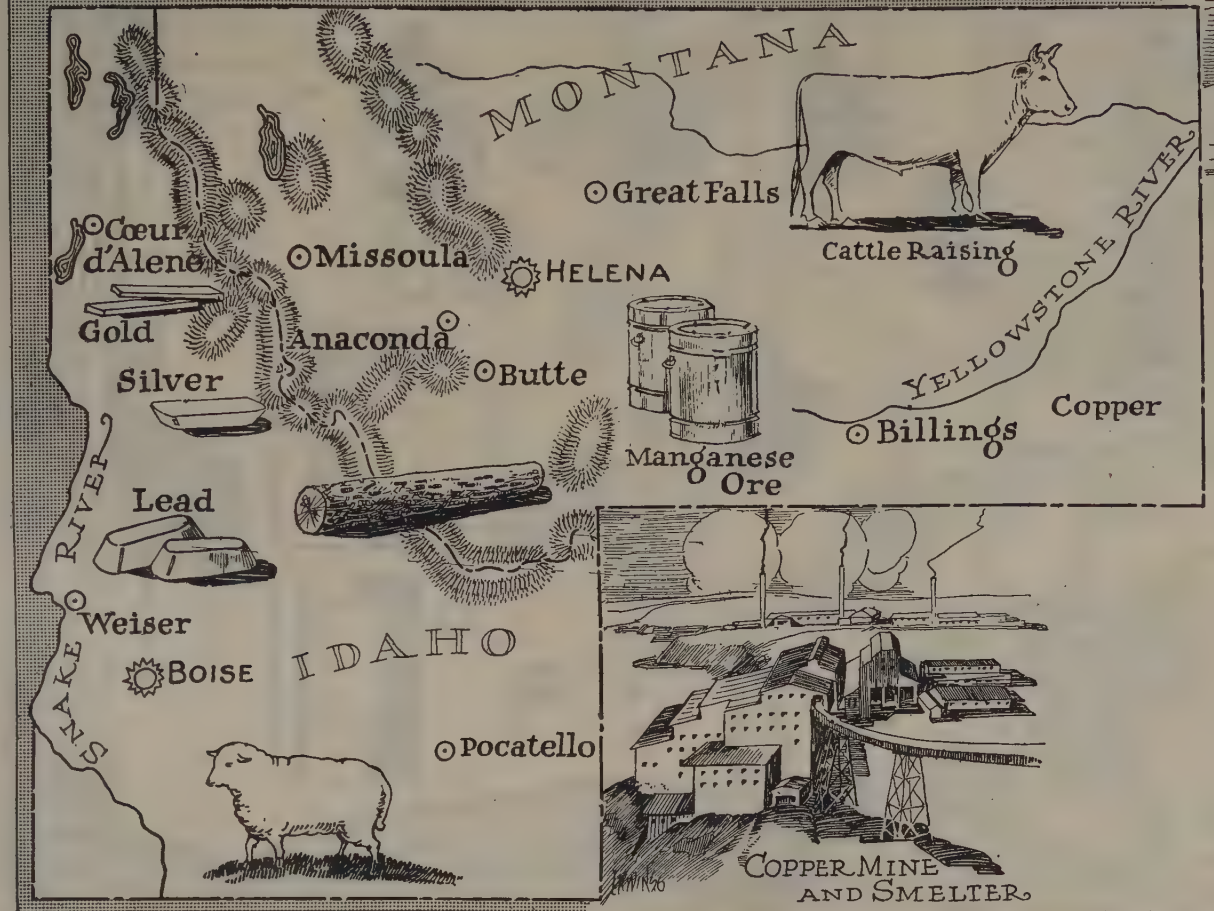
Total Area: 103,948 Square Miles.
Admitted to Union 1876
Meat packing, canning & preserving.
Flour mills and mining. The mineral wealth is great, including, coal, oil, gold silver, copper, lead, zinc, tungsten & radium.

ARIZONA and NEW MEXICO
Grand Canyon
Colorado River
Prescott
Beef Cattle
PHŒNIX
Gila River
Distributing ditch of Arizona irrigating system
Tucson
Silver City
Bisbee
ARIZONA
Shaded areas represent Indian Reservations.
Copper
Albuquerque
SANTA FÉ
NEW MEXICO
Rio Grande
Roswell
An Indian Pueblo
IRWIN '26
ARIZONA
Total Area: 113956 Sq. Miles
Admitted to Union 1912
Silver, gold and lead mines
Beef cattle and sheep raising. Extensive irrigation.
NEW MEXICO
Total Area: 122634 Sq. Mi.
Admitted to Union 1912
Mineral deposits similar to those of Arizona, also copper, salt, plumbago & gypsum. Cattle & sheep.


NEVADA and UTAH
Black Rock Desert
Great American Desert
Great Salt Lake
Ogden
Salt Lake City
Utah Lake
Provo
Reno
Virginia City
Carson City
Tonopah
Goldfield
A silver mine and smelter at Tonopah.
NEVADA
Colorado River
UTAH
NEVADA
Total Area. 110690 Sq.Mi.
Admitted to Union 1864
Mining is the chief industry with a large production of silver and gold, some lead and copper. Beef cattle raised and slaughtered. Farming, dry and by irrigation. Large hay and forage crops.
UTAH
Total Area 84990 Sq.Miles
Admitted to Union 1896
Mining and agriculture. Silver, lead and other minerals. Beet sugar is produced & there are large salt beds. Cattle and sheep raising is an extensive industry.
An irrigation canal and storage dam
The desert in Nevada.
IRWIN '26

IDAHO and MONTANA





IDAHO

Total Area: 83888 Sq. Mi. Admitted to Union 1890. Industries: Production of minerals, chiefly gold, silver and lead. Lumber and Flour milling. Farming and stock-raising are important, particularly the breeding of sheep.

MONTANA

Total Area: 146,997 Sq. Mi. Admitted to Union 1889 Industries: Mining and milling of gold, silver, lead copper and zinc. Rich coal fields, limestone, sandstone, granite and slate. First in production of manganese. Some tungsten is found. Sheep and wool production leads the entire United States.

WASHINGTON & OREGON
Total Area 69,127 Sq. Miles
Admitted to Union 1889
Coal, iron ore and large tracts of timber. Lumber & wood pulp. Wheat, fruit and hops are grown. Salmon fishing and canning are large industries.
Total Area: 96,699 Sq. Miles
Admitted to Union 1859
Corn, wheat and potatoes. Grapes, prunes, apples and other fruits. Dairy cattle and sheep raising. Lumber mills, salmon fisheries & meat packing.
Mount Rainier
A log train
Everett
Seattle
WASHINGTON
Spokane
Apples
Tacoma
OLYMPIA
MT. RAINIER
Wheat
Salmon Canning
Astoria
COLUMBIA RIVER
Portland
MT. HOOD
SALEM
OREGON
PACIFIC OCEAN
SNAKE RIVER
Apples
Peaches
Pears
Prunes
Apricots
Sheep raising
Dairy cattle
CRATER LAKE NAT'L PARK
Klamath Lake
Shaded areas are Indian reservations
IRWIN '26
A LUMBER MILL

AFRICA
ASIA
AUSTRALIA
EUROPE
NORTH AMERICA
SOUTH AMERICA
ISLANDS

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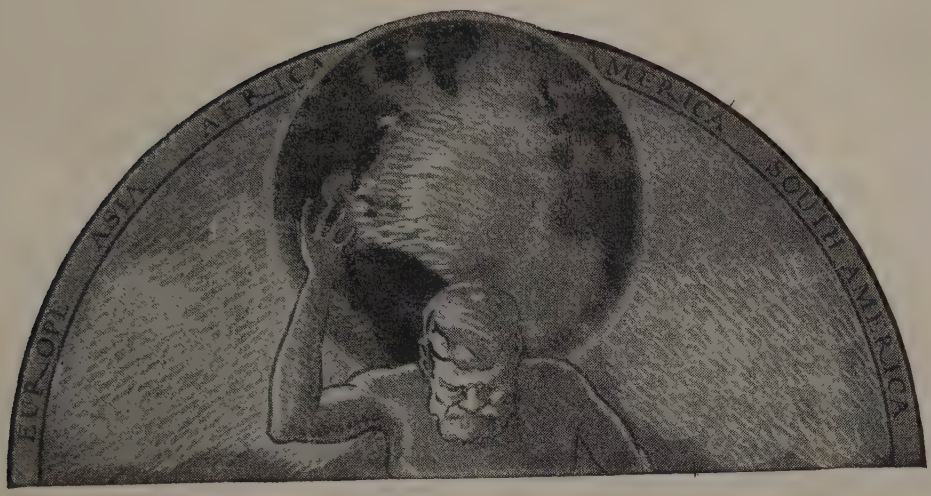
CANALS AND WATERWAYS

1 Panama Canal. 2 Gaillard Cut, Panama Canal. 3 Suez Canal at Ismalia. 4 Culebra Cut, Panama Canal. 5 Chesapeake & Ohio Canal at Georgetown, D. C. (Original survey made by George Washington). 6 Cape Cod Canal, Massachusetts. 7 Erie Barge Canal. 8 Kiel Canal, Germany. 9 Soo Canal, Sault Ste. Marie, Mich. 10 Welland Canal, Canada.

BOOK VI.

ATLAS.



Drawing by SELDEN IRWIN.

MAP OF WORLD, COUNTRIES OF EUROPE, ISLANDS OF NORTH SEA, BRITISH ISLES, AFRICA, ASIA, AUSTRALIA, NEW ZEALAND, SOUTH AMERICA, NORTH AMERICA, CENTRAL AMERICA, UNITED STATES, CANADA AND NORTHWEST TERRITORY, WEST INDIES, HAWAII, PHILIPPINES.

Atlas, a Greek mythological term. Homer represents him as "one who knows the depths of the whole sea, and keeps the tall pillars which hold heaven and earth asunder." Finally Atlas was explained as the name of a primitive astronomer, who was said to have made the first celestial globe. A figure of Atlas supporting the heavens, is often used as a frontispiece in map collections. It is said to have been first used in this way by Mercator. The name applies—first, to a volume of maps, secondly, to any volume containing a tabulated treatment of a subject.

Maps. A representation on a plane, and in reduced scale of a part, or whole of the earth's surface. If it is designed for use of seamen it is called a Chart. The words map and chart are derived from mappa and charta, the former being the Latin for a napkin or cloth, the latter a parchment or papyrus. Maps are frequently named after the material upon which they were drawn or painted. Today maps for military use are frequently printed on cloth.

A collection of maps, is called an Atlas, named after the mythological Atlas, supporting the heavens.

Maps may be divided in different classes according to their use. Physical, which include geological, hydrographical, etc. Political, showing boundaries of states. Ethnological, illustrating distribution of races of mankind. Statistical, illustrating commerce and statistics. Travel maps, highways, railroads, aviation, ocean routes. Historical maps, as showing growth of United States. Educational, designed for reference and general school purposes.

The most ancient known map is one sketched on a clay tablet discovered in Babylon, and is believed to date from the 8th century B. C. It shows the earth as flat, circular in form, surrounded by a river, which the Greeks believed to be an ocean.

The authors of "The New Century Book of Facts," realizing the vital importance of maps in the study of Geography have placed this department adjacent, in order that they may be used together. It is not sufficient merely to know that a certain city is located in the state of New York or Texas, or that a certain state is west of the Mississippi river, or a particular railroad connects two cities; it is important to know the exact geographical location, the exact country traversed by this railroad, and the reasons for the growth of these cities.

Modern mechanics has become so highly developed, that long hours of toil are gradually lessening. People have more time for study and travel. This together with the ever increasing speed of the transportation world, makes it pos-

sible that places and things which were only within the reach of the more wealthy are now at the door of every automobile owner. People have become educated to the value of travel not only through the motor, but also the increasing advertisements of cheap excursions by the railroads. All this means that to better appreciate their travel, these excursions, use must be made of an Atlas. The New Century Atlas, is most up to date, the best that is to be offered.

AFRICA

Algeria (Fr.)
Angola (Port.)
Anglo Egyptian Sudan
Belgian Congo
British East Africa
  Kenya
  Nyasaland
  Tanganyika
  Uganda
British South Africa
  Basutoland
  Bechuanaland
  Rhodesia, N. and S.
  Swaziland
British Somaliland
British S. W. Africa
British West Africa
  Cameroons
  Gambia
  Gold Coast
  Nigeria
  Sierra Leone
  Togoland
Cameroons (Fr.)
Canary Islands (Sp.)
Egypt
Eritrea (It.)
Ethiopia (It.)
French Equatorial Africa
French Somaliland
French West Africa
  Dahomey
  Guinea
  Ivory Coast
  Mauretania
  Niger
  Sudan
Italian Somaliland
Liberia
Libya (It.)
Madagascar (Fr.)
Madeira Islands (Port.)
Morocco (Fr., Sp.)
Mozambique (Port.)
Rio De Oro (Sp.)
Tunisia (Fr.)
Union of South Africa
  Cape of Good Hope
  Natal
  Orange Free State
  Transvaal

ASIA

Aden
Afghanistan
Baluchistan
Bhutan
British Malay
British East Indies
  Borneo
  New Guinea
  Sarawak
  Timor
Burma
Ceylon
China
Chosen (Korea)
Cyprus
Dutch East Indies
  Borneo
  Celebes
  Java
  Molucca
  New Guinea
  Sumatra
French Indo China
Goa (Port. India)
Hong Kong
India
Iran
Iraq
Japan
Kuwait
Manchukuo
Mongolia
Nepal
Oman
Palestine
Philippine Islands
Saudi Arabia
Siam (Thailand)
Sinkiang
Syria
Tannu Tuva
Tibet
Trans Jordan
Turkey
Russian S. F. S. R.
Yemen

AUSTRALIA

Canberra F. T.
New Hebrides
New Zealand
New South Wales
Northern Territory
Queensland
South Australia
Tasmania
Victoria
Western Australia

BRITISH ISLES

Alderney
England
Guernsey
Hebrides Islands
Ireland
Isle of Man
Isle of Wight
Jersey
Orkney Islands
Scotland
Shetland Islands
Wales

CANADA

Alberta
British Columbia
  Queen Charlotte Is.
  Vancouver Island
Labrador
Manitoba
New Brunswick
Newfoundland
Northwest Territory
  Dist. of Franklin
  Dist. of Kewatin
  Dist. of Mackenzie
Nova Scotia
Ontario
Prince Edward Island
Quebec
Saskatchewan
Yukon

CENTRAL AMERICA

British Honduras
Costa Rica
Guatemala
Honduras
Nicaragua
Panama
Salvador

EUROPE

Albania
Andora
Austria
Azores (Port.)
Belgium
British Isles
Bulgaria
Corsica
Crete
Czechoslovakia
Denmark
Estonia
Faroe Islands
Finland
France
Germany
Greece
Hungary
Iceland
Italy
Latvia
Lithuania
Luxemburg
Malta
Monaco
Netherlands
Norway
Poland
Portugal
Rumania
Russia (U. S. S. R.)
Sardinia
Sicily
Spain
Sweden
Switzerland
Turkey in Europe
Yugo Slavia

NORTH AMERICA

Alaska
Bermuda
British West Indies
  Bahama Islands
  Jamaica
  Leeward Islands
  Windward Islands
Canada
Cuba
Dominican Republic
French Possessions
  St. Pierre, Miquelon
  Martinique
  West Indies Islands
Greenland
Haiti
Mexico
U. S. of America
  Atlantic Islands
    Puerto Rico
    Virgin Islands
  Pacific Islands
    Aleutian Islands
    Guam
    Hawaiian Islands
    Midway Island
    Wake Island

SOUTH AMERICA

Argentina
Bolivia
Brazil
British Possessions
  Falkland Island
  Guiana
  Trinidad
Chile
Colombia
Dutch Possessions
  Curaco
  Surinam
  W. Indies Islands
Ecuador
  Galapagos Is.
French Guiana
Paraguay
Peru
Uruguay
Venezuela

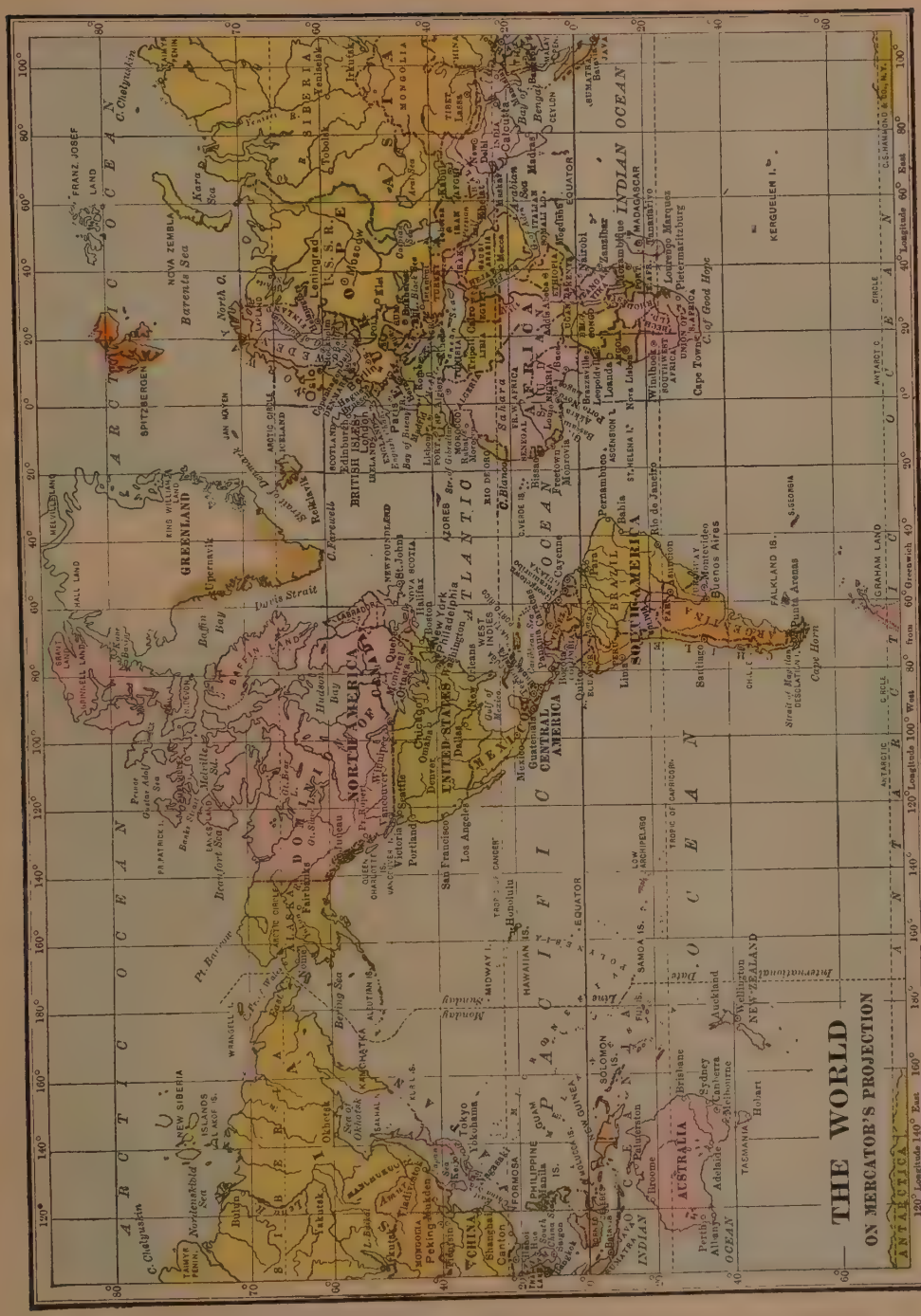
U. S. OF AMERICA

Alabama
Arizona
Arkansas
California
Colorado
Connecticut
Delaware
Dist. of Columbia
Florida
Georgia
Idaho
Illinois
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
Montana
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma
Oregon
Pennsylvania
Rhode Island
South Carolina
South Dakota
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming

OCEANIA

Bonin Island (Jap.)
Fiji Islands (Br.)
Hawaiian Islands (U. S.)
Loyalty Island (Fr.)
New Caledonia (Fr.)
New Hebrides (Br., Fr.)
Samoa (U. S.)
Santa Cruz (Br.)
Solomon Island (Br.)

Br.—Britain; Fr.—France; It.—Italy; Jap.—Japan; Port.—Portugal; Sp.—Spain; U. S.—United States.



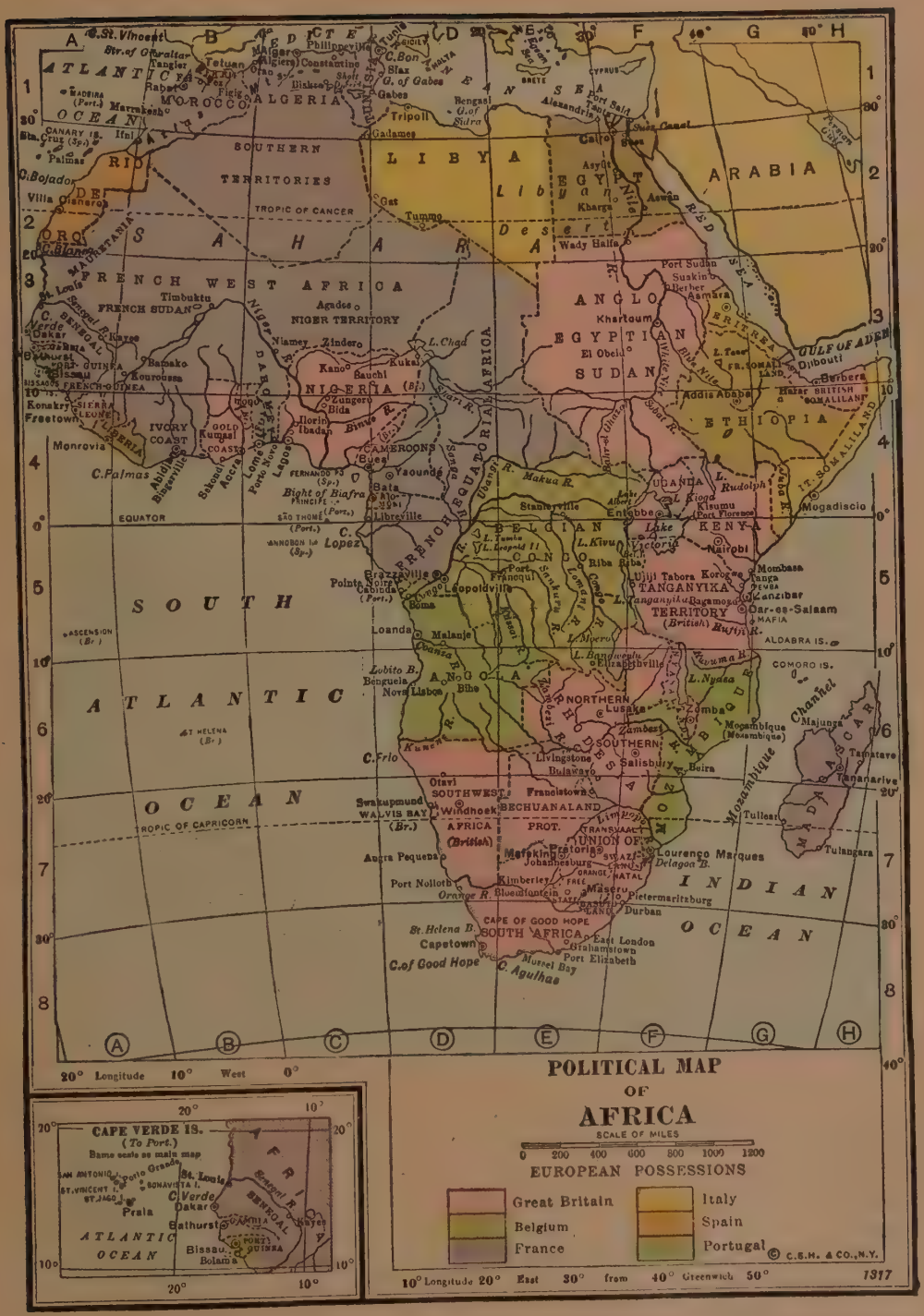
THE WORLD—Land area in square miles: 196,950,000. Africa, 11,500,000; Asia, 16,990,000; Europe, 3,872,000; North America, 8,500,000; South America, 6,814,000; Australia, 2,974,581.
Total Population: 2,155,000,000. Africa, 155,500,000; Asia, 1,185,000,000; Europe, 550,000,000; North America, 182,710,000; South America, 91,300,000; Australia, 6,960,891.

Boundaries at the time of the Munich Agreement.

EUROPE—Area: 3,872,0

...es. Population: 550,000,000.

BRITISH ISLES—Area: 120,879 square miles. Population: 49,186,043. Capital: London.
England—Area: 50,874 square miles. Population: 37,794,003.
Wales—Area; 7,466 square miles. Population: 2,158,374.
Scotland—Area: 30,405 square miles. Population: 4,842,980.
Northern Ireland—Area: 5,237 square miles. Population: 1,279,753. **Isle of Man**—Area: 221 square miles. Population: 49,308. **Channel Islands**—Area: 75 square miles. Pop.: 93.205.
Ireland (Eire)—Independent State. Area: 26,601 square miles. Population: 2,968,420. Capital: Baile Atha Cliath (Dublin).



AFRICA—Having an area of 11,500,000 square miles. Population: 155,500,000. Comprises various colonies and protectorates, governed by Great Britain, France, Italy, Spain, Portugal and Belgium, the Republic of Liberia, the Kingdom of Egypt, and the International Zone of Tangier.

ASIA—Area: 16,990,000 square miles, and a population of 1,185,000,000 is the largest of the grand divisions of the globe, comprising about one-third of the land surface. China, Japan, Chosen, Afghanistan, Bhutan, Nepal, Iran (Persia), Thailand (Siam), India, Syria, Palestine, Iraq, Ceylon, Burma, Indo-China, Malaysia, Turkey, Saudi Arabia, Yemen, Oman, Trans-Jordan, Asiatic U.S.S.R., Manchukuo, Tannu Tuwa and Mongolian Republics, Philippine Islands, East Indies, etc., form this grand division.

POLITICAL MAP
OF
AUSTRALASIA
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
Hammond's Political Map of Australasia
Copyright by C.S. Hammond & Co., N.Y.
INDIAN OCEAN
PACIFIC OCEAN
TASMAN SEA
AUSTRALIA
NORTHERN TERRITORY
QUEENSLAND
NEW SOUTH WALES
VICTORIA
SOUTH AUSTRALIA
WESTERN AUSTRALIA
TASMANIA
NEW ZEALAND
NORTH ISLAND
SOUTH ISLAND
Torres Strait
Great Barrier Reef
Coral Sea
Arafura Sea
Timor Sea
Gulf of Carpentaria
Great Australian Bight
Bass Strait
Tropic of Capricorn
Solomon Is.
New Caledonia
Fiji Is.
New Hebrides
Norfolk I.
Lord Howe I.
Loyalty Is.
Louisiade Archipelago
East Indian Arch.
Melville I.
Bathurst I.
Groote Eylandt
Wellesley Is.
Sir Charles Hardy Is.
Great Sandy I.
Fraser I.
Moreton I.
Stradbroke I.
Kangaroo I.
Flinders I.
King I.
Furneaux Group
Stewart I.
Auckland Is.
Campbell I.
Macquarie I.
Three Kings Is.
Kermadec Is.
Chatham Is.
Antipodes Is.
Bounty Is.
Auckland
New Plymouth
Hamilton
Napier
Wellington
Nelson
Westport
Greymouth
Timaru
Oamaru
Dunedin
Invercargill
Christchurch
Gisborne
Tauranga
Whangarei
Cook Strait
C. Farewell
North C.
East C.
Brisbane
Ipswich
Toowoomba
Maryborough
Gympie
Rockhampton
Gladstone
Mackay
Townsville
Charters Towers
Cairns
Normanton
Croydon
Burketown
Mt. Isa
Cloncurry
Winton
Hughenden
Richmond
Longreach
Barcaldine
Blackall
Charleville
Cunnamulla
St. George
Roma
Dalby
Toowoomba
Warwick
Stanthorpe
Tenterfield
Grafton
Kempsey
Port Macquarie
Newcastle
Parramatta
Sydney
Botany Bay
Bathurst
Goulburn
Canberra
Queanbeyan
Albury
Wagga Wagga
Hay
Deniliquin
Echuca
Shepparton
Wangaratta
Benalla
Seymour
Melbourne
Geelong
Ballarat
Portland
Warrnambool
Hamilton
Horsham
Stawell
Ararat
Maryborough
Bendigo
Castlemaine
Kyneton
Warrnambool
Mildura
Swan Hill
Kerang
Robinvale
Renmark
Murray R.
Darling R.
Murrumbidgee R.
Lachlan R.
Macquarie R.
Broken Hill
Wilcannia
Menindee
Cobar
Dubbo
Orange
Bourke
Walgett
Moree
Inverell
Tamworth
Muswellbrook
Gunnedah
Narrabri
Coonamble
Nyngan
Hillston
Griffith
Leeton
Narrandera
Albury
Wodonga
Yarrawonga
Echuca
Kerang
Swan Hill
Mildura
Broken Hill
Wilcannia
Menindee
Darwin
Port Darwin
Palmerston
Pine Creek
Daly Waters
Tennants Creek
Barrow Creek
Alice Springs
Arltunga
Hermannsburg
Charlotte Waters
Finke R.
Macdonnell Ra.
Musgrave Ra.
Oodnadatta
Strangways Springs
Peake
Lake Eyre
Lake Torrens
Lake Gregory
Lake Amadeus
Lake Macdonald
Lake Mackay
Lake Nash
Lake Wells
Lake Barlee
Lake Lefroy
Lake Cowan
Lake Darlot
Lake Carnegie
Lake Rason
Lake Ballard
Lake Violet
Lake Way
Lake Disappointment
Lake Macleod
Lake Gascoyne
Lake Frome
Lake Callabonna
Lake Gairdner
Lake Torrens
Lake Eyre
Lake Blanche
Lake Hope
Lake Harris
Lake Eyre
Lake Torrens
Lake Gairdner
Lake Macleod
Lake Gascoyne
Lake Disappointment
Lake Violet
Lake Way
Lake Ballard
Lake Rason
Lake Carnegie
Lake Darlot
Lake Cowan
Lake Lefroy
Lake Barlee
Lake Wells
Lake Mackay
Lake Nash
Lake Macdonald
Lake Amadeus
Lake Gregory

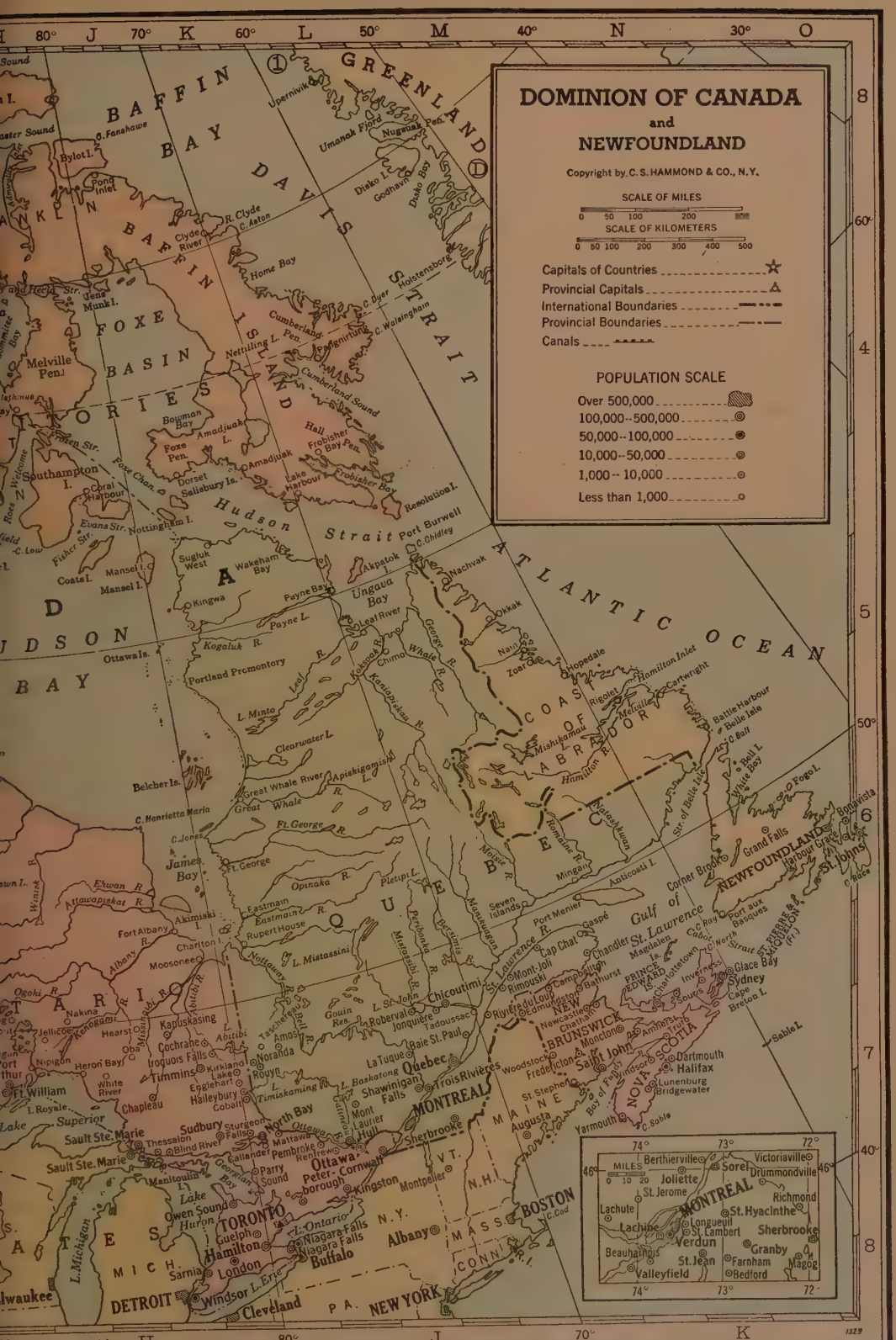
CARIBBEAN SEA
ATLANTIC OCEAN
PACIFIC OCEAN
VENEZUELA
COLOMBIA
ECUADOR
PERU
BOLIVIA
BRAZIL
PARAGUAY
URUGUAY
CHILE
ARGENTINA
Barranquilla
Cartagena
Maracaibo
Valencia
Caracas
Barcelona
Puerto Cabello
La Guaira
Orinoco Delta
Ciudad Bolivar
Georgetown
Paramaribo
Cayenne
Medellin
Bucaramanga
Antioquia
Honda
Bogotá
Buenaventura
Cali
Popayan
Bolivar
Quito
Guayaquil
Cuenca
Iquitos
Paita
Piura
Chiclayo
Trujillo
Huaraz
Pasco
Callao
Lima
Ica
Arequipa
Mollendo
Arica
Iquique
Tocopilla
Antofagasta
Taltal
Caldera
Potrerillos
La Serena
Ovalle
Valparaiso
Santiago
Talca
Talcahuano
Concepcion
Temuco
Puerto Montt
Ancud
Puerto Madryn
Rawson
Viedma
Bahia Blanca
Tandil
Azul
General Acha
General Roca
La Plata
Buenos Aires
Montevideo
Colonia
Fray Bentos
Chuy
Rio Grande
Porto Alegre
Pelotas
Salto
Paysandu
Mercedes
Rosario
Cordoba
Rioja
Catamarca
Tucuman
Jujuy
Salta
Villa Maria
Villa Rica
Corrientes
Asuncion
Encarnacion
Concepcion
Pilcomayo R.
Paraguay R.
Paraguay
Parana
Uruguay R.
Iguazu
Cruz Alta
Rio Pardo
Curitiba
Paranagua
Santos
São Paulo
Rio de Janeiro
Petropolis
Campos
Campinas
Ouro Preto
Victoria
Diamantina
Bello Horisonte
Porto Alegre
Desterro
Laguna
Ilhéos
Bomjardim
Cachoeira
São Salvador (Bahia)
Penedo
Aracajú
Alagoas
Joazeiro
Recife (Pernambuco)
João Pessoa (Parahyba)
Natal
Aracatí
Fortaleza (Ceará)
São Luiz (Maranhão)
Parnahyba
Granja
Belém (Pará)
Obidos
Manaus
Santarem
Tabatinga
Iquitos
Leticia
Amazon R.
Negro R.
Solimões R.
Madeira R.
Purus R.
Jurua R.
Javari R.
Napo R.
Maranon R.
Ucayali R.
Pachitea R.
Huallaga R.
Tocantins R.
Araguaya R.
Xingu R.
Tapajos R.
Rio Branco
Rupununi R.
Essequibo R.
Cuyuni R.
Mazaruni R.
Barima R.
Pomeroon R.
Corantijn R.
Courantyne R.
Maroni R.
Oyapock R.
Trombetas R.
Tocantins R.
Francisco R.
Parahyba R.
Jequitinhonha R.
Doce R.
Paraguassu R.
Paraguay R.
Paraná R.
Uruguay R.
Plata R.
Negro R.
Colorado R.
Chubut R.
Deseado R.
Santa Cruz
Chico R.
Gallegos R.
Grande Bay
Strait of Magellan
Punta Arenas
TIERRA DEL FUEGO
Mt. Darwin
STATEN I.
C. Horn
Gulf of St. George
C. Tres Puntas
Puerto Deseado
Gulf of Penas
C. San Valentin
Mt. Sarmiento
CHONOS ARCH.
CAMPANA I.
WELLINGTON I.
MADRE DE DIOS I.
Gulf of Corcovado
CHILOE
C. of Corcovado
Mt. Tronador
Mt. Osorno
Mt. Llaima
Mt. Villarrica
Mt. Lanin
Mt. Copahue
Mt. Domuyo
Mt. Aconcagua
Mt. Tupungato
Mt. Illampu
L. Titicaca
Mt. Sajama
Mt. Illimani
Mt. Pomerape
Mt. Parinacota
Mt. Misti
Mt. Chimborazo
Mt. Cotopaxi
Mt. Cayambe
Mt. Duida
Mt. Roraima
Mt. Auyantepui
Mt. Neblina
Pico da Neblina
Mt. Caburai
Mt. Parima
Mt. Pacaraima
Mt. Tumucumaque
Serra Geral Mts.
Serra do Espinhaço
Serra do Mar
Serra do Mantiqueira
Serra Dourada
Serra Parecis
Serra Acary
Serra Tumucumaque
Serra Pacaraima
Serra Parima
Serra Imeri
Serra Aracá
Serra Tapirapecó
Serra Cupim
Serra Ibiapaba
Serra Grande
Serra Borborema
Serra Negra
Serra Geral
Serra Tapes
Serra Tandil
Serra Ventana
Serra Pillahuinco
Serra Curamalal
Serra Pie de Palo
Serra Famatina
Serra Aconquija
Serra Velasco
Serra Sierra Nevada
Serra Sierra Chica
Serra Sierra Grande
Serra Sierra Ventana
Serra Sierra Pillahuinco
Serra Sierra Curamalal
Serra Sierra Pie de Palo
Serra Sierra Famatina
Serra Sierra Aconquija
Serra Sier

NORTH AMERICA—Area: 8,500,000 square miles. Population: 182,710,000. A grand division of the earth, the northern half of the western hemisphere. It comprises the United States, Dominion of Canada, Newfoundland, Labrador, Mexico, Alaska and the various Central American countries and the West Indies, Cuba and Puerto Rico.

UNITED STATES—Total Area: 3,022,387 square miles; Land, 2,977,128 square miles; Water, 45,259 square miles. Population: Last Census, 131,669,275. It comprises 48 states and the District of Columbia

UNITED STATES
Copyright by C. S. HAMMOND & CO., N. Y.
SCALE OF MILES
0 50 100 200 300 400
SCALE OF KILOMETRES
0 100 200 300 400
Capitals of Countries
State Capitals
International Boundaries
GULF OF MEXICO
ATLANTIC OCEAN
CUBA
BAHAMA ISLANDS
Habana
Miami
Tampa
Jacksonville
Charleston
Savannah
Atlanta
New Orleans
Memphis
Nashville
Louisville
Cincinnati
Chicago
Detroit
Cleveland
Toronto
Montreal
Ottawa
Quebec
Boston
New York
Philadelphia
Baltimore
Washington
Pittsburgh
Buffalo
Minneapolis
St. Paul
Milwaukee
Indianapolis
Columbus
Kansas City
St. Louis
Omaha
Denver
Houston
Dallas
San Antonio
Los Angeles
San Francisco
Seattle
Portland
Salt Lake City
Phoenix
Albuquerque
Oklahoma City
Wichita
Des Moines
Lincoln
Cheyenne
Billings
Helena
Boise
Reno
Sacramento
Fresno
San Diego
Las Vegas
Santa Fe
Amarillo
Little Rock
Jackson
Mobile
New Orleans
Birmingham
Montgomery
Atlanta
Columbia
Raleigh
Richmond
Norfolk
Wilmington
Charleston
Key West
Miami
Tampa
Jacksonville
Savannah
Atlanta
Nashville
Memphis
Louisville
Cincinnati
Indianapolis
Chicago
Detroit
Cleveland
Buffalo
Rochester
Albany
Boston
New York
Philadelphia
Baltimore
Washington
Pittsburgh
Toronto
Montreal
Ottawa
Quebec
Minneapolis
St. Paul
Milwaukee
Chicago
Omaha
Kansas City
St. Louis

BEAUFORT SEA
ALASKA
YUKON
DISTRICT OF MACKENZIE
NORTHWEST TERRITORIES
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
Banks Island
Victoria Island
Viscount Melville Sd.
Prince Albert Pen.
Amundsen Gulf
Coronation Gulf
Dease Str.
Cambridge Bay
Great Bear Lake
Great Slave Lake
Mackenzie R.
Yukon R.
Porcupine R.
Peel R.
Liard R.
Peace R.
Athabasca R.
Slave R.
Hay R.
Churchill R.
Nelson R.
Red R.
Assiniboine R.
Yellowstone R.
Missouri R.
Rainy L.
Lake of the Woods
Lake Winnipeg
Lake Athabasca
Great Slave Lake
Great Bear Lake
Wood Buffalo National Park
Prince Albert National Park
Riding Mountain National Park
Waterton Lakes Park
Glacier Park
Vancouver I.
Strait of Juan de Fuca
Queen Charlotte Is.
Hudson Bay
Arctic Ocean
Pacific Ocean
Fairbanks
Dawson
Whitehorse
Yellowknife
Fort Nelson
Fort McMurray
Edmonton
Calgary
Medicine Hat
Lethbridge
Saskatoon
Regina
Winnipeg
Brandon
Vancouver
Victoria
New Westminster
Seattle
Portland
Spokane
Prince George
Prince Rupert
Kamloops
Kelowna
Nelson
Trail
Cranbrook
Fernie
Banff
Jasper
Grande Prairie
Peace River
Lloydminster
Swift Current
Moose Jaw
Maple Creek
Shaunavon
Estevan
Brandon
Portage la Prairie
The Pas
Flin Flon
Thompson
Churchill
Port Nelson
Norway House
Berens River
Red Lake
Kenora
Fort Frances
Rainy River
Dryden
Sioux Lookout
Geraldton
Longlac
Kapuskasing
Timmins
Cochrane
Moosonee
Hudson
Ungava Bay
Labrador
Newfoundland
Prince Edward Island
Nova Scotia
New Brunswick
Quebec
Ontario
Toronto
Hamilton
Ottawa
Montreal
Kingston
Windsor
Detroit
Sarnia
London
Niagara Falls
Buffalo
Erie
Lake Erie
Lake Ontario
Lake Huron
Lake Superior
Lake Michigan
Lake St. Clair
Georgian Bay
Bismarck
Fargo
Minneapolis
Duluth
Sandusky
Cleveland
Pittsburgh
Chicago
Milwaukee
Detroit
Boston
New York
Philadelphia
Washington
Baltimore
Richmond
Norfolk
Atlanta
Charleston
Miami
Jacksonville
Tampa
New Orleans
Houston
Dallas
Kansas City
St. Louis
Omaha
Denver
Salt Lake City
Los Angeles
San Francisco
San Diego
Las Vegas
Phoenix
Albuquerque
Santa Fe
El Paso
Oklahoma City
Tulsa
Memphis
Nashville
Louisville
Cincinnati
Indianapolis
Columbus
Cleveland
Buffalo
Rochester
Syracuse
Albany
Hartford
Providence
Boston
Portland
Augusta
Burlington
Concord
Manchester
Montpelier
Trenton
Harrisburg
Dover
Annapolis
Wilmington
Charleston
Columbia
Raleigh
Richmond
Norfolk
Jackson
Montgomery
Tallahassee
Jacksonville
Miami
Key West
Tampa
Orlando
Atlanta
Birmingham
Mobile
New Orleans
Baton Rouge
Shreveport
Little Rock
Jefferson City
Springfield
Kansas City
Topeka
Wichita
Oklahoma City
Tulsa
Amarillo
Lubbock
Abilene
Fort Worth
Dallas
Austin
San Antonio
Houston
Corpus Christi
Brownsville
Laredo
Del Rio
El Paso
Albuquerque
Santa Fe
Phoenix
Tucson
Yuma
Las Vegas
Reno
Carson City
Sacramento
San Francisco
San Jose
Fresno
Bakersfield
Los Angeles
San Diego
Salt Lake City
Ogden
Provo
Cheyenne
Denver
Colorado Springs
Pueblo
Grand Junction
Durango
Aspen
Vail
Boulder
Fort Collins
Greeley
Cheyenne
Laramie
Casper
Rock Springs
Green River
Evanston
Jackson
Yellowstone National Park
Grand Teton National Park
Glacier National Park
Waterton Lakes Park
Banff
Jasper
Lake Louise
Yoho National Park
Kootenay National Park
Mount Robson
Mount Logan
Mount Fairweather
Mount St. Elias
Mount McKinley
Denali National Park
Kluane Lake
Kluane National Park
Wrangell-St. Elias National Park
Glacier Bay National Park
Tongass National Forest
Chugach National Forest
Kenai Peninsula
Kodiak Island
Aleutian Islands
Bering Sea
Gulf of Alaska
Prince William Sound
Cook Inlet
Anchorage
Fairbanks
Juneau
Ketchikan
Sitka
Skagway
Dawson
Whitehorse
Yellowknife
Inuvik
Tuktoyaktuk
Cambridge Bay
Resolute
Pond Inlet
Baffin Island
Frobisher Bay
Iqaluit
Kugluktuk
Coppermine
Hay River
Fort Simpson
Fort Liard
Fort Nelson
Fort St. John
Dawson Creek
Grande Prairie
Peace River
Fort McMurray
Lloydminster
Swift Current
Moose Jaw
Regina
Saskatoon
Prince Albert
North Battleford
Yorkton
Melville
Estevan
Weyburn
Brandon
Portage la Prairie
Dauphin
Swan River



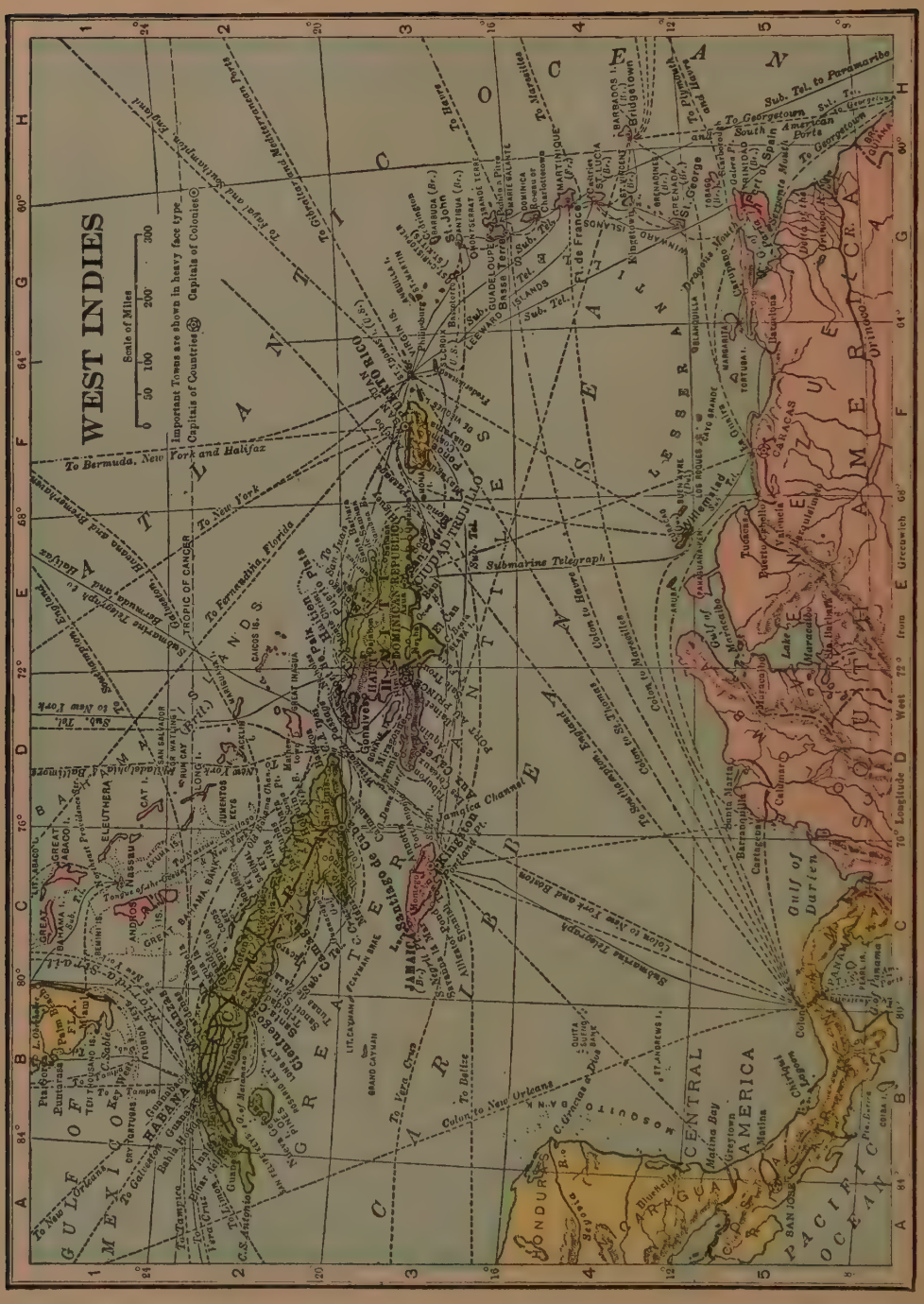
NEWFOUNDLAND AND COAST OF LABRADOR—Area: Newfoundland, 42,734 square miles. Population: 294,800. Area: Coast of Labrador, 112,400 square miles. Population: 4,700. Coast of Labrador confirmed under jurisdiction of Newfoundland March, 1927. Capital: St. Johns.

ACQUIRED BY DISCOVERY 1792, EXPLORATION 1805, BY ASTORIA SETTLEMENT 1811 AND BY FLORIDA TREATY 1819.
CEDED BY MEXICO 1848
GADSDEN PURCHASE 1853
PURCHASED FROM FRANCE 1803
TERRITORY
DOMINION OF CANADA
MEXICO
ALASKA 1867
Scale of Miles
Hammond's 9 x 11 Acquisition Map of United States

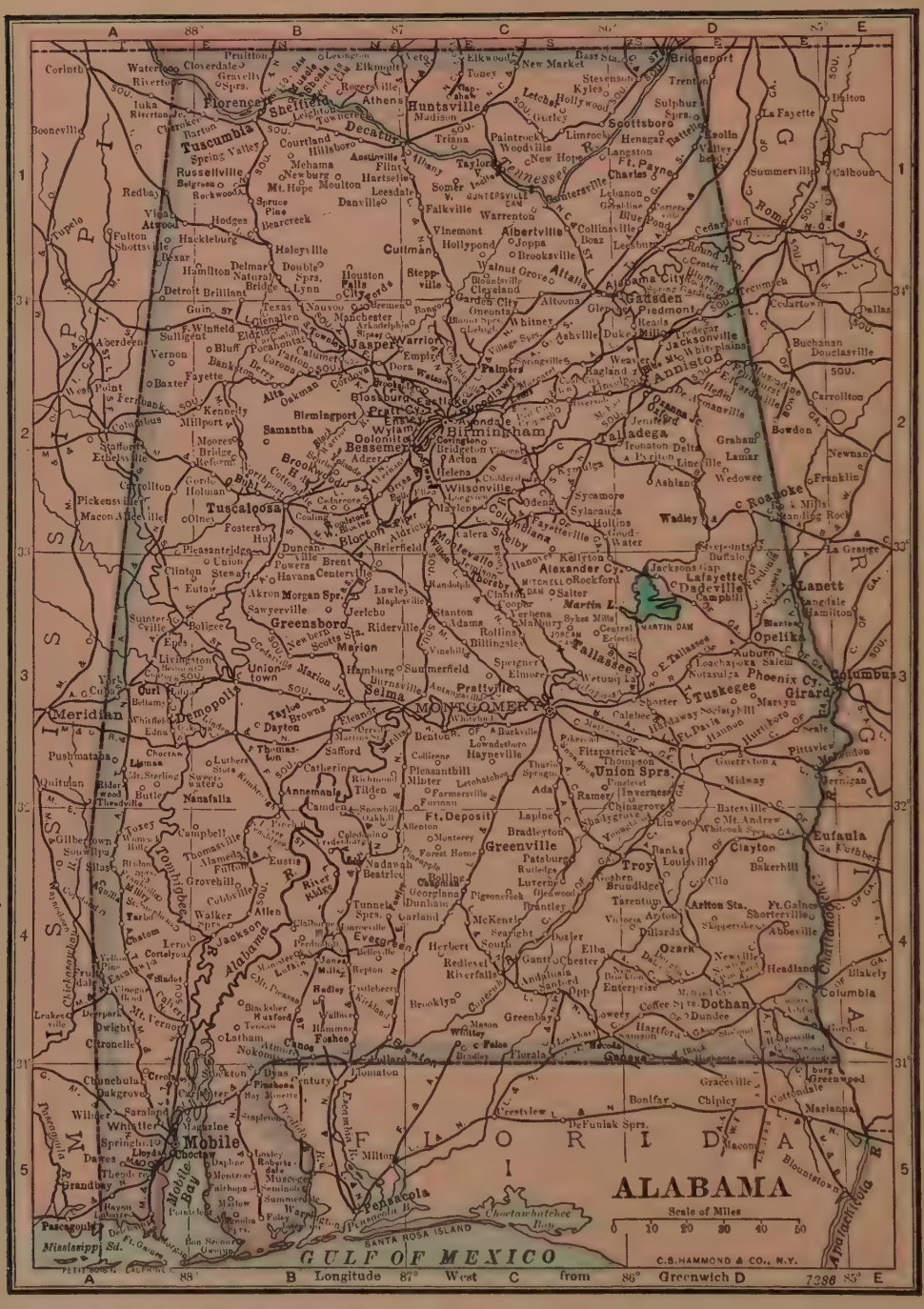
UNITED STATES AND POSSESSIONS—Total Area: 3,733,993 square miles. Total Population: 150,502,298

	Area: sq. miles	Population
Continental United States	3,022,387	131,669,275
Alaska	586,400	72,524
American Samoa	76	12,908
Guam	206	22,290

GUAM ISLAND
1899
HAWAIIAN ISLANDS 1898
PORTO RICO
Scale of Miles
Mayaguez
San Juan
PORTO RICO
Ponce
1899
ATLANTIC OCEAN
CARIBBEAN SEA
TUTUILA ISLAND
ROSE ISLAND
OLOSENGA I.
OFOO I.
MANUA ISLAND
Part of SAMOA ISLANDS 1900
WAKE ID. 1898
WAKE ID
ORIGINAL AREA OF THE UNITED STATES
1783
1803
1819
1845
1846
1848
1853
1867
1898
CEDED BY SPAIN
MAINE
1820
NEW HAMPSHIRE
1788
VERMONT
1791
MASSACHUSETTS
CONN.
R. I.
NEW YORK
PENNSYLVANIA
NEW JERSEY
DELAWARE
MARYLAND
VIRGINIA
WEST VIRGINIA
OHIO
1802
KENTUCKY
1792
TENNESSEE
1796
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
1788
1787
1788
1790
1788
1778
1788
1788
1788

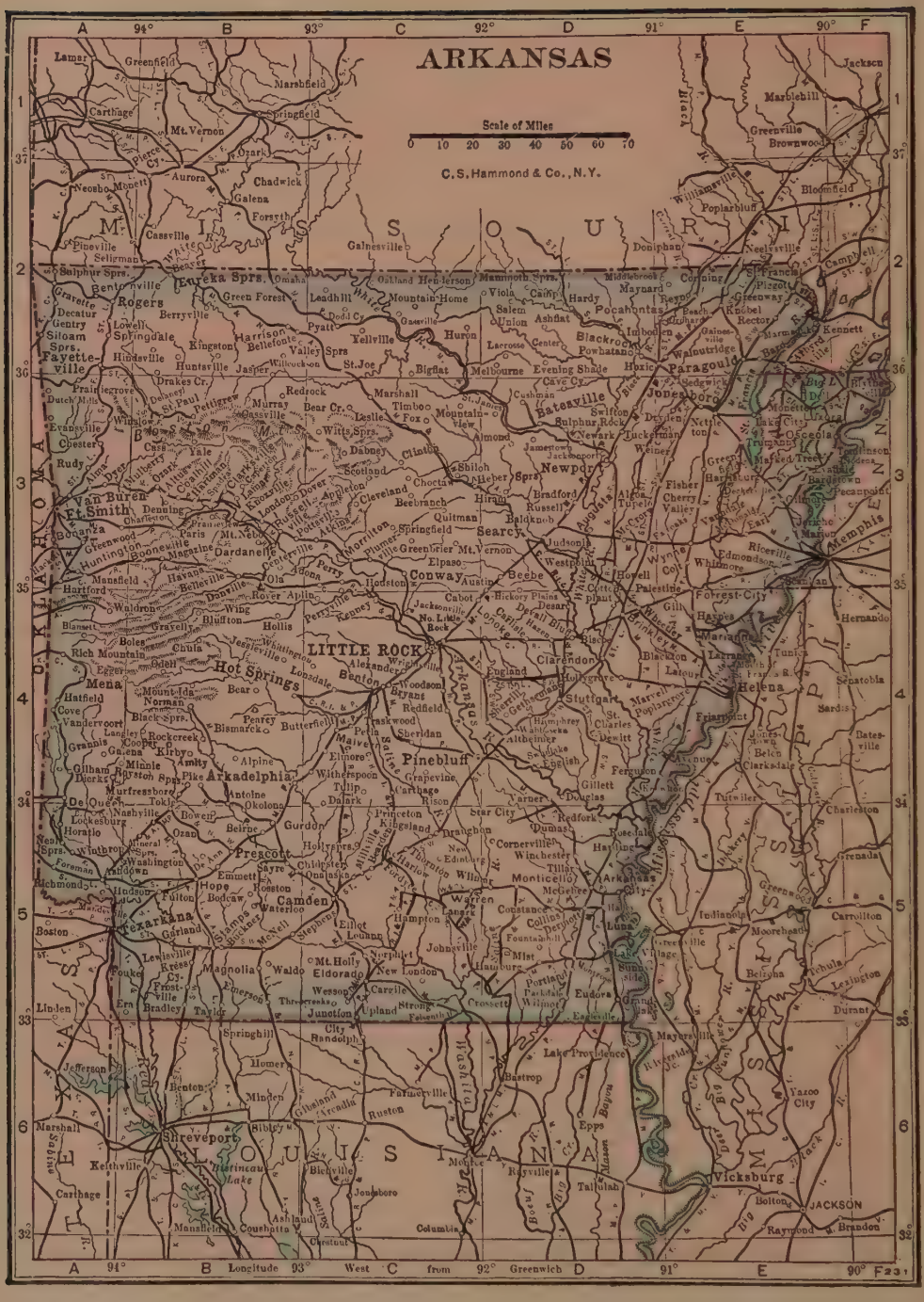

WEST INDIES
Scale of Miles
0 50 100 200 300
Important Towns are shown in heavy face type.
Capitals of Countries ◎
Capitals of Colonies ◎
ATLANTIC OCEAN
CARIBBEAN SEA
GULF OF MEXICO
PACIFIC OCEAN
SOUTH AMERICA
CENTRAL AMERICA
GREATER ANTILLES
LESSER ANTILLES
BAHAMA ISLANDS
To Bermuda, New York and Halifax
To New York
To Jacksonville, Florida
TROPIC OF CANCER
Submarine Telegraph
Colon to Haiti
Colon to Maracaibo
Colon to St. Thomas
Colon to New York and Boston
Colon to New Orleans
To Vera Cruz
To Belize
To Havana
To Marseilles
To Plymouth
To Georgetown
To Paramaribo
To Para and Maranham
To Gibraltar and Mediterranean Ports, England
Sub. Tel. to Paramaribo
Sub. Tel. to Georgetown
Sub. Tel. to Spain
Sub. Tel. to Jacksonville
Sub. Tel. to New York
Sub. Tel. to Key West
Sub. Tel. to Galveston
Sub. Tel. to Vera Cruz
Sub. Tel. to Belize
Sub. Tel. to Colon
Sub. Tel. to Haiti
Sub. Tel. to Maracaibo
Sub. Tel. to Curaçao
Sub. Tel. to La Guaira
Sub. Tel. to Trinidad
Sub. Tel. to Barbados
Sub. Tel. to Martinique
Sub. Tel. to Guadeloupe
Sub. Tel. to Leeward Islands
Sub. Tel. to Dominica
Sub. Tel. to St. Lucia
Sub. Tel. to St. Vincent
Sub. Tel. to Grenada
Sub. Tel. to Trinidad
Sub. Tel. to Demerara

ALASKA
Copyright by C.S. Hammond & Co., Inc., N.Y.
SALE OF MILES
0 50 100 150 200
Capitals
Railroads
Government Road
OCEAN
ARCTIC
BERING SEA
BERING
BRISTOL BAY
GULF OF ALASKA
PACIFIC
ALEUTIAN ISLANDS
ALEXANDER ARCH.
PRINCE OF WALES I.
QUEEN CHARLOTTE IS.
DOUGLAS
JUNEAU
SEWARD PEN.
NORTON SOUND
ALASKA RANGE
BROOKS RANGE
Arctic Circle
U S S R.
CANADA
Fairbanks
Anchorage
Nome
Juneau
Dawson
Mt. McKinley 20300
Mt. Logan 19850
Mt. St. Elias 18100
Mt. Foraker 17000
Mt. Hubbard 16000
Mt. Sanford 16206
Mt. Wrangell 16420
Mt. Spurr 11070
Mt. Iliamna 10016
Mt. Katmai 7500
Longitude West 152° of Greenwich
Longitude West 156° of Greenwich
Longitude West 148° of Greenwich
Longitude West 180° of Greenwich
Longitude West 176° of Greenwich
Longitude West 172° of Greenwich
Longitude East 180° of Greenwich
Longitude East 176° of Greenwich
Longitude East 172° of Greenwich
Longitude East 168° of Greenwich
Longitude East 164° of Greenwich
Longitude East 160° of Greenwich
Longitude East 156° of Greenwich
Longitude East 140° of Greenwich
Longitude East 136° of Greenwich
Longitude East 132° of Greenwich
Latitude North 68°
Latitude North 64°
Latitude North 60°
Latitude North 56°
Latitude North 52°
ALEUTIAN ISLANDS
BERING SEA ISLANDS
PACIFIC OCEAN
Attu I.
Agattu I.
Semichi Is.
NEAR IS.
Kiska I.
RAT IS.
Amchitka I.
Amukta Pass
Amlia I.
Seganm I.
Tanaga I.
Kanaga I.
ANDREANOF IS
Schumagin Is.
Kodiak I.
Trinity Is.
Chirikof I.
Pribilof Is.
St. Paul I.
St. George I.
St. Matthew I.
Hall I.
St. Lawrence I.
Nunivak I.
Nelson I.
Fox Is.
Unalaska I.
Umnak I.
Umnak Pass
Unimak Pass
Unimak I.
Shumagin Is.
Sand Point
Kodiak
Seward
Valdez
Cordova
Chitina
Kotzebue
Nome
Barrow
Point Barrow
Point Hope
Wainwright
Wales
Teller
Candle
Deering
Shishmaref
Kivalina
Noatak
Kobuk
Shungnak
Selawik
Buckland
Hayfork
Kiana
Noorvik
Kotzebue
Sound
Nulato
Koyukuk
Galena
Ruby
Kaltag
Yukon
Koyuk
Shaktolik
Unalakleet
Golovin
Elim
Wesley
Shelton
Wales
Teller
Nome
Council
Solomon
Gambell
Savoonga
St. Lawrence I.
Akulurak
Kotlik
St. Michael
Stuart
Pilot Sta.
Russian Mission
Hooper Bay
Anvik
Holy Cross
Ophir
Takotna
Flat
McGrath
Iditarod
Ophir
Takotna
Flat
Stony River
Sushitna
Talkeetna
Talkeetna Mts.
Chickaloon
Copper Center
Nenana
Tanana
Rampart
Tanana
Hot Springs
Minchumina
Kuskokwim
Bettles
Wiseman
Chandalar
Caro
Beaver
Stevens
Circle
Fort Yukon
Eagle
Franklin
Tanacross
Nutzotin Mts.
Mentasta Pass
Klutina L.
Klutina R.
Tazlina L.
Tazlina
Matanuska
Wasilla
Knik
Kenai
Hope
Seldovia
Kodiak
Afognak I.
Shuyak I.
Karluk
Katmai
Naknek
Egegik
Ugashik
Pilot Point
Ugashik
Port Heiden
Perryville
Chignik
Sand Point
Unga
Belkofski
Shumagin Is.
Dillingham
Kanektok
Hagemeister I.
Quinhagak
Kwethluk
Tuluksak
Bethel
Akiak
Tuntutuliak
Eek
Tuntutuliak
Tikchik Lakes
Iliamna
Iliamna L.
Lake Clark
Mt. Iliamna
Mt. Katmai
Mt. Spurr
Mt. Redoubt
Mt. McKinley
Mt. Foraker
Mt. Hubbard
Mt. Logan
Mt. St. Elias
Mt. Fairweather
Yakutat Bay
Yakutat
Icy Bay
Malaspina Glacier
Chitina
Valdez
Cordova
Katalla
Cape Cleare
Prince William Sound
Resurrection Bay
Seward
Kenai Mts.
Kenai
Hope
Seldovia
Kodiak
Afognak I.
Shuyak I.
Karluk
Katmai
Naknek
Egegik
Ugashik
Pilot Point

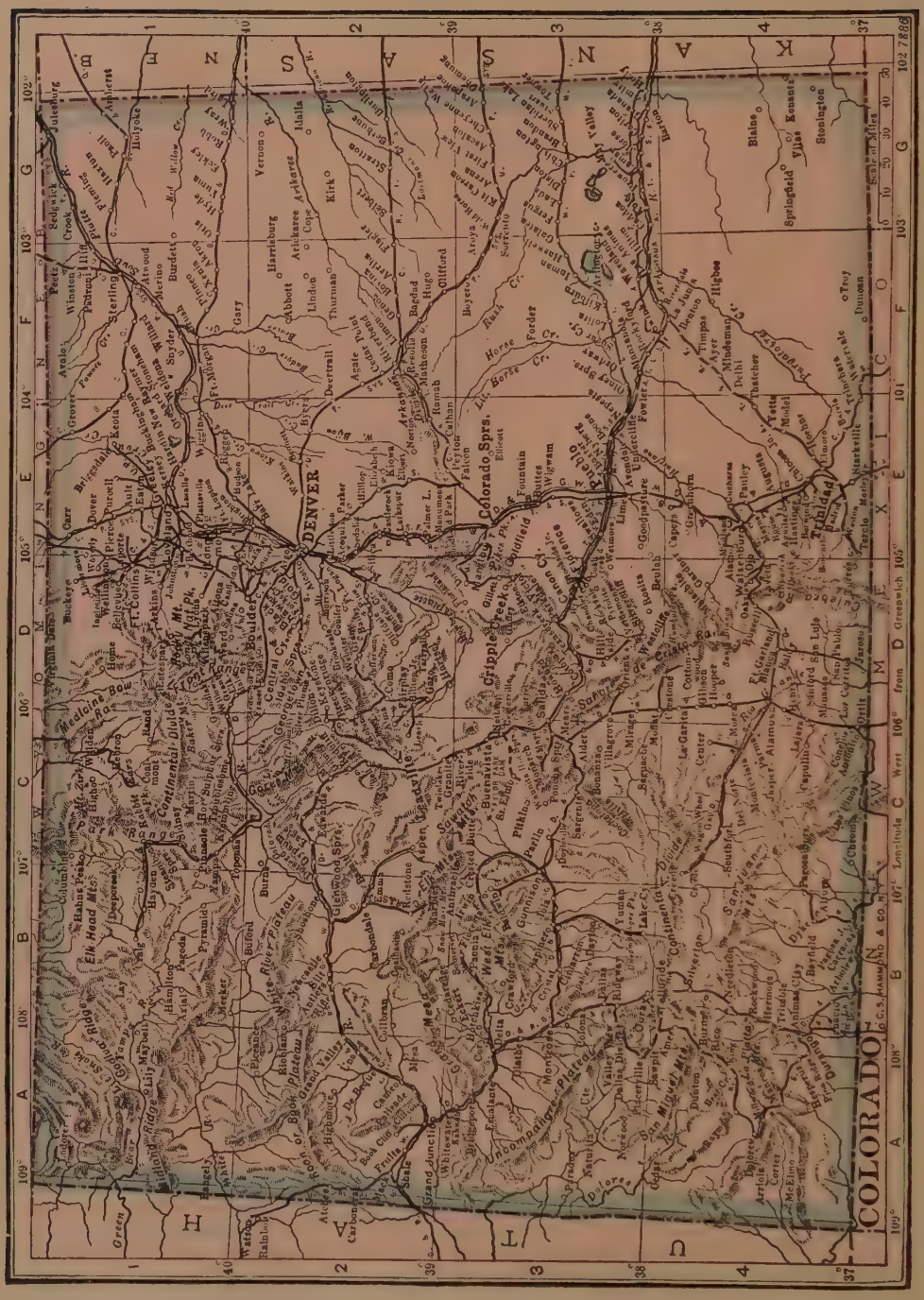


ALABAMA—First Settled at Ft. St. Louis, 1702. Admitted as a Territory, March 3, 1817. Admitted as a State, December 14, 1819. Area: Land, 51,279 square miles; Water, 719 square miles. Total, 51,998 square miles. Population: Last Census, 2,832,961. Capital, Montgomery.

ARIZONA—Admitted as a Territory, February 24, 1863. Admitted as a State, February 14, 1912. Area: Land, 113,810 square miles; Water, 146 square miles. Total, 113,956 square miles. Population: Last Census, 499,261. Capital, Phoenix.

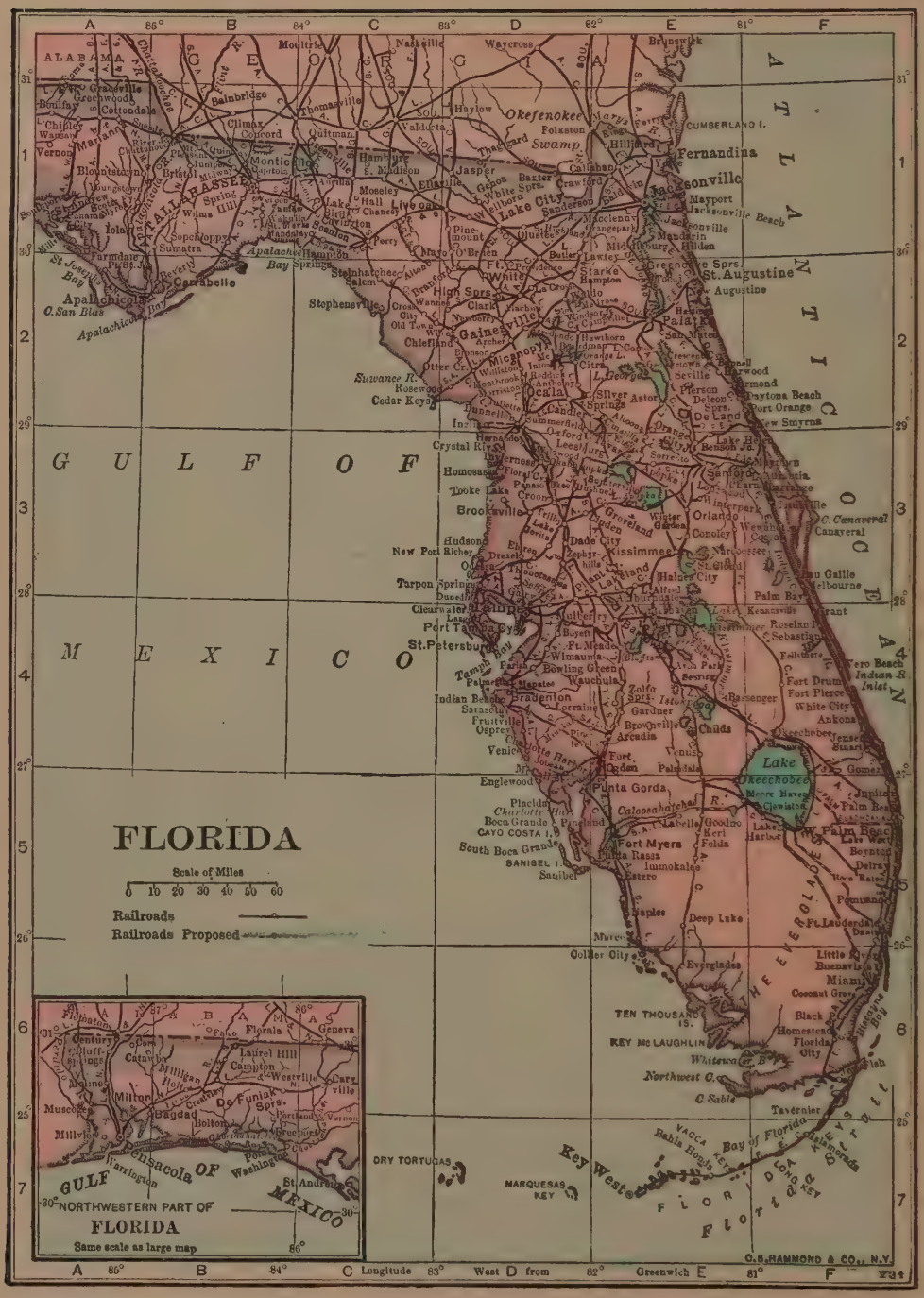

ARKANSAS
Scale of Miles
0 10 20 30 40 50 60 70
C.S.Hammond & Co., N.Y.
Longitude West from Greenwich
LITTLE ROCK
Hot Springs
Pine Bluff
Arkadelphia
Prescott
Camden
Texarkana
Fort Smith
Van Buren
Fayetteville
Rogers
Eureka Spgs.
Harrison
Batesville
Jonesboro
Paragould
Blytheville
Osceola
Newport
Searcy
Conway
Russellville
Helena
Forrest City
Marianna
Clarendon
Stuttgart
Monticello
El Dorado
Magnolia
Hope
Nashville
Murfreesboro
Mena
Waldron
Clarksville
Ozark
Springfield
Mt. Vernon
Carthage
Neosho
Aurora
Marshfield
Lamar
Greenfield
Cassville
Pineville
Mountain Home
Yellville
Marshall
Leslie
Clinton
Quitman
Heber Spgs.
Bald Knob
Beebe
Cabot
Jacksonville
North Little Rock
Benton
Bryant
Sheridan
Malvern
Arkadelphia
Gurdon
Hope
Texarkana
Lewisville
Magnolia
Stamps
Hampton
Warren
Crossett
Eudora
Lake Village
Dumas
McGehee
Arkansas City
Rison
Star City
Pine Bluff
Redfork
Rose Bud
Hazen
Des Arc
Brinkley
Marvell
Helena
Wheatley
Elaine
Lake Providence
Vicksburg
Jackson
Bolton
Raymond
Brandon
Yazoo City
Tallulah
Rayville
Monroe
Bastrop
Farmerville
Ruston
Minden
Shreveport
Keithville
Marthaville
Bienville
Jonesboro
Paragould
Blytheville
Osceola
Wilson
Manila
Memphis
Marion
Hernando
Senatobia
Tunica
Clarksdale
Batesville
Charleston
Tutwiler
Greenville
Leland
Indianola
Moorehead
Belzoni
Tchula
Lexington
Durant
Carrollton
Grenada
Bates-ville
Scott
Sardis
Friar Point
Arkansas City
Lake Village
Eudora
Portland
Parkdale
Wilmot
Mist
Johnsville
Mt. Holly
Eldorado
New London
Wesson
Carville
Strong
Felsenthal
Junction City
Upland
Three Creeks
Emerson
Waldo
Fouke
Frost-ville
Bradley
Taylor
Springhill
Homer
Gibsland
Arcadia
Jefferson
Linden
Boston
Lewisville
Garland
Fulton
Bodcaw
Washington
Prescott
Okolona
Gurdon
Beirne
Ozan
Bowie
Locksburg
De Queen
Horatio
Nashville
Murfreesboro
Amity
Pike
Alpine
Antoine
Tokio
Gillham
Norman
Black Spgs.
Mt. Ida
Hatfield
Cove
Vandervoort
Rockcreek
Kirby
Penrey
Bismarck
Butterfield
Grannis
Cooper
Gavena
Minnie
Hurston
Sparkman
Pike
Murfressboro
Okolona
Tokio
Nashville
Bowie
Ozan
Beirne
Gurdon
Hollyrpes
Prescott
Childress
Onsiasco
Emmett
Sayre
Hope
Bodcaw
Waterloo
Rosston
Camden
Eldorado
Mt. Holly
Eldorado

CALIFORNIA—First settled at San Diego, 1769. Ceded to the U. S. by Mexico in 1848. Admitted as a State, September 9, 1850. Area: Land, 155,652 square miles; Water, 2,645 square miles. Total, 158,297 square miles. Population: Last Census, 6,907,387. Capital, Sacramento.



COLORADO—First settled at Auraria, 1859. Admitted as a Territory, February 28, 1861. Admitted as a State, August 1st, 1876. Area: Land, 103,658 square miles; Water, 290 square miles. Total, 103,948 square miles. Population: Last Census, 1,123,296. Capital, Denver.

CONNECTICUT
RHODE ISLAND
LONG ISLAND
NEW YORK
MASSACHUSETTS
The Race
Fishers I.
Block I.
Watch Hill Point
Napatree Point
Stonington
Westerly
Pawcatuck R.
Mystic
Groton
New London
Thames R.
Niantic R.
Niantic
Waterford
Millstone Pt.
Montauk Pt.
Gardiners I.
Plum I.
Orient Pt.
Greenport
Shelter I.
Sag Harbor
Peconic Bay
Gardiners Bay
Oyster Pond Pt.
Saybrook Pt.
Old Saybrook
Westbrook
Clinton
Duck I.
Branford
Guilford
Guilford Harbor
Sachem Head
Indian Neck
Branford Harbor
Morgan Pt.
New Haven
Savin Rock
Woodmont
Milford
Housatonic R.
Stratford Pt.
Long Beach
Bridgeport
Fairfield
Southport
Greens Farms
Westport
Saugatuck
Norwalk
Wilton
Darien
Stamford
Greenwich
Port Chester
Rye
Harrison
Mamaroneck
Pelham
New Rochelle
Larchmont
Mt. Vernon
Yonkers
Hastings
Dobbs Ferry
Tarrytown
Sleepy Hollow
Irvington
Ardsley
Hartsdale
White Plains
North White Plains
Scarsdale
Mamaroneck
Port Chester
Greenwich
Stamford
Norwalk
Wilton
Ridgefield
Danbury
New Fairfield
Sherman
New Milford
Kent
Cornwall
Litchfield
Torrington
Winsted
Norfolk
Canaan
Salisbury
Lakeville
Sharon
Millerton
Dover Plains
Pine Plains
Amenia
Sharon
Salisbury
Canaan
Norfolk
Winsted
Torrington
Litchfield
Kent
New Milford
Danbury
Ridgefield
Wilton
Norwalk
Stamford
Greenwich
Port Chester
Rye
Harrison
Mamaroneck
New Rochelle
Pelham

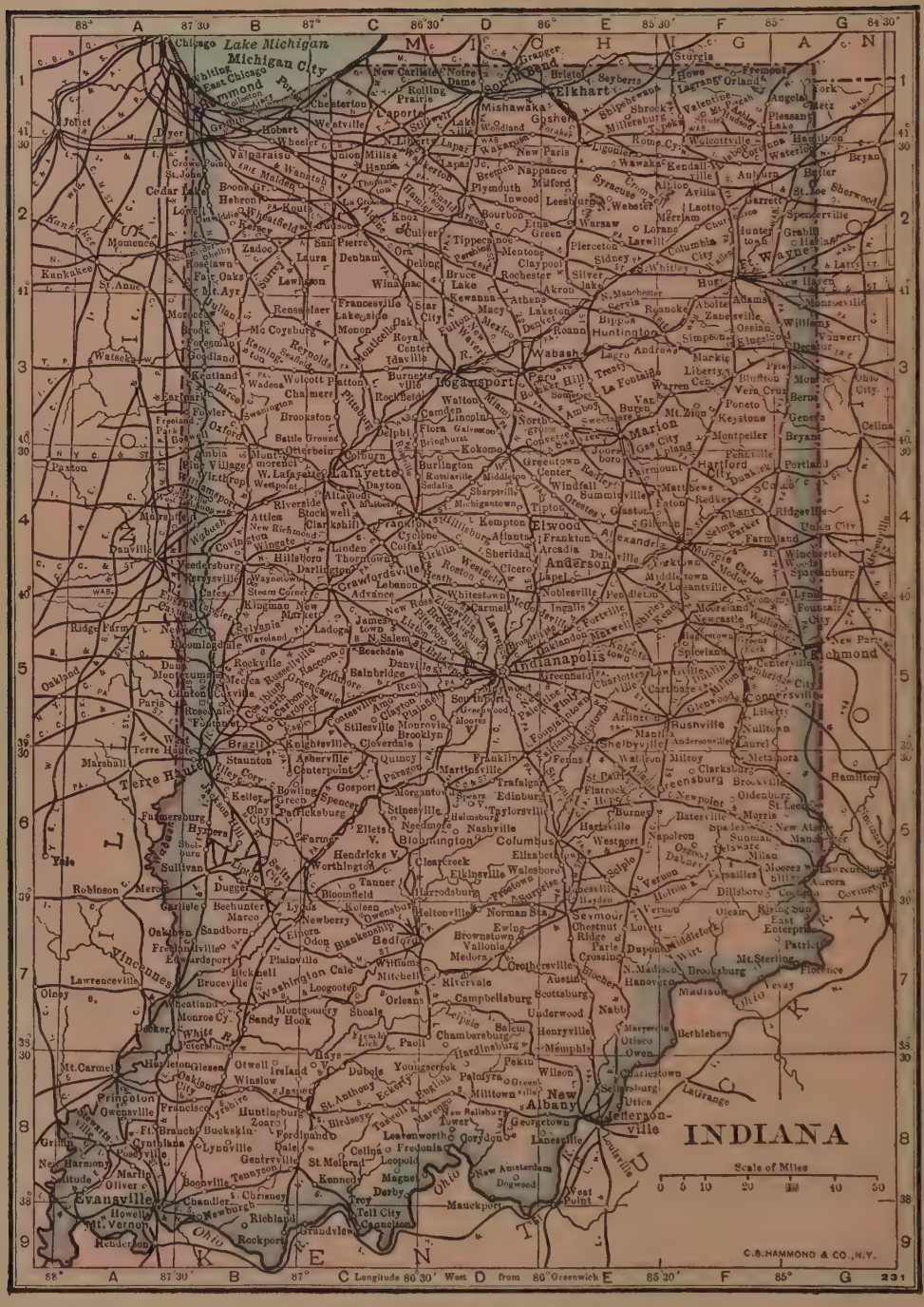


FLORIDA—First settled at St. Augustine, 1565. Admitted as a Territory, March 30, 1822. Admitted as a State, March 3, 1845. Area: Land, 54,861 square miles; Water, 3,805 square miles. Total, 58,666 square miles. Population: Last Census, 1,897,414. Capital, Tallahassee.

GEORGIA—First settled at Savannah, 1733. One of the Original Thirteen States. Area: Land, 58,725 square miles; Water, 540 square miles. Total, 59,265 square miles. Population: Last Census, 3,123,723. Capital, Atlanta.

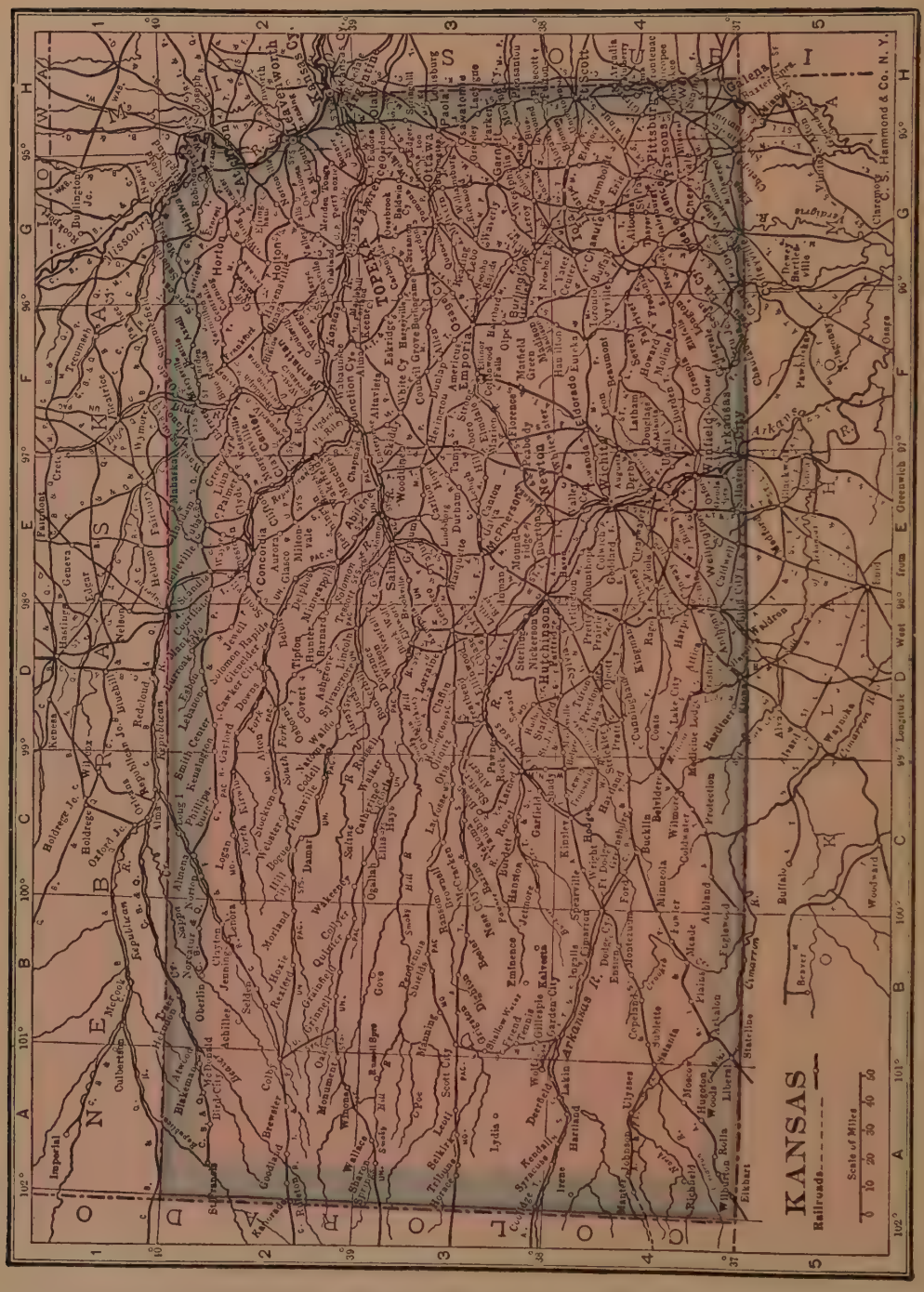
IDAHO—First settled at Coeur d'Alene, 1842. Admitted as a Territory, March 3, 1863. Admitted as a State, July 3, 1890. Area: Land, 83,354 square miles; Water, 534 square miles. Total, 83,888 square miles. Population: Last Census, 524,873. Capital, Boise.

ILLINOIS—First settled at Kaskaskia, 1720. Admitted as a Territory, March 1, 1809. Admitted as a State, December 3, 1818. Area: Land, 56,043 square miles; Water, 622 square miles. Total, 56,665 square miles. Population: Last Census, 7,897,241. Capital, Springfield.

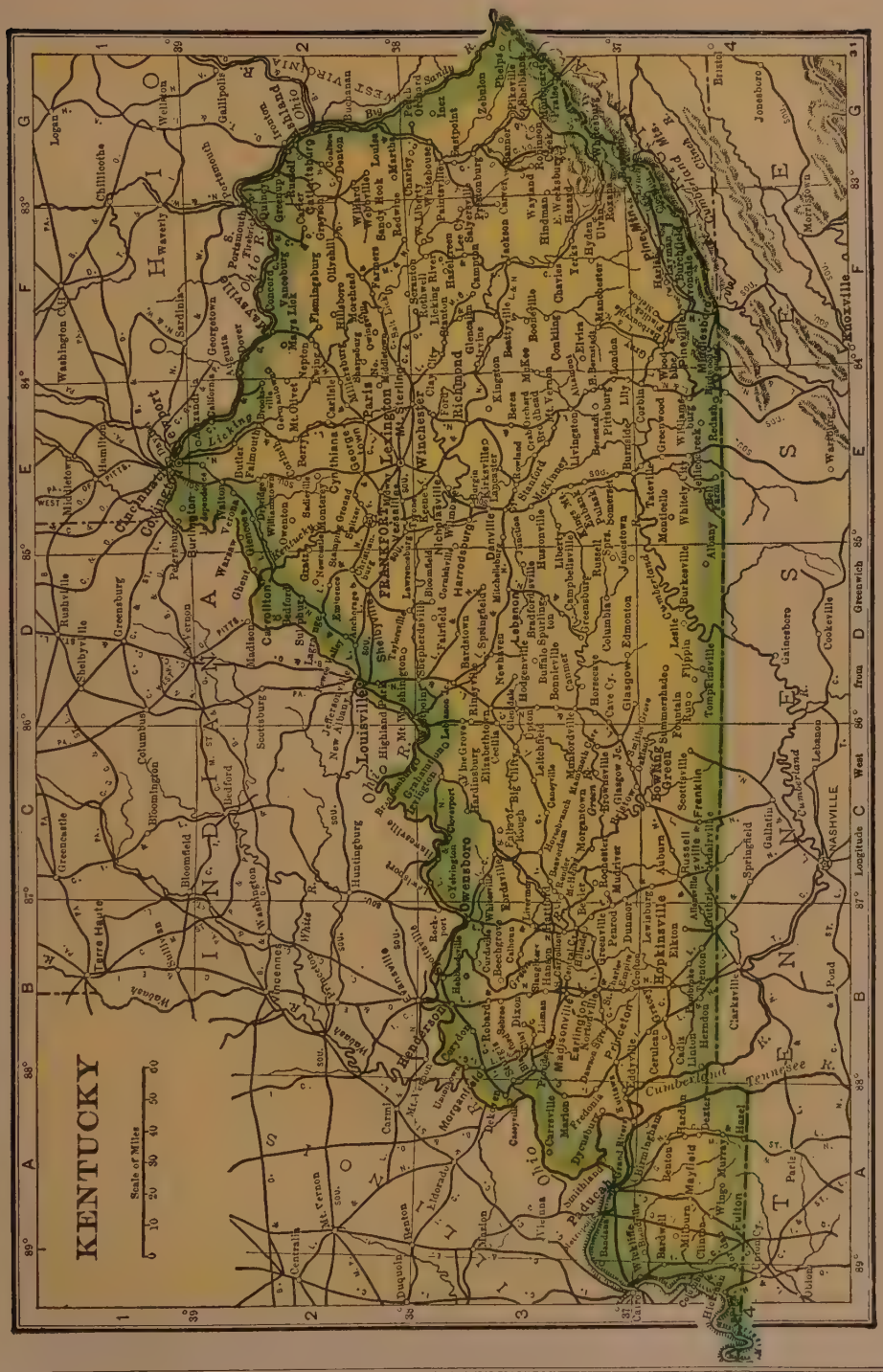


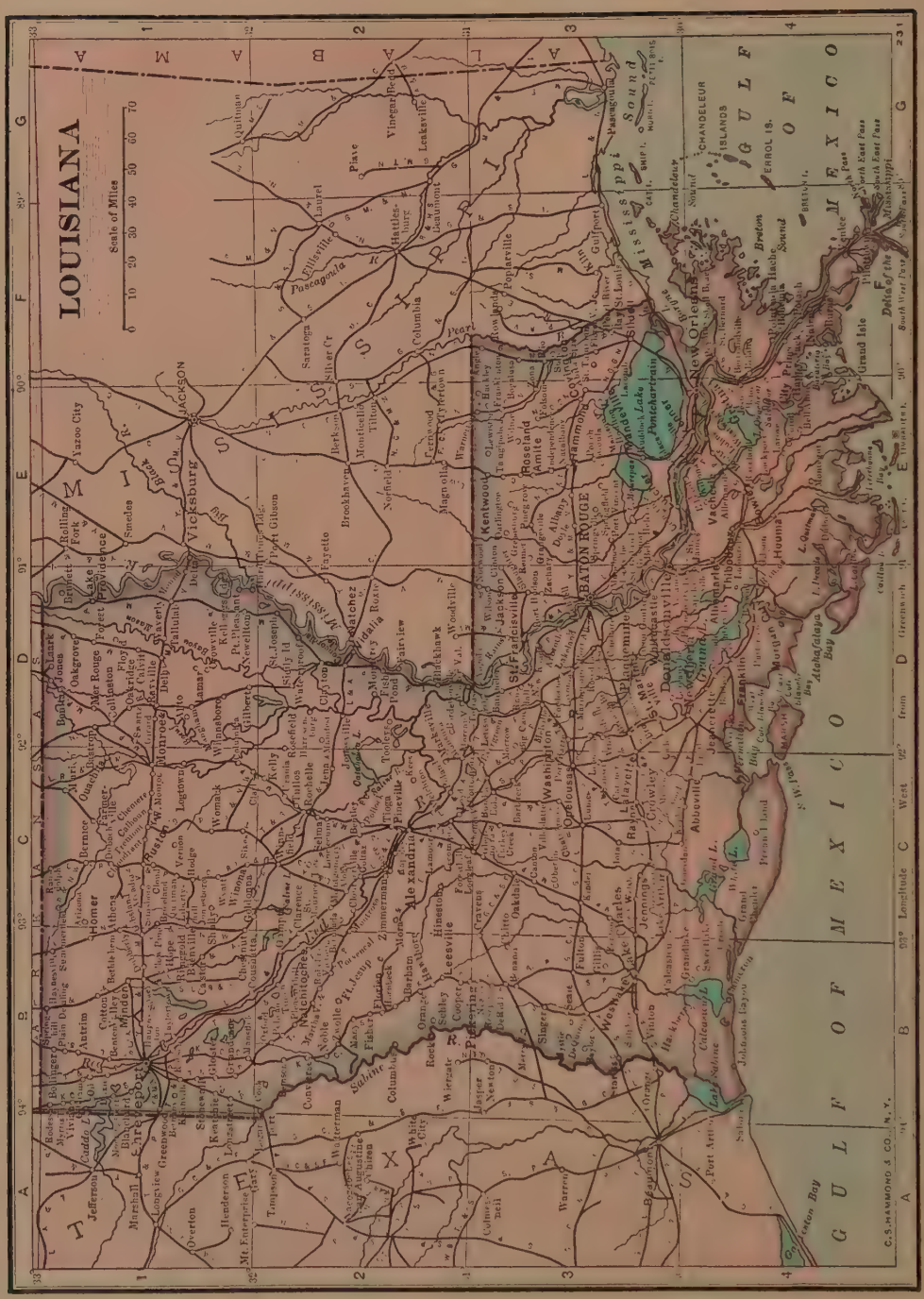
INDIANA—First settled at Vincennes, 1730. Admitted as a Territory, July 4, 1800. Admitted as a State, December 11, 1816. Area: Land, 36,045 square miles; Water, 309 square miles. Total, 36,354 square miles. Population: Last Census, 3,427,796. Capital, Indianapolis.

IOWA
Scale of Miles
0 10 20 30 40
WISCONSIN
ILLINOIS
MISSOURI
NEBRASKA
SOUTH DAKOTA
MINNESOTA
Dubuque
Clinton
Davenport
Cedar Rapids
Iowa City
Marshalltown
Des Moines
Council Bluffs
Sioux City
Omaha
Burlington
Ottumwa
Mississippi R.
Missouri R.
Des Moines R.
Iowa R.
Boone
Ames
Grinnell
Newton
Oskaloosa
Fairfield
Mt. Pleasant
Keokuk
Creston
Red Oak
Shenandoah
Atlantic
Audubon
Carroll
Storm Lake
Spirit Lake
Estherville
Emmetsburg
Algona
Fort Dodge
Webster City
Mason City
Clear Lake
Charles City
Waterloo
Cedar Falls
Independence
Manchester
Dyersville
Maquoketa
Monticello
Anamosa
Tipton
Wilton Jc.
Muscatine
Washington
Kalona
Riverside
Oxford
Williamsburg
Montezuma
Grinnell
Brooklyn
Deep R.
Tiffin
Iowa City
Solon
Lisbon
Mechanicsville
Clarence
Wheatland
Delmar Jc.
Camanche
Le Claire
Princeton
Buffalo
Walcott
Durant
Wilton Jc.
Moscow
Nichols
Conesville
Fruitland
Stockton
Letts
Columbus Jct.
Wapello
Toolesboro
Danville
Middletown
Yarmouth
Burlington
W. Burlington
Mediapolis
Wapello
Columbus City
Winfield
Mt. Pleasant
Olds
Salem
Rome
Hillsboro
Bonaparte
Farmington
Keosauqua
Bentonsport
Birmingham
Selma
Eldon
Iconium
Drakesville
Cantril
Bloomfield
Moulton
Unionville
Centerville
Numa
Promise City
Seymour
Chariton
Lucas
Russell
Lineville
Allerton
Lucerna
Corydon
Humeston
Knoxville
Melcher
Pella
Oskaloosa
Sigourney
Harper
Brighton

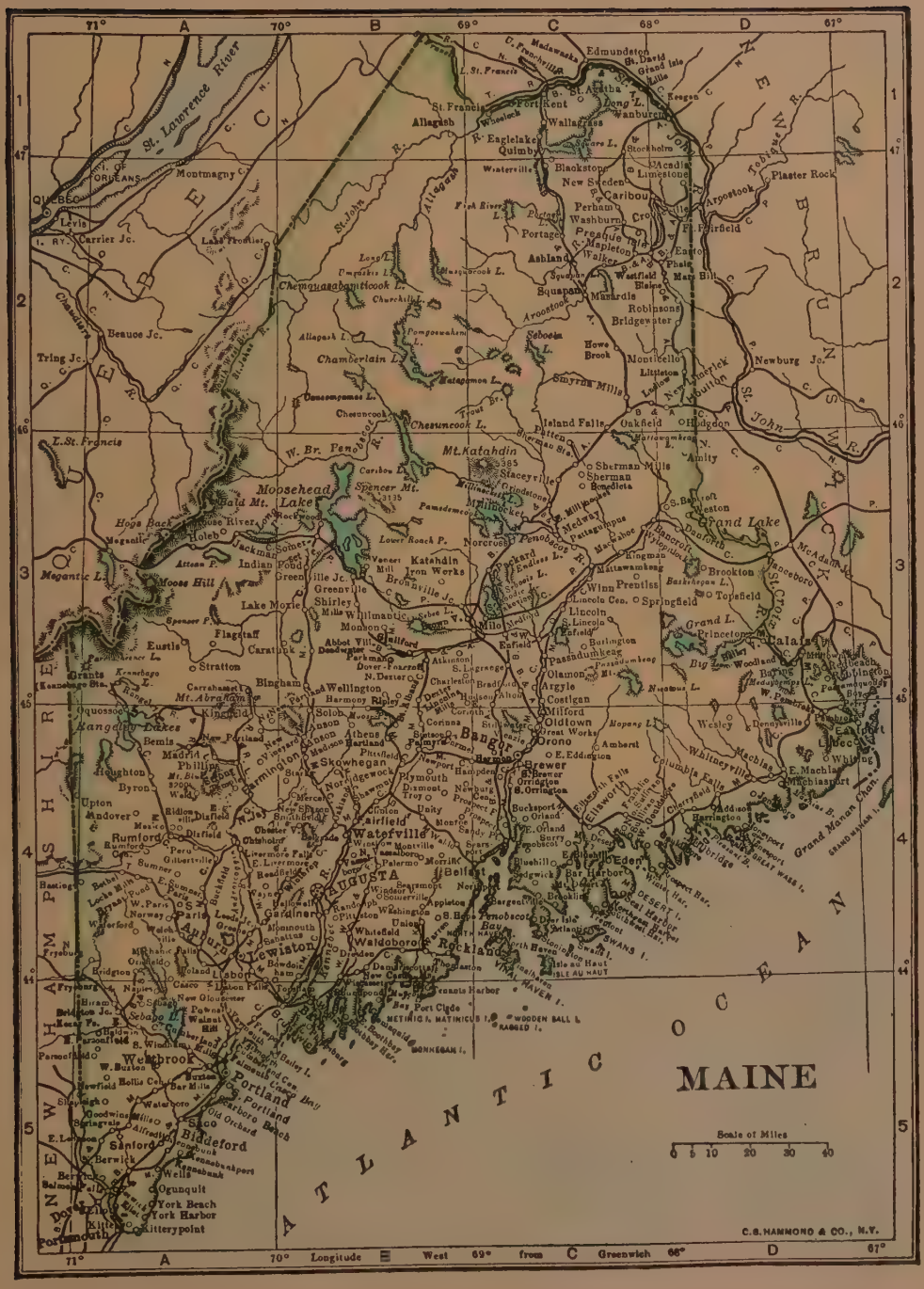


KANSAS—First settled at Ft. Leavenworth, 1827. Admitted as a Territory, May 30, 1854. Admitted as a State, January 29, 1861. Area: Land, 81,774 square miles; Water, 384 square miles. Total, 82,158 square miles. Population: Last Census, 1,801,028. Capital, Topeka.


KENTUCKY
Scale of Miles
0 10 20 30 40 50 60
Ohio R.
Mississippi R.
Tennessee R.
Cumberland R.
Louisville
FRANKFORT
Lexington
Winchester
Covington
Newport
Paducah
Hopkinsville
Owensboro
Henderson
Bowling Green
Middlesboro
Ashland
Maysville
Harrodsburg
Danville
Richmond
Georgetown
Shelbyville
Elizabethtown
Madisonville
Princeton
Cadiz
Eddyville
Mayfield
Murray
Columbus
Fulton
Hickman
Clinton
Barbourville
Pineville
London
Somerset
Jamestown
Monticello
Albany
Burkesville
Glasgow
Edmonton
Cave City
Horse Cave
Greensburg
Campbellsville
Lebanon
Springfield
Bardstown
Shepherdsville
Taylorsville
Brandenburg
Hardinsburg
Cloverport
Irvington
Leitchfield
Caneyville
Hartford
Beaver Dam
Morgantown
Russellville
Auburn
Scottsville
Franklin
Bowling Green
Glasgow Jct.
Tompkinsville
Albany
Jamestown
Columbia
Liberty
Danville
Harrodsburg
Nicholasville
Versailles
Frankfort
Lawrenceburg
Shelbyville
Eminence
New Castle
Carrollton
Warsaw
Owenton
Williamstown
Dry Ridge
Crittenden
Falmouth
Butler
Cynthiana
Paris
Georgetown
Lexington
Winchester
Mt. Sterling
Irvine
Richmond
Berea
Kingston
Stanford
Crab Orchard
Mt. Vernon
Somerset
Burnside
Pulaski
Stanford
Lancaster
Nicholasville
Versailles
Midway
Frankfort
Lawrenceburg
Shelbyville
Taylorsville
Bardstown
Springfield
Harrodsburg
Danville
Stanford
Lancaster
Richmond
Berea
Kingston
Irvine
Mt. Sterling
Winchester
Paris
Cynthiana
Falmouth
Butler
Dry Ridge
Crittenden
Williamstown
Owenton
Warsaw
Carrollton
Madison
Milton
Westport
Pendleton
Burlington
Florence
Union
Walton
Verona
Crittenden
Dry Ridge



LOUISIANA—First settled at Iberville, 1699. Admitted as a Territory, March 3, 1805. Admitted as a State, April 30, 1812. Area: Land, 45,409 square miles; Water, 3,097 square miles. Total, 48,506 Square miles. Population: Last Census, 2,363,880. Capital, Baton Rouge.



MAINE—First settled at Pemaquid, 1625. Admitted as a State, March 15, 1820. Area: Land, 29,895 square miles; Water, 3,145 square miles. Total, 33,040 square miles. Population: Last Census, 847,226. Capital, Augusta.

MARYLAND—First settled at St. Mary's 1634. One of the Original Thirteen States. Area: Land, 9,941 square miles; Water, 2,386 square miles. Total, 12,327 square miles. Population: Last Census, 1,821,244. Capital, Annapolis.

DELAWARE—First settled near Wilmington, 1638. One of the Original Thirteen States. Area: Land 1,965 square miles; Water, 405 square miles. Total, 2,370 square miles. Population: Last Census, 266,505. Capital, Dover.

MASSACHUSETTS
Scale of Miles
0 5 10 15 20 25 30
ATLANTIC OCEAN
Cape Cod
CAPE COD BAY
Nantucket Sound
NANTUCKET ISLAND
MARTHAS VINEYARD
NO MANS LAND
Gay Head
Boston Bay
BOSTON
Massachusetts Bay
Cape Ann
Salisbury
Newburyport
Gloucester
Rockport
Salem
Lynn
Chelsea
Hingham
Weymouth
Quincy
Dedham
Milton
Brookline
Cambridge
Somerville
Medford
Malden
Melrose
Lawrence
Haverhill
Merrimac
Amesbury
Andover
Lowell
Billerica
Concord
Framingham
Natick
Wellesley
Newton
Waltham
Watertown
Arlington
Woburn
Reading
Wakefield
Stoneham
Winchester
Lexington
Bedford
Lincoln
Sudbury
Wayland
Weston
Needham
Dover
Walpole
Norwood
Canton
Stoughton
Randolph
Braintree
Holbrook
Abington
Hanover
Hingham
Hull
Scituate
Marshfield
Duxbury
Kingston
Plymouth
Carver
Wareham
Rochester
Mattapoisett
Marion
Fairhaven
New Bedford
Acushnet
Dartmouth
Westport
Fall River
Somerset
Swansea
Seekonk
Rehoboth
Attleboro
Mansfield
Norton
Taunton
Raynham
Bridgewater
Whitman
Hanson
Pembroke
Hingham
Cohasset
Hull
Scituate
Marshfield
Duxbury
Kingston
Plymouth
Carver
Wareham
Rochester
Mattapoisett
Marion
Fairhaven
Acushnet
Dartmouth
Westport
Somerset
Swansea
Seekonk
Rehoboth
Attleboro
Mansfield
Norton
Raynham
Bridgewater
Whitman
Hanson
Pembroke
Provincetown
Truro
Wellfleet
Eastham
Orleans
Chatham
Harwich
Brewster
Dennis
Yarmouth
Barnstable
Sandwich
Bourne
Falmouth
Mashpee
Hyannis
Centerville
Osterville
Marstons Mills
Cotuit
Santuit
Mashpee
Falmouth
Woods Hole
Vineyard Haven
Oak Bluffs
Edgartown
Chilmark
Menemsha
Aquinnah
Gay Head
Nantucket
Siasconset
Madaket
Surfside
Quaise
Tom Nevers
Wauwinet
Coskata
Great Pt.
Nantucket Harbor
Muskeget I.
Monomoy Pt.
Monomoy
Chatham
Harwich
Brewster
Dennis
Yarmouth
Barnstable
Sandwich
Bourne
Falmouth
Mashpee
Hyannis
Centerville
Osterville
Marstons Mills
Cotuit
Santuit
Mashpee
Falmouth
Woods Hole
Vineyard Haven
Oak Bluffs
Edgartown
Chilmark
Menemsha
Aquinnah
Gay Head
Nantucket
Siasconset
Madaket
Surfside
Quaise
Tom Nevers
Wauwinet
Coskata
Great Pt.
Nantucket Harbor
Muskeget I.
Monomoy Pt.
Monomoy
Provincetown
Truro
Wellfleet
Eastham
Orleans

MICHIGAN—First settled in Sault Ste. Marie, 1668. Admitted as a Territory, June 30, 1805. Admitted as a State, January 26, 1837. Area: Land, 57,480 square miles; Water, 500 square miles. Total, 57,980 square miles. Population: Last Census, 5,256,106. Capital, Lansing.

MINNESOTA—First settled at mouth of St. Croix and Minnesota Rivers, 1805. Admitted as a Territory, March 3, 1849. Admitted as a State, May 11, 1858. Area: Land, 80,858 square miles; Water, 3,824 square miles. Total, 84,682 square miles. Population: Last Census, 2,792,300. Capital, St. Paul.

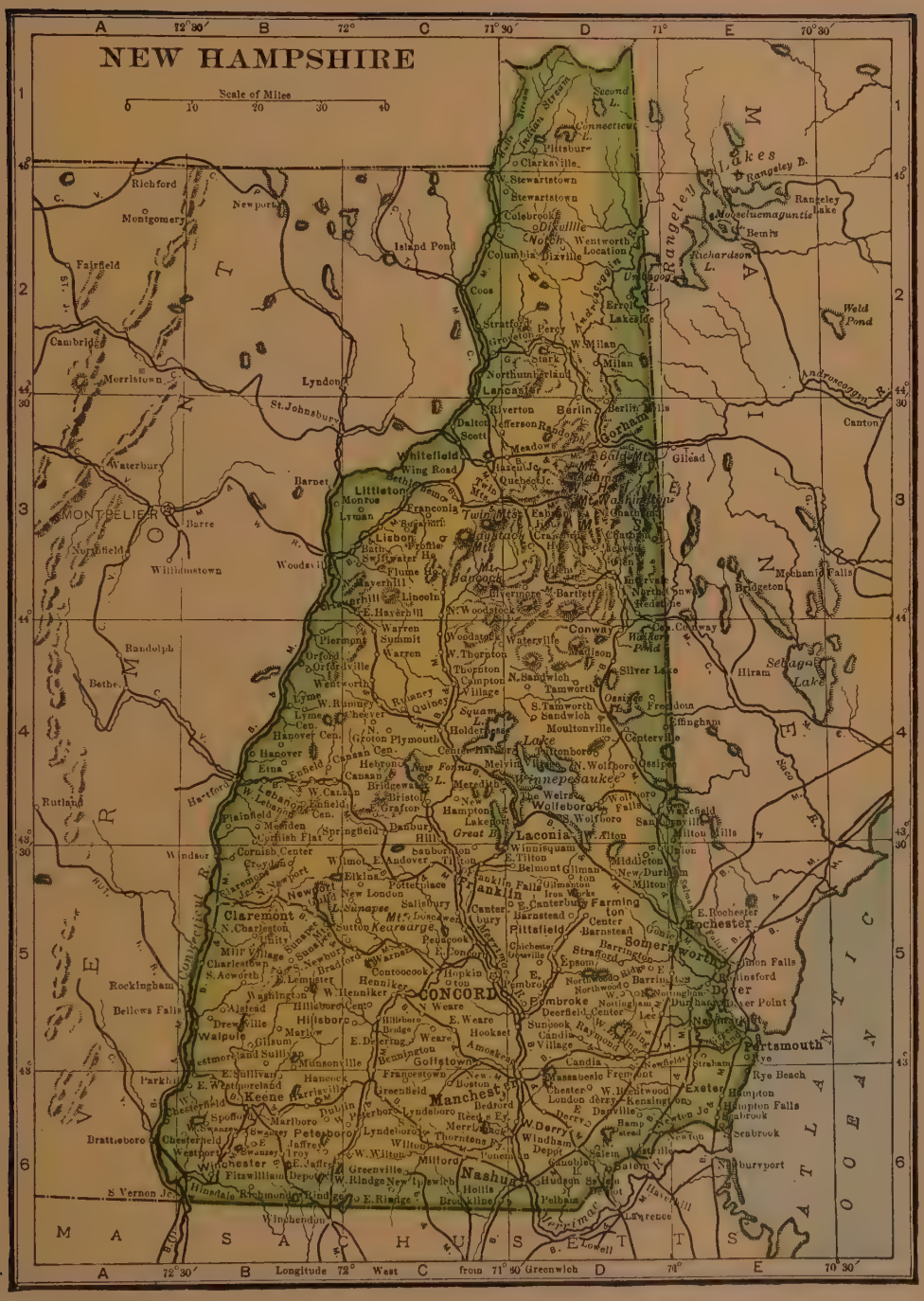
MISSISSIPPI—First settled in Biloxi, 1699. Admitted as a Territory, April 7, 1798. Admitted as a State, December 10, 1817. Area: Land, 46,362 square miles; Water, 503 square miles. Total, 46,865 square miles. Population: Last Census, 2,183,796. Capital, Jackson.

MISSOURI—First settled in Ste. Genevieve, 1735. Admitted as a Territory, June 4, 1812. Admitted as a State, August 10, 1821. Area: Land, 68,727 square miles; Water, 693 square miles. Total, 69,420 square miles. Population: Last Census, 3,784,664. Capital, Jefferson City.

MONTANA—First settled on Yellowstone River, 1809. Admitted as a Territory, May. 26, 1864. Admitted as a State, November 8, 1889. Area: Land, 146,131 square miles; Water, 866 square miles. Total, 146,997 square miles. Population: Last Census, 559,456. Capital, Helena.

NEBRASKA—First settled at Bellevue, 1805. Admitted as a Territory, May 30, 1854. Admitted as a State, March 1, 1867. Area: Land, 76,808 square miles; Water, 712 square miles. Total, 77,520 square miles. Population: Last Census, 1,315,834. Capital, Lincoln.

NEVADA—First settled in Genoa, 1849. Admitted as a Territory, March 2, 1861. Admitted as a State, October 31, 1864. Area: Land, 109,821 square miles; Water, 869 square miles. Total, 110,690 square miles. Population: Last Census, 110,247. Capital, Carson City.


NEW HAMPSHIRE
Scale of Miles
0 10 20 30 40
A 72°30′ B 72° C 71°30′ D 71° E 70°30′
Longitude 72° West from 71°30′ Greenwich
MASSACHUSETTS
VERMONT
MAINE
ATLANTIC OCEAN
Connecticut R.
Merrimack R.
Androscoggin R.
Lake Winnipesaukee
Rangeley Lakes
Second L.
Connecticut L.
Pittsburg
Clarksville
Stewartstown
Colebrook
Columbia
Dixville
Notch
Wentworth Location
Errol
Lakeside
Milan
Berlin
Berlin Mills
Gorham
Gilead
Canton
Richford
Montgomery
Newport
Fairfield
Cambridge
Morristown
Lyndon
St. Johnsbury
Island Pond
Coos
Stratford
Percy
Groveton
Stark
Northumberland
Lancaster
Waterbury
Barnet
MONTPELIER
Barre
Northfield
Williamstown
Woodsville
Littleton
Monroe
Lyman
Franconia
Lisbon
Bath
Profile
Flume
Haverhill
Lincoln
E. Haverhill
N. Woodstock
Whitefield
Wing Road
Jefferson
Dalton
Scott
Riverton
Meadows
Twin Mts.
Quebec Jc.
Randolph
Bethel
Rutland
Windsor
Claremont
N. Charleston
Newport
Sunapee
Mt. Sunapee
Kearsarge
Rockingham
Bellows Falls
Walpole
Alstead
Drewsville
Hillsboro
Marlow
Gilsum
Westmoreland
Sullivan
Munsonville
Keene
Parkhill
E. Sullivan
E. Westmoreland
Hancock
Harrisville
Chesterfield
Spofford
Marlboro
Dublin
Peterboro
Swanzey
Brattleboro
Winchester
Fitzwilliam
Depot
Jaffrey
E. Jaffrey
Greenville
W. Rindge
Rindge
E. Rindge
S. Vernon Jc.
Hinsdale
Richmond
Winchendon
Lebanon
W. Lebanon
Plainfield
Meriden
Cornish Flat
Cornish Center
Croydon
Grafton
Springfield
Danbury
Canaan
Canaan Cen.
Enfield
Hanover
Hanover Cen.
Etna
Lyme
Lyme Cen.
W. Rumney
Orford
Orfordville
Wentworth
Village
Rumney
Quincy
Plymouth
Groton
Hebron
Bridgewater
Bristol
New Found L.
Meredith
Center Harbor
Melvin Village
Tuftonboro
Wolfeboro
The Weirs
Wolfeboro Falls
S. Wolfeboro
Alton
Alton Bay
Wakefield
Sanbornville
Milton Mills
Union
Middleton
New Durham
Milton
Farmington
Center Farmington
Barnstead
Center Barnstead
Pittsfield
Chichester
Epsom
Barrington
Strafford
Somersworth
Rochester
E. Rochester
Gonic
Lebanon
Enfield
Grantham
Mascoma L.
Canaan
Orford
Lyme
Hanover
Norwich
Thetford
Fairlee
Bradford
Newbury
Sunapee
Georges Mills
Contoocook
Hopkinton
Henniker
Hillsboro
Hillsboro Bridge
Deering
Weare
E. Weare
Hookset
Goffstown
Bennington
Amherst
Francestown
Greenfield
Lyndeboro
Peterboro
Merrimack
Thornton's Ferry
Wilton
W. Wilton
Milford
Greenville
New Ipswich
Hollis
Brookline
Nashua
Pelham
Windham
Depot
Derry
Londonderry
Chester
Candia
Village
Raymond
Deerfield
Center
Lee
Durham
Dover
Dover Point
Newington
Portsmouth
Rye
Rye Beach
Hampton
Hampton Falls
Seabrook
Exeter
Kensington
Danville
Newton Jc.
Newton
Salem
Methuen
Newburyport
Hudson
Salem

NEW JERSEY—First settled at Elizabethtown, 1664. One of the Original Thirteen States. Area: Land, 7,514 square miles; Water, 710 square miles. Total, 8,224 square miles. Population: Last Census, 4,160,165. Capital, Trenton.

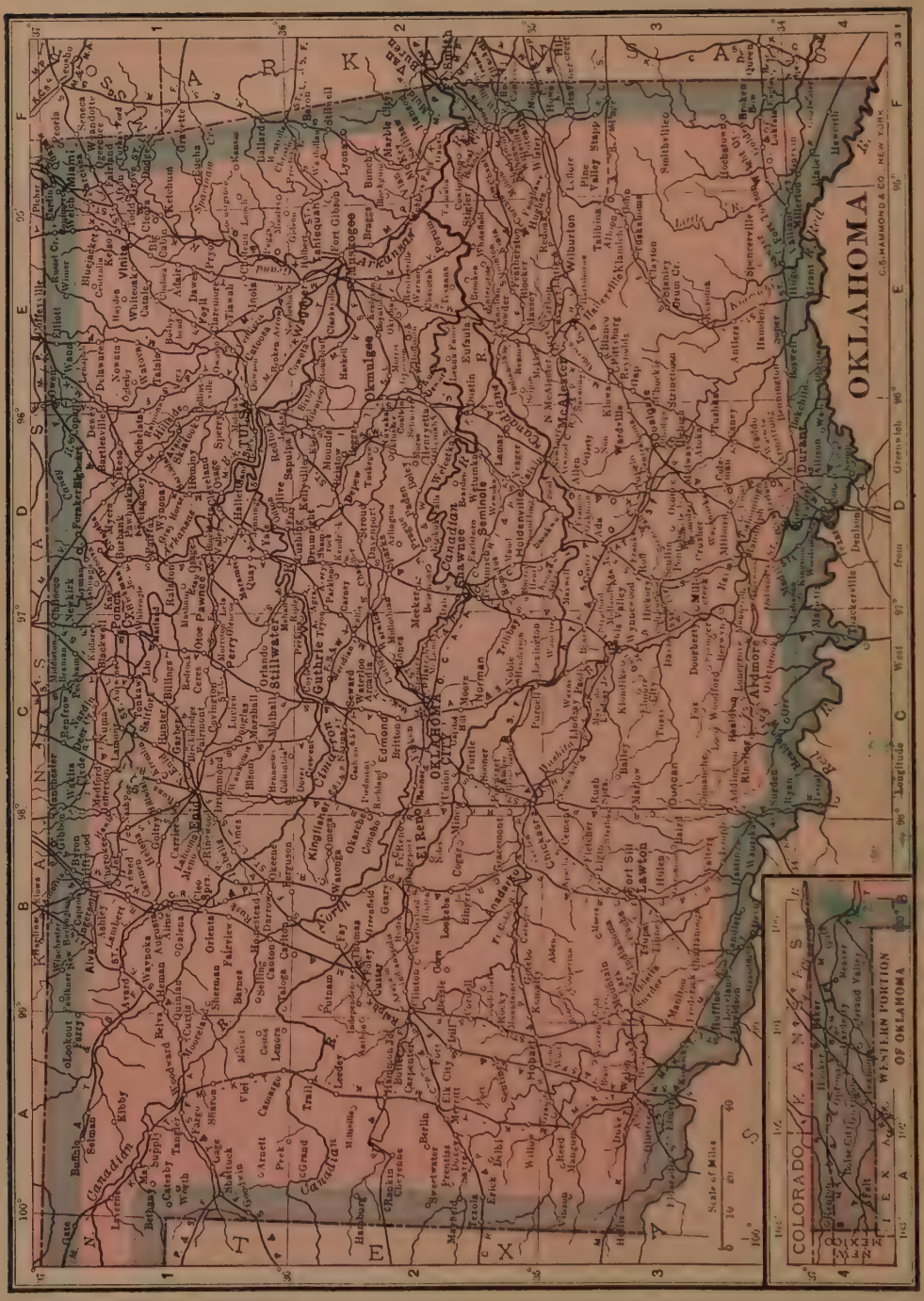
NEW MEXICO—First settled at Santa Fe, 1537. Admitted as a Territory, September 9, 1850. Admitted as a State, January 6, 1912. Area: Land, 122,503 square miles; Water, 131 square miles. Total, 122,634 square miles. Population: Last Census, 531,818. Capital, Santa Fe.

NEW YORK
ONTARIO
LAKE ONTARIO
PENNSYLVANIA
ADIRONDACKS
CATSKILL
ALBANY
Syracuse
Buffalo
Rochester
Binghamton
Troy
Utica
Elmira
Ithaca
Niagara Falls
Scale of Miles
0 10 20 30 40 50 60
SOUTHERN PORTION OF NEW YORK
Same Scale as Main Map
ATLANTIC OCEAN
LONG ISLAND SOUND
CONNECTICUT
NEW JERSEY
Port Jervis
Hudson R.
Mohawk R.
Genesee R.
Susquehanna R.
Delaware R.
Lake Erie
Lake Ontario
Lake Champlain
Oneida L.
Seneca L.
Cayuga L.
Canandaigua L.
Keuka L.
Chautauqua L.
Owasco L.
Skaneateles L.
Otsego L.
Saratoga L.
Schroon L.
Lake George
Long Lake
Raquette L.
Tupper Lake
Saranac Lake
Lake Placid
Mt. Marcy
Mt. Seward
Mt. Mclntyre
Mt. Colden
Mt. Haystack
Mt. Dix
Mt. Whiteface
Mt. Marshall
Mt. Skylight
Mt. Emmons
Mt. Redfield
Mt. Adams
Mt. Jefferson
Mt. Clay
Mt. Washington
Mt. Monroe
Mt. Franklin
Mt. Pleasant
Mt. Hunter
Mt. Tremper
Mt. Utsayantha
Mt. Vision
Mt. Pisgah
Mt. Morris
Mt. Tom
Mt. Beacon
Mt. Ida
Mt. Defiance
Mt. Independence
Mt. Hope
Mt. Equinox
Mt. Anthony
Mt. Greylock
Mt. Everett
Mt. Frissell
Mt. Riga
Mt. Algo
Mt. Utowana
Mt. Tabor
Mt. Peg
Mt. Ararat
Mt. Pocono
Mt. Penn
Mt. Gretna
Mt. Joy
Mt. Wilson
Mt. Holly
Mt. Hope
Mt. Ephraim
Mt. Laurel
Mt. Vernon
Mt. Airy
Mt. Carmel
Mt. Union
Mt. Pleasant

NORTH CAROLINA—First settled on Albemarle Sound, 1653. One of the Original Thirteen States. Area: Land, 48,740 square miles; Water, 3,686 square miles. Total, 52,426 square miles. Population: Last Census, 3,571,623. Capital, Raleigh.

NORTH DAKOTA
Scale of Miles
0 10 20 30 40 50
Longitude 101° West from 100° Greenwich
Grand Forks
Valley City
Jamestown
Devils Lake
Minot
Williston
Dickinson
Bismarck
Mandan
Fargo
Wahpeton
Lisbon
Ellendale
Oakes
Hettinger
Mott
Beach
Medora
Killdeer Mts.
Turtle Mts.
Pembina Mts.
Souris R.
Missouri R.
Little Missouri R.
Cannonball R.
Heart R.
Knife R.
Sheyenne R.
Red R.
Pembina R.
Park R.
Forest R.
Goose R.
James R.
Elbow Woods
Fort Berthold Ind. Res.
Standing Rock Ind. Res.
Fort Yates
Cannon Ball
Fort Rice
Fort Lincoln
Fort Abraham Lincoln
Fort Stevenson
Fort Buford
Fort Union
Fort Totten
Fort Seward
Fort Ransom
Fort Abercrombie
Fort Pembina
Fort Dilts
Fort Clark
Fort Mandan
Fort Lincoln
Fort Rice
Fort Yates
Fort Berthold Ind. Res.
Standing Rock Ind. Res.

OHIO—First settled at Marietta, 1788. Admitted as a State, January, 1803. Area: Land, 40,740 square miles; Water, 300 square miles. Total, 41,040 square miles. Population: Last Census, 6,907,612. Capital, Columbus.



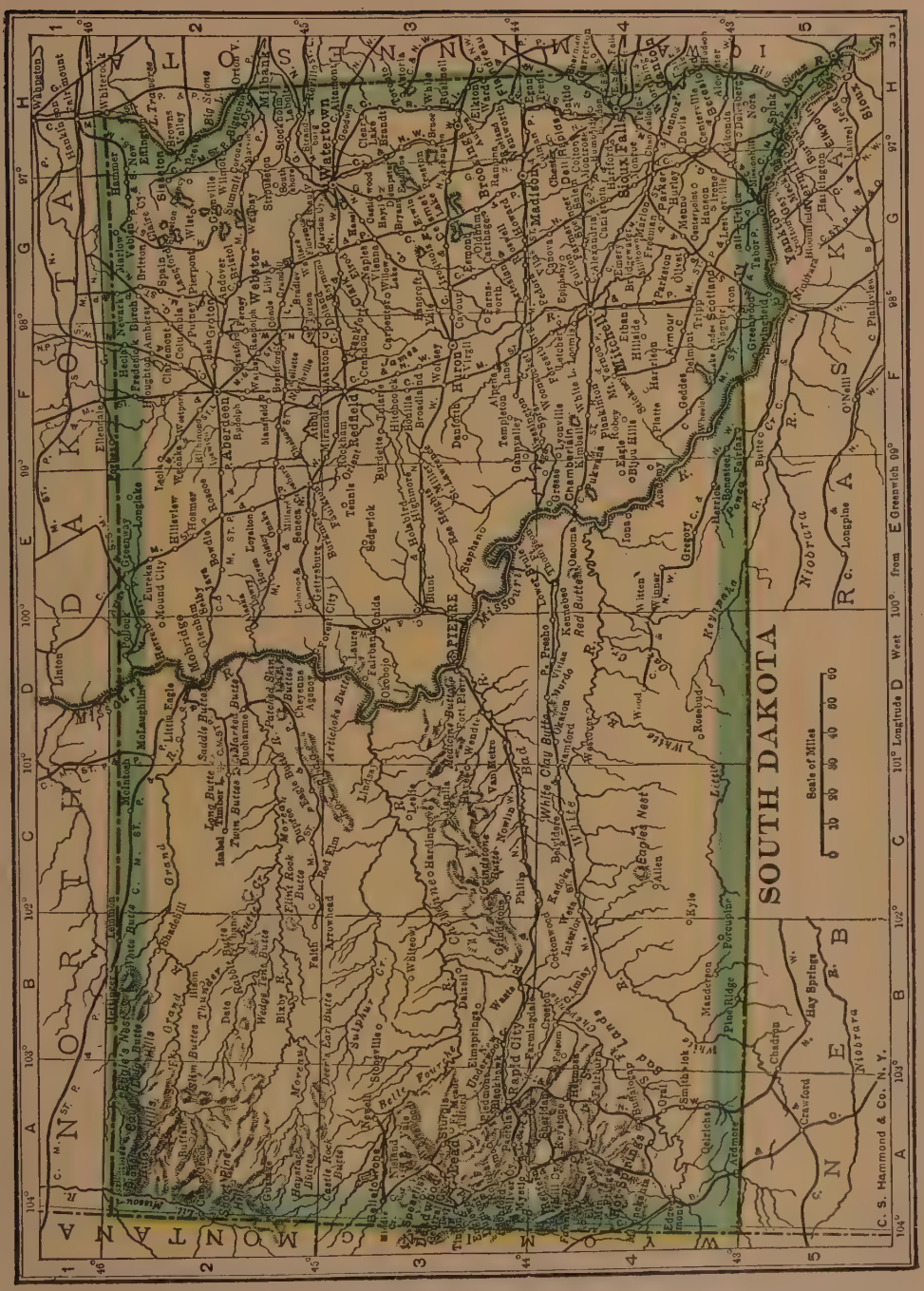
OKLAHOMA—First settled at Guthrie, 1890. Admitted as a Territory, May 2, 1890. Admitted as a State, November 16, 1907. Area: Land, 69,414 square miles; Water, 643 square miles. Total, 70,057 square miles. Population: Last Census, 2,336,434. Capital, Oklahoma City.

OREGON
WASHINGTON
IDAHO
CALIFORNIA
NEVADA
PACIFIC OCEAN
Columbia R.
Snake R.
Willamette R.
Deschutes R.
John Day R.
Owyhee R.
Malheur R.
Umpqua R.
Rogue R.
Klamath R.
Pendleton
SALEM
Portland
Astoria
Oregon City
The Dalles
Baker
Bend
Klamath Falls
Medford
Ashland
Roseburg
Albany
Corvallis
Eugene
Lakeview
Warner Lake
Harney L.
Summer L.
Albert L.
Silver L.
Klamath L.
Crater L.
Mt. Jefferson
Mt. Thielsen
Mt. Scott
Cascade Mts.
Coast Range Mts.
Siskiyou Mts.
Blue Mts.
Wallowa Mts.
Steens Mts.
Warner Mts.
Pueblo Mts.
Trout Creek Mts.
Ochoco Mts.
Grande Ronde R.
Powder R.
Burnt R.
Malheur L.
Goose L.
Abert L.
Summer Lake
Silver Lake
Fort Rock
Fremont
Crescent
Paulina
Prineville
Madras
Redmond
Sisters
Mitchell
Fossil
Condon
Heppner
Ione
Arlington
Hermiston
Umatilla
Milton
Weston
Enterprise
Joseph
La Grande
Union
Cornucopia
Baker
Sumpter
Whitney
Hereford
Bridgeport
Huntington
Ontario
Vale
Nyssa
Jordan Valley
Owyhee
Burns
Harney
Riverside
Drewsey
Crane
Diamond
Voltage
Wagontire
Silver Creek
Barnes
Silver Lake
Beckley
Bonanza
Bliss
Fields
Denio
Plush
Adel
Lakeview
New Pine Creek
Alturas
Cedarville
Eagle Lake
Susanville
Lassen Peak
Mt. Shasta
Yreka
Weed
Dunsmuir
Mt. Eddy
Scott Mts.
Salmon Mts.
Trinity Mts.
Klamath Mts.
Siskiyou Mts.
Coast Range Mts.
Cascade Mts.
Crater Lake
Diamond Peak
Mt. Scott
Mt. Thielsen
Mt. Jefferson
Three Sisters
Mt. Hood
Mt. St. Helens
Mt. Adams
Mt. Rainier
Columbia
Willamette
Deschutes
John Day
Umatilla
Walla Walla
Snake
Grande Ronde
Powder
Burnt
Malheur
Owyhee
Klamath
Lost
Pit
Rogue
Umpqua
Coquille
Chetco
Illinois
Applegate
Sprague
Williamson
Wood
Sandy
Clackamas
Molalla
Santiam
McKenzie
Yamhill
Tualatin
Nehalem
Wilson
Trask
Nestucca
Siletz
Yaquina
Alsea
Siuslaw
Umpqua
Coos Bay
Coquille
Chetco
Rogue
Illinois
Applegate
Klamath
Lost
Pit

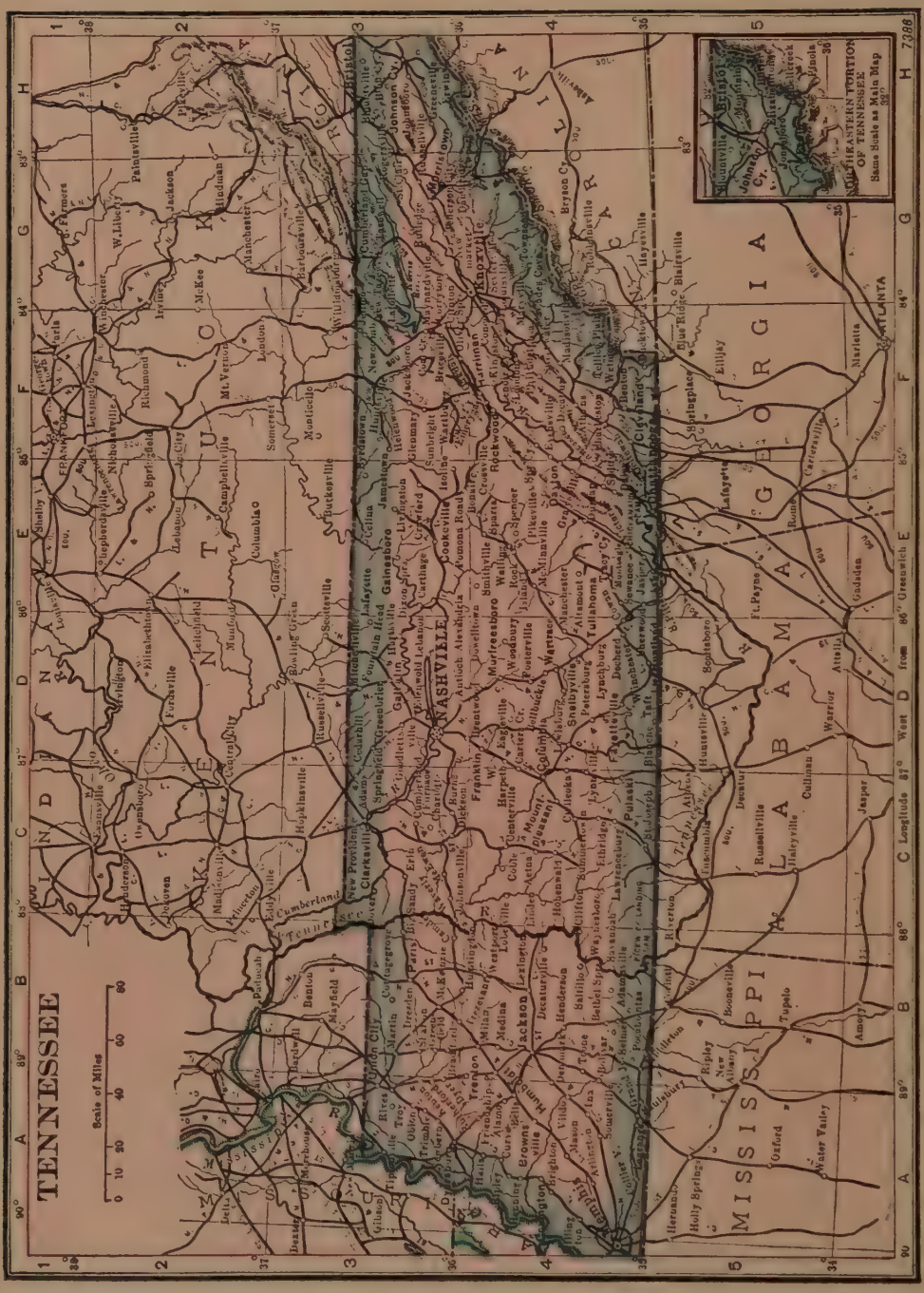
PENNSYLVANIA—First settled at New Gottenburg, 1643. One of the Original Thirteen States. Area: Land, 44,832 square miles; Water, 294 square miles. Total, 45,126 square miles. Population: Last Census, 9,900,180. Capital, Harrisburg.

RHODE ISLAND—First settled at Providence, 1636. One of the Original Thirteen States. Area: Land, 1,067 square miles; Water, 181 square miles.. Total, 1,248 square miles. Population: Last Census, 713,346. Capital, Providence.

SOUTH CAROLINA—First settled at Albemarle Point on the Ashley River, 1670. One of the Original Thirteen States. Area: Land, 30,495 square miles; Water, 494 square miles. Total, 30,989 square miles. Population: Last Census, 1,899,804. Capital, Columbia.

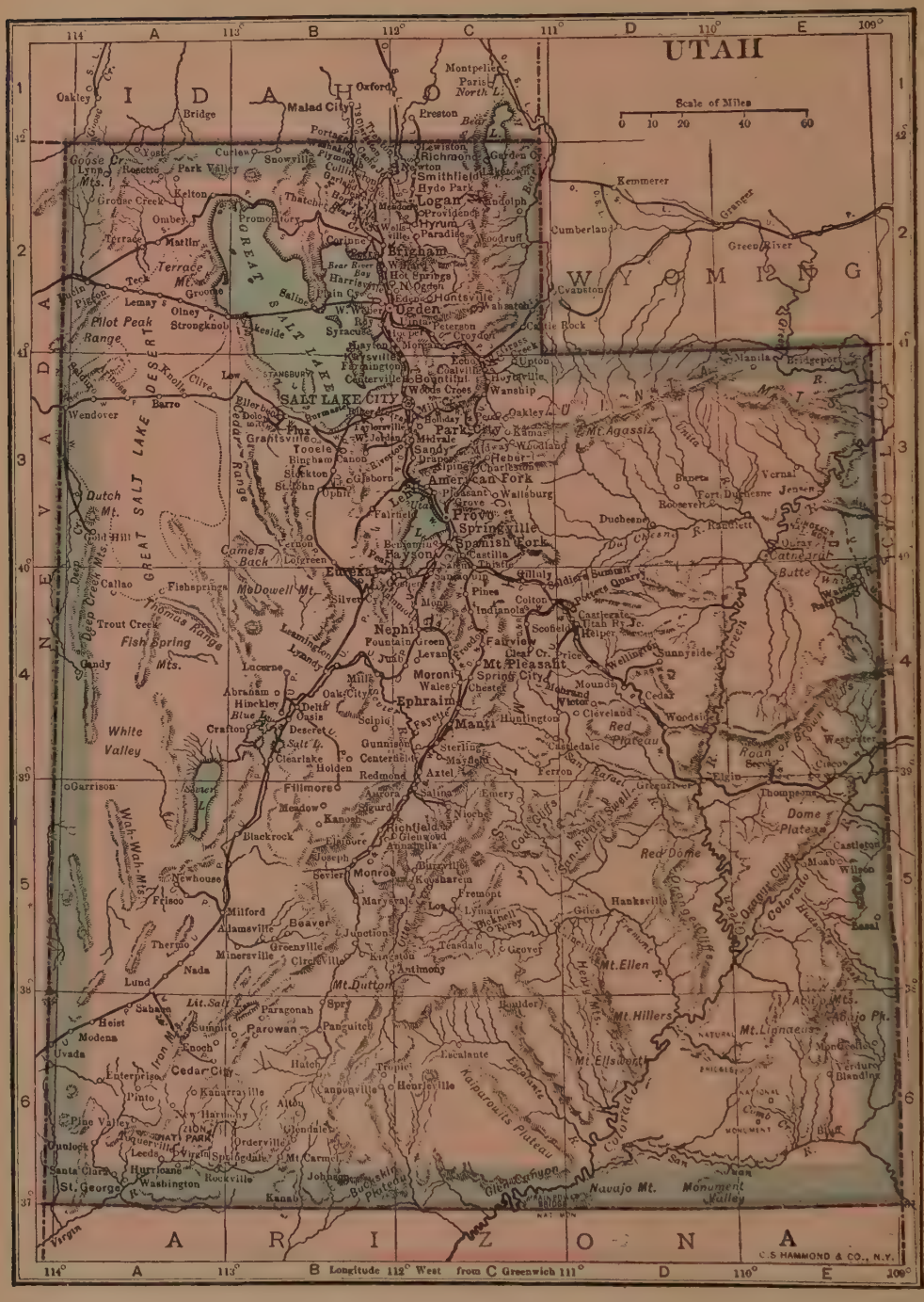


SOUTH DAKOTA—First settled in the southeast part, 1859. Admitted as a Territory, March 2, 1861. Admitted as a State, November, 1889. Area: Land, 76,868 square miles; Water, 747 square miles. Total, 77,615 square miles. Population: Last Census, 642,961. Capital, Pierre.



TENNESSEE—First settled at Ft. Loudon, 1756. Admitted as a State, June 1, 1796. Area: Land, 41,687 square miles; Water, 335 square miles. Total, 42,022 square miles. Population: Last Census, 2,915,841. Capital, Nashville.

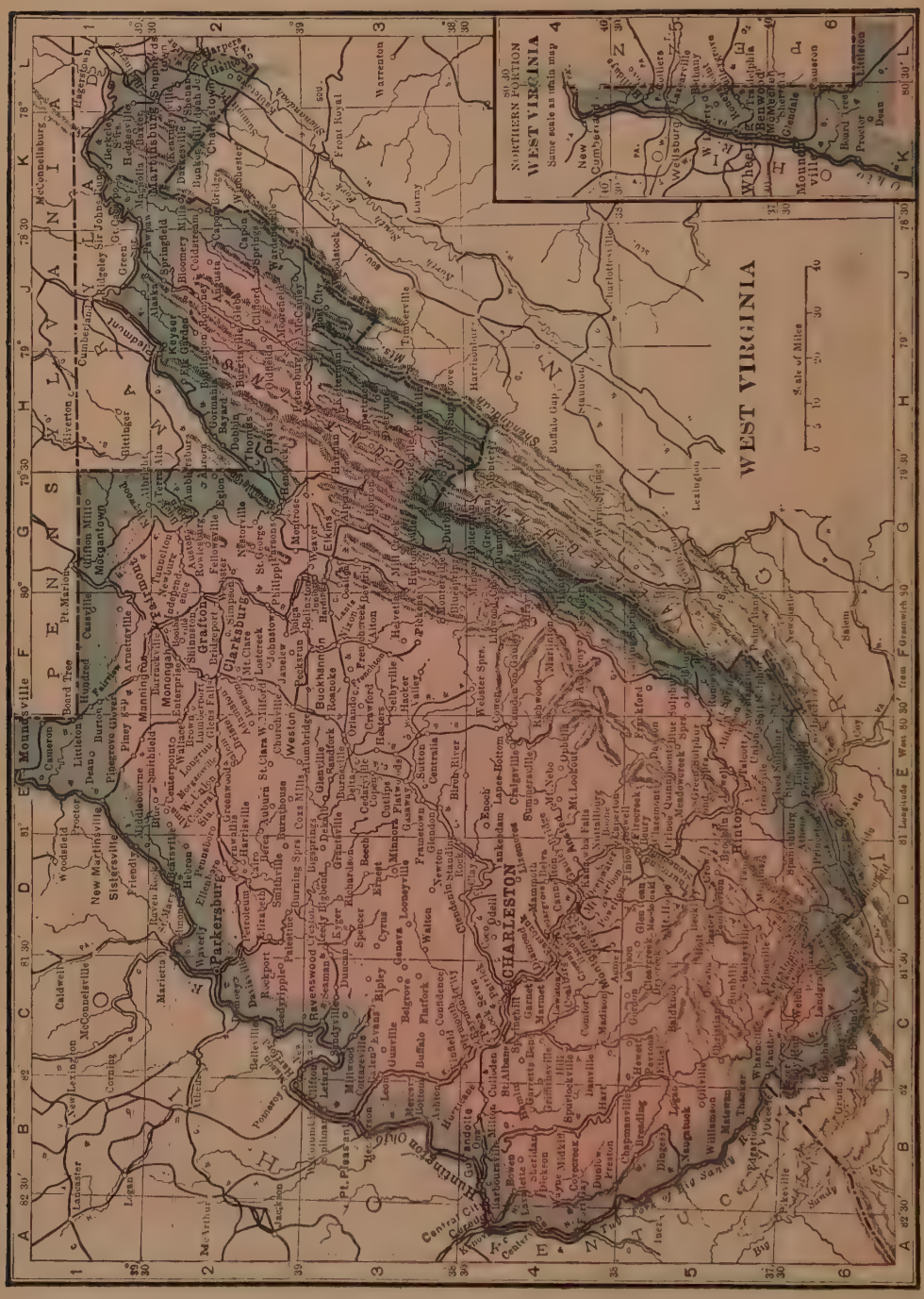
TEXAS—First settled at Taleta, 1682. Admitted as a State, December 29, 1845. Area: Land, 262,398 square miles; Water, 3,498 square miles. Total, 265,896 square miles. Population: Last Census, 6,414,824. Capital, Austin.


UTAH
Scale of Miles
0 10 20 40 60
Longitude 112° West from Greenwich
SALT LAKE CITY
Ogden
Provo
Logan
Brigham
Great Salt Lake
Great Salt Lake Desert
Wasatch Range
Uinta Mts.
Pilot Peak Range
Dutch Mt.
Camels Back
McDowell Mt.
Fish Spring Mts.
Thomas Range
Deep Creek Mts.
White Valley
Wah Wah Mts.
Mt. Dutton
Mt. Ellen
Mt. Hillers
Mt. Ellsworth
Mt. Lingaeus
Navajo Mt.
Monument Valley
Kaiparowits Plateau
Escalante
Henry Mts.
Abajo Mts.
Abajo Pk.
Red Dome
Dome Plateau
Red Plateau
Book Cliffs
Roan Cliffs
Grand Mesa
Mt. Agassiz
Cumberland
Kemmerer
Green River
Bridgeport
Manila
Vernal
Jensen
Fort Duchesne
Roosevelt
Ducheene
Price
Sunnyside
Castle Gate
Helper
Wellington
Scofield
Colton
Fairview
Mt. Pleasant
Spring City
Ephraim
Manti
Nephi
Fillmore
Meadow
Kanosh
Richfield
Monroe
Sevier
Salina
Aurora
Sigurd
Gunnison
Centerfield
Sterling
Mayfield
Axtel
Redmond
Ferron
Emery
Castledale
Huntington
Cleveland
Woodside
Elmo
Green River
Thompson
Castleton
Moab
Wilson
Hanksville
Loa
Fremont
Torrey
Teasdale
Grover
Boulder
Escalante
Tropic
Henrieville
Cannonville
Kanab
Alton
Glendale
Orderville
Mt. Carmel
Hurricane
Washington
St. George
Rockville
Santa Clara
Ivins
Leeds
Virgin
Zion Nat. Park
Bryce Canyon Nat. Park
Cedar City
Enterprise
Modena
Uvada
Heist
Sahara
Lund
Nada
Thermo
Milford
Beaver
Minersville
Newhouse
Frisco
Garrison
Callao
Wendover
Barro
Oakley
Montpelier
Paris
Preston
Oxford
Malad City
Oakley
Bridge
Soda Springs
Grace
Bear Lake
Randolph
Woodruff
Evanston
Cumberland
Kelton
Terrace
Matlin
Ombey
Promontory
Corinne
Tooele
Grantsville
Stockton
Gisborn
Lehi
American Fork
Pleasant Grove
Provo
Springville
Spanish Fork
Eureka
Silver City
Nephi
Levan
Fayette
Gunnison
Manti
Ephraim
Mt. Pleasant
Fairview
Huntington
Castledale
Emery
Ferron
Price
Helper
Castle Gate
Sunnyside
Wellington
Scofield
Colton
Spring City
Mt. Pleasant
Fairview
Nephi
Levan
Fayette
Gunnison
Manti
Ephraim
Mt. Pleasant
Spring City
Colton
Scofield
Wellington
Sunnyside
Price
Helper
Castle Gate
Roosevelt
Ducheene
Vernal
Jensen
Fort Duchesne
Manila
Bridgeport
Evanston
Kemmerer
Cumberland
Green River
Grace
Soda Springs
Montpelier
Paris
Preston
Oxford
Malad City
Oakley
Bridge
Snowville
Park Valley
Kelton
Grouse Creek
Terrace
Matlin
Ombey
Promontory
Corinne
Brigham
Logan
Hyde Park
Smithfield
Richmond
Lewiston
Newton
Providence
Hyrum
Paradise
Wellsville
Mendon
Honeyville
Bear River City
Harrisville
Plain City
Hot Springs
North Ogden
Ogden
Huntsville
Eden
Liberty
Wheeler
Weber
Peterson
Croydon
Morgan
Mountain Green
Enterprise
Clinton
Sunset
Layton
Kaysville
Farmington
Centerville
Bountiful
Woods Cross
West Jordan
Sandy
Draper
Midvale
Murray
Holladay
Cottonwood
Taylorsville
West Jordan
Bingham Canyon
Copperton
Magna
Garfield
Grantsville
Tooele
Stockton
St. John
Ophir
Gisborn
Lehi
American Fork
Pleasant Grove
Orem
Provo
Springville
Spanish Fork
Castilla
Benjamin
Payson
Santaquin
Genola
Goshen
Eureka
Silver City
Mona

VERMONT
Scale of Miles
0 5 10 20 30
MONTPELIER
Barre
Burlington
Rutland
Bennington
Brattleboro
St. Johnsbury
Newport
Springfield
Lockingham
Windsor
Middlebury
Ferrisburg
Colchester
St. Albans
Swanton
Richford
Derby Line
Canaan
Averill
Norton's Mills
Island Pond
Colebrook
Coos
Northumberland
Lyndon
Lyndonville
Granby
Victory
Guildhall
Burke
Gallup Mills
Barnet
Littleton
Whitefield
Lancaster
Danville
Peacham
Groton
Ryegate
Wells River
Topsham
Newbury
Haverhill
Lincoln
Woodsville
Bradford
Fairlee
Thetford
Pompanoosuc
Plymouth
Norwich
Hartford
White River Jc.
Hartland
Windsor
Claremont
Lake Sunapee
Franklin
Meredith
Winnipesaukee
Laconia
CONCORD
Keene
Hinsdale
Vernon
Brattleboro
Bellows Falls
Walpole
Chester
Grafton
Saxtons R.
Manchester
Arlington
Shaftsbury
Bennington
Hoosick Falls
North Adams
Williamstown
Barre
Montpelier
Waterbury
Stowe
Morrisville
Hyde Park
Johnson
Enosburg
Richford
Highgate
Swanton
Alburg
Rouses Pt.
Isle La Motte
Lake View
Sheldon
Sheldon Jc.
St. Albans
Fairfield
Fletcher
Fairfax
Milton
Westford
Essex
Essex Jct.
Williston
Richmond
Jonesville
Shelburne
Hinesburg
Huntington
Charlotte
Ferrisburg
Vergennes
Bristol
New Haven
New Haven Mills
Middlebury
Bridport
Ripton
Salisbury
Leicester Jct.
Brandon
Sudbury
Florence
Pittsford
Proctor
Fair Haven
Poultney
Wallingford
Mt. Holly
Ludlow
Cavendish
Proctorsville
Chester
Springfield
Perkinsville
Windham
Londonderry
Peru
Manchester
Manchester Cen.
Bondville
Jamaica
Townshend
Newfane
Williamsville
Putney
Dummerston
Westminster
Bellows Falls
Walpole
Keene
Hinsdale
Vernon
Brattleboro
Wilmington
Mariboro
Davis Pridge
Jacksonville
Whitingham
Stamford
Pownal
Bennington
Shaftsbury
Arlington
Manchester
Rutland
Castleton
Hydeville
Fairhaven
Whitehall
Lake George
Lake Champlain
Connecticut River
Winooski River
Otter Creek
Mettawee River
Battenkill
Walloomsac R.
Hoosic R.
Deerfield R.
Passumpsic R.
Nulhegan R.
Clyde R.
Black R.
Ompompanoosuc
Waits R.
White R.
Ottauquechee R.
Williams R.
Saxtons R.
Sugar R.
Ashuelot R.
Quechee
Taftsville
Woodstock
Plymouth
Cuttingsville
Proctorsville
Ludlow
Cavendish
Perkinsville
Springfield
Chester
Grafton
Saxtons R.

VIRGINIA—First settled at Jamestown, 1607. One of the Original Thirteen States. Area: Land, 40,262 square miles; Water, 2,365 square miles. Total, 42,627 square miles. Population: Last Census, 2,677,773. Capital, Richmond.

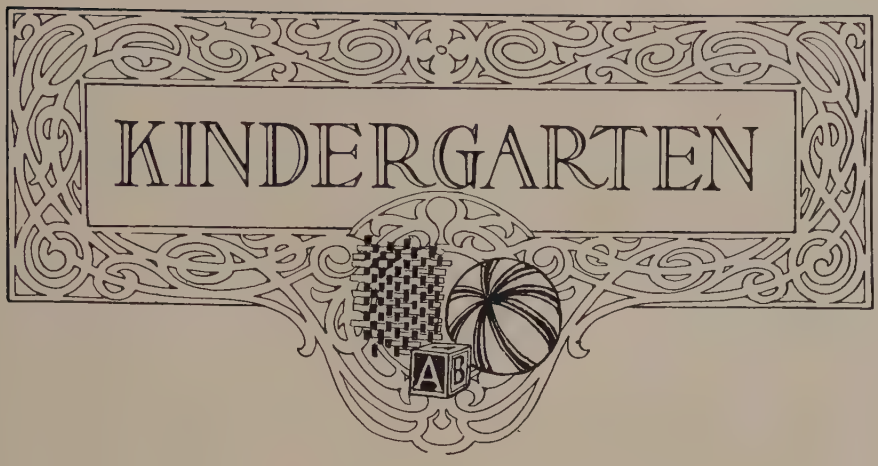
WASHINGTON—First settled on the Columbia River, 1811. Admitted as a Territory, March 2, 1853. Admitted as a State, February 22, 1889. Area: Land, 66,836 square miles; Water, 2,291 square miles. Total, 69,127 square miles. Population: Last Census, 1,736,191. Capital, Olympia.



WEST VIRGINIA—First settled in Upshur County, 1764. Admitted as a State, June 19, 1863. Area: Land, 24,022 square miles; Water, 148 square miles. Total, 24,170 square miles. Population: Last Census, 1,901,974. Capital, Charleston.

WISCONSIN
Scale of Miles
0 10 20 40 60
C. S. Hammond & Co. N. Y.
LAKE SUPERIOR
MICHIGAN
LAKE MICHIGAN
GREEN BAY
Superior
Duluth
La Crosse
Eau Claire
Wausau
Green Bay
Oshkosh
Fond du Lac
Sheboygan
Manitowoc
Milwaukee
Racine
Kenosha
Madison
Beloit
Janesville
Chicago
Waukegan
Rockford
Dubuque
Marquette
Ontonagon
Ironwood
Rhinelander
Antigo
Marinette
Menominee
Appleton
Watertown
Portage
Wisconsin Rapids
Stevens Point
Marshfield
Merrill
Tomahawk
Superior Entry
Apostle Is.
Manitou I.
Keweenaw Pt.
Keweenaw Bay
Lake Superior
Lake Michigan
Green Bay
Mississippi R.
Wisconsin R.
Chippewa Falls
Menomonie
Baraboo
Portage
Prairie du Chien
Platteville
Mineral Point
Darlington
Monroe
Janesville
Beloit
Elkhorn
Whitewater
Fort Atkinson
Jefferson
Watertown
Columbus
Beaver Dam
Juneau
Fond du Lac
Oshkosh
Neenah
Menasha
Appleton
Kaukauna
Green Bay
De Pere
Sturgeon Bay
Algoma
Kewaunee
Two Rivers
Manitowoc
Sheboygan
Port Washington
Cedarburg
West Bend
Hartford
Waukesha
Milwaukee
South Milwaukee
Racine
Kenosha
Waukegan
Lake Geneva

WYOMING—First settled at Ft. Laramie, 1834. Admitted as a Territory, July 25, 1868. Admitted as a State, July 10, 1890. Area: Land, 97,548 square miles; Water, 366 square miles. Total, 97,914 square miles. Population: Last Census, 250,742. Capital, Cheyenne.



AIMS OF KINDERGARTEN
RELATION TO FIRST GRADE
GAMES
STORIES
SINGING GAMES
MANUAL ACTIVITIES
SINGING EXERCISES
MONTHLY PROGRAM
CHILD POEMS

Photos from Selden Irwin.

KINDERGARTEN ACTIVITIES

1 Story Reading 2 Manual Teaching 3 Group Play Class

BOOK VII.

KINDERGARTEN.

STUDY.
Mural Painting in the Congressional Library, Washington.
BY C. S. PEARCE.

AIMS OF KINDERGARTEN. RELATION TO FIRST GRADE. METHOD. GAMES. STORIES. METHOD OF USING MATERIALS. OUTLINE OF YEAR'S WORK BY THE MONTH. TOPICS, STORIES, GAMES, RHYTHMS AND MANUAL ACTIVITIES. REFERENCE BOOKS FOR STORIES, FOR RHYTHMS, FOR POEMS AND RHYMES. POEMS. SINGING EXERCISES. SINGING GAMES.

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1. Aims of the Kindergarten. The Kindergarten through its various activities strives to aid in the development of the child from four to six years of age. The child has exhausted the unorganized activities of the home at the age of four, and is ready for the organized play of a group of his own age. And for this period, the Kindergarten was designed. It provides the child with a systematized plan of play and work which is based upon those experiences of the home with which he is most familiar. It provides more—as its functions carry him out beyond the home into the activities of the neighborhood and community of which he now becomes an important member.

At this age the child manifests an interest in all the activities about him, as is shown by his play. He imitates; he delights in little rhymes and Mother Goose jingles; he names everything and asks innumerable questions about the things he hears and sees; he is never quiet but is constantly exercising his own physical activities and is thus gaining control of his own body. This is the period when the interests of children can be more permanently formed and the Kindergarten provides them with the right sort of materials to work with and gives them organized exercises for their physical and mental development. It helps them to grow more kindly, unselfish, and courteous, and to gain right habits of work and play—all essentials in the development of *worth while* ladies and gentlemen.

2. Relation to First Grade. The Kindergarten provides the first step from the home and mother to the more formal program of the grades in school. Therefore it should combine a homelike atmosphere with the systematized and entertaining routine of school. Application and concentration should be put before the child in such ways that they become a part of his being —valuable assets to his later school career. Stress should be laid on fair play and consideration of others' rights. The many games and the various gift-materials provide the means to this end.

3. Method. When the child enters the Kindergarten, it is usually the first step away from Mother—the first step out into the world by himself. The Kindergarten aims to give him then as much of the home atmosphere as possible. The room should be made attractive with many

interesting pictures, a piano, a sand table, and upon the tables he should have for his enjoyment many things to play with.

After a play by himself, he will be glad to enter into play with others such as sitting upon the circle and rolling the balls back and forth. As he becomes better acquainted, he will pick out certain ones to whom he will roll the ball and this aids in mastering the different names. After the children have played with the balls, they have overcome much of their shyness and so other simple group games can be introduced. Avoid any game at the beginning in which a child must perform an act that would make him at all conspicuous as the self consciousness that comes over him will sometimes stay with him for several weeks.

Marching should be the first rhythm and with a good martial air played upon the piano, they soon fall into the spirit. At the beginning, care and patience will be needed to guide the little ones to follow in line. From the march they are shown how to carry their chairs back and forth from the tables.

It will take several days to learn to carry the chairs properly, to march fairly well, to sing the Greeting, or Good Morning song, and in general to feel at home. Then they are ready to gather together around the circle for a little talk, which will from now on form a part of the daily program. These talks are about some experience, a toy, a picture, or a story about some topic in which all are interested. The talks are followed by some related activities, such as building a bird's nest from clay about which some child has told.

The topics chosen must not only appeal to the child's interest but be instructive as well. They should be concerning the community life about him, the world of nature, geographical studies and people whose lives are so different from ours.

The songs and games make the day more happy and pleasant. These are sometimes related to the topics on hand and again they just appeal to the child's emotional nature. In the songs, the words should be learned before the melody is attempted. Care should be taken to choose songs that are simple and whose pitch is neither very high nor low. Soft and sweet tones should always be used—no child should be allowed to sing to the full capacity of his or her voice for fear of a strain which would impair the quality of the voice for singing in later years. "Quality and not quantity" should always be the motto to follow. Different songs and games should be put "on the shelf" every now and then and left for a month or so. Then the children delight in taking them down, blowing off the dust, and singing and playing them all over again.

The manual activities increase in difficulty as the time goes on and one should notice considerable progress after a few weeks' work. In the gift work, there is a good chance to instill unselfishness. The average child upon entering Kindergarten wants his material all to himself but later on with careful guidance, he will be glad to give from his portion if it will help another to complete his picture.

The rhythms and calisthenic exercises relax the muscles and should be put in often through the program. After steady work at the tables, to have the children stand and imitate riding a bicycle for a few seconds, etc., will cause them to return to their work with new energy. These exercises also follow the child's natural inclination to live in the land of "make believe." Besides these little exercises to relax the muscles, a make believe nap gives a rest to the eyes as well as the body. The teacher should croon a soft lullaby which can be followed by the representation of a "dream fairy," bringing a tiny dream to each one. Upon the sound of the bugle, every one awakes and has a turn to let their imagination play in telling the dream that was brought to them.

4. Games.

(a) BALL GAME, to teach direction, likewise co-operation with a large group. This is a circle game and is played by calling a name and rolling the ball to the person called. If he misses, he is out of the game.

(b) KNIGHT GAME, to teach civic ideals through play, and to introduce the physical exercise of galloping horses.

(c) SENSE GAMES, to increase the keenness of perception. These are many and varied —such as—*A table full* of objects is displayed and after a short survey, covered over and child is asked to tell all he observed. *The Lost Child* also aids in sight development. One child is sent from the room and another one is hidden. The rest change chairs and the child, returning, discovers the lost child. *The Hen and Chicks* game develops the sense of hearing. The hen is chosen to leave the room. In her absence several children are selected for the chicks. When the hen returns, all the children cover their mouths and when the hen clucks, the selected chicks answer "peep" and the correct ones are to be located. *Where's My Kitty?* is on this order. One child is sent out and one is chosen to be the kitty. The child returns and asks, "where's my kitty?" and the kitty answers, "Meow." *"Who Am I?"* develops the sense of touch. A child is blindfolded, another goes up to him and says, "Who am I?" The first child feels him all over and tries to tell who it is.

(d) MY LADY IS GOING ON A JOURNEY GAME, to develop the memory. One is chosen to stand in the center of the circle for the lady's maid. Each child is given the name of some article that a lady would take on a trip. As the maid names these various articles, the one bearing the name stands and turns about and sits down. Upon the mention of TRUNK, all get up and change chairs and endeavor to secure a chair and not be "it," there being one less chair than players.

(e) MUSICAL CHAIR, to teach alertness. Chairs are placed in a row, there being one less chair than players. As the music starts, all march around the chairs. When the music stops, each endeavors to get a chair. The child who does not, must take his chair out, and so on until there is but one remaining.

(f) FINDING THE CHALK, a sense of hearing game. One child is chosen to leave the room while a piece of chalk is hidden. Upon his return, he is to find this chalk with the aid of

music. Loud music tells him he is "hot" and soft music that he is "cold."

(g) THE FARMER AND THE CHICKENS, for a running exercise. A chicken house is built—a circle of chairs with space for a door. One is chosen for the farmer and one for the timekeeper. The rest are chickens who roam around about the chicken house as the time keeper calls different hours of the day. When "midnight" is called the chickens aim to get in the door before the farmer can catch them. Any caught are out of the game.

(h) PINNING THE COLORED PAPERS ON THE BACKS. Two children are chosen and upon each back is pinned a bright colored paper. Each one tries to see the other's paper and at the same time keep his own paper out of sight. This provides active exercise and teaches concentration.

(i) CHALK GAME, to develop the will. Several children are sent from the room while a piece of chalk is hidden. Upon their return they hunt the chalk and upon discovering it, they steal to their chairs and in no other way do they signify that they have found it and thus do not acquaint the others of its whereabouts.

A Kindergarten Class.

(j) WHEELBARROW RACE, an exercise game. Boys take hold of the feet of other boys and hold them as they would the handles of a wheelbarrow; the wheelbarrows then run on their hands to a line marked off on the floor and return to the starting point. See who wins the race.

(k) RUTH AND JACOB. One player is blindfolded, the rest dance in a circle round him till he points at one of them. This person then enters the ring, and when the blindman calls out "Ruth," answers "Jacob," and moves about within the circle so as to avoid being caught by the blindman, and continues to answer "Jacob" as often as the blindman calls out "Ruth." This continues until Ruth is caught. Jacob must then guess who it is that he has caught; if he guesses correctly, Ruth takes his place, and the game goes on; if he guesses wrongly, he continues to be Jacob.

(l) SIMON SAYS, a good concentration game. They seat themselves in a circle and choose one of the company to be Simon. His duty is to order all sorts of different things to be done, the funnier the better, which must be obeyed only when the order begins with "Simon says." As, for instance, "Simon says: 'Thumbs up!'" which, of course, all obey; then perhaps comes "Thumbs down!" which should not be obeyed, because the order did not commence with "Simon says." Each time this rule is forgotten, the child forgetting is out of the game.

(m) BRONCHO GAME, a very active exercise. Three people form the broncho, one the head, the second the body, and the third the tail. Several such bronchos are formed at different places in the room. One child is chosen as a rider and one as a chaser. In order not to be caught, the rider can "jump" on one of these bronchos and he thus becomes the tail and the head becomes the rider and the chaser pursues him. If caught, he becomes the chaser.

(n) FLY AWAY, another good concentration

game. The children are seated with their hands in their laps. When "It" says, at the same time raising his hands, "Fly away, mosquito," or "Fly away, bat," or "Fly away," followed by the name of any other animal that flies, the rest of the players are to fly their hands. When he says, "fly away," followed by the name of an animal that does not fly, the players are not to raise their hands, although the leader flies his. Any one making a miss either by not raising the hands at the right time or by flying the hands at the wrong time becomes "It." Or they can be out of the game and the winner is the one who remains after all the rest are out.

(o) SKIP TAG, a great favorite with little children. A circle is made and one chosen "It." He skips around the circle and tags one to chase him. When caught, the child tagged becomes "It" and repeats the performance until all have played.

(P) AUTOMOBILE GAME, an imagination game. The children sit around in a circle and one stands in the center and begins a make believe story of an automobile ride. All at once in the procedure of the story, he tells how the car ran over a piece of glass or a nail, etc., and a "tire burst" at which all get up and change chairs. The one who misses a chair makes up the next story of an auto ride.

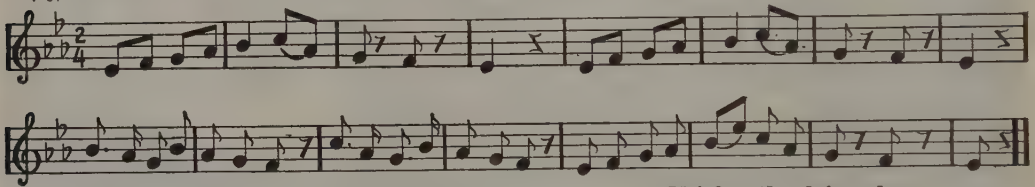
(Q) MODES OF TRAVEL, to increase inventiveness. The players are ranged at one end of the room and numbered from one up. When a player's number is called he crosses the room to the other goal in any way he may choose. No player can employ the same mode of travel as any preceding player. After all have crossed the floor the teacher decides which one travelled in the most unique or interesting way. A variation may be to choose a destination, such as Atlantic City or any place familiar to the children.

(R) FOLLOW THE LEADER, another game to develop the ingenuity of the child. A leader is chosen who takes his place at the head of a line of players. He walks about, at the same time going through various motions. The rest of the players must follow him and imitate all his actions.

Two lines may be formed and a contest take place as to which gives the better exhibition.

A. SINGING GAMES.

(A) RABBIT IN THE HOLLOW. One child crouches in the center of the ring while the hunter roams without. The children in the ring chant the song. When they come to "run, run, run," the hunter from without breaks through while the rabbit escapes and is pursued. If caught he becomes the hunter while another child is chosen for the rabbit.



(B) THE FARMER IN THE DELL. One player stands in the center, surrounded by children who, with hands joined, circle about and sing the verses below. At the conclusion of the second verse, the child within the circle chooses one of the circle players to stand beside him. At the end of each of the succeeding verses, the last one chosen, chooses another child to come within the circle. When the last verse has been sung, all the players jump up and down and clap their hands.

The verses:

1.
The farmer in the dell,
The farmer in the dell,
Heigh-o the dairy oh,
The farmer in the dell.

2.
The farmer takes a wife,
The farmer takes a wife,
Heigh-o the dairy oh,
The farmer takes a wife.

3.
The wife takes a child,
The wife takes a child,
Heigh-o the dairy oh,
The wife takes a child.

In like manner are sung:

4.
The child takes a nurse, etc.

5.
The nurse takes a dog, etc.

6.
The dog takes a cat, etc.

7.
The cat takes a rat, etc.

8.
The rat takes the cheese, etc.

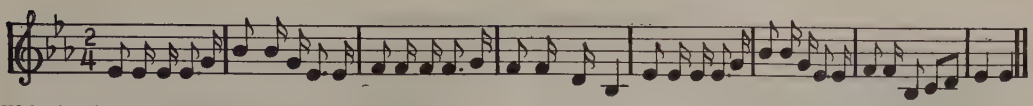
9.
The cheese stands alone, etc.

(C) THE MULBERRY BUSH.

Here we go round the mulberry bush,
The mulberry bush, the mulberry bush.
Here we go round the mulberry bush,
So early in the morning.

This is the way we wash our clothes,
We wash our clothes, we wash our clothes,
This is the way we wash our clothes,
So early in the morning.

Chorus—(Here we go round the, etc.)



This is the way we iron our clothes,
We iron our clothes, we iron our clothes,
This is the way we iron our clothes,
So early Tuesday morning.
Chorus—(Here we go round the, etc.)

This is the way we scrub the floor, etc.
(Wednesday morning.)
Chorus—

This is the way we mend our clothes, etc.
(Thursday morning.)
Chorus—

This is the way we sweep the house, etc.
(Friday morning.)
Chorus—

This is the way we bake our bread, etc.
(Saturday morning.)
Chorus—

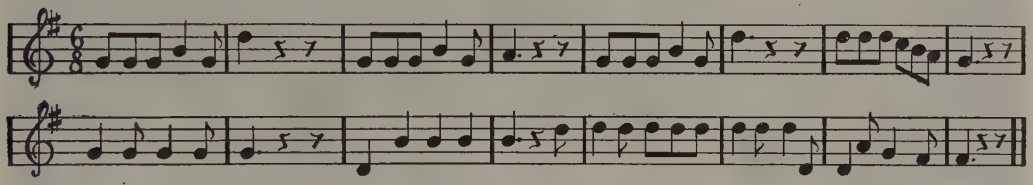
This is the way we go to church, etc.
(Sunday morning.)
Chorus—

(D) CHARLEY OVER THE WATER. One of the players, Charley, stands in the center, the others with hands joined, circle about him, singing—in a chant

Charley over the water,
Charley over the sea;
Charley caught a blackbird,
But he can't catch me.

The players stoop just as the last word is said and should Charley tag any player before he stoops they exchange places.

(E) LOOBY LOO. All join hands in a circle and dance one way as they sing, "Here we dance Looby Loo," and dance back as they sing, "Here we dance Looby Light." This is repeated and then the motions of the song are taken as sung.



Here we dance looby loo,
Here we dance looby light,
Here we dance looby loo,
All on a Saturday night.

Put your right hand in,
Put your right hand out,
Then give your right hand a shake, shake, shake,
And turn yourself about.
Chorus—
Here we dance looby loo, etc.

Put your left hand in,
Put your left hand out,
Then give your left hand a shake, shake, shake,
And turn yourself about.
Chorus—
Put your right foot in, etc.
Chorus—
Put your left foot in, etc.
Chorus—
Put your whole selves in, etc.
Chorus—

(G) ROUND AND ROUND THE VILLAGE.

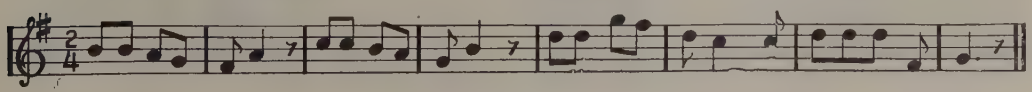
1.
Round and round the village,
Round and round the village,
Round and round the village,
As fast as we can go.

2.
In and out the windows,
In and out the windows,
In and out the windows,
As we have done before.

3.
Follow me to London,
Follow me to London,
Follow me to London,
As we have done before.

4.
Stand and face your partner,
Stand and face your partner,
Stand and face your partner,
And bow before we go.

Directions—The children form a circle with one player standing outside. For the first verse the child dances around the outside of the circle. At the second verse, the child passes in under one pair of arms and out under another and so winds in and out. For the third verse, he remains in the center and chooses one to follow him around the circle. For the last verse, they stand and face each other and bow and part.



B. SINGING EXERCISES.

(A) DUSTY BOB.
(B) ON OUR TIPTOES.
(C) FORMATION GAME.
(D) WE'LL ALL GO A-WALKING.
(E) RIDE A MILE.
(F) ALL SIZES.
(G) THE LAMPLIGHTER.
(H) SOLDIER BOY.
(I) THE TRAIN.
(J) THE STREET CAR RIDE.

These exercises are to be found in Old Tunes, New Rimes and Games by Mari Hofer and published by A. Flanagan Co., Chicago.

C. CONTEST GAMES.

(a) Ring Toss.
(b) White House Egg Rolling Game.
(c) Ten Pins.
(d) Putting the Ring on Sambo's Pipe.
(e) Rubber Horseshoe Game.

5. Stories.

The story is the beginning of literature and should be of such nature as to create a love for good reading. Good stories can be repeated many times. Fairy tales are great favorites but care should be exercised to choose the ones in which the gruesome element is lacking. The children love these repeated again and again. Reproduction by the children can be added and then dramatization of the more simple ones. The latter aids materially in giving the child poise as well as developing fluency of speech. In this work let the child use his own ideas as to what materials should be used and how. This helps the imagination of the child. Care should be taken to guide him in the use of correct grammar and at the same time try not to make him self conscious. When a grammatical error is made, it is well to repeat the correct form immediately after.

Longer stories should be read rather than told to the children so as to let them give their undivided attention to the story. Even simple books can be added to the list of which only a part is read each day. This is excellent work for the memory as the previous day's reading is reviewed in short. The Thornton Burgess Books are illustrations of good books to read as these are very instructive in the lives and habits of animals and are written in a very interesting manner. The Lucy Fitch Perkins' Twin Books also furnish good material for children of Kindergarten age. These books give geographical knowledge which is authentic. The Johnny Gruelle Books supply the aesthetic element.

The following are good for telling, reproducing, and dramatizing.

THE FOX AND THE GRAPES.

A fox was very fond of grapes. One day after he had been running all day and was exceedingly thirsty, he came to a garden where he saw bunches of beautiful, sweet, ripe grapes hanging from a vine which had grown high up over a trellis. His mouth began to water and he wanted those grapes. He tried to jump up to catch them with his mouth but they were too high. Again and again he jumped but with no better success. He simply could not reach them. At last he had to give up and as he turned away, disappointed, he tried to comfort himself by saying: "Well, those grapes are sour, anyway."

Aesop.

THE ELVES AND THE SHOEMAKER.

Once upon a time there was a shoemaker who was a good man and who worked very hard but still he was poor. One day he found that things had gone from bad to worse and that he had only one piece of leather and no money to buy more. He cut a pair of shoes out of the leather and laid them on the bench as it was late and time for him to go to bed.

"It is late, my wife," he said, "I will not do more to-night but will get up early in the morning and make the shoes."

But the next morning when the shoemaker went to his bench, there were the shoes all made. Every stitch was in the right place. "Who could have done the work?"

Soon a man came in to buy a pair of shoes. These pleased him so much that he gave the poor shoemaker a good price for them. This enabled the shoemaker to buy enough leather for two pairs of shoes. That night he cut them out and laid them on the bench and when the morning came again he found the two pairs all made.

Two men came in that day. "These are fine shoes," they said; and they paid a big price for them.

This time the shoemaker bought leather enough for four pairs of shoes. Once more he cut them out and laid them on the bench and once more the following morning he found the shoes completed.

So it went on. Each night he cut out the leather and each morning he found the shoes all made and made very well with every stitch in the right place. Each day he sold them for a good price and bought more leather. At last he became rich.

One night just before Christmas, he said to his wife, "Let us sit up to-night and see who has been so good to us." So they hid behind the door.

At midnight in came two little elves, skipping and jumping. They ran to the bench, hopped upon it, and set to work. How fast their needles and their hammers flew. They worked until all the shoes were made. Then they placed them on the bench and with a hop and a skip, away they ran.

The next morning the shoemaker's wife said, "These little elves have made us rich and now we must do something for them. Let us make them some new clothes as the ones that they were wearing looked pretty thin and old for this cold weather. I will make them warm coats and trousers and you can make them some shoes."

So the shoemaker made two little pairs of shoes and his good wife made two little red coats and two little blue trousers. That night they laid them on the bench and again hid behind the door to see what would happen.

At midnight, in came the two little elves with a skip and a jump. They got upon the bench and looked around for the leather but they saw none. In its place they saw the suits of clothes. They were delighted and could hardly wait to get into them. Then they danced for joy.

They jumped from the table and ran out the door. No one ever saw them again but the shoemaker and his wife were always happy at their work and were never poor again.

THE ELVES AND THE SHOEMAKER.

THE LITTLE SNOW-GIRL.

Once there was a little boy and a little girl who lived with their father and mother. These two little children had names just like flowers —the little girl being called Violet and the boy, Peony.

One winter day the snow began to fall and it snowed and snowed until the ground was covered. The children stood at the window and watched the snow awhile and then said, "Oh, Mother, may we go and play in the snow?" The mother was busy sewing but she looked up and said they could go but that they must wrap up warm. So the children put on their coats, hats, mittens and galoshes and out they ran to play in the snow. They had a fine time, throwing snow at one another and rolling the snow into balls for a snow-man. Then Violet said, "Oh, Peony, wouldn't it be fun to make a snow-girl?" So they did. They made such a pretty little girl with a snow coat, snow hat, snow mittens, and snow rubbers, and then Violet said to Peony, "Wouldn't it be fun, Peony, if this little girl could play with us?" And do you know that just as Violet finished speaking, this little snow-girl opened her eyes, stepped off the snow, and began to play with the children. My! what a good time they all had. They ran races and played tag. Soon they called to their mother, "See, Mother, what a nice snow-girl we made." Mother looked up from her sewing and smiled—she thought it was one of the neighbor children.

So they played all afternoon until the sun went down. Father came home for supper and he called for the children to come in. But the children answered that they could not go in without the little snow-girl. "Little snow-girl," said Father, "Nonsense, who ever heard of a snow-girl? Where is she?" "Oh," said Violet, "We did make one and she played with us all the afternoon. Then when you came home she ran away down behind the bushes in the garden." "I must go down and see her," said Father. Sure enough, there was the little snow-girl but Father thought it was a neighbor's child too. "Come in and get something warm to eat, little girl," said Father. "And then we will take you home." At first the little girl hung back as she knew what would happen when she got in by the fire but Father took her by the hand and led her into the house. In the living room there was a fine big fire blazing away in the grate, with Violet standing on one side and Peony on the other. Father placed the little snow-girl between them and then went out to get her something warm to eat. When he came back, there stood Violet and Peony as he had left them but between them was a little heap of melted snow on the carpet.

Hawthorne's Wonder Book (Adapted)

THE LITTLE RABBIT.

There was once a little rabbit who built himself a house. Pretty soon there was a knock at the door and a voice said, "Little Rabbit, let me come in. I am so cold." The little rabbit said, "Yes, do come in and get warm." And he opened the door and in came a fox. After he was seated, he said to the rabbit, "Little rabbit, this house is too small for two. You go out and I shall live here now."

Little rabbit felt very badly at being driven from his home and he began to cry as he roamed about. Soon he met a bear who said, "Little Rabbit, why do you cry?" "I cry because the fox came into my house and drove me out," replied the rabbit. "Well, we will see about that," said the bear and together they went to the rabbit's house. In a deep rough voice, the bear called out, "Come out of there, Mr. Fox." But Mr. Fox said, "If I do, I'll eat you up." This frightened the bear and he said he couldn't stay for that and away he ran.

Little rabbit continued on his way and soon he met a wolf. He said to the rabbit when he noticed the tears, "Why do you cry?" "I let the fox in to get warm and he drove me out of my house," said the rabbit. "We shall see about that," said the wolf and they went to the rabbit's house. In a loud voice the wolf shouted, "Come out of there, Fox." But the fox replied that if he did he would eat the wolf up and Mr. Wolf decided he would not stay for that and away he ran.

Next little rabbit met a white rooster who asked him why he cried. The rabbit said, "I cry because the fox has my house and will not let me stay in." "Well, we'll see about that," said the rooster and very bravely he walked back to the rabbit's house. When he reached there he called, "Come out of there, Fox." But the Fox said, "If I do, I'll eat you up." "I have a gun that shoots on the spot. The fox had better run or he'll get shot," said the rooster and out ran the fox and away as fast as he could go without once looking to see who had driven him out. The little rabbit was very grateful to the rooster and thanked him for getting his house back.

THE STORY OF PETER RABBIT.

Flopsy, Mopsy, Cottontail, and Peter lived with their mother in a sand bank at the foot of a fir tree.

One day Mrs. Rabbit called the children to her and said, "Children, I must go to the store and I will tell you what you can do while I am away. You may play in the field where the blackberries grow but you mustn't go near Mr. McGregor's garden. I shall bring you something pretty nice if you are good and do as you are told. Now run along."

"We will be good, mother," they cried and off they went.

Flopsy, Mopsy, and Cottontail were good little rabbits and did as they were told but naughty little Peter, What do you suppose he did? He ran straight to Mr. McGregor's garden and squeezed under the gate and was soon eating his fill of nice tender lettuce.

When he had eaten all the lettuce he wanted, he started for the parsleybed; but just as he rounded the corner, he had a great fright. There

was Mr. MacGregor planting cabbages. Peter was so frightened that he forgot where the gate was but he started to run.

Mr. MacGregor picked up his rake and ran after him, calling, "Stop, thief! Stop, thief!" This frightened Peter more than ever. His shoe came off but he did not have time to find it. And then! What do you think? He fell into a net and there he was, caught fast, and Mr. MacGregor very close to him. It was the button of his coat that had caught in the net and pretty soon a thought came to Peter. What do you think he did? He slipped out of his coat, left it in the net, and ran like the wind.

He made for the tool house and there he saw a watering can. In he jumped but Oh, Oh! Peter had jumped into a can of water. It was cold and wet, but there he had to stay as Mr. MacGregor had come into the tool house. I don't believe he would have ever thought of looking in the watering can if Peter had not sneezed. "Kerchoo!" went Peter. Mr. MacGregor was after him in a minute. Out of the window dashed Peter, upsetting three plants. The window was too small for Mr. MacGregor, and he was tired of running after Peter. He went back to his work.

Peter sat down to rest; he was out of breath and trembling with fright, and he had not the least idea which way to go. After a time he began to wander around, going lippity-lippity-not very fast, and looking all around.

He found a door in a wall but it was locked and there was no room for a fat little rabbit to squeeze underneath.

An old mouse was running in and out over the stone doorstep, carrying peas and beans to her family in the wood. Peter asked her the way to the gate but she had such a large pea in her mouth that she could not answer. She only shook her head at him. Peter began to cry.

Then he tried to find his way straight across the garden, but he became more and more puzzled. Presently he came to a pond where Mr. MacGregor filled his watering cans. A white cat was staring at some goldfish; she sat very, very still, but now and then the end of her tail would twitch as if it were alive. Peter thought it best to go away without speaking to her. He had heard about cats from his cousin, Little Benjamin Bunny.

He went back towards the tool shed but suddenly quite close to him, he heard the scritch-scr-r-atch of a hoe. Peter scampered under some bushes but presently, as nothing happened, he came out and climbed upon a wheelbarrow and looked around. The first thing that he saw was Mr. MacGregor, hoeing onions. His back was turned towards Peter and just beyond him was the gate.

Peter got down very quietly and started running as fast as he could go. Mr. MacGregor caught sight of him but Peter did not care. He kept on going and soon slipped under the gate and was safe at last in the wood outside the garden.

Mr. MacGregor hung up the little jacket and the shoes for a scarecrow to frighten the blackbirds.

Peter never stopped running until he reached the fir tree. He was so tired that he flopped down on the nice soft sand and closed his eyes. He was soon fast asleep.

His mother was busy cooking. She wondered what he had done with his clothes. It was the second little jacket and pair of shoes that Peter had lost in a fortnight.

I am sorry to say that Peter was not very well during the evening. His mother put him to bed without any supper and made him some camomile tea. But Flopsy, Mopsy, and Cotton-tail had bread and milk and blackberries for their supper.

Beatrix Potter.

THE PIED PIPER OF HAMELIN.

Many years ago in Germany in the town of Hamelin there were rats, rats, rats. The town was very pretty. There were trees along the streets and not far away was a beautiful river. But all the beauty of the town was spoiled by so many rats. They were in the streets and in the houses. They were into everything and the people had no peace. At last they went to the Mayor and told him that he must get rid of the rats. The Mayor did not know of any way to rid the town of the rats. He thought and thought but no plan suggested itself.

Just then there was a tap at the door and the Mayor called, "Come in." And in did come a stranger. He was a very queer looking fellow as half of his coat was yellow and half was red. He himself was tall and thin and each blue eye was sharp like a pin. Around his neck was hung a flute.

"Good Day," said the stranger. "I hear you are troubled with rats in this town. Would you like to be rid of them?"

"Indeed we would," replied the Mayor. "But who are you and how do I know that you can rid the town of rats?"

"I am the Pied Piper," said he. "I can play on my flute, music that will charm all things under the sun. In Italy the King's palace was overrun with mice and when I played on my flute, they all followed me away. Will you give me a thousand guilders to take all the rats away from here?"

"Agreed," said the Mayor.

The Piper went out into the street and put his flute up to his mouth. Up one street and down another he went, playing a weird tune. Soon a strange thing happened. Tiny squeaks began to be heard and they grew louder and louder and out of the houses the rats came tumbling; all kinds of rats—little rats, big rats, lean rats, fat rats, brown rats, black rats, white rats, gray rats. Every rat in the town followed him as he played his music. He led them on until he came to the river and in their effort to get nearer to the wonderful music they did not see where they were going and into the river they all went and every one was drowned.

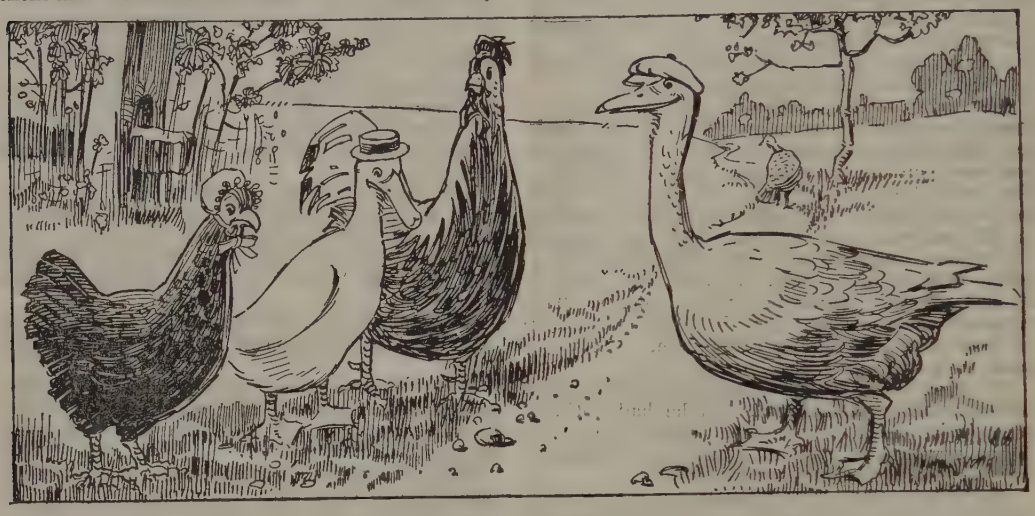
The Piper returned to the Mayor for the thousand guilders but the Mayor said, "Surely, you know that I was only joking."

"But I was not joking," said the Piper. "Will you give me the money or not?"

Still the Mayor refused and in parting the Piper said, "You'll be sorry for I have another

tune to play for people who do not keep their word."

He went into the street once more and began to play on the flute. This time the music was rollicking and soon out of the houses the children came running. They danced and sang and followed the Piper wherever he went. It seemed that they could not help themselves. He led them around the streets and then led them away from the town. The parents called and called but they heeded them not. The Piper led them to a mountain and when they reached it a door in the side of the mountain opened and in went the Piper and all the children and that was the last the people of Hamelin ever saw of the Piper or the children. And oh, how lonesome it was in the town with all the children gone.



HENNY PENNY.

Henny Penny was a little black hen that lived at Farmer Brown's. One day she was in the garden scratching around under an oak tree. Something fell out of the tree onto her head and she flew out of the garden in haste.

"I must tell the King that the world is coming to an end," said Henny Penny and that is what she thought for whatever had fallen from the oak tree, to her was a piece of the sky.

Soon she met a rooster who asked her where she was going.

"I am going to tell the King that the world is coming to an end as a piece of the sky fell on my head today," said Henny Penny.

"I will go with you," said Cocky Locky—for that was the rooster's name. So the two hurried on.

Soon they met a duck by the name of Ducky Lucky.

"Where are you going, Cocky Locky?" asked the duck.

"We are going to tell the King that the world is coming to an end," said the rooster.

"Who told you that?" said the duck.

"Henny Penny told me and she knows for a piece of the sky fell on her head today," replied the rooster.

"I'll go with you," said the duck and the three started off.

Soon they met a goose who asked them where they were going.

The duck said, "We are going to tell the King that the world is coming to an end."

"How do you know that?" asked the goose.

"Cocky Locky told me and Henny Penny told him. Henny Penny knows as a piece of the sky fell on her head this day," said the duck to Goosey Poosey, for that was the Goose's name.

"I'll go with you, if I may," said the goose and he joined the party of three and they set off together to the King's palace.

As they travelled on they met Turkey Lurkey, a nice fat turkey who said to them, "Where are you going?"

"We are going to tell the King that the world is coming to an end," said the goose.

"How do you know that?" asked the turkey.

"Ducky Lucky told me and Cocky Locky told him and Henny Penny told Cocky Locky. Henny Penny knows as a piece of the sky fell on her head today," said the goose.

"I'll go with you," said the turkey.

A little farther on they met a fox by the name of Foxy Loxy who asked them where they were going.

"We are going to tell the King that the world is coming to an end," said Turkey Lurkey.

"How do you come to know that?" asked the fox.

"Goosey Poosey told me, Ducky Lucky told her, Cocky Locky told Ducky Lucky and Henny Penny told Cocky Locky. Henny Penny knows as a piece of the sky fell on her head today," said Turkey Lurkey.

"Come with me to my house and I will give you a lunch and then we will all go to the King's palace," said the fox.

They were all glad to go as their long walk had made them hungry. The fox led them into his house but they never came out again. It was the fox who had the lunch, or rather it was a dinner as a hen, a rooster, a duck, a goose, and a turkey made a full sized meal.

THE THREE KITTENS.

There were three kittens, one gray, one black, and one white, who lived with their mother in a small house at the edge of town. One day their mother said, "Children, I am going to market to buy you some rolls. You must be good while I am away and do not answer the door if there should be a knock as it may be the wolf." "We will be good," said all the kittens. So off the mother started.

She had not been gone long when there was a knock at the door and a voice called, "Open the door, my children. Here is your mother and she has food for you." But the gray kitten said, "Oh, no, you are not our mother. Our mother's voice is soft and sweet and your voice is harsh, You are the wolf, so be off with you." The wolf ran to the grocery store and bought some fairy chalk which he ate to make his voice sweet. Then he ran back to the kittens' house and knocked on the door again. And in a sweet voice he called out, "Children, let me in. I am your mother and I have food for you." Yes the voice was sweet just like their mother's but little white kitten peeped through the keyhole and saw that the feet were black so he said, "Oh, no, you are not our mother as your feet are black and our mother's feet are white. You are the wolf, so be off with you."

The wolf ran to the baker's and ordered the man to wrap his feet in dough. This done, he ran back to the kitten's house and once again knocked at the door and in a sweet voice said, "Open the door, my children, for your mother. She has food for you." The voice was sweet as their mother's and white kitten looked through the keyhole and saw that the feet were white like their mother's so he opened the door and in bounced the wolf. The three kittens ran in all directions to hide. Gray kitten jumped upon a shelf; white kitten hid under the tub in the kitchen, and black kitten jumped into the clock case. The wolf found gray kitten and ate her up. Next he found white kitten under the tub and ate him up but try as he would, he could not get black kitten in the clock case. And at last he had to give up and go home.

What a sorry sight met the mother when she came into the house. Two of her kittens were gone, only the black one remaining. This one she helped out of the clock case and he told her all that had happened. They started off in search of the wolf. They found him down by the brook fast asleep. His big meal had made him sleepy. The mother sent the little kitten back to the house for a pair of scissors, a needle and thread. When he returned she cut open the wolf and freed the other two kittens and all three ran to the edge of the brook for three stones which the mother sewed in the wolf. Then they all hid to see what would happen. When the wolf awoke, he went down to the brook to get a drink, saying as he went, "My but these kittens are heavy." As he leaned over to drink, the stones were so heavy that they made him lose his balance and he fell over into the water and was drowned. The four cats were so happy that they danced around and sang—

The wolf is dead,
The wolf is dead,
The wolf is dead, hurrah!

LITTLE HALF CHICK.

Once there was a hen which had five chickens, All of them were fine little fellows but the fifth one and he was not at all like the others. He was only half a chicken with but one leg and one eye, so his mother called him Half Chick.

She was very sorry for him whenever she looked at him for she thought he would never be able to go out into the world like the others but would always have to stay with her. But she soon found that she was mistaken as little Half Chick was not satisfied to stay at home under her wing.

Half Chick was not like the others in his ways as well as his looks. They played around the coop but whenever their mother clucked to them, they would run to her but Half Chick would pretend that he did not hear and would roam on farther. And the older he became, the worse he got. He would not mind his mother at all.

One day he hopped up to her and cocked his one eye and said, "Mother, I am tired of staying here and I do not intend to do so any longer. I am going off to see the King."

"To see the King," said his mother. "That is a long ways off—too far for even me to go. You could not go half the distance. Stay at home with me until you are bigger and then we will take a trip together."

But Half Chick was determined to go and off he hopped while his mother called to him to be kind to all he met.

He hopped along through a field and then he came to a stream that was filled up with weeds and waterplants so that it could not flow. It cried out to Half Chick, "Do come and help me! Please pull these weeds out so I can run along my way."

"Take time to help you when I am on my way to the palace of the King! Indeed not!" And with an extra hop, off he went.

He had gone quite a ways when he came to a fire that had been left in a wood. It was just about out and so it cried to Half Chick to bring some dry leaves and sticks to replenish it. But Half Chick said very unkindly, "Get them yourself and don't trouble me. I am going to the palace to see the King and have no time to waste on you." And off he hopped.

The next day when he was not so very far from the palace, he passed a large tree which had caught the wind in its branches.

"Oh, Half Chick," cried the wind, "won't you stop a minute and free me from these branches? I cannot get away by myself."

But Half Chick replied, "Then you should not have gone there. I can't take my time to help you. You got yourself into this trouble and now you can get yourself out the best way you can. I am going to see the King." And away he went.

Soon he reached the palace and he thought he would take a look around. As he was hopping at the back of the palace, the King's cook happened to look out of the window and see

him. "Just the thing for the King's dinner," she said and with that she hurried out and caught Half Chick by his one little leg and took him back into the kitchen where she dropped him into a pot of water. This she put on the stove. Little Half Chick did not like this at all as the water came up into his one little eye. So he called out, "Water, water, do not come up on me like this. You are getting me all wet."

But the water replied, "Half Chick, you did not help me when I was a little stream so now how can you expect me to help you?"

The cook came and stirred up the fire so the chicken would cook faster. This made it very uncomfortable for little Half Chick and he hopped from one side of the pot to the other. Finally he could stand it no longer and he called out, "Oh, fire, have mercy on me and do not burn me so."

But the fire reminded him that he had not helped the fire in the wood when it needed fuel and so now in turn he could not help Half Chick.

The cook came to see how the chicken was cooking and found that he had cooked up so that there was not much of him left, not enough to put him upon the table. She grabbed him out of the pot and gave him a toss through the window. The wind caught him up and whirled him so swiftly through the air that he could hardly catch his breath.

"Oh, wind, do not carry me so fast. I can hardly breathe," said he but the wind replied, "Half Chick, when I was caught in the tree and asked you to help me, you would not do it, so now do not expect me to help you."

So the wind whirled him about and finally dropped him upon the spire of a tall church where he stuck. There he remained and now he tells which way the wind is blowing. Little Half Chick became a weather vane.

LITTLE HALF CHICK.

THE LITTLE FIR TREE.

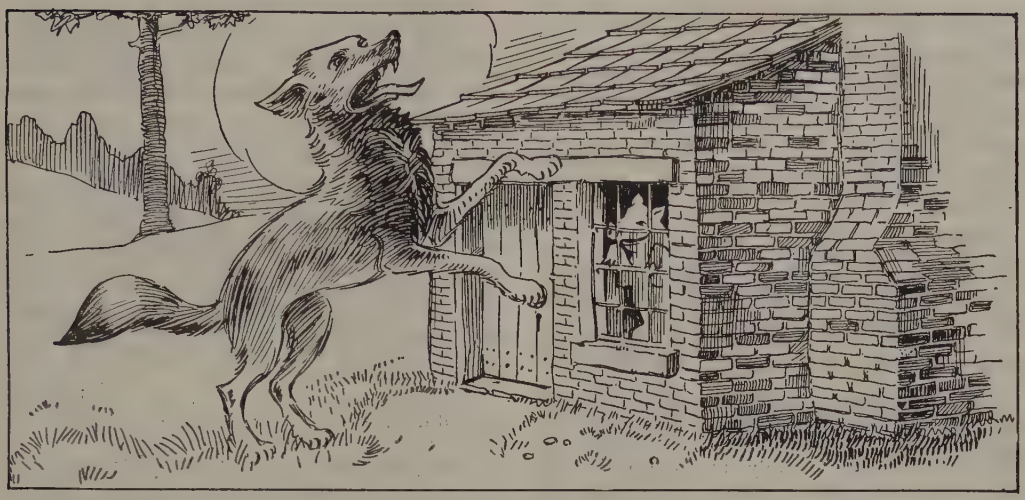
At the edge of a large forest there stood a little fir tree, the little green needles shining in the sun. The little tree was very well satisfied when it was winter time as it still had its green needles while the other trees were bare. But when summer came and all the trees had beautiful leaves and the wind played with them, rustling through them, the little fir tree began to wish that it had leaves instead of needles. It wished so very hard that a fairy heard it and lo! in the morning this little tree was covered with beautiful green leaves which made it feel proud indeed.

But that afternoon a goat and her seven kids came along by the little tree. "These little tender leaves will make us an excellent dinner and we can reach every one," said the mother goat. So they began to eat and it being a small tree, they soon stripped it of every leaf. This made the fir tree very sad and it decided that green leaves would never do as the goats would eat every one. So it wished and wished that it might have gold leaves. Again the fairy heard the wish and granted it. The next morning the little fir tree awoke to find itself covered with lovely golden leaves that sparkled in the sun. How proud the little tree was! But that night a robber came through the woods and as he came to the fir tree, the glitter of the gold caught his eye and he began to pick off the lovely leaves and put them in his bag. The tree being small, he soon had every leaf picked and once again the little tree stood bare.

"Well, green leaves will never do as the goats eat them and gold leaves will never do for the robbers take them. I believe I would like glass leaves," said the tree. The fairy heard the wish and came to the tree and said, "Are you sure you will be satisfied with glass leaves?" "Oh, yes, fairy. Please give me glass leaves." So in the morning the little fir tree was covered with glass leaves and it was indeed a beautiful sight and as the wind blew gently through the leaves it made sweet music. This pleased the wind so much that it began to blow harder and harder and the glass leaves knocking against each other, soon broke all to bits. And again the little tree stood bare.

"I can't have green leaves as the goats eat them and I can't have gold leaves for the robber takes them. And now I can't have glass leaves as the wind breaks them. I wish I had my own little pine needles back again," moaned the tree. The fairy appeared again and asked the tree what it wished now. "Kind fairy, do give me back my own dear needles and I will always be satisfied," said the tree. "All right," said the fairy. "This last wish I will grant." So in the morning the little tree awoke to find itself dressed in its own needles again and how good they looked to it. "Never again will I want any thing but my needles. They are best for a little tree like me for the goats do not eat them, the robber does not take them, and the wind does not break them," said the tree and so it grew at the edge of the forest and was happy and contented ever after.

German Fairy Tale.



THE THREE PIGS.

Long, long ago, when pigs could talk, an old mother pig lived all alone with her three little sons.

Their little house was right in the middle of a big oak forest where there were plenty of acorns and each little pig grew fat and round as an apple. All were as happy as could be until one year came when the heavy frosts killed all the acorns. Mrs. Piggy-Wig had a very hard time to find enough to feed her little ones. One day she had had worse luck than usual, so she called her three sons to her and told them that they would have to go out into the world to seek their fortune.

She kissed them all and started them on their travels, each down a different path.

The first little pig had not gone far when he met a man who was carrying a fine bundle of straw on his back.

"Please, Mr. Man, give me that straw so I can build me a house," said the first little pig.

The man, who was kind, gave the pig the straw and little Piggy-Wig built a cozy little house with it.

The little pig had just finished his house and was about to lie down and take a nap when a big wolf came along and knocked at the pig's door.

"Little pig, little pig, let me come in," said the wolf.

But the little pig said, "Oh, no. Not by the hair of my chinny-chin-chin."

Then the wolf in a very bass voice said, "I'll huff and I'll puff till I'll blow your house in."

So he huffed and he puffed and he blew the house in, because, you see, it was made only of straw and was very light. When the wolf had blown in the house, he ate up the little pig, even to the very tip of his curly little tail.

The second little pig had not gone far on his path when he met a man with a bundle of sticks on his back. When the little pig saw it, he bowed most politely and said, "Please, Mr. Man, will you give me those sticks to build me a house with?"

The man was generous and gave the sticks to the pig, who built a pretty little house with them.

No more was it finished than the wolf came to this house and said, "Little pig, little pig, let me come in." But the pig answered, "NO, no. Not by the hair of my chinny-chin-chin."

"Then I'll huff and I'll puff till I blow your house in," roared the wolf in his heavy bass voice.

So he huffed and he puffed, and he puffed and he huffed, and at last he blew the house in and gobbled up the second little pig.

But the third little pig met a man carrying on his back a load of bricks and mortar, and he said, "Please, Mr. Man, will you give me those bricks and mortar to build me a house with?"

The man gave them to him and the little pig set to work to build himself a house. It took him one whole day and night but when it was done it was a nice, strong little house.

When it was finished along came the wolf, just as he had come to the other little pigs.

"Little pig, little pig, let me come in," said the wolf. But the little pig smiled to himself as he said, "No, no. Not by the hair of my chinny-chin-chin. I'll not let you come in."

"Then I'll huff and I'll puff till I'll blow your house in!" said the wolf.

Well, he huffed and he puffed, and he puffed and he huffed, and he huffed and he puffed, but no matter how hard he huffed and puffed, he could not blow the little brick house in.

At last he could blow no more so he sat down to think it over. Pretty soon he called out, "Little pig, I know where there is a nice field of turnips."

"Where?" said the little pig.

"Behind Farmer Brown's house; and if you will be ready tomorrow morning at six o'clock I will call for you and we will go together and get some."

"Very well," said the pig; "I will be ready at that time."

Well the wise little pig got up at five o'clock, scuttled over to the turnip field and brought home a fine load of turnips before the wolf came. At six o'clock the wolf came to the

little pig's house and said, "Little pig, are you ready?"

"Ready!" cried the little pig. "Why, I have been to the field and back again and now I have a pot full of turnips on to boil for breakfast."

This made the wolf very angry and he said to himself, "I'll get that little pig someway or other." So he called out again in a very friendly voice, "Little pig, I know where there is a nice apple tree."

"Where?" said the little pig.

"Just over the hill in the big orchard," said the wolf. "If you will be ready to go tomorrow morning at five o'clock, I'll call for you and we will go together."

But the next morning the pig got up at four o'clock and was off and away long before the wolf came.

The orchard was farther off than the little pig had expected, so before he had filled his sack with apples, he saw the wolf coming over the hill. He was terribly frightened, but he tried to look very brave when the wolf came up.

"Little pig, why are you here before me?" said the wolf. "Are the apples nice?"

"Yes, very nice," answered the pig. "I'll throw one down for you to taste." So he picked an apple and threw it as far as he could and while the wolf was racing after the apple the little pig climbed down from the tree and ran home as fast as his little legs would carry him.

The next morning the wolf was on hand again, more determined than ever to get the pig. "There is going to be a fair in town this afternoon. Will you go with me to see it?"

"Yes, I shall be glad to go," said the pig. "What time shall we start?"

"At three-thirty," said the wolf.

Of course the wise little pig started long before that and went to the fair alone. After he had seen all he wanted to, he bought a large butter churn and started for home. He had not gone far when he saw the wolf coming up the hill. This frightened the little pig so that he did not know what to do, but he crawled into the churn to hide. This started the churn to rolling and down the hill it went, right toward the wolf. The wolf could not think what the strange thing was, coming straight down the hill toward him; so he turned and ran away home in a fright and he never went to the fair at all.

The next morning he went to the pig's house and told him all about the fright he had had and all about the big round thing that had come rolling down the hill at him.

"Ha, ha," laughed the pig. "So I frightened you, did I? That was a churn I bought at the fair, and I was inside it."

This made the wolf so angry that he vowed that he would eat the pig and that nothing would stop him. So he climbed upon the roof and jumped down the chimney.

But the wise little pig was ready for him, for he had built a big fire and hung a great kettle of water over it, right under the chimney. When the pig heard the wolf coming he took off the cover and splash! right into the kettle of boiling water fell the wolf. Before he could crawl out, the little pig popped the lid back on again and soon all was over for the wolf.

That night the little pig had boiled wolf for supper. So he lived in the little brick house very happily ever after and was never troubled with a wolf again.

LITTLE PETER OF HOLLAND.

At the edge of a little town in Holland there lived a woman and her boy. This woman used to bake cakes and pies to sell and the little boy delivered them.

One day the mother called to the little boy whose name was Peter, to come in and get a basket of cakes to take to the doctor who lived on the other side of the town. It was still afternoon and he would have time to go there and back before supper time. Peter took the basket on his arm and started on his way, whistling as he went. He followed the dike for that was the road.

Peter enjoyed the walk, there was so much to see. He would stop and watch the big sails on the windmills as they turned slowly around like huge white birds sailing through the air. Bright flowers grew on the banks and Peter stopped to pick some of these to take to the doctor.

At last he reached his house and after giving him the basket of cakes and flowers, he started on his way back home. Not wishing to be late, he hurried as already the sun had set and he knew his mother would be watching for him. After he had gone about half way he heard the trickling of water. What child is Holland who does not know the danger that that means! Looking over the side of the dike, on the land side, he saw a tiny stream running in from the sea. Something must be done at once. Peter dropped his basket and putting his hand up to his mouth he shouted as hard as he could, "Help, help! There is a leak in the dike. Come and help!" But no one was near to hear. No time could be lost so Peter ran down the side of the dike and put his little hand into the hole. "There is a leak in the dike! There's a leak in the dike!" he shouted again and again. Still no one came.

Stars came out in the sky and the night was dark. Peter was cold and hungry and frightened too, as he had never been out alone at night before. Still, he did not think of going home as he knew that leak meant danger and there was no one there but himself to keep out the sea. From holding his little arm in the one position so long, it soon began to ache but never once did he think of pulling it out. Tears fell from his blue eyes as he was cold and sleepy. He called again and again but no one heard.

When it grew dark, the mother came to the door to see if Peter was coming but no Peter did she see. She called but no one answered.

"Maybe he is staying with the doctor tonight although he has never done that before," mused the mother. "Still the man may be ill and has kept Peter to help him with his work. I shall wait until morning and then go over to the doctor's house to see."

Early the next morning the mother was up and was soon ready to start to the doctor's house. As she started from the house, she saw a crowd of people coming. Peter was carried by the big man in front and as they neared the mother they all raised their hats and shouted, "Peter is a hero! Peter is a hero! He kept out the

sea with his little hand and has saved us from a flood. He is a brave boy!"

Tears of joy ran down the mother's face when she saw her boy was safe and how proud she was of the little hero. Nothing was too good for Peter that day, nor for many days after as he had done the bravest thing a boy could do. And ever after he was pointed out as the boy who had saved the town from being flooded by keeping his hand in the hole in the dike.

THE BOY AND THE GOATS.

There was once a boy who had three goats, named Willie, Nannie, and Winkie. Each day he took them out to the meadow to graze and he would sit down by the gate and read a book. One morning he took the goats out but instead of them going into the meadow, they jumped the fence into a turnip field. Try as he would, the little boy could not get the goats out. Every time they came to the gate they would run right past it.

Finally the boy gave it up and sat down and cried. Soon a rabbit came hopping by. He stopped when he saw the boy crying and said, "Why do you cry, little boy?"

"My goats are in the turnip field and I can not get them out," said the boy.

"Don't cry any more," replied the rabbit. "I'll get them out for you."

So in he hopped and began to chase the goats. But every time they came to the gate, they would run right past it. So the rabbit gave it up and came out and sat down beside the boy and cried.

A fox came running by. When he saw the boy and rabbit crying, he stopped and said, "Why do you cry, rabbit?"

"I cry because the boy cries and the boy cries because he can not get his goats out of the turnip field," said the rabbit.

"Don't worry about that," said the fox. "I will get them out for you." So in he ran after the goats. But as with the rabbit, every time the goats came to the gate they ran right past it. So the fox sat down beside the other two and cried.

Next a wolf came along. He saw the three crying and so stopped to inquire. "Why do you cry, fox?"

"I cry because the rabbit cries, the rabbit cries because the boy cries and the boy cries because he can not get his goats out of the turnip field," said the fox.

"Never mind that," said the wolf. "I'll get them out for you as they will be afraid of me." So he gave the goats a chase but with the same result. He came out of the field very dejected and said, "I can not get the goats out." And he sat down and cried.

"Buzz, buzz! Buzz, buzz!" came flying a small bee. "Why do you cry, wolf?" he said.

"I cry because the fox cries. The fox cries because the rabbit cries. The rabbit cries because the boy cries and the boy cries because he can not get his goats out of the turnip field," cried the wolf.

"I'll get them out for you," buzzed the little bee.

"What! A bee do what a wolf can not!" said the wolf.

"What! A bee do what a fox can not!" laughed the fox.

"What! A bee do what a rabbit can not!" cried the rabbit.

"What! A bee do what a boy can not! Ha, Ha!" laughed the boy.

"Don't laugh," said the bee. "Wait and see what a bee can do." And in he flew and landed right on the back of Nannie. Buzz! Nannie gave a jump and ran out of the turnip field. Next the bee sat on Willie's back and buzz! he, too, ran out of the field. And last the bee sat on Winkie's back and he ran out of the field. Can you guess what made them run?

The bee flew back to the four friends and said, "Now see what a small bee can do."

"Thank you," they all cried. And the boy drove the goats home again.

Emilie Poulsson (Adapted).

THE LITTLE YELLOW BIRD.

It was a beautiful morning in the spring. The sun was shining so brightly that it put song in every one's heart. A little yellow bird felt it and said to himself, "I shall fly to the King's house and sing him a song this beautiful sunshiny morning." So off he flew.

Pretty soon he passed Gray Pussy's house. Gray Pussy called, "Where are you going, little Yellow Bird?" "I am going to the King's house to sing him a song this fine morning," replied the bird. "Come here and I will show you the pretty ring around my neck," said the cat. "Oh, no, Gray Pussy, you would only eat me up," said the bird and away he flew.

Next he passed Mr. Fox's house. He called to the bird, "Where are you going, little Yellow Bird?" "I am going to the King's house to sing him a song this fine morning," said the bird. "Do come here and I will show you the white tip on the end of my tail." "Oh, no, Mr. Fox. You would only eat me up," said the bird and on he flew.

As he flew along he came to the home of the Black Snake. Black Snake called, "Where are you going, little Yellow Bird?" "I am going to sing a song for the King this sunshiny morning," called the bird. "Come here instead and I will show you the rings on my tail." "Not me, Black Snake, for you would only eat me up." And on flew the bird.

Soon he came to the house where the Boy lived. When the little boy saw the Yellow Bird he called to it and said, "Where are you going, little Yellow Bird?" "I am going to the King's house to sing him a song. This is such a beautiful morning," said the bird. "Come here and I will give you some corn to eat," begged the boy. "Oh, no, little Boy. You would only put me in a cage. No, I shall not stop for the corn," said the bird and on he flew.

At last he reached the King's house and perched in a cherry tree just outside the window. Then he began to sing his beautiful song. The King heard him and said to the Queen, "Hear that beautiful song. Let us give the bird a bag of feathers for his nest." This they did. The bird thanked them and flew back to Mrs. Yellow Bird and they soon had a fine nest built, all lined with soft feathers.

THE THREE PIGGY-WIGS.

Once there were three piggy-wigs living together in a meadow. One was Great Big Piggy-Wig, one was Middle-sized Piggy-Wig, and one was Little Piggy-Wig. One day Great Big Piggy-Wig said to the other pigs, "Let us go across the bridge and eat those little red apples and make ourselves fat. You go first, Little Pig." Now under this bridge lived an old Troll whose eyes were as big as saucers and whose nose was as long as a broom stick. But Little Piggy-Wig started bravely across the bridge, his feet making a trip, trip sound as he went along. As he reached the middle of the bridge, the old Troll spoke up, "Who goes trip, trip over my bridge?" "It is I, Little Piggy-Wig. I am going over to the apple tree to eat red apples to make myself fat." "Don't you go any farther for I am coming up to eat you up," replied the Troll. "Oh, don't eat me up," said the pig, "Wait for Middle-sized Piggy-Wig. He is much fatter than I am." "All right—go on," said the Troll, "As I am pretty hungry today, I shall wait for your brother." So Little Piggy Wig went on over the bridge and was soon eating the red apples. Next came the Middle-sized Piggy-Wig. He was fatter than the first and his feet went trip, trap on the bridge. When he reached the middle of the bridge, the Troll said, "Who goes trip, trap over my bridge?" "It is I, Middle-sized Piggy-Wig. I am going over the bridge to the apple tree to eat red apples and make myself fat." "Don't you go any farther," said the Troll, "for I am coming up to eat you up." "Please do not eat me up. Wait for Great Big Piggy-Wig. He is much fatter than I am," said Middle-sized Piggy-Wig. "Very well," said the Troll. "I am pretty hungry today so I shall wait." So Middle-sized Piggy-Wig went on across the bridge and was soon eating red apples with his brother.

Now Great Big Piggy-Wig started across the bridge. He was so fat and heavy that his feet went TRIP, TROP on the bridge. Pretty soon the Troll called out, "Who goes TRIP, TROP over my bridge?" "It is I, Great Big Piggy-Wig. I am going across the bridge to the apple tree to eat little red apples and make myself fat." "Don't you go any farther," said the Troll, "for I am coming up to eat you up." "All right!" said Great Big Piggy-Wig. "Come on." So the Troll came upon the bridge but as he did so, Great Big Piggy-Wig ran at him and bumped him and thumped him and knocked him down into the river. And that was the last that was ever seen or heard of the Troll. Big Piggy-Wig stood upon the bridge and said, "Now who owns this bridge?" Then he went on across the bridge and joined his brothers. They all ate red apples and grew so fat that they never cared to go back to the meadow.

WHITE RABBIT.

Once there was a little white rabbit which lived near an oak tree. One day he was over under the oak tree looking for something to eat. All of a sudden something fell on his head and in fright he ran over to Brown Rabbit's house which was in a sand bank across the field. When he reached there he was too frightened to even say "Good Day" but instead he gasped, "Oh, Brown Rabbit, I am so frightened. Something fell from the oak tree and it fell upon my head."

"Did it hurt?" said Brown Rabbit.

"Hurt? I should say it did and I wish to know what it was," he replied.

"I am sure that I do not know what it was. Let us go and tell Gray Squirrel as he may know what it was," said Brown Rabbit

So away they ran to the home of Gray Squirrel which was in a tree.

"How do you do?" said Gray Squirrel to the two friends but White Rabbit said, "Oh, Gray Squirrel, I am so frightened. While I was under the oak tree near my house, something fell on my head."

"Did it hurt?" asked Gray Squirrel.

"Well, I should say that it hurt and I wish to know what it was," said White Rabbit.

"I do not know what it was," answered Gray Squirrel, "but perhaps Wise Owl could tell you what it was. He is very wise and knows most everything."

So the three hurried over to his home which was in a hole in a tree. Wise Owl was out on his front porch and when he saw the three, he said to them, "Good Day, my friends. What brings you here?"

"Oh, Wise Owl, I am so frightened. As I was under the oak tree, something fell upon my head."

Wise Owl sat and winked and blinked and then he said very slowly, "Did it hurt you?"

"Hurt me! Well, I should say it did and I would like to find out what it was," replied the White Rabbit.

There was silence again as Wise Owl winked and blinked. Then he said, "Did you look to see what it was?"

"Oh, no. I did not take time to do that as I was too frightened," said the rabbit.

"Then we must go back and see what it was," replied Wise Owl. So all of them went back to the oak tree. And here is what they found—a big brown acorn. White Rabbit laughed when he saw what had fallen on his head.

"Just think! I ran away from that," he said.

"How very wise Mr. Owl is," said the Brown Rabbit and the Gray Squirrel. But Wise Owl just winked and blinked.

THE THREE BEARS.

There once lived in a little cottage at the edge of a great, dark forest a little girl and her father and mother. This little girl had such lovely golden curls that her parents called her Goldilocks. Goldilocks loved to go out in the open and play but sometimes time flew fast and it would grow dark before she would realize.

She loved the deep, dark woods and had many friends with the little wild creatures. The birds sang to her and the little squirrels would play hide and seek with her. But she had been warned by her mother to not go far into the woods as there might be wild beasts that would do her harm.

One day it was a particularly nice day, the sun was shining brightly and the birds were singing so sweetly and seeming to invite her farther into the woods. Goldilocks forgot what her mother had told her and she soon found herself far, far into the woods. Still she was not frightened. She saw some lovely flowers and ran to pick them; then a playful squirrel invited her to give chase. But when she grew tired, she stopped and looked around her and discovered that the place was all new to her. How frightened she became! She remembered all that her mother had told her but alas! it was too late now. There she was in the woods all alone, lost, and very hungry after her run. Goldilocks sat down and cried.

When she had stopped crying, she looked about her and saw in the distance a little house. She knew it was not her house but she thought that maybe some one lived there who could show her the way home. She reached the little house after a short run and knocked at the door. There was no answer. She knocked again and still there was no answer. So she gently lifted the latch and walked in. No one seemed to be around but in the middle of the floor stood a table upon which were three bowls of soup and around the table were three chairs. The bowls and the chairs were of different sizes, one being large, one middle-sized, and one small. Goldilocks was very hungry and she though no one would care if she ate a bit. So she took a taste of the soup in the big bowl but that was too hot and it burned her tongue. She next tasted the soup in the middle-sized bowl, but that was too cold to suit her. So she tried the little bowl and found that was just to her liking and before she realized it, she had eaten every drop.

She was tired from her walk and she decided to sit down for a while. She tried the great big chair but that was much too hard for her. So she sat down in the middle-sized chair and found that too soft. She sank down in it so far that her feet would not touch the floor. She then tried the wee, small chair and that seemed just made for her. But the little chair was not made for as much weight and it broke right in two and the pieces fell on the floor.

Goldilocks decided to see what else the house contained and she went into the next room. There she saw a staircase that led up to the next floor where the bedrooms were. She walked up the stairs and there in the first room she saw three beds, all nice and clean with white, soft pillows on each. One was a very large bed, one was a medium-sized bed, and one was a tiny, wee bed.

After the good soup, and seeing the beds, Goldilocks realized that she was sleepy and so she thought a little nap would do no harm. First she tried the biggest bed but that was too high at the head. Then she tried the second bed but that was too high at the foot. She went over to the tiny, wee bed and climbed in. It was so comfortable that it was no time until she was sound asleep.

Meanwhile three bears—the father bear, the mother bear, and the baby bear, who lived in the house, came back from their walk. The father bear was a great, big bear; the mother bear was middle-sized, and the baby bear was wee, little.

When they came into the house they saw at once that someone had been in the house and for all they knew, might be there still.

The father bear in a great big voice said, "WHO HAS BEEN TASTING OF MY SOUP?" The mother bear in a middle-sized voice said, "*Who has been tasting of my soup?*" And the

wee bear said in a wee voice, "Who has been tasting of my soup and, oh, they have eaten it all up?"

When they went to sit down, the great big bear said in a great big voice, "WHO HAS BEEN SITTING IN MY CHAIR?" And the middle-sized bear in a middle-sized voice said, *"Who has been sitting in my chair?"* And the tiny wee bear said in a tiny wee voice, "Who has been sitting in my chair and, oh, they have broken it down."

They decided to make a hunt for the one who had eaten their soup and who had sat in their chairs. So up the stairs they went. When they came in the bedroom the great big bear said in a great big voice, "WHO HAS BEEN LYING IN MY BED?" And the middle-sized bear said, *"Who has been lying in my bed?"* And the little baby bear said, "Who is this lying in my bed?"

Their voices awoke Goldilocks and you can imagine her surprise when she saw the three bears standing by her bed. She jumped up and ran to the window, threw up the sash, and leaped out and ran for her home as fast as she could run. The bears were slow to realize what was happening and when they got to the window, GoldiLocks was out of sight.

She never stopped running until she reached her own home at the edge of the wood and after she had told her mother of her adventure, she promised never again to run so far away from home.

Robert Southy—Adapted.

HANSEL AND GRETEL.

Once upon a time there was a poor woodman who lived in a little hut near a woods. With him lived his wife and two children, a boy by the name of Hansel and a girl named Gretel. The father and mother worked hard to earn money to provide the children with food that they might grow strong and big. The father cut wood in the forest and sold it to the people in the village.

After one winter the father was poorer than ever as the heavy snows had kept him from going far into the forest to cut wood. It was so cold that they had to use most of what he did cut to keep themselves warm and so they had very little money coming in. At last he did not have enough to buy food for the family.

One night after the children had gone to bed, he and his wife sat up talking and trying to think of some way to provide for them. Finally the father said, "The good Father in Heaven may take pity on them if I cannot give them food. Let us take them into the woods and leave them there and the Good God will find shelter and food for them." The mother tearfully consented and they decided that the next morning they would take them into the woods and leave them to the care of God.

The children had not gone to sleep and they heard what the father and mother planned. Gretel cried and said, "What will become of us?" But Hansel told her not to cry as he would find a way out. As soon as the parents had gone to bed, Hansel got up, slipped on his clothes, and stole out into the moonlight. The little white pebbles which lay before the door, shone like silver and he stooped down and picked up enough to fill his pockets. Then he went back to Gretel and said, "Do not be afraid, dear sister. Go to sleep and rest as God will not forsake us." And then he, too, went to bed again.

The next morning, before the sun was up, the mother went and called the children. "Come, children, we are going into the woods to cut some wood." She gave them each a piece of dried bread and told them that it was for their dinner but that they must not eat it until it was that time as it was all they could have.

All four started on their way and every little while Hansel would stop and look back at the house and every time he stopped he would drop a little pebble out of his pocket upon the path.

When they came to the middle of the woods, the father told the children to gather some wood and he would make them a fire so that they would not be cold. So Hansel and Gretel gathered quite a pile of dry wood and the father set fire to it. "Now, children, lie down near the fire and rest yourselves while we go farther into the forest to cut wood. When we are ready we shall call for you," said the mother.

The children first ate their bit of bread and then, because they were tired, they lay down and soon dropped off to sleep. When they awoke it was quite dark and this made Gretel cry. "Don't cry, sister," said Hansel. "Wait until the moon rises and we will find our way home. Soon the moon shone forth and the little pebbles that Hansel had dropped, looked like bits of silver in the path and Hansel, taking Gretel by the hand, started on their way. All night they traveled and then just as day was breaking, they reached their father's house. When the mother saw them, she broke out crying and hugged and kissed them and the father did likewise, for both had felt very badly over the loss of their children.

All went well for a while, but once again hunger came upon them and the parents realized that the children would starve to death if something was not done. So one night the children overheard the father say to their mother, "Everything is again eaten up; we have only one half of a loaf of bread left and when that is gone, the children will surely die. We must put them in the care of God again." With many sobs, the mother said, "Yes. We will take them farther into the woods so that they cannot find their way out."

When all was quiet and the house was wrapped in sleep, Hansel got up and went after more pebbles. But when he got outside no moon was shining and he could not see one. He went back to bed and comforted Gretel again by saying that the Good God would not forsake them.

The next morning the mother came to them and told them to dress to go to the woods. As before she gave them a piece of bread for their dinner. On the way Hansel broke his piece of bread in his pocket and every little while he would drop a crumb on the path.

This time the parents led then far into the woods where they had never been before and,

making a fire, they said to them, "Now lie down and rest and sleep. When we have chopped all the wood we need, we shall come to you."

When dinner time came Gretel shared her piece of bread with Hansel as he had scattered his along the path. It was not enough and from weakness, the children soon fell asleep. When they awoke in the dark night, Gretel again cried but Hansel told her to wait till the moon came out and then they would find their way home. But when the moon did shine, they could not see a single crumb for the birds had picked them all up. Hansel did not give up and would say, "We will soon find the way;" but they did not although they walked all that night and the next day. Still they could not find the way out of the woods. Soon they were so tired that they could not drag themselves another step and so they lay down under a tree and fell asleep.

It was now the third day since their parents had left them in the woods. They had had nothing to eat except berries that they found along their way and they began to realize that if they did not reach the edge of the woods soon that they would perish. All of a sudden they saw a light and they hastened to reach it. When they got there, they found a dear little cottage and imagine their delight when they saw that it was made of gingerbread and cookies with doughnuts for the windows and a roof of sugar.

"Now we shall eat our fill," said Hansel. "I shall take a bite of the roof first and you can eat a window." Hansel reached up and broke a piece off of the roof and was eating when a voice called, "Nibble, nibble, mousekin, who nibbles at my housekin?" "It is but the wind," said Hansel and the children went on eating. Soon the door opened and a homely old woman on crutches hobbled out. The children were frightened when they saw her and they dropped their food and started to run. But the old woman called to them and said, "Ah, dear children, what has brought you here?" When the children had told her their story she took them by the hands and led them into the house where she gave them a good supper. And then she put them to bed in nice little beds where they soon went to sleep.

But the old woman was not good as it would seem. She was really a bad witch and she wanted to lure children to her house where she made them serve her. The next morning the old witch awoke the children with a voice as rough as it had been sweet the night before. "Wake up, you lazy ones. Do you think you have nothing to do but eat and sleep?" and with that she dragged them out of their beds and put them to work—Hansel to gather wood and Gretel to sweeping and dusting. Neither child had been used to hard work and was soon exhausted. But the old witch kept them at it until night. They were so tired by then that they went right to sleep when they went to bed and had no time for fear. The next morning the old witch put Hansel in a cage to fatten to eat and she made Gretel cook things for him to eat. The time came at last when the old witch though he was fat enough to eat and so she called Gretel to come and see if the oven was hot. It was a queer old oven and Gretel said she did not know how to peep into it. The witch said, "Stand up on tiptoe and look it." But Gretel saw that she meant to shove her in when she opened the door, so she said, "You will have to show me how." The old witch stood up on her tiptoes and peeped into the oven and while doing so, Gretel gave her a push and in she went. Gretel hurriedly closed the door and there was the old witch caught in her own trap. Gretel went and unlocked the cage that contained Hansel and both children were once more free.

They ate all they could and then started off to find their way home. A little white bird was flying overhead and Hansel said, "Let us follow the bird and perhaps it will show us the way." Sure enough! When they had crossed a little stream not far from the witch's house, they found they were in a part of the woods that was familiar to them. They traveled on and it was not long until they reached home. How good it looked to them. And how glad the father and mother were to see their dear children back again.

Hansel was able now to help his father and so the father could cut more wood and have more to sell. Gretel helped her mother in the house. Soon they were able to have some hens and they sold the eggs; and then a cow and they sold butter. They were very happy now and had plenty to eat. The children always helped and all went well for the rest of their days.

Adapted from Wilhelm and Jacob Grimm's Hansel and Gretel

BILLY BOB TAIL.

Once there was a little boy by the name of Billy Bob Tail. He had no home and he had no friends. He decided he would go out into the world and seek his fortune. As he walked along, he met a cat.

"Mew, mew! Where are you going, Billy Bob Tail?" said the cat.

"I am going to seek my fortune," replied Billy.

The cat asked if he could go with him but Billy said that he did not want him to go.

"I have no home and I have no friends Please let me go with you," begged the cat.

Billy felt sorry for the poor cat and so he told him to come but warned him to not scratch him.

The two friends walked along together and soon they met a dog.

"Bow, wow!" said he. "Where are you going, Billy Bob Tail?"

Billy told the dog that he was going out into the world to seek his fortune. The dog wanted to go along but Billy said that he didn't want to be seen with a dog and a cat. But the dog begged and begged as he had no home. He was getting old and his master had said he would kill him. Billy felt sorry for the poor dog and said he could go but he didn't want him to bite him.

The three friends walked on down the road and soon met a cow.

"Moo, moo!" said the cow. "Where are you going, Billy Bob Tail?"

Billy told her the same that he had told the others and she too asked to go along. But Billy did not want to be seen with a cat, a dog, and a cow and he said so. But the cow told him that her master was going to kill her and eat her as she had heard him say so and she didn't want to stay for that. Billy didn't want the cow killed either and so he told her to come along but told her that she must not hook him.

Now the party of four journeyed on until they met a goat who said, "Baa, Baa! Where are you going, Billy Bob Tail?"

"I am going out to seek my fortune and you may go with us if you will be careful not to butt me," said Billy.

On and on the friends went until they came to a dark forest. They decided that they would go into the woods as the fortune they were looking for might be in there.

Billy told the friends to not be frightened as he could whistle and throw stones. The cat said it could mew and scratch; the dog could bark and bite; the cow could moo and hook, and the goat could bleat and butt. So the five thought there was nothing to frighten them since each could do so much and in they started. They had not gone far when they saw a house and from the house was issuing a deep growl. What could it be? Billy thought it was a bear and he told the friends to make all the noise they could and that would frighten him away. So all together they went—a whistle; mew, mew; bow, wow; moo, moo; baa, baa! The bear was very much frightened at the dreadful noise and he ran out of the house and never went back again. The five friends lived there and were very happy in their new home and in the thought that their fortune was found.

Folk Tale.

THE GINGERBREAD BOY.

There was once an old woman who lived with her husband in a very old house. They had but one son.

One day while she was making a cake, she said to the boy that she would make him a little gingerbread boy for him to play with. So she rolled out the dough and cut a little boy. Then with red sugar she covered his hat. With yellow sugar she fixed the coat, and she put brown sugar on his shoes. She put him in a pan and stuck him in the oven. Then she told the little boy that he must stay there and watch to see that the little gingerbread boy did not burn. She said that she would leave the oven open and then he could see. That was just what the little gingerbread boy wanted. The little boy nodded and fell asleep and out jumped the gingerbread boy. As he ran out of the house he called, "I can run away from you, I can." The old woman called to her husband to come and help her catch the gingerbread boy.

The gingerbread boy ran on and on until he came to a barn where some men were threshing wheat and as he came by the door, he called,

"I am a little gingerbread boy.
I've run away from a little old woman,
A little old man,
A little boy,
And I can run away from you,
I can, I can."

The men all ran out of the barn and began to chase the gingerbread boy but he could run very fast and soon he was out of sight and the men gave it up and returned to their work.

Next the little gingerbread boy came to a field of mowers. He called to them,

"I am a little gingerbread boy.
I've run away from a little old woman,
A little old man,
A little boy,
A barn full of threshers,
And I can run away from you too,
I can."

The men started after him but he ran so fast that they, too, had to give up the chase.

On, on he ran until he met a cow. To it, he called,

"I am a little gingerbread boy,
I've run away from a little old woman,
A little old man,
A little boy,
A barn full of threshers,
A field full of mowers,
And I can run away from you, too,
I can."

But the cow did not stop chewing her cud. She didn't appear to hear him. So he ran on until he met a fox to whom he called,

"I am a little gingerbread boy.
I've run away from a little old woman,
A little old man,
A little boy,
A barn full of threshers,
A field full of mowers,
A cow,
And I can run away from you too,
I can."

A fox can run very fast and he gave the gingerbread boy a lively chase. At last they came to a river that was very wide. There both had to stop.

"Would you like to get across?" said the fox, very politely.

"Indeed I should," replied the gingerbread boy.

So the fox told him to jump on his tail and then into the water he swam. The water came higher and the fox told him to climb upon his back for fear he might drown. This the gingerbread boy hastened to do. The fox swam a little farther and the water got deeper so he called, "Jump up on my nose as I am afraid you will drown on my back as the water is getting real deep." The gingerbread boy jumped on his nose where he stayed until they reached the shore and then SNAP! The fox opened his mouth and in went the little gingerbread boy!

THE TRACKS TO THE DEN.

A lion and his mate lived in their den in a large forest. They were getting old and food was scarce. One day the mate came to the lion who was lying in front of his den and said, "We must have food. It has been three days since we have eaten."

"What can we do? We are both too old to hunt now and the animals will not come here to be killed," said the lion.

"We must think of some way to bring them here," said the mate. "Let us say we are sick. Then they will come to visit us."

"A very good plan, mate! A very good plan, indeed!" said the lion.

A crow flew to a tree near by and the mate told her that they were sick and lonesome and would like to have some company. The crow is a great talker and at once she flew away with the news.

"You shall have the first one, dear. I'll wait outside and send him in," said the lion to his mate. So the mate went inside of the den.

Soon the wolf came and said, "I hear that you are sick, sir."

"Yes, so sick, friend wolf, and so lonesome!" said the lion.

"Why then, I'll sit and talk with you," said the wolf.

The lion bade him enter the den and he would follow but instead he remained outside. Soon the mate came out and said, "The plan works fine! That wolf was nice and tender."

Soon two lambs came to call on the lions. "We hear you are very sick," they said. "Your voices are as weak as ours."

"Alas, we are both like little lambs, now. Won't you come into our house and sit with us for a little while. We get so very lonesome," said the lions.

So the lambs entered the den and the lions followed. All was quiet for a while and then the lions reappeared at the door.

"I like spring lamb," said the mate and the lion said he too, was very fond of it.

Soon a fox came along but he stayed at a safe distance. "Good morning, friends! I hear you are very sick," he said.

"Oh very, very, very sick," said the lion and his mate. "Why do you stand so far away? Come near and talk with us, my dear."

But the fox said he had to go. "Go! Did you not come to visit us?" said the lions in unison.

"Yes, but I cannot stay," said the fox. "I see many tracks going into your den but not a single track comes out! Not even a footprint. It is strange, isn't it, friends? I think I shall be on my way." And with that off ran the fox.

"That fox is very clever," said the mate. "Yes, much too clever," replied the lion.

THE HONEST WOODMAN.

There was once a woodman cutting down a tree on a river bank. All at once the ax flew off the handle and fell into the river. "Dear me," said the woodman. "What shall I do now? My ax has fallen into the river and I can cut down no more trees and I can not get food for my children."

"I will get your ax, good sir," said a fairy.

"You must not dive, kind fairy, as the river is too swift here," said the woodman.

"No river is too swift for me," replied the fairy. And she dived in and soon came up with a gold ax. "Is this your ax, woodman?"

"Oh, no! That ax is gold. That is not my ax."

"Then I will dive again," said the fairy. This she did and soon she came up with a silver ax.

"Is this your ax, woodman?" she asked.

"Oh, no! That ax is silver. That is not my ax," again said the woodman.

So the fairy dived the third time and came up with the woodman's ax.

"That is my ax! That is my ax!" shouted the woodman.

"You are an honest man, sir, and I am pleased with you. You shall have all three of the axes as a gift from me," said the fairy.

"Thank you, good fairy. I thank you," replied the man and he went joyfully home to show his wife and children the fairy's gift.

A second woodman had been cutting trees near the place where the first one lost his ax and he had seen all. "Why should not I have a gold ax too? I will! Indeed I will!" said he. So he threw his ax into the river and then sat down and began to weep.

The fairy came to him and asked him why he was weeping. "Alas! Alas! My ax fell into the river," cried he.

"Weep no more," said the fairy. "I will bring it up for you." And she dived down into the river and brought up a gold ax. "Is this your ax, woodman?" said she.

"Yes, yes! That is my ax. Why do you hold it away from me?" he said.

"I am not pleased with you, sir. Your ax was not of gold! Your ax lies in the river and there it shall lie forever, forever!" said the fairy and then she went away.

"I wish I had not done it! Oh, I wish I had not done it!" cried the woodman but it was too late.

THE STORK.

Hans and Katrina lived with their mother and father in a city of Holland. Their house was made of brick, painted blue with snowy white door and window frames. On the roof a stork had built her nest and there she lived with her babies. How the children liked to watch the storks and many pleasant minutes were spent in watching the mother stork fly down to the ground for food and then up again where several hungry mouths stood open ready to receive. The children got so they would put out grain for the mother and she did not have to go far to obtain enough to feed her babies.

One day the house next to Hans' and Katrina's home took fire and soon smoke was rolling from the roof and sparks were flying high into the air. Everywhere was confusion and in the excitement no one thought of the danger the storks were in. The mother stork flew upon the nest and with her wings tried to fan away the smoke that came in clouds over the house. As the fire grew worse, the sparks settled down and mother

stork had no time to fan the smoke away. All she could do was to keep the sparks away from her babies by spreading her wings over them, never once thinking of the danger to herself.

At last the firemen got the fire out. Hans's father looked upon the roof of their house and there saw the poor stork. He hurriedly got a ladder and climbed to the top and carried the stork to the ground. Upon examination, it was discovered that the sparks had burned the wings so badly that she could never fly again. But she had saved her babies by her heroic act. The mother and the little storks were taken care of by the children and their father and mother until the little ones grew big.

The market house was not far from their home and it was no uncommon sight to see the mother stork walking around in there, picking up the bits of food that were dropped on the floor and in that way she was a great help in keeping the market clean and she soon became the friend of everyone.

ANDROCLES AND THE LION

In the city of Rome, there lived a man by the name of Androcles. He was a slave and his master was hard and cruel. When he was angry, he would beat Androcles very severely. The slave stood it as long as he could and then one night he ran away. He hid in the dark woods for many days, only going forth at night to get his food for fear some one would recognize him and take him to his master.

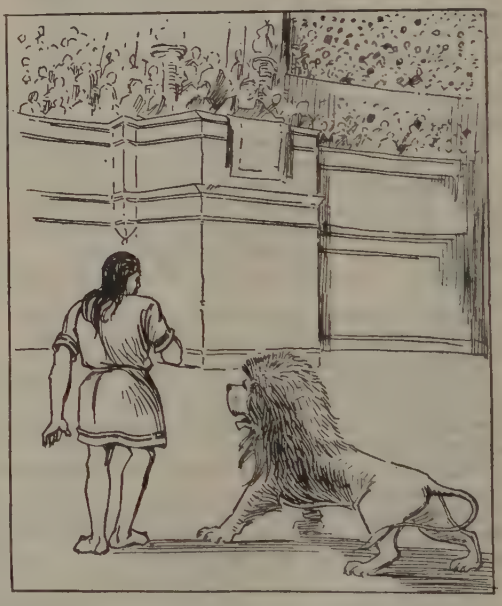
One day in the early evening Androcles was forced to look for food as he was about starved. As he wandered about in search of something he came unexpectedly upon a lion. It was lying down, moaning and groaning. At first, Androcles turned to flee but he noticed that the lion did not pursue him and so he returned to see what was the matter. He went up to the lion and there he saw a large thorn in one of his front paws. He pulled out the thorn and bound up the paw. The lion thanked him just as a dog would do. He jumped about him and licked his hands and feet.

Androcles was no longer afraid and that night the two slept side by side. The next day the lion took the slave to a cave which was his home and every day the lion would go forth and bring food to Androcles. The two became very good friends.

But alas! One day as they were out for a walk in the woods some soldiers came marching by. They saw Androcles and recognized him as they had often seen him with his master. So they took him back to Rome. Now the master was more cruel than before. He beat him and had iron chains fastened to his legs so he could not run away again.

Finally he was taken to a large place that looked like a circus ground. A large stone wall ran around this and against this wall were hundreds and hundreds of seats. People would come to this place to see men fight wild beasts. Androcles was led into the center of the ring and the chains loosened. From another door came a roaring lion. Androcles must fight that lion. How frightened he was! He stood and waited for the lion to come and kill him as he was sure that would happen. The lion came on roaring and exposing the large teeth. One more spring and the lion and man were side by side. Then a queer thing happened. Androcles gave a cry of joy and threw his arms around the lion's neck. The lion licked his hands and feet. The two friends had found each other again.

The people who had come to see the fight could not understand and they shouted and waved their hands. The Emperor called Androcles to him and asked him to explain and when Androcles told him the story, he set the man free and the lion was freed, too. The two went out of the ring together. The lion was given to the slave and they lived together in Rome for many years.



ANDROCLES AND THE LION.

THE LITTLE RED HEN.

In a barnyard there lived a very thrifty and hard working red hen. One day as she was scratching around for food she came upon a few grains of wheat. She called to the dog, the pig, the cat, and the rat and said, "Who will help me plant this wheat?"

But the dog said, "I will not."

And the pig said, "I will not."

And the cat said, "I will not."

And the rat in his squeaky voice said, "I will not."

"Then I will have to do it," said the little red hen, and she started to work. She dug up the ground with her sharp little feet and soon the few grains of wheat were resting in the soft earth. Days followed in which there was a

little rain and plenty of sun and soon the wheat grew up straight and tall and it was ready to cut.

"Who will cut this wheat," said the little hen but the dog and the pig said, "Not I." And the cat and rat said, "Not I." The little red hen said, "I will then." And with her little bill she cut every blade.

The wheat was ready to thresh and again the little red hen called for help but each again said that they would not help and the little hen had to thresh the wheat all by herself. So she fanned it until she had every grain threshed out.

"This wheat will make nice flour," she said. But who will help me grind it?"

"Not I," said the dog.

"Not I," said the pig.

"Not I," said the cat.

"Not I," said the rat.

"Then I shall do it myself," said she and with two small stones she rubbed the wheat together until she had nice flour.

Now the flour was ready to make into bread but upon being asked to help, the dog and the pig and the cat and the rat said, "Not we. We shall not help make the bread."

"I shall do it then," said the hen and she kneaded and kneaded the dough until she had three loaves of bread ready for the oven. She put them in and soon there was the tempting smell of fresh baked bread coming from the oven. How good it smelled! It made one feel hungry. At last it was done and the little red hen took it out of the oven and then she said, "Now, who will help me eat this bread?"

"Oh, I will," said the dog and the pig.

"And I will," said the cat and the rat.

But the little red hen replied, "No! Not you. I shall call my little chicks and they and I shall eat the bread. You did not help to make it and you shall not help to eat it."

"Bow-wow," said the dog.

"Squeak, squeak," said the pig.

"Meow, meow," said the cat.

"Dear me!" said the rat

THE FOUR FRIENDS.

Once there was a poor donkey that had grown too old to work. He heard his master say one day that he was useless and should be killed.

"I shall not stay here and be killed," said the donkey. "I shall go to town and play in the band." And off he started down the road.

Soon he met a dog, lying by the road. He seemed unhappy and the donkey felt sorry for him. "Why are you here, Dog?" said the donkey.

"I used to hunt for my master but now I have grown too old. My eyes are not like they were when I was young and I cannot see the game. And now my master intends to have me killed for I heard him say so," said the dog.

"Do not stay here to be killed," said the donkey. "Come with me and we will go to the town and play in the band. You can play the flute and I can beat the drum."

So the donkey and the dog started on down the road. Pretty soon they saw a cat. The cat, when she saw the two friends, called out, "Where are you going?" "We are going to the town to play in the band," said the two.

"Let me go with you?" asked the Cat. "I am too old to catch mice any more and my mistress said that I would have to be drowned and I do not want to die yet."

"Surely you can go with us as you can sing while we play the flute and the drum," they said. So the cat joined them and the three continued on their way toward town. In taking a short cut through a farmyard they saw a rooster standing on a fence. He was crowing as loudly as he could. The friends stopped to listen and when he had finished, they said to him, "Why do you crow so loudly?"

"How happy I have been living here at this farm. I had plenty to eat and plenty to drink and now that I am nice and fat, the cook intends to cook me for dinner tomorrow. So I shall crow while I can for my time is short," said the rooster.

"Why don't you come with us and not stay here to be cooked," said the donkey. "We are all going to the town and play in the band. I shall play the drum, the dog the flute, and the cat will sing. You can sing, too, since you have such a beautiful voice."

The rooster was only too glad to go and so he flew off the fence immediately.

It was getting late and the four friends realized that they could not get to the town that night and that they must find a good place to sleep. They came to a woods and they decided to stop there. The rooster flew up into a tree, clear up to the tip-top. The cat climbed up to the first branch and there settled herself for the night. The dog and the donkey lay down on the ground under the tree and soon all were asleep but the rooster. He could not go to sleep for thinking of the narrow escape he had had. He was so happy that he was saved and he perched there and looked all around in a very satisfied way. All at once in the distance he saw a light. He called his new friends and said, "Wake up, friends. I see a light and there must be a house close by. How good supper would taste, so let us go and ask them for something to eat."

"I would like a juicy bone," said the dog as he awoke.

"And I, a fat mouse," said the cat.

"I'll take some corn for mine," said the donkey.

They started off at once to the place where they saw the light, and sure enough, it was coming from the window of a little brick house. The window was too high for any but the donkey to see in so he walked over to it very quietly and looked in.

"I see a table laden with many good things to eat and around the table are four robbers. Let us think of a way to frighten them away so we can have the good things to eat," said the donkey.

They got their heads together and thought and thought. Finally the dog said, "Let us all make our loudest noise and it will be so terrible when we do it all together that we will frighten the robbers away and we can have the food and the house in which to spend our old age. What say, my friends? The donkey can stand with his

fore feet upon the window sill and I can climb upon his back. Then the cat can get on my back and the rooster on the cat's back. I shall count three and we shall make the loudest noise we can."

At three the donkey brayed, the dog barked, the cat meowed, and the rooster crowed. Such a noise they made! The robbers were so frightened that they ran out of the house as fast as they could go. The four friends went on into the house and sat down to a good feast. After they had eaten all they could eat, they felt sleepy and each began to look for their beds. The donkey went outside to sleep. The cat curled up in front of the fireplace. The dog went to sleep by the door and the rooster went outside and flew up into a tree. Soon all were fast asleep.

The robbers had run a safe distance from the house when they heard the dreadful noise and then had stopped to see if they were followed. They waited several hours and then as all was quiet they decided to creep back. One went on ahead and, meeting no one, he opened the door of the house and walked in. He went to strike a light at the fireplace and that woke the cat who flew at him and scratched him with her claws. He turned to run and as he passed the door the dog bit him in the leg. In panic, he rushed out of the house and passed the donkey who woke in time to give him a good kick. He went back to the other three robbers and told them of his sad experience and they decided to never go back to the little house again and it was left to the four friends who lived happily ever afterwards.

Adapted—Grimm.

KING MIDAS.

Adapted from the story by
Nathaniel Hawthorne.

Once upon a time there lived a very rich king by the name of Midas. He loved gold almost more than anything in the whole world. There was just one thing that he loved more and that was his only child, a little girl whom he called Marigold because of her lovely golden curls.

Midas kept his gold in an underground room of the palace and his greatest pleasure was to go down to this room, lock the doors securely, and then take out the bags of gold and spread it all out on a table. He would fondle it and let the sunshine shine in on it to make it glisten all the more. But the more that he had, the more that he wanted. When he looked at the gold tinted clouds of the sunset, he wished that they were real gold that he could pack them into his bags.

Before he became so fond of gold, Midas had admired flowers very much and had planted a garden in which grew the largest and most fragrant roses any one ever saw or smelled. Midas would spend hours in the garden admiring them and inhaling their wonderful perfume. But now, if he looked at them at all, it was to figure what the garden would be worth if every petal of the roses was a thin plate of gold. He got so greedy for more gold that all he wanted to see was gold and all he wanted to hear was the chink of one coin against another.

One day as usual, Midas was enjoying himself down in the underground room, when he noticed a shadow fall across the heaps of gold and, looking up, he saw a stranger. As Midas knew that he had turned the key in the lock very carefully when he came into his treasure room, he felt sure that the stranger he looked upon was no mortal man but a fairy instead.

The stranger gazed about the room and then turned to Midas and said, "Midas, you are a very wealthy man. I doubt if there is a room in all the world that contains so much gold. You must be very happy and entirely satisfied."

"Yes, I have done pretty well. But after all it is but a mere trifle when you think that it has taken my whole life to get it together. If one could live to be a thousand years old then he might have enough wealth to be proud of," answered Midas.

"Oh, you are not satisfied?" exclaimed the stranger. "Pray what would satisfy you?"

Midas paused and thought. At last a bright idea came to him and he said to the fairy, "It has been a hard task to gather this gold together and it has taken me too long a time. I wish that everything I touch would turn to gold."

"The Golden Touch!" exclaimed the stranger. "But are you sure that this will satisfy you?"

Midas said that it was all he wished and that he would never regret the wish and so the fairy told him that at sunrise he would find himself gifted with the Golden Touch. With this the fairy seemed to fade away into the air and was gone.

Midas could hardly sleep that night for thinking of the wonderful fortune that had come to him. When the first light of day peeped over the hills Midas was awake and was stretching his arms out to touch the objects that were within his reach. He was anxious to see if the Golden Touch was a reality or not. He touched a chair and it became gold. The bed clothes were no longer linen but were changed to a woven texture of the purest gold. Midas was delighted and he jumped from the bed and rushed to the window to let the sun in to shine on the golden objects. As he pulled the tassel of the shade, it, too, turned to a mass of gold. He hurriedly put on his clothes and was overjoyed to see himself arrayed in a suit of gold.

Midas was so enraptured that the room seemed too small for him and so he went downstairs and the bannister of the stairs turned to a bar of shining gold as his hand passed over it in his descent. He lifted the door-latch (it was gold now) to look out upon the world and he noticed the lovely roses growing in the garden and he thought of how often he had wished that each petal was gold. So he went out and touched every rose and they were changed to gold.

Breakfast was called and as the morning air had given him a good appetite, he hastened back to the palace and sat down to the table. He picked up a glass of water and it turned to gold. He tried a cup of coffee, and that turned to gold. Dear, dear! This was not so funny for he had nothing to drink.

Next he took up an egg and that turned to gold. He tried some bread and butter and they met the same fate. No, indeed! This was not so funny as he had nothing to eat.

As Midas was wondering what to do, in came Marigold, crying as if her heart would break and in her hand was clasped a golden rose. Her father said to her, "Why do you cry, my Marigold?"

She held up the rose that her father had so recently changed.

"Well, what is in this magnificent rose to make you cry? Is it not beautiful?"

"No, dear father, it is the ugliest flower that ever grew and its lovely fragrance is all gone. Something dreadful has happened to all the flowers as they have all turned yellow and no longer smell sweetly." And Marigold burst forth into tears again.

To comfort her, Midas got up from the table and walked around to the child. He put his arms around her and, behold! what had he done! The moment he put his arms about her, a change had taken place. Her rosy face had assumed a yellow color, with yellow tear drops upon the cheeks. Her hair was of the same tint. Her little soft, flexible body grew hard and rigid. No longer did Midas have a human child but in her stead, a golden statue. Midas was beside himself with grief as you remember he loved his little girl even more than gold and now here she was lost to him. He wrung his hands and wished that he was the poorest man in the world if he could just have Marigold back again.

While he was in the depths of despair, he suddenly beheld the stranger before him.

"Well, King Midas," said the stranger, "how do you succeed with the Golden Touch?"

"I am most miserable," replied Midas.

"How does that happen? Did I not keep my promise to you? And do you not have everything that your heart desires?" said the stranger.

"Gold is not everything," wailed Midas. "I have lost my most precious possession, Marigold, who was more to me than anything else in the world. Oh, my child, my dear child! I would not have given her one little finger for the power of changing this whole world into a solid lump of gold." And Midas bowed his head in grief.

"You are wiser than you were, King Midas," said the stranger. "Tell me now, do you wish to rid yourself of the Golden Touch?"

Midas replied that it was most hateful to him and so the stranger told him to go to the river and plunge into it. He told him to take a pitcher and fill it with the water and then bring it back to the palace and sprinkle it over any of the objects that he wished changed back again into its former substance.

King Midas lost no time in rushing to the river. Upon reaching the shore, he plunged headlong in, without even waiting to remove his clothes. As his head emerged from the water, he was conscious of a change in himself. It seemed that a heavy weight had been lifted off his heart. He hurriedly dipped in the pitcher which had turned golden with his touch and he was overjoyed to see it turn back to glass. He filled it with the river's water and then hastened back to the palace. The first thing that he did was to sprinkle some on the golden figure of Marigold.

No sooner did it fall on her than the rosy color began to come back into her face and once more she was the dear little girl whom Midas loved.

Midas had grown so much wiser and had found that there are many things that are more valuable than gold. He did not care to have constant reminders of the time when he had been so foolish as to think that gold was all that counted in life, that he sprinkled the precious water on everything that he had changed when he had the Golden Touch and now Midas was a happy and contented king.

THE ANT AND THE GRASSHOPPER.

In a field one summer's day a grasshopper was dancing about to her heart's content. Wearying of playing by herself, she hopped over to the home of Mrs. Bushytail and invited her to join her in a dance. The squirrel told her that she was too busy storing away food for her winter's use to waste her time dancing and hopping about. She told the grasshopper that she, too, should be getting ready for the winter as summer could not last forever.

"Bah," said the grasshopper, "why work when the day is sunny? You may do so if you wish but I shall enjoy myself." And she hopped on. She soon saw Mrs. Bee gathering nectar for honey. She called to her and said, "Come and dance with me. Let us have a merry time. The sun is too bright to waste your time working."

"Dancing may be a very pleasant thing but summer is short and then comes the winter and we should all be prepared. Buzz, buzz, buzz! I can not idle here talking to you for I must away and gather pollen for my bread." And again the grasshopper was left alone.

She shook her head and laughed. "I don't

believe there is any such thing as winter. They can all work if they want to but I shall have my fun. I shall go and see if Mrs. Ant will dance with me." But Mrs. Ant was busy carrying along a kernel of corn. She was taking it to her home. Grasshopper called to her to come and dance with her but the busy ant said she had too much work to do, enough to keep her busy all the summer as she had a great many children to feed and they got hungry in winter as well as in summer. "You had better work, too," and with that the ant picked up the corn and started on her way.

But the winter did come, much to the surprise of Mrs. Grasshopper. The days grew very cold and food became scarce and often she was hungry. Then came the snow and the grasshopper could not find one thing to eat. Something had to be done! She hopped over to Mrs. Squirrel's house and knocked at the door but all were asleep and did not hear her. Then she went to the home of Mrs. Bee but there, too, they were fast asleep and did not hear the knock. Only one place was left, Mrs. Ant's home. Her strength was fast leaving her as she was not used to the cold and she had had nothing to eat for several days. By the time she reached the ant's house she could only whisper, "Please give me something to eat—just a little bit and then I'll pay you back next summer." Mrs. Ant heard the grasshopper and went outside and helped her into her nice warm house. She fed her but the aid had come too late and Mrs. Grasshopper died but not before she realized that it is best to work as well as play.

THE SUN AND THE WIND.

One day the Sun and the Wind were arguing as to which was the stronger.

"I am the stronger," said the Wind. "I can do many things. I cover the ground with snow and freeze the water."

"I am stronger than you," said the Sun. "I warm the ground and make the plants grow. I melt the snow and the ice."

"I see a way to decide who is the stronger," said the Wind. "Here comes a man up the hill. He has on a heavy coat. The one who can make him take off the coat will be considered the stronger."

"Agreed," said the Sun. "You begin."

So the Sun went behind a cloud and the Wind began to blow as hard as he could upon the man.

"How cold it is," said the man. "That wind is so strong, I must hold my coat close or it will blow it off of me." And he fastened his coat up tight and the Wind, try as he would, could not make him take it off.

Then the sun came out and began to shine. He shone so warmly that the man said, "How warm it has gotten! This is a queer day. First it is cold, and then it is warm. This coat feels too heavy. I must take it off." And with that, he pulled off his coat and carried it on his arm on up the hill.

And so the argument was settled. Which was the stronger?

Aesop.

THE GOOSE THAT LAID THE GOLDEN EGG.

There was once a man who owned a very fine goose. Every day she laid an egg of gold and soon the man became rich.

As he grew rich, he grew greedy too. He said to himself, "The goose must be gold inside. I shall kill her and get all the gold at once and not have to wait for just one golden egg a day."

So he killed the goose but he found no gold. The man was very sad and wished that he had been content with the golden eggs.

A little is better than none at all.

Aesop.

THE HARE AND THE TORTOISE.

A hare was out in a field boasting that he could run faster than any one else. "I was never beaten in a race in my life," said he.

A tortoise was near by and he heard the hare. "I will run a race with you," he said.

This made the hare laugh as everyone knows that the tortoise is about the slowest thing there is.

"That is a good joke," said the hare. "I could dance around you all the way and then win."

But the tortoise was not to be daunted and so a goal was fixed. The hare was off with a bound and was soon out of sight. He looked around and not seeing the tortoise, he said, "That tortoise is so slow that I can take a nap and still get up and beat him."

This he did. The tortoise plodded along and soon passed where the hare was sleeping. But he did not stop. He kept right on going until he reached the goal.

By and by the hare awoke. He jumped up and ran as fast as he could. When he reached the goal, imagine his surprise when he saw the tortoise there before him.

Aesop.

THE RABBITS AND THE FROGS.

Some rabbits lived in the woods where there were many wild beasts. The rabbits were so bothered by them and so afraid of them that they did not know what to do. One day they were dreadfully frightened by some lions and one rabbit said to the rest, "We are so afraid of these large animals, let us jump into the river. It is better that we drown than to live in this continual state of fear. We shall be killed by them anyway, I am sure."

So the timid little rabbits ran as fast as they could to the river. As they approached it, a group of frogs who were sitting on the bank of the river, became frightened and jumped into the water.

The one rabbit again spoke, "The frogs are afraid of us. We are all afraid of anything bigger than we are." And they all ran back to the woods.

Aesop.

THE STAG IN THE LAKE.

One very hot day a stag came to quench his thirst at a lake. After he had taken his drink, he lingered to view himself from head to toe in the clear pool. The thing that he admired the most was his pair of beautiful antlers. "If only the rest of my body displayed the strength that is in these horns, how proud I would be," said he. "But, ah me! how slender are these poor legs of mine. I would almost rather have none."

Just then some men and their dogs who were hunting deer, came to the lake where the stag stood. Like a flash, he was off at full speed; and those legs, at which he had complained so much, soon took him far out of reach of the men and hounds. But the horns, of which he was so proud, caught in the branches of a low tree and held him there till the hounds came to pull him down.

Aesop.

THE CAT, THE MOUSE, AND THE COCK.

A young mouse who had taken his first trip away from home, came back in great haste and said, "Oh, Mother, I have had such a fright! While I was away to-day, I saw a horrible thing. It had such a fierce look and it strutted first here and then there and always on two feet. He wore a small red flag upon his head and another one at his throat and he would flap his arms up and down as if he would fly. But instead of flying, he would stretch out his head and scream at me with his sharp mouth and I thought he was going to eat me up. It made me shake from head to foot and I was very glad to run home as fast as my four legs would carry me. If he hadn't frightened me so, I should like to have stayed and made the acquaintance of the sweetest little soul. She had soft fur like ours but hers was a glossy black. She had four legs and a fine long tail that she would wave from side to side. She looked very meek and when she fixed her two bright eyes on me, I thought she wished to speak. But that terrible creature roared just then and I ran home."

"My dear child, it is well that you ran—not from the one you spoke of as he was only a rooster and would do you no harm but from the one you thought so sweet as she was a cat and cats eat all the mice they can catch. From now on do not be too hasty to judge by the looks."

Aesop.

THE BIRDS, THE BEASTS, AND THE BAT.

Once upon a time the birds and the beasts went to war. The bat—which could hardly be called a bird or a beast—stayed out of the way of both until he thought the beasts were winning the fight. Then he joined their ranks and to prove his right to be there, he said, "Look! Can you find a bird that has two rows of teeth in his head as I have?"

The war went on and the tide changed—the birds seemed to be the winning side. Then the bat joined their ranks. To them he said, "What else can I be but a bird since I have wings?"

This was not thought honorable by either the birds or the beasts and neither would own him and to this day he hides and skulks in caves and trunks of trees, coming out only at night after the birds of the air have gone to their nests and the beasts of the field are sound asleep.

One must always play the game fairly.

Aesop.

THE BOY AND THE NUTS.

A little boy once put his hand into a jar where his mother kept nuts and figs. He took all that his hand would hold but when he went to pull it out, he found that the neck of the jar was too small for him to do so. The little boy began to cry when he could not get the figs and nuts out. A friend standing near, said, "Grasp at but half, my child, and you will get it; but if you grasp at all, you are liable to lose all."

Aesop.

THE HORSE, THE WOLF, AND THE FOX.

It was a cold, snowy night and food was hard to find. A fox had searched everywhere but with no success. As he roamed around, he met a wolf who also was looking for food. To him, he said, "Do you see the horse in that field? I think if you would help me, I could kill him and we would both have a good meal." To this the wolf agreed. When they came up to the horse, the fox was surprised to see how much smaller he was than the horse.

"May I ask you your name and that of the man who owns you?" politely asked the fox. "My name is Prince but if you would know the name of my master you will have to see the stamp on the bottom of my shoe," replied the horse. The fox guessed what this would mean and said, "Oh, but I do not know how to read, but my friend here is smarter than I am and I am sure he can read it," and he bowed low to the wolf. The wolf was made quite vain by this flattering speech. He walked up close to the horse and bent his head low to read, but, alas! Prince gave a kick and that was the end of the wolf.

Do not ask of others what you would not do yourself.

Aesop.

THE FOX AND THE STORK.

One day as Mr. Fox was out for a walk, he met Mrs. Stork. He invited her to take dinner with him the following day. This she gladly agreed to do.

The fox thought he would have some fun and so he prepared some soup which he would serve in a flat plate.

The next day Mrs. Stork came all ready for a good dinner. There on the floor were two plates of soup. The fox lapped up his with his tongue but the stork could not get a drop with her bill. So the fox ate her soup, too.

"I am sorry you do not like your soup, Mrs. Stork," said the fox.

"Oh, that is all right, Mr. Fox. You must come to my house to dinner tomorrow."

When the fox came to the stork's house the next day, he found the dinner was meat served in long necked vases. The stork could get the meat with her long bill but the fox could but smell his. So Mrs. Stork ate hers and then the fox's meat, too.

"I am sorry you do not like the meat," said the stork. And the fox had to go home hungry as the stork had done the day before. A joke is never so much fun when played on yourself.

Aesop.

THE BOY AND THE WOLF.

A shepherd boy was watching some sheep in a pasture near the village. He had been told that there were wolves in the woods close by and that if any appeared, he was to call to the men to come. This day seemed particularly long and in an idle mood, he decided to see if the men would really come if he called.

He rushed toward the village and called as loudly as he could, "Wolf, wolf! The wolf has come!"

Quickly the men came, armed with guns and sticks to drive the wolf away. When they reached the field, they saw no wolf, so asked, "Where is the wolf?"

"There is no wolf," said the boy. "I only called out for fun." The men went back to the village.

The boy thought that he had had so much fun that he would try the trick again the next day. He called out, "The wolf! The wolf! Come quick for the wolf is here."

Again the men came running from the village and when they saw no wolf, they were angry with the boy for having fooled them again.

Then one day the wolf really did come and the boy called and called, "Oh, come quick! The wolf has really come!" But the men thinking that they would not be fooled again, heeded not. The boy tried to drive the wolf out but he was not able to and before long he had killed every sheep. The boy walked slowly back to the village. He had to tell the men that the wolf did come and had killed the sheep. The men were very angry and said, "How were we to know that you were not fooling us?" And the boy was never entrusted with sheep again.

Aesop.

THE FOX AND THE CROW.

A big black crow sat in a tree. She sniffed and said, "I smell cheese. It must be over in Farmer Brown's window. I shall fly over and see."

So spreading her wings, she went over to the pantry window, cawing as she flew. Sure enough! There was some cheese. She broke off a piece with her bill and flew back to the tree.

A fox came along, saw the crow and wanted the cheese she had. He sat down at the foot of the tree and said, "How handsome you are, Mrs. Crow! Your coat is such a glossy black and your feathers are so smooth."

The crow was pleased with what the fox said and she preened around that her feathers might shine all the more in the sun.

"I am sure that one with so much beauty must have a beautiful voice, too," went on the fox. "Will you not sing for me?"

Thinking that she must please the fox whom she looked upon now as her friend, the crow opened her mouth to say, "Caw" but as she did so she dropped the cheese. This is just what the fox wanted and he grabbed it up and ran off. As he went, he called back to the crow "Thank you for my dinner, Mrs. Crow."

Aesop.

THE CROW AND THE PITCHER.

One day a crow was thirsty. He looked around for some water but all he could find was in a pitcher. But it was down in the pitcher so far that he could not reach it with his bill. He tried to break the pitcher but he could not. Then he tried to turn it over so the water would run out but this, too, he was unable to do.

Finally he saw some pebbles on the ground close by. He picked up one and dropped it into the pitcher. He noticed that the water rose a little. Then he dropped in another pebble and the water rose still higher. So he dropped in another and another until the water came up where he could reach it and he drank all the water he wanted. So where there is a will, there is a way

5. MANUAL ACTIVITIES.

First there are the shells, scoops, and tin dishes for the sand table with which the children begin their play. Balls of various sizes and kinds, bean bags, some toys such as found in the home, and picture books supply the needs of the beginners and with these they have the first step in getting acquainted and learning to play in a group.

Pegs of the six colors of the rainbow—red, orange, yellow, green, blue, and violet—to put in peg boards. These boards are square with round holes in them. Sticks, natural or in the

six colors, ranging in length from one to five inches. Balls covered with worsted covers of the six shades.

Wooden beads for stringing on shoe laces. These beads come in the half inch and inch size, six colors, and shaped like cubes, balls, and cylinders.

Two inch wooden cubes, cylinders, and balls for rolling and building.

Wooden and paper parquetry in the six colors for design work. These are shaped in the diamond, the triangle, the square, and the circle.

Cardboard kaleidoscopes in the straight sticks, one to four inches long, and the half circle.

Mosaic cubes and round tiles for building.

Plasticine and clay flour for modeling.

Colored papers of the six standard colors for chain making.

Metal rings, circle, half circle, and quarter circle, for design work.

Inch straws and paper parquetry for stringing.

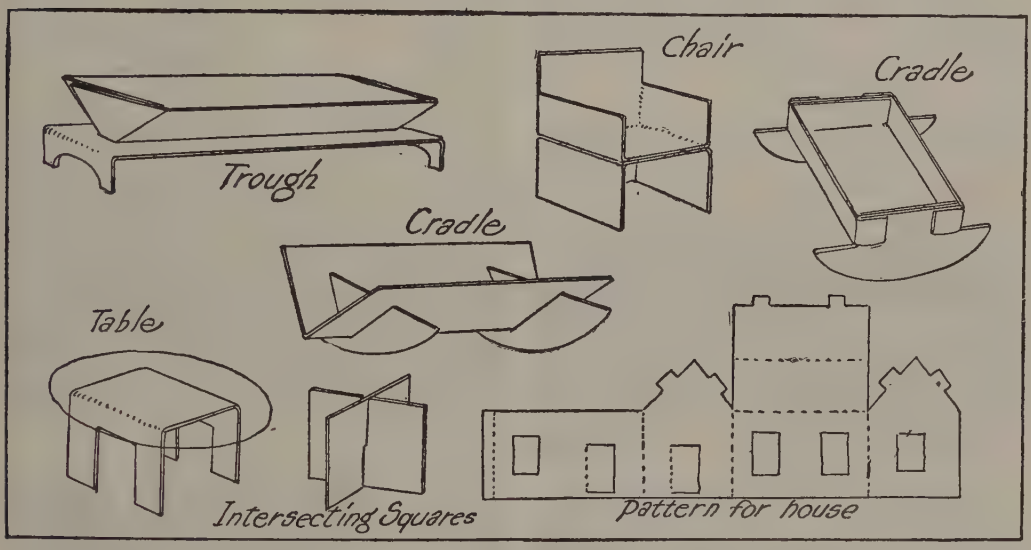
Mats and fringes of heavy paper for weaving.

Four by four and five by five inch square and round colored papers for folding boats, soldier hats, drinking cups, pin wheels, etc.

Drawing paper and colored crayons for free hand drawing as well as pattern work.

Watercolor paper, which is white and of a firmer grade, paint brushes, and watercolors for painting.

Thin white paper for free hand cutting and blunt pointed scissors.



Colored construction paper for making wheel barrows, baskets, wagons, boxes, furniture, etc. This grade is used for mounts also for the other papers.

Prick cards and sewing cards, yarn and heavy needles.

Stencil cards.

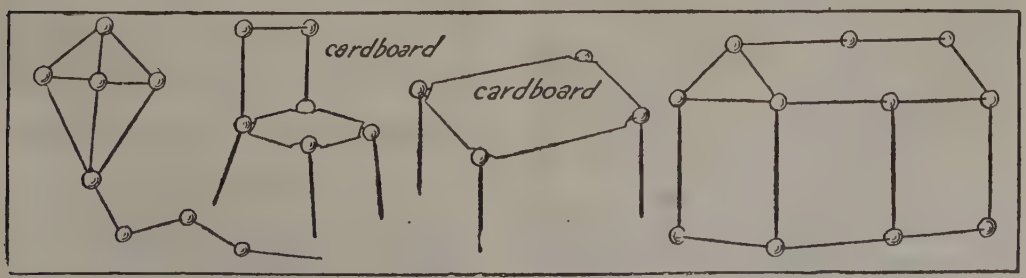
Puzzle pictures of birds and animals to put together.

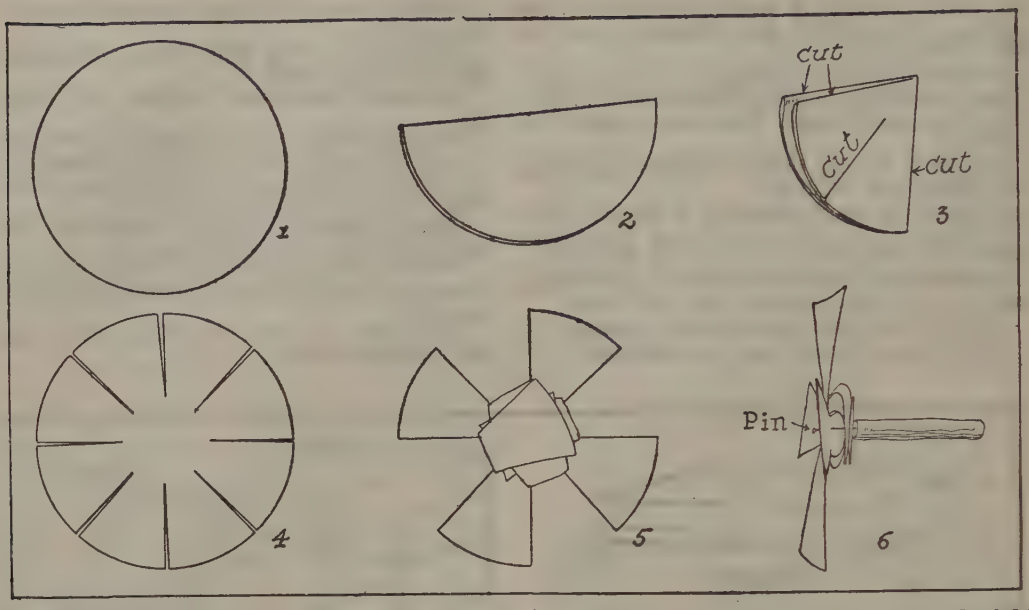
Magic Dot Cards and Dots. These cards contain pictures and are filled with little holes into which the colored dots are placed. These come in large and small sizes.

Paste, paste brushes, and individual paste jars for pasting the various pictures and the chains.

Square and round lentils in the six colors for design laying.

Seed peas and toothpicks for construction work. These peas must be soaked over night before using.





Pin Wheel—involving the following processes; drawing around a circle, folding, cutting, and pinning every other one to a round stick.

Gummed rings and strips for reproducing on mounting sheets the designs laid with sticks and rings.

Bradley's Straight Line cut-outs—these furnish pleasing material for first steps in paper cutting and construction, besides forming attractive borders for the room.

Boxes of blocks, the third gift, containing eight two-inch cubes; the fourth gift boxes with eight oblong blocks, one by two inch and two by four inch sizes; the fifth gift boxes containing more cubes and some that are divided diagonally into halves; the sixth gift boxes with oblong blocks and some that are divided crosswise and lengthwise, and the curvilinear gift boxes containing the divided cylinder and thus gives half rings and quarter rings of sufficient depth to produce the effect of arches.

6. Method of Using the Materials.

The first use of the materials should be experimental with no suggestions from the outside. The child likes to feel them and to try his own ideas even though this be little more than laying the blocks, etc., out in a row in front of him or letting the sand sift through his fingers.

After he has become acquainted with the materials, some phase of a story that has been read or some of the talks will suggest to his mind something to construct. Be sure to let him carry out his own ideas rather than to copy from the idea of an adult. By questions and suggestions these ideas can be further developed and the result more satisfactory. In an amazingly short time one will be surprised to see the improvement and the really complicated construction that they are able to carry out.

In the Indian project, many of the materials will lend themselves to the construction of the wigwams, the canoes, and the Pilgrims' log houses. Group building will enlarge the structures and the talking over of the thing to be built will develop new angles and bring it nearer perfection. So with other projects.

The sand table furnishes the best group work and each strives to add something to the project being worked out. They know that only the best will be used in it and this stirs them on to develop fineness in their work.

Rings, sticks, and tablets may be used for flat pictures. Many artistic designs are developed which aid the idea of symmetry. With the rings and sticks, life forms are constructed which can be used as patterns from which to draw and color.

The prick cards and stencils are not aids to creative self activity but they help to train the child in the sense of direction and by the connection of points or lines to form a picture.

The plasticine and clay as well as the cut-out pictures furnish the material for the child to take home. The thought of making a picture or present for Mother always appeals to the child and brings forth his best efforts.

The pegs and the sticks give the first step for little number stories which is an aid toward the First Grade.

The folding lessons should be by dictation which serves as a great help in gaining attention and in developing the ability to construct by direction rather than from a pattern.

7. Outline of the Year's Work by the Month.

SEPTEMBER.

Great big trunks packed to the brims;
Worn-out shoes; hats without brims;
Faces brown with sun and weather;
Clothes grown small—scarce hook together.

Journeys home 'mid lots of fun;
Thoughts of school that's just begun;
Lots of lessons to remember
Cooler days—and that's September.

Youth's Companion.

TOPICS.

THE HOME-HARVEST-FRUIT-VEGETABLES.

The child has just left the home and naturally that and all it implies holds first importance in his mind. So the first talks should be on Home—what the home is like—the family with its various members—the pets—the playthings—the occupation of the father—the neighborhood.

What the home is like—In this talk the child is led to tell what the house is like, how arranged inside, etc. The color of the house is brought out here. Great interest is manifested in where the child plays and each one tells what they play at home.

The members of the family—Mother is foremost here and many talks are developed as to her different tasks. "Here We Go Round the Mulberry Bush," is a good game to illustrate some of her duties. The baby comes next—what does mother do for him; what can the child do? He can sing the baby to sleep—Bye Baby Bunting being a good lullaby song and a new one can be taught. Then the rest of the family come in for their share.

The pets—Many conversations can be had about the various pets, their habits, their care, and their plays. Maybe some child has a pony and Dusty Bob makes an interesting singing game.

The playthings or toys at home—Have the children bring their favorite toy and demonstrate how the various ones work. The many colored balls will be one of the most popular and a test for color distinction can be made.

The occupation of the father—Perhaps one father will prove to be a carpenter and the talk can be on how he builds the house. Building blocks and other gift material afford an unlimited scope for the child's imagination here and the work of their little hands is often a work of art.

The neighborhood—Here the child tells of his playmates. He also makes many comparisons. The formation game is a neighborly game.

The harvest—Talk about the effect of the sun and rain on the corn and wheat that grows on the farm. The children have taken rides into the country and have noticed how the grains look at this season and how they differ from the same kind during the spring and summer. Kernels of corn and wheat should be shown to them and then a full grown ear of corn and a bunch of wheat. Then tell them that the farmer cuts down the grains and gets it ready for winter use. The various activities of threshing time come in here and are highly interesting to the child. Flour and cornmeal can be shown and this leads to the introduction of where the grains are ground and the life of the miller is developed. The dramatization of The Little Red Hen is good to show the different steps of the growth and development of the grain of wheat.

The fruits and vegetables—Have fruits and vegetables on hand and let the children distinguish between them. Call attention to the way the fruit tree looked in the spring and the way it looks at this season of the year. Develop the fruit from the blossom to the mature fruit and in this development call attention to the trees' friends, such as certain birds that destroy the harmful insects that blight the trees. With the vegetables observe that in some kinds, the part we eat grows under the ground and let the children name the kinds they know.

STORIES.

Familiar stories should be used a great deal this month. The Three Bears is popular and should be dramatized, allowing the children to choose the materials to be used and how. Care must be taken to have correct expression and lead the child from its own vernacular without causing self consciousness.

The Little Red Hen, as stated before, furnishes a good example of how the wheat is raised and cared for.

The Little White Rabbit and The Fox and the Grapes are good fall stories as acorns and grapes are ripe at this season.

GAMES.

The Farmer in the Dell.

Ring Around the Rosy or London Bridge Is Falling Down for old familiar ones which, like the stories, must be used to lead the child from the known to the unknown.

Here We Go Round the Mulberry Bush.

The circle ball game as given in the games, acquaints the children with each other's names.

Where's My Kitty, for a sense game.

Adam's Sons, for imitation.

SONGS.

Good Morning to You.
The Farmyard.
Piggy Wig.
Here's a Ball for Baby.

Jack and Jill and some other Mother Goose songs as the words are already familiar to the child.

MANUAL ACTIVITIES.

Various balls—the large water balls for the Ball Game mentioned before; the spectrum colored balls for the teaching of the colors (having the children name the color whether the balls are distributed or collected).

The small wooden balls may be used to roll at targets such as the ten pins or buildings made of blocks.

The colored wooden beads are strung on shoe laces and are arranged according to color at first and then when the colors are learned the child may arrange in any rhythmic order, and many times very interesting strings are designed.

With crayons and scissors, balls are cut and colored, using the six primary colors. From the round ball the apple grows, also the peach. Then the pear follows with the round base. Fruit baskets can be arranged—some free hand and others done by cutting a pattern. The various vegetables are cut and colored and arranged in various kinds of pictures in which pasting is another activity.

Pegs are used a great deal, with and without the peg boards. Color arrangement is carried out here again.

The sand table affords free play for the child. The construction of hills and houses is the main theme followed.

Plasticine is used to make the balls, fruits, and vegetables or the many things as suggested by the stories. For the Three Bears the chairs, beds, and bowls are made—crude, of course, in the beginning but improving with practice.

Blocks are used to construct the *home* after a certain amount of free play with them in which skill in handling has been acquired.

Free hand drawing of the fall flowers develops the art instinct. A sense of proportion is developed in this. The salvia, goldenrod, and wire grass are good subjects. These drawings should be developed from the flowers themselves and done with the colored crayons.

OCTOBER.

"Come, little leaves," said the wind one day.
"Come o'er the meadows with me and play;
Put on your dresses of red and gold,—
Summer is gone and the days grow cold."

George Cooper

TOPICS.

THE LEAVES—NUTS—THE PREPARATION OF BIRDS, ANIMALS, AND TREES FOR WINTER.

The Leaves.

Draw the children's attention to the new month. The leaves are now changing color and each little leaf puts on its Autumn dress. Some have red dresses, some yellow, some brown, and others have golden ones. Then the wind comes along and invites them to leave Mother Tree and to go with him for a play and he sends them whirling over the fields. They have work to do too. The little flowers that have been blooming all summer, have gone but their little roots stay in the ground and must be kept warm. So the little leaves cover them over with a bright blanket and when Jack Frost comes he is not able to harm them. Then when winter comes, the snow falls over all and makes another cover for the sleeping flowers.

The Nuts.

Not only have the leaves left Mother Tree but various nuts have fallen to the ground. Show if possible, the different kinds of nuts and the houses that they lived in until Jack Frost tapped at the door. It is very interesting to the child to see the many ways Mother Nature has provided for the little nuts in the way of houses. For instance—the prickly chestnut burr is lined with *velvet* and has rooms for three nuts. Some of these nuts will be gathered by children, others by squirrels for their winter storehouse and some will be left on the ground and like the leaves, they sleep through the long winter under the blanket of snow and when spring comes they burst their little coats and send their roots down into the ground which later shoot up into trees.

Preparation for Winter.

It is at this season of the year that the birds must think of going to a warmer home. The leaves have fallen from the trees and they no longer offer shelter from the wind. The flower seeds have scattered and food is getting scarce. So in October one sees many flocks of birds starting south. There are some, however, who brave the rigors of winter and it is for these that we should be ever mindful and throw bread crumbs and other food where they can get it.

The caterpillar has provided for himself and has built himself a home. Cocoons should be gathered and explained to the children and kept in the room to watch developments and see the lovely butterflies as they emerge from them in the early summer. The study of the silkworm is taken up here too as it is so closely related.

All the furry animals are provided by Mother Nature with an extra heavy coat. Then they in turn must provide their winter store. Many gather nuts and store them away, as in the case of the squirrel. The bear goes into a cave and sleeps the winter through.

The trees have been busy all summer and now comes their time to rest. The leaves have been taking care of very tiny buds but now they have flown away to cover the flower seed and nuts and the baby buds must put on a heavy winter dress, a varnish, under which they will sleep until the warm sun awakes them and it is time for them to grow into leaves.

Hallowe'en preparations occupy the last week and much interest is manifested in the first party of the year.

STORIES.

The North Wind at Play—in Miss Poulsson's Book.

The Thrifty Squirrel—in In the Child's World.

The Baby Buds' Winter Clothes—in In the Child's World.

The Little Rabbit—in this volume.

The Squirrels' Harvest—in Half a Hundred Stories.

Mother West Wind Stories by Thornton Burgess.

GAMES.

The Leaves Are Green.
The Little Gray Squirrel.
The Lost Child—sense game for hearing.
Fly Away.
Finding the Chalk by Music.

SONGS.

Milkweed Babies.
Autumn Leaves.
Numbering the Fingers—in Frobel's "Mother Play."

Wee Willie Winkie
The Crooked Man
Little Tommy Twig
} Actions given suitable to the words as given in the poem section of this volume.

RHYTHMS.

Rhymatic exercises are introduced this month and are added to each month as they appeal greatly to the child and help him on expressing himself by means of physical action. The march is the first rhythm taught from which is developed the soldier march. The skip follows

this. Then the flying birds which signify the migration of the birds south. For dramatized action we have for this month the bending trees; the falling leaves which are twirled about by the wind and then fall softly to the ground for their long winter nap; the squirrels gathering nuts and storing them away, and bicycle riding.

MANUAL ACTIVITIES.

Colored leaves should be collected and pressed. Then a thin varnish is applied and the leaves are ready to paste in designs. Or a leaf is marked on paper and then colored the autumn colors.

Purple circles are arranged in clusters for grapes.

Many colored circles are used for balloons that one sees at the fair. A man is cut and colored and these circles arranged on lines (strings) and fastened to the man's hand.

Beads have been popular and now one can add the stringing of beans, peas, or pumpkin seeds which the children delight in bringing from home.

Seed peas put to soak can be utilized with toothpicks to make kites and furniture.

For Hallowe'en, pumpkins may be cut out and colored with eyes, nose, and mouth. Witches, owls, and cats can be cut from black paper and posted around the room for decoration.

Pumpkins and Jack-O-Lanterns are made from the plasticine.

Paper lanterns are made by cutting a folded paper (6 by 9) in strips one half inch wide and leaving them joined at the open sides. Then the paper is opened out and the strips colored in the different colors. This completed, the lantern is rolled around and joined by pasting and then a handle is added.

Paper chains make a very good pasting lesson and form decoration for the usual Hallowe'en party.

NOVEMBER.

It is cold and still,
The wind is away,
And Little Jack Frost
Is busy at play.
He nips my cheeks—
He nips my nose,
But before I can catch him
Away he goes.
Jack Frost! Jack Frost!
You queer little elf!
Where do you go when you hide yourself?

Alys E. Bentley,
A. S. Barnes Co.

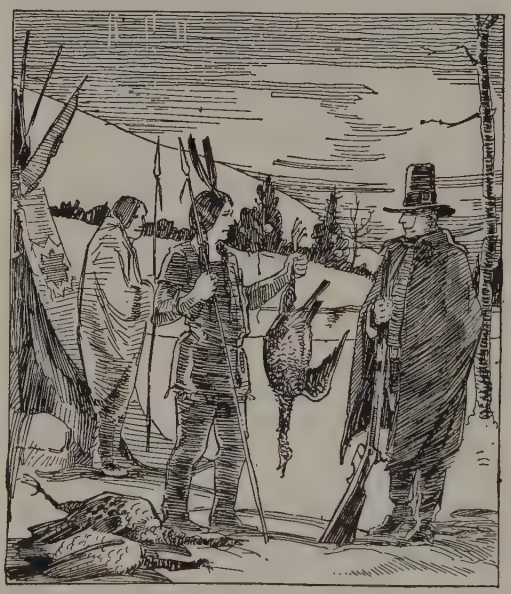
TOPICS.

The Indians.

No subject proves more interesting than the first men of our land. The personal appearance of the Indian is taken up first—the red skin, high cheekbones, black eyes, and coarse straight black hair. Then the dress—suits were made by the squaws out of deerskin and sewed together with small strips of skin in a bone needle. The shoes, or moccasins, were made of deerskin too and ornamented with shells. The boys and girls dressed very much the same. The father wore feathers in his hair and strings of shells around his neck. The children love to bring their modern day moccasins for display and will like to wear their Indian suits.

The home of the Indian is talked of next. Small trees were cut down by the squaws and put in the ground in a circle. These were brought together at the top and bound with a strip of skin. Around this, large buffalo skins were placed with just a small opening for the door. Over this door was fastened a small skin to shut out the cold. In the center of the wigwam, as the tent is called, a hole was hollowed out for the fire. This furnished the heat and the light for the home as well as being used for cooking when the weather did not permit of cooking outdoors.

While the woman built the wigwam and cooked the food, the man or warrior, hunted game—such as buffalo, deer, and small game with his bow and arrows. He was also the fighter. He made the canoes out of birch bark and the large boats out of a large log which he hollowed out by means of first burning and then scraping.



INDIANS—THANKSGIVING.

Several families of Indians lived in a group and belonged to a tribe. When game and food became scarce, the tribe packed their belongings and fastened them on the ponies and all sought a new place where there was running water and plenty of food for both the Indians and the ponies. The women did all of the packing of the wigwams and things and then when the new home was reached, they again set everything to rights.

Long, long ago there were no white men in this country and the Indian reigned supreme—no houses—no stores. Everywhere were woods and prairies. This now leads to the introduction of the white man.

Thanksgiving.

In England the King wished all the people to pray to God as he did and if they did not they

were punished. There were some people who did not like this and so decided to leave England and go to Holland and live with the Dutch people and there they could attend whatever church they wished. This they did and were very well satisfied for a time. But as their children grew up they had adopted Dutch ways and this was not to the liking of the English people. They had heard of the new country called America and they decided they would brave the ocean and go there to make their home. They got two boats, the Mayflower and the Speedwell, and all started for what is now our land. They had not gone far until the Speedwell broke down and they returned to England for repairs. It could not be fixed, so all that could crowded into the Mayflower and once more started on their way. These people were called Pilgrims which means Wanderers.

The trip in the sail boat was a long and tiresome one and all grew very restless. A baby was born on the trip and was called Oceanus and he helped to pass the time for the little children. At last a day came when land was sighted and there was great rejoicing. But there were no comfortable homes waiting for them—nothing but a bleak coast with woods beyond in which many perils lurked. The men landed first and had to build crude log houses before the women and children could go ashore. And among the first buildings to be constructed was a church.

The first winter for these Puritans was a very hard one and with so many privations, many sickened and died and when spring came only about half of the number were living. They had met some friendly Indians and they showed the white man how to plant corn. In the fall, with God's help, the Puritans had a plenteous harvest. They had better homes and more people had joined them from England. So the white people decided to set a day aside to thank God for his blessings and this was the first Thanksgiving. The friendly Indians were invited to the feast and their contribution to it was fluffy white popcorn—the first the white people had ever tasted. But before partaking of the feast, these people assembled at the church and prayed to God and thanked him for all. This first Thanksgiving lasted three whole days.

STORIES.

The Elves and the Shoemaker—a thanksgiving story.
Billy Bob-Tail.
Peter Pan.
Thanksgiving story in Miss Wiltse's "Kindergarten Morning Talks and Stories."
The Little Snow-Girl adapted from Hawthorne's Wonder Book.

GAMES.

The Hen and the Chicks.
Simon Says.
The Farmer and the Chickens.
Sense game as given in (c) of Games.
Skip Tag.

SONGS.

Jack Frost.
Thanksgiving.
Mother Goose Songs.
Winter Song.
The Disappointed Snowflakes.

RHYTHMS.

Jack in the Box.
Galloping Horses.
Brownies.
Indian Dance.

MANUAL ACTIVITIES.

The sand table has been used for free play up to this time but now the children will be interested in developing an Indian display. Canoes, wigwams, Indians, and ponies can be made of stiff paper and made to stand in the sand. One end can be reserved for the Puritans and their log houses.

Cutting and coloring of the turkey.
Clay modeling of the canoe and the wigwam.
Building of forts with blocks.
Stringing of straws and paper parquetry.

DECEMBER.

"A little fir grew in the midst of the wood,
Oh, there in his evergreen dress he stood.
His branches were sweet with the balsam smell,
His needles were green where the snow fell,
And always contented and happy was he—
The very best kind of a Christmas tree."

Henry Van Dyke.

TOPICS.

Preparation for Christmas.

Review of why we have a Thanksgiving day—yes; it is to thank the Heavenly Father for all the blessings we enjoy. What month does Thanksgiving come in? Yes; November. And now we are in another month, a month that should be the happiest of all the months. This month gives us the day that the Heavenly Father sent us that which we thank Him most for. This day is the birthday of Christ. Tell the story of the first Christmas, and why it is called "Christmas Day." Show pictures of the Christ-child in the manger, also of the wise men and the shepherds.

The true spirit of giving should be presented to the children. We give because we love those for whom we are working and we want to make them happy. So we give to each other on Christmas Day because it was on that day that the Heavenly Father gave us the Christ-child. The children want to make gifts for their father and mother as they are the ones they love best and preparations are made for an entertainment on the last day of school before the holidays.

Many talks are had upon Santa Claus and the thought of his love for the children is the motive for his lavish giving. Toylands are visited and much free talk is given on the toys seen there—how they work, etc. The children imitate the mechanical action of the various toys

STORIES.

The Night Before Christmas.
Christmas at the Lighthouse.
The Little Fir Tree.
The Bird's Christmas—In the Child's World.
Santa Claus and the Mouse.
The Story of the Christ Child.
Little Piccola.

GAMES.

Pinning candles on a Christmas Tree and seeing who can pin one at the top. Eyes blindfolded.

Santa Claus and His Bells—played the same as the Hen and Chicks with "Merry Christmas" substituted for "Cluck" and "Tinkle, tinkle" for "Peep, peep."

Musical Chair.

SONGS.

Round and Round the Christmas Tree.
Little Jack Horner.
Kris Kringle.
Holy Night, Silent Night.
Away in a Manger.
Santa Claus So Jolly.
Jingle, Jingle, Tiny Bells.

RHYTHMS.

For dramatization of action use the various toys as—beating drums, blowing horns, sliding on sleds, etc.

The long stride of the giants.
Rocking Dolly to sleep.
Riding a Rocking Horse.

MANUAL ACTIVITIES.

For the room and tree decorations,. make chains of holly leaves fastened together, these to be cut and colored by the children. Also make Christmas bells out of red cardboard. Chains can be made of small pieces of spaghetti and cranberries.

For the gifts—calendars can be made by coloring anything appropriate to Christmas and mounting on a red or green mount with a little calendar pad pasted just below; blotters can be had by making a fancy cover and fastening it to a piece of blotting paper with a ribbon, 4 by 6 is a convenient size; candle shades with the design on each of the four sides cut out and a tissue paper mounted underneath for a facing; needle books; pen wipers, a colored design combined with red flannel; a telephone list with a Christmas design at the top; a memorandum book, and many other simple useful things that little hands can make.

The sand table is fixed up for Santa Claus Land using sheet wadding for the snow. His house can be constructed of blocks and the work of making a sleigh, reindeers, and toys will make fine occupation for the children.

Out of parquetry and rings many toys are constructed. Plasticine is used in a free construction, too.

Considerable time is used in the learning of little songs and verses for the first *real* entertainment when *Santa Claus* will come and the tree will have many surprises for them.

JANUARY.

"Late lies the wintry sun abed,
A frosty, fiery sleepy head,
Blinks but an hour or two and then,
A blood-red orange, sets again."

R. L. Stevenson.

TOPICS.

The New Year—The Eskimos.

The New Year—Always the New Year brings with it new resolutions and each child will be glad to tell of one thing in which he or she intends to do differently. Some may resolve to keep their hands and face clean, some to come to school every day and to be on time, others to obey when spoken to either at home or at school, and some one else to not be rude and talk when others are talking. In this New Year talk, a survey is made of the different things that the children have learned up to date.

The Eskimos—The children are very interested in the study of the people that live up in the cold north—which means almost Santa land to them. First the appearance of the Eskimo is considered—coarse black hair, black eyes set in a round, yellow face, and they are of short, heavy-set stature. The dress, made by the mothers, consists of two suits of fur, one with the fur turned inside and one with the fur turned outside. The hoods and leggings, likewise, are made of fur and the shoes (kamiks) are made of skins. All dress much the same and one would have difficulty in telling which were the boys and which the girls. Their winter home is made of stone since there are no trees that far north and consequently no wood except driftwood that is washed ashore from some wrecked ship. The house has three parts to it—a large round room where the Eskimos sit, eat, and sleep. The next part is a long low tunnel and at the other end of this is a small round room which is built to keep out the cold. In this is the doorway which is a small round hole which necessitates the Eskimos dropping down on their hands and knees to enter. The stones of the igloo, as the house is called, are put together with moss and covered over with snow that is patted down by means of their snow shovels. In contrast to the Indian, the Eskimo men build these houses. In the room where the Eskimos live there is a bench at one side, often of ice, and this is used as the bed at night and to sit on during the day. A stone lamp filled with whale oil and moss as a wick is used for lighting and heating the igloo as well as for cooking the meat that they do not eat raw. In the summer the Eskimos leave this stone house after opening up the top to let the sun clean house for them in their absence and they journey to a new spot and pitch tents made of skins of the musk ox. The women set up the summer home.

It being so cold in this far away land, the Eskimos have no vegetables and so live on meat and fish. When a bear or a whale is caught by one man of the Eskimo village, the women cut it up and it is passed around to all the families. One sweet morsel to the children, such as candy to our children, is the layer of fat that comes under the skin of the whale which is called blubber. They like to eat this raw. Fishes' eyes are another choice tidbit.

The Eskimos have no horses but dogs carry them about. The fathers usually have a sled made from driftwood and to this are hitched from ten to twenty dogs and it is remarkable to know how rapidly they can travel over the snow. Driftwood is too scarce for the children's

sleds so they are made from blocks of ice. At an early age the little boys learn to drive dogs, to hunt with bow and arrow, and to fish. The Eskimos know that without constant hunting for food, the extreme cold would soon make an end to them. In the summer they catch many fish and dry for winter use and walruses, seals, bears, and deer, caught through the summers, are cut up and placed in storage to guard against the time when it might be impossible to secure food. The big snow storms of the winter often shut them in for many days at a time.

The Eskimo men have each a small boat similar to the canoe of the Indian. In this, the man pulls a skin coat over him and then even if he turns clear over in the water, he can not get water in the boat. Such a boat is called a kyak. For changing their abode in the summer, large "Women Boats" are used.

The dark day of the winter and the light night of the summer is an interesting study. Half of the year it is night most of the time and the other part it is day. The Eskimos have no clocks and so they reckon time by *"sleeps."*

These people are great believers in signs. They believe the Northern Lights to be the spirits of children dancing in the sky. If they are not industrious and thrifty, they think the giants who live at the edge of the world will come and get them. If a bear is killed, his head is kept for five days and their belief is that then the spirit of the bear goes to the land where the relatives of the Eskimos' live who have passed away.

STORIES.

The Eskimo Twins—a book by Lucy Fitch Perkins.
Buster Bear—Thornton Burgess.
The Three Kittens.
Toolooah—in Child Life in Many Lands.
Hansel and Gretel.
The Snowflakes—Kindergarten Stories and Morning Talks by Miss Wiltse.

GAMES.

My Lady is going on a Journey.
Who Am I?
Ruth and Jacob.
Chain Skip Tag.
Bean Bag Relay Race.

SONGS.

New Year Greeting.
Eskimo Song.
The Clocks.
Dolly's Lying in the Closet.
Day and Night.

RHYTHMS.

Snowflakes.
The Bears.

MANUAL ACTIVITIES.

The presents that the children received for Christmas are still very important and they love to tell about them. They should be allowed to bring some of them to school and show others how they work. Then pictures can be made of the more simple ones, such as the horns, drums, etc.

Snow pictures should be made. The sky is colored blue if for daylight and gray if for night. The snow is made by tearing a piece of white paper to represent an uneven horizon line and then pasted on the mount. A snow man can be built up of various sized circles and the eyes, nose, mouth, buttons, and stick hands being added by means of black crayolas. Skeleton trees, colored black, and a yellow moon make good night pictures. Rabbits jumping in the moonlight on the snow is another suggestion. Boys rolling up large snow-balls can be cut from a pattern, colored and pasted on a snow mount.

Plasticine makes wonderful snow men.

Many pictures of the Eskimos are made. The children delight in making the little Eskimos of construction paper and covering all but his face with sheet wadding to represent fur. The igloo is also covered with the cotton for snow. These pictures can be made very artistic and are of great value in impressing the study of the Eskimo upon their minds.. An iceberg or two should be shown as well as some of the animals that live in that region.

The sand table furnishes good material for working out Eskimo land. Cotton and the artificial snow that one gets at Christmas time add much in making realistic effect.

Stick laying—making simple things as snow shovels, sleds, etc.

FEBRUARY.

"There are many flags of many lands,
There are flags of every hue;
But there is no flag, however grand,
Like our own Red, White, and Blue."

TOPICS.

LINCOLN—VALENTINE'S DAY—THE POSTMAN—WASHINGTON.

Lincoln—A story of his life in a simple way should be told to the children and various pictures of him shown so as to impress on their minds the type of man he was. The story of his great desire for learning and the many handicaps that he had to overcome to attain his ambition—the meagerness of their home and circumstances—the rise from a rail-splitter to clerk in a grocery store, then to being a lawyer, and thence to President of our United States—the Civil War and its cause which happened during his term of office—and his untimely death are all topics of interest if told in a child's vocabulary.

Valentine's Day—A little talk on the subject of sending valentines to one another—to show our love.

The Postman—At Valentine time we are very interested in the Postman that delivers the missives or the clerks in the Post Office who hand them out if the town is not large enough to have city delivery. No matter the weather, the postman is always on hand. From him, we go back to a brief study of the Office and of how the mail reaches there and is taken care of. An excursion to the Post Office proves of great value in seeing how much attends the delivering of one Valentine to your door or the sending of one.

Washington—Here again as with Lincoln,

simple story is given of his life and a comparison can be made of the two homes and environment by means of many pictures. Washington's people had the very thing that Lincoln opposed—slaves—but at that time it was thought nothing of. The rise of Washington was more rapid, going from surveyor to the leader of the army during the Revolutionary War and then to the Presidency of the United States.

"First in War,
First in Peace,
And first in the hearts of his Countrymen."

STORIES.

Stories about Lincoln and Washington.
Philip's Valentine—in "In the Child's World."
The Three Pigs.
Androcles.
The Lion and the Mouse.

GAMES.

Soldier Boy.
Chalk game as given in (i) of this volume.
Automobile Game.

SONGS.

America.
George Washington.
Abraham Lincoln.
A Pretty Way.
Flag Of Our Country.
A Valentine.
The Star Spangled Banner.
Soldier Boys.

RHYTHMS.

A Soldier's March—Soldier hats and flags should figure in this. At the conclusion of the march, the flag salute should be given.

"I give my hand,
I give my head,
I give my heart to my countrymen.
One God, one country, and one flag."

An orchestra can be added in which some play their horns and drums and one is chosen to carry the baton and to lead them. The teacher should play a soldier march and while the children will not add to the musical side they will develop a rhythmic sense.

MANUAL ACTIVITIES.

A log cabin can be built of sticks for Lincoln's home.

Then one can be drawn upon paper and colored. A silhouette of Lincoln's face should be made and pasted upon a shield of red, white, and blue.

Valentines for the fourteenth take considerable time as the envelopes are to be made as well. Then a mail box must be covered for the collection of valentines for each other which are given out on that day. Postmen are selected to deliver the valentines to their make believe house (chairs arranged in rows as though they were houses on different streets). So for this, mail bags must be made for the postmen. These can be made by sewing two large pieces of paper together.

For Washington's birthday we will want to make a flag. The first results will be rather discouraging but with repeated attempts, the children will be better able to keep their red coloring within the right lines. Soldier hats should be made by folding. As for Lincoln, a silhouette of Washington should be made. Pictures of Washington as a little soldier boy and as a boy cutting down the cherry tree (a story that every child is familiar with) can be constructed by a cutting, coloring and pasting lesson.

The sand table can be brought into use again for a soldier picture. Tents can be folded, soldiers cut out and fastened on sticks to stand in the sand as on parade. Flags should be colored to adorn the forts.

MARCH.

"Weather-cock, what makes you go
Round and round the whole day so?"
"'Tis the wind whirls me!
'Tis the wind twirls me!
So to all the world I show
How the merry wind doth go."

(From the German).

TOPICS.

THE DUTCH PEOPLE—THE MILLER—THE CIRCULATION OF SAP IN THE MAPLE TREES—THE PUSSY WILLOW.

The Dutch People—March is our windy month and it makes one think of the country where the wind is put to a great deal of use—Holland. Here the wind is needed to make the myriads of windmills go around that are so necessary to keep the land from being flooded.

The people of Holland are fair skinned, with yellow hair and blue eyes. The little girl wears her hair in two long braids down her back while the boy wears his in a bob. Like us, the Dutch boys and girls dress differently. The girl wears a spotless white blouse with a broad girdle of velvet which laces up the front. Her skirt is very full and comes down to the ankles. It is usually made of some bright woolen material. The Dutch people are fond of bright colors. Then the girl wears a lace or a starched linen cap that has points out at each side. The boys wear velveteen jackets that are short and are fastened together with large brass buttons and in the case the father is very rich these buttons are of gold. His trousers are long and baggy, being brought into a band at the ankles. His cap is a little round cloth affair. On the children's feet are woolen stockings that the mother knits and then wooden shoes. They would seem most awkward to us but these Dutch boys and girls can klump along very fast over the cobble stone

The homes are made of brick and are very tall, running to a high gable. Sometimes the houses are six stories high but the top stories are very narrow. The houses are painted bright colors with white door and window casings. The roofs are of red tile. The floor inside is likewise of tile which is kept spotless. The children before entering the house remove their shoes and go around in their heavy woolen stockings. The housewife in Holland is a very industrious type and every thing in the house is kept as neat as a pin. Dutch Cleanser that your mother uses to clean with was so called because it is characteristic of the Dutch to chase away dirt.

The country of Holland is lower than the ocean and so huge walls have to be built to keep the sea from flooding the land. These walls, called dikes, are made of crushed rock and dirt and are wide enough at the top to make a road. Along the dikes are stationed little houses in which men live who watch the dike that no leak comes in it. If one is discovered, a bell is rung as we ring a bell for fire and the men rush to that place to repair it before the water sweeps over the land. Because of the lowness of the land windmills are constantly kept at work to pump water off the land into canals which carry it into the sea through the sluices. These canals are made by digging wide ditches and are used as streets in many places, the people going back and forth to their work or school by means of boats in the summer and skates in the winter when the canals are frozen over.

The windmills have other duties to perform too. They crush the rock for the dikes and grind the wheat and corn for food. They, like the houses, are painted bright colors with snowy white sails and must add much to the picturesqueness of the scenery.

The Dutch are great lovers of flowers and their two favorites are the tulip and the hyacinth. They raise large fields of these and have worked and worked until they have some types that are seen nowhere else. For instance, they have succeeded in raising a black tulip.

In winter skating is a great pastime, grandma and grandpa as well as the children enjoying the sport. The women skate to market with their basket on their heads. In the evening they often have skating festivals. At this time all kinds of fancy sleds and ice boats are displayed. Lights are attached to many and it is quite a beautiful sight.

As in Greenland where the Eskimos live, the dog is used as a horse. In Holland they are made to pull the milk wagons and to carry back and forth to market. One does not see so many horses. But in the meadows cows graze and from their milk, butter and cheese are made.

The stork is a native of Holland and it is no uncommon sight to see their crude nests built upon the tops of the houses. The Dutch like it so. The storks are often seen about the market house picking up the refuse which helps to keep the market clean.

The Miller—From the study of the Dutch people we have found out how their flour is made and that leads us to discover how ours is made. Here the farmer takes his wheat and corn to a mill whose big wheel is turned by the river close by or to a mill that has a great deal of machinery which cleans the grain and grinds it into flour. Show the children the bran that comes from the wheat as well as the flour. An excursion to a mill and its dusty miller is very educative.

The Circulation of Sap in the Maple—We know that spring is on her way by the moist appearance of the maple tree. Explain the process of sugar-making to the children. Suggestions for this talk can be found in "In the Child's World."

The Pussy Willow.—Find if the children have seen anything that would make them think that Mistress Spring was on her way back after her winter down south. The snow melting will be one answer and they have just learned that the moist appearance of the trees shows that spring is near. Yes, maybe some child will bring a sprig of pussy willow. Call their attention to the nice warm dress that pussy has and so she will not mind the cold March winds. While March is one of our spring months, still Jack Frost returns now and then for a visit but unlike in the winter, he does not stay long at a time now.

STORIES.

Little Peter of Holland.
The Mother Stork.
The Maple Tree's Surprise—"In the Child's World."
Charlotte and the Ten Dwarfs.
The Wind—a poem to learn.

GAMES.

Rabbit in the Hollow.
Modes of Travel.
Dutch Dance—Mari Hofer's Folk Dance Book.
Follow the Leader.

SONGS.

The Wind.
The Children of Holland.
The Song of the Trades—with "miller" supplied.
The Pigeons.
Pussy Willow.
The Windmill—by Inez Gordon Brown in The Kindergarten and First Grade Magazine, published by Milton Bradley & Co.

MANUAL ACTIVITIES.

For the Dutch many pictures can be attractively arranged, showing blue sky and blue water, brown strips pasted so as to represent the dikes, the bright colored windmill by the water, and the Dutch boy or girl. Others can show the Dutch house and the stork at the top by the chimney. A boy or girl with tulips which are an easy flower for children to make, a girl with her geese, and any other arrangement that one may desire.

With sticks the Dutch house can be constructed and also the windmill.

The sand table lends itself beautifully for making a Dutch picture.

Free hand drawings of maple trees with a pail catching the sap as it runs out of the improvised spout.

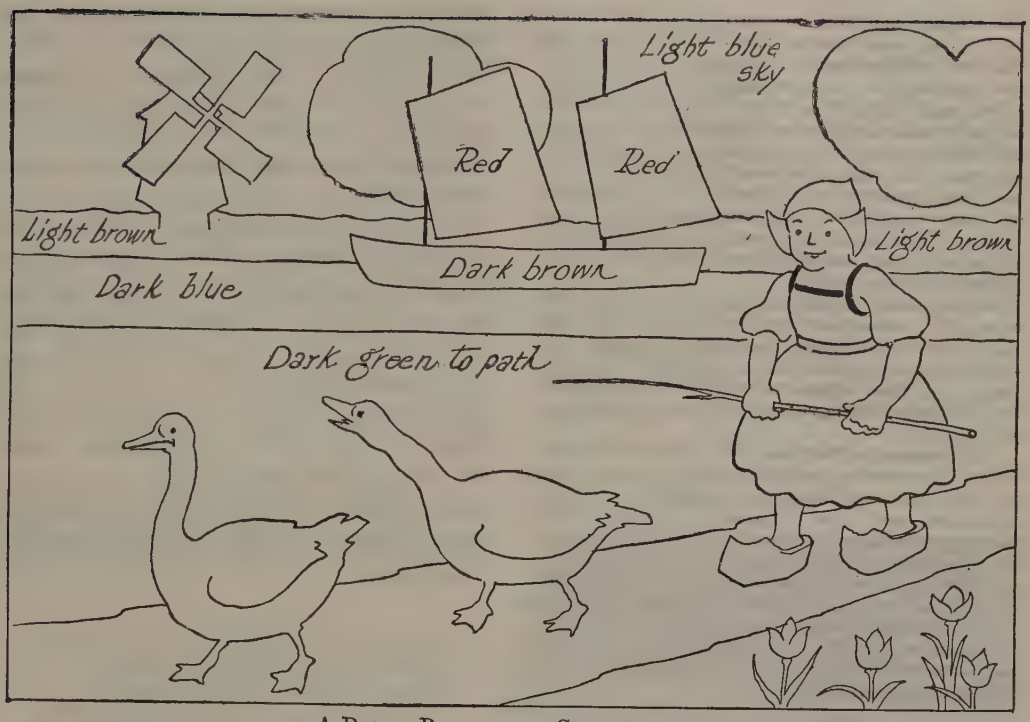
The wind suggests the making of kites—real kites and pictures of kites. Pin wheels are good for this time of year.

Out of the pussy willows that are brought in, pussies can be made sitting on a fence, the head with its ears and the tail are supplied with a black crayola. The soft fur of the pussy willows give them a realistic appearance.

APRIL.

"The rain is raining all around,
It falls on field and tree
It rains on the umbrellas here
And on the ships at sea."

R. L. Stevenson.



A Dutch Picture for Construction.

TOPICS.

Easter—The Farmer's Spring Work—The Barnyard—The Change in Clothing.

Easter—Last month the children's attention was drawn to the waking trees and now some of the early flowers, such as the crocus, are waking up and more will follow. There is also something in the school room that has been sleeping the whole winter through in the nice little house that it spun. It is the caterpillar and when it wakes up it will come out of the little house as a beautiful butterfly. It will stay in one position for quite some time as it has never been out in the world before, its wings are weak and it can not fly. It will later move them slowly up and down and as they grow stronger, it will finally fly.

The grass is now beginning to grow and the trees and bushes are budding out. Baby chicks are hatching and in the midst of growing things, we are not unmindful of who it is that makes things grow. The children will recall the wee babe that they talked of at Christmas time. In brief, tell of how He grew to be a man and became a carpenter. He told the people about the Heavenly Father and after a while He went to live with the Heavenly Father. And the day that He arose is called Easter. The real significance of the day can not be understood by the children of this age and they should be led to think of this season as a season of life rather than a season of death.

After Easter the children will want to tell all about the day and what they did. There are often vivid tales of finding colored Easter eggs and about Easter baskets that they received and where they were hidden.

The Farmer's Spring Work—It is at this time of the year that the farmer gets the ground ready for the seeds. He plows the ground first and then goes over it with a harrow to smooth the clods of earth that the plow has turned up. The seed is planted mainly by machinery in the large fields but in the garden by hand. A talk can be had as to how the different seeds are planted and what the plant is like when it matures, showing again that in some plants, the eatable part grows above the ground and in some it grows below. An excursion to see the planter is the best introduction to this paragraph and the child will be better able to imitate the activities in his small way. If it is not easy to go to see a farmer, a gardner can be observed.

The Barnyard—Along with the talk about the farmer preparing the ground for the spring planting, the subject of the animals that the farmer uses comes up. Where have the animals of the farmer been kept through the long winter when snow was on the ground and the days were very cold? Yes, in the barn where every morning and night the farmer went out to feed them the hay, oats, corn and wheat that he stored in the barn last fall. But now if one were to go out to the farm he would see the different animals out in the barnyard. They are beginning to shed their heavy clothing and to put on lighter suits of fur. This is noticed particularly in the cows and the horses. Have the children name what other animals would be found in the barnyard. Call attention to the chickens, especially to the hen and chicks and then tell how

the mother hen sits on the eggs as the mother bird does, and keeps them warm until the chickens are hatched. As soon as the chickens are hatched the farmer takes the hen and her chicks and puts them in a coop. It is always an interesting sight to see Biddy in the coop and her babies running in and out, gathering the bits of grain that the farmer has scattered about and the constant "Cluck, cluck" of the hen makes us know that she is teaching her babies what to do. Then as dusk comes on, she calls them all in and they snuggle down under her warm feathers for the night.

Notice that the ducks, geese, chickens, turkeys, etc, have feathery coats and two legs. They are called fowls and are a kind of bird. They cannot fly like birds, as their legs are longer and their wings too heavy for long flights. The animals that have hairy or wooly coats have four legs.

The Change in Clothing—We, like the animals, have been wearing heavier clothing to keep out the cold and now we begin to think of making a change, too. Trace the source of the winter clothing and have pictures of the farmer shearing his sheep. Now, the childen see that the material of the clothes that they put on for spring and summer is different and the source of cotton should be the next subject. The children saw the work of the caterpillar and from this, can be shown how silk is obtained from the cocoon of the silkworm.

STORIES.

Little Half Chick.
Chicken Little.
The Story of Speckle—in "In the Child's World."
The Pied Piper of Hamelin.

GAMES.

In Our Garden.
White House Egg Rolling Game.
The Snail.
Little Playmate, Dance With Me.
Dramatization of the Fox and the Crow.
Looby Loo.
Broncho Game.

SONGS.

The Robin.
The Woodpecker.
The Birds' Lullaby.
The Butterfly.
The Rain.
Easter Is Here.

RHYTHMS.

Dance of the Sunbeams.
Butterflies.
Going to Church.

MANUAL ACTIVITIES.

For Easter the children will be kept busy making Easter baskets, coloring Easter eggs, making rabbits and chickens, some coming out of the shell, and various other things indicative of Easter. This work will be free hand and also by the use of patterns.

Umbrellas can be made by cutting a good sized circle of black and folding in half and over from side to side and pasting on a mount and adding a handle and point.

Birds should be made. Wings can be pasted to each side and then when the bird is suspended by a fine black thread, he looks like he was flying.

Plasticine makes fine bird's nests as well as Easter baskets.

Out of sticks can be built bird houses.

The children should arrange a bath for the birds in the school yard so that they can observe the habits of the birds more closely. Bits of string and yarn should be hung where the birds can get it for the construction of their nests. An old nest of two should be brought into the school and examined to see how it is made and what materials are used.

It is interesting to keep a calendar for the month of April, cutting and pasting little umbrellas on the rainy days and round yellow suns on the bright, pleasant days.

The landscape pictures at this period should show a great improvement. The sky, grass, or water should extend evenly across the paper and be done with a much lighter stroke than earlier in the year.

MAY.

"Oh, sun shine bright in the heavens;
Birds, carol your sweetest lay;
Bloom, beautiful star-eyed daisies,
The year has brought us the May."

Susie M. Best.

TOPICS.

MAY DAY—MOTHER'S DAY—THE CIRCUS.

May Day—For May Day a little program of verses and songs should be prepared. The dance around the Maypole is one of the especial features. The children are too little to make this complicated and it is effective if two circles are formed and, moving in opposite directions, they wind around the pole rather than weave. A lively skip music, changing to marching time, gives variety. The maypole gives great pleasure to the children and therefore should not be confined to May Day alone but used all through the month.

Mother's Day—Though this day comes on a Sunday, there should be observance of it the following Monday. If real flowers are not available for each child to wear, the table period can be devoted to making them. Have the children know why this day is observed and many conversations will follow about the many thing that "Mother" does for them.

The Circus—This and June are the months that the circus comes to town. All the interest is centered on that, both for a period before its arrival (in anticipation) and after its departure. They will tell about the different animals that they saw in the parade. The animals should be put in classes—the wild ones and the tamed ones. Have the children name the ones that are kept in the cages and then the ones that are used by the men for carrying purposes. The elephants are always the most favored and the children will delight in telling what they did in both the parade and in the circus. Have them

imitate the bear and the elephant. A little talk can be had as to where these various animals come from and ask the children where they think they would rather be, at home or in the circus.

The clowns will be discussed, too.

The Bees—The bees are busy now with their summer's work. The Queen Bee gets her workers together and allots to each his particular task which is performed with great dispatch. Children like honey and are therefore interested to know a little as to how it is made. Miss Poulsson has good suggestions for this talk. After a little excursion out into the open and observing the busy bees, the children will return more eager to do their work well. The bees teach industry and when the children realize that it is from them that they get the honey, they take even more interest in taking care of the flowers for it is from them that the bee gets the nectar.

STORIES.

The different bird stories in the Boston Collection of Kindergarten stories.

A Narrow Escape—in "In the Child's World."

The Little Pink Rose—in "Stories to Tell Children," by Bryant.

The Honest Woodman.

Danny Meadow Mouse—by Thornton Burgess.

GAMES.

Follow the Leader.
Street Car Ride.
Wheelbarrow Race.
Fly Away.

SONGS.

A Toad Came in from out of Town.
Child's Garden.
The Dandelion.
The Tulip.
The Seeds.
Dance of the Fairies.
My Old Dan.
The Zoo.

RHYTHMS.

The Merry-Go-Round.
The May Pole Dance.

MANUAL ACTIVITIES.

For May Day make baskets for May flowers and fasten a ribbon or colored thread so as to hang them on a door knob.

Tulips can be cut out and colored and pasted on a card board pot.

Hyacinths can be made by pasting little stars cut from colored paper along a stalk. Then paste a pot over the lower end. All this is done on a mount about 4 by 6.

A bird in a birdcage makes an attractive window decoration and from the outside they very much resemble a real bird. Make the cage from fancy wall paper by folding the paper and cutting out the bars. This cage should be at least 9 by 12. Then a bird is cut and colored yellow and pasted to the back of the cage as though standing on a perch.

Various flowers can be worked out with the parquetry and with the rings.

Gardens are constructed with the sticks or pegs.

Clay makes very nice flower pots when dried and covered with shellac.

Pictures of children working in the garden can be developed. The tools for use in the garden can be cut free hand, such as the hoe, the shovel, and the rake.

The circus parade will be eagerly made after the children have seen it. A long strip of wall paper, blue in color, and upon which a narrow brown strip has been pasted to represent the street, makes a suitable mount for this picture. The wagons are cut with the bars and an animal pasted back to look as though it were in the cage. The wagons, harness on the horses and the trappings of the elephants should all be colored bright colors. They add to the gayness of the picture. The clowns, animals, and all should be drawn from patterns or else cut out after being tranced for them. This parade will take considerable time because of the quantity of objects to be shown.

OLD FASHIONED HAYRIDE. Picnic crowd.

Milton Bradley's Straight Line Cut-outs of the circus make very good borders.

Blocks and colored tablets make Merry-go-rounds, patterned from the child's imagination.

The farmyard provides a project that children will enjoy working out in the sand table. Here they can make paper animals such as cows and horses for the stable, pigs for the pig pen and dogs for the kennel.

Great plans are laid for the last festivity of the year—the picnic. On this occasion they have a jolly good time out at a spot selected where there are no perils. The children delight in getting away for the day where they can have free play and also all the games that they like best. And of course the lunch is one of the big features of the day.

REFERENCE BOOKS FOR STORIES.

Mother Stories and *More Mother Stories*, by Maud Lindsay, published by Milton Bradley & Co., Springfield, Mass.

In the Child's World, by Emilie Poulsson, published by Lathrop Pub. Co.

Boston Collection of Kindergarten Stories.

The Story Hour, by Kate Douglas Wiggin and

Nora A. Smith, published by Houghton, Mifflin & Co., Boston, Mass.

Child Life in Many Lands—The New Century Reader, published by Rand McNally & Co., Chicago, Ill.

How to Tell Stories to Children and *Stories to Tell to Children*, by Sara C. Cone Bryant, published by Houghton Mifflin & Co., Boston, Mass.

For the Children's Hour, by Carolyn S. Bailey & Clara M. Lewis, published by Milton Bradley & Co., Springfield, Mass.

Kindergarten Stories, by Miss Wiltse.

The Thornton Burgess Books.

The Johnny Gruelle Books, published by P. V. Volland Co., New York.

Aesop's Fables, published by Macmillan & Co., London.

A Kindergarten Story Book, by Jane L. Hoxie, published by Milton Bradley & Co., Springfield, Mass.

The Twin Books, by Lucy Fitch Perkins—these books deal with children of various countries, such as the Eskimos and the Dutch.

REFERENCE BOOKS FOR SONGS

Songs and Shadow Pictures for The Child World, Jessie L. Gaynor, published by The John Church Co., Chicago.

The Song Primer, published by A. S. Barnes & Co., Chicago, Ill.

Child Land in Song and Rhythm, Jones Barbour, published by Arthur P. Schmidt, New York.

Primary Melodies—Rote Songs, published by Ginn & Co., Chicago, Ill.

First Year Music, by Hollis Dann, published by the American Book Co.

Mother Goose Songs and *More Mother Goose Songs*, by Ethel Crowninshield, published by Milton Bradley & Co., Springfield, Mass.

Robert Louis Stevenson Songs, by Ethel Crowninshield, published by Milton Bradley Co.

Small Songs for Small Singers, by Neidlinger, published by G. Schirmer, New York.

Songs of the Child World, Nos. I and II, by Riley and Gaynor, published by The John Church Co., Chicago, Ill.

Finger Plays, by Emilie Poulsson, published by the Lathrop Publishing Co.

Ring Songs and Games, The "Wheelock Girls' Song Book," by Flora H. Clifford, published by Milton Bradley & Co., Springfield, Mass.

Songs of Happiness, by Carolyn S. Bailey and Mary B. Ehrmann, published by Milton Bradley & Co., Springfield, Mass.

REFERENCE BOOKS FOR RHYTHMS.

Rhythms of Childhood, by Caroline Crawford and Elizabeth Fogg, published by A. S. Barnes & Co., Chicago, Ill.

Dramatic Games and Dances for Little Children, by Caroline Crawford.

Music for the Child World, by Mari Hofer, published by Clayton F. Summy Co., Chicago, Ill.

Folk Games and Gymnastic Play for Kindergarten and Primary Playground, Saul Bros., Publishers, Chicago, Ill.

Folk Dance Book, by Mari Hofer. I & II. Published by A. Flanagan & Co., Chicago, Ill.

Children's Singing Games, by Mari Hofer, published by A. Flanagan & Co., Chicago, Ill.

REFERENCE BOOKS FOR POEMS AND RHYMES.

A Child's Garden of Verse, by Robert Louis Stevenson.

Eugene Field Reader, published by Charles Scribner's Sons.

Memory Gems for Children, by Jessie Carr Tyndall, published by the Milton Bradley & Co., Springfield, Mass.

Christina G. Rossetti's Poems.

Gordon Readers, published by D. C. Heath & Co.

Free and Treadwell Reader, published by Row, Peterson & Co.

The Howe Readers, published by Charles Scribner's Sons.

Graded Literature Readers, published by Charles E. Merrill Co.

8. THE RESULTS OF A YEAR'S WORK.

By the end of the year through the singing of songs the children should have better control of their voices. Monotone drills and the reproducing of tones from the piano, should cultivate a better tone and help to get the voice into the head rather than in the throat.

By the discussion of the various subjects, much valuable information has been obtained and much of it will leave a lasting impression which will prove a benefit in the years to come. The mind of the average Kindergartner is very receptive and so care should be exercised that authentic facts are given them. Through the discussion of the economic topics, the children are led to feel a more kindly interest in the home and those who make the home possible, in animals, birds, bees, etc., and to feel that they must aid them rather than hinder or destroy.

Observing the rights of others should be one lesson learned. Habits of courtesy should become almost second nature.

Through the stories, a love for good literature should be attained. Concentration is created. By the dramatization of the stories, a better vocabulary is given to the child and a freedom to express oneself in good grammatical sentences.

The manual activities aid in habits of neatness; a sense of the artistic is fostered; a better color and form idea is formed; the imagination is developed and it helps the child to reproduce what he sees and to create as well.

The games are the greatest factor in instilling the thought of fairness. Initiative in taking the lead is developed. In group games the child must realize that he is part of a whole and must aim to do his best to make the game of interest to all.

Rhythms have developed better control of the muscles and have given more poise. In some cases little physical defects are corrected. A

sense of grace should have been created. Ability to keep time has been attained. The little calisthenics such as imitation of the peddling of a bicycle, the reaching for imaginary grapes, the jumping up from a stooping position as a Jack-in-the-box, deep breathing exercises, etc., strengthen the muscles and are an aid toward better health.

HOW TO DO IT.

Do you want to be happy and gay, little man,
  Do you want to be happy and gay?
Then do a kind deed every day, little man,
  Then do a kind deed every day.

Do you want to be merry and glad, little maid,
  Do you want to be merry and glad?
Then speak a bright word to the sad, little maid,
  Then speak a bright word to the sad.

Do you want to be healthy and wise, little folk,
  Do you want to be healthy and wise?
Then early to bed and to rise, little folk,
  Yes, early to bed and to rise.

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DREAMING.

A little boy lay dreaming,
Upon his mother's lap,
That the pins fell out of all the stars
And a star fell into his cap.

So when his dream was over,
What did that little boy do?
Why, he went and looked into his cap
And found it was not true.

Nursery Rhyme.

BOATS SAIL ON THE RIVERS.

Boats sail on the rivers,
  And ships sail on the seas;
But clouds that sail across the sky
  Are prettier far than these.

There are bridges on the rivers,
  As pretty as you please;
But the bow that bridges heaven,
  And overtops the trees,
And builds a road from earth to sky,
  Is prettier far than these.

Christina Rossetti.

THE LOST DOLL.

I once had a sweet little doll, dears,
  The prettiest doll in the world;
Her cheeks were so red and so white, dears,
  And her hair was so charmingly curled.
But I lost my dear little doll, dears,
  As I played on the heath one day;
And I cried for her more than a week, dears,
  But I never could find where she lay.

I found my poor little doll, dears,
  As I played on the heath one day;
Folks say she is terribly changed, dears,
  For her paint is all washed away.
And her arm trodden off by the cows, dears,
  And her hair not the least bit curled;
Yet for old sake's sake, she is still, dears,
  The prettiest doll in the world.

Charles Kingsley.

THE NEW MOON.

Dear mother, how pretty
The moon looks tonight!
  She was never so pretty before;
Her two little horns
Are so sharp and so bright,
  I hope she'll not grow any more.

If I were up there,
With you and my friends,
  I'd rock in it nicely you'd see;
I'd sit in the middle
And hold by both ends;
  Oh, what a bright cradle 'twould be!

And there we would stay
In the beautiful skies,
  And through the bright clouds we would roam;
We would see the sun set,
And see the sun rise,
  And on the next rainbow come home.

Eliza Lee Follen.

THE ROBINS.

One day the sun was warm and bright,
  No cloud was in the sky,
Cock robin said, "My little dears,
  It's time for you to fly."
And every little robin said,
  "I'll try, I'll try, I'll try."

I know a child, and who she is
  I'll tell you by and by;
When mother says, "Do this, or that,"
  She says, "What for?" and "Why?"
She'd be a better child by far
  If she would say, "I'll try."

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THE THREE KITTENS.

Three little kittens
Lost their mittens,
And they began to cry,
"Oh, mother dear,
We very much fear
That we have lost our mittens."

"Lost your mittens!
You naughty kittens!
Then you shall have no pie."
"Me-ow, me-ow, me-ow!"
"No, you shall have no pie."

Three little kittens
Found their mittens,
And they began to cry,
"Oh, mother dear,
See here, see here!
See, we have found our mittens."

"Found your mittens!
You dear, dear kittens!
Then you shall have some pie."
"Purr, purr, purr!
Oh, we shall have some pie.
"Purr, purr, purr!"

WHO STOLE THE BIRD'S NEST?

"To-whit! To-whit! To-whee!
Will you listen to me?
Who stole four eggs I laid,
And the nice nest I made?"

"Not I," said the cow, "Moo-oo!
Such a thing I'd never do;
I gave you a wisp of hay,
But didn't take your nest away.
Not I," said the cow, "Moo-oo!
Such a thing I'd never do."

Coo, coo! Coo, coo! Coo, coo!
Let me speak a word, too.
Who stole that pretty nest
From little yellow breast?"

"Not I," said the sheep, "oh, no!
I wouldn't treat a poor bird so;
I gave the wool the nest to line,
But the nest was none of mine.
Baa, baa!" said the sheep, "Oh, no!
I wouldn't treat a poor bird so."

"Caw, caw!" cried the crow,
"I should like to know
What thief took away
A bird's nest to-day?"

"Cluck, cluck!" said the hen,
"Don't ask me again;
Why I haven't a chick
That would do such a trick.
We each gave her a feather,
And she wove them together.
Cluck, cluck!" said the hen,
"Don't ask me again!"

"I would not rob a bird,"
Said Little Mary Green;
"I think I never heard
Of anything so mean."
"'Tis very cruel, too,"
Said little Alice Neal;
"I wonder if he knew
How sad the bird would feel?"

A little boy hung down his head,
And went and hid behind the bed;
For he stole that pretty nest
From poor little yellow breast;
And he felt so full of shame
He didn't like to tell his name.

Lydia Maria Child.

EARLY TO BED.

Cock crows in the morn
To tell us to rise,
And he who lies late
Will never be wise.

For early to bed,
And early to rise,
Makes a man healthy,
And wealthy, and wise.

Nursery Rhyme.

BIRDS THOUGHTS.

I lived first in a little house,
And lived there very well;
I thought the world was small and round,
And made of pale blue shell.

I lived next in a little nest,
Nor wanted any other;
I thought the world was made of straw,
And brooded by my mother.

One day I fluttered from the nest
To see what I could find.
I said, "The world is made of leaves,
I have been very blind."

At last I flew beyond the tree,
Quite fit for grown-up labors.
I don't know how the world is made,
And neither do my neighbors!

From the Graded Literature Readers, Book II.
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TWO LITTLE KITTENS.

Two little kittens, one stormy night,
Began to quarrel, and then to fight.
One had a mouse, the other had none;
And that's the way the fight was begun.

"I will have the mouse," said the bigger cat.
"You will have the mouse! We'll see about that."
"I will have that mouse," said the older one.
"You shall not have the mouse," said the little one.

I told you before 'twas a stormy night
When these two kittens began to fight.
The old woman took her sweeping broom,
And swept the two kittens out of the room.

The ground was covered with frost and snow,
And the two kittens had nowhere to go;
So they laid them down on a mat at the door,
While the old woman finished sweeping the floor.

Then they crept in as quiet as mice,
All wet with snow and cold as ice:
For they thought 'twould be better that stormy night
To lie down and sleep, than to quarrel and fight.

LADY MOON.

Lady Moon, Lady Moon, where are you roving?
"Over the sea."
Lady Moon, Lady Moon, whom are you loving?
"All that love me."

Are you not tired with rolling and never
Resting to sleep?
Why look so pale and sad, as forever
Wishing to weep?

"Ask me not this, little child, if you love me:
You are too bold:
I must obey my dear Father above me,
And do as I am told."

Lady Moon, Lady Moon, where are you roving?
"Over the sea."
Lady Moon, Lady Moon, whom are you loving?
"All that love me."

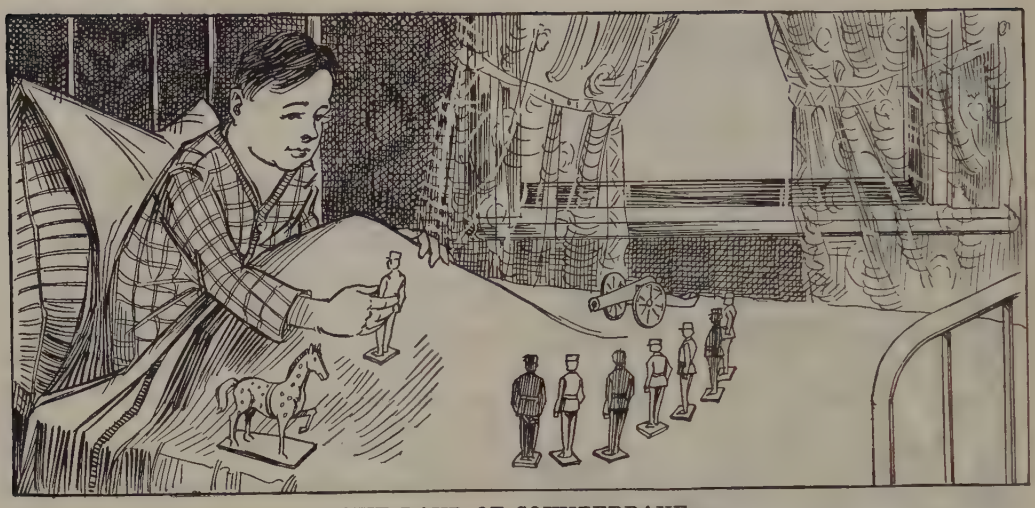
Lord Houghton.

SWEET AND LOW.

Sweet and low, sweet and low,
Wind of the western sea.
Low, low, breathe and blow,
Wind of the western sea!
Over the rolling waters go,
Come from the dying moon and blow,
Blow him again to me;
While my little one, while my pretty one, sleeps.

Sleep and rest, sleep and rest;
Father will come to thee soon.
Rest, rest on mother's breast;
Father will come to thee soon.
Father will come to his babe in the nest;
Silver sails all over the west,
Under the silver moon;
Sleep, my little one, sleep, my pretty one, sleep.

Alfred Tennyson.



THE LAND OF COUNTERPANE.

When I was sick and lay a-bed,
I had two pillows at my head,
And all my toys beside me lay
To keep me happy all the day.

And sometimes for an hour or so
I watched my leaden soldiers go,
With different uniforms and drills,
Among the bedclothes, through the hills;

And sometimes sent my ships in fleets
All up and down among the sheets;
Or brought my trees and houses out,
And planted cities all about.

I was the giant great and still,
That sits upon the pillow-hill,
And sees before him, dale and plain,
The pleasant land of Counter-pane.

Robert Louis Stevenson.

BED IN SUMMER.

In winter I get up at night
And dress by yellow candle-light.
In summer quite the other way,
I have to go to bed by day.

I have to go to bed and see
The birds still hopping on the tree,
Or hear the grown-up people's feet
Still going past me in the street.

And does it not seem hard to you,
When all the sky is clear and blue,
And I should like so much to play,
To have to go to bed by day?

Robert Louis Stevenson.

WINDY NIGHTS.

Whenever the moon and stars are set,
Whenever the wind is high,
All night in the dark and wet,
A man goes riding by.
Late in the night when the fires are out,
Why does he gallop and gallop about?

Whenever the trees are crying aloud,
And ships are tossed at sea,
By, on the highway, low and loud,
By at the gallop goes he.
By at the gallop he goes, and then,
By he comes back at the gallop again.

Robert Louis Stevenson.

MY SHADOW.

I have a little shadow that goes in and out with me,
And what can be the use of him is more than I can see.
He is very, very like me from the heels up to the head;
And I see him jump before me when I jump into bed.

The funniest thing about him is the way he likes to grow—
Not at all like proper children, which is always very slow;
For he sometimes shoots up taller like an india-rubber ball,
And he sometimes gets so little that there's none of him at all.

He hasn't got a notion of how children ought to play,
And can only make a fool of me in every sort of way.
He stays so close beside me, he's a coward you can see;
I'd think it shame to stick to nursie as that shadow sticks to me!
One morning, very early, before the sun was up,
I rose and found the shining dew on every buttercup;
But lazy little shadow, like an arrant sleepy-head,
Had stayed at home behind me and was fast asleep in bed.

Robert Louis Stevenson.

THE WIND.

I saw you toss the kites on high
And blow the birds about the sky;
And all along I heard you pass,
Like ladies' skirts across the grass—
O wind, a-blowing all day long,
O wind, that sings so loud a song!

I saw the different things you did,
But always you yourself you hid.
I felt you push, I heard you call,
I could not see yourself at all—
O wind, a-blowing all day long,
O wind, that sings so loud a song!

O you that are as strong and cold,
O blower, are you young or old?
Are you a beast of field and tree,
Or just another child like me?
O wind, a-blowing all night long,
O wind, that sings so loud a song!

Robert Louis Stevenson.

LITTLE BOY BLUE.

The little toy dog is covered with dust,
But sturdy and stanch he stands;
And the little toy soldier is red with rust,
And his musket molds in his hands.
Time was when the little toy dog was new,
And the soldier was passing fair;
And that was the time when our Little Boy Blue
Kissed them and put them there.

"Now don't you go till I come," he said,
"And don't you make any noise!"
So toddling off to his trundle-bed,
He dreamt of the pretty toys;
And, as he was dreaming, an angel song
Awakened our Little Boy Blue—
Oh! the years are many and the years are long,
But the little toy friends are true!

Ay, faithful to Little Boy Blue they stand,
Each in the same old place—
Awaiting the touch of a little hand,
The smile of a little face;
And they wonder, as waiting the long years through
In the dust of that little chair,
What has become of our Little Boy Blue,
Since he kissed them and put them there.

Eugene Field.

LITTLE DUCKS.

"My dears, whatever are you at?
You ought to be at home;
I told you not to wet your feet,
I told you not to roam.

"Oh, dear! I'm sure you will be drowned,
I never saw such tricks;
Come home at once and go to bed,
You naughty, naughty chicks!"

Now most of them were five days old,
But one whose age was six—
"Please, ma'am," said he, "I think we're ducks;
I don't believe we're chicks."

From the Graded Literature Readers, Book II.
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THE BEE AND THE FLOWER.

The bee buzzed up in the heat.
"I am faint for your honey, my sweet."
The flower said, "Take it, my dear,
For now is the spring of the year,
So come, come!"
"Hum!"
And the bee buzzed down from the heat.

The bee buzzed up in the cold,
When the flower was withered and old.
"Have you still any honey, my dear?"
She said, "It's the fall of the year,
But come, come!"
"Hum!"
And the bee buzzed off in the cold.

Alfred Tennyson.

LOOKING FORWARD.

When I am grown to man's estate,
I shall be very proud and great,
And tell the other girls and boys
Not to meddle with my toys.

Robert Louis Stevenson.

WHOLE DUTY OF CHILDREN.

A child should always say what's true,
And speak when spoken to,
And behave mannerly at table,
At least as far as he is able.

Robert Louis Stevenson.

AN EMERALD AS GREEN AS GRASS.

An emerald is as green as grass;
A ruby, as red as blood;
A sapphire shines as blue as heaven;
A flint lies in the mud.

A diamond is a brilliant stone
To catch the world's desire;
An opal holds a fiery spark;
But a flint holds fire.

Christina G. Rossetti

THE SHUT-EYE TRAIN.

Come, my little one, with me!
There are wondrous sights to see
As the evening shadows fall;
In your pretty cap and gown,
Don't detain
The Shut-Eye train—
"Ting-a-ling!" the bell it goeth,
"Toot-toot!" the whistle bloweth,
And we hear the warning call;
"All aboard for Shut-Eye Town!"

Over hill and over plain
Soon will speed the Shut-Eye train!
Through the blue where bloom the stars
And the mother moon looks down
We'll away
To land of Fay—
Oh, the sights that we shall see there!
Come, my little one, with me there—
'Tis a goodly train of cars—
"All aboard for Shut-Eye Town!"

Swifter than a wild bird's flight,
Through the realms of fleecy light
We shall speed and speed away!
Let the night in envy frown—
What care we
How wroth she be!
To the Balow-land above us,
To the Balow-folk who love us,
Let us hasten while we may—
"All aboard for Shut-Eye Town!"

Shut-Eye Town is passing fair—
Golden dreams await us there;
We shall dream those dreams, my dear,
Till the Mother Moon goes down—
See unfold
Delights untold!
And in those mysterious places
We shall see beloved faces
And beloved voices hear
In the grace of Shut-Eye Town!

Heavy are your eyes, my sweet,
Weary are your little feet—
Nestle closer up to me
In your pretty cap and gown;
Don't detain
The Shut-Eye train!
"Ting-ling!" the bell it goeth,
"Toot-toot!" the whistle bloweth—
Oh, the sights that we shall see!
"All aboard for Shut-Eye Town!"

Eugene Field.

THE WIND AND THE LEAVES.

"Come, little leaves," said the wind one day.
"Come o'er the meadows with me and play;
Put on your dresses of red and gold,—
Summer is gone and the days grow cold."

Soon as the leaves heard the wind's loud call,
Down they came fluttering, one and all,
Over the brown fields they danced and flew,
Singing the soft little songs they knew.

Dancing and flying the little leaves went;
Winter had called them and they were content.
Soon fast asleep in their earthy beds,
The snow laid a coverlet over their heads.

George Cooper.

WHAT IS PINK.

What is pink? A rose is pink,
By the fountain's brink.

What is red? A poppy's red,
In its barley bed.

What is blue? The sky is blue,
Where the clouds float through.

What is white? A swan is white,
Sailing in the light.

What is yellow? Pears are yellow,
Rich and ripe and mellow.

What is green? The grass is green,
With small flowers between.

What is violet? Clouds are violet,
In the summer twilight.

What is orange? Why, an orange,
Just an orange!

Christina G. Rossetti.

DAISIES.

Where the pretty bright-eyed daisies are,
With blades of grass between,
Each stands up like a star
Out of a sky of green.

Christina G. Rossetti.

THE SWING.

How do you like to go up in a swing?
Up in the air so blue.
Oh, I do think it's the pleasantest thing
Ever a child can do.

Up in the air and over the wall,
Till you can see so wide,
Rivers and trees and cattle
And all over the countryside.

Robert Louis Stevenson.

THE LITTLE ELF.

I met a little Elf-man once,
Down where the lilies blow.
I asked him why he was so small,
And why he did not grow.

He slightly frowned, and with his eye
He looked me through and through.
"I'm quite as big for me," said he,
"As you are big for you."

John Kendrick Bangs from Gordon Reader, published by D. C. Heath and Co.

MILKING TIME.

When the cows come home the milk is coming;
Honey's made while the bees are humming;
Duck and drake on the rushy lake,
And the deer live safe in the breezy brake;
And the timid, funny, pert little bunny
Winks his nose and sits all sunny.

Christina G. Rossetti.

RIDDLES.

Higher than a house, higher than a tree,
Oh, whatever can it be?
A Star.

Black within and red without;
Four corners round about.
A Chimney.

From Gordon Reader, published by D. C. Heath and Company.

THE COW.

Thank you, pretty cow, that made
Pleasant milk to soak my bread,
Every day and every night,
Warm, and fresh, and sweet, and white.

Do not chew the hemlock rank,
Growing on the weedy bank;
But the yellow cowslips eat,
They will make it very sweet.

Where the purple violet grows,
Where the bubbling water flows,
Where the grass is fresh and fine,
Pretty cow, go there and dine.

Jane Taylor.

THE CITY MOUSE.

The city mouse lives in a house;—
The garden mouse lives in a bower,
He's friendly with the frogs and toads,
And sees the pretty plants in flower.

The city mouse eats bread and cheese;—
The garden mouse eats what he can;
We will not grudge him seeds and stalks,
Poor little timid furry man.

Christina G. Rossetti

From Gordon Reader, published by D. C. Heath and Company.

He prayeth best who loveth best,
All things both great and small;
For the dear God who loveth us,
He made and loveth all.

Samuel Taylor Coleridge.

TWINKLE, TWINKLE LITTLE STAR.

Twinkle, twinkle, little star;
How I wonder what you are!
Up above the world so high,
Like a diamond in the sky.

When the blazing sun has gone,
When he nothing shines upon,
Then you show your little light,
Twinkle, twinkle, all the night.

In the dark blue sky you keep,
And often through my curtains peep;
For you never shut your eye
Till the sun is in the sky.

As your bright and tiny spark
Lights the traveler in the dark,
Though I know not what you are,
Twinkle, twinkle, little star!

Nursery Rhyme.

WHITE SHEEP.

White sheep, white sheep,
On a blue hill.
When the wind stops—
You all stand still.
When the wind blows—
You walk away slow;
White sheep, white sheep,
Where do you go?

Nursery Rhyme.

BLOCK CITY.

ROBERT LOUIS STEVENSON.

What are you able to build with your blocks?
Castles and palaces, temples and docks.
Rain may keep raining and others go roam,
But I can be happy and building at home.

Let the sofa be mountains, the carpet be sea;
There I'll establish a city for me:
A kirk and a mill and a palace besides,
And a harbor as well where my vessels may ride.

Great is the palace with pillar and wall,
A sort of a tower on top of it all,
And steps coming down in an orderly way
To where my toy vessels lie safe in the bay.

This one is sailing and that one is moored:
Hark to the song of the sailors on board.
And see, on the steps of my palace the kings
Coming and going with presents and things.

Now I have done with it, down let it go.
All in a moment the town is laid low.
Block upon block lying scattered and free,
What is there left of my town by the sea?

Yet as I saw it, I see it again,
The kirk and the palace, the ships and the men,
And as long as I live, and where'er I may be,
I'll always remember my town by the sea.

Robert Louis Stevenson.

A GOOD BOY.

I woke before the morning,
I was happy all the day,
I never said an ugly word,
But smiled and kept at play.

And now at last the sun
Is going down behind the wood,
And I am very happy,
For I know that I've been good.

My bed is waiting, cool and fresh,
With linen smooth and fair,
And I must off to slumber land,
And not forget my prayer.

Then sleep will hold me tightly
Till I waken at the dawn,
And hear the robins singing
In the lilacs round the lawn.

Robert Louis Stevenson.

WHERE GO THE BOATS?

Dark brown is the river,
Golden is the sand,
It flows along forever,
With trees on either hand.

Green leaves a-floating,
Castles of the foam,
Boats of mine a-boating—
Where will all come home?

On goes the river
And out past the mill,
Away down the valley,
Away down the hill.

Away down the river,
A hundred miles or more,
Other little children
Shall bring my boats ashore.

Robert Louis Stevenson.

SIMPLE SIMON.

Simple Simon met a pieman
Going to the fair;
Said Simple Simon to the pieman,
"Let me taste your ware."

Said the pieman to Simple Simon,
"Show me first your penny."
Said Simple Simon to the pieman,
"Indeed I have not any."

Simple Simon went a-fishing
To try to catch a whale;
But all the water that he had
Was in his mother's pail.

Simple Simon went to see
If plums grew on a thistle;
He pricked his fingers very much,
Which made poor Simon whistle.

Simple Simon went a hunting,
To try to catch a hare;
He rode a goat about the streets,
But could not find one there.

He carried water in a sieve,
But soon it all ran through;
And now poor Simple Simon
Must say good-bye to you.

American Mother Goose Rhymes.

LITTLE THINGS.

Little drops of water,
Little grains of sand,
Make the mighty ocean,
And the pleasant land.

And the little mountains,
Humble though they be,
Make the mighty ages
Of eternity.

Little deeds of kindness,
Little words of love,
Make our earth an Eden,
Like the heaven above.

Ebenezer Bobham Brewer.

Bow-wow wow!
Whose dog art thou?
Little Tom Tucker's dog,
Bow-wow wow!

AMERICA.

My country, 'tis of thee,
Sweet land of liberty,
Of thee I sing;
Land where my fathers died,
Land of the Pilgrims' pride
From every mountain side,
Let freedom ring!

My native country, thee—
Land of the noble free—
Thy name I love;
I love thy rocks and rills,
Thy woods and templed hills;
My heart with rapture thrills,
Like that above.

Let music swell the breeze,
And ring from all the trees
Sweet freedom's song;
Let mortal tongues awake;
Let all that breathe partake;
Let rocks their silence break,
The sound prolong.

Our fathers' God to Thee,
Author of liberty,
To Thee we sing;
Long may our land be bright
With freedom's holy light;
Protect us by Thy might,
Great God, our King!

Samuel F. Smith.

OUR FLAG.

There are many flags of many lands,
There are flags of every hue;
But there is no flag, however grand,
Like our own Red, White, and Blue.

Then hurrah for the flag, our country's flag,
With its stripes and its bright stars, too
For there is no flag, however grand,
Like our own Red, White, and Blue.

From the Howe Reader, Book II, published by Charles Scribner's Sons.

A MUSIC BOX.

I am a little Music Box,
Wound up and made to go,
And play my little living tune
The best way that I know.

If I am naughty, cross, or rude,
My music will go wrong,
My little works be tangled up,
And spoil the pretty song.

I must be very sweet and good
And happy all the day,
And then the little Music Box
In tune will always play.

Abbie Farwell Brown.

From the Howe Reader, Book II, Published by Charles Scribner's Sons.

THE ROCK-A-BY LADY.

The Rock-a-by Lady from Hush-a-by Street
Comes stealing; comes creeping;
The poppies they hang from her head to her feet,
And each hath a dream that is tiny and fleet—
She bringeth her poppies to you, my sweet,
When she findeth you sleeping!

There is one little dream of a beautiful drum—
"Rub-a-dub!" it goeth;
There is one little dream of a big sugar-plum,
And lo! thick and fast the other dreams come
Of popguns that bang, and tin tops that hum,
And a trumpet that bloweth!

And dollies peep out of those wee little dreams
With laughter and singing;
And boats go a-floating on silvery streams,
And the stars peek-a-boo with their own misty gleams,
And up, up, and up, where the Mother Moon beams,
The fairies go winging!

Would you dream all these dreams that are tiny and fleet?
They'll come to you sleeping;
So shut the two eyes that are weary, my sweet,
For the Rock-a-by Lady from Hush-a-by Street,
With poppies that hang from her head to her feet,
Comes stealing, comes creeping.

Eugene Field.

THE MONTHS

Mary had a little lamb,
His fleece was white as snow;
And every where that Mary went,
That lamb was sure to go.

CRADLE SONG.

Sleep, baby, sleep!
Thy father is watching the sheep!
Thy mother is shaking the dreamland tree,
And down drops a little dream for thee.
Sleep, baby, sleep!

Sleep, baby, sleep!
The great stars are the sheep,
The little stars are the lambs, I guess;
The bright moon is the shepherdess.
Sleep, baby, sleep!

Sleep, baby, sleep!
Thy father is watching the sheep!
Thy mother is shaking the dreamland tree,
And down drops a little dream for thee.
Sleep, baby, sleep!

From the Howe Reader, Book II, published by Charles Scribner's Sons.

BILL OF FARE.

Pies of pumpkin, apple, mince,
Jams and jellies, peaches, quince,
Purple grapes and apples red,
Cakes and nuts and gingerbread—
That's Thanksgiving.

Turkey! Oh, a great big fellow!
Fruits all ripe and rich and mellow,
Everything that's nice to eat,
More than I can now repeat—
That's Thanksgiving.

Lots and lots of jolly fun,
Games to play and races run,
All as happy as can be—
For this happiness, you can see,
Makes Thanksgiving.

We must thank the One who gave
All the good things that we have:
That is why we keep the day
Set aside, our mammas say,
For Thanksgiving.

Eugene Field.

THE MONTHS.

January brings the snow,
Makes our feet and fingers glow.

February brings the rain,
Thaws the frozen lake again.

March brings breezes sharp and chill,
Shakes the dancing daffodil.

April brings the primrose sweet,
Scatters daisies at our feet.

May brings flocks of pretty lambs,
Sporting 'round their fleecy dams.

June brings tulips, lilies, roses,
Fills the children's hands with posies.

Hot July brings thunder-showers,
Apricots and gilly-flowers.

August brings the sheaves of corn;
Then the harvest home is borne.

Warm September brings the fruit;
Sportsmen then begin to shoot.

Brown October brings the pheasant,
Then to gather nuts is pleasant.

Dull November brings the blast—
Hark! the leaves are whirling fast.

Cold December brings the sleet,
Blazing fire and Christmas treat.

Sara Coleridge.

From the Howe Reader, Book II, published by Charles Scribner's Sons.

THE NIGHT BEFORE CHRISTMAS.

'Twas the night before Chrismas,
When all through the house
Not a creature was stirring,
Not even a mouse.

The stockings were hung
By the chimney with care,
In hopes that St. Nicholas
Soon would be there.

The children were nestled
All snug in their beds,
While visions of sugar-plums
Danced through their heads.

Mamma in her 'kerchief,
And I in my cap
Had just settled our brains
For a long winter's nap. . . .

When out on the lawn
There arose such a clatter:
I sprang from my bed
To see what was the matter.

Away to the window
I flew like a flash,
Tore open the shutters
And threw up the sash.

The moon on the breast
Of the new fallen snow
Gave a lustre of mid-day
To objects below:

When what to my wondering eyes
Should appear—
But a miniature sleigh
And eight tiny reindeer!

With a little old driver,
So lively and quick:
I knew in a moment
It must be St. Nick.

More rapid than eagles
His coursers they came,
And he whistled and shouted
And called each by name:

"Now, Dasher, now, Dancer,
Now, Prancer, now, Vixen!
On, Comet! On, Cupid!
On, Donner and Blitzen!

To the top of the porch,
To the top of the wall,
Now, dash away, dash away,
Dash away, all!"

As dry leaves before the wild hurricane fly,
When they meet with an obstacle, mount to the sky:
So up to the house-top the coursers, they flew,
With a sleigh full of toys, and St. Nicholas, too.

And, then in a twinkling,
I heard on the roof
The prancing and pawing
Of each little hoof.

As I drew in my head,
And was turning around,
Down the chimney St. Nicholas
Came with a bound.

He was dressed all in fur
From his head to his foot,
And his clothes were all tarnished
With ashes and soot.

A bundle of toys
He had flung on his back,
And he looked like a peddler
Just opening his pack.

His eyes, how they twinkled!
His dimples, how merry!
His cheeks were like roses,
His nose like a cherry.

His droll little mouth
Was drawn up like a bow,
And the beard on his chin
Was as white as the snow.

The stump of a pipe
He held tight in his teeth,
And the smoke, it encircled
His head like a wreath.

He had a broad face,
And a little round belly
That shook when he laughed
Like a bowl full of jelly.

He was chubby and plump—
A right jolly old elf,
And I laughed when I saw him
In spite of myself.

A wink of his eye,
And a twist of his head
Soon gave me to know
I had nothing to dread.

He spoke not a word
But went straight to his work,
And filled all the stockings
Then turned with a jerk—

And, laying his finger
Aside of his nose,
And giving a nod,
Up the chimney he rose.

He sprang to his sleigh,
To his team gave a whistle,
And away they all flew
Like the down on the thistle.

And I heard him exclaim
Ere he drove out of sight:
"MERRY CHRISTMAS TO ALL,
AND TO ALL A GOOD NIGHT."

Clement Moore.

THE COW.

The friendly cow all red and white,
I love with all my heart.
She gives me cream with all her might,
To eat with apple tart.

She wanders lowing here and there,
And yet she cannot stray,
All in the pleasant open air,
The pleasant light of day;

And blown by all the winds that pass
And wet with all the showers,
She walks among the meadow grass
And eats the meadow flowers.

Robert Louis Stevenson.

MEMORY GEMS.

'Tis a lesson you should heed:
Try, try again;
If at first you don't succeed,
Try, try again.

He prayeth best who loveth best,
All things both great and small,
For the dear God who loveth us,
He made and loveth all.

FINGER PLAY

If a task is once begun,
Never leave it till it's done;
Be the labor great or small,
Do it well or not at all.

Do your best, your very best,
And do it every day;
Little boys and little girls,
That is the wisest way.

Be the matter what it may,
Always speak the truth;
If at work or if at play,
Always speak the truth.

One good trick is better than a hundred poor ones.

Hearts, like doors, will ope with ease
To very, very little keys;
And don't forget that two are these:
"I thank you, sir," and "If you please."

To do to others as I would
That they should do to me,
Will make me honest, kind, and good,
As children ought to be.

Little children, you must seek
Rather to be good than wise;
For the thoughts you do not speak
Shine out in your cheeks and eyes.

Birds of a feather flock together.
Fine feathers do not make fine birds.

All things bright and beautiful,
All creatures great and small
All things wise and wonderful,
The good God made them all.

Politeness is to do or say
The kindest thing in the kindest way.

In books or work or healthful play
Let my first years be passed,
That I may give for every day
Some good account at last.

FINGER PLAY.

Roll your hands, roll your hands,
As slowly, as slowly, as slow can be.
Then fold your arms like me.

Roll your hands, roll your hands,
As swiftly, as swiftly, as swift can be.
Then fold your arms like me!

Clasp your hands, clasp your hands,
As softly, as softly, as soft can be.
Then fold your arms like me!

Clap your hands, clap your hands,
As loudly, as loudly, as loud can be.
Then fold your hands like me.

If all were rain and never sun,
No bow would span the hill;
If all were sun and never rain,
There'd be no rainbow still.

Christina G. Rossetti.

THE DUEL.

The gingham dog and the calico cat
Side by side on the table sat;
'Twas half-past twelve, and (what do you think!)
Nor one nor t'other had slept a wink!
The old Dutch clock and the Chinese plate
Appeared to know as sure as fate
There was going to be a terrible spat.
(I wasn't there; I simply state
What was told to me by the Chinese plate!)

The gingham dog went "Bow-wow-wow!"
And the calico cat replied "Mee-ow!"
The air was littered an hour or so,
With bits of gingham and calico,
While the old Dutch clock in the chimney-place
Up with its hands before its face,
For it always dreaded a family row!
(Now mind: I'm only telling you
What the old Dutch clock declares is true!)

The Chinese plate looked very blue,
And wailed, "Oh, dear! What shall we do!"
But the gingham dog and the calico cat
Wallowed this way and tumbled that,
Employing every tooth and claw
In the awfullest way you ever saw—
And, oh! how the gingham and calico flew!
(Don't fancy I exaggerate—
I got my news from the Chinese plate!)

Next morning, where the two had sat
They found no trace of dog or cat:
And some folks think unto this day
That burglars stole that pair away!
But the truth about the cat and pup
Is this: they ate each other up!
Now what do you really think of that!
(The old Dutch clock it told me so
And that is how I came to know.)

Eugene Field.

SINGING.

Of speckled eggs the birdie sings,
And nests among the trees;
The sailor sings of ropes and things
In ships upon the sea.

The children sing in far Japan,
The children sing in Spain;
The organ with the organ man
Is singing in the rain.

Robert Louis Stevenson.

THE HORSES OF THE SEA

The horses of the sea
Rear a foaming crest,
But the horses of the land
Serve us best.

The horses of the land
Munch corn and clover,
While the foaming sea horses
Toss and turn over.

Christina G. Rossetti.

CHICK-A-DEE, DEE.

Chick-chick-a-dee-dee! saucy note
Out of sound heart and merry throat,
As if it said Good-day, good Sir!
Fine afternoon, old passenger!
Happy to meet you in these places
Where January brings new faces.

Ralph Waldo Emerson.

THE SUN'S TRAVELS.

The sun is not abed when I
At night upon my pillow lie;
Still round the earth his way he takes,
And morning after morning makes.

While here at home, in shining day,
We round the sunny garden play,
Each little Indian sleepy-head
Is being kissed and put to bed.

And when at eve I rise from tea,
Day dawns beyond the Atlantic sea;
And all the children in the west
Are getting up and being dressed.

Robert Louis Stevenson.

How doth the little busy bee
Improve each shining hour,
And gather honey all the day
From every opening flower!

How skillfully she builds her cell!
How neat she spreads the wax!
And labors hard to store it well
With the sweet food she makes.

Isaac Watts.

AT THE SEA-SIDE.

When I was down beside the sea,
A wooden spade they gave to me,
To dig the sandy shore.

My holes were empty like a cup,
In every hole the sea came up,
Till it could come no more.

Robert Louis Stevenson.

A GOOD PLAY.

We built a ship upon the stairs
All made of the back bedroom chairs,
And filled it full of sofa pillows.
To go a-sailing on the billows.

We took a saw and several nails,
And water in the nursery pails;
And Tom said, "Let us also take
An apple and a slice of cake;"—
Which was enough for Tom and me
To go a-sailing on till tea.

We sailed along for days and days,
And had the very best of plays;
And Tom fell out and hurt his knee;
So there was no one left but me.

Robert Louis Stevenson.

MY BED IS A BOAT.

My bed is like a little boat;
Nurse helps me in when I embark;
She girds me in my sailor's coat
And starts me in the dark.

At night, I go on board and say
Good-night to all my friends on shore;
I shut my eyes and sail away
And see and hear no more.

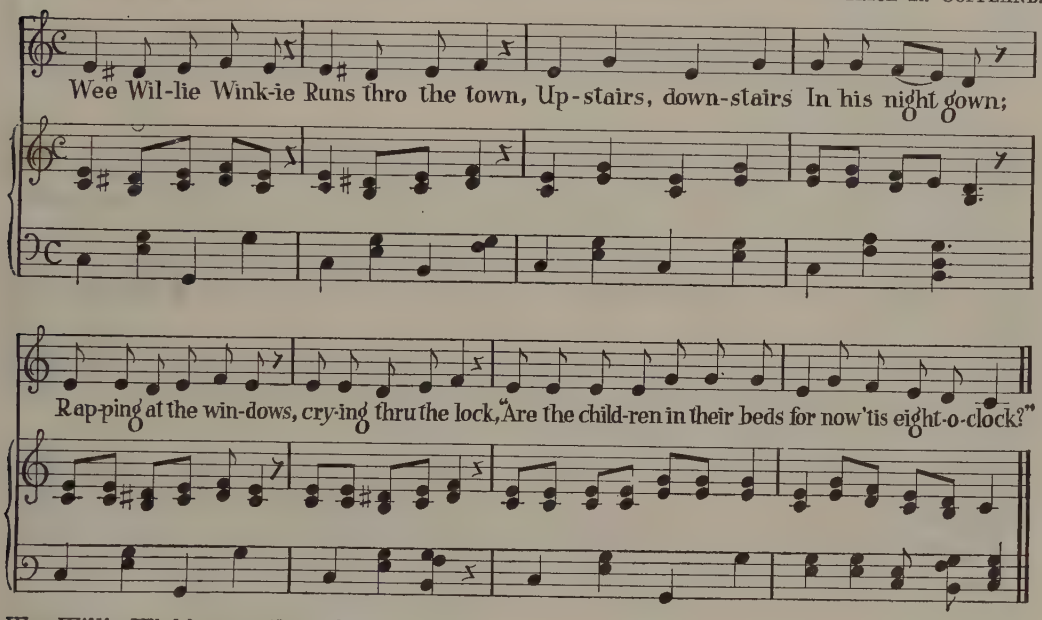
* * * * *

All night across the dark we steer;
But when the day returns at last,
Safe in my room beside the pier,
I find my vessel fast.

Robert Louis Stevenson

WEE WILLIE WINKIE.

BEATRICE R. COFFLAND.


Wee Wil-lie Wink-ie Runs thro the town, Up-stairs, down-stairs In his night gown;
Rap-ping at the win-dows, cry-ing thru the lock, "Are the child-ren in their beds for now 'tis eight-o-clock?"

Wee Willie Winkie runs through the town,
Upstairs and downstairs in his night gown.
Rapping at the window,
Crying through the lock,
"Are the children in their beds, for now it's eight o'clock?"

William Miller.

One is chosen for Wee Willie Winkie and he runs around on tiptoe. At "rapping at the windows" he stops at someone's chair and knocks —pretends to cry through the lock, and points finger to ask if all are in bed.

SIMPLE SIMON.

Simple Simon met a pieman
Going to the fair.
Said Simple Simon to the pieman,
"Let me taste your ware."
The pieman said to Simple Simon,
"Show me first your penny,"
Said Simple Simon to the pieman,
"Indeed I have not any."

Mother Goose.

This should be done in pantomime by two children while the other children sing the words. The two walk around and meet each other, one as Simple Simon and one as the pieman. Stop when the conversation begins. On "Let me taste your ware" Simple Simon motions for some pie and indicates what he wants with it by pretending to eat. The pieman motions for the penny but by the shake of the head and throwing of the arms, Simple Simon shows that he has not any.

LITTLE TOMMY TWIG.

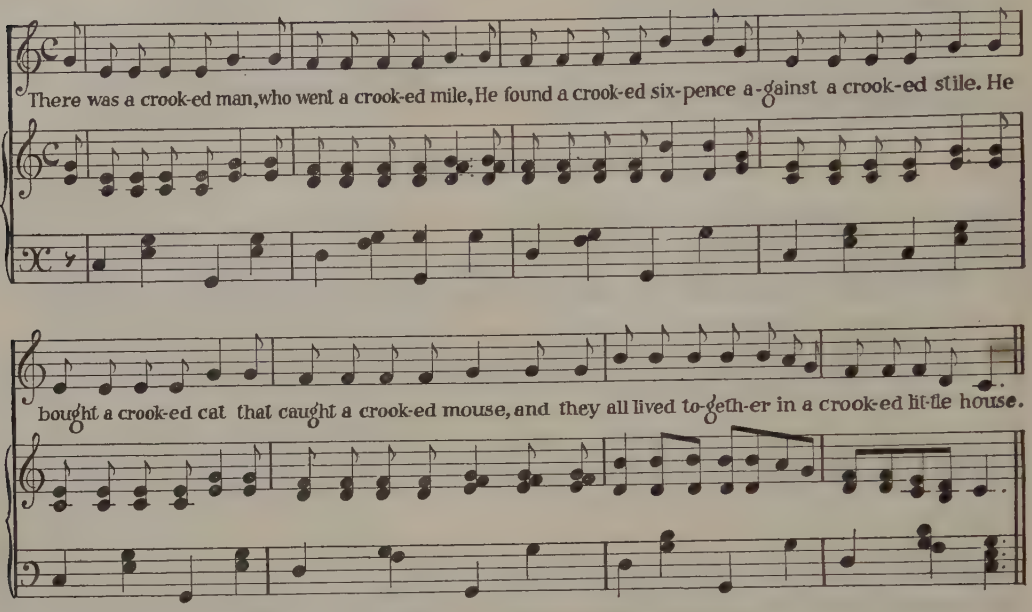
Little Tommy Twig had a fine bow and arrow.
What will he shoot? Why, a poor little sparrow.
Oh, fie! Little Tom with your fine bow and arrow!
How cruel to shoot a poor little sparrow.

Mother Goose.

An imaginary bow and arrow held in position for shooting for the first line. A pointed finger for the second line. A stamp of the foot for the third. A clap of the hands and pointed finger for the fourth.

THE CROOKED MAN.

MOTHER GOOSE. BEATRICE R. COFFLAND.

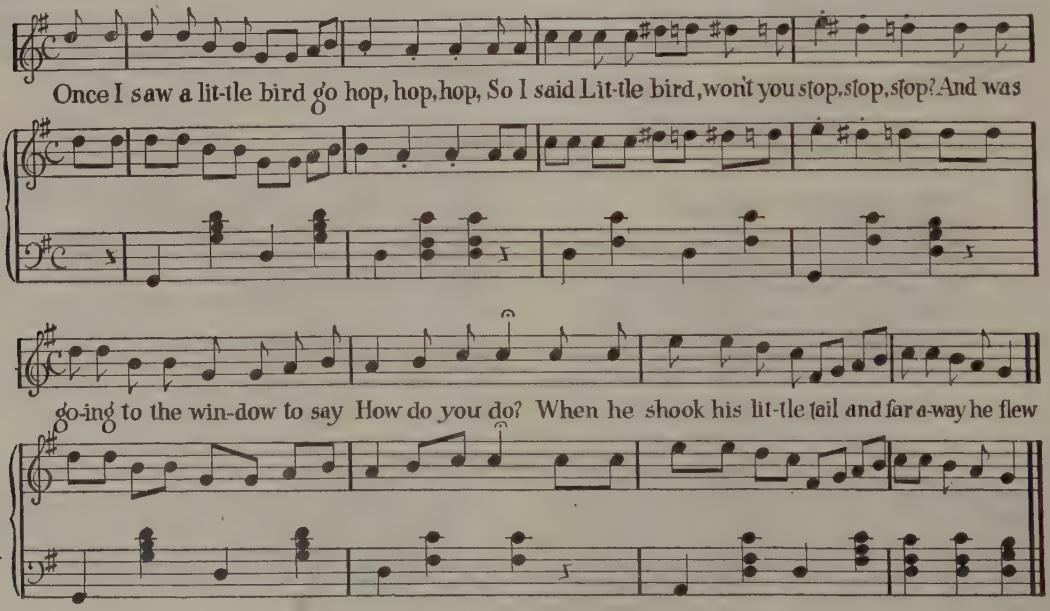

There was a crook-ed man, who went a crook-ed mile, He found a crook-ed six-pence a-gainst a crook-ed stile. He
bought a crook-ed cat that caught a crook-ed mouse, and they all lived to-geth-er in a crook-ed lit-tle house.

There was a crooked man, and he went a crooked mile,
He found a crooked sixpence against a crooked stile;
He bought a crooked cat, which caught a crooked mouse,
And they all lived together in a crooked little house.

Mother Goose.

One starts out as the crooked man who walks crooked by crossing one foot far over the other, etc. He touches one for the crooked sixpence who follows behind in the same manner—then one for the cat and one for the mouse. Much laughter is evoked by the crooked walking.

MOTHER GOOSE. BEATRICE R. COFFLAND.


Once I saw a lit-tle bird go hop, hop, hop, So I said Lit-tle bird, won't you stop, stop, stop? And was
go-ing to the win-dow to say How do you do? When he shook his lit-tle tail and far a-way he flew

THE LITTLE BIRD.

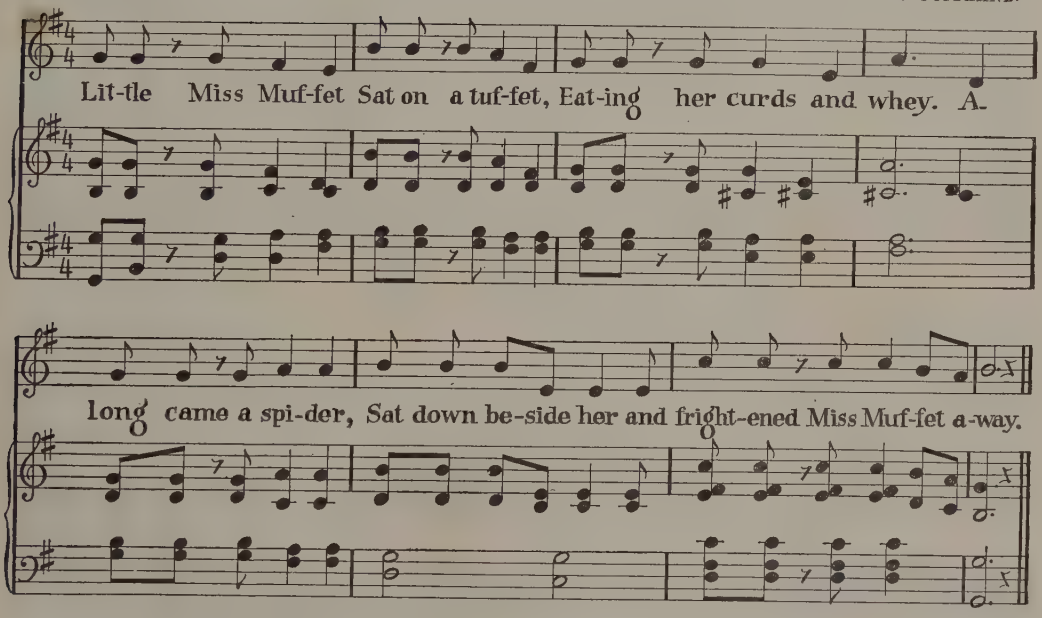
Once I saw a little bird go hop, hop, hop;
So I said, "Little bird, won't you stop, stop, stop?"
And was going to the window to say, "How do you do?"
But he shook his little tail
And far away he flew.

Mother Goose.

Several are chosen to stand in a row. Hand shading the eyes for "once I saw." Three hops for "hop, hop, hop." Hands held out entreatingly for "Little bird won't you stop, stop, stop?" A bow or courtsy for "How do you do." Wave of the hand for "shook his little tail" and flying of the arms for "far away he flew."

LITTLE MISS MUFFET.

MOTHER GOOSE. BEATRICE R. COFFLAND.


Lit-tle Miss Muf-fet Sat on a tuf-fet, Eat-ing her curds and whey. A-
long came a spi-der, Sat down be-side her and fright-ened Miss Muf-fet a-way.

Little Miss Muffet sat on a tuffet,
Eating of curds and whey.
Along came a spider
And sat down beside her
And frightened Miss Muffet away.

Mother Goose.

Miss Muffet sits on a stool with a bowl and spoon pretending to eat. A child crawls toward her as the spider which frightens Miss Muffet and she drops the things and runs away.

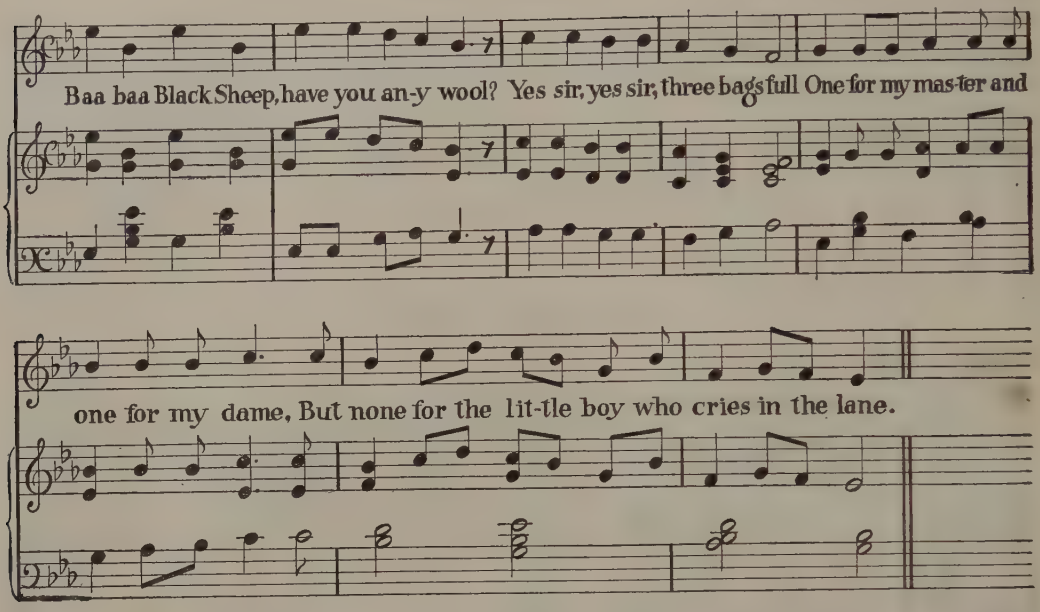
BAA, BAA, BLACK SHEEP.

"Baa, baa, black sheep,
Have you any wool?"
"Yes sir, yes sir.
Three bags full.
One for my master,
One for my dame,
But none for the little boy
Who cries in the lane."

Mother Goose.

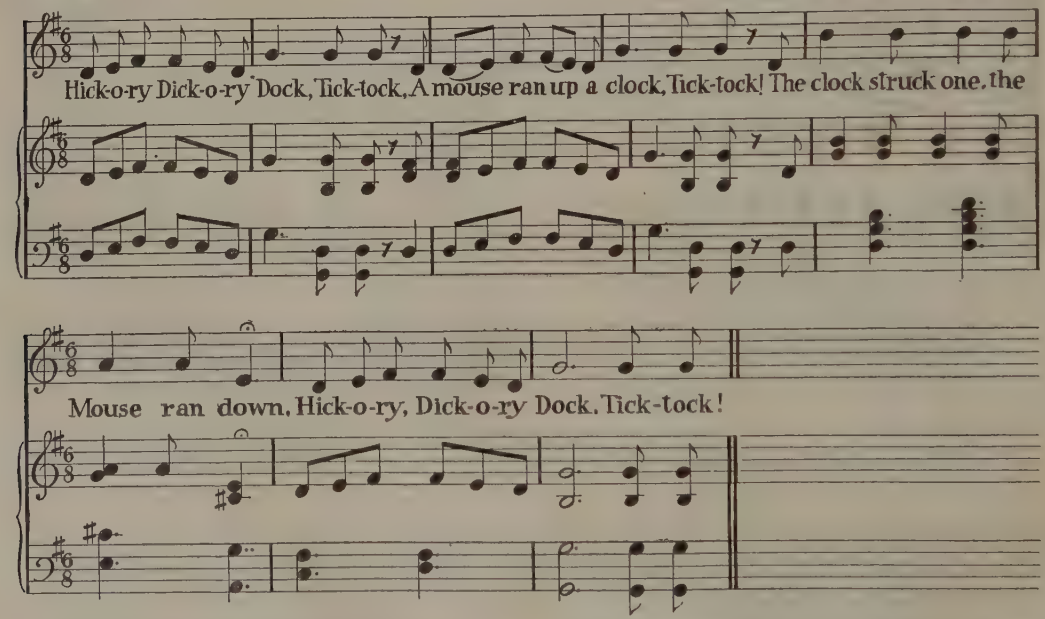
One in the center of a ring with arms over his eyes pretending to cry. All the rest skip around him as they say the first four lines. Then they stop and hold up one finger to show one bag for the master, and one to show a bag for the dame. But they stamp their feet and point at the little boy for the last two lines.

MOTHER GOOSE. BEATRICE R. COFFLAND.


Baa baa Black Sheep, have you an-y wool? Yes sir, yes sir, three bags full One for my mas-ter and
one for my dame, But none for the lit-tle boy who cries in the lane.

HICKORY, DICKORY, DOCK.

MOTHER GOOSE. BEATRICE R. COFFLAND.


Hick-o-ry Dick-o-ry Dock, Tick-tock, A mouse ran up a clock, Tick-tock! The clock struck one, the
Mouse ran down, Hick-o-ry, Dick-o-ry Dock, Tick-tock!

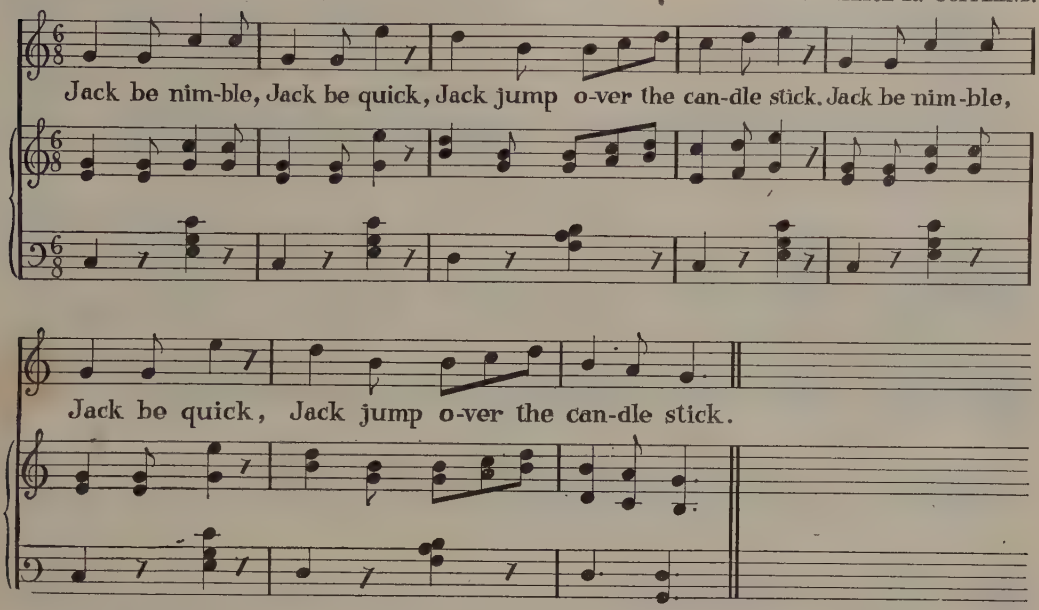
Hickory, dickory, dock; tick, tock.
The mouse ran up the clock, tick, tock
The clock struck one,
The mouse ran down.
Hickory, dickory, dock; tick, tock.

Modified Mother Goose.

Three children each in two lines facing each other. They walk toward one another on the "Hickory, dickory" and then stop and stamp twice on the "Tick, tock." Walk back on the second line. Clap hands on "one." Repeat the motions of the first line for the last line.

JACK, BE NIMBLE.

MOTHER GOOSE. BEATRICE R. COFFLAND.

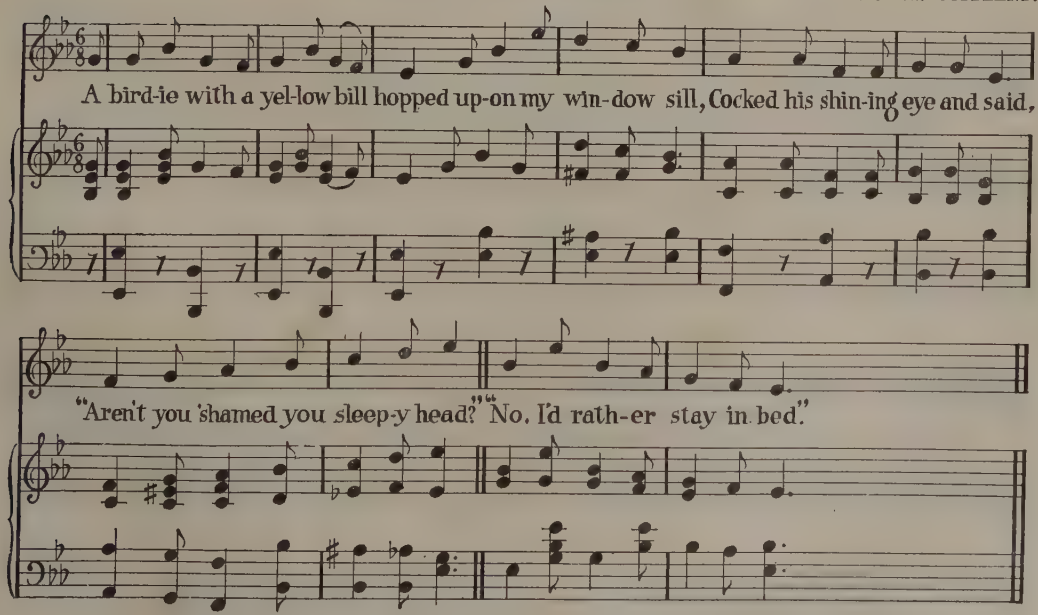


Jack, be nimble,
Jack, be quick,
Jack, jump over the candle stick.
Jack, be nimble,
Jack, be quick,
Jack, jump over the candle stick.

Something to represent a candle is placed in the center of the circle, and each takes turn playing Jack and jumping on the word "jump."

A BIRDIE WITH A YELLOW BILL.

BEATRICE R. COFFLAND.


A bird-ie with a yel-low bill hopped up-on my win-dow sill, Cocked his shin-ing eye and said,
"Aren't you 'shamed you sleep-y head?" "No, I'd rath-er stay in bed."

A birdie with a yellow bill,
Hopped upon my window-sill.
Cocked his shining eye and said,
"Aren't you shamed, you sleepy-head?"

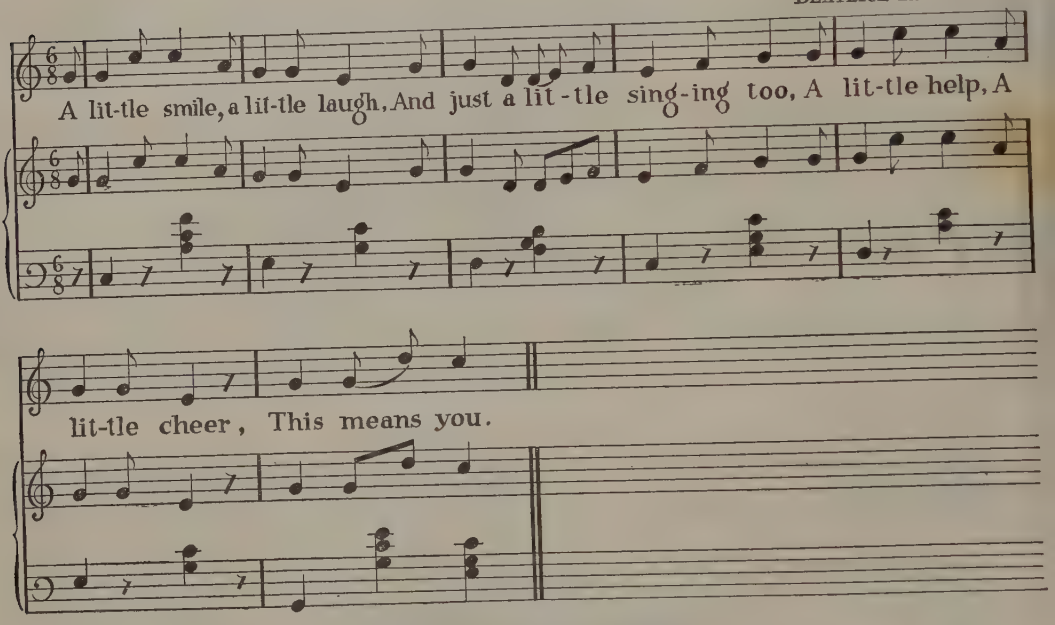
"No, I'd rather stay in bed."

Robert Louis Stevenson.

Several stand to take part in this. For the first line, they put the fingers and thumbs of both hands together to represent the bill—opening and shutting the palms together. A little hop for "hopped" and a hand held out for a window-sill are the motions for the second line. On the third line, cock the head and then point a finger at an imaginary "sleepy-head." A few children chosen for the sleepy-heads reply the last line as they stretch and pretend a yawn.

THIS MEANS YOU.

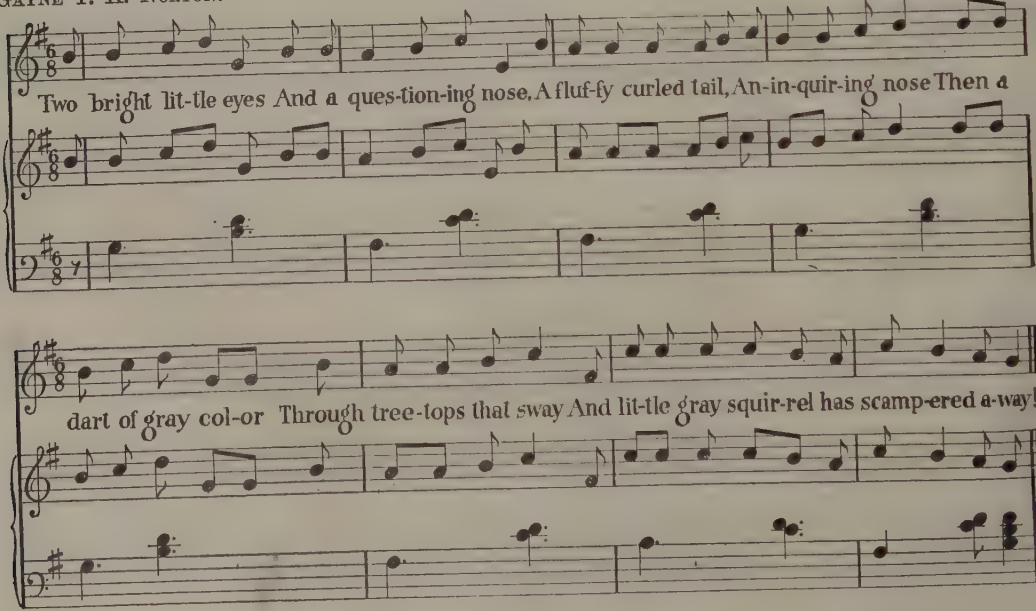
BEATRICE R. COFFLAND.



THE LITTLE GRAY SQUIRREL.

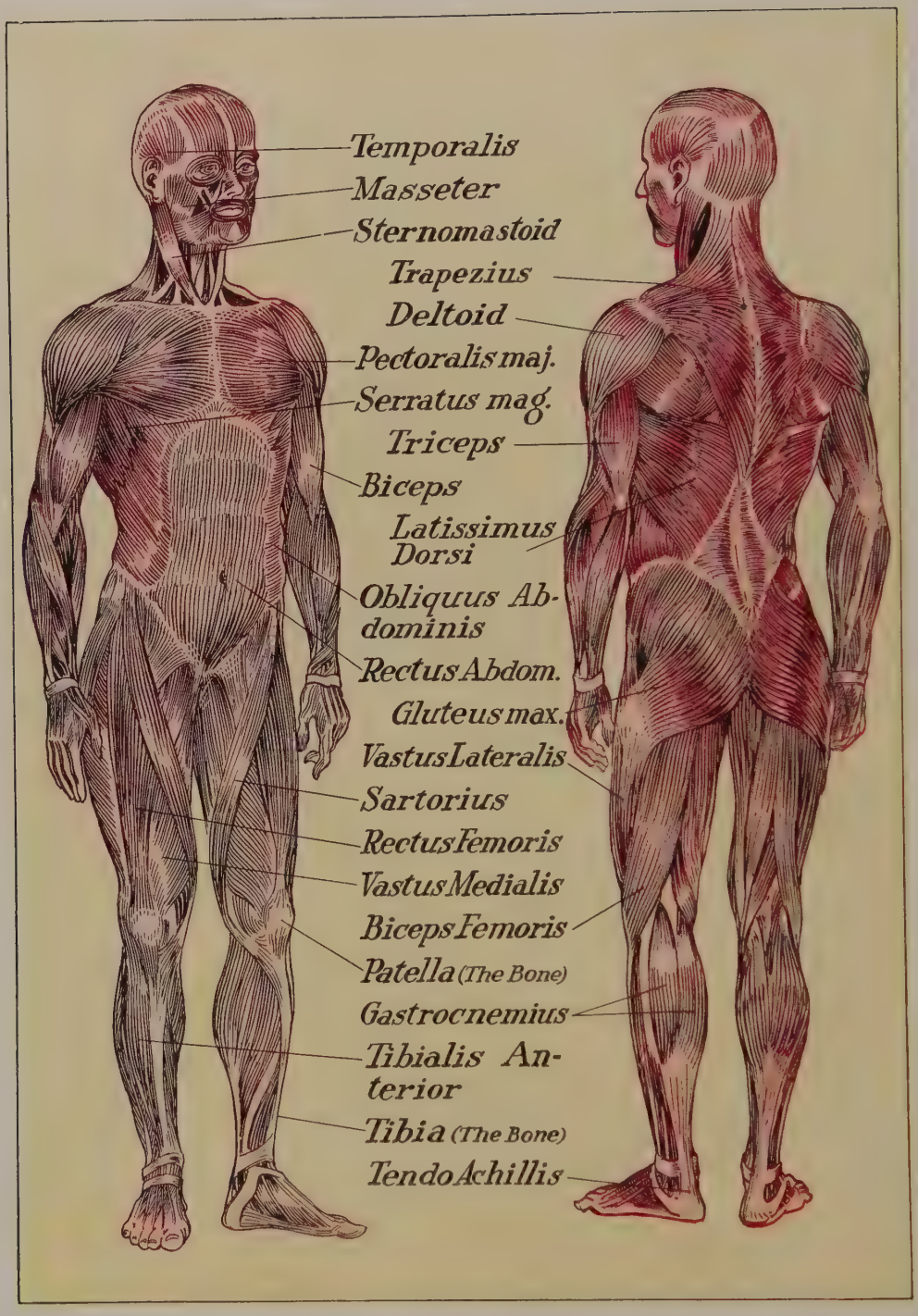
GAYNE T. K. NORTON.

BEATRICE R. COFFLAND.


Two bright lit-tle eyes And a ques-tion-ing nose, A fluf-fy curled tail, An-in-quir-ing nose Then a
dart of gray col-or Through tree-tops that sway And lit-tle gray squir-rel has scamp-ered a-way!

PHYSIOLOGY

PLAN OF THE HUMAN BODY
DIVISIONS OF SKELETON
MUSCLES
CAVITIES AND ORGANS
FOUR FUNDAMENTAL FUNCTIONS
SENSORY APPARATUS
MOTOR APPARATUS
NUTRITIVE APPARATUS
REPRODUCTIVE APPARATUS
PHYSIOLOGY OF MUSCLE AND NERVE
CENTRAL NERVOUS SYSTEM
SENSES
CIRCULATORY SYSTEM
RESPIRATION
INTESTINES
FOODS
HEREDITY
ENVIRONMENT
HYGIENE
COMMUNICABLE DISEASES
INFANT HYGIENE
DICTIONARY OF MEDICAL TERMS

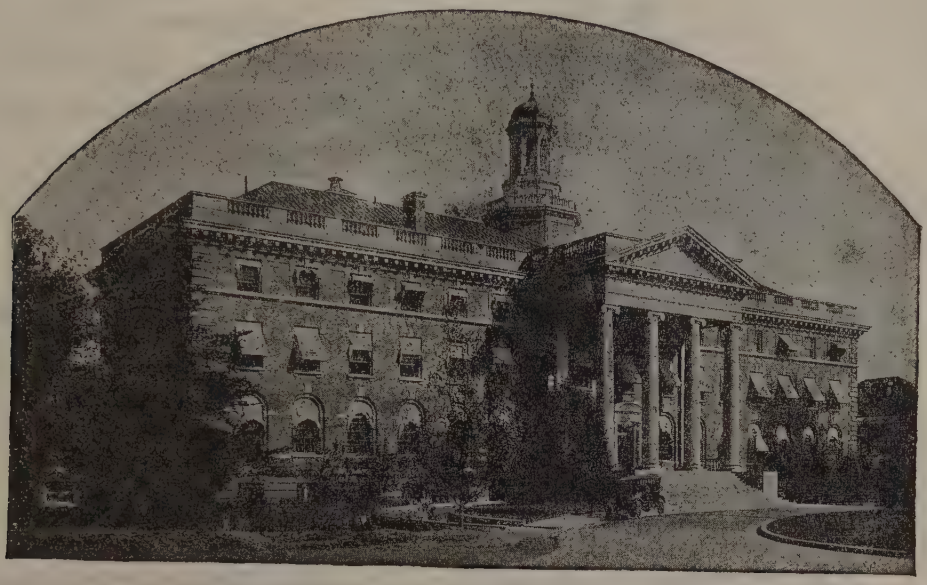


Drawn by Selden Irwin

THE MUSCULAR SYSTEM

BOOK VIII.

PHYSIOLOGY.



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WALTER REED MEMORIAL HOSPITAL.
WASHINGTON, D. C.

PLAN OF THE HUMAN BODY. SKELETON AND DIVISIONS. CAVITIES, WALLS AND CONTENTS. FUNCTIONS OF THE HUMAN BODY. PHYSIOLOGY OF MUSCLE AND NERVE. CENTRAL NERVOUS SYSTEM. SPECIAL SENSES. BLOOD AND LYMPH. CIRCULATION OF THE BLOOD. RESPIRATION. PHYSIOLOGY OF DIGESTION AND SECRETION. INTESTINES. DEFECATION. FOODS AND THEIR DIGESTION. FERMENTS AND ENZYMES. LIVER. KIDNEY. ORGANS OF REPRODUCTION. HEAT AND ITS REGULATIONS. HEREDITY. ENVIRONMENT. HYGIENE. TABLE INSPECTION. TONSILS. TEETH. HEARING. COMMUNICABLE DISEASES. WEANING. INFANT HYGIENE. MEDICAL TERMS.

A study of the Human Body, its material, its parts, the way these parts fit together, is called Anatomy.

A study of the use of each part, the work it does, the function it performs, the coming together of all these operations to make up the one complex series of well-timed, closely connected activities that we call the life of an organism, is called Physiology.

A study of the right use, the proper activities, and right care during and after these activities; of the well-being of each and every part and of their individual and collective functions; a study of how to keep well, a study of the health of the body and its life—this is called Hygiene; any of these statements is a sufficient definition.

PLAN OF THE HUMAN BODY.

The plan of our body is that of the mammalian vertebrate. That is the fundamental structure of the body is the backbone (inside-skeleton) or Endoskeleton. This backbone is not, as the name suggests, one bone, but a series of them numbering twenty-four, each called a vertebra. These are piled together in a column so that a central opening in each fits to the preceding and to the following, making a canal through which passes the great nerve cord called the spinal cord. From this the column is also called the spinal column. We have, then, as names for the foundation structure: *backbone, spinal column,* or *vertebral column.* Animals whose bodies have this as a feature are called vertebrates.

The conception includes the idea that the backbone is so placed that the body has a forward, or up-end, that develops a head; a hind, or down, or tail end. In carrying on life activities this results in using the body so that there is a front and a back, a right and a left side.

The back bone is so planned that it constitutes

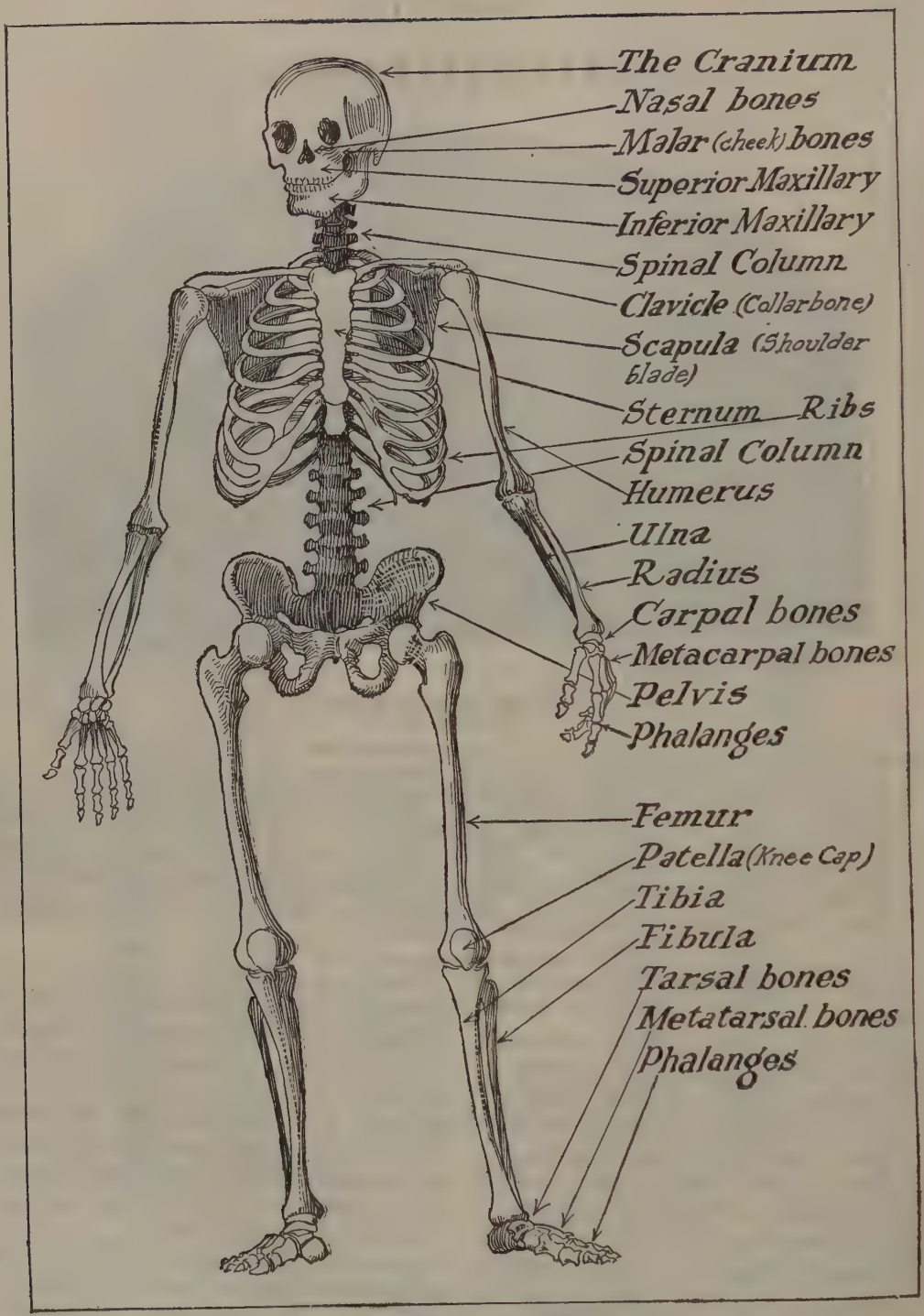


Fig. II The Skeleton.

the basis for two cavities extending the length of the body—one on the backside called the *Dorsal Cavity;* or, since it holds the central nervous system (the brain and the spinal cord), it is also called the *Neural Cavity;* one on the front side is called the *Ventral Cavity* or, since it holds the groups of organs called the Viscera (heart, lungs, stomach, intestines, etc.) it is also called the *visceral cavity.*

This axis also provides for two girdles—one near the front and one at the hind end. From these extend limbs which in some forms are used in water as oars and called *fins;* in others for walking or running, or crawling on land, and are called *legs.* The front pair of limbs, in some forms, are used in such a way that they become wings, or arms and hands. These extensions or limbs may be entirely lost by using ways of movement that make them unnecessary as in the case of snakes. But here we usually find vestiges of girdles just as in the case of tailless vertebrates, where we find structures that point to a tail useful in former generations. These features all belong to the vertebrate and they all grow from a bony foundation, called the skeleton.

The bones of the skeleton are covered by muscles which move them. They are also covered by a network of blood vessels, intermingled with a network of nerves, an enmeshing connective sheet binding all together, all covered by a skin. We call it the *Endoskeleton,* i.e., the *Inner Skeleton.*

There are five well-developed classes of vertebrates. Among them is the *human body* which is built on the *Mammalian plan.* This means that the animal is a vertebrate, with (1) an Endoskeleton as described; (2) a skin that covers and protects, forms and carries an outer-skeleton or exoskeleton of slime and scales, as fish; or of dry scales as snakes; (3) or as illustrated in the case of scales on lizards, alligators and turtles where the scales may become large, strong, bony plates, often with great horns; (4) or of feathers, as in the case of birds; (5) or hair, as in the case of fur-bearing animals, cattle, sheep, cats, dogs and man.

Also the young are shed from the body of the mother not as eggs, but developed so far that they look so like the father and mother, that love, parental care and home in larger and better ways are brought about and so make provision for a soul development that does not show itself in such ways among lower animals. Their young are fed on milk from glands called mammae developed on the mother's body. The name mammal comes from the name of these glands.

I. The Axial Part of the Endoskeleton.
   1. Skull.
   2. Spinal column.
      a. Cervical vertebrae.
      b. Dorsal vertebrae.
      c. Lumbar vertebrae.
   3. Sacrum—5 modified and fused vertebrae.
   4. Coccyx—4 vestigial vertebrae.

II. The Appendicular Part of the Endoskeleton.

III. The Supporting Structures—the Inner Skeleton or Endoskeleton.

The ideas of support, meaning the holding in position of the parts of the structure for sustaining weight or shock; and of protection, cannot well be separated in considering the Endoskeleton, usually called merely "skeleton." And we cannot overlook the part it plays in the function of motion, as will be seen in the discussion of that topic. For convenience we study the structural features of the entire Endoskeleton, as the supporting framework of the body. Glancing at the outline, it will be seen that we will have to consider, first, the axial skeleton, second, the appendicular skeleton.

Axial Skeleton.

In the Human, the framework of the head, i.e. the skull, rests on top of the backbone. This skull consists of eight bones which are drawn and named in figure (III). The joints by which the eight bones are held together to make the cavity for holding the brains, are called *sutures.* These are *immovable joints.* The figure shows the dove-tailing by which they are tightly held together, making a light but strong-walled box, which is completely filled by the brain and has openings only for the passing of nerves (chief of which is the great nerve called the spinal cord), and of blood vessels.

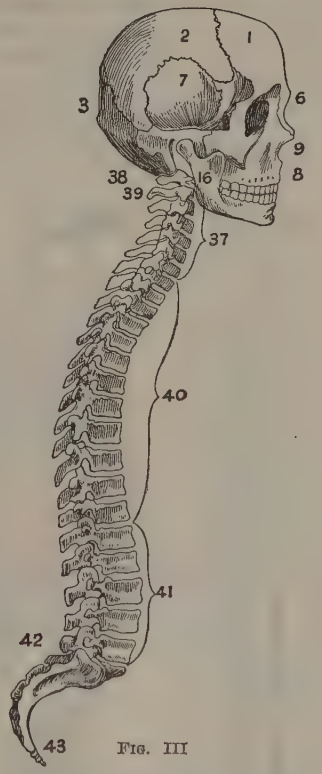


FIG. III

1, frontal bone; *2,* parietal; *3,* occipital; *6,* orbital cavity; *7,* temporal bone; *8,* maxillary; *9,* malar; *16,* mandible; *37,* cervical or neck vertebræ; *40,* dorsal or thoracic vertebræ; *41,* lumbar vertebræ; *42,* sacrum; *43,* coccyx; *38* and *39,* spines of axis and atlas.

Under and in front of the skull, are *fourteen face bones.* The larger and more conspicuous from their positions are shown in figure (II). Three small bones in each ear, i.e. six bones, might also be counted among the bones of the head. They are named from their shape, *Hammer, Anvil* and *Stirrup.* All these belong with the *Appendicular* skeleton.

Coming to the rest of the backbone (Spinal column, or vertebral column) we have to consider the Vertebrae or segments of the backbone. These are twenty-four separate bones, varying in shape according to the needs of their position. The figure shows them grouped as they occur in the body and as listed in the outline. The figure shows a typical vertebra and makes plain how when twenty-four are piled in a column they give, with the skull, the cavity for the Brain and Spinal Cord, as shown in figure (3). The joints are classified as *slightly movable.* This column of Vertebrae rests on the bone called the *Sacrum.* This bone really consists of five large vertebrae grown together. Following these are five much reduced vertebrae, no longer needed, called the *Coccyx,* the remnant indicating a tail once usable in our progenitors. All this constitutes the part of the Endoskeleton called the axial skeleton.

II. The Appendicular Part of the Endoskeleton.

Appended to various parts of this axis (axial skeleton) are bones that taken together make up the Appendicular Skeleton.

Beginning with the head we have already fourteen face bones as named in the outline and referred to in study of the head. Many are shown in figures (2) and (3).

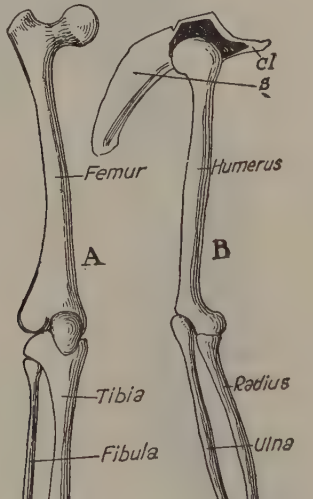


FIG. IV

The *Hyoid bone* on which the tongue rests has no skeleton connection. The twenty-four ribs and the Sternum, or Breast bone, and the part they play in forming the thorax or chest cavity with the axis can be very well understood from the study of figure (V) of the Endoskeleton.

The most conspicuous features of the Appendicular part of the Endoskeleton are the parts making up and suspended from the two girdles. These two can best be studied by using the outline and referring to the cut of Endoskeleton and then handling these parts of your own body.

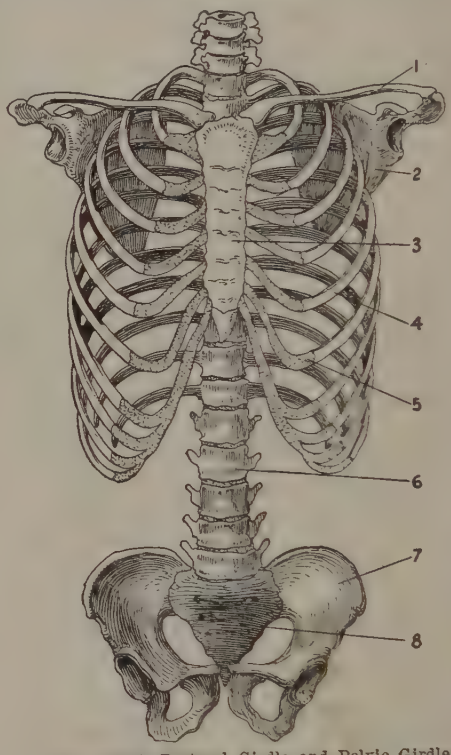


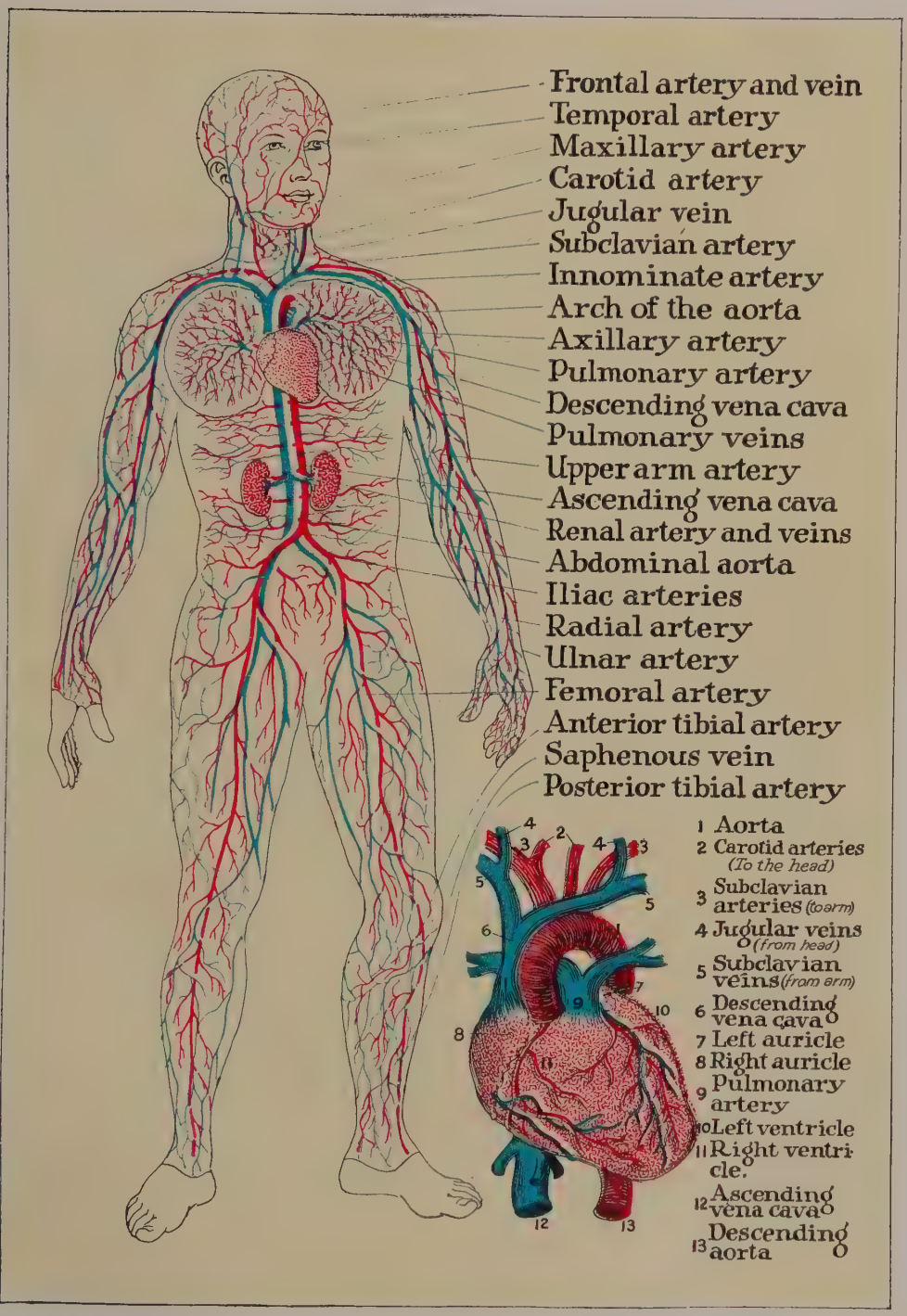
FIG. V Chest, Pectoral Girdle and Pelvic Girdle. *1,* Clavicle; *2,* Scapula; *3,* Sternum; *4,* Ribs; *5,* Costal Cartilage; *6,* Vertebral Column; *7,* Osinnominatum; *8,* Sacrum.

III. The Supporting Structures.

In the study of the *protecting structures,* we have to consider the outer skeleton, or the *exoskeleton.*

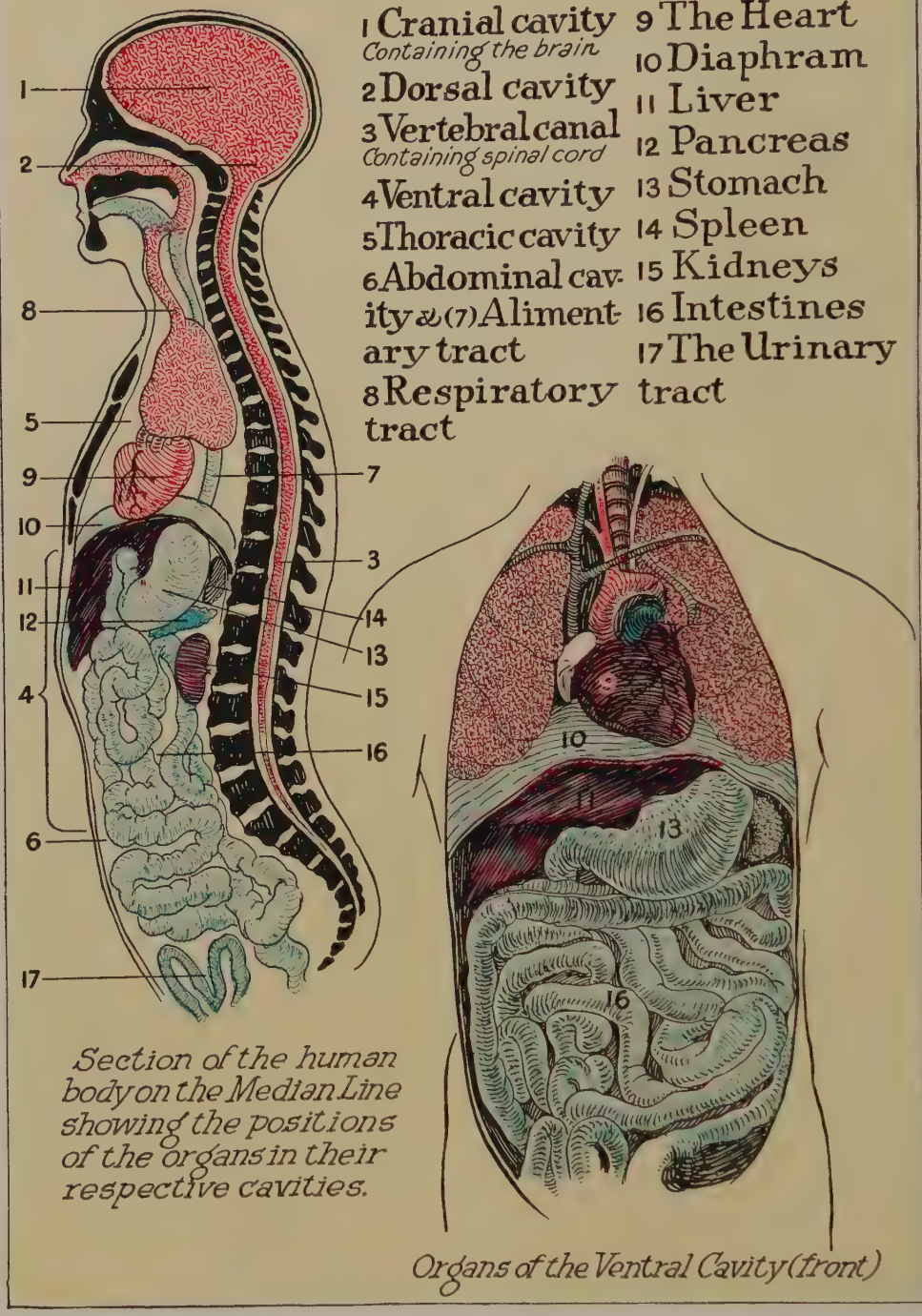
The parts we are concerned with as the outer skeleton is chiefly the layer called the *epidermis* and of this only the *cuticle,* the hair and nails which are outgrowths of the live part of the epidermis. The thickness of the whole sheet not the protective skeletal part only, varies from one-eighth inch to one-hundredth inch in different parts of the body. The area it covers in an adult varies from twelve to twenty square feet.

As an outer skeleton (exoskeleton) it serves like the inner skeleton (endoskeleton), as a support. It does this (1) through layers, forming holdings for nerve end-organs of touch, blood vessels and sweat glands, which together regulate the temperature of the body and perform an important excretory function by eliminatin



Drawn by Selden Irwin

THE CIRCULATORY SYSTEM



Drawn by Selden Irwin

THE ORGANS OF THE HUMAN BODY

poisonous matter in solution that we call sweat; (2) it also serves as a protection as does the inner skeleton.

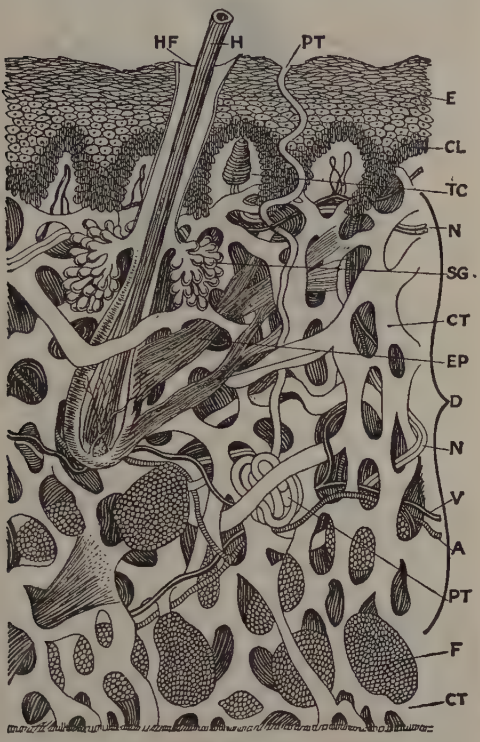


FIG. VI

Longitudinal section of skin (partly diagrammatic), magnified about 100 diameters. Its structure and contents (with the exception of the lymphatics).—E, epidermis; D, dermis; CL, color layer; TC, tactile corpuscle; N, nerve; V, vein; A, artery; CT, connective tissue; F, adipose tissue; HF, hair follicle; PT, perspiratory tube and gland; SG, sebaceous gland; EP, erector pilate muscle; H, a hair.

Among the ways of functioning in this manner are (1) *covering*—for this purpose it is elastic, strong, light, and beautiful. (2) It prevents *evaporation* of the body fluids. (3) It prevents the *entrance of dangerous* and *foreign* matter, as dust and bacteria. (4) It prevents too rapid *access* and *loss* of heat. (5) It prevents or lessens injuries from *friction, bruises,* and *cuts.* (6) It covers the space provided by the inner layer for the very extended *distribution of nerve-ends* and so makes possible the various experiences of sensation, touch, taste, smell, hearing, seeing, and by this means regulates the intensity of the function.

It also gives protection as an *aggressive agent* —having parts developed for positive offense as well as parts that protect by their negative defensive ways. For this we have the nails and the teeth. The teeth are outgrowths of that part of the skin which lines the mouth. This is called *mucous membrane,* and is really an extension of the skin inward to line the inner cavities of the body reached by air. With us the teeth are no longer needed primarily as protective mechanisms but some features of their structure show that they were used for such purposes. The nails are highly modified for uses quite different from those of the claws and talons of offensive, preying animals.

Cavities, Walls and Contents.

The foundations for the great cavities of the body, as can be seen in the figure of the Endoskeleton, are provided by these parts of the axial and appendicular skeleton. The best way to study them is by using the outline and figures together, but further study of these and their contents will be made under other headings already referred to under the study of the plan of the Human Body. Here we study them with the definite aim of getting clear notions of *walls, contents, size,* and *relations.*

The illustration shows the dorsal cavity running the length of the body, consisting of the two parts, (1) the skull or *cranial cavity,* holding the brain; (2) the walls consisting of the bones of the skull, resting upon the backbone. The cavity is continued through the backbone as the spinal canal, holding the spinal cord, which is but an extension of the brain into the backbone.

In front of this and extending parallel with it, is the *ventral* or *visceral cavity,* consisting of irregular cavities, varying much in size and shape, holding organs that, taken together, are called *viscera;* it consists of the subdivisions:

I. *Nose cavity* or nasal chamber;
II. Mouth or oral chamber;
III. Throat or Pharynx;
IV. Thorax or Chest;
V. Abdomen or Belly;
VI. Pelvic cavity.

(1) The *nose cavity* extends into the upper part of the throat called the nose-throat; the *mouth,* leading into the middle part of the throat is called the mouth-throat. These two parts of the throat are called the voice-throat. The three parts, nose-throat, mouth-throat, and voice-throat together make a continuous cavity, somewhat funnel-shaped, though quite irregular, and are called the throat or *pharynx.*

(1) The walls of the nose cavity, which is a double, rather pear-shaped cavity, are fleshy at the front part, the entrance divided by a partition to make the two nostrils—called the *anterior nares;*—but, at the base, the walls of the chamber proper are bony. All the way they are covered with mucous membrane.

The partition, called the *Septum,* is cartilaginous in front, but bony further back. The back openings into the upper or nose-throat we call *posterior nares.*

The front part of the chamber is called the respiratory portion. The lining of the outer portion of this bears hairs which help strain out of the entering air the coarse dust particles. In the bony-walled portion, the mucous membrane lining bears ciliated *epithelium* which with secretion from the gland cells of the mucous membrane helps to remove fine dust and other foreign materials.

The wall surface of the nasal chamber is much increased by curved shelves of bone plates projecting into the cavity from the wall. This increases the air-warming capacity of the nasal chamber by furnishing room for more abundant distribution of blood capillaries and thereby in-

creases the amount of warm blood at the surface; as well as increasing the air-cleansing capacity, by enlarging the surface of ciliated Epithelium.

Besides these two important functions the mucous membrane lining is supplied with a network of nerve fibers and nerve-ends that make up the receptive end of the machinery for the sense of smell. The nerve net work gives the mucous membrane a characteristic appearance and we call it the Schneiderian membrane.

(2) Turning again to the cut just studied for the nasal cavity, we take up next the study of the mouth cavity. With a mirror, see all you can, and with a clean finger-tip feel all you can, of your own mouth. The floor of the nasal chamber makes a part of the roof of the mouth; like the nasal chamber, it opens backward into the throat—the part known as the mouth-throat.

It is a cavity nearly oval-shaped, closed by the lips in front; when closed the floor and roof are usually in contact, and the sides come up to the tooth-arches. The space in front of the teeth is the vestibule, and behind these the mouth cavity proper.

In the cavity, *mouth-digestion*, consisting of *mastication* and *insalivation*, takes place. Here too, the tasting of the food is experienced, and absorption of what is digested and the swallowing process, *deglutition* begins. Get the relations by studying the outlines.

The enclosing walls in front and at the sides are the lips and cheeks, while the floor holds the tongue and its supporting bone, the hyoid. These walls consist of *glandular*, *muscular*, and *connective* tissues. The skin flaring upward and outward forms the neck.

The cavity holds within its space and by its walls the jaws, upper and lower, bearing the teeth, sixteen in each in the second set (preceding this was a first set consisting of ten in each jaw); also the tongue, free in front and supported behind by the hyoid bone; within the mouth walls are the salivary glands which bring their secretions to the mouth cavity by ducts; there are three pairs of them, the *parotid*, *submaxillary* and *sublingual;* within the mucous membrane lining are many mucous glands. On the surface of the tongue are the taste organs.

The whole mucous lining is pink in color, showing the great abundance of capillary blood-vessels. Then there are lymph vessels and lymph glands. The walls hold muscles for various movements and blood and nerve supply for the chemical and mechanical activities.

The joints for the teeth as well as for the parts of the upper jaw are of the immovable sort; while that for the lower jaw is a perfect hinge-joint.

(3) The two cavities just studied open into the next cavity backward and downward. This is the throat or pharynx—see fig. (7). It consists of the well-defined parts referred to as the nose-throat, the mouth-throat, and below these the larynx-throat. The whole cavity is somewhat funnel-shaped; about four and one-half inches long and wider than thick. Its walls are muscular and membranous. *Seven* openings communicate with it—the *two posterior nares*, the *two Eustachian tubes*, the *mouth*, the *larynx* and the *œsophagus*.

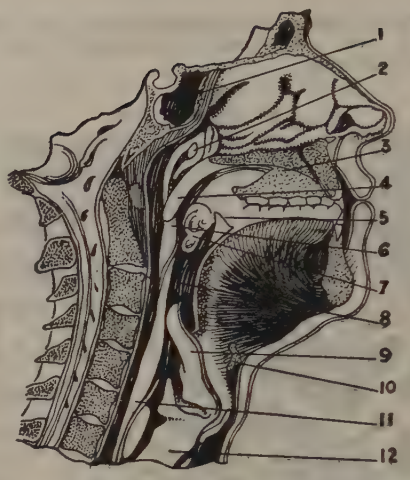


FIG. VII

A vertical section through the middle of the face, neck, and upper vertebrae.—*1*, Cavity in the skull; *2*, opening of left Eustachian tube; *3*, the hard palate; *4*, the soft palate; *5*, muscular wall in front of tonsil; *6*, muscular wall behind the tonsil; *7*, the left tonsil; *8*, pharynx, or throat; *9*, the epiglottis; *10*, the hyoid bone; *11*, œsophagus; *12*, the cavity of larynx.

In the side walls of the mouth-pharynx are the tonsils. These are rounded in form, about half an inch long, and about a third of an inch wide and thick, well imbedded in the walls and show the openings of twelve or fifteen crypts.

The whole cavity is lined with mucous membrane which varies in the thickness of its epithelial covering. In the nasal portion, the epithelial cells are ciliated, to help in the cleansing of the air on its way to the larynx and lungs.

The front walls of the larynx-throat are made up of the backwalls of the larynx and its epiglottis. Embedded within the walls are muscles to help in the swallowing process, i.e., deglutition.

The esophagus or gullet is the tube connecting the pharynx with the stomach. In front of the upper part lies the larynx, the base of the tongue with its hyoid bone; the *trachea* and esophagus and some large bloodvessels, the *thyroid gland* and large neck muscles—all in front of the cervical vertebrae of the backbone and surrounded by skin, together they make up the neck.

(4.) The base of the neck rests upon the top of the next large cavity that we call the *thoracic* or *chest cavity*. This, the fourth chamber of the series that makes up the great ventral cavity, is somewhat conical in shape and has for its foundation walls the thoracic vertebrae of the backbone and the ribs extending in ring-like fashion forward and slightly downward, meeting in front at the breast-bone or sternum, excepting the two vestigial pairs at the base that we call the floating ribs. These endoskeletal features give the chest a basket-like appearance, with the wide part down. The open spaces between any two adjacent ribs are filled in with muscles that help in the breathing process by increasing and decreasing the size of the cavity. All this is well covered by thick, finely developed skin, holding (1) sparsely-set hairs, coarse in parts, and (2) the mammary glands.

The floor of the cavity consists of muscles and their central fastening to the central tendon, all of which is called the *diaphragm.* From the outer edges of this, which are fastened to the ribs and spinal column, there is a decided curving upward, giving the floor of the chest quite a convex surface.

The upper end, gives the opening into the neck, allowing passage for the tubes and vessels mentioned in connection with the study of the throat, is quite constricted, as the figure shows.

The squarish contour of the chest, in spite of the features just described, is brought about by the arrangement and attachment of the shoulder girdle, as the figure shows.

So many controllable and uncontrollable irregularities occur from habits through ignorance of structural conditions at this spot that it is important to get clear ideas of arrangements here, and conform habits to such knowledge.

The lining of the cavity consists of *serous membrane* whose inner layer is an *epithelium,* called here *endothelium.* This makes the cavity moist, perfectly smooth, and air-tight.

Within the cavity are lungs, the greater length of the trachea and trunks of the bronchi. Between the lungs are set the heart and the large blood-vessels connected with it. There are special sacs encasing the lungs, called the *pleurae.* Another encasing the heart, called the *pericardium.* These are reflections of the membrane lining the walls of the cavity. The surfaces moving upon each other, because of expansion and contraction of the chest cavity, inflation and deflation of the lungs in the respiratory process, the beating of the heart in providing for the circulation of the blood, are protected against the wear, heat and pain of friction by the smoothness of these surfaces which protection is enhanced by the secretions abundantly made by the cell-glands within the membrane.

(5) Below the chest cavity is the *abdomen* or belly. This is nearly cylindrical in shape, has mainly fleshy walls held up by connection with the backbone, and the lower edges of the bony framework of the chest, the bottom edges resting on the upper rim of the pelvic cavity made by the strong, heavy bone structure of the pelvic girdle.

The skin covering the muscle and connective tissue is thick, strong, smooth, beset with fine hair generally, but with heavy and coarse hair along the mid-line well down near the base.

The cavity contains the *liver, pancreas, spleen;* the *stomach, intestines*—large and small; against the rear wall on either side of the backbone, are the *kidneys,* and the *adrenal glands* and their ducts; large blood-vessels, *lymphatic vessels* and *glands*; large nerve cords and ganglia and net-like sheets. The lining is a membrane covered with endothelium and called peritoneum, sending reflections into the cavity to enwrap organs moving on and over one another and against the walls; various forms of connective tissue; muscles and skin covering all, with distribution over some areas of fine hairs and over others, of course, heavy hairs.

The floor of the cavity consists of the widely flaring surfaces of the pelvic, the *innominate* or *hip bones* of the pelvic girdle. The central portion of this floor is the large opening into the next and last of the series of cavities and designated as the pelvic cavity.

(6) The cavity mentioned is the *pelvic basin.* The walls all around are bony—the rounded, irregular surfaces of the hip bone at the side; the curve of the group of fused vertebrae that we call the *sacrum,* curving sharply backward, tipped by the downward curving of the vestigial vertebrae making up the *coccyx.*

The cavity holds some loops of the small intestine, the *sigmoid flexure* of the *colon;* the end of the large intestine, called the *rectum;* the bladder and its ducts; the internal reproductive organs, their tubes and ducts, the ligaments, muscles and nerves. The series of cavities and their walls, from the throat downward, are frequently spoken of as the *trunk of the body.*

FUNCTIONS OF THE HUMAN BODY.

Now, turn your thought chiefly upon the fact that this is a living machine; that these structures have developed, are developing now, mainly by the use to which they are put, the functions they perform; that the combination of structures that make up the body as a whole is a result of nicely *coordinated, exactly timed* and *accurately* proportioned activities that taken together constitute *the life of an individual.* Looking over these activities, we find them amazingly numerous, complex, and often conflicting. And we see them as responses to stimuli coming out of the environment of the individual.

We also find *action* an absolute essential to life. We do not think of life without some kind of action. The larger, the greater, and richer the life, the higher the degree and quality and complexity of action—*doing.* In order to maintain life within a body, the body must continue to do. Look, for a moment, how varied and complex the doing.

We touch an object in our surroundings, and we feel. If the feeling is pleasant, we enjoy, i.e., are pleased with it and ourselves, and indulge in more of it. If the feeling is unpleasant, we are unhappy about it—want less or none of it and act to avoid it. In either case the result is motion within the body substance, and of the entire body, i.e., *locomotion.* This, of itself, may give its own pleasure or pain and bring pleasure or pain by the new contacts from change of position.

Whether pleasure or pain, the result is using up of energy and wearing out of body substance. This implies chemical and mechanical activity, reduction of energy, the formation of waste-matter. This makes necessary the formation of new body matter, living material, and of matter that is non-living and wholly different from body matter. It also means the replenishing of the stock of energy. This, too, brings its pleasure and pain and its motion, increasing the complexities by the interminglings. It means the removal of the waste matters, the replacement of this worn-out material by new, the constant alternation of accumulation and reduction of the stock of energy and so becoming unbalanced. The satisfaction in the whole series of activities may result in such extensive indulgence that there is accumulation of body matter and of energy. This is *growth.* For

probably all forms of life there is a definite limit to this in an individual.

But growth may be transferred to a new individual. *This is reproduction*—replacement of an old, passing generation of individuals by a new, coming one. This results in amazingly complex activities and wonderfully interesting life histories, relationships, and *springs of action.*

We may conveniently group these *actions* into four great groups of activities, naming these the *four fundamental vital functions.*

I. The Function of Sensation and its Apparatus—the *Sensory Apparatus.*
II. The Function of Motion—the *Motor Apparatus.*
III. The Function of Nutrition—the *Nutritive Apparatus.*
IV. The Function of Reproduction and its Apparatus—the *Reproductive Apparatus.*

Considering first the *FUNCTION OF SENSATION*, we may lay a good foundation for further study, by making a study of the body parts and their actions concerned in the simplest and most direct of the sensations—*touch.* When this is clear in mind, consider that from this fundamental process evolve the more complex senses like taste, smell, hearing and sight—all essentially touches, but the touching agents more subtle and demanding modifications of the former structure in adjustment to the more delicate touching, so that the essential similarity is lost sight of until careful thinking is done. The figure and its explanation in the legend should make clear the elements involved. The various parts of the drawing are not made to the same scale. The brain is drawn as though it were transparent. The whole drawing is purely schematic.

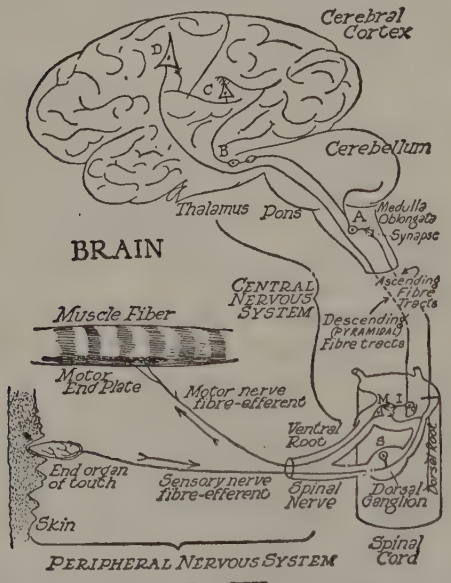


FIG. VIII

The end-organ of touch, in the skin, contains the endings of the dendrite from the sensory nerve cell *S*: stimuli from the skin are transmitted to the spinal cord along the fibre; they may go there directly or by way of the intermediate nerve cell **I**, to the motor nerve cell **M**, which sends nervous impulses down its axone, the motor or efferent fibre, to the muscle fibre, causing it to contract. This is *reflex contraction.* Nervous impulses from the sensory nerve cell may also be transmitted up the spinal cord to the nerve cells in the brain (**A, B, C,**) and may give rise to sensation.

Many connections exist in the brain (associative tracts), and as a result of the sensory stimulation the motor cells (pyramidal cells), **D,** of the motor cortex may be excited and send impulses down the cord thru the pyramidal fibre tracts, eventually reaching (through the intermediate nerve cell I) the motor cell of the spinal cord, producing a voluntary contraction of the muscle. Or, as a result of other connections and other stimuli, the motor nerve cells may receive nervous impulses which prevent its activity. This is called *inhibition.* Of the numerous possible courses those which are taken by the nervous impulses are determined by process of training and memory.

The illustration of the next of the Fundamental Vital Functions—*MOTION AND ITS APPARATUS*—shows the starting in quite a similar way and its expression so different that the outworking results in quite a different set of body parts.

Returning to the cut (FIG. VIII) a set of structures shows the machinery which we call motor end plates and the nerve connections translate a thought, a wish, a willing into motion, action or doing; also part of the machinery of reflex action. A bundle of fibres so constructed, placed and operated, and combined with many others like it makes a muscle. These muscles are fastened by connective tissue of various kinds to each other, and to the bones, and there, passing over their joints in the Endoskeleton, are the source of all the movements we make.

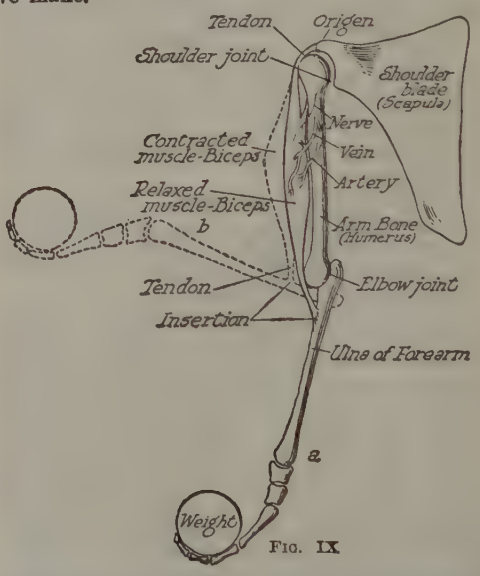


FIG. IX

The picture shows the biceps muscle and its related parts and is used to illustrate the action explained in the text.

TABLE I

FUNCTION OF SENSATION Consisting of PROCESSES	accomplished by	SENSORIAL APPARATUS Consisting of SYSTEMS
A. Reception	accomplished by	End Organs Touch— tactile corpuscles { bulbs of Krause; Pacinian corpuscles Taste— taste buds Smell— olfactory corpuscle Hearing— organ of Corti Sight— rods, cones } of retina
B. Conduction	accomplished by	Nerves..... { Process of Cells { Medullated / Non-Medullated; Fibers; Axis Cylinders; Medullary Sheath; Neurilemma. Ganglia—Cells and their processes. Synapses.
C. Central Reception and Interpretation	accomplished by	Nerve-Cells { Gray Matter; Ganglia
D. Elaboration	accomplished by	3. Central or Cerebro-Spinal { Brain..... { Cerebrum, Crebellum, Medulla } White & Gray Cortex and Fibers; Convolutions and Fissures; Hemispheres and Lobes Protection—Cranium; Membranes; Ventricles and Fluids. Cranial Nerves (12 pairs) and Ganglia. Spinal Cord... { White and Gray Matter; 31 pairs Spinal Nerves and Ganglia. Protections { Membranes, Spinal Canal, Cavities and Fluids.

TABLE II

FUNCTION OF MOTION* which is accomplished by the Consisting of a series of PROCESSES: These are*	accomplished by	MOTOR APPARATUS SYSTEMS: These are*
1. Nerve-end stimulation	accomplished by	Nerve end platelets.
2. Muscle contraction	accomplished by	Muscle fibres. Made up of muscle cells and their products, wrapped in sheath called sarcolemma, grouped into bunches called fibres; bunches of these are wrapped in membranes making fascicles; bunches of these are grouped, covered by fasciae, making a muscle; the body of the muscle substance makes the muscle belly, while the extended and united ends of the wrappings make tendon for muscle origin and insertion.
3. Moving a load, work.		Muscle is fastened over joints in the bones of the endo-skeleton. Freely movable joints, as hinge-joints like the elbow; ball-and-socket-joints as the shoulder Slightly movable, as the joints of the back-bone. By contraction and so shortening the distance between points of attachment the bones are moved because of the pull of contraction across the joint. By wonderful adaptation of these structural elements the amazing variations in movements and the superb skills as in playing musical instruments, ball-playing, dancing and the like are brought about.
4. Weariness, wear, repair	accomplished by	Lymph spaces. Lymph capillaries. Blood capillaries. The sense of weariness and exhaustion comes about largely through the mechanical and chemical breakdown of the muscle substance and its accumulation and change producing poisoning effects upon the muscle stuff. Removal through lymph spaces, lymph capillaries and blood capillaries and so getting the waste and poison into the blood stream and finally to the various excretory systems; at the same time the capillaries of the blood system bring a supply of nutritious stuff which is used in repair.

*After starred words read both *across page* and *down column*.

See the shape of the muscle in the cut; feel your own. Notice the origin and insertion, and the passing of the tendons over the joints. Return to the cut showing how nerve ends, tiny plates at the branching ends of the nerve fibre spread over various muscle fibres. Now, think of impulses coming to the muscle fibres, as there explained. Start them going in your own.

This causes the length of the muscle to decrease, that is, the muscle shortens. At the same time, since the amount of substance remains the same, thickness and width, must increase. Feel yours thicken and widen. The tendons do not stretch or contract, but the pull from the muscle is passed through them. The fore-arm's weight, plus the weight of the hand, plus the weight of the ball in the hand are raised from A to B.

In the same manner, by the same principle, all our most complicated movements are made.

The summary chart is not intended to give an exhibit of the large number of muscles in the human body (about 600), nor of the kinds, classified either as to size, shape, office or innervation.

A single illustration of one of the simpler types will serve for clearly thinking out the whole complicated machinery. This, of course, will be best done if one set of organs and their motions be taken up in the order given in the table, and immediately where possible studied from the parts of your body which in such study are caused to act for the sake of the study (see Table II, marked Funct. Mot.)

When you reflect that these actions are small, that the body parts doing them are microscopic in size, that every large act that we do is a total of many small acts and that every large body part performing these large activities, is made up of groups of many of these small parts, we are amazed at the smoothness and simplicity of the action. Then consider that every act, small or large, in taking place wears out the body parts performing it, and that this worn out part must be replaced by a new part; also that the worn out substance and the by-product of waste material—a chemical compound that is usually poisonous—whether gaseous, liquid or solid, must be removed in order that the newly made parts replacing the worn out and the waste, can properly function, you can readily understand the unity that is necessary to complete the smallest action and the amount of replacement that is always necessary.

This means supply of raw material, nonliving and of unfit structure and chemical makeup, and a whole series of complicated processes to make fit and to get into place. This constitutes the third of the Fundamental Vital Functions, the *FUNCTION OF NUTRITION*.

For illustration of the whole series of complicated processes we must limit our study to one of the simplest functions listed in the whole scheme.

The figure 10 shows a diagrammatic drawing of a small portion of a salivary gland, where one of the ingredients of saliva is made for use in mouth digestion. It shows a pocket of cells at the labelling alveolus, with a tube leading to the mouth, and surrounded by bloodvessels and lymph tubes, and entered by a nerve fibre. It is held in place by connective tissue of several kinds.

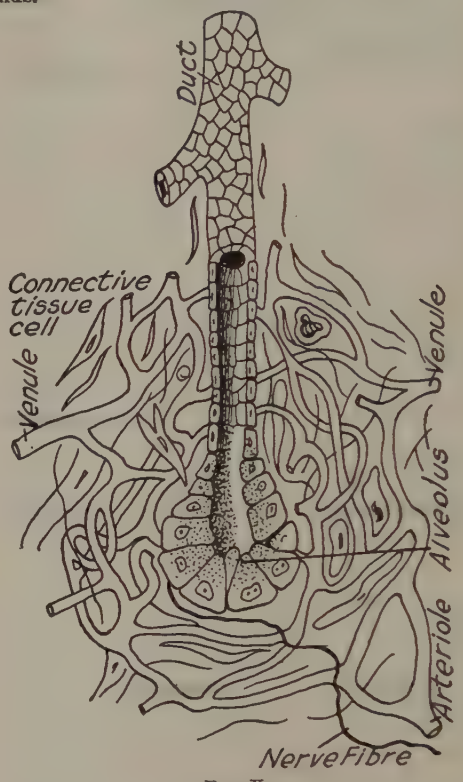


FIG. X

The cells making the walls of the alveolus can be seen holding granules. The material of these is derived from the blood and in the cytoplasm of the cells manufactured into saliva. This passes out through the tube and so gets to the mouth. Now, if you take an unflavored cracker, chew it well, and notice it becoming sweet, also disappearing without your swallowing, you may understand what we mean by digestion.

FIG. XI

TABLE III

I. FUNCTION OF NUTRITION* Consisting of a series of PROCESSES: These are*	accomplished by	NUTRITIVE APPARATUS Consisting of SYSTEMS: These are* made up of organs, which are constructed of tissues, and tissues are built up of cell and cell-products.
1. Mastication*		
A Mechanical Process	accomplished by	1. Masticatory System Consisting of *Organs*. 1. Mouth—a cavity whose walls consist of Tissues. 2. Teeth. 3. Jaw-Bones and Joints. 4. Muscles. 5. Blood Vessels. 6. Nerves. 7. Mucous Membrane. 8. Tongue.
2. Insalivation and Mouth Digestion (Chemical)	accomplished by	2. Insalivatory System Consisting of *Organs*. 1. 3 pairs of Salivary Glands. 2. Mucous Glands.
3. Sensation	accomplished by	3. Gustatory or Taste System Consisting of *Organs*. 1. Taste Buds. 2. Nerves. 3. Brain Center.
4. Absorption	accomplished by	4. Absorptive System Consisting of *Organs*. 1. Capillaries and larger 2. Blood Vessels. 3. Lymph Spaces and Vessels.
5. Deglutition or Swallowing	accomplished by	5. Deglutitory System Consisting of *Organs*. 1. Mouth, Tongue and Breathing System. 2. Palate {Hard / Soft} 3. Throat. 4. Gullet or Œsophagus. 5. Cardiac Sphincter.
6. Stomach Digestion and Chymification	accomplished by	6. A Digestive System a. Secretory {Mucous Glands / Gastric Glands} Chemical b. Conducting—Muscular Coat of Walls—Mechanical.
7. Absorption	accomplished by	7. Vascular...Blood Vessels in Walls.
8. Intestinal Digestion and Chylification	accomplished by	8. A Digestive System a. Secretory {Mucous Glands / Intestinal Glands / Liver / Pancreas} Chemical. b. Conducting (Peristalsis) {Muscular Coat of Walls} Mechanical
9. Absorption	accomplished by	9. Absorptive {Villi, Lacteals, / Capillaries.
10. Defæcation	accomplished by	10. Conducting (Peristalsis) {Muscles of Coat / Rectum / Anal Sphincter
11. Circulation	accomplished by	11. Circulatory {Heart, Arteries, / Capillaries, / Veins, Blood.
12. Respiration and Oxygenation	accomplished by	12. Respiratory {Nose and Mouth, / Throat, Larnyx, / Trachea, Bronchi, / Lungs, Bloodvessels, / and Blood.
13. Assimilation, Deoxidation and Dissimilation, creation of Energy Metabolism {Anabolism / Katabolism}		
14. Excretion	accomplished by	14. Excretory System {Kidneys, / Lungs, / Skin.
15. Lymphatic Circulation	accomplished by	15. Lymphatic System {Lacteals, Lymph Spaces, / Rec. Chyli, / Thoracic Duct, / Lymphatic Glands.

*After starred words read both *across page* and *down column*.

The fluid made by these cells is a chemical substance that changes the starch into sugar, that is why the cracker now tastes sweet, but in the mass of saliva it is dissolved and as a solution passes into the capillary bloodvessels lining the walls of your mouth just as you see in the figure, such bloodvessels making a network about the alveolus. They lie there so thick and are so full of red blood that the walls of your mouth are pink in color.

How does sugar get into the bloodvessels? How does saliva matter get out of the cells?

Look at the figure of the hen's egg set in a glass of water, after the shell has been picked open above and below without destroying the thin white sheet of membrane inside the shell.

There are no holes in the membrane, but notice that the membrane bulges outward; water has passed through the membrane, increasing the content. (See Fig. XI.) We call this *osmosis*, which means an exchange of heavier and lighter liquids through a membrane without rupture.

In the same way saliva stuff passes out of the cell, while other liquid stuff passes in, and in the blood-vessels of the mouth from the blood, through the walls of the vessels, without holes or rupture, liquid passes to the mouth; also the digested starch, now sugar solution, passes through the walls of the blood vessels into the blood stream.

The related processes that bring about the total result, nutrition, elimination of waste, assimilation, of the whole organism are approximately exhibited in the following table.

As previously said, an excess in the supply of manufactured material for replacing the worn out and the waste results in growth. Excessive growth is cared for by transfer to a new individual; this is the *FUNCTION OF REPRODUCTION AND ITS APPARATUS*, the fourth of the four Fundamental Vital Functions. The essential feature of reproduction is the coming together of two cells, each in itself incomplete, from two different individuals, one the male and the other the female. These are sperm cells and eggs and each incapable of coming to a new individual without the other. The poet's way of putting it is "useless each without the other."

Being formed in different bodies, the coming together of the two becomes an important problem; this is variously solved among the plants and animals, and goes a long way towards explaining the vast numbers of different kinds of bodies, also the varying behaviors and life histories.

In some, plants and animals, each sex produces its kind of cell and the individual gives itself no concern about the coming together of their products. Some female fish shed their eggs anywhere in the water and the male fish of the same species anywhere in the same water. The coming together of the two mating cells is a matter of chance.

In others, plants and animals, the female holds her cells in her body. The male of the same species becomes interested and is equipped with the desire and means to place his sperm cells where they can get to the eggs and so unite with them. It is easy to see that this is a source of immense variations in body, action and life history.

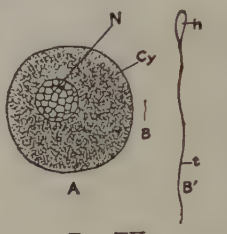


Fig. XII

A, ovum—a single incomplete cell from ovary of the female; B, sperm cell from the testis of the male; B, size proportionate to ovum; B', same enlarged; Cy, cytoplasm; N, nucleus; h, head; t, tail.

To become a new human individual these two cells must unite; the sperm enters the ovum and then very wonderful changes take place, and the two become one. This one is now an embryo, and destined to grow through many changes, recapitulating vast history and finally becomes a mixture of the characters of both parents, like the father in some respects, like the mother in others; never wholly like either. The characters of each are blended in ways that make each individual a new, unique character—nothing ever before like it, nothing ever again just like it.

Because of the need of coming together from different individuals, there are the differences in size and shape, also in power. The sperm is the smallest cell of the human body, the ovum the largest. The sperm is equipped with desire and an organ to go and find his mate. The organ is the tail. The ovum is loaded with food for the young that is to be—heavy and not provided with an organ of motion, but awaits the coming of her mate. There are vast numbers of sperm: there are relatively few ova.

PHYSIOLOGY—HYGIENE.

Anatomy has to do with the structure of the body or as it is known the organism.

Physiology has to do with the functions of the body or organism.

Hygiene refers to the understanding of both of these important studies so we can care for our bodies and understand them in order to increase their normal activities, at the same time preserving them and conserving their energies.

It is the duty of all intelligent persons over twelve years old to thoroughly recognize the necessity of being familiar with these three subjects. The first step then is to have an acquaintance with the physiology of the body, adequately understand the functions—(which is only another name for the mechanics or workings) of the organism so that any departure from what is natural or normal may be quickly recognized and corrected as well as keeping it fit when it is in good health.

PHYSIOLOGY OF MUSCLE AND NERVE.

The notable feature of muscle is the power of contraction. There are small cells in the body called Cilia that also possess this property but in the main it is muscles that have the power of contraction. The muscle tissues are divided into three divisions from a functional standpoint. It is to be understood in Physiology that when the term function is used it means the special action of that tissue or gland, in contradistinction to the word organic, which means the special structure of the individual organ or tissue.

The three groups of muscle are named *Striated Skeletal Muscle, Plain (Smooth) Muscle* and *Striated Heart Muscle.*

SKELETAL MUSCLE.

Skeletal Muscle produces the voluntary movements or those under control of the will. Each muscle is composed, of course, of many fibers. Each one of these fibers is held in a little bag or membrane and this is called the *Sarcolemma.*

Muscles possess the two qualities, *extensibility* and *elasticity.* They stretch from bone to bone and are always, so to speak, in an elastic state of stretching or tension. This is referred to as muscle tone. A muscle acts better to stimuli when it is in this elastic state of tension than when altogether relaxed. In the body muscles are placed in sets of *extensors* and *flexors* and they are antagonistic to each other. This delicate balance of elasticity and tone is not only beneficial here but also must be maintained in other kinds of muscle as for instance the heart muscle and the muscular coat of the arteries.

Muscles are made to contract by a stimulus sent down by the brain through what is called a motor nerve. If anything severs or interferes with this nerve the muscle is paralyzed and will not act. A muscle, however, has an independent irritability and will contract if an electric current is made to come in contact with it. If you push the stimuli to a muscle too rapidly it will come into a state called muscle fatigue and by and by will not act. In other words, a muscular structure requires a certain latent period or resting time to pick up its tone again. Before a muscle passes into a stage of fatigue, it will sometimes stay in a fluttering condition of constant contraction, this is called compound contraction or tetany. In death the muscles pass from a viscous to a solid state, this is called *Rigor Mortis.* All muscles do not develop it alike. It usually starts in the jaw and descends downward.

PLAIN MUSCLE (Smooth)

This is located in the walls of the organs like the stomach, in the arteries and veins, the digestive canal, in the genito urinary organs, the windpipe, and in the eye ball as well as the muscles of the hair. It is not under the control of the will generally speaking. They are regulated by reflexes or unconscious stimuli from the brain. The sensitiveness of this type of muscle is more sluggish in its reaction to stimuli. The heart muscle is classed in this type but it is more rapid in its actions and also possesses an individual quality of rythmic action not possessed in like degree by other members of this class.

NERVE FIBER.

The nerve fibers of the body are divided into two classes called *medullated* and *non-medullated.* The brain and the spinal cord, the cranial nerves, and the roots of the nerves along the spine are classed as *medullated.* All these structures have a core called an axis cylinder and surrounding this core is a sheath. This sheath is divided every so often. Around this sheath is a very delicate coat called the *Neurolemmal Sheath.* The other division of nerves do not have this medullary sheath. Nerves going to an organ are called *efferent.* Those leaving the organs and carrying impulse to the brain are called *afferent.*

Furthermore, nerves which carry motor impulses or stimulate to action, come out through the front or anterior roots in the spine while those bringing back sensations come through the back or posterior roots. Various agencies stimulate nerves.

(1) Chemicals,
(2) Mechanical means,
(3) Heat or cold,
(4) Electrical stimuli.

There are certain spots in the body where voluntary muscles can be especially well stimulated. They are called Motor Points and are where muscle receives its Motor Branch. The nature of the nerve impulse by which nerves contract or otherwise affect an organ is supposed to be in a form of matter akin to electricity or its associate form the electrons.

When a nerve trunk is killed or divided all that part of the nerve beyond the division dies or degenerates. If the nerve can be reunited it regenerates. The process of divided nerve is similar to the relation of central telephone office and your telephone, cut the wire and the usefulness of the telephone is immediately lost.

CENTRAL NERVOUS SYSTEM

All the processes of this system are related by a unit called the **neuron.** The neurons are supposed to communicate by contact only. These neurons resemble spiders with the branches representing the legs. As in the case of muscle cells and almost every other cell in the body, they must have their "resting" or relaxing period. When nerves are spoken of as having reflex action it means they are acting independently by carrying afferent (organ to brain) impulses to the brain. As for instance, the eye sees an insect coming toward it and the lids close before the individual has time to think it out. This is utilized in examinations as for instance when you are asked to cross one knee over the other, examiner taps knee cap, your knee jerks forward. The brain and the spinal cord are nothing but a big assemblage of nerve cells and nerve fibers. These are divided into grey matter and white matter. In general the gray matter originates the thoughts and nerve impulses. The white matter carries them along.

The cerebrum, divided into two halves or hemispheres, has various spots or areas that do certain things. Part of it is intellectual so to speak. Part of it controls the limbs, part of it the eyes and so on. If any one of these parts

are struck in such a way that they are killed or by being pressed on by blood or fluid or by degeneration through tumor or disease, they cease to function. This explains the phenomena of paralysis. For instance if the leg center is pressed then paralysis of the limbs occurs. These impulses pass down through the lower portions of the brain, that is, through the cerebellum, the pons, and the medulla-oblongata. These impulses, from the centers, rule over the heart, lungs, and control the temperature of the body. The *vaso motor* nerves are located in a locality known as the fourth ventricle at the base of the brain. As part of the nerve fibers cross in the medulla oblongata it explains why when you are hit on the left side of the cranium the right side becomes paralyzed. These nerve fibers are arranged in the form of bundles of wires and are called tracts.

Various diseases pick out different tracts as for example, *Infantile Paralysis* picks out the front, therefore is called *anterior Poliomyelitis*. *Locomotor Ataxia* picks out certain fibers relating to locomotion. A disease called *Multiple Sclerosis* selects spots here and there. *Parésis* affects the grey matter of the brain. *Aphasia* or loss of speech may come from degeneration in the motor nerves that stimulate action or the sensory nerves that convey impressions.

CRANIAL NERVES

There are twelve cranial nerves and these all have special functions. They arise as direct offshoots from the brain.

(1) Olfactory or nerve of smell.
(2) Optic or nerve of vision.
(3) Supplies motion to the eye.
(4) Supplies motion to the eye.
(5) Supplies teeth, nose, eyes, face and is the one chiefly concerned in facial neuralgia.
(6) Supplies motion to part of the eye.
(7) Supplies motion and receives sensations from the face.
(8) Nerve of hearing.
(9) Taste, sensation, motion.
(10) A very important nerve going to the lungs, heart and digestive organs. It is probably one of the most important nerves in the body and any interference with its function results in many of the serious ailments related to disease of these organs.
(11) Supplies motion to some muscles of the neck.
(12) Supplies motion to the larynx and the tongue.

Anything interfering with the function of any one of these nerves will cause pain or paralysis of their function. Degeneration of optic nerve causes blindness, of auditory nerve loss of hearing. Interference with the tenth induces heart disturbances. Paralysis of the twelfth brings on difficulty of speech and so on. *Syphilis* has a great tendency to affect these nerves, particularly those supplying motion to the eye.

There is another large mass of nerve fibers connecting many important structures and spread out like a web in and about the spinal nerves to the various organs. It includes the often alluded to *Solar Plexus*. While not strictly speaking altogether sympathetic in the usual meaning of that term, it is nevertheless called the *Sympathetic System*. This system was formerly supposed to be independent of the mind but it is now felt, that they are not free from voluntary control and that, therefore, worry, habits, mental disturbances can affect partially, at least, the activities of this great webbing of nervous tissue binding together so many important organs.

SLEEP.

No definite theory as to what causes sleep has as yet been accepted.

SPECIAL SENSES.

There are in the body nerves specialized to sensations. We understand these best on the skin. The four leading forms of sensation are: namely *pressure, warmth, cold* and *pain*. The deeper organs seem only sensitive to pressure and pain in a slight degree and are not sensitive to either touch or temperature. The pain sense is the most widely distributed. It is supposed to be related to the irritation of so many "pain points" located in the nerve distribution. The muscles have a muscular sense. It is probably used in judging weight and resistance. We have the sensation of hunger which probably is partly due to the so called hunger contractions of the stomach. Hunger may be disagreeable. Appetite on the other hand is located in the nerves of the stomach and is usually pleasant. Thirst is probably located in the nerves of the pharynx and whenever the water content becomes too low these nerves are stimulated. The nerves of taste are supplied from two sources. The front two-thirds from the fifth nerve. The back, one-third from the glosso-pharyngeal nerve. There are also taste buds scattered about in the throat which are supposed to be auxiliary to the main nerves. This makes the sense of taste not entirely dependent on any one nerve. The four main taste sensations are *sweet, bitter, sour* and *salty* and all others are combinations of these. There are also combinations of taste sensation with those of odor. Common sensibility of the tongue also enters into it as in the case of pepper and alum. If we hold our nose during ingestion of food certain tastes will disappear. Very disagreeable tastes are usually bad odors.

SMELL.

It is generally supposed that the sense of smell is caused by small particles of the matter detected, floating through the air at least in a gaseous form and striking the olfactory membrane. Odor is largely a matter of association and has a large measure of the psychological in it. For instance musk is pleasant to some and very unpleasant to others as is also garlic. The sense of smell may be fatigued. The sense of smell is highly developed and the very small particles that affect it are almost beyond belief. The dog especially has a high sense of smell. Two odors may neutralize each other as for instance Balsam of Peru and that of Iodoform.

SIGHT.

The eye is, of course, the organ of vision. The eye is an optical instrument that catches

rays of light emanating from external objects, brings them to focus on a curtain of nerve fibers, the retina, which in turn gives the sense of sight to the brain by a series of special impulses.

Through a window called *cornea*, the rays are passed through a complex curtain called the *Iris* which has the power of becoming larger or smaller according as the light is too bright or too dim thus varying the aperture (called the pupil) in size of opening. The light is caused to come to a focus by a clear lens called the *crystalline lens* (opacity of which is a cataract) which has the power of adaptation to distance and is then thrown on a curtain similar to a stereoptican background which curtain is called the *retina* and is alluded to as being composed of *rods* and *cones*. The impression is transmitted to the brain through the optic nerve. Defects of vision can occur anywhere in any of these structures but failure of the crystalline lens is probably the most common in which case one wears glasses which make up for the defect the crystalline lens cannot correct. However, the cornea can also have its share in astigmatism. The *iris* or curtain can be affected by many drugs. When it is constricted it is called *Miosis*, when dilated *Mydriasis*. Atropin (Belladona) and Cocaine dilate the pupil while Eserin Pilocarpine constricts the opening. The instrument for examining the eye is called an *opthalmoscope*. Certain people do not react to the sensations of color, particularly red. This is referred to as color blindness.

HEARING.

The ear is divided into three main parts. That outside of the drum or *Tympanum*. The middle part containing the bones of hearing (hammer, anvil and stirrup, named for their respective resemblance) with ligaments and muscles and a connecting tube the Eustachian canal which connects with the throat and serves to equalize the air pressure on both sides of the drum membrane. The internal ear with its organ of sensation, the *Cochlea*. Its vestibules and semicircular canals making a structure called the *Labyrinth*. The sound waves strike the ear drum, are transmitted to the bones and in turn are carried on through a very delicate and complex system which selects different waves in the internal ear to the auditory nerve and thence to the brain.

The importance of keeping the Eustachian canal open is apparent and its occlusion in nose and throat affections account for the buzzing in the ears. On the other hand, the importance of micro organisms or germs passing up through it from the nose and throat accounts easily for the prevalence of ear troubles during epidemics of nose and throat diseases. Different people have various ranges of hearing as in the case of smell and sight. The semicircular canals are concerned also in giving us a sense of proportion and direction. Interference with them makes us dizzy and gives us *vertigo* and *nausea*. They are the supposed causes of sea sickness and car sickness.

BLOOD AND LYMPH.

The blood is the fluid which is kept in circulation by the heart. It flows through a series of tubes known as the arteries, veins and capillaries, and keeps up the nutrition of the body. Its functions are varied. *First*, it carries the food after it has been prepared by the digestive organs. *Second*, brings oxygen from the air to the lungs. *Third*, carries away the products of combustion, so to speak, of this same oxygen designated as carbonic acid gas and other waste products from the tissues, as for instance, the nitrogenous compounds Urea, Uric Acid and similar material. *Fourth*, distributes the various secretions of the glands and internal organs. *Fifth*, maintains the temperature of the body, as well as preserves the proper balance of fluid.

The blood consists of a fluid part, the Plasma, and in it floating, so to speak, a number of minute bodies, the corpuscles. These corpuscles are further divided into three groups; namely the *red corpuscles*, the *white corpuscles* (also called Leucocytes) and the *Blood Plates*. The Plasma is colorless or with a greenish yellow tint. The red color of the blood is due to the red corpuscles. Blood coagulates on exposure to the air. This is due to the spontaneous formation of a fibrinous product which is a special endowment and is dependent on the existence of a ferment-like substance fibrinogen associated with lime salts.

People whose blood does not possess this quality of coagulation are described as having Hemophilia and are in grave danger from bleeding to death following injury or operation. For this reason one should have a "coagulation time" test taken on him before submitting to operation if there is any doubt at all about his possessing the coagulating quality in his blood.

Blood is alkaline not acid in reaction to litmus. The red corpuscles in health average 5,000,000 to an arbitrary standard, the cubic micro millimeter in males. 4,500,000 in females. They carry an iron compound *Haemoglobin*. Their function is to carry oxygen gas which unites easily with this iron compound. When a person goes to a laboratory to have a so called "red count" made, it is to determine how near to the normal number of 5,000,000 he happens to possess. A low count is indicative of the condition *Anaemia*.

The white cells called Leucocytes are more complex than the red. They number about 6,000 to 7,000 per cubic millimeter. If an individual goes to a laboratory to have a so called "white count" done, it is to estimate the number of these white cells. In many conditions, notably acute Appendicitis, the number is greatly increased to 15,000 to 20,000. While in Pneumonia, it may reach 35,000 to 50,000. If a patient has pain in the region of the Appendix and a count of 15,000 to 20,000 is obtained, it is practically certain he will have an abscessed Appendix. The blood is obtained by pin prick from finger or ear. A high count is known as Leucocytosis. In Typhoid Fever, you have a low count and this is known as Leucopenia.

White cells have a power of movement all their own and this has earned for them the name of wandering cells. They can go through spaces between the other body cells as for instance the bloodvessels. The white cells:

(1) They protect the body against so called micro-organisms or germs. They either

ingest them or else destroy them. This has earned for them the term "policemen of the blood."

(2) They aid in absorbing fats and peptones from the intestines.

(3) They aid in coagulation.

(4) They help to maintain the so called proteins in the blood.

BLOOD PLATES.

They occur in great numbers in the blood, 300,000 to the cubic millimeter. Their exact use is not understood.

Blood is a complex fluid and is not a simple compound. Its reaction, contents, amount of protein (white of egg is a class of protein) and clotting features are specific for any individual. Blood transfusion cannot, therefore, be done indiscriminately. The blood of one healthy individual may be toxic or poisonous to another. Likewise, serums obtained from other animals may be toxic to a man. In order to combat this feature, it is usual in giving the blood of one person to another, to type them and examine them so as to find out whether they measure up approximately alike. No one should receive blood from another person unless the giver or donor is known to be of their type, unless it is in the case of grave emergency, and known that the donor is free from Syphilis.

LYMPH.

The Lymph is the other fluid of the body found in the system of corollary tubes to the blood circulation, known as the *Lymphatic System* as well as in certain open spaces outside of the bloodvessels. All tissues are probably bathed in this fluid Lymph. They, the Lymphatics and the Lymph spaces, are really a sort of *"Clearing House"* between the blood stream and the tissues.

CIRCULATION OF THE BLOOD.

To understand the circulatory apparatus, it is well to consider it as an organ of the body in itself. It is in endless motion, which never for a moment stops from birth to death, yet it is not the same in all parts of the body. In one part as for instance the carotid artery, it may be traveling at a high velocity, yet in another it may be moving very slowly as in the microscopic vessels, the Capillaries. The time necessary for a complete circulation of the blood is usually stated as 23 seconds.

The pressure of the blood is not the same in all individuals and is produced by pressure waves (like the waves of a stone falling into a pond) induced by the alternate contraction and expansion of the heart and its effect on the blood in the arterial vessels.

The maximum or highest point is obtained by the action of the heart in contraction known as *Systole.* This is the apex of the pressure and is called *Systolic.* The lowest or minimum pressure is obtained after the heart has rested and is known as *Diastolic* pressure. In man this is about 110 to 120 millimeters measured on a mercury column for the Systolic or high point while the lower or Diastolic is between 67 and 75 millimeters. Subtracting one of these from the other gives the so called pulse pressure. Therefore, a man with this blood pressure has a heart beat which has a force equal to lifting a column of mercury in a tube 45 millimeters high. This is what taking your blood pressure actually means. Anything which makes the resistance to the blood flow greater will cause the heart to increase the force of its beat.

THE PULSE.

When the heart throws the blood into the arteries, if they were hard and rigid, then the pressure would be the same everywhere in the body and as much blood would have to flow into the heart as flowed out from it. This is not the case. The arteries are soft, compressible and elastic. They fill up near the heart and pass the pressure along in a series of snake-like movements until finally in a feeble way it reaches the most distant parts of the body. In so called hardening of the arteries seen in the aged and those with *Arteriosclerosis* from disease, this remarkable property is to a more or less degree lost with the result that a variety of untoward symptoms arise interfering with comfort and health. Whenever an artery comes to the surface and is easily felt this blood pressure wave or pulse may be detected. If this wave occurs regularly it is called a *regular pulse* or wave. If in good tune, it is called *rhythmic.* If soft, compressible and elastic it is said that the *tension* is good. If a normal quantity of blood is evidently passing along with each wave it is said the *volume* is good. If life insurance or other examinations are made these are the terms used to describe the pulse.

HEART BEAT.

The heart is divided into four rooms or chambers. The two upper or receiving chambers are called *Auricles.* The two lower or chambers of pressure activity are called *Ventricles.* A heart beat consists first of the squeezing in or contracting of the upper or filling chambers. Next a squeezing in or contracting of the emptying chambers and then a rest when the blood is again running into the heart. Activity is known as *Systole.* Resting is known as *Diastole.* The beat begins in a bundle of nerves at the upper portion of the heart and spreads out over the heart like the wind setting in motion a field of wheat. It is not a sudden spasmodic action. Many heart diseases are the result of interference with this spreading wave. This wave is accomplished by the action of different nerve nodes like the lighting progressively of the bulbs on an electric sign. Interference causes serious trouble as in the case of heart bloc when the impulse is stopped or in fluttering where it acts too often in one part. Valves between the chambers and vessels, keep the stream from flowing back in the wrong direction while the squeezing of the walls in contraction is going on. If at any point through disease these valves do not fit tight leakage occurs in the wrong direction. While the ventricles are in action, two sounds are to be heard over the heart, one at the beginning, the other at the end of the action. It resembles "lubb-dup." A stethoscope

intensifies these sounds. When heart sounds "lubb-dup" are replaced through disease by soft purring-like sounds these replacements are designated as murmurs. They are useful in ascertaining just what portion of the mechanism is at fault. But these so called murmurs are not accepted with the same finality and importance they once were.

The cause of the heart beat consists of impulses sent down by the central nervous system from the center designated as being in the fourth ventricle of the brain. Those to hasten it are described as coming through a nerve, the *Cervical Sympathetic.* Those to retard it through the *Vagus* or 10th cranial nerve. If either one of these nerves are paralyzed or interfered with by disease or accident or drugs the other will gain the ascendency. Cut the *Vagus* and the heart will run away with itself. Interfere with the sympathetic or acceleration nerve and the heart will beat too slow. While the nerves above mentioned start or regulate the contraction they have nothing to do with its rhythm. It is, therefore seen, that the heart is an automatic organ. It needs to be started but runs on itself.

The rate of the heart beat varies.

At birth	135 to 140
Infancy	120
Childhood	100
Youth	90
Adult	75
Old age	70

Exercise increases it. Blood pressure affects it. Low pressure increases it.

VASO-MOTOR NERVES.

There are in the coats of the blood vessels a series of nerves which dilate them or constrict them as necessity arises to maintain normal blood pressure. These are absolutely essential and very important. One set is designated as *Vaso-Constrictor* and they diminish the size of the bloodvessels. They are seen in action when the face grows pale. The antagonistic set are the *Vaso-Dilators.* They are seen in action when we blush and they open or dilate the blood vessels.

These constrictor nerves are in constant tonic activity. They have their center in the brain and it is known as the *Vaso-Motor* center. The center of the dilators is not so well made out. These nerves have a great deal to do with our bodily welfare. They are concerned in surgical shock after operations, in fainting, in various skin diseases, in the actions of many drugs, in the disease known as *Hypertension* and in the symptoms of high blood pressure. They maintain the equilibrium of the circulation giving to a part that needs it, more blood and withdrawing it from others that do not. They can literally make a man "bleed into his own veins." They are an important adjunct to the heart and are almost as necessary to our lives as that important organ.

RESPIRATION.

Respiration relates as a rule to the process between a body and its surroundings, of the interchange of some form of gas. In the human being this consists in the absorption into the blood of oxygen and the elimination outward of carbonic acid or carbon dioxide gas. From the time we are born until the period of our death this process of changing of gases must go on. It may, apparently, stop for a short period as when some one is resuscitated from drowning or during an anaesthetic, but even then it is a matter of using up a residual or reserve air, that the lungs always hold, which carries the injured over the hazard.

It may be said therefore to be a constant process like that of the heart beat. We must have fresh air. The only way to come to a clear understanding of the breathing in of oxygen is to remember that the gas oxygen is in reality like food. Ordinary food is taken into the stomach. Oxygen by way of the lungs. The bowels must move to eliminate the waste of rough food—the ashes so to speak. The lungs must bring back that Carbonic acid gas to the outer air as the ashes of the gas oxygen. In the last analysis the results are quite the same, except that in an emergency we can go without food for the stomach while we cannot go at all without food for the lungs else we die of asphyxiation.

So we come to understand that the *metabolism,* (which is to say changing of matter like food into living tissue of the body) is simply a process by which fats, sugars, proteids and salts with water on the one hand and on the other the gas oxygen are taken into the body, and turned into living tissue. What is worn out and of no further use is eliminated, the foodstuffs by bowel and kidney, while the gas comes away through the lungs as carbonic acid.

The interchange of gas occurs in the lung, where a myriad of little cells like the compartments of a honey comb or automobile radiator are lined with veins and arteries. The bloodvessels bring the blood impure with carbonic acid gas so that it is dark in color, and give the gas over to the air in the little air chamber. It is taken up, oxygen is furnished in exchange and the blood goes on its way purified, bright red in color. This process of purifying is often referred to as *ventilation.*

The lungs are two large organs arranged in lobes. They operate like bellows. They are in two closed cavities which are encased in the thorax. A vacuum exists between the sides of the chest wall and the covering of the lungs. This makes the pressure coming from within the lungs greater than that between wall and lung. As we take air into our lungs it is referred to as *Inspiration* as we breathe it out it is called *Expiration.* The action of *Respiration* is carried on by the big domelike muscle that resembles the ceiling in a cathedral and which separates the lungs and heart from the stomach, bowels and liver, also by the bringing up or elevating of the ribs. Also by the various muscles of the chest.

Ordinary breathing is called *quiet breathing.* Difficult breathing is called *dyspnea.* Breathing is also referred to as *costal* in which the chest is predominant, abdominal, when that portion of the body is the chief factor. Artificial respiration is that carried on by a force outside the body. An instrument, *THE PULMOTOR,* auto-

matically does this. It is however frequently not around when needed. Two other methods are in common use. The *Sylvester Method* is as follows. Raise arms above chest then lowering them down against the sides of the chest so as to make pressure inward, releasing, and the same procedure over again. Do not hurry. Do it less often than one would breathe or about 10 to 15 times a minute, holding tongue forward.

The *Schafer Method* is done with less labor and as it may have to be carried on in some cases of drowning for almost an hour this feature is of some importance.

Patient lies face downward, be sure tongue is out. Pad under chest. From a point at hips operator straddles body, facing head, places both hands over lowest ribs called *diaphragm*. Throws weight of his own body against hands. Slowly sits up again without removing hands. Do not hurry. Do it 10 to 15 times per minute.

As was stated before a vacuum exists between the lung and chest wall. If air rushes into this vacuum, or enters from a puncture through the lung inside or chest wall outside, the lungs immediately shrink. This condition is known as *Pneumothorax*. It is utilized in Tuberculosis to rest the lung. The lungs are supplied with nerves from various sources. The most important is the *Phrenic* in so far as it innervates the diaphragm. Numerous nerves go to the various muscles. Ordinarily breathing goes on involuntarily in a rhythmic manner, but to a limited extent breathing is under voluntary control. But we cannot hold our breath beyond a certain point therefore an infant cannot come to grief in this way.

Holding sway over the whole scheme of Respiration is a center in the brain called the respiratory center. It is located under or in the medulla oblongata. This center acts almost automatically, so that if you are threatened with lack of air or asphyxiation, the carbonic acid rising into a condition of excess you breathe faster. The excitation of any sensory nerves will stimulate this center. So that a cold bath, pain, grievous sights, annoying sounds will all make one breathe faster.

The interchange of gases in respiration is always affected by pressure. Atmospheric pressure is quite a factor. People going down in deep sea work, or those engaged in building tunnels or caisson work must avoid too rapid changes from low to high or high to low pressure. Caisson sickness has to do with high pressure. Mountain sickness with low pressure. In all that pertains to Respiration the main thought never to be forgotten is that fresh air is a *necessary food* which we cannot possibly do without for a moment. Furthermore the air we inspire should be on the move so to speak and not stagnant. There can never be any argument as to whether we should have fresh air. Being a continuous necessity it must then be ever present.

PHYSIOLOGY OF DIGESTION AND SECRETION.

Mastication is entirely a matter of the will. Reasonable time should be taken for it. Deglutition (or swallowing the food) is at first voluntary; later it is not.

At the upper end of the wind pipe is a sort of cap or valve known as the epiglottis which shuts off the food from going down the windpipe.

The cardiac (heart) end of the stomach has a *Sphincter muscle* (a valve) which is open when food enters; is closed when the stomach is full.

The stomach of man is a single organ. However different parts of it act differently. The two main parts are the *Fundus* with the main body and the *pylorus* or smaller lower end. The lower end has the pyloric valve which allows food to escape when it has been properly prepared. The stomach has three layers of muscles, *longitudinal, oblique,* and *circular.* They give it a churning movement pulling as they do in different directions. The upper part of the stomach acts more as a reservoir while the active mixing and digesting is carried on in the lower end. Food of a solid nature may remain for quite awhile but liquids are passed along with celerity. The stomach fits around the food within it. Different kinds of food have a different period of residence in the stomach. Starches which are not digested there pass out in half the time of such foods as meat and the like which the stomach digests. The stomach therefore is a large receiving organ for food which it ejects at stated intervals into the duodenum. Food such as we eat could not be directly thrown into the intestines, they are in no sense large enough to receive it. The stomach receives its nerve supply from the vagus and the splanchnics (sympathetic). It is however something like the heart, an automatic organ.

THE INTESTINES.

The bowels have two muscular coats, an outer lengthwise or longitudinal, and an inner round and round or circular. Like the stomach they have an inner soft velvet-like layer called the mucous coat which absorbs the food.

Two kinds of movements are brought about by these muscular coats. First, *peristalsis*, this is a constriction of the walls. It works in segments like a block signal system on a railroad and has the effect of squeezing the food or residue on from part to part. Food passed through the small gut takes about 4 to 6 hours, and after a full meal the chances are it is spread along its whole length.

The second kind of movement is the *rhythmic* movement and it operates not so much to push food along but rather to separate it and re-unite it into small masses. This aids in digestion and also forms the stool.

The nerve fibers of the intestines have not altogether been clearly made out. Like the splanchnics, the vagus and other extrinsic nerves they have their specific effects. The intestine like the stomach is classed as an automatic organ.

The opening of the small into the large intestine is controlled by a valve, the *ileocecal*, and by a sphincter (like the rectum). The large intestine is something of a reservoir and in civilized man its place has been taken by the modern cook who prepares the food so that the roughage that normally was collected in this organ is either broken up or removed altogether.

The nerves of the large intestine come from two sources, (1) from the lumbar nerves (2) from the sacral nerves.

DEFECATION.

That part of the undigested and indigestible portions of food with other wastage and secretions not used up reach the bend in the large intestine known as the *Sigmoid Flexure*. The rectum is thought not to hold the fecal matter for long under normal conditions. In reality under civilized life the probabilities are that it does.

Two sphincters or valves hold the fecal matter in the rectum. Defecation is partly voluntary and partly involuntary; part is carried on by the abdominal muscles. They increase the pressure. Defecation is however mostly involuntary and is carried on by a nervous reflex.

VOMITING.

Ejection of the contents of the stomach up into the mouth by way of the esophagus and to the outside.

It is a reflex nervous act and the abdominal muscles assist. The cardiac end of the stomach is opened while the lower end contracts. It is as before stated essentially nervous, caused by irritations to the brain, disturbances of the sense of position by way of the ear labyrinth, irritation of the stomach wall by products of fermentation or by emetics. Also by reflexes, through connection with the uterus, liver, kidney and other organs. Morning sickness in pregnant women is due to this reflex activity. It is supposed by many that there is a definite vomiting center in the brain. The drug apormorphine which, when injected directly into the body promptly produces vomiting, possibly acts on this center.

FOODS AND THEIR DIGESTION.

The substances we require to keep the body properly nourished are foods. There is a wide range of various foods on the face of the earth. However they can all be reduced to five essential elements.

PROTEIDS
WATER
CARBOHYDRATES
SALTS
FATS

Withdrawal of any one of these, especially water and the mineral salts, spell injury and even death to the body. In any of our bodily ailments it is merely a question of too much of one and not enough of another. Some of the most serious skin diseases represent an absence of one or the other. Dietetics and the science of food selection with their series of charts and figures merely represent the amount of which each one of the foods contain of these five elements. Animal foods have large quantities of proteins and fats. Vegetable foods have large amounts of carbohydrates and water. Some vegetables like peas however have even more protein than meat. To understand the word protein, is to recall the white of an egg. To understand the word carbohydrate is to recall starch and sugar. Fat is fat. The animal foods are more completely digested than the vegetable as the latter has shreds and fibers of cellular or fiber-like material.

There is another element in food known as vitamines. They are not as yet capable of being separated or isolated.

FERMENTS AND ENZYMES.

Ferments are as a rule living collections of organisms. Enzymes are the non-living unorganized elements which produce actions of a fermentive character. The first enzyme we meet is that of the salivary glands. It is called *Ptyalin* and it has an action on starchy foods. The salivary glands have secretory functions and these determine the flow of saliva.

Certain drugs act very definitely on this gland. *Atropine* or *Belladona* paralyzes the nerve of the salivary gland causing dryness of the mouth. Nicotine likewise lessens it.

All normal activities of the stomach so far as action on the food is concerned and for breaking it up into substances fit for absorption are directly produced, by fermentation. It is an error to ascribe certain conditions causing flatulence and so called "Gas" to enzyme action as a general term. It may be that the wrong food is fermenting into undesirable compounds but fermentation is normally present in the stomach.

Pepsin is the enzyme of the stomach. Like all other enzymes and ferments it acts without destroying or lessening itself. However pepsin must act in the presence of dilute hydrochloric acid, so that normal gastric juice is always acid and sour. It is to be remembered that enzymes that act on one kind of food cannot act on another. The gastric juice and the enzymes are secreted by many tubular or goblet-like cells in the velvety mucous membrane. The ferments are probably induced to flow by nervous impulses first started when food enters the mouth.

The gastric juice has also a milk changing ferment called *Rennin*. Rennet was used in olden times to make cheese and was obtained from the calf's stomach. It is the same as that of man. So it is to be expected that whenever milk which has been ingested for a time, is vomited, it will come up in the form of curds. Proteins are digested, water, some forms of sugars but not many, alcohol, drugs, and mineral salts are absorbed in the stomach. It is not as rapidly done as is generally supposed.

DIGESTION AND ABSORPTION IN THE INTESTINES.

Most of the more elaborate digestion of food is done in the intestine and here most of it is absorbed. Intestinal digestion begins at the duodenum and is nearly completed by the time it reaches the end of the small intestine at the ileocecal valve. Three juices enter into the process. The *Pancreatic*, the *succus entericus* (secretion from intestine) and the bile.

The pancreatic juice comes from the pancreas. It is not the secretion concerned in the disease Diabetes. It is like the gastric juice concerned in digestion only. It has a number of properties and secretions. First is a substance *secretin*. The next secretion is that of *Trypsin*. It also digests Protein but it acts in alkaline as well

as neutral and acid conditions. The next is *Amylase* which is the ferment which acts upon starches changing them into sugars. Starch as such is absorbed. The next is *Lipase Steapsin* which digests fats, changing them into emulsified forms similar to soaps. The action of the intestinal juice is not as yet thoroughly understood. All the food not absorbed by the stomach, which is very little at all of some kinds, is absorbed in the intestine. This throws a heavy load upon these organs and causes us to arrive at the reason why so much that is made out as "Indigestion" by doctors is really intestinal in type.

Bacteria swarm in the lower intestine at all times. By some they are judged as necessary. By others who have made experiments on animals in the arctic regions who have none, they are held as not necessary.

THE LIVER.

The liver plays an important part in the nutrition of the body. It is not concerned to any great extent at all with the movement of the bowels and so cannot be acted upon in that province by cathartics or purgatives. Its function is to secrete the Bile, and to be concerned in the production of urea and in the elaboration of glycogen. It has other functions not well understood among which are the production of bile pigments and substances to aid in coagulation of the blood.

The *bile* has many functions but the most important is the part it takes in the digestion of fats.

A part of it is stored in the Gall Bladder when active call for it is absent. Precipitation of the salts of bile form Gall Stones. It contains two color pigments called *biliverdin* and *bilirubin*. When they are absorbed in the blood by stoppage of the flow of bile or in disease they stain all tissues like a dye and are the direct cause of the yellowish green appearance known as *jaundice*. The liver forms Glycogen, known as animal starch. It is stored in the liver as a reserve fund of carbohydrates.

SPLEEN.

This is the mysterious organ of the body. It is the "undiscovered country" so to speak. Removal of it does not seem to affect the body.

KIDNEY.

The Kidney is a system of little tufts of blood-vessels resembling a rosette on a bonnet. These lie in little balloon-like capsules. The urine drops out, separated from the blood, of the tufts into the capsule and is removed through long snake-like tubes. As it passes through these tubes it is further acted upon and receives other excreted matter. The tubes all run together into a pyramid like point and the urine is collected in the cavity of the kidney (pelvis), where it leaves by way of ureters to the bladder.

Selective cells or epithelium are responsible for separating the waste elements from the blood. The process was originally supposed to be filtration. It is partially so. The more rapidly and strongly the blood comes to the kidney the more it separates the nitrogenous or protein waste, which is mostly secreted here. One of these products is urea. Another is Uric acid. Drugs, bacteria, and the like are also thrown out of the blood by way of the urine.

In albuminuria it would appear that the kidney structure is at fault but a disease like Diabetes has nothing to do with the kidney. The kidney merely removes the sugar as it would a drug from the blood. Whenever these long snake like tubes become clogged with cells or blood they form casts of the tubule like a plaster of Paris cast and when these are washed by the urine out of the body they can be detected easily through microscope.

The sweat also in addition to its effect on the temperature of the body, effect the excretion of waste products.

INTERNAL SECRETIONS.

By this time the reader has become familiar with glands that secrete juices by tubes called ducts into the exterior for various purposes, such as digestion. Glands also secrete substances necessary to life and health directly into the blood and lymph. They are highly necessary to the condition known as feeling "Fit" and in the main, contribute largely to our buoyancy, ambition, and interest in what is about us but it must also be remembered they are just as necessary to life itself. Internal chemical products which induce glands by secretions to activity are known as *hormones*.

The liver has not an internal secretion demonstrated as yet. The *Thyroid Gland*, the over growth of which is termed *Goiter*, is a conspicuous example of an organ which operates very largely by internal secretion. Small glands near the thyroid called *Parathyroids* also have a separate internal secretion. The thyroid excretes a hormone which is practically a form of iodin. In any event iodin is necessary to the activity of the gland. This internal secretion of the thyroid exercises control of nutrition and growth. Various conditions affect it, such as the arrival of puberty especially in girls and the condition of Pregnancy in women. Both of these make a call on the thyroid and if it is not large enough to secrete enough to meet the demand of the body it promptly enlarges. As long as this enlargement is merely a physiological increase, the internal administration of iodine will reduce it. If it is chronic and the frame work of the gland enlarges too, iodine will not reduce it.

THYMUS.

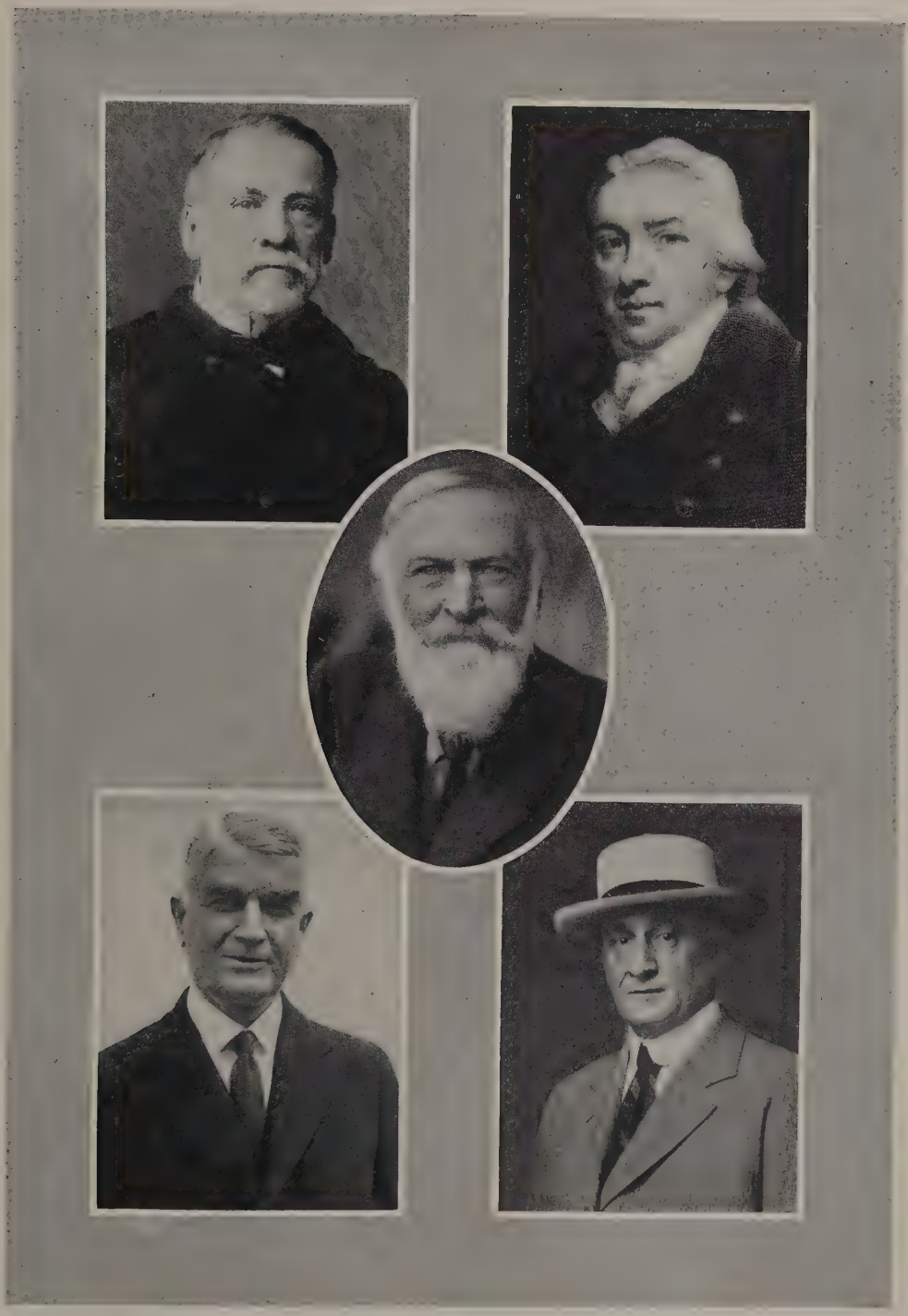
This furnishes an internal secretion perhaps in pre-natal manner and also in the infant which ceases very shortly after birth.

THE ADRENAL BODIES.

Located near and above the kidneys are these ductless glands. They no doubt regulate blood pressure, but it is probable they also have an effect in regulating spasmodic conditions of the inhibitory apparatus.

PITUITARY BODY.

Located in the Brain. Consists of two parts a forward or anterior part or lobe. A backward or posterior part or lobe.



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FAMOUS SURGEONS AND PATHOLOGISTS—I

Louis Pasteur — Dr. Adolf Lorenz — Edward Jenner

Dr. William Mayo — Dr. Charles Mayo

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FAMOUS SURGEONS AND PATHOLOGISTS—II

Dr. Francis G. Blake
Dr. Joseph A. Blake
Dr. Alexis Carrel
Dr. F. G. Banting
Dr. Howard Atwood Kelly

The anterior lobe has an effect on growth of the body.

The posterior lobe secretion raises blood pressure and stimulates possibly all involuntary muscles in the body. It is the secretion of this part of the Pituitary Body that is used to induce labor pains in the pregnant woman. This it does promptly when injected. Care must always be taken that the outlet is large enough to admit passage outward of the child as rupture of the uterus may result. It is also used to contract the uterus and stop bleeding after the child is delivered. This secretion is also used in surgery to act on dilated intestines to produce a contraction of their muscles and expel gas during the period after operation.

The anterior lobe has to do with growth, giants and dwarfs are the result of the unnatural functioning of the organ. Obesity especially about the hips is regarded as due to an abnormality of this gland.

ORGANS OF REPRODUCTION.

Owing to the general prevalence of interest in the internal secretions of these organs they have become a matter of popular importance. The testicles have two secretions. The one the *spermatozoa*, is directly concerned in fructification and the reproduction of life. Passing out by the way of the genital organs of the male it fertilizes the female egg or ovum.

The other is an internal secretion passing from gland into blood. It produces the characteristics of vitality and sexual appetite in men and except in this indirect manner has nothing to do with reproduction. Therefore implanting a testicle under the skin of a man will in no way beget children at all except that the procedure awakens activity in his own glands to secrete virle spermatozoa. But it may produce quite a number of changes which may be regarded as increasing his general well being. In many cases these are not permanent and cease as the implanted organ atrophies or dries up. The students and observers of this procedure have not the confidence in it that the popular mind has painted. Animals in which testicles are removed become femininized.

The ovaries have an internal secretion but its influence has not been made out. Women who have had them removed may gain in weight, at times suffer with hot flashes and headaches but no other changes have been noticed. While some women have an altered sexual appetite, the majority seem to suffer no changes.

PANCREAS.

It has been pointed out that the Pancreas secretes a digestive juice. There are however in this gland a number of spots called the islands of *Langerhans*. They secrete a substance that has nothing to do with the direct digestion of food. Its duty seems to be to act as a coupling so to speak between the cells of the body that need sugar and the sugar itself. Loss of these spots or islands produce *diabetes*. The more islands lost, the more severe the *diabetes*. Like two Pullman cars ready to move that have no coupling, so is the cell ready to absorb the sugar and the sugar in the blood ready to be absorbed by the cell. The result is that sugar accumulates in the blood and is removed when in excess by the kidney. As stated before *diabetes* is a disease of the blood not of the kidney. Insulin, the newly discovered product is an artificially prepared secretion obtained from the pancreas of animals. It is this coupling which on being injected into a diabetic immediately affords a union of cell and sugar. Its danger is in giving more coupling than is needed. The immediate swallowing of sugar or orange juice will correct this. Tests for blood sugar mean taking some blood and determining the percentage of excess sugar in it.

NUTRITION. HEAT.

Proteins or Proteid Food supply some energy, but their main use is to build up tissues of body.

Carbohydrates furnish the energy of the body —the coal in the furnace to furnish power.

Fats furnish the coal in the furnace so to speak for heat.

Vitamines furnish some peculiar power to build up the body. As they have not been isolated and their existence is mainly shown by the desperate conditions that arise when they are absent, it is difficult to give a description. They are designated by the letters A—B—C. found in Cod Liver Oil, Vegetables, Milk, Butter and Yeast.

They are absolutely necessary to a growing baby and are supplied to it by way of fruit juice, tomato juice and the water from spinach.

As most every organ of the body is largely composed of water and every process is concerned with water it is at once apparent water is an absolute necessity. Likewise the minerals and mineral salts. Iron in the blood, iodin for growth, carbonates of soda and potash, in the chemistry of the blood, common salt for the production of chloride, as well as lime for the bones and teeth make an ash free diet that is full of danger and death.

Flavors and condiments act favorably by making the food appetizing. In moderate amounts they increase the flow of gastric juice.

Coffee and tea in moderate amounts are stimulant to muscular energy. They are perhaps harmless unless taken by those who have a so called idiocyncrasy for them. Alcohol possesses some value as a food and to supply energy but as a stimulant in practically all cases coffee is superior. Alcohol has a poor after effect.

HEAT AND ITS REGULATIONS.

1. Heat is lost through excreta.
2. Expired air.
3. By sweat.
4. By conduction directly away from skin.

Heat is produced.

1. By oxidation of food.
2. By exercise.

Heat is supposed to be regulated by a heat center in the brain and it is the interference of this center by organism and through secretions of a toxic nature that gives us fever in disease. This is done in pretty much the same way a carburetor in an automobile when tampered with and its regulation thrown out of the normal

gives you either too lean or too rich a mixture. So the toxic products of disease interfere with the heat carburetor so to speak and give us either a subnormal or a fever temperature.

REPRODUCTION.

This is a difficult subject to comprehend and concerns the union of the ovum or female egg and the spermatezoa—a small unit resembling the common tadpole though microscopic in size. This union is called fertilization and one of its fundamental problems is heredity.

The ovary is a small organ lying on the right and left side of the uterus. It has no direct connection with the uterus. The uterus has two arms or tubes in the form of the arms of a bat and on the end of these tubes is a stringed ending resembling the vegetable kale. Each month a so called Graafian Follicle passes up to the surface of the ovary. It contains the egg or ovum, a miniature explosion takes place and the egg projected passes down through the open end of the tube into the uterus.

Menstruation while not fully understood is thought to be a preparation, by casting off the inside covering of the uterus like a snake does its skin, for the fertilization of the egg.

If the egg meets the spermatezoa in the uterus or the tube then fertilization takes place.

This maturation is a complex process and resembles the various figures proceeded by that form of fireworks known as the pin wheel.

After various steps in a period of 280 days the reproduction is complete. Hormones forming in the blood of the mother cause the breast to function and other changes. If these hormones are improperly formed the toxic conditions of pregnancy eclampsia and the other kidney poisonings occur.

HEREDITY.

This embraces the idea that in fertilization we have two cells uniting in one cell and thereby building up many more and also that these cells build up with many characteristics of the two that caused them, in an orderly manner. There is in this connection a law formulated by Mendel. It supposes that characteristics are handed down in blocks or units. Substances in the parent cells called unit factors are supposed to make them. In most cases there is no blending but the child takes on whatever is dominant in either parent. The equivalent characteristic is supposed to be there hidden away so to speak and is called recessive.

Heredity does not altogether shape the course of the individual, environment may change the life, at the same time it is profoundly possible by the Science of Eugenics to breed the better class of characteristics.

ENVIRONMENT.

Those influences which surround us in all phases of life and control in a large sense, the acts, desires and impulses of the average individual. Modern Science gives more stress to this by far than it does to heredity. It is true that some of the world's most famous men have had the worst kind of environment and maybe a rather undesirable heredity history and yet through it all mounted to fame.

Some of our greatest artists and composers have written and scored the world's greatest masterpieces while ill with Tuberculosis or other maladies equally as devastating to the human body. These however are exceptions to the general rule and only bring out in greater relief that the "average person class" to which we most all belong must have a good environment. The better the environment, in all probability the better the citizen will be. If you have good books around, the child will naturally accept good books as a part of a regular scheme of life. If you have a reference book around handy and go to it yourself whenever you find or hear of a subject you do not know about, then the child by imitation will take this up as a natural movement of its environment and go and do likewise. It therefore behooves us to have such books easy to obtain and consult.

"Early instruction in truth will best keep out error. Some one has well said, 'Fill the bushel with wheat, and you may defy the devil to fill it with tares.' "—*Tyron Edwards.*

As we find it in the case of books we find it in the matter of health. If the environment of a child includes parents or guardians naturally alert to teach it little by little the facts of health and disease it will be far easier for such a child to keep itself fit than one who has to learn it all off "by heart" (as they say in school), from text books in a few weeks. Information taken little by little each day as it is usually done without effort remains fixed in the mind and is not forgotten. Neither does it seem anything like the task it is often made to appear when it is all imparted and received in a few weeks.

One may be said to grow up in an environment of hygiene where the child receives little bits of advice on diet, health and right living from day to day. It comes to him naturally as the bird or kitten learns little by little from its mother, the various movements it will be later called upon to use. Instinct does a lot for a fledgeling or a kitten, but so also do its parents.

Tuberculosis is no longer regarded as a serious disease from Mother to child except she naturally gives her off-spring a weakened constitution. But if after the child is born she constantly expectorates around the home she is simply placing her child in an environment fraught with millions of bacteria which inhaled into its weakened constitution give it the disease. Environment not heredity gave it the disease.

We think at this time in the same terms about Cancer. It is not hereditary but acquired. So then it behooves us all to have cheerful homes, good reading matter, exhilarating amusement that shall be free from stimulation or taint, plenty of sleep, relaxation, periods for reflection, good food picked out with excellent judgment with a common sense regard for not having too much of any one kind, abundance of water, if possible congenial work, friends for social intercourse, and in the case of children parents who are ever on the alert to detect early signs of decay or deformity, or infection. Had we all these then could we say we had an ideal environment.

HYGIENE.

What has been said earlier about care of the body, when it is well, to avoid possible mild ailments leading on to more serious defects applies to the school children. Often times parents object to the ministrations of school nurses. Possibly there are some over zealous, but in the main the whole theory on which school nursing is based, is that by frequent examinations and observance the little things at their beginning can be detected and thus the later serious defects prevented or arrested. For instance calling your attention to a bad tooth or infected tonsil easily curable may prevent development of a "leaking heart" incurable.

Height and weight are of great value in ascertaining the nutrition and growth. But it must not be forgotten that there are exceptions to this rule as you may notice in a tall girl who is very active and yet may be normally thin. However for the most part they are good guides.

TABLE INSPECTION.

Observe your child at home and tell him or her to report to school nurse anything you notice out of usual. Or else consult your physician. For many diseases begin with poor color, sallow skin, constipation, diseased teeth, child sleeping with mouth open, snoring, dislike of exercise, dry brittle hair. The chronic diseases like Tuberculosis, Kidney disease and the like seldom if ever begin with pronounced symptoms. See that your child gets a well balanced ration. This does not require any unusual effort. Proteins, carbohydrates, fat, water and mineral salts must all be present as each one does something in the upbuilding. No wonder then that a child who wants almost all his diet to be sweets or starches languishes and has to be given cod liver oil. Fruits are absolutely required. Fats in proper amount as well. The proteins come in meat, cereal, milk, and eggs. Plenty of water in some form or other. Most children actually like good water. Exercise without excessive play. Do not forget oxygen is a food too, so fresh air always. Ten to twelve hours sleep. Comfortable clothing, a good bath frequently, and he must have some recreation he likes.

EYES.

It is better to take your child to a good oculist now and then. It is true there are men who may give glasses when not needed but that dishonesty will happen to be the case in any walk of life. The great majority of good oculists charge what sometimes appears a rather high stipend but it is tedious work of a high order and almost anyone of them are just as glad to give you a negative as a positive answer. Select a good oculist and abide by his decision. Do not allow any little eye defect to go unnoticed. Itching eye lids, constant redness of lids, "Blood shot" eyes; occasional crossing, failure to see plainly, headaches on reading, holding book close, twitching nerves, frowning,—all call for examination. Don't take the advice of neighbors. Go to an oculist. If he says "Glasses," get them. Use them.

TONSILS AND ADENOIDS.

Whatever children were in other days, makes little difference in the fact that a very large number have these organs diseased today. The chances are they were not noticed and the "brain fever" and other unnamed diseases were the after effect of disease from these organs. You often hear that too many are removed. Mistakes are made but not very often in proportion to the great number affected.

Put your finger on the nostril of a child. Stop the breathing in that side. Does he breathe through the other? Does he snore or is he a mouth breather? Is his face pinched and drawn? Is he drowsy? In some cases slow to learn? Does he have running of the nose? Earache? (Remember a little tube passes from back of the tonsil up to the middle ear). Does he talk through his nose? If he has these look out for adenoids. These are little growths in a part of the nose and throat you can't see. He might just as well have two or three little balls of cotton or gauze there as far as obstruction goes. Not only that, their being infected spreads it elsewhere and makes it easy to "catch" other diseases. By a peculiarly shaped little instrument they can be quickly scraped off. They may come back. It does not matter. They must then be removed a second time. See a competent adviser.

THE TONSILS.

It is unfortunate but nevertheless a fact that although you can see the *tonsils* you cannot make sure they are diseased. For many a tonsil is diseased at the bottom or underneath, while the top appears normal. If you could go in an operating room where they are removed you would see this statement verified many many times. Many diseases of an inflammatory nature can receive their start from what is lurking in the bottom of tonsils that you cannot see. Acute *Rheumatic Fever*, growing pains, valvular leakage of heart, earache and middle ear disease, neuritis, nephritis (Kidney disease), many troubles with digestive canal, St. Vitus Dance, decay of teeth, have their origin in an infection of tonsils slowly and stealthily planted in various remote regions by the blood current. A tonsil is full of little long pockets like a bee hive. Honey can be at the bottom or top of a comb and likewise so can infection in the tonsil. All forms of disease germs can find a comfortable home in these crypts. Then on occasion flare up and seek other locations in the body. While removal of the tonsil necessarily is attended by some bleeding it soon stops as does that following extraction of teeth. Consult a competent physician and always be sure your child has a "coagulation test" to see how his blood clots before the operation is done.

TEETH.

Your grandfather may say "teeth" were not bad when he was a boy. It may have been so then, it is not now, and we live in today and tomorrow. Do not wait for toothache to appear as a warning. Pain often warns us too late in

many conditions of the body. Look for discolorations. Look at crooked, irregular teeth and then decide that you will have teeth constantly inspected while they are evidently good. Each tooth is worth hundreds of dollars to any boy or girl. The X-Ray is a big help.

"Focal Infection" is a prominent factor in the cause of disease as seen today. It has been found that there are not so many different diseases as we thought but it is more likely that germs located in foci or spots in tonsils, teeth and adenoids are carried in the blood current (like salts of minerals are carried by brooks and streams and deposited on stones) and lodging in various organs "Hatch out" by the millions in these new locations and set up a new inflammation. Your child has a "Mastoid" which is acute inflammation in little closed bony cells back of the ear. You say what Disease is that? It is not a new disease. Germs from some infected teeth were washed there by the blood. Found a haven started the usual process of inflammation. Operation is required to get them out. Likewise your child develops inflammation of the kidney. Where did he get it? Perhaps from an infected tooth or tonsil. But you say his mouth appeared all right to you. Perhaps so. It may take an X-Ray to show the abscess in the tooth. Even such a disease as *Biliousness* may have its origin in an infected tonsil. There are two small sinuses or caverns in the head connected with the nose or ear by a small canal admitting a very small wire. There are some in the bones of the forehead, another set back of the bridge of the nose, and some in cheek bone. These too may become infected and be focal areas. Chronic Diseases of these or of tonsils or teeth are serious. So have your child inspected now and then, "for a stitch in time saves nine."

HEARING.

Nearly all of the ear troubles start from the mouth up through the eustachian canal into the middle ear. Some come by the blood current. Frequent examination alone will prevent them but after they have done permanent damage it is exceedingly hard to bring back the hearing. Avoid indiscriminate washing of ears with various washes, the composition of which you do not know. Ear troubles are best prevented by drugs dropped into the nose.

DEFORMITIES.

Orthopedics—the science of correcting deformities has disclosed many of them. Watch early for deficient motion in limbs. Keep your children's feet in shoes that are not tight. Throw shoes away if they hurt. If any deformity appears seek the best man in your vicinity who follows the specialty.

NERVOUSNESS.

Do not say that this is merely tempermental until you are sure of it. Children should not be nervous. This does not mean that "gritting their teeth" means worms, or crying out in the night tends to epilepsy. Neither of these are true. But if child "wets the bed" at night, jerks his head or eyes, or has ever so slight a condition known as "fits" consult a competent adviser. Whether the cause is the "movies" or lack of sleep, it is nevertheless a fact that nervousness in children is on the increase.

TUBERCULOSIS.

Children should not be exposed in the same household to a tubercular patient. Nor should they drink milk from cows not tested against tuberculosis. These are the two common causes of the disease.

Probably one third of all children have a slight attack of this disease sometimes in their lives. Children who have had other chest diseases are especially prone to it.

Underweight, lack of desire to go and play, "kernels" in the neck, fever (very low), night sweats, condition known as "scrofula" or "debility"—these are all early symptoms. It is sometimes thought that much of the tuberculosis in grown ups is only a return of tuberculosis they had when a child.

Rest. Fresh air. Good plain every day food. Sunlight. These are the treatment in the beginning. Later, exercise selected and moderate.

CONTAGIOUS DISEASES.

Most diseases are caused by direct contact, although some may be air borne. Many people have germs in their bodies which have become harmless to them but are still dangerous to other people. They are called "Carriers." Germs need moisture and warmth and tissues like the human body. Unless one has the resistance against them they will enter and start to grow and live wherever they can.

MEASLES.

A very dangerous disease and very much under rated. You know how severe it appears from the outside, then recall it is appearing similar to that in the respiratory tract, namely the wind pipe and lungs. Pneumonia is what is to be feared. Running eyes and nose, a nutmeg grater cough, dry skin, and at times little blush white spots along teeth and on gums, *Koplik's Spots*, are the earliest signs. Your child is most dangerous to others during this time. Measles leaves the child in rather impaired condition—a fruitful soil for other diseases. Middle ear disease is quite common.

WHOOPING COUGH.

Whooping cough carries a fatal termination in many more cases than it is generally supposed. Nor is it the heart so often that suffers as it is the weakened condition generally speaking that follows. The whoop is due to the action of the diaphragm. It is not absolutely necessary as a symptom. If child grasps chair and coughs at the same time and vomits long ropy mucus, holding its breath and has been exposed, suspect it whether he whoops or not.

SCARLET FEVER.

Probably in its severe form the most dreaded disease of modern times. Yet it can occur in so mild a form as scarcely to be noticed. It is infectious in either case and very much so in its beginning, not so much its scaling stage. All

of these diseases with rash and cough that belong peculiarly to children begin with headache, tired feeling, aching of bones, some fever and intestinal disturbance. Eating food that does not agree with your particular digestive system, paw paw, peanuts, cabbage, etc., may give you a short term red rash. They do not have sore throats. All discharges from every where should be regarded as catching, or should be destroyed.

Doctors suspect, although they do not know for sure, that the germ that causes this, causes blood poison, therefore it leaves all the organs especially the kidneys and middle ear in poor condition. Both should be closely watched. Through the discovery by two investigators, the Dicks, has come a Dick test and the serum. The one enables you to tell whether you are susceptible or not, while the serum bids fair to eliminate scarlet fever as diphtheria has been. Do not conflict this *Dick Test* for scarlet fever with the *Schick Test* for diphtheria. They are entirely separate.

DIPHTHERIA.

Formerly a very fatal disease, while now if intelligently handled, is very mild. Intelligently handled means getting an early diagnosis as well as an early injection of antitoxin into the patient. Delay is the worst condition in this malady. The fatalities used to be 35 percent, now they are hardly one percent. Suspect every sore throat. It is the only way. Nor can you tell by looking at it alone. Some cases of ordinary tonsilitis appear worse than mild diphtheria. In general, diphtheria looks like a grayish white smear of velvety looking paint. The membranes stick tight. If in least doubt obtain physician or a nurse who will make a culture. This is not in the least harmful. It merely means obtaining some of the discharge and membrane and examining it under the microscope and also letting it hatch out like eggs in an incubator. The Schick Test is a test which shows whether a child is susceptible to the disease. There is an antitoxin which protects against the disease, and this antitoxin coupled with the antitoxin the patient developed himself overwhelms the poison. Horses in prime condition if given the disease throw it off, and just at the point where their system is getting the ascendency, their blood is taken. The horses do not suffer, they usually survive. The clear part of the blood is then strained off, and is rendered free from any tendency to spoil. The patient is doing this when he has diphtheria, only it comes on so gradually that he cannot manufacture his own fast enough. So doctors give the horses serum to the patient and together they cure the patient. Some times people break out in hives after the use of the horses serum. This comes from mixing two kinds of blood together, and soon wears off. Gargles help to keep the mouth clean, but when the membranes get in the throat the wind pipe will have to be opened or a tube by way of mouth inserted. If you have an early diagnosis, plenty of antitoxin, these severe measures never will be necessary.

GERMAN MEASLES.

A mild disease with a short term rash like measles.

MUMPS.

Mumps, no rash but a swelling down on face in front of ears. Keep patient quiet, give ordinary nursing care. In boys watch for complications of the testicles.

SMALL POX.

An obsolete disease which has been made so by vaccination. The unpleasant features of vaccination scabs are very often mixed infections due to germs of the pus family getting in. Every child should be successfully vaccinated.

TYPHOID.

Caused by a peculiar germ found in water and milk. Can be prevented by having three injections of a vaccination serum. If in doubt about its nearness boil all water and even the milk if necessary. Have your water supply examined.

INFLUENZA.

A disease resembling measles but with no rash. It is likewise really a form of pneumonia, of the broncho pneumonia type. Prostration is an early sign. It comes into the body by the way of the nose and throat.

PNEUMONIA.

The king of diseases comes in by way of nose and throat. Give attention to them and keep the body as near fit as possible, avoid exposure, especially for long periods, with insufficient clothing protection and little food. Pneumonia is catching; be sure to have enough fresh air and avoid close, ill ventilated places where many people congregate. This disease depends on one's so called existence as to its outcome.

INFANTILE PARALYSIS.

Comes into the body by way of nose and throat.

When one case has been made out, all other children should be protected. It is a highly contagious disease. If you have a child that has had it consult the best crippled children expert you can find to obtain proper correction. Consult him before deformities appear.

HOOK WORM.

Found in southern climates. Very great pallor lazy disposition. Backwardness at school and distention of abdomen. The worm or egg can be found in stools. Sanitation is needed while the drug thymol is an antidote.

HAY FEVER.

We have a proteid balance in our body. Some people have this easily disturbed by eating or in handling even minute quantities they are sensitive to. Some people can not eat eggs. The dandruff of a dog upsets others; but by far the most offensive is the pollen of plants such as rag weed, timothy, rose pollen, all can cause it as can many others. Injections of protective extract can be made into the body if you know which one is the offensive. Hay fever is caused by these various irritating substances from these plants and foods.

LOCK JAW TETANUS.

Found in dirt, dust, fire crackers, blank cartridge wads, manure, hair, etc. It gets into the body through a wound. It thrives best if wound seals itself because it cannot grow in the presence of fresh air. The symptoms do not appear until later, so a wound produced by an old dirt covered nail or from the above mentioned causes should be well opened, thoroughly cleaned and at the time of injury a protective dose of antitoxin given. Do not wait for the spasm of the muscles to develop; it is then often too late. Remember it is not the rust of an old nail, it is the germ hidden in the rust away from the air that does the damage. Call a physician at once.

TRACHOMA.

Very infectious disease of the eyelids; granular lids that persist must always be looked at by competent eye physician.

PEDICULOSIS. LICE.

Well recognized as little white nit on hair: comb with fine comb, apply kerosene or larkspur after thoroughly shampooing; leave on over night.

SCABIES ITCH.

Anybody who has red, irritated areas with little marks like a fine needle scratch, face, arms, fingers or abdomen which suddenly appear should consider scabies, especially, if one after another develop it. Sulphur ointment is a cure. Disinfect all articles of bedding and clothing.

IMPETIGO.

Large clusters of thick crust with reddened base, exuding water-like discharge, contagious. Use sulphur, zinc, or amoniated mercury ointment, the last must be handled carefully.

RING WORM.

If inflammation of the skin occurs in circles, consult a doctor.

HEAD COLDS.

Only a word to say they must not be neglected or left to run their course unmolested.

RICKETS.

A disease caused by lack of sunshine and a diet lacking in mineral and vitamines. Sunshine, a balanced diet cure it. The bones are soft and easily curved and bend under weight.

SCURVEY.

Child pale, skin not clear. Later red spots and bleeding gums, caused by faulty diet. Lacking in fruits and vegetables.

PELLAGRA.

Brown, dirty looking splotches on the face, neck and knees. It is a nutritional disease and needs a balanced diet.

GOITRE.

Enlargement of the thyroid gland of the neck coming on about puberty, although may exist before. Iodine administered in chocolate tablets or otherwise is its cure. This is now usually given in the school and no parent should object to its intelligent use. Iodine like iron is needed in your system. Iodine given thus, is not a drug, it is a necessary constituent of the body. Cod liver oil also contains iodine.

ACCIDENTS.

Almost all articles or objects we come in contact with are covered with germs. Any laboratory can demonstrate this at any time. Most of them do no damage to the unbroken skin. Unfortunately there is no way of telling where the really dangerous ones are located. A thousand common pins may have nothing on them of a dangerous character but the one next to it may have on its point the streptoccus, the fatal germ of blood poison. These germs are as different as varieties of snakes and under the miscroscope are as different as a rattlesnake is from a garter snake. The only thing you can do is to promptly take care of all wounds however trivial. Turpentine or peroxide of hydrogen will not do this. Use iodine, also solutions of bichloride of mercury, lysol, creolin and *Dakin* solution. In the eye and ear some of the silver salts or boric acid may be used if proper directions have been given. "Drawing" with fat meat, application of dirty cobwebs or tobacco are of no value and carry germs.

HYGIENE.

II

The definition of Hygiene is the science of health and its preservation.

Periodic Health Examinations should be made if one expects to ward off many of the ills of life. It should be done like the teeth are examined or one's automobile is gone over. Nor is it necessary to have some big organization do it, there are in nearly all sections of the country medical men who are capable of doing this. All that is required is that they be trained as well as honest. This advice applies to babies as well. The average loss to each person in loss of time each year is seven days. Over two percent of American wage earners are constantly ill. In the war over half the recruits had defects which caused some trouble. A stitch in time saves nine.

INFANT HYGIENE.

A baby should be registered not only for vital statistics but as a matter of lawful record. A new baby should have silver in some form put in its eyes at birth to prevent blindness. Mothers milk is of course best for the baby. Nature no doubt has the better idea of just what it requires. No doubt properties the mother possesses are passed on to the baby to fight off disease. Not nearly so many breast fed babies die as bottle fed. Beside if the nipple is cleansed the milk is certainly clean. If the mother has a communicable disease such as tuberculosis then it should not be fed by her from breasts.

Mothers milk may not be in sufficient quantity. Drinking more water by mother and massaging the breast may help. The baby's sucking them stimulates them as well. The baby should be nursed at regular intervals. Some

prefer 3 hours, others 4. Whatever is decided on should be strictly adhered to. Arousing the baby up when asleep can do no harm. It immediately falls asleep again. One feeding at night from one to two A. M.

Three hours or over is selected because it takes that long to empty a baby's stomach. A baby should be breast fed up to ten to twelve months. If persisted in too long, the baby obtains milk similar to the so-called "strippings" from a cow. Orange or lemon juice or tomato or spinach water should be given in order to insure the so-called vitamine element. Up to four months one teaspoonful strained with water is given daily.

WEANING.

It should be partially attempted as early as six to 10 months. Baby trained to use bottle or cup. There can be no set rules of feeding for any baby. They all require attention in special ways. The following is taken from a Health Bulletin.

6:00 A. M. Breast feeding.
9:00 A. M. Orange juice—two teaspoonsful.
10:00 A. M. Well cooked cereal, breast feeding.
2:00 P. M. Breast feeding.
6:00 P. M. Well cooked cereal, breast feeding.
10:00 P. M. Breast feeding.

At seven months:

6:00 A. M. Breast feeding.
9:00 A. M. Orange juice—two tablespoonsful.
10:00 A. M. Well cooked cereal, breast feeding.
2:00 P. M. Vegetable soup, hard toast or zwieback, breast feeding.
6.00 P. M. Well cooked cereal, breast feeding.
10:00 P. M. Breast feeding.

At eight months:

6:00 A. M. Breast feeding.
10:00 A. M. Orange juice or raw cabbage juice, cereal, toast or zwieback, breast feeding.
2:00 P. M. Vegetables (one tablespoon), toast, broth, breast feeding.
6:00 P. M. Cereal, toast, breast feeding.
10:00 P. M. Breast feeding.

At nine months:

6:00 A. M. Breast feeding.
10:00 A. M. Orange juice, cereal, two ounces milk (boiled one minute), toast, butter, breast feeding.
2:00 P. M. Broth, fresh vegetables (two tablespoons), baked potato, butter, fruit, zwieback or cracker.
6–6:30 P. M. Cereal, two ounces milk, (boiled one minute), breast feeding.

If the baby cannot have breast milk then cow's milk modified must be used. Cow's milk and mother's milk are not the same. Modification means bringing cow's as near as possible to mother's milk.

Pasturized milk means milk that has been brought to a certain heating point considerably short of the boiling point, but enough to kill or greatly inhibit the growth of bacteria. Many diseases a child is later heir to as well as the cause of its many ailments during infancy are due to germs of bacteria in milk. It is the duty of parents to spend some time and care in finding out the character and source of their infant's milk.

Numerous preparations of artificial milk are to be had. Some of these contain too much sugar. Some of them are merely milk with the water extracted and come as a powder or in condensed form. Many of them are merely added to milk as modifiers. There are times when they are very excellent additions or even substitutes but they should be selected by a physician to suit the needs of a baby. Corn syrup is at times admissable. All of them should be prescribed and not used blindly depending on advertisements. Everything entering into the procedure of feeding a baby must be clean.

A baby's bowels should move at least once or twice a day. Water given regularly will aid this. If some evidence of clogging up arises, a syringe (baby) of warm water as an enema will probably be sufficient. This should not be required often. A safe and sane laxative in the drug line has as yet not been found that could be given indiscriminately.

Soft material in dressing baby. An abdominal band is not required after second week. It frequently causes crying because it is on too tight (after feeding).

A baby should gain over half an ounce a day in first six months. After this a little less. It is interesting and helpful to weigh it daily At the same time it is no cause for worry if at times it fails to do this every day.

A baby needs its full share of oxygen. Growing it needs a good deal. It should get it. This does not mean to put it where it can kick the covers off and be in a direct draft. Drafts cause the rapid conduction of heat away from body like blowing on hot soup cools it. The modern theory of sunlight makes it an absolute necessity. Rickets, one of the worst of children's diseases is prevented as well as cured by sunlight. Babies properly protected should go out in cold weather. Babies out of doors or on porches in all kinds of weather naturally develop a hardiness.

A baby's greatest requirement besides food is sleep. This should be regular and free from interruption. This should be 18 to 20 hours in first six months. A little less after that.

A baby should lie flat, and if it is properly fed the use of pacifiers and the like are not necessary. Insects not only interrupt regular sleep but carry disease. Colic is either caused when the baby is really hungry or else by overfeeding. Overfeeding is usually the result of irregular feeding.

Summer is not any more dangerous than any other time if the baby is fed reliable milk and its usual habits observed. The fact that summer is the time of vacations and parents usually travel around, makes the above a little difficult to observe. Nevertheless they should be if your baby is ill or is not gaining weight you should consult a competent adviser at once.

VITAL INFORMATION CONCERNING THE PREVENTION

DIVISION OF COMMUNICABLE DISEASES

DISEASES	EARLY SIGNS AND SYMPTOMS	SOURCE OF INFECTION	INCUBATION PERIODS	MODE OF TRANSMISSION	PERIODS OF COMMUNICABILITY
Cerebro Spinal Meningitis	Rapid onset, headache, stiffness of neck, and vomiting. Temperature 102°. Positive Kernig, Herpes Labiales.	Naso-pharyngeal discharges.	2 to 10 days	Contact, droplet infection from sneezing or coughing of carriers or cases.	So long as meningococcus persist in naso-pharynx—carriers more common than supposed.
Chickenpox	Usually occurs in children under 12 years of age. Onset usually gradual with mild fever The symptoms may be mild or lacking. The rash appears on the second day as small raised pimples which shortly become filled with clear fluid.	Discharge from skin and mucous membrane.	14 to 21 days	Contact with patients or articles soiled by discharges from lesions.	While primary scabs are present on mucous membranes and skin. Discharge from nose and throat. Most infection during early stage of disease.
Diphtheria	The onset may be gradual or rapid. The early signs are those of croupy cough, fever and sore throat with grayish-white patches on the throat, palate or tonsils. The glands of the neck near the angle of the jaw may be swollen. Later there may be profound prostration.	Discharges from throat, nose, vagina, and wound surfaces—persistent carriers often show virulent bacilli in tonsilar crypts.	2 to 5 days	Contact with discharges from cases or carriers—milk and milk products are vehicles of infection.	While virulent organisms are present in secretions and lesions. Well persons carry diseases for months.
German Measles	While the onset is sudden the malady is usually mild. The rash may be the first sign noticed. Ordinarily there is no "cold in the head" as there is in measles,	Oral and nasal discharges.	10 to 21 days	Direct contact with patient or with fresh oral and nasal secretion.	Eight days from onset, and especially during catarrhal stage.
Influenza	The onset is abrupt with fever, chills, pain in the head, back and limbs as well as a "cold in the head." Lassitude or profound depression are characteristic symptoms.	Oral and nasal discharges.	2 to 5 days	Direct contact with fresh discharges. Droplet infection—sneezing and coughing, improper sterilization of Mess gear, common drinking cups, towels, etc.	Unknown. Probably until four days after temperature is normal.
Measles	Begins like a "cold in the head," with running nose, watery, inflamed eyes and sneezing The rash, consisting of small, irreguiar groups of dull-red, slightly raised spots appears about the third day.	Oral and nasal discharges.	7 to 18 days Usually 14 days	Direct contact with fresh discharges of persons coming down with disease.	During period of catarrhal symptoms and while there are abnormal mucous membrane secretions.
Mumps	The onset may be sudden or gradual with slight fever, nausea, pain and swelling about the angle of the jaw.	Secretions from mouth and possibly nose.	4 to 25 days Usually 18 days	Direct contact with cases or articles freshly soiled with secretions of mouth.	From onset and one week after disappearance of swelling.
Scarlet Fever	The onset is usually sudden. Vomiting, sore throat, headache or fever may be early symptoms. In the beginning of the disease the eyes are not watery or congested as in measles. The rash usually appears within 24 hours upon the neck and upper part of the chest. It appears as fine bright-red and evenly diffused spots. Later the skin peels in scales, flakes or large pieces. In the early stages of the disease the tongue is often of a characteristic strawberry type, the red papilae of the tongue showing through the white fur.	Discharges from nose, throat, ears, and broken down glands and any open lesion.	2 to 7 days Usually 3 or 4 days	Direct contact with cases or articles soiled by infectious discharges or by contaminated milk.	Twenty-eight days from onset, without regard to desquamation and while there are abnormal discharges or open sores.
Whooping Cough	The disease is highly infectious and sometimes assumes a virulent type. A malady that is particularly infectious during the first few weeks and is accompanied by a high mortality among very young children.	Discharges from bronchial and laryngeal mucous membranes.	Within 14 days	Direct contact and with articles freshly soiled by discharges.	During catarrhal stages.

SCABIES OR ITCH

An infectious eruption found most frequently on palm of hand and between fingers. The usual treatment is to wash affected parts thoroughly with warm water and soap and then anoint with a diluted sulphur ointment. Child should be kept separate until cured. Sleep alone. All clothing and bed linen should be boiled for one-half hour. Quite contagious, especially to others in same family. Exclude child until eruption has entirely disappeared.

PEDICULOSIS OR HEAD LICE

Light gray insects. Lay eggs or "nits" in the hair at the nape of the neck and about the ears. Symptoms are irritation and itching of the scalp. The usual treatment is to soak hair in kerosene or in turpentine, wash thoroughly with soap and hot water. Repeat three successive nights. Scrupulous care and cleanliness are sufficient to prevent recurrence. Exclude child until head is free from lice. Entire family must be deloused.

AND CONTROL OF COMMUNICABLE DISEASES

WEST VIRGINIA STATE DEPARTMENT OF HEALTH

Laboratory Diagnosis	Rules for School Attendance	Special Features	Period of Quarantine and Method of Control
Examine cultures from pharynx of carriers or spinal fluid turbid and under pressure organisms can be found intra and extracellular.	Children from houses infected shall be excluded from school during the quarantine period or may be permitted to attend school after being removed from infected house and kept under observation for 10 days together with obtaining negative pharyngeal cultures.	Most prevalent in winter and spring months. Over-crowding is a factor in the spread of the disease.	Quarantine and isolate for 14 days—isolate carriers until pharyngeal cultures negative 2 to 4 times. Prevent overcrowding and deficient ventilation.
Chief inoculation (Lymph) rabbit's cornea negative for Guarnieri's bodies as against variola.	Sick child can not attend school. Exclude contacts to known cases from school for period of 14 days unless satisfactory proof of their having had the disease is furnished.	A mild disease with few after-effects but readily transmitted. The most dangerous period is during the onset of the disease. Papules, vesicles, postules and crust present at same time due to successive crops of the eruption.	Notify health authorities having jurisdiction and isolate patient for 14 days from beginning of the disease, and until all abnormal discharges have ceased.
Cultures throat, nose or other affected surfaces. Examine for B. Diphtheria.	Sick child must be excluded from school until two negative cultures, taken not less than 24 hours apart, are obtained from the nose and throat. Children remaining in infected home may be released 5 days after quarantine is lifted, 1 negative culture and freedom from disease. Exposed children living in other homes may be released after 1 negative culture and freedom from disease. Children exposed to disease should be removed from infected premises and kept under observation for a period of 5 days. At end of this period secure 1 negative culture before releasing.	A very serious disease, varying greatly in its forms and frequently escaping detection. Mild cases should be particularly sought after as they are fully as infectious as the more apparent ones. All children under 5 years of age should be immunized against diphtheria by injection of toxin-anti-toxin. All children over 5 years of age should receive the Schick test; those reacting positively should be immunized. Daily inspection of children for fever, sore throat or croupy cough is recommended during the prevalence of the disease.	Quarantine and isolate case until two negative cultures are obtained from nose and throat taken 24 hours apart. In absence of laboratory test, cases should be quarantined for 21 days from beginning of disease. Wage earners of patient's family should be released from quarantine immediately after one negative culture each from nose and throat is obtained.
None.	Same for measles.	Usually a mild disease with few or no after-effects. Precautions should not be neglected.	Isolate patient 10 days—Concurrent disinfection.
None.	Sick child can not attend school until 4 days after temperature becomes normal and abnormal manifestations have disappeared. Well children from infected homes can not attend school.	An exceedingly infectious malady frequently followed by serious after-effects. The patient should be kept in a recumbent position until 4 days after the temperature has become normal or longer if necessary.	Prevent the promiscuous transference of saliva.
None.	Sick child can not attend school. Children from infected homes who have had measles may attend school. Well children from infected homes who have not had measles may not attend school.	A malady which is infectious even before the rash appears. Complications such as broncho-pneumonia, middle ear disease, weakness of the eyes and even tuberculosis may ensue. The after-effects are much more serious than the disease itself.	Quarantine and isolate cases for 14 days—concurrent disinfection.
None.	Sick child can not attend school until 2 weeks after onset of disease and 1 week after disappearance of swelling. Well children from infected homes may not attend school until 21 days after last exposure to known cases.	Because of the infectiousness of the disease attempts should be made to observe early symptoms and exclude immediately persons showing symptoms.	Isolate patient until parotid glands return to normal. Contacts should be excluded from public gatherings for 21 days from date of last exposure.
Marked leukocytosis in severe cases. May be some eosinophilia. Urine may show albumen.	Sick child must be excluded from school for at least 6 weeks and until membranes are normal and discharges have ceased. Well children may be admitted to school after 7 days of exclusion, provided they have been removed from infected home during that period and are free from the disease.	When the disease is present a daily inspection of the school children should be made for the purpose of detecting early cases. Sore throat, fever or feeling of illness should be deemed sufficient for the exclusion of a child from school. The disease is dangerous both during and after the attack. Complications are frequent. A certain percentage of cases of scarlet fever do not have a distinct rash. Quite an additional number of cases have only a slight rash on some parts of the body, the rash disappearing within a few hours. The failure to recognize these obscure cases is undoubtedly responsible for the occurrence of many additional cases.	Quarantine and isolate cases for 28 days from beginning of disease or until all discharges from ears or glands have ceased without regard to desquamation. Contacts should be isolated for 7 days. Disinfect all discharges. Pasteurize milk.
Primary leukocytosis, then lymphocytosis, then eosinophilia. Examine smear from sputum of early stages and culture same.	Sick child must be excluded from school at least 8 weeks after onset. Well children from same home may attend school provided they are removed from infected premises for period of 14 days.	Whooping cough is especially infectious during its early stages. The disease is particularly fatal to children under 5 years of age and may cause prolonged debility at all ages.	Isolate child 2 weeks after whoop.

EXCLUSION FROM SCHOOL

Teachers should send home at once any pupil with a severe cough, a severe cold, itch, lice or other vermin or any contagious skin disease; also children who are filthy in body or clothing, or who have any dangerous contagious or infectious disease.

IMPETIGO "CONTAGIOUS SORE"

Sores which soon form loose scales. Appear principally on face, also may appear on back of hands. The usual treatment is to apply ammoniated mercurial ointment (10% strength). Child should use separate towels. Very contagious, especially in the spring. Exclude child until sores have disappeared.

Nervous System.

MEDICAL TERMS

Ab—meaning From. The word abnormal meaning behaving or acting from the normal which is to say different from the regular.

Acute—Used in two ways. One meaning sharp, stinging, disturbing, equal to directing all attention to it, biting such as acute pain, or toothache. 2. What is short, or new, or recent by acquired. An acute disease is one just "caught" in an organ not before affected. An acute appendicitis is one that has just become diseased in an organ supposed to be normal.

Bacteria.

Coccus—Bacteria that are round or in the shape of a ball.

Bacillus—Bacteria that have the shape of rods or straight lines.

Spirillum—Bacteria that have a coil-like form that are stiff.

Spirochaete—Bacteria that are in the form of wavy hair and are flexible.

Chronic—Applied to inflammations and other conditions that have been acute and instead of going on to cure have become continuously affected or diseased. They may apparently have recovered as regards symptoms and still have remained diseased. A patient may have an "acute appendix." Pain, tenderness, nausea, vomiting, fever and all these subside. Repeated attacks with intervals of seeming good health will however reveal the disease has become chronic.

Cesarean Section—Delivery of child by a laparotomy.

Diagnosis—The art of telling the points of difference that one disease has from the others and in that way arriving at the nature of the affection with which any given case may be diseased.

Clinical Diagnosis—That obtained at the bedside based on the symptoms present during life, usually in conjunction with the past experience of the doctor; and not taking in account the laboratory or other such findings.

Differential Diagnosis—Telling one disease from another which is different.

Exclusion—Ruling other out.

Laboratory—Obtained by tests of blood, urine, sputum, and the examination of bacteria.

Pathological—Founded on the texture of a removed piece of a diseased organ. Also its microscopic aspect.

En—Usually refers to the condition as within or inside the membranes covering (Walls) Encephalitis. Inflammation of the inside of the brain itself.

Endo—Means on the inside as well. Endocarditis, an inflammation on the inside of the heart or in its cavity.

Ecto—A term meaning without.

Ectomy—Usually means in following a name, to cut out—Gastrectomy—to cut out stomach: Appendectomy—to cut out appendix: Cystectomy—to cut out a cyst. Although it usually applies to a bladder, it furthermore usually refers to the Gall Bladder.

Filterable Virus—Toxins or poisons which slip through all the barriers at present known to collect such material. It is as though you were using a sieve and some of the particles were still too small to be collected by the mesh.

Immunity—The ability to "not take or catch" a disease. It is of two main kinds.

NATURAL IMMUNITY—The one we have within our own bodies, so to speak.

ACQUIRED IMMUNITY—The one we induce in ourselves when we are vaccinated or have protective serum injected into our bodies. This may be done in gradually increasing small doses as in the injection against "Hay Fever" or in one dose to protect other members of the family when a single case of Diphtheria has developed.

Itis—This means an inflammation of the part of the body to whose name it happens to be attached. For instance Tonsil. The small organ at the back part of the throat. Inflammation of it is called Tonsillitis. Mastoid—Mastoiditis. Appendix—Appendicitis.

Laparotomy—A term now used to mean any opening through into the abdominal organs. An operation for Appendicitis is a Laparotomy. As is also one for the removal of an Ovary.

Peri—Means around. For instance if the tonsilar inflammation extends around the tonsil as well as in the organ itself, it is called Peritonsilar Abscess or a Peritonsillitis. Pericardium means around the heart. Periosteum—around the bone.

Normal—The way healthy organs were when they were born subject to the usual and prescribed rules of growth. That is the usual composition and structure of the tissues of the body as they exist when unaffected by disease or injury, and are performing their functions in the regular manner.

Pneumococcus—Coccus or bacteria of Pneumonia. Streptococcus occurs in chains, the germ of virulent Blood Poisoning.

Staphylococcus—Coccus in the clusters like grapes when preceded by the word pyogenes —means they form pus.

ALBUS—White pus.

AUREUS—Golden yellow pus.

CITREUS—Lemon yellow pus.

It is well to recall these names, difficult as they first appear on reading them, because each one of them have characteristics as different as one species of dog has from another.

Streptococcus—A much dreaded organism. Its introduction through a wound is what usually causes the short infections of blood poisoning that quickly terminate in death. The Staphylococcus, Aureus and other forms are virulent but not so violent usually in their activities. Whenever you get a wound and it has violent symptoms of inflammation with red-

dish streaks running up a limb or away from the scene of injury, you will do well to at once repair to a competent authority and find out just which one of these organisms has been the cause.

Serum—This is the plasma or serum obtained from animals who have been given a disease and as they arrive at the condition where they "throw it off" then their blood is withdrawn. In many diseases, the bacteria attack the human body with such vigor that the natural fighting machinery of the blood cannot make antitoxin fast enough to act as a complete antidote to the attacking poison. When you give antitoxin of any kind you are only adding the fighting antitoxic serum of a horse or other animal to that of the sick person's—it is like the slang phrase "Every little bit added to what you got, makes a little bit more." Say you could measure it in ounces (which of course you cannot) and you had a child with Diphtheria. Say the poison was two ounces. The child's resistance in antitoxin one ounce. Now you add two ounces of a horse's antitoxin. That would make three against two and the child would get well. The only thing to remember is not to mix animal and human blood together very often. If you do a condition of serum sickness or anaphylaxis will follow.

Tests:

Wasserman Test—To determine the presence of Syphilis from blood or spinal fluid.

Fehlings Test—A test for sugar in the urine. Used in Diabetes.

Albumin Test—A test for albumin in urine. Used in Brights Disease or to determine poor kidney function.

Specific Gravity—Comparing the urine with that of distilled or pure water.

Reaction—Testing any liquid to see if it is acid or alkaline.

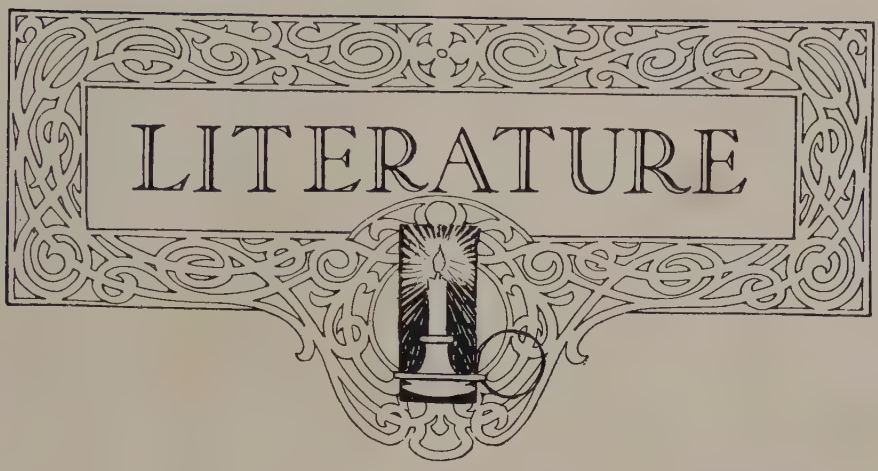
Basal Metabolism—A test with a special apparatus which measures the composition of the ventilation products of the air in the lungs and gives you an idea how the body is burning up its energy.

Microscopical Examination of Urine—Putting the urine through a centrifuge, which whirls out the sediment. This is examined for casts, bacteria, pus, blood, urea, uric acid and the cells of the kidney and bladder.

Twilight Sleep—Formerly extensively used but not now so common. Use of Morphine and a drug called SCOPOLAMIN to render patient as acting to stimulus of pain but not keeping it in her memory when in labor.

Vaccine—The well known clear fluid taken from cowpox blister or vesicle which inoculates against smallpox. This is now prepared in elaborate laboratories, the very last word in cleanliness and is taken from inoculated calves whose antecedents are proven healthy. Vaccines are also prepared against other diseases. They are however obtained after inoculation with bacteria and themselves. Typhoid is the chief disease protected against. This is a highly successful procedure and made Typhoid Fever almost a negligible disease in the late war.

Common colds, aches, boils and many others have a vaccine. They have not been altogether accepted by all physicians but that of Typhoid as a preventive not as a cure is a efficacious as vaccination against smallpox.



LITERATURE OF THE NATIONS
OUTLINE OF THE WORLD'S LITERATURE
LITERARY PLOTS
DICTIONARY OF PSEUDONYMS
DICTIONARY OF MYTHOLOGY
BOOK REVIEWS
RHETORICAL TERMS
LIST OF BOOKS FOR THE FAMILY LIBRARY

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BIRTHPLACES OF FAMOUS AUTHORS

Longfellow's Home, Cambridge, Mass.
"Sunnyside," Washington Irving's Home

Whittier's Birthplace, Haverhill, Mass.
"Wayside," The Home of Nathaniel Hawthorne, Concord, Mass.

BOOK IX.

LITERATURE.

Mural Painting in the Congressional Library, Washington.
By H. O. Walker.

HISTORY OF LITERATURE OF ALL NATIONS. OUTLINE IN CHART FORM OF THE LITERATURE OF THE WORLD, SHOWING CONTEMPORARY WRITERS IN THE SEVERAL COUNTRIES. DICTIONARY OF MYTHOLOGY. DICTIONARY OF PEN NAMES AND REAL NAMES. OUTLINE OF INTERESTING BOOKS. LITERARY TERMS AND DEFINITIONS. USEFUL BOOKS FOR MOTHERS AND TEACHERS. FOR CHILDREN, FOR HIGH SCHOOL. COLLLEGES AND UNIVERSITIES.

Babylonian and Assyrian Literature.—The majority of modern students of language consider that it is very probable the Sumerian language, spoken by the earliest inhabitants of the valley of the Euphrates, is the oldest language of which we have any knowledge. In that locality recent excavations have revealed a great quantity of clay tablets bearing characters written in the peculiar wedge-shaped letters known as cuneiform inscriptions. These have been deciphered and are found to be records in the Sumerian language, which seems to have persisted in written records long after the people themselves had merged with the Babylonian races. Only a very slight fraction of the great wealth of the early literature that is buried along this locality has yet been discovered, but sufficient is known to render it very probable that the first place in which written records were made, of which we have any knowledge, is among the Babylonians. The language was Semitic, and the Babylonian differed from the Assyrian only in a few variations of dialect. Everything points to a common Aryan origin; in no sense did the Babylonians borrow from the Egyptians. Clay was used as an ordinary writing material among the earliest Babylonians, but they inscribed upon stone the records which they desired to be permanent. Assurbanipal, a king of Assyria, caused copies of this earlier literature to be made, and some of it dates back earlier than 2000 B. C. It comprises hymns, prayers, incantations, myths, legends, and poems. Among the records are a great many commercial and legal cabinets, which are abundant in European and American museums. These range all the way from 3000 B. C. down to 200 B. C., and are exceedingly valuable as throwing light upon the history, manners, and customs of the people during many of the past centuries. There is every prospect that the gaps in the complete record will all be filled up by discoveries of new material which the excavations are constantly yielding. So important has this great mass of literature been to the students of past history that since 1890 it has been possible to almost wholly reconstruct the records of early Babylonian and Assyrian history from them. Under the patronage of the Assyrian kings the great library at Nineveh, instituted by the removal hither of that at Cabah, obtained a wonderful collection of tablets and books systematically arranged in every known department of knowledge. This library was destroyed in 625 B. C. when Nineveh fell. Nebuchadnezzar formed a great royal library, of which we have probably exaggerated accounts, and this, too, disappeared with the fall of Babylon. The contents of these libraries were private property of the kings.

EGYPTIAN LITERATURE.

Such papyri as we now possess are sufficient to show that ancient Egyptian literature was very extensive. The pyramids of the VI. and VII. dynasties bear rock-cut inscriptions of a religious nature. These are generally magical, for the religion of ancient Egypt was saturated with belief in magic. The famous *Book of the Dead* is, in its earlier chapters, little more than a series of incantations and assurances to the soul of the dead of its future welfare. Translation of hieroglyphics shows a complete absence of any works of a philosophical or speculative character. The nearest approach to this department of literature is a number of moral maxims or proverbs, all of an extremely practical nature. Such are the *Proverbs of Ptah-hotep* and the *Prescriptions of Ani*. The same practical vein runs through their works on science. The *Rhind Papyrus*, preserved in the British Museum, is the most important work on Egyptian mathematics which we have. It is a collection of arithmetical and geometrical solutions of problems of a very practical sort.

The *Papyrus Ebers*, written about 1550 B. C., is an extensive medical work. It deals only with the treatment of disease, and the prescriptions which it contains are in many cases disgusting and always empirical. Magical incantations play an important part in increasing the efficacy of the treatment prescribed. A fuller collection of these religious and medical incantations has been preserved in the *Harris Magical Papyrus*.

The *Turin Papyrus* gives an admirable and interesting illustration of civil and criminal law procedure, especially as no code or collection of Egyptian laws has come down to us. The *Abbott Papyrus* further illustrates these in describing the procedure in an investigation into tomb robberies in the reign of Rameses IX. (about 1100 B. C.).

Egyptian poetry is modeled upon that of the XII. dynasty. The only epic poem which remains describes the victory of Rameses II. over the Hittites at Kadesh on the Orontes. Lyric poetry abounds in the form of many really fine hymns and a few love-songs.

In the narration of tales and stories the Egyptians excelled all other Oriental nations, and the professional story-teller appeared in public places in ancient Egypt just as he does in Cairo to-day. The *Papyrus Westcar* contains a collection of stories dating from the Middle Empire. The story of the *Fated Prince* which is contained in the *Papyrus Harris*, though incomplete, is interesting in its treatment of a theme common in the folklore of all nations. The *Tale of Two Brothers* contained in the *Orbiney Papyrus* is complete. The story of the *Shipwrecked Mariner* gives play to the Egyptian love of adventure in simple, unaffected narrative, while the *Story of Sinuhe* and that of the *Eloquent Peasant* are heavily laden with a florid and ornate style and filled with rhetorical extravagances. Later Egyptian fiction, however, returns in the Ptolemaic era to the simple narrative, where the plot is essential and quick movement is the rule.

CHINESE LITERATURE.

The history of Chinese literature goes back, perhaps 18 or 20 centuries B. C. We do not find in China any lasting monuments like those of Babylon and Assyria upon which by inscriptions the early writings might be recorded. The earliest gathering together of the Chinese literature that we know of was in the sixth century B. C. when Confucius edited the famous *Ching* or *King*, a sacred canon. From this we know that already a great mass of both prose and poetry existed in China. This classic stands in a unique position among the early writings of the world in that it has exerted a marvelous influence upon the manners, morals, and customs of the nation down to the present day. It forms as interesting a literary collection as can be found anywhere among ancient writings. Thousands of volumes of commentary and discussion have been based upon this work which for over 3,000 years has been the model of literary style, the means of preserving the form of their remarkable language, and of prescribing the social life and the government of so many millions of people. As a record of authentic ancient history China is easily in the first rank of the Asiatic nations for reliable information concerning the early ages. Mencius, the greatest follower of Confucius, adds to the work and gives an elaborate exposition of the teachings of Confucius and sets forth the principles of his philosophy in what is known as the *Book of Mencius*. This group of works has dominated the minds of the people and has subordinated all other teachings, making it the backbone of extreme conservatism of the nation in all of the departments of national life. When, in 213 B. C., the emperor Chin found his reforms opposed by this spirit of conservatism which the writings of Confucius imposed upon the people, he ordered the destruction of all books in the hope that he would in this way be able to overcome the opposition of the *literati*. The only books spared were those upon science, agriculture, and divination. This thorough destruction of literature forms an epoch in Chinese history. But Chin's reign was short, and the Han dynasty (200 B. C.—200 A. D.) which succeeded instituted one of the most zealous revivals of learning that history has ever witnessed. In this revival there was a remarkable development of poetical and historical writing which is in distinct and marked contrast with the severe canonical restrictions of the age of Confucius. It is to this period that the work of Sze-ma Ch'ien (born 145 B. C.) belongs. His *Historical Record* gives the history of China from the beginning down to the author's own times in 526,500 words, all originally scratched with a stylus upon bamboo sheets. So thoroughly and devotedly has this work been studied that it forms even to this day the model of style for all historical treatises. Each succeeding dynasty caused the records of its rule to be added faithfully to the original record, so that in 1747 the work consisted of 219 volumes in which the national history had been revised and condensed. Other noted Chinese historians are Sze-ma Kwang, who wrote a history in 360 volumes in the eleventh century, and Chu Fu-tz', who wrote an abridgment in 55 volumes in the twelfth century.

Among the comparatively few works of foreign travel, for which the Chinese were never noted, are the accounts of the Buddhist pilgrims, Fa Hsien in the fourth century, and Hsuan Tsang

in the seventh century. These record travel in India and preserve much Buddhist literature which would otherwise have been lost in the extinction of India.

The intellectual life of China reached its zenith in the T'ang dynasty (600-900 A. D.), The names of the poets of this period are legion, and a "Complete Collection" was published in 1707. It contains 50,000 poems in 900 books. The most noted names of this period are Li Po (705-762) and Tu Fu (712-770), both court favorites and very popular among all classes. Their names have been household words in China for more than a thousand years. Han Yu (768-824) is a name venerated for nobility of character, probity and ability in high office, and refinement and excellence of literary style. Parts of his works are even now read at Chinese funeral exercises and others form an important part of the repertoire of school and public readers.

While there is a marked and rapid decline in the originality and power of the writers after the great golden T'ang period of Chinese literature, yet several noted names appear in the tenth and eleventh centuries. Valuable historical works were written by Sze-ma Kwang (1019-1086) and Chu Hsi (1130-1200). The latter was one of the most remarkable men of his country. He was not only a historian of ability but as a philosopher he interpreted the work of Confucius into that system or code which is now known to the outside world as Confucianism.

The invention of block printing in the tenth century caused a great increase in bookmaking and in the formation of libraries. While the Mongols added nothing to the intellectual life of China, it was during the period of their control that the Chinese drama was evolved and developed, and novels and short stories were introduced. Chinese plays are not long, as is erroneously supposed in the West. They are short and the plot often ingenious and melodramatic, but never complicated. The sessions at the playhouses are long, but a number of plays are presented in rapid succession without scenery. During the Ming (1368-1644) and present dynasties novels have developed with increasing and absorbing interest, though the plot is often too complicated and the characters too numerous to suit the Western ideas. Chinese short stories are admirable and some of them rank among the world's best, such as *Strange Stories* published in 1679.

Chinese later literature abounds in dictionaries and encyclopedias—one of the latter being complete in 5,600 volumes. No other country can present anything to compare with China in this department; but they can hardly be classed as literature.

Taken as a whole, Chinese intellectual development is most praiseworthy and creditable to any nation. More attention is being devoted to its study by Western scholars and every year reveals much to be admired in it, though through the difficulties of the language it suffers in translation more than the literature of other nations.

The labors of various European travelers and students have given us specimens of almost every description of Chinese literature. In legislation, we have a translation of the penal code of the Empire; in politics and morals, the sacred books of Confucius, and his successor Mencius; in philology and belles-lettres, a well-executed dictionary of the language; several translations and abstracts of history; and selections from the drama, criticism, and romance. Among the most successful explorers of the field of Chinese literature, we may mention Staunton, Davis, Morrison, Klaproth, and Rémusat, who have followed up the earlier researches of the Jesuits at Peking, and elucidated a subject which had been supposed to be inaccessible.

HEBREW AND JEWISH LITERATURE.

The earliest known writings in Palestine are the Tel el-Amarna letters which date about 1400 B. C. It is, however, probable that a knowledge of writing was general among the Hebrews about 1000 B. C. The greater part of ancient Hebrew literature which is known to us is contained in the Old Testament, which covers a period of about 900 years,—from 1000 B. C. to about 100 B. C. There are in addition some apocryphal books, such as the *Book of Ecclesiasticus*, written by Jesus Sirach about 180 B. C. A large portion of the originals of this work has recently been discovered. The oldest portions of this literature are the poetical portions, such as the *Song of Deborah* in Judges v., the *Fable of Jotham* in Judges ix., and the *Elegy of Saul and Jonathan* in II. Samuel i. The earliest collections of traditions and legends date from the tenth and ninth centuries B. C. Legal codes, such as are to be seen in the *Book of the Covenant* in Exodus xxi. and xxii., date from the tenth century B. C. The discourses of the prophets date from the eighth century B. C., while the latest sections are of the third century B. C. The great body of the religious poetry such as the *Psalms* and such philosophical productions as the Books of *Ecclesiastes* and *Job* were written after the return from exile. At that time a college of learned men under the direction of Ezra gathered together the remains of Hebrew literature, and from their labors we have received the books of the Old Testament in their present form.

This period of literary activity is considered the first period of Jewish literature as distinguished from the ancient Hebrew literature. The second period of Jewish literature dates from 143 B. C. to 135 A. D. In this period the *Midrash*, or inquiry into the meaning of the Old Testament, was divided into the *Halacha*, or authoritative and binding civil and religious law, and the *Haggada*, which was a free poetical dissertation on the whole body of the Old Testament. The *Midrash* was the center of all Jewish mental activity for over 1500 years. To this second period also belong all of the *Apocrypha* and the earliest Jewish writings on Christianity. Josephus, Philo, Hillel, Shammai, Johanan ben-Zakkai, Gamaliel, Eleazar ben-Hyrcan, Joshua ben-Hananya, Ishmael, and Akiba are among the great names of the second period. To the third period (175-475) belong the flourishing schools of Galilee, Syria, Rome, and Babylonia in which instruction was given in the *Halacha* and the *Haggada*. The masters of the *Mishna*, the body of "oral law," and the *Talmud*, the comprehensive compilation of laws and ceremonial regulations pertaining to rabbin-

ical Judaism and the discussion of the same, were Eleazar ben-Jacob, Jehuda, Jose, Meir, Simeon ben-Yehai, Jehuda the Holy, Nathan, Hiyya, Rab, Samuel, Johanan, Hunna, Rabba, Rava, Papa, Ashe, and Abina. In 340, Hillel II. fixed the Jewish calendar. The fourth period extended from 475 to 740. During this time the Jews adopted the language of the country in which they lived and the greatest part of the literature is of translation of the *Talmud* and other works into the several languages. Little remains of the works of the eminent physicians of the period. In the fifth period, from 740 to 1040, the Oriental Jews were stimulated by the great activity of the Arabs, and names of many physicians, astronomers, grammarians, commentators, and historians are famous in the literature of this period. The oldest prayer book was drawn up in 880, and the first Talmudic dictionary in 900. In this period are such names as Saadia (died 942), famous in nearly all departments of knowledge; Sherira (died 998) and his son Hai (died 1038) who wrote a dictionary. Spain and Egypt became the great seats of Jewish literature after the suppression of the Babylonian schools in 1040. In the eighth century Hebrew rhyme was produced. The sixth period, which extended from 1040 to 1204, was the most splendid in Jewish medieval literature. The Jews in Spain devoted their energies to almost every branch of literature and wrote in Arabic, rabbinical Hebrew, and ancient or classical Hebrew. The greatest names among them were Samuel Halevi, the great doctor (died 1055), and the celebrated Maimonides, who died in 1204. The French and German Jews attained very great fame. The seventh period (from 1204 to 1492) shows distinctly the influence of Maimonides. The most famous writers of this period lived in Spain, and, later, in Portugal, Provence, and Italy. The first Hebrew books ever printed were produced in Italy between the years 1475 and 1477. The eighth period extended from 1492 to 1755. The ninth period includes the years from 1755 to the present time. In these two periods the names of brilliant Jewish writers increased so that it is impossible to give even the names of the most illustrious. But it may be safely said that there is no civilized country which is not proud to record the names of eminent Jews among the great literary men of every department of literature. Everywhere they take a leading part in the intellectual progress of the age; and there is hardly a university of note which does not number Jews among the most learned professors.

SANSKRIT LITERATURE.

Sanskrit literature, like the language, may be divided into two periods: the Vedic and the Sanskrit. The chief point of difference is that the literature of the Vedic period is always sacred and that of the Sanskritic period is nearly always profane. The *Vedas* are the oldest books of the Hindus and, in the opinion of great philologists, date back to the fifteenth century B. C. They are the sacred books or the Bible of the Hindus written in poetry in the most ancient form of the Sanskrit language. The *Vedas* are three in number: first the *Rig-Veda*, containing hymns and mystic prayers; second the *Yajur-Veda*, containing the religious rites; and third the *Sama-Veda*, composed of prayers in the form of hymns or psalms. These writings are believed to be inspired. They treat of the 33 gods of the heavens, of the air, and of the earth; of the creation of all things; of the relation of the gods to each other; of the relations and duties of men to each other and to the gods; of surgery, medicine, music, dancing, war, architecture, mechanical arts, astronomy, astrology, grammar, poetry, etc. The *Vedas* were first translated into English by Sir William Jones, about 1790. The individual writers of the Vedic literature are practically unknown, as the books are the work of families of poets or schools of religious learning. The *Brahmanas* are divisions of Vedic literature which relate to prayer and sacrifice. They are of a later period than the hymns. The *Upanishads* are speculations of a philosophical and theological nature found usually at the end of the *Brahmanas*. The earliest of the *Upanishads* can hardly be dated later than the year 600 B. C.

Sanskrit literature includes epic, lyric, didactic, dramatic, and narrative. The great epic is the *Mahabharata* or the story of the *Bharatas*. It is a composite work dating in the form in which it has come down to us from about 200 B. C. with additions from time to time down to 100 A. D. It consists of 18 books of 100,000 stanzas. The Bharata war which the epic describes is thought to have occurred in the twelfth century B. C. The *Ramayana* is the second of the two great epics of India. Unlike the works which precede it, this epic is mainly the work of one poet, Valmiki. It ranks with the great epics of the world and is to-day the favorite poem of the Hindus. In its 50,000 lines it describes the youth of Rama, the incarnation of the god Vishnu, and his banishment and residence in central India. The *Puranas* are a mixture of the epic, didactic, and cosmogonic, dating from the sixth to the fourteenth centuries A. D. They are 18 in number and relate chiefly to mythological legends. They form a sort of religious manual for the people and deal almost exclusively with the worship of Siva and Vishnu. Epic poetry reaches its highest perfection in the works of the great poet Kalidasa in the sixth century A. D. *The Birth of the War God* and the *Race of Raghu* are his most artistic epic poems.

In Sanskrit lyric poetry also Kalidasa is the leader. His elaborate long lyrics, the *Cloud Messenger* and the *Cycle of Seasons*, are famous examples. Short lyric verses were a favorite form of poetry for which Bhartrihari is the most famous. He lived in the seventh century A. D. and is the most remarkable Sanskrit poet after Kalidasa. Amaru, who wrote the *Century of Amaru*, is perhaps better known than Bhartrihari, because of his mastery of the erotic phase of lyric verse. But Hindu poetry and prose is always marked by the presence of speculative and reflective expression so that much of the writing is at once capable of classification in several departments of literature. The proverb is a favorite form of expression in Hindu writing and more than 8000 stanzas of this nature have been collected from Sanskrit writings. Such is largely the work of Bhartrihari; Silhana in his *Century of Tranquillity;* and the *Hamer of Folly.*

In didactic literature the most famous examples are the *Pancatantra* and the *Hitopadesa*. The *Pancatantra* is the great collection of beast-fables of the Hindus. It dates from the fifth century A. D., and is the work of probably many hands. The *Hitopadesa* or *Book of Good Counsel* is a collection of fables which have passed into the literatures of the whole world.

The chief dramatic writer, too, of India is Kalidasa, at once a master of the epic, lyric, and dramatic. One drama antedates his work. It was written at the court of King Sudraka, probably by Dandin. Later than Kalidasa are the works of King Harsha in the seventh century; Bhavabhuti, who ranks next to Kalidasa in the drama, and Viskhadatta, both in the eighth century.

The most interesting phase of Sanskrit writings is the fable and the fairy tale. Besides the *Pancatantra* and the *Hitopadesa*, which deal with fables, there is the *Oceans of Rivers of Stories* composed by Somadeva, a Kashmirian poet about 1070, which is the most famous collection of fairy tales. There are also the *Seventy Stories of the Parrot*, the *Twenty-five Tales of the Vampire*, and the *Thirty-two Stories of the Lion-Seat or Throne*.

In prose romance there are the works of Dandin who wrote the *Adventures of the Ten Princes* in the sixth century A. D.; of Subandhu, a little later; and of Bana, a writer of novels in the seventh century A. D.

Indian literature abounds in works of science, from the grammars of Panini, one of the greatest grammarians of all time, and from his commentators, Katyayana and Patanjali, down through the gift of the so-called Arabic numerals to the Arabs, to the medical works of Caraka, chief physician to King Kanishka, in the first century A. D.

PERSIAN LITERATURE.

The literature of Persia falls into four divisions: (1) The Old Persian cuneiform inscriptions of the Achæmenian kings; (2) the *Avesta*, including the more ancient Gâthâs, believed to date from the time of Zoroaster; (3) the Pahlavi literature; and (4) the post-Mohammedan or "Modern Persian" literature, which latter is generally what is understood as "Persian Literature." The Achæmenian inscriptions may be regarded rather as historical than literary monuments, and we may pass to the one classic which represents the literature of ancient Persia. This is the *Avesta*, of which only a fragment has come down to us, and which embodies the religious system of Zarathustra (Zoroaster).

The language of the *Avesta* is termed Avestic, but is often improperly called Zenda. The misleading term, *Zend Avesta*, really means "Avesta and Zend," that is, the original text of the Zoroastrian scripture, and the Zend or "Explanation" (translation and commentary) which accompanies it. The Zend is written in the Pahlavi language, different altogether from that of the text. By analogy it is as if some old Anglo-Saxon fragment had been "explained" in the middle English of Chaucer.

The Pahlavi literature consists chiefly of translations of Avesta texts, and of a number of religious works and commentaries of Pahlavi texts. Of non-religious subjects only 11 works have come down to us, containing not more than 41,000 words altogether. Pahlavi was essentially the Persian literature of the Sâsânian period, though it continued to about the ninth or tenth century. No poetry has come down to us from Sâsânian times, and scholars are not agreed as to whether such poetry ever existed.

In 641 the Persians were defeated by the Arabs at the battle of Nehavend, and with the fall of Merv in 651, the Moslem conquest was complete. The growth of a national literature was retarded, for during the Arab dominion Arabic was the chief medium in Persia, both for prose and poetry. Under the semi-independent dynasties, the Saffârids, Sâmânids, and earlier Tâhirids, the use of Persian was revived as a literary language.

The oldest poem written in modern Persian that has come down to us is a short ode by Abbas of Merv, at the beginning of the ninth century. The founder of the new school of Persian literature proper was the blind poet Rudagi, who died about 950, and who was pronounced by his contemporaries as "peerless amongst the Arabs and Persians." The language of Rudagi and his followers was surcharged with Arabic words, and their poems were but echoes of Arabic poetry.

The famous Sultan Mahmud of Ghazni, who reigned from 998 to 1030, was the greatest patron of literature that Persia had hitherto known. His court was the home of 400 poets, of whom one was elected as "King of the Poets," or laureate—an office which has continued to the present day.

The works of these poets consisted chiefly of occasional odes and panegyrics, with a sprinkling of lyrics in honor of some imaginary beauty. These were arranged in *divans* or collections, and were for the most part modeled on the *ghazal* of the Arabs. The ghazal is a form of poetical composition, consisting usually of 12 couplets, into the last of which the poet invariably introduces his nom de plume. The Arabic *kasida*, corresponding to the Greek *idyllium*, or our elegy, was also freely copied. It was at the court of the great Mahmud that Firdausi flourished, the Homer of Iran, and the author of the great Persian national epic, the *Shâhnâma*, or "Book of Kings," completed in the year 1010 and containing about 60,000 couplets. Though not the founder of the epic style in Persian he was its greatest exponent.

The epic was foreign to Arabic poetry, and was essentially Persian in growth and origin. The national spirit, though suppressed, was not extinguished by the flame of Islam. Firdausi's famous epic recorded the old legendary story of Iran from the creation of the world to the fall of the Sâsânian dynasty in 641. In the field of pure romance the greatest figure is Nizami (died 1203), who composed five romantic poems. The last of this school and the last poet of the classical period was Jami (1414-1492).

Not only the epic but the *ruba'i* or quatrain (from Arabic *raba'a*, four) was native to the Persian genius; the examples best known to the West are the quatrains of Omar Khayyam (died 1123). The other great lyrist was Hafiz, noted for his famous ghazals. Among his many imitators the most prominent was Baba Fighani of Shiraz (died 1516 or 1519), known as "the

minor Hafiz." In the Persian lyric proper, love and wine are the predominating themes; but in reading these poems the esoteric or Sufiistic meaning must ever be borne in mind.

Parody is closely allied to the lyric, and in this connection must be mentioned Abu Ishak (died 1427), who sang of gastronomical glories. Still more closely related to lyric poetry is the religious and didactic poetry, equally permeated by the spirit of Sufiism. The foremost writer of the mystic poetry was Jalal-ud-Din Rumi (1207-1273), whose *Divan* and *Mathnavi* are among the most important sources for the study of Sufiism. His greatest predecessor was undoubtedly Farid-ud-Din Attar (died 1229), whose *Mantig ut-Tair* (*Bird Parliament*) is a noble allegory of the struggle of the soul to be one with the Infinite. To this class of writing also belongs the great name of Sâdi (died 1291), whose *Gulistán* or *Rose Garden*, and *Bustán* or *Flower Garden* are among the finest didactic poems of the Orient, and Mahmud-Shabistari (died 1317), the writer of the well-known *Gulsán-i-Ráz* or *Rose Garden of Mystery*.

The prose literature is meager in extent, and indifferent in quality, very few of the great writers making use of prose at all. The oldest specimens of prose are Muwaffak's work on pharmacology and Balami's translations of Tabari, both written in the tenth century. The principal historical works are the *Chronicles of Wassaf*, the *Marrow of the Chronicles*, by Khaswini, in 1370, and the *Rauset Essafa*, by Mirchond, written about 1450.

During the last century Persia has produced three poets of a high order of genius, Kaani of Shiraz, Yaghma of Khorasan, and Mirza Serush of Ispahan, all of whom, both in style and diction, rank almost equal with Hafiz and Sâdi. Kaana in particular is noted for his charm of language, and many of his poems are unexcelled in the Persian tongue.

Apart from the miracle play of *Hasan and Hosein*, the drama of Persia is of recent development and unimportant as literature. The present state of Persian literature cannot be called flourishing, and, save in the field of philosophical speculation, serious studies are rarely attempted.

GREEK LITERATURE.

Greek literature is the source from which all European literature has mainly sprung; nor is its quickening energy abated by the centuries. In ethics and logic, as in geometry, the Greeks laid the foundation of all modern thought. Their literature is preëminently original, as befits a race remarkable for its creative genius. The beauty of the mind expressed itself in beauty of form and language. In poetry the Greeks perfected for us the principal types—the epic, lyric, and dramatic; in prose they fashioned well-defined types to suit particular needs—historical, oratorical, philosophical.

Greek literature may be divided into three periods: (1) the Early Literature, from Homer to 475 B. C.; (2) the Attic Literature, from 475 B. C. to 300 B. C.; and (3) the Literature of the Decadence, from 300 B. C. to 529 A. D.

I. The Early Literature. During the early period of Greek literature epic poetry flourished. There are no extant records of any poetry previous to the immortal poems of Homer—the *Iliad* and the *Odyssey*. But these epics were not the crude efforts of a primitive race struggling to record its minstrelsy in the vulgar tongue. They are the finished products of a poetic age, and reveal the skill of a consummate artist. The earliest stages of Greek poetry were closely allied to religion—hymns to the gods, festive marriage hymns, dirges for the dead. In time, poetry assumed a more secular character, and the minstrel (*aoidos*) sang of the deeds of warriors and the clash of war. Narrative or epic poetry gradually took form and became identified with hexameter verse.

The *Iliad* describes one of the final stages in the ten years' siege of Troy, and centers around Achilles and his "wrath." The theme of the *Odyssey* is the return of Odysseus (or Ulysses as he was called by the Romans). It is more domestic than military, and is filled with the wonderful legends that stirred the popular imagination. Little is known of the illustrious bard who wove these legends, lays, and superstitions into an artistic whole. Whether or not the *Iliad* and the *Odyssey* are the work of one poet has been often challenged, but the question admits of no positive proof.

The second author whose works have come down to us is Hesiod. His most important writings are his *Works and Days*, the earliest didactic poem extant, the *Theogony* or *Origin of the Gods*, and the *Catalogues of Women*, of which the well-known *Shield of Heracles* was supposed to be a fragment, although the latter is now held to be of later date. A collection of thirty-three so-called Homeric Hymns has descended to us; these consist of epic preludes designed for the use of the rhapsodists.

As is natural to all literatures, the lyric is of later growth than the epic; the poetry of reflection is of later unfoldment than the poetry of observation. In this early epoch of Greek literature elegiac and iambic poetry arose and the lyric had its birth. Archilochus (670 B. C.) is regarded as the father of lyric poetry. Other noted names are Simonides of Amorgus (660 B. C.), and the famous elegists Callinus, Tyrtaeus, Mimnermus, Solon the great lawgiver, Theognis, Phocylides, Xenophanes the founder of the Eleatic philosophy, Simonides of Ceos (480 B. C.), more celebrated as a lyrist, and Hipponax the outcast of Ephesus.

As lyric poetry was inseparable from music its development kept pace with that of the sister art; for in ancient Greece music formed part of a liberal education. The Æolian School of lyric poetry was rendered famous by the works of Alcaeus, Sappho (610 B. C., a woman of surpassing genius), and Anacreon. The most prominent figures of the Dorian School are Alcman, Stesichorus ("marshal of choruses," whose real name was Tisias), Arion, and Ibycus (540 B.C.). Lyric poetry was Dorian in form but national in spirit. With Simonides of Ceos commenced a new era. Pindar (522 B. C.) became the national lyrist of Greece, and with him lyric poetry culminated. The fragments of his work which have come down to us represent every form of lyrical poem including hymns, panegyrics, dirges, choral dance-songs, and *scolia* or festive songs. The only complete poems of Pindar extant are his *Epinicia* or triumphal odes

celebrating the victories gained respectively in the Olympian, Pythian, Nemean, and Isthmian games. During this early period prose writing began among the Ionian Greeks of Asia Minor, though in a crude form.

II. Attic Literature. During the Attic period, from 475 to 300 B. C., dramatic poetry reached its perfection both in tragedy and comedy. Popular devotion to the drama brought about a decline in lyric poetry, though the dramatic art could not be entirely divorced from the lyric, for the songs of the chorus were an essential feature of the Greek drama. The drama attained its highest excellence in the works of the great trilogy of Greek tragic artists—Æschylus the true founder of tragedy, Sophocles, and Euripides. Besides "satyric" dramas 70 tragedies are attributed to Æschylus, 113 to Sophocles, and 92 to Euripides. Only seven of the tragedies of Æschylus now remain to us: *Prometheus, Seven against Thebes, Agamemnon, Choephori, Eumenides,* the *Supplicants* and the *Persians.* Sophocles was the most perfect tragic writer of classic times. His dramas are marked by skillfully woven plots, clearly delineated characters, and artistic development of the stories. He introduced improvements into the Greek drama, increasing the number of actors from two to three, which was the greatest number allowed on the stage at any one time. His extant plays are: the trilogy of *Oedipus the King, Oedipus at Colonus,* and *Antigone;* the *Death of Ajax;* the *Maidens of Trachis;* the *Philoctetes;* and the *Electra.* These plays of Sophocles give expression to the age of Pericles on its higher moral and intellectual side. Euripides (480 to 406 B. C.) introduces a new order of ideas. His characters are essentially natural and his dramas are marked by great pathos combined with elegance of language; they however lack the artistic finish of the plays of Sophocles. His leading tragedies are *Alcestis, Medea, Iphigenia among the Tauri, Hippolytus, Hecuba,* and *Ion.* The *Cyclops* is the only specimen of a satyric drama that has come down to us.

Like tragedy, Greek comedy originated from the worship of Dionysus. Attic comedy began to take artistic form about 470 B. C., and in the hands of the three great dramatists, Cratinus, Eupolis, and Aristophanes, it reached its highest perfection. The comedies of Aristophanes form a satire on the daily life of the Athenians, and partake somewhat of the nature of burlesque. Aristophanes was great not only as a satirist but as a poet. After his death comedy became more purely social than political, and was represented by Antiphanes, Alexis, and Philippus. The "New" comedy, which flourished chiefly from 320 to 250 B. C., is represented by the poets Menander, Philemon, and Diphilus.

Literary prose was late in being developed, and until the time of the Persian wars the epic was found all-sufficient. During the Attic period the Greeks perfected a prose literature in history, oratory, and philosophical dialogue, and with this new development, coincidental with the passing away of political freedom, strictly creative art is left behind, and we enter an era of learned productions in science and literature. Herodotus, who lived in the fifth century B. C., is regarded as the "father of history," as he was also the first artist in prose. Thucydides may be styled the first philosopher of history. The third historian of the period is Xenophon, whose principal works are the *Anabasis,* the *Cyropaedia,* and the *Memorabilia.*

The most finished specimens of prose are contained in the works of the Attic orators: Antiphon, Andocides, Lysias, Isocrates—the founder of literary rhetorical prose, Isaeus, and Demosthenes—the greatest orator the world has ever produced. The chief contemporaries of Demosthenes were Æschines, Lycurgus, Hypereides, Deinarchus, and Demades. The decline of oratory began with Demetrius Phalereus, who flourished about 318 B. C.

The Greeks were the first nation to separate philosophy from religion. The untrodden field of philosphical thought was entered by Thales of Miletus and his successors, Anaximander and Anaximenes, about six centuries before Christ. The Pythagorean and the Eleatic schools still further grappled with the mysteries of existence. The doctrines of the atomistic philosophers were followed by those of Anaxagoras and the sophists. Then the master mind of Socrates introduced a new method into the inquiry. Socrates left no writings, but fragments of his teachings are preserved for us in the works of his disciples, more especially Xenophon, and the most celebrated philosopher of any age—Plato (429-347 B. C.). No "profane" teacher held a purer conception of God, nor has any writer embodied his thoughts in language more exquisite. His *Republic, Phaedrus, Timaeus, Critias,* and his famous Dialogues, are all masterpieces of literary genius.

The first of Greek scientists, Aristotle (384-322 B. C.), presents us with concise and unadorned reasoning. He was the founder of logic, and discovered the syllogism. His *Ethics* and *Politics* and his conceptions of what is now termed biology have exercised a far-reaching influence on Western thought. After Aristotle the productive energy of Greek philosophy began to decline. Various schools of philosophy flourished about the beginning of the third century B. C.: the minor Socratic schools (Megarics, Cynics, and Cyrenaics), the Epicureans, and the Stoics.

III. The Literature of the Decadence. This may be subdivided into two periods: the Alexandrian, 300-146 B. C., and the Graeco-Roman, 146 B. C.-529 A. D. When the glory departed from Athens after the conquests of Philip of Macedon and Alexander the Great, the city of Alexandria became the center of literature and art. The poetic Pleiades which assembled there consisted of Lycophron, Aratus, Nicander, Theocritus, Philiscus, Æantides, and Homerus. Poetry became artificial in style and derivative in character. Prose held a prominent place but was devoted chiefly to works of science and learning. Theocritus, the pastoral poet, was the greatest of the Pleiades, while with Apollonius Rhodius, Bion, and Moschus, the "silver age" of Greek poetry passed away. The "golden age" had perished with Pindar and his great contemporaries.

Science and learning are represented by Zenodotus, Aristophanes of Byzantium (200 B. C.), Aristarchus, Apollodorus, Euclid, Archimedes, Eratosthenes, the founder of scientific chronology, and the historians Manetho and Berosus.

The first part of the Graeco-Roman period, that is, from the Roman conquest of Greece to the end of the Roman Republic (146-30 B. C.), was devoted to literary and scientific research, and produced a number of histories, lexicons, miscellanies, and the like. The most talented of the historians was Polybius, who ranks next below Herodotus and Thucydides. During the latter part of this era, namely, from Augustus to Justinian (30 B. C.-529 A. D.), a number of writers arose, many of them being more remarkable for industry than for literary merit: Dionysius of Halicarnassus; Plutarch, whose celebrated *Lives* are of undying popularity; Strabo and Pausanias, the geographers; Josephus, the Jewish historian who wrote in Greek; Athenaeus, author of the *Deipnosophistae;* Lucian, Longinus, Libanius, and Heliodorus, noted names in rhetoric and belles lettres; Epictetus, Marcus Aurelius, and the Neoplatonists Plotinus, Porphyry, and Iamblichus, who represent the philosophic thought of the epoch.

No poetry of high merit was produced during these years of decadence. Æsop's fables were versified by Babrius; other notable writers of verse were Oppian, Nonnus, and Quintus Smyrnaeus. The so-called *Sibylline Oracles* and the *Greek Anthology* contained the remainder of all that is interesting or pleasing in the verse of this age. In 529 the schools of heathen philosophy were closed by order of Justinian, and the edict emphasized the fact that the old literature of Greece was dead.

LATIN LITERATURE.

Though all divisions are arbitrary, it will be found that Latin literature divides naturally into six periods, viz.:—

I. A period of crude beginnings, before literature was established, extending from the founding of Rome to the end of the First Punic War (240 B. C.). These beginnings are limited to simple and often coarse ballads, farces, and mimes, popular among the rustics at fairs and merrymakings. It was not until the Romans came into closer contact with the cultured Greeks who lived in the cities of southern Italy that they became aware of their great literary inferiority.

II. A second period, which for lack of a better name may be called the early period of Roman literature, extends from 240 B. C. to 80 B. C. After Rome had conquered for the time her arch-enemy, Carthage, in the First Punic War, she found time to devote herself to the arts of peace. The leisure class turned to a study of Greek culture, and for a time, at the beginning of this period, the literature of Rome consisted chiefly of translations of Greek models into Latin. Livius Andronicus (about 284-204 B. C.), a Greek captive from the taking of Tarentum in 272 B. C., translated Homer's *Odyssey*, fragments of which remain. But the real founder of Latin poetry was Gnæus Nævius (died 204 B. C.), who wrote tragedies and comedies that were very popular with his countrymen. Titus Maccius Plautus (about 254-184 B. C.) displays the greatest genius and a surprising mastery over the difficulties and limitations of the Latin language in his comedies. While we have only very few fragments of the works of his predecessors, we have no fewer than 20 plays from his pen. Great names in Latin literature now follow very rapidly. Quintus Ennius (239-169 B. C.), more popular than Plautus, was styled "the Father of Roman Poetry" and is memorable for his *Satires* and *Annales*. Quintus Fabius Pictor (born about 254 B. C.) was the first important prose historian. The familiar Marcus Porcius Cato (234-149 B. C.), or Cato the Censor, among other great literary qualities was the first Latin orator to write down his speeches. Alimentus (prætor in 210 B. C.) wrote his annals in Greek. The six plays of Terence (about 185-159 B. C.), derived from Greek sources, are faultless in diction and full of merit. Gaius Lucilius (180-103 B. C.) is called "the Father of Roman Satire." The last of the great Latin tragic poets, Lucius Attius (170-94 B. C.), closed the school of the old character-drama. Lucius Afranius closed the old Latin comedy school. Nor must the Gracchi be forgotten in the department of oratory, though their chief characteristic was vehemence.

III. The third period is known as the Golden Age, the Classical Period, or the Ciceronian Period (87-43 B. C.). The latter part is known as the Augustan Age, in which a new spirit is exhibited in Roman literature. In didactic poetry Lucretius surpassed his Grecian masters by the force of thought and the splendor of diction which characterize his great philosophical poem on the origin of the universe. Catullus attempted various styles of poetry, in all of which he obtained eminent success. His lyric and elegiac poems, his epigrams and satires, are marked by singular versatility of feeling, frequent flashes of wit, and rare felicity of expression. Among the elegiac poets, of whose genius we still possess the remains, the highest distinction was gained by Tibullus, Propertius, and Ovid. The former of these poets was pronounced by Quintilian to be the greatest master of elegiac verse; Ovid possessed an uncommon fertility of invention and ease of versification; while Propertius tempers the voluptuous cast of his writings with a certain dignity of thought and vigorous mode of expression. The great lyric poet of the Augustan age is Horace, whose graceful and sportive fancy, combined with his remarkable power of delicate and effective satire, continues to make him a favorite with all who have the slightest tincture of classical learning.

The noblest production of this period, however, is the *Aeneid* of Virgil, which, with his elaborate poem on rural affairs, the *Georgics*, and his sweet and tender pastorals, or *Eclogues*, fairly entitles him to the position, which has been given him by universal consent, of the most gifted epic and didactic poet in Roman literature.

The writings of the Latin prose authors, taken as a whole, betray a higher order of genius and cultivation than the works of the poets. In this department the pre-eminence belongs to Cicero, whose various productions in eloquence, philosophy, and criticism are among the most valuable treasures of antiquity. In history, Cæsar, Sallust, and Livy are the most prominent names, who, each in his own peculiar style, have left models of historical composition which have been the admiration of every subsequent age. The literature of the Augustan

period partook of the general character of the Roman people. Devoted to the realization of practical objects, with slight tendencies to the ideal aspect of things, and absorbed in the exciting games of politics and war, the Romans had little taste either for abstract speculation or for the loftiest flights of poetical fancy. Hence no new system of philosophy was produced in their literature; their best poets were essentially imitative; and of all branches of study, those connected with popular eloquence were held in the greatest esteem.

IV. The fourth period, to mark the decline and its inferiority to the period immediately preceding, is often called the Silver Age. It is post-classical, and receives many important contributions from Spain. It is counted as extending from 17 B. C. to about 130 A. D. While more of the writings of authors of this period survive, they are of only secondary importance. The two Senecas, Mela, Lucan, Columella, Quintilian, Martial, and others were of Spanish origin. The despotic Tiberius (reigned 14-37) exercised a markedly depressing effect upon Roman literature by discouraging it so that men dare not praise the deeds of the past nor record those of the present. Yet the fables of Phædrus in adaptation of those of Æsop, and the great medical work of Celsus belong to this reign. The greatest writings of the succeeding reigns were the philosophical works of Seneca (4 B. C.-65 A. D.). The greatest writer of Vespasian's reign was Pliny the Elder, whose zeal for scientific research caused his death in the destruction of Pompeii by the eruption of Vesuvius. Martial, the court poet of the Emperor Domitian, is the creator of the epigram as we know it, for he invented the use of the sting which the real epigram carries with it. Sextus Julius Frontinus (40-103) was perhaps the most scientific writer of all the Romans. The noblest literary works of the whole period of the Roman Empire are those of the reign of Nerva and Trajan, covering the period from 96 to 117. It is graced by the names of Tacitus, Juvenal, and Pliny the Younger.

V. The fifth period covers the time of the Middle Empire during the second century, marked by the writings of authors of African origin and those of the Early Christian writers. Gaius Suetonius Tranquillus (75-160), author of *Lives of the Caesars*, Florus, Fronto (about 100-175), and Gaius the Jurist (about 110-180) were the chief writers in the reign of Hadrian. Aulus Gellius, author of *Noctes Atticae;* Lucius Apuleius, the rhetorician and philosopher; and the earliest literary work in Latin on Christianity, the *Octavius* of Felix, are of greatest interest in the reign of Marcus Aurelius. In the reigns of Commodus and Severus, Tertullian of Carthage (about 150-230), the defender of Christianity, and Papinian the Jurist are the greatest names.

VI. The sixth and closing period, covering the years from the third to the sixth centuries, marks one of decline in literature from a purely literary point of view. Interest in the numerous writers of the period attaches to subjects upon which those learned men wrote. Saint Cyprian, Bishop of Carthage; the Christian poet Commodius; Lactantius; Avienus; Ausonius; Prudentius; Saint Ambrose, Bishop of Milan; Hieronymus or Saint Jerome; Donatus, the grammarian; Claudianus; Saint Augustine; Bishop Hippo; Apollinaris Sidonius, Bishop of Clermont; Dracontius; Boethius the philosopher; and Cassiodorus, author of the *World-Chronicle*, are among the last names memorable in the department of Latin literature.

ITALIAN LITERATURE.

There is no existing record to show that Italian—the latest developed of the Romance languages—was used for literary purposes before the thirteenth century. Unlike those of France and Germany, the beginnings of Italian literature were not simultaneous with the struggles of a rising people. The nation was versed in the art of expression in other tongues, which accounts for the rapid development of the literature when once the vernacular became a medium for the master minds. At the outset Italy drew mainly from the literature of France, and imitated the lyrics of the troubadours and the heroic songs of the trouvères. Italy had no national epic of its own. The first awakening of Italian poetry was in Sicily in the time of Frederick II., the great patron of letters. Soon afterward religious poetry flourished in Umbria, due to the rise of the two orders of St. Francis and St. Dominic. The drama sprang into being from the same impulse; the *Laude Spirituali* gradually developing into the *Devozione* and the *Rappresentazione*. Meanwhile the poets of Tuscany, stimulated by the influence of Provençal poetry, founded a less conventional school of writing, and established the preëminence of the Tuscan dialect. Three poets are worthy of mention in connection with this school: Guinicelli (1220-1276) the founder, Cavalcanti, and Cino da Pistoja. Of early prose writings the oldest specimen extant is a register of household expenses by Matasala di Spinello of Siena, which, however, cannot be classed as literature. The letters of Guittone d' Arezzo are the earliest existing monument of literary prose; but the first writer of any considerable work was Malespini, who wrote a history of Florence to the year 1282. The real founder of Italian literature is Dante (1265-1321), for previous to him there is not an author of the first or even the second rank. Out of the crudest materials this mighty artist fashioned a monument whose sublimity of conception is equaled by the grandeur and delicacy of his art. The destiny of Italian literature was fixed and defined by his great epic, the *Divina Commedia*, and the era of the Renaissance was ushered in. In this world's classic, Dante voices the beliefs and aspirations of the Middle Ages. Guided by Vergil, he makes a visionary journey through the dread regions of the Inferno and the circling abodes of Purgatory; thence led by the saintly Beatrice he beholds with a seer's vision the manifold glories of Paradise. The greatness of the poem was instantly recognized, and time will never sully the brightness of its fame. Two more names—Petrarch, the greatest Italian lyrist, and Boccaccio, the father of Italian prose—complete the *triumvirate*. Petrarch (1304-1374), "the laureat poete," as Chaucer called him, was the first to place Italy in the van of European literature. He revived the study of the Greek and the Latin authors and restored

the republic of letters. His fame now rests not on his Latin works but on his *Canzoniere* or lyrical poems, inspired by his love for Laura. The exquisite beauty and perfection of these poems place him only a little lower than Dante himself. Boccaccio (1313-1375) by his *Decameron* endowed Italy with a classic prose and earned the distinction of being the first modern novelist.

The century from the death of Boccaccio to the rise of Lorenzo de' Medici is the most barren in the history of Italian literature. Attention, however, was given to the development of the drama and the romantic epic. The most famous of the early dramatists are Feo Belcari (1410-1484), Castellani, Antonia (wife of Bernardo Pulci), Rosselli, and the author of the first classical Italian drama, Angelo Poliziano (1454-1494). The first to raise the literature from the low estate into which it had fallen was Lorenzo de' Medici, named "the Magnificent" (1448-1492), who gave a great impetus to the study of the vernacular, and himself led the way with many graceful poems. His court was the home of artists and men of letters. Among them were Boiardo, author of the *Orlando Innamorato*, and Pulci, author of the epic, *Morgante Maggiore*. One of the features of the times was the founding of the academies of Florence, Naples, and Rome.

In the literary epoch following that of the Renaissance every form of art was perfected, and the Italian character of the language was combined with classicism of style. This Golden Age lasted from 1494 to about 1560. Of the prose writers two figures tower above their contemporaries—Machiavelli and Guicciardini, the chief originators of the science of history based on observation. Machiavelli (1469-1527) is the Thucydides of Italy, as the great Florentine historian Villani in the previous century is her Herodotus. He holds a position in prose similar to that of Dante in poetry. His three most famous works are *The Prince*, *The Art of War*, and the *History of Florence*. No book has aroused more controversy than *The Prince*. By many it has been regarded as a manual for tyrants, and true it is that no book has wrought more harm, for it was the daily companion of the most noted despots of Europe. Yet it was nothing more than the dream of a philosophical patriot for the restitution of liberty to his country. Less illustrious but of a more practical genius is the historian Guicciardini (1482-1540), whose *History of Italy* is one of the most valuable works in the language. Of lesser historians of this period Nardi, Segni, Camillo Porzio, and Cardinal Bembo may be noted. A characteristic product of the age, due to the study of Plato, is the dialogue; and the most typical example of these polished didactic colloquies is the *Cortegiano* of Castiglione (1478-1529). Ariosto (1474-1533) is a great and essentially national poet, who assimilated the romance of chivalry to the style and models of classicism. His great poem, *Orlando Furioso*, the result of ten years' toil, eclipses all previous romances, and has never since been equaled. Its success inspired many imitations, the two most important of which were the *Girone il cortese* of Alamanni and the *Amadigi* of Bernardo Tasso, both of them feeble productions. Not more successful was Trissino (1478-1500) who in his *L'Italia Liberata* made the first attempt to write Italian epic poetry in blank verse. Torquato Tasso published his famous work *Jerusalem Delivered* in 1581. It is a poem of faultless beauty, and is the finest of all epics after the *Aeneid* and *Paradise Lost* (for *Orlando Furioso*, to which it is commonly compared, is not really an epic at all). Tasso achieved immediate success with *Aminta*, a pastoral masque which attracted a host of imitators. The best of these was Guarini, the author of the *Pastor Fido* (1537-1612).

From 1559 began a period of decadence, known in the history of Italian literature as the *Secentismo*. Lyric poetry was represented by mediocre rhymesters. Galeazzo di Tarsia, Vittoria Colonna and her sister poet, Gaspara Stampa, are amongst the noteworthy names. Though in pure literature the age was one of decline, it was an era famous for the advance of natural science, and incidental reference may be made to the names of Galileo, Cassini, Renieri, Torricelli, Valisnieri, Viviani, Bellini, and Redi. The chief name in Italian literature during the seventeenth century is that of Tassoni (1565-1635), whose masterpiece, *La Secchia Rapita*, is a poem of European reputation. Of the minor poets who emulated the extravagances of Marini (1569-1625), the most famous were Guidi, Testi, Ciampoli, Menzini, and Filicaja. Some of the poems of Filicaja reach a high degree of excellence, and his name recalls the famous sonnet, *Italia, Italia, a cui feò la sorte*. A mania for rhyming seized the nation, and dates from the inauguration of the "Arcadian Academy" in 1692. But the Arcadians, the last of whom was Frugoni (1692-1768), replaced with effeminacy the bombast of the Marinists, and only succeeded in impoverishing the literature. But one department of the fine arts, the opera or musical drama, achieved distinction through the genius of Metastasio (1698-1782), who was both a consummate playwright and a true lyric poet. The only other writer of the first rank during this period is Goldoni, the reformer of Italian comedy. Voltaire said of him that he had rescued Italy from the hands of the harlequins. His great rival, Count Carlo Gozzi, won success on the Venetian stage by his *fiabe* or dramatized fairy-tales. Alfieri (1749-1803) swept Italian tragedy with his drastic reforms. Though his writings display what Matthew Arnold calls a "narrow elevation," his style is manly, and he is undoubtedly one of the grandest figures in Italian literature since Tasso. Giuseppe Parini is interesting as being the first Italian poet who shows decided traces of English influence. His *Giorno* is suggestive of Thomson's *Seasons*, but the satire is worthy of Pope. Parini opened the way to the fine school which was now to arise, that of Foscolo, author of the lyrical masterpiece, *I Sepoleri;* Monti, whose *Bassvilliana* gave him rank as the first epic poet of his time; Pindemonte, whose best work is his *Antonio Foscarini;* Manzoni, the representative of the romantic and mediæval reaction of the post-Napoleonic age, and the author of the world-famed *I Promessi Sposi;* Leopardi, whose blank verse is the finest in Italian literature; Niccolini, renowned as a poet and a classical dramatist; Giusti, the Tuscan satirist; Gioberti,

author of the great book, *Il Primato d'Italia;* Pellico, the writer of the famous work, *Le Mie Prigioni.* Love of country is the dominant thought of the nineteenth century writers; and though these include no name of premier rank, yet the pervading spirit of liberty and patriotism lends to the literature of the period a unity and dignity which command our admiration. Aleardo Aleardi (1812-1878) has failed to retain his popularity. His poems are graceful and full of feeling but lack force. Prati (1815-1884), called by Carducci "the last of the troubadours," produced several volumes of lyrics, whose fluency borders on improvisation. Gabriele Rossetti (1783-1854) was the most noted poet in southern Italy. His greatest compositions are *Iddio e l'Uomo* and *L'Arpa Evangelica.* Carducci (1835-1907) is the foremost Italian poet of the past half century, and the greatest force in recent Italian literature. Many of his lyrics are widely known, and the admirable translations of the American, Mr. Sewall, have done much to increase their popularity. Carducci is a critic, too, of no mean order. Zanella (1820-1889) is a poet whose fame has gone on increasing. *The Vigil,* a meditation on evolution, is perhaps his masterpiece. His lyrics are exquisite. D'Annunzio (born 1864) is a second Marini, but his naturalism too often borders on extravagance. In his sonnets he has enriched Italian poetry with one new form of beauty, the *rima nona.* The poet of the social revolution is Mario Rapisardi, a Sicilian; while the woes of the poor are expressed by a lady, Ada Negri. Arnaboldi excelled in grave and dignified lyric, not unlike Matthew Arnold. Arturo Graf, Fogazzaro, Panzacchi, Edmondo de Amicis (celebrated as a traveler), Capuana, Marradi—translated specimens of these and other contemporary poets may be read in G. A. Greene's *Italian Lyrists of To-Day.*

The serious drama is represented by the tragedies of Cavallotti and the New Testament trilogy of Giuseppe Bovio; and the humorous by the comedies of Roberto Bracco and Giacinto Gallina.

Lengthy story-telling seems to be foreign to the genius of the people, and the novelists are mostly of inferior rank. One or two, such as Matilda Serao, Barrili, and Farini have acquired a wider reputation. Two names stand out, however, as masters of fiction, the poet, D'Annunzio, author of *La Vergine della Rocce,* and Giovanni Verga, whose novels reflect the social history of Sicily. In the field of literary criticism the two chief names are Settembrini and De Sanctis. Of modern historians, Villari, the biographer of Savonarola and Machiavelli, and Comparetti, author of *Virgilio nel Medio Evo,* have won a lasting reputation as writers. We cannot conclude without a reference to Giuseppe Mazzini (1805-1872), that "swift, yet still, Ligurian figure; merciful and fierce; true as steel, the word and thought of him limpid as water," as Carlyle finely portrays him. His writings greatly influenced the destinies of his beloved Italy.

SPANISH LITERATURE.

Spanish literature has its root in the old heroic songs and *fabliaux* of early France and Italy. No texts of earlier date than the twelfth century have come down to us. The two oldest extant specimens of Castilian verse are the *Poema del Cid,* and the *Misterio de los Reyes Magos.* The *Cid* is national in tone, and is an epic or *chanson de geste* of about four thousand lines, celebrating the adventures of the great national hero, Ruy Diaz de Bivar (died 1099), better known by the Arabic surname of the Cid. His exploits are also recounted in the *Rhymed Chronicle,* which some suppose to be of older date than the *Poema.* In the thirteenth century religious and didactic poetry grew up, the most noted representative of which is Gonzalo de Berceo (1198-1268). Under Alfonso the Learned (1226-1284) the language became a polished literary medium. Alfonso, like Bacon, took all knowledge as his domain, and in every branch he shone preëminent. He was the creator of Castilian prose. The second great prose-writer was his nephew, Don Juan Manuel, who brought the language to perfection. His best known work is *Conde Lucanor,* a collection of 51 didactic tales. Juan Ruiz (1300-1350), better known as the Archpriest of Hita, is the most original mediaeval Spanish poet. His *Libro de Cantares* gives us a highly-colored picture of the manners of the age. The *Rhymed Chronicle of Alfonso XI.,* discovered in 1573 by Diego Hurtado de Mendoza, was written by Rodrigo Yañez, who is the first to use lines of eight syllables for the purpose of epic narrative. A writer who did not come under the prevailing influence of Provençal and Italian poetry is Pedro López de Ayala (1332-1407), whose best-known work is the *Rimado de Palacio.* He is equally distinguished as a writer of prose. A representative writer of the fifteenth century is Iñigo López de Mendoza, Marqués de Santillana, who wrote both in prose and verse, and was an imitative rather than an original genius. The official court-poet of the time of Juan II. was Juan de Mena, known to his own age as the "Prince of Castilian poets." In contrast to the artificiality of such writers as these is the celebrated elegy of Jorge Manrique on the death of his father, known as the *Coplas de Manrique.* This imperishable poem has been admirably translated by Longfellow. The fifteenth century finds the chivalrous romance established in Spain, and the best example is *Amadis de Gaula.* The introduction of printing presses in 1474 inaugurated an era of translation. Nebrija (1444-1522), the greatest of Spanish humanists, printed his Spanish-Latin dictionary in 1492. It is worthy of note that the first Greek text of the New Testament ever printed was produced by Nebrija at the University of Alcala de Henares, in 1514. Versions of foreign classics were in all men's hands.

With the reign of Charles V. we reach the Golden Age of Spanish literature. Juan Boscán is chiefly noted as having naturalized the Italian eleven-syllable verse. He is seen at his best in the allegorical poems, the *Octava Rima.* In point of merit he is eclipsed by his comrade, Garcilaso de la Vega (1503-1536), a poet of refinement and distinction, whom both Cervantes and Lope de Vega agreed in calling the first of Castilian poets. He certainly is one of the greatest of Spanish poets. As a reproducer of the cadences of the Vergilian Eclogue, his success is unique. Diego Hurtado de Mendoza

(1503-1575), one of the chief figures in the history of Spanish politics and letters, cultivated both the national and the Italian forms of poetry, but lent his weight to the supremacy of the latter. He is the author of two historical works: The *History of the Rebellion and Chastisement of the Moriscos* and the *Guerra de Granada*. Amongst the greatest Spanish poets few, if any, rank higher than Fernando de Herrera (1534-1597). He is the first purely lyrical poet of Spain. Another eminent poet was his contemporary, Luis Ponce de León (1529-1591), who was no less great in prose. The greatest of all Spanish mystic books, *Los Nombres de Cristo*, together with his translation of the Song of Solomon, give him rank with the masters of Castilian prose. The moral and mystic writings of Santa Teresa (1515-1582) have justly won a reputation which is world-wide. She is a sublime figure in the annals of religious thought, and is the only woman who stands as an unchallenged equal with the great writers of literature. Crashaw's famous line will be recalled:—

"O 't is not Spanish but 't is Heaven she speaks."

Her masterpiece is the *Castillo interior*.

At the close of the sixteenth century, Spanish literature, with the exception of the drama, had become stereotyped; the Italian influence had set its seal on form and matter; the chivalresque romance was on the wane; the picaresque novel, modeled on the unclaimed *Lazarillo de Tormes*, was losing its freshness; and until the appearance of Cervantes no genius had arisen to introduce any new type. Miguel de Cervantes Saavedra (1547-1616) is the most illustrious figure in Castilian literature. He is a great creative genius and a universal humorist. He ignored the conventions of the times, and, drawing closely to humanity, he created types which are eternal. As a dramatist he is seen at his best in the tragedy of *Numancia*, and in his comedy, *Trato de Argel;* but it is as the author of the immortal *Don Quixote* that his fame is sung throughout the world. This work is by no means a model of literature, nor does it show Cervantes at his best as a writer of prose; but the strong human interest that underlies its humor is the reason for its greatness. It is a masterpiece of unsurpassed invention, and is a work for all times and all nations. A great creative writer, but lacking the universal note of Cervantes, is his contemporary, Lope Felix de Vega Carpio (1562-1635). Lope was the creator of the modern drama. He was a prodigy of learning and inventiveness, and was the most voluminous writer of ancient and modern times. The great authors of other nations drew upon the treasures of his art; his plays have been treated as models by all later Spanish writers, and his influence has been unique. As a poet he achieved fame, though not greatness. Many of his carols (*villancicos*) treating of the childhood of Jesus are very beautiful. The miscellaneous works of this versatile writer fill more than twenty large volumes. The most eminent of the minor poets of this epoch was Góngora (1561-1627), whose earlier verse is marked by fine workmanship and rare lyrical melody. But he was the founder of a school which is known as *culturanismo*, and Gongorism soon become synonymous for all that savors of bad taste, affectation, and euphemism. A more widely gifted writer is Quevedo (1580-1645), who attained some measure of success in almost every branch of literature, though never reaching the first rank in any one of them. The chief writers of the so-called Aragonese school were the brothers Lupercio and Leonardo de Argensola, whose works are scholarly but artificial. Less exclusively classical is Manuel de Villegas, an Anacreontic poet.

Turning to the historians, a new epoch is marked by the production of the *Anales de la Corona de Aragon* by the learned Gerónimo de Zurita. This is the most trustworthy authority on the period, though it is hardly distinguished as literature. Very different is the *History of Spain* by the greatest of Spanish historians, Juan de Mariana. It bears the defects and limitations of the age, but its prose is above criticism.

Calderón (1600-1681) is the greatest Spanish dramatist by reason of his being the greatest poet who espoused the drama. He created no new forms but developed the seeds sown by Lope. His published works consist of about 120 plays and 80 autos or mystery-plays, besides some light interludes and occasional verses. His best known plays are the *Principe Constante*, *El Pintor de su Deshonra*, and the two philosophical dramas *La Vida es Sueño* and *El Mágico Prodigioso*. As a writer of autos he stands supreme. He is not an universal dramatist, but the most representative Spaniard of the seventeenth century. A notable dramatist of the Golden Age is Gabriel Téllez, better known by his pseudonym "Tirso de Molina" (1571-1648). His most famous play is the *Burlador de Sevilla*, which is based upon the legend of Don Juan. The religious side of the Spanish character is represented in *El Condenado por Desconfiado*, while Tirso's mastery in lighter comedy is shown in his *El Vengonzoso en Palacio*. His fame, like Lope's, is growing every day. During a period of one hundred years the fertility of the dramatic authors is unparalleled. Plays dealing with the problems of human life or studies in human character are foreign to the Spanish genius, but the form in which Spain excels is the play depending for interest entirely on its plot, and the masterly combinations of stock characters. The "sword and cloak" plays were dear to the hearts of the people. The period of Spanish literary glory coincided, as in other countries, with the most brilliant epoch of military glory and national activity. But when reverses came, Spanish literature decayed. The old ideals were still clung to, but they were no longer in keeping with the spirit of the times.

The best attempt at formal epic in Spanish is the *Araucana* of Ercilla, written during the campaign against the Araucanian Indians in Chile. There is little in it however that merits the name of poetry.

With the succession of the Bourbons, French influences became dominant in Spain. The old traditions were dead, and the ground was cleared for fresh developments. When Spain awoke from her lethargy, the eighteenth century was dead, the old literature was gone, the foreign influences had not taken root, and the vacant field was about to be occupied by the romantic

school and the modern novelist. During the age of the Bourbons, one of the foremost figures was the poet Luzán, whose *Poética* sets out his destructive criticism. Other reformers were Feijoo, Sarmiento, Isla, and Meléndez. Isla was the greatest prose writer of his time.

Under the unifying influence of the French wars Spanish literature responded to the renewed activities of the nation. During the struggle for independence, the verses of Manuel José Quintana (1772-1857) stirred the depths of patriotism. Yet even his *Call to Arms against the French* is written in the French classical style, and is Spanish only in sentiment. The classical poets of the early years of the nineteenth century number many other names of minor rank. The two chief poets of the Romantic school are the Duque de Rivas (1791-1865), who wrote *Al Faro de Malta* and *El Moro Expósito*, and José de Espronceda (1810-1842), the greatest Spanish poet of the last century. Espronceda modeled his verse on that of Byron, and was the hero of his own writings. His famous ode *To Jarifa*, his fragmentary *Diablo Mundo*, and his patriotic odes *A la Patria* and *Al Dos de Mayo*, are the most notable of his compositions. His successor, Zorrilla (1817-1893), is more widely known by his plays, *Don Juan Tenorio*, *El Zapatero y el Rey* and *Traidor, Inconfeso, y Mártir*. Among his more prominent contemporaries may be noted A. G. Gutierrez, the author of *El Trovador;* J. E. Hartzenbusch, who wrote the popular play, *Amantes de Teruel;* Manuel Tamayo y Baus, whose best and most ambitious play is *Un drama nuevo* (1867); and Gustavo Becquer (1836-1870), who is represented by three volumes of prose legends and *Rimas*. Some of the latter are beautiful and full of pathos.

Spain has not contributed much to modern philosophy; but her theologians have always been of good repute. Two names suggest themselves: Don Jaime Balmés, author of the famous *Cartas á un Escéptico*, and Don Juan Donoso Cortes, whose most celebrated work is *An Essay upon Catholicism, Liberalism, and Socialism*. One of the most brilliant masters of prose is Mariano José de Larra (1809-1837). An essayist of somewhat the same stamp is Serafín Estébañez Calderôn (1799-1867); but more popular is Mesonero Romanos, author of *Escenas Matritenses*. Cecilia Böhl von Faber, better known by her pseudonym, "Fernán Caballero" (1796-1877), is the writer of *La Gaviota*, a novel many times translated.

Of more recent writers, the most eminent are Campoamor, who devised a new poetic *genre* under the name of *doloras, humoradas*, or *pequeños poemas;* Valera, whose *Pepita Jiménez* marks the renaissance of the Spanish novel; Pereda and Galdós, the novelists; Alas ("Clarin"), the critic and writer of one of the best modern novels, *La Regenta;* Emilia Pardo Bazán (b. 1851), the best authoress of the century; and the orator Castelar, who wrote an Italian story called *La Hermana de la Caridad*. The best of the modern dramatists is José Echegaray (b. 1832), who wrote *La Esposa del Vengador* and *O Locura ó Santidad*. The political poet, Gaspar Nuñez de Arce, the Cuban poetess Doña Gertrudis de Avallaneda, and the eminent critic, Marcelino Menendez y Pelayo (b. 1856), author of the remarkable *Historia de las Ideas estéticas en España*, are the last names that call for special mention.

The most exhaustive survey of the subject will be found in George Ticknor's great *History of Spanish Literature*, first published at Boston in 1849. This may also be read in the Castilian version of Pascual de Gayangos and Enrique de Vedia (1851-1856), or in the German of Nikolaus Heinrich Julius (Leipzig 1852).

PORTUGUESE LITERATURE.

The Portuguese language and literature had their birth in the same era as the kingdom. There is no great Portuguese epic like the *Cid*. The earliest monuments we possess are fragments of the poems of Hermiguez and Egaz Moniz, two knights of Alfonso I. These uncouth ballads are barely distinguishable as Portuguese. For the next two centuries such poetry as existed was imbued with the Provençal spirit, due to the troubadours and jongleurs of Provence, who flooded the peninsula with their minstrelsy. Macias, known as El Enamorado, Cristovão Falcão, João de Menezes, and the more eminent Bernardin Ribeyro, are the first Portuguese poets of any importance. These writers flourished in the fifteenth century, by which time the language began to assume the characteristics of modern Portuguese, and pastoral poetry laid its hold upon the affections of the people. Ribeyro has also left us a fragment of a prose romance entitled *Menina e Moça*. At the beginning of the sixteenth century the wealth and greatness of the nation had reached their zenith, and at this opportune moment appeared Sá de Miranda to stamp his genius on the poetry of his country. Miranda (1495-1558) laid the foundations of a national literature, and gave to poetry a nobler aim and a wider sympathy. Much of his best work is in the Castilian tongue, but his Portuguese writings consist of eclogues, sonnets, epistles, and two comedies. Of these, his epistles, written in flowing verse, are perhaps his most important contribution to literature. His influence was very marked, and, having rescued the national literature almost from barbarism, he was esteemed and imitated by a host of writers. Foremost among these was Antonio Ferreira (1528-1569), who rivals his master in the mark which he has left on the literature of his country. His style is more classical and more polished, and he wrote no single line except in Portuguese. His epistles and odes have won for him the title of the Portuguese Horace. His greatest work, and also the best tragedy in the Portuguese tongue, is *Castro*, based on the tragic history of the Lady Inez de Castro. These two great poets ushered in the most glorious period of Portuguese literature, an age which gave birth to the poets Pedro de Andrade Caminha, Diego Bernardes, Rodriguez de Castro, and Lobo de Soropita, and which culminated in the *Lusiad* of Camoëns.

The genius of Camoëns (1525-1580) looms large in his country's literature, so much so that the two great names, Miranda and Ferreira—the Chaucer and Dryden of Portugal—are almost overlooked even by their countrymen. His great masterpiece, the *Lusiad* (called by the Portuguese *Os Lusiadas*, or the *Lusitanians*), is a magnifi-

cent conception inspired by a lofty patriotism. It recounts the conquests in the Indies and the glory of the Portuguese arms and achievements. This famous epic is almost the only specimen of Portuguese poetry known outside the kingdom. Camoëns wrote a number of sonnets, canzoni, and eclogues, eloquent of the sorrow and melancholy of his life. One of his most noted contemporaries was Gil Vicente, a dramatic author, who may be considered the founder of the Spanish theater, in that he served as a model for Lope de Vega and Calderon. The rage for pastoral compositions reached its height in the time of Rodriguez Lobo, the author of a book on philosophy, besides pastoral romances and fugitive poems. His *Winter Nights* greatly influenced the writers of Portuguese prose, and its Ciceronian style was freely imitated. During the same period flourished Jeronymo Cortereal, who wrote a ponderous epic on the misfortunes of the celebrated Manuel de Sousa Sepulveda. Two other specimens of the Portuguese epic must be noted: the *Ulysses* of Castro, and the *Malacca Conquistada* of Francisco de Sa y Menesez.

The Augustan age saw the beginnings of a new branch of Portuguese literature. The historians vied with the poets in recounting the exploits and conquests of their countrymen. Foremost among them is John de Barros (1496-1571), author of the monumental work, *Asia Portugueza*, and one of the founders of Portuguese prose. His history was continued by Conto. Other noted historians are Castenheda and Bocarro, who dealt with the Portuguese conquests in India; Affonso d'Albuquerque, author of a series of *Commentaries;* Bernardo de Brito (1570-1617), whose reputation rests on his *Monarchia Lusitana*, an incomplete history of Portugal "from the creation of the world" to the rise of the monarchy; Osorio, Bishop of Sylvez (1506-1580), the historian of the troublous reign of King Emanuel. The most voluminous writer of this epoch was Manuel de Faria. He wrote largely in Castilian, but in his native writings he has won distinction by his *Portuguese Europe*, and a number of sonnets and eclogues. His commentary upon Camoëns and his dissertations on the art of poetry established his reputation as a critic. During the national decline following the subjugation of Portugal by Philip II. of Spain, a number of lesser poets abounded, the most notable among them being Antonia Barbosa Bacellar (1610-1663), Andrada. Simão Torezão Coelho, Duarte Ribeiro de Macedo, and Sister Violante do Ceo. Bacellar was the first to devise the *saudade*, a sort of elegy combining love, remembrance, and regret. The eighteenth century opens with the name of Francisco Xavier de Menezes, Count of Ericeyra (1673-1744), a disciple of Boileau, whose *Art of Poetry* he had rendered into Portuguese verse. Ericeyra's most ambitious work is the *Henriquéide*, an epic poem relating the exploits of Henry of Burgundy (the founder of the Portuguese monarchy) against the Moors. Antonio Correa Garçao and the Countess de Vimieiro, author of the tragedy *Osnia*, did their best to revive a moribund drama. The most eminent of the early nineteenth century poets are Antonio Diniz da Cruz e Silva, J. A. da Cunha, and F. M. de Nascimento. The Romantic movement began with Garrett (1799-1854) and Herculano (1810-1877). The latter is more famous as a historian, his *History of Portugal to the End of the Reign of Alfonso III.*, and later, the *History of the Origins and Establishment of the Inquisition*, establishing his reputation as the leading historian of the Peninsula. An ultra-romantic school of poetry was started by Castilho (1800-1875), and included such lyric poets as João de Lemos (1819-1889), Soares de Passos (1826-1860), and Thomaz Rebeiro (1831-1901), author of the patriotic poem, *D. Jayme*. Belonging to no school, and a true son of the people, is João de Deus (1830-1895), one of the chief lyric poets of Portugal. His *Campo de Flores* is remarkable both for its spontaneity and simplicity, and contains a number of such exquisite gems as *A Vida* and *Rachel*. Four more poets call for mention, each of whom is distinguished by a weighty reflection and the influence of foreign models: Anthero de Quental (1842-1891), author of more than one hundred sonnets; Guerra Junqueiro, whose *Death of Don Juan* and *Patria* prove him a master of satire, while his quasi-philosophical *Os Simples* shows him to be a really great poet; Gomez Leal, who wrote the *Claridades do Sul;* and Antonio Nobre (1867-1900), whose lyrics created a sensation by their freshness and lofty inspiration. In comedy the two chief names in modern times are Fernando Caldeira (1841-1894), author of *A Mantilha da renda* and *A Madrugada*, and Gervasio Lobato (1850-1895), whose most popular plays are *O burro do Sr. Alcaide*, *O Valete de Copas*, and *O testamento da Velha*. The novel shares with poetry the leading place in modern Portuguese literature, and three at least of their novelists are of first rank, viz., Camillo Castello Branco (1825-1890), Gomes Coelho ("Julio Diniz"), and Eça de Queiroz (1843-1900), the greatest of the three, and the founder of the Naturalist school in Portugal. The best novels of Queiroz are *Cousin Basil*, *Os Maias*, *The Relic*, and *The City and the Mountains*. As a creator of characters he can hold his own with any European novelist of his day. The leading art critic of recent years is Ramalho Ortigão, who will be remembered chiefly for his *Farpas*, a series of satirical sketches of society written in collaboration with Queiroz. Nor must we overlook the philosophic *Historia de Portugal* and *Portugal Contemporaneo* of the gifted writer, Oliviera Martins (1845-1894). It will be seen that, the drama alone excepted, Portuguese literature during the last century reaches a high level of excellence. That their more eminent writers are not more widely known and appreciated is due to the language being little understood by foreigners generally.

FRENCH LITERATURE.

The earliest literary monument of the French language is found in the Strassburg Oaths of 842, famous alike in history and literature. Few manuscripts, however, have come down to us from before the twelfth century. The form of the language and the trend of the literature were largely determined by two events: the conquest of Normandy by Philip Augustus, and the Crusades which terminated under his grandson. During the twelfth and thirteenth centuries almost every form of literature was attempted

Since poetry invariably develops before prose in the literature of any nation (for the imagination of infancy precedes the growth of reason), we find *cantilènes*—short historical ballads—and epic poems in abundance. The French Epic is of German origin, the Teuton spirit in a Romance form; and like that of all other nations it had its birth in native minstrelsy. The *Chansons de Gestes*, so called from the *Gestes* or heroic families of early France, were sung by the *Trouvères* and *Jongleurs* to the accompaniment of the *veille*. The *Chanson de Roland*, the MS. of which is in the Bodleian Library, Oxford, is the most famous of these poems, and represents the first real development of French literature. To France we owe the origin of the epic of Arthur, the satire of Reynard the Fox, and the allegory of the Rose. The epic and romance were not so popular in the south, and the lyrics of the troubadours are the chief feature of Provençal poetry. Blondel de Nesle (known by his legendary connection with Richard I.) and Thibaut of Navarre were the most noted lyrists of the Provençal school. The drama, too, was begun in all its varieties, tragedy, comedy, and opera; while history, vernacular homilies, and satire were equally prolific. The oldest extant historical work on contemporary events is Ambroise's *L'Estoire de la Guerre Sainte*, which relates to the Third Crusade (1189-1192). The Fourth Crusade is dealt with in the famous memoirs of Villehardouin (about 1160-1213), the first author of distinction who used French prose as a medium of expression. His *Conquête de Constantinople* has been called a *chanson de geste* in prose. What Villehardouin is to the twelfth century *Jean de Joinville* (1224?-1317) is to the thirteenth and Froissart to the fourteenth. Joinville, in 1309, produced his *Histoire de Saint Louis*, in which he gives an account of the things he had "oralement veues et oyes." During the reign of St. Louis the first French translation of the whole Bible was written at the University of Paris. This became the standard French version of the Scriptures.

The fourteenth century saw a change come over the spirit of the literature; romance was checked, and the *chansons de gestes* were converted into prose. Didactic literature dethroned the tales of chivalry and adventure. Few writers need be noted: Alain Chartier (1386-1440), poet and historian, whose best work is his *Quadriloge*, but who is known to modern readers by the story of Margaret of Scotland's Kiss; Christine de Pisan (1363-1431), whose chief works are her *Cents Ballades*, and the *Livre du chemin de longue étude* directed against the *Roman de la Rose;* Eustache Deschamps (1328-1415), the most prolific poet of his time; Charles d'Orleans (1391-1465), the last of the trouvères, and an admirable poet; Villon (1431-1485), the most important figure of French literature before the Renaissance, and whose poems foreshadow the modern poetry; and Froissart (1335-1410), the celebrated chronicler and lyrist, whose *Chroniques* deal with the history not only of France but of England, Italy, Germany, Spain, and Portugal. Froissart has been well named "the knight-errant of history." The fifteenth century was more remarkable for its prose than its poetry, and Comines (1447-1511) was its most illustrious writer. In reading his *Mémoires* one is struck with the progress the language has made since Froissart. The French Chronicle before Comines was practically only gossip, with random gleams of genius. No abstruse or political work of importance was attempted in French prose before the beginning of the sixteenth century; for the vernacular, though rich in volume, was not flexible or precise enough for serious prose. Latin had stunted the expansion of the language, and a critical spirit had not as yet shown itself. As a molder of French prose, Antoine de la Salle (1398-1462), the chief writer of fiction before Rabelais, deserves to rank with the great chroniclers. Poetry was at a low ebb, and the verses of Crétin and Coquillart may be taken as typical of the fifteenth century.

The sixteenth century witnessed the grand upheaval of the Renaissance and the Reformation, and in no country was the literary result more striking than in France. No later period can show a finer array of poets and prose writers: Calvin, St. Francis de Sales, Montaigne, Du Vair, Bodin, D'Aubigné, Brantôme, Pasquier, Rabelais, Des Periers, Herberay des Essarts, Amyot, Garnier, Marot, Ronsard and the rest of the Pléiade, and the polished satirist Regnier. These created a language and a style able to give expression to their genius. Calvin's *Institution de la religion chrétienne* (1540) is the first really great composition in argumentative French prose. The Pléiade, whose two brightest stars were Ronsard and Du Bellay, revolutionized the language; and in spite of their classical eccentricities they laid the foundations of modern French. The dramatic works of Etienne Jodelle (1532-1573) mark an epoch in the history of the drama. With his *Cléopâtre* he founded modern French tragedy, and modern comedy with his *Eugène*. Literature, in fact, became organized. But the pride of the early Renaissance is Rabelais, whose *Gargantua and Pantagruel* is the work of a great creative mind, and a master of literature. Montaigne, whose *Essays* have never lost their popularity, was a writer of the purest French, and his work is of supreme importance in the history of French prose.

The seventeenth century is the golden era of the French drama and French prose; but, excluding the dramatists, there is not a single poet who belongs to the first rank. Malherbe and Boileau are the two most prominent poets of the latter half of the century, the former being a radical reformer of the language and literature. The most illustrious group of the "Grand Siècle" of Louis XIV. consisted of Descartes, Corneille, Pascal, St. Evremond, La Rochefoucauld, Bossuet, Madame de Sévigné, La Fontaine, and Molière; and these have scarcely a rival in prose, or in the measured verse, half poetry, half prose, which the dramatists affected. In 1635 a great service was rendered to literature by the founding of the *Académie française* by Richelieu. "Le grand Corneille" (1606-1684) is the greatest tragic dramatist of France in the classical style, and as a writer of dramatic verse his place is amongst the giants of the world's literature. The *Cid* and the *Menteur* are respectively the first examples of French tragedy and comedy, which can be termed modern. His masterpieces, *Horace, Cinna, Polyeucte* (the greatest of all Christian tragedies), and *Rodogune* (perhaps the finest of his works), strictly conform to the classical model. Molière (1622-1673) stands foremost in the history of French comedy. He

alone amongst dramatists recognized the value of the stage as a lay pulpit, and his wit enshrined a wholesome moral. The heights of his genius are seen in *Tartufe* and the *Misanthrope;* while his influence on all subsequent writers of comedy is most marked. The tragic masterpieces of Racine (1639-1699) reveal a perfection of workmanship never before attained. The purity and melody of his style and his masterly skill are seen at their best in his *Andromaque* and *Athalie.* But like Molière he ignores the complexity of human character, and his dramatis personæ might well be labeled with some particular type or trait—puppets of the stage and not creatures of the world. This distinguishes the classical dramas from the plays of Shakespeare, and is largely due to the rigid adherence to the Aristotelian unities. No century surpasses the seventeenth in the beauty and precision of its prose. As finished gems, what can excel a peroration of Massillon, a letter of Madame de Sévigné, a maxim of La Rochefoucauld, a *caractère* of La Bruyère, a *pensée* of Pascal, an *oraison* of Bossuet, when each writer is seen at the best? But the first complete model for classical prose was supplied by the *Discours de la Méthode* of Descartes, which was not only an epoch-making book of philosophy but also of French style. The essays of Jean Guez de Balzac (1594-1655) and the *Recherche de la Vérité* of the philosopher Malebranche (1631-1715) were remarkable contributions to French literature. The most popular narrative of France, the *Télémaque* of Fénelon, was produced in this period; so too were the writings of the great wit, St. Evremond, which influenced Voltaire and through him all later literature.

The eighteenth century was dominated by the Academy, to which every French author strove to belong. The effect at first was salutary, but in time the Academy acted as a check on spontaneous genius; hence the eighteenth century is not eminent in belles lettres, but only in serious branches of study. The most important French literary production was the *Encyclopédie* edited by Diderot. Voltaire (1694-1778), one of its contributors, won fame in almost every branch of letters. As a dramatist his three best works are *Zaïre, Mérope,* and *Tancrède.* As a writer of short tales he excels, and in the use of satire and *persiflage* he is a past master. Many of his phrases are now household words. As a historian his best work is the *Siècle de Louis Quatorze.* Chénier (1762-1794) is the greatest poet of the century; while Crébillon the Elder, Beaumarchais (author of the *Barbier de Séville* and the *Mariage de Figaro*), and Lesage are its most noted dramatists. Diderot the encyclopædist was not at his best in his plays. The first and greatest novelist of the century is Lesage, whose *Gil Blas,* a work which resembles Fielding, is by reason of its style and language one of the classics of French literature. Marivaux (1688-1763) may claim to have invented the novel without a purpose, aiming simply at amusement. Jean Jacques Rousseau (1712-1778), the celebrated novelist and *philosophe,* became the teacher of Europe, and was a greater force in life, letters, and education than any other writer of the age. His *Emile* (whose sub-title is *L'Education*) and *La Nouvelle Héloïse,* though not perfect as novels, have had a mightier influence than any other novel in the world. The greatest man of letters of the eighteenth century was undoubtedly Montesquieu (1689-1755), a writer of greater depth and originality than Voltaire. His three chief works are the *Lettres Persanes,* the *Grandeur et Décadence des Romains,* and his masterpiece *Esprit des Lois.* A notable follower of Rousseau was Bernardin de St. Pierre, whose *Paul et Virginie* is now a well-known schoolbook. In philosophy we must note the names of Turgot, Condorcet, Volney, and Condillac, as well as the moralists Helvétius, Thomas, Vauvenargues, Chamfort, and Rivarol. Among the *philosophes* was an antitheistic school, whose opinions may be gathered from that remarkable book, the *Système de la Nature,* believed to be the work of Baron d'Holbach. The chief of the scientific writers is Buffon (1707-1788), whose great work is the *Histoire Naturelle,* a book of 36 volumes, written in an inflated style. Buffon is the author of the well-known phrase, "Le style c'est l'homme." Rouget de Lisle deserves mention for his one famous poem, the *Marseillaise* (1792).

The greatest name at the beginning of the nineteenth century is unquestionably Chateaubriand (1768-1848), whose literary influence can hardly be exaggerated, and who has justly been called "the father of the romantic movement." So charmed was Joubert (whose *Pensées* prove him the most illustrious successor of Pascal and Vauvenargues) with the brilliance of Chateaubriand's style, that he called him "l'enchanteur." Of his miscellaneous works the most remarkable are *Les Martyrs, René, Génie du Christianisme,* his *Itinéraire,* and his autobiography, *Mémoires d'Outre Tombe.* Madame de Staël (1766-1817) is an important figure during this epoch. Her principal novel is *Corinne,* but her greatest achievement is her book *De l'Allemagne.* Xavier de Maistre (1764-1852) is best known by his *Voyage autour de ma Chambre,* a model of French style. Courier (1772-1825) deserves mention for his unique Letters, which in his own words reveal "peu de matière et beaucoup d'art." Chief amongst the transitionists from the *philosophe* era to the new romantic and eclectic movements are Béranger, the song writer of the people; Lamartine, distinguished both in prose and verse; Lamennais, the gifted theologian and journalist; Cousin, the eclectic; Henri Beyle, who wrote under the name of De Stendhal; Nodier, and the two dramatists Soumet and Delavigne. The triumph of the literary revolution is centered in Victor Hugo (1802-1885), the king of modern French literature, foremost then and foremost still. In him all the romantic characteristics are embodied and expressed. The fine tragedy *Hernani,* that masterpiece in prose *Notre Dame de Paris,* his matchless odes and ballads, and that remarkable book *Les Quatre Vents de l'Esprit* all show the greatness of his genius. The seven other names which sum up the greatness of the romantic movement are Sainte-Beuve, the greatest of French critics; Dumas the Elder, the celebrated novelist and dramatist; Honoré de Balzac, a novelist of great originality, given to minute psychological analysis; George Sand (Lucile Aurore Dupin), a novelist of rare imagination and improvising power; Mérimée, a novelist of the first rank and a master of French prose; Théophile Gautier, poet, critic, and novelist, a master of the ornate style of modern

French; and, lastly, Alfred de Musset, the gifted poet, dramatist, and novelist. Three stars of lesser magnitude must be noted: Alfred de Vigny, an original thinker among poets, and a prose writer of some distinction; Auguste Barbier, eloquent in his vigorous satires, the *Iambes;* and Gérard de Nerval, a less known writer of poetic prose. The romantic was followed by the naturalistic movement, itself divided into the Impressionists (represented by the two Goncourts, Alphonse Daudet, and, in a sense, Pierre Loti) and the Realists (led by Flaubert, Zola, and Guy de Maupassant). The Realistic School abolished all conventions and sunk deep into the baser side of human character. Though the works of Zola contain an element of grandeur, it is a grandeur in which no Soul is immanent. A reactionary movement against this school was begun by Paul Bourget (1852-1936), aided by Brunetière, Lemaitre, and Anatole France.

Of the most recent poetry the "Parnassian School" is the most noteworthy. It was founded by L. Xavier de Ricard and Catulle Mendès. Its most prominent members are Sully-Prudhomme (a French Matthew Arnold) and François Coppée. Of names distinguished in other fields of literature, the most notable are Comte and Proudhon, constructive philosophers; Montalembert, Lacordaire, and Rénan, theological writers; the brothers Thierry, Guizot, Thiers, Michelet, Quinet, Tocqueville, and Taine—a band of the greater modern historians.

Lavedan perfected the analytical novel, while de Régnier, Jammes, and Alain Fournier developed a fine poetic fancy in prose, and Romain Rolland combined criticism with fiction. Collete, the wife of de Régnier, and Comtesse de Noailles all three wrote with charm and feminine insight. Symbolism had died out by 1910, but the World War stopped further progress, though novelists continued to analyze, reminisce, and weave in delightful pictures. Benoit, Chadbourne, and Bizet brought back adventure to fiction after 1915. Carco chose realism, while Maurois perfected a type of impressionism, Bloch seemed a new Balzac, Jules Romains founded a new poetic style, Montherland introduced new moral purpose, and Chartier a short perfect French essay.

GERMAN LITERATURE.

The history of German literature may conveniently be divided into three periods:—

I. Old High German Literature, 600-1100, from the rise of the Franks to the Crusades.

II. Middle High German Literature, 1100-1500, from the Crusades to the Reformation.

III. New High German Literature, 1500 to the present day.

1. The beginnings of the literature may be traced almost to the dawn of the Christian era, and although no remains have come down to us there are references to German poetry which was in existence during the first six centuries. The development of epic poetry from the old heroic songs was closely connected with the migration of the German tribes. The heroic period was succeeded by an age of culture and Christianity in which the whole tone of literature was revolutionized by the infusion of new ideals. In the fourth century Bishop Wulfila (or Ulfilas) made a translation of the Bible into Gothic. The oldest monument extant of Christian poetry is the *Wessobrunner Gebet,* a Saxon poem, written in the beginning of the ninth century. A copy of the pagan poem, *Hildebrandslied,* though of much earlier origin, has come down to us from the same period. A great impetus was given to the literature by Charlemagne, aided by his Anglo-Saxon adviser, Alcuin. The poems *Ludwigslied* and *Der Heliand* mark the transition from paganism to Christianity. The former was written by Otfried, who was the first to write in rhyme. He also wrote the sacred epic, *Krist.* The first German poetess was the nun Hroswitha von Gandersheim (920-968), who was also the first dramatist after the Romans. In the second half of the ninth century we trace the beginnings of prose, the first efforts being in the form of tales (*Märchen, Novelle, Schwänke*) and legends. In the tenth century Notker Labeo translated the psalms into German prose.

2. The hundred and fifty years from 1150 to 1300 are called the "erste Blütezeit"—the first Golden Age of German literature. The brilliancy of this period is due to four causes: (1) The influence of the Crusades; (2) the patronage of the Hohenstaufen dynasty; (3) the spirit of chivalry; and (4) the introduction of models from France. The language used was Middle High German The epic romances presented an idealized picture of the virtues of knighthood. The priest Konrad wrote the *Rolandslied* in imitation of the *Chanson de Roland;* another priest, Lamprecht, wrote the *Alexanderlied.* Greater than either of these was Heinrich von Veldeke, the first of the poets who may claim to rank as German trouvères. His great work was the *Eneit,* based on Vergil's *Aeneid.* The greatest production of the Middle Ages is the *Nibelungenlied,* an epos which embraces the hero-songs of the leading German tribes. These songs had been recited for generations by the wandering minstrels, to an accompaniment on the zither or the harp. The second national epic is the *Gudrunlied,* which embodies the legends of the North Sea. While the sagas of the minstrels formed the foundation of these two epics, the poetry of the Court was inspired largely by the legends of other nations. Chief amongst these were the Arthurian Legend, the Spanish Legend of the Holy Grail, the Classical Legends of the Trojan War, the deeds of Alexander the Great and Charlemagne. The greatest poet of this era is the Bavarian knight, Wolfram von Eschenbach, whose *Parzival* is a masterly conception. The greatest of his contemporaries is Gottfried von Strassburg, who died at the beginning of the thirteenth century. The age of chivalry was remarkable for its lyrics. Poets of this class were called Minnesänger because their theme was "Minne," or the ideal Love. The chief of these writers of Minnepoesie was Walther von der Vogelweide, who died in 1227. The lyrics of Ulrich von Lichtenstein rank next in order of merit. His *Frauendienst,* 1255, is the oldest German autobiographical work extant. As the national and courtly epic began to decay about the middle of the thirteenth century, narrative poetry became more general, and the longer romance gave place to the short tale. The chief didactic work of this period was Freidank's *Bescheidenheit,* a word which appears to have meant worldly wisdom, rather than "modesty"—its modern meaning.

The use of prose was encouraged by the *Sachsenspiegel* and the *Schwabenspiegel*, two great collections of local laws; but preaching did more to establish it. From 1300 to 1500 was a period of literary dearth. After the fall of the Hohenstaufen dynasty, the age of chivalry came to an end. Driven from the strongholds of princes and nobles, literature took refuge in the cities. Guilds of poetry were formed amongst the burghers, but there is hardly a "Meistersänger" worthy of note. Heinrich von Meissen, surnamed "Frauenlob," was the first of the Meistersingers. Lyricism found its expression in the popular ballads (*Volkslieder*). During this age of decadence, prose became the universal medium, and a plain narrative prose style began to be cultivated in the Chronicles. But there were no prose writers of distinction in this period of gloom; no Villehardouin or Joinville, no Boccaccio or Roger Bacon. Not till after the early Italian Renaissance and the culture of the Humanists had spread beyond the Alps, did the Germans rise to the need of universities to form a groundwork for their literature. The rise of the drama from the sacred plays was similar to its development in other European countries. Gradually the comic element increased, until in the fifteenth century the secular drama or comedy arose alongside of religious tragedy.

3. With the Reformation the Germans awoke from their lethargy; and Luther (1483-1546), the dominant figure in literature as in religion, placed his countrymen in the van of European progress. His translation of the Bible gave the nation for the first time a literary language. Luther is the greatest of German hymn writers, and led the way with that fine battle hymn, "Ein feste Burg ist unser Gott." Ulrich von Hutten (1488-1523), a writer of satirical poems and prose dialogues, was a prominent disciple of Luther's. Hans Sachs (1494-1576), the leading German poet of the sixteenth century, composed in all 6,048 poems, among them many excellent hymns. His best works are his *Shrove Tuesday Plays*. The greatest satirist of this epoch was Johann Fischart, who was also one of the best masters of diction. Jacob Ayrer, a writer of plays, is best remembered for his *Singspiele*, the parent of the opera. The Thirty Years War (1618-1648) paralyzed German literature, and religious lyrics alone survived amid the general decay. The beginnings of modern German poetry may be said to date from the publication of the critical *Buchlein von der deutschen Poeterei*, of Martin Opitz, 1624. Paul Fleming (1609-1640) is the only secular poet of the seventeenth century endowed with true genius. Opitz and his followers are called the First Silesian School of Poetry. Marking the transition from this to the Second Silesian School is Andreas Gryphius (1616-1664), who was the first German dramatist to divide his tragedies into five acts. During the greater part of the seventeenth century Germany produced few prose works of eminence, and the language became more and more corrupt. Grimmelshausen's romance *Simplicissimus*, 1659, is a masterpiece of its time; while the name of Christian Thomasius (1655-1728) is noteworthy in connection with the first German periodical. During this dismal period Germany gave birth to one of her most brilliant thinkers, the philosopher Leibnitz (1646-1716). Poetry is represented by the names of Wernicker, Günther, and Brockes, the first German poet who displayed acquaintance with English literature. With Frederick the Great came a revival of letters. Gottsched (1700-1766) did good work for German literature by his "Critical Art of Poetry" (*Kritische Dichtkunst*). The poet and fabulist, Gellert, is the most popular figure of these times. His most important work is *The Swedish Countess*, the first social novel in German literature. It was modeled on Richardson's *Pamela*. Haller, Hagedorn, and "Vater Gleim" deserve note as poets; but greater than these is Klopstock (1724-1803), who, under the influence of the English nature poets, created the modern German lyric. His *Messias*, a sacred epic, is his greatest achievement. Gessner (1730-1788) is best known by his *Idylls*, which, until the appearance of *Werther*, was the most popular book in Europe. Among prose writers Moses Mendelssohn, Nicolai, and Forster stand out among their contemporaries.

The foundations of the classical literature, which reached its zenith by the beginning of the nineteenth century, were chiefly laid by Klopstock, Wieland (1733-1813), and Lessing (1729-1781). Wieland stands somewhat apart from the writers of his time. He represents the Latin element in the literature, and his work helped to counterbalance the excessive nature worship of Rousseau, which later swept through Germany. His masterpiece is the romantic poem *Oberon*, which won the applause of Goethe. In a letter to Lavater, July 3, 1780, Goethe wrote: "Sein 'Oberon' wird so lang Poesie Poesie, Gold Gold, und Crystall Crystall bleiben wird, als ein Meisterstück poetischer Kunst geliebt und bewundert werden." Wieland was the first to popularize Shakespeare in Germany, and translated 22 of his plays, thus contributing to the development of the German drama, which was soon to burst forth into unrivaled splendor. Lessing was the founder of æsthetic criticism in Germany, and the pioneer of the modern German drama. Macaulay styles him "the first critic of Europe." The greatest of his critical writings is the *Laokoon*. Lessing is still a living influence, and unsurpassed as a master of style. His *Minna von Barnhelm*, 1767, is the first masterpiece of German comedy. The tragedy, *Emilia Galotti*, followed in 1772, and his third and greatest dramatic work, *Nathan der Weise*, in 1779. The Second Golden Age of German literature was now reaching its highest glory in every field of thought. A new and vigorous movement began in Germany known as the "Sturm und Drang" (a name adopted from one of Klinger's plays); and the watchword of its leading spirits was "Originality and genius." Herder (1744-1803) is the greatest intellectual force of this new epoch, and forms the link between Lessing and Goethe and Schiller. As a linguist and translator he stands alone. His best prose work is *Ideen zur Philosophie der Geschichte der Menschheit*. Goethe, to use his own words in reference to Shakespeare, "is not for an age but for all time." His name is enrolled amongst the foremost poets of all nations, and *Faust*, his masterpiece, will live as long as the German tongue. Goethe sprang into European fame with the publication of his *Werther*,

and soon afterwards joined the illustrious group at the court of Weimar. With Wieland, Herder, Goethe, and Schiller banded together, it was indeed a "Court of the Muses." Goethe's famous dramas *Iphigenie, Egmont, Torquato Tasso,* besides his immortal *Faust,* give him rank as the greatest of German dramatists; while his matchless lyrics prove him the foremost lyric poet of Germany. The range of his activity was extraordinary, but the main secret of his power was his combination of realism and idealism. Schiller (1759-1805) is a truly national poet, second only to Goethe. He is an idealist expressing his noble sentiments and ideas by means of his dramatic creations. *Don Carlos, Wallenstein, Die Jungfrau von Orleans, Maria Stuart,* and his masterpiece, *Wilhelm Tell,* reveal the greatness of his dramatic genius. His ballads are loved by every reader of the language.

The Romantic School which now arose left its influence on every branch of literature and science. The prophet of this school was Friedrich von Hardenberg, better known as Novalis (1772-1801); its critical leaders were the brothers Schlegel, and its most productive writer was Ludwig Tieck. Affected too by this wave of romanticism were the brothers Grimm, whose fairy tales are dear to every child; Alexander von Humboldt, the natural philosopher; and Jean Paul Richter (1763-1825), usually called "Jean Paul," a master of satire gifted with what Carlyle called a "vast World-Maelstrom of Humour." Richter's two best works are *Titan* and the unfinished *Flegeljahre.* He was a power in his generation, but his influence is on the wane. Among the contemporary poets must be named Bürger, whose *Lenore* and *Der wilde Jäger* are translated by Scott; Voss, best known for his poem *Luise;* the brothers Stolberg; Matthisson, Miller, and Claudius. The deepest current in the intellectual life of Germany during the nineteenth century was philosophical speculation. The eminent philosopher, Kant, was succeeded by Fichte, Schelling, and Hegel, and these in turn by Strauss, Feuerbach, and Schopenhauer. One of the most celebrated story writers of the Romantic School was E. T. Amadeus Hoffmann (1776-1822), whose *Die Serapions-Brüder* and *Nachtstücke* are characteristic of his weird imagination. Friedrich de la Motte-Fouqué (1777-1843) is remembered best by his well-known fairy tale *Undine.* One of the great lyrical poets of modern times is Chamisso (1781-1838), who also wrote the romance of *Peter Schlemihl.* The lyrics of Heine (1797-1856) are amongst the best in German literature, and his ballads are known in every home. Except Goethe, no other German poet achieves his effects by such simple means. Rückert (1788-1866) wrote a number of poems inspired by the Napoleonic wars; but a more picturesque figure is Theodor Körner (1791-1813), whose well-known battle songs and the drama *Zriny* show great promise. Patriotism likewise inspired Kleist (1777-1811), who wrote many lyrics and excellent short stories. His two great patriotic dramas are *Prinz Friedrich von Homburg* and the *Hermannsschlacht.* Platen, Arndt, and Max von Schenkendorf also stand among the greater poets of the period. The Swabian group of nature poets included Uhland (1787-1862), the writer of some of the most charming songs and ballads; Gustav Schwab; Justinus Kerner, who was of a more tragic cast; and Eduard Mörike. Of more recent poets Fallersleben (1798-1874), Freiligrath (1810-1876), Kinkel (1815-1882), and Giebel (1815-1884), are the most distinguished; while Hebbel and Karl Gutzkow are highly-gifted dramatists. The German novel has not kept pace with other departments of literature. Freytag, author of *Soll und Haben* ("Debit and Credit"), is one of the best German novelists. Hauff's *Lichtenstein,* Scheffel's *Ekkehard,* Dahn's *Kampf um Rom,* Ebers' *Homo sum,* Auerbach's *Tales of the Black Forest,* Spielhagen's *Problematische Naturen,* and Paul Heyse's *Die Kinder der Welt,* are amongst the best of modern German fiction. Heyse is a master of style, as is also Hermann Sudermann, the dramatist of the successful play, *Die Ehre.* Sudermann's two best novels are *Frau Sorge* and *Der Katzensteg.* The greatest modern humorist of Germany is Fritz Reuter, author of *Ut mine Stromtid;* while the most original dramatist is Hauptmann (born 1862). History rose to its zenith in Niebuhr, von Ranke, and Mommsen.

Friedrich W. Nietzsche (1844-1900) established the individualism that dominated later Germany. Even on the poets, like Arent, Falke, Rilke, Hart, and the Swiss Spitteler his influence was profound. Realism in prose gained new power in Fontane, Raabe, H. Seidel, Rosegger of Austria, and Meyer of Switzerland. Keller in Switzerland and Thomas Mann (b. 1875) perfected the short story, while three women, Gabriele Reuter, Clara Viebig, and Ricarda Huch, gave us some of the best fiction. Wasserman and Mann kept the novel at high level, but popular tendencies interfered. Fulda, Kaiser, Ernst, Werfel, Toller, with Schnitzler, Bahr, and von Hofmannsthal developed the drama. Expressionism and romanticism also flourished.

RUSSIAN LITERATURE.

The literature and the people of Russia stand apart from the Western European world. The great movements, from the Crusades to the Revolution, which left their mark on Western nations, did not arouse Russian literature from its lethargy. The epic age, beginning with the *bilinas* or heroic tales, continued till the opening of the nineteenth century. The *bilinas* (literally "songs of the past"), unlike the national epics of other nations, are an apotheosis of the laborer instead of the knight. Instead of an Arthur or a Roland, they glorify Mikula and Ilia, both heroes of the plow. The age of chivalry which succeeded this primitive era is known as the Kief cycle, and its central figure is Vladimir, who introduced Christianity into Russia; yet the heroic *mujik,* Ilias de Moron, the giant Cossack, is well to the fore. With the spread of Christianity the paladins disappeared, and the literature assumed a religious cast. Two Greek brothers, Cyril and Methodius, translated the Gospel into the Sclavonic tongue; and in the eleventh century epistles, sermons, and moral writings began to pour forth. Nestor the monk, who died in 1116, Nicephorus, and Cyril the Golden-Mouthed were the chief writers of the time. Nestor's *Chronicle* is the first book on Russian history ever written. The twelfth century produced the *Song of the Host of Igor,* a

mixture of pagan and Christian marvels, written to please the Russian nobles. The Tatar invasion in the thirteenth century checked the course of lay literature, and not till the fifteenth century did the oral tales really enter into the domain of literature. In 1564 the printing press was established in Moscow, and on the first of May *The Acts of the Apostles*, the first book printed in Russia, made its appearance. The first regular press and the first periodical (1705) were founded by Peter the Great, who gave a great impetus to the Russian language and literature. Peter revived the theater and established the academy. In his reign there arose the first Russian writer of note, Lomonosof, who refined and perfected the language for his successors. Till the middle of the eighteenth century, though many writers appeared, their works were chiefly of an utilitarian nature. Tatichtchev (1685-1750) produced a *History of Russia*, while the only poet of distinction was Kantémir, with whom modern Russian poetry practically begins.

Under the influence of the Empress Catherine letters made great progress. A literary Pleiad arose, which numbered such names as Von-Vizine, the first original Russian dramatist; Derzhavin, the official bard; Kheraskoff, the pseudo-classic author of the *Rusiada;* Sumarakov, the first dramatist whose plays were put upon the stage; and the poets Bogdanóvich and Petróv. Russian literature owes much to Catherine, for by her writings and her influence she familiarized her people with the best thought of Europe. Translations from the *Spectator*, the *Guardian*, and the *Tatler* had a salutary effect on Russian letters. In the eighteenth century we find hardly a trace of anything original; imitations of foreign models alone abound. Other writers worthy of mention are Princess Dolgoroukaïa (1713-1770), Prince Chakhofskoï (1705-1772), Joukovski (1786-1852), and the prose writers Nóvikov, Tatíshchev, Shcherbâtow, and Radíshchev. But during this epoch little seriousness was shown in literary pursuits, and prose naturally suffered more than poetry. The best records of the eighteenth century are found in the memoirs, for the restrictions of free speech gave an incentive to this class of literature, which was not originally intended for publication. Karamzin (1766-1826), the "Titus Livius of Russia," the historian and novelist, first freed the popular style from the fetters of a pseudo-classicism, and exercised a humanizing influence on Russian literature. His direct literary heirs were the poets Dmitriev and Oziérov. The fables of the satirist Krylov are stamped with his own personal genius, and have been translated into twenty-one languages.

With the name of Pouchkine (1799-1837) we enter upon the most glorious epoch in Russian literature. Pouchkine is a lyrist of the first rank. His chief works, *The Prisoner of the Caucasus*, *The Fountain of Baktchissaraï;* *The Gipsies, and Eugène Onièguine*, have won for him a European reputation. He was moreover a finished prose writer, and the author of a most interesting novel, *The Captain's Daughter*. The two poets who stand nearest to him are his contemporaries, Baratinski, whom Pouchkine called "our first elegiac poet," and Lermontoff, the Russian Byron, whose poems are the high-water mark of romanticism in Russia. Pouchkine, Lermontoff, and Tolstoy, each in his own way, have sung the regenerative virtue of the snow-capped Caucasus. The creator of the Russian novel, Gogol (1809-1852), put an end to romanticism with his masterpiece, *Dead Souls* (a kind of Russian *Don Quixote*), and established the school of modern realism. One of the foremost writers of this school is the novelist, Turguéniev (1818-1883), a finished artist whom Ernest Renan pronounced the incarnation of the Russian people. His best known works, *First Love*, *A Sportsman's Sketches*, and *A Lear of the Steppes* so filled Taine with enthusiasm that he regarded their author as one of the most perfect artists the world has seen since the days of the ancient Greeks. Of his rival, Gontcharov (author of *Oblomov*), the visionary Dostoïevski, the gifted propagandists Herzen and Chtchédrine, the novelist Pissemski (whose best novel is *A Thousand Souls*), the poet of freedom, Nékrassov, and the author of the *Family Chronicle*, Aksakov, we can merely find space for their names. The most famous Russian novelist, Tolstoy, was born in 1828. A nihilist and a mystic, he formulated the idea of a return to Nature, for which the way was already paved by Schopenhauer, and in his writings Russian naturalism would seem to have culminated. A less known, though remarkable novelist is Liéskov (1831-1895), author of *The Priests*, the first description in the national literature of the life of the orthodox clergy. Of the writers of a younger generation only Tchékhov seems to be known out of Russia. Garshin and Chekov gave Russia powerful short narratives. Pasternak led the futurists, Klyuchevsky introduced scientific history, Lenin and Trotsky were powerful orators, but the Bolsheviks drove many good authors into exile.

POLISH LITERATURE.

Compared with Russia and Servia, Poland is extremely poor in legendary poetry and national songs. The earliest specimen of the Polish tongue is the so-called Psalter of Queen Margaret, discovered in 1826 at the convent of St. Florian, and which was presumably written about the middle of the fourteenth century. A more famous monument is the ancient battle hymn, *Picsn, Boga Rodzica* (1408), addressed to the Virgin. This is supposed to have been written by St. Adalbert. The next extant monument is the Bible of Queen Sophia or *Bible of Szaroszpatak*. The introduction of Christianity into Poland did nothing to foster the native literature, for Latin was exclusively the organ of the new faith. Not till the sixteenth century, when Polish became the language of Sigismund's court and of polite society, did the national literature come into being. From Rey of Naglowic (1505-1569), who is the earliest poet of repute and who first fixed the idiom of the language, the poets of Poland follow in an unbroken line. Rey, who is a contemporary of the celebrated Pole, Copernicus, is best known by his didactic poem, *The Mirror of an Honest Man*. The period from 1548 to 1606 is called by Poles their Golden Age. To this era belong Grochowski, author of 32 Polish works; Miaskowski, the best religious poet; Zabczyc, a song-writer and satirist; Zbylitowski, a didactic poet; Bielski, author of the *Kronika Polska*, the first historical work in Polish; Szymonowicz and Zimorowicz.

writers of pastorals; and Kochanowski (1530-1584), called the prince of Polish poets, whose most popular work is his *Treny* or "Lamentations," and who is the author of the first regular play, *The Despatch of the Greek Ambassadors.*

From 1606 to 1674 is known as the macaronic period, during which the literature and language declined, owing to the pedantic and frivolous studies introduced by the Jesuits. The poets were for the most part mere rhymesters, and the only writers worthy of notice are Potocki, noted for his epigrams; Twardowski, a most prolific poet; Opalinski, a bitter satirist; and Kochowski, one of the best Polish lyrists.

The literature found a regenerator in the last Polish king, Stanislaus Poniatowski, a zealous patron of letters and education. In this second great period of the development of Polish literature French taste was all-dominant; and though the language was enriched, it lost much of its national character. The most celebrated poet was Bishop Krasicki (1735-1801), a keen satirist, who wrote an elaborate epic on *The War of Chocim.* His fame now rests chiefly on his comic tales and fables. Another bishop-poet, Naruszewicz, succeeded better as an historian, and his *History of the Polish Nation* stands out as one of the finest examples of Polish prose. His contemporary, Kniaznin, ranks with the best of his country's lyrists. The more conspicuous names of this era are that "gifted child of nature," Elizabetha Druzbacka, the poetess; Trembecki, a court poet, whose chief work is a contemplative poem called the *Zofiiowska;* Wenzyk, whose *Glinski* and the *Boleslav* are the finest tragedies in the language; Kropinski, best known by the tragedy of *Ludgarda;* Felinski, who wrote the historical tragedy of *Barbara Radziwill;* Godebski and Tropinski, writers of miscellaneous verse; Niemcewicz, author of the *Historical Lives of Poland;* and Tomaszewski, the bucolic epic poet.

With the appearance of Mickiewicz (1798-1855), a romantic movement was inaugurated, and Poland, which had remained untouched by mediæval romanticism, was swept by the newer thought of England and Germany. Mickiewicz eclipses all Polish poets. His longest poem, by many regarded as his masterpiece, is *Pan Tadeusz;* but he is also the author of many beautiful sonnets, such as *The Storm, Bakchiserai,* and *The Grave of the Countess Potocka.* The second great poet of the romantic school is Slowacki (1809-1849), who, influenced by the writings of Byron and Hugo, produced his famous pieces, *The Monk, Hugo,* and *Lambro Beniowski.* One of the most entertaining dramatists Poland has produced is Fredro (1793-1876), who has given us many excellent comedies, modeled on those of Molière. Of more recent writers, few names call for special mention. Brodzinski, who has translated the *Lay of the Last Minstrel,* is a truly national poet. His best known poem, *The Legionist,* is touched with real genius. A further development of romanticism was marked by the Ukraine School of poets, chief amongst whom are Malczewski, Goszczynski, and Zaleski. But none of these can aspire to the mantle of Mickiewicz. Two names in fiction have attained European rank, Kraszewski and Sienkiewicz; the latter especially coming into prominence in 1896 with his sensational *Quo Vadis?*

DUTCH LITERATURE.

No national hero inspired the earliest writers of the Netherlands: the literature was mainly nurtured in the lap of commerce. Dutch literature had its birth in the thirteenth century. The oldest prose monuments extant are the charters of the towns of Flanders and Zealand, 1249, 1251, and 1254; these are in Middle Dutch. A translation of the Old Testament was made about 1300, and there is a *Life of Jesus* written about the same time. No genuine folk-tales of Dutch antiquity have been bequeathed to us, but there are some interesting prose translations of the stories of Arthur and Charlemagne recited by the wandering *jongleurs.* The first original Dutch author was Jakob van Maerlant (1235?-1300?), whose *Flowers of Nature*—a collection of moral and satirical addresses—forms an epoch in Dutch literature. No longer was literature the handmaid of the classes, but gave expression to the prosperity and growing independence of the burghers. A Dutch version of *Reynard the Fox* was made about 1250 by Willem the Minstrel. The first lyrical writer was John I., Duke of Brabant; while the earliest collection of Dutch folk-songs was published in 1544. The fourteenth century opens with the famous rhymed chronicles, the *Brabantsche Yeesten,* of Jan van Brendale (1280-1365); but the most important work of this period is the *New Doctrine* by De Weert, which by the boldness of its phrase foreshadows the Reformation.

The chivalric spirit came once more into vogue about the middle of the fourteenth century; though it was foreign to the literary genius of the Hollanders, who from the first sought to express themselves in a homely and utilitarian manner. During the Bavarian period (1349-1433) very little original work was produced—Van Aken wrote the romance of *Heinric en Margriete;* while with Dirk Potter's *Der Minnen Loep,* the last traces of the chivalric element disappeared, and poetry was left to the school of Maerlant. As in most European countries the religious drama occupies a prominent place. The earliest existing relic is part of a *Limburg-Maestricht Passover Play* of about 1360. The latest Dutch miracle play is the *Mystery of the Holy Sacrament,* by one Smeken, and performed at Breda in 1500. Besides these theological dramas there were produced moralities known as *Abelespelen* and *Sotternieën,* and in these we find the first signs of that genius for low comedy which culminated in the dramas of Brederôo. Out of the various theatrical companies and the wandering poets or *sprekers* there arose the "Chambers of Rhetoric" (for poetry was then styled the "Art of Rhetoric"), and these literary guilds greatly flourished during the fifteenth and sixteenth centuries. Meanwhile the growth of the native literature was retarded by the fact that the greatest Dutch intellects had recourse to the Latin tongue. Erasmus, Grotius, Arminius, Lipsius, and Vossius are well-known names to students of history, but their writings are entirely in Latin.

Modern Dutch literature virtually begins with Anna Bijus, who stands out amid the rhetoricians and psalm-writers of the sixteenth century as a poet of true genius. In her the middle Dutch period terminates and modern Dutch begins. Marnix (1538-1598), the author of the

famous *Wilhelmuslied*, the national hymn of Dutch independence, is also the writer of an epoch-making prose work, the *Biencorf* or Beehive of the Church of Rome. His contemporary, Coornheert, is best known by his *Zedekunst*, a prose treatise on ethics. Spieghel and Visscher form the link between the sixteenth and seventeenth centuries, and stand at the threshold of the Dutch Renaissance. At a time when the republic of the United Provinces rose to the first rank among European nations, with Amsterdam as the center of all literary enterprise, we encounter the greatest names in Dutch literature—Hooft, Vondel, Cats, Huygens. The tragic and lyric poet Hooft (1581-1647) is the founder of native tragedy. He is even more celebrated as a prose writer, for his masterpiece, the *History of Holland*, gives him rank with the foremost of European historians. His influence on his native tongue cannot be overestimated. Vondel (1587-1679) is the greatest of all Dutch writers. His fame rests chiefly on his numerous tragedies, the best of which are *Gysbreght van Aemstel* and, the more exalted in conception, *Lucifer*. The two daughters of Visscher, Anna (1584-1651) and Tesselschade (1594-1649), won distinction by their poems, and many writers of their time gathered around them. Brederôo (1585-1618) is the greatest comic dramatist Holland has produced. His best work is *Jerolimo, the Spanish Brabanter*. He created no school, but is a solitary figure in the literature of his country. "Father" Cats (1577-1660), as his countrymen affectionately call him, was a voluminous writer of didactic and descriptive poems written in a prosaic style. Though always popular with the people, he has really had a baneful influence on the literary art of Holland. Huygens (1596-1687) was not great as a poet, though a consummate metrical artist. His most famous poem is *Batava Tempe*, written in praise of The Hague. Among the lyrists the chief name is Starter (an Englishman by birth), who wrote the exquisite *Friesche Lusthof*.

After 1687 the literature declined. The more noted names are those of Poot, a rustic poet of undoubted genius; Langendijk, Holland's only comic poet; Hoogvliet, the author of the poem *Abraham;* De Marre, one of the best writers of tragedy; the brothers Van Haren, two celebrated poets; and Heemskerk, whose *Batavian Arcadia* is the first original Dutch romance. Towards the end of the eighteenth century the turning point was reached when the ladies, E. B. Wolff and Agatha Dekken, began to collaborate. In 1782 appeared their first novel *Sara Burgerhart*, in imitation of Richardson. This was followed by *Willem Leevend*, 1785, and *Cornelia Wildschut* in 1792. The real creator of a new epoch was Willem Bilderdyk (1756-1831), the most impressive figure of his time. He excelled in every kind of poetry, except tragedy; his masterpiece is the unfinished epic, *De Ondergang der eerste Wereld*, of which his country is justly proud. In spite of Bilderdyk's opposition the new romantic movement made headway in Holland. Van Alphen (the children's poet), Feith, and Kinker are the chief poets of this school. The foremost prose writer of the nineteenth century is Van der Palm, an historian of decided genius. His greatest achievement was the translation of the Bible. No very great genius has arisen in any branch of letters since Bilderdyk and Van Alphen. Loosjes wrote an historical romance, *Charlotte van Bourbon*. Among more recent authors we may mention Tollens and Loots, the patriotic poets; Van Walré and Van Halmaal, dramatic poets of distinction; and Bogaers, the most prominent poet and romance writer of the time, author of the famous poem *Jochebed*, though more beautiful is his *Voyage of Heemskerk*, in which his genius attains its height.

Flemish literature came once more into existence with the independence of Belgium, and has produced three writers of note: the poet Ledeganck (1805-1847), the popular novelist Hendrik Conscience, and the gifted writer De Laet. The use of the French tongue by Flemish authors has, however, deprived the national literature of much that is meritorious.

SCANDINAVIAN LITERATURE.

From an intellectual standpoint the Scandinavian nations, which consist of the people of Denmark, Norway, Sweden, and Iceland, form a national unity imbued by the same spirit. Down to the Middle Ages they spoke the same tongue, and even to-day the differences between the three chief languages, Danish, Norwegian, and Swedish, are very slight. The development of Northern literature is one of the most striking phenomena in the history of the world. The poetry and the sagas of the North were inspired by the highest ideals, and gave utterance to the deepest thoughts of the Teutonic race. The early literature of the North divides itself into two great categories—(1) the Lays, usually called the Eddic Poetry, and (2) the Sagas or Prose Histories. There are two Eddas: *The Elder* or Sæmund's Edda, consisting of 39 poems, was collected from oral tradition in Iceland between 1050 and 1133; *The Younger* or Snorre's Edda is the work of different writers, both of prose and verse, and was doubtless intended as a handbook for Skalds. The Eddas embrace a number of semi-historical narratives, dealing with the lives and deeds of Norse heroes, chief of whom is Sigurd, the champion of the Volsungs, besides mythic poems remarkable for their range and depth of thought. The skaldic poetry extends back to prehistoric times, but not till the time of the Norwegian king, Harold Fairhair, at the end of the ninth century, can we name any skald with historical certainty. The two most famous poets of the reign of Harold—himself a skald—are Thjodolf of Hvin and Thorbjorn Hornklofe. Of greater renown is Eyvind Finnson, who celebrates King Hakon in one of the finest songs bequeathed to us—*Hakonar-mál*. This poem seems to have been modeled on the earlier *Eiriksmál*, which was chanted at the funeral of King Erik Bloodaxe (d. 952). The most famous Icelandic skalds, descendants of Norse emigrants, were Egil Skallagrimsson, a great warrior-poet who has left us three long *drapas* or songs of praise besides a number of songs; Kormak and Gunlaug Ormstunga, whose lives are told in sagas; Snorre Sturlason, the celebrated poet and historian, and his two nephews, Olaf Hvitaskald and Sturla Thordarson. Sturla was the last to compose drapas in honor of Norse kings. After the fourteenth century, when Christianity gradually made itself felt, the poetry assumed a

religious tone. The most noted of these early religious poems is *The Lily* by the monk Eystein, a poem which marks the close of the skaldic period and the beginning of the *Rima* or ballad. The saga is a kind of prose epic centering round a single figure or group of characters. The Sagas may be divided into three groups: (1) The Icelandic Sagas dealing with life and character in Iceland, e. g., *Njala*, *Gretla*, *Laxdaela*, the *Eyrbyggia*, and *Egil's Saga*, all works of great literary merit; (2) The Historic Sagas, e. g., the renowned *Heimskringla*, or "the Sagas of the Kings of Norway" to the year 1177, by Snorri Sturlason; (3) The Mythical or Romantic Sagas, e. g., The *Volsung* and the *Saga of Gunlaug Serpent-Tongue*.

After the union with Denmark, intellectual activity in Norway almost ceased. A few Norsemen with literary ambitions settled in Copenhagen, and their works became incorporated in Danish literature. Swedish letters, however, entered upon an independent course. Among the more eminent names are Saxo Grammaticus, whose *Chronicle of Denmark* is the greatest intellectual effort of Denmark in the Middle Ages; Messenius (1579-1637), whose chief work is the *Scondia Illustrata*, a history of Sweden partly in prose and partly in verse; the chancellor Axel Oxenstjerna (1583-1654), who began a history of Gustavus Adolphus; Olof Rudbeck the Elder (1630-1702), whose *Atlantika* tries to prove that Plato's Atlantis and Paradise were no other than Sweden; Georg Stjernhjelm (1598-1672), a great literary reformer, who, in his epic-didactic poem *Hercules* and other poetic works, laid the foundation of an artistic literature; Rydelius (1671-1738), the first great Swedish philosopher; Swedenborg (1688-1772), the mystic writer who founded the remarkable theosophical system which bears his name; Holberg (1684-1754), who wrote a number of comedies in the style of Molière, and whose influence was so great that he must be regarded as the founder of modern Danish literature; Ewald (1743-1781), one of the greatest lyric poets of Scandinavia, whose best work is *The Fishermen;* and Wessel (1742-1785), the witty satirist and the second great poet of this period. During the latter half of the seventeenth century Swedish poetry modeled itself chiefly on the pseudo-classical French, the transition between this period of imitation and the golden age of Swedish poetry being marked by the writings of Olof von Dalin (1708-1763), and Fru Hedvig Charlotta Nordenflycht (1718-1763). The first Swedish novelist was Jacob Henrik Mörk (1714-1763), whose great novels, *Adalrik och Göthilda* and *Thecla*, are amongst the best prose works of this era. Another novelist, Jacob Wallenberg (1746-1768), is still popular in Sweden by reason of his rollicking novel *Min Son pa Galejen*. This period produced many eminent men of science, the greatest of whom is Karl von Linné (1707-1778), "the king of botanists." Swedish poetry attained its highest glory in the reign of Gustav III., himself a man of great literary ability, and the founder of the national theater in 1782 and the Swedish Academy in 1786. The most famous poets of this Gustavian period are Kellgren, Karl Gustav af Leopold, J. D. Valerius, Lidner, Thorild, and the greatest of all, Karl Michael Bellman (1740-1795). Historiography in the first half of the nineteenth century claims three eminent names, Geijer, Strinnholm, and Fryxeli. The most widely known Swedish poet is Esaias Tegnér (1782-1846), the author of *Frithjof's Saga*, *Axel*, and a poem made famous by Longfellow's translation—*The Children of the Lord's Supper*. Of the romantic poets or Phosphorists (so called from their periodical, the *Phosphoros*), the greatest was Atterbom (1790-1855), and his disciples, Dahlgren, Börjesson, Julia Kristina Nyberg ("Euphrosyne"), and Grafström. In the field of fiction Sweden is to the fore, and is particularly rich in historical novels. Count Sparre, Zeipel, Kullberg, Crusenstolpe, and the Finlander Zachris Topelius, have each given us important historical novels. A writer well known in the United States, which she once visited, is Fredrika Bremer, who wrote an appreciative *Life in the New World*, besides the romances, *The President's Daughters*, *Nina*, *Home*, and *The Neighbors*. Somewhat like her in his appreciation of all the features of an everyday life is Wetterbergh ("Uncle Adam"), whose novels *Genre Pictures*, *The Four Signatures*, *The Core of Society*, etc., give us a vivid picture of Swedish life and customs. Two other novelists, both women, are worthy of note, Sofia Knorring, and Emilie Flygare-Carlen, both of whom have left faithful portrayals of popular life. The greatest poet that has ever used the Swedish tongue is Runeberg, the Finlander (1804-1877). His chief work, *Fänrik Stals sägner*, is a collection of masterpieces throbbing with intense patriotism, and has won for him the title of national poet, both of Finland and Sweden. His exquisite idyl, *The Elk-Hunters*, marks an epoch in Swedish literature on account of its minute realism. One of the foremost writers of modern times is Viktor Rydberg, whose historical romance, *The Last Athenian*, has been translated into several tongues.

During the first fifty years of last century Danish literature shone forth with a new splendor. Oehlenschläger (1779-1850) was the first to rouse the nation's interest in the treasures of the past, and he revived the skaldic heroes in a series of historic tragedies, *Earl Hakon*, *Baldur the Good*, *Palnatoke*, *Hagbarth and Signa*, the heroic romance of *Helge*, and the fine dramatic poem, *Aladdin*. The versatile Baggesen belongs to the opening years of the century. Both his prose and verse are marked by a graceful style. He has been called "the poet of the graces." In the field of the drama there are P. A. Heiberg, a writer of operettas and comedies; Hauch, a true romanticist and author of many successful plays; and Henrik Hertz (1798-1870), the father of the new comedy in Denmark. The study of antiquities was further developed by Müller, author of the critical *Sagabibliothek;* Petersen, Werlauff, K. F. Allen, and the Icelander, Finn Magnusson (1781-1846), who traced the discovery of New England by Bjorne in the tenth century. The chief name in natural science is Oersted (1771-1851), author of a brilliant work, *Aanden i Naturen* (The soul in Nature). A race of intellectual giants came to a close with four Danish poets, each eminent in his own line—Grundtvig, Bödtcher, Andersen, and Paludan-Müller. Grundtvig (1783-1872) is the people's poet and his spirited songs are the joy of the poor. His influence on the literature of his country has been

considerable. Bödtcher (1793-1874) is one of the most finished poets of the North. His finest poem is *The Meeting with Bacchus.* The world-famed Hans Christian Andersen (1805-1875) was one of the most versatile writers, but his *Fairy Tales* are the flower of his remarkable genius. Their charm and freshness are not equaled by his *Improvisatoren* and *The Story of My Life.* Paludan-Müller (1809-1876), the social satirist, has won fame by his great epic, *Adam Homo,* though his lyrical drama, *Kalanus,* possesses more cosmopolitan interest. The excellent critic, Georg Brandes, whose *Danske Digtere* (1877) is known to every Scandinavian student, says of *Adam Homo* that it is "a piece of Denmark, a piece of our history, a piece of living cloth cut out of the web of time."

It was not till Norway regained her independence in 1814 that her literature became distinct from the Danish. At first her poets sang with harsh and hearty note, but amongst these patriotic versifiers three men, who have been called the Trefoil, were much admired in their day—Schwach, Bjerregaard, and M. C. Hansen. Rising far above these is the noble figure of Wergeland (1808-1845), who aggressively advocated the building of a literature upon national history and traditions. His most ambitious work is the symbolic epic, *Creation, Man, and Messiah,* but *The English Pilot* is his last and greatest poem. Welhaven (1807-1873) maintained a contrary opinion, and did his utmost to introduce new canons of criticism from abroad. He has left behind him several fine lyrics, while his prose writings are the most brilliant in Norwegian literature. A book which has exercised a great influence on later poets is the *Norwegian Popular Tales,* by the joint authors Jörgen Moe and the gifted zoölogist, P. C. Asbjörnsen. We now pass to the greatest name among the poets of the new realistic school, Henrik Ibsen, who has risen higher and higher as an artist till he now ranks with the foremost writers of the nineteenth century. His most famous work is the Puritan opera of *Brand.* Of his many dramas none have excited so much controversy as *A Doll's House.* Ibsen is an original thinker and an unsparing satirist. To him literature is a mighty agency for the amelioration of the race. His great rival, Björnson, poet, novelist, and dramatist, is famous throughout Europe and America. Björnson's works are imbued with the life and thought of his native land, and he has achieved what to Wergeland was only a fond hope. Stimulated by Ibsen and Björnson, a vigorous school of novelists has arisen, the most distinguished writers being Jonas Lie and Kielland, whilst among minor novelists may be noted Magdalene Thoresen, Camilla Collett, Dilling, Glöersen, and Paulsen.

JAPANESE LITERATURE.

In reviewing the voluminous literature of the Japanese, three features are particularly noteworthy: (1) the prominence of women writers; (2) the lack of any great epic or didactic poem; and (3) the absence of any great dramatist or imposing figure of any kind in the whole twelve centuries of their literary history. From the earliest times literature was the pastime of the mikado and his courtiers, and took the form chiefly of poetry and the writing of diaries. There were few works of a popular nature. China supplied both the inspiration and the models, while India, through the humanizing energies of the Buddhist missionaries, left its impress on the rising literature. The oldest extant monument is the *Kojiki,* or "Record of Ancient Matters" (712); but, though containing a number of Japanese songs, its interest is more archæological than literary. Of a similar character, though of greater historical importance, is the *Nihongi,* or "Japanese Record," in which Chinese influence is very marked. The *Norito,* or Shinto liturgies, are written in prose containing many of the elements of Japanese poetry.

The poetry is very restricted in its scope and form. Love and wine, absent and lamented friends, the joys of home and life's uncertainty, and withal the manifold beauties of nature, these are the themes most favored by the poets. War and religion seem foreign to the native muse, nor do we meet with any political, philosophical, or satirical poems. The most ancient collection is the *Manyôshiu,* or "Collection of a Myriad Leaves," which was prepared at the beginning of the ninth century. This anthology covers a period of about 130 years, and contains more than 4,000 poems, of which the greater part are *Tanka,* or short stanzas of 31 syllables. Still better known is the *Hiaku-nin-is-shiu,* or "Collection of One Hundred Persons," each author being represented by a single poem. This was compiled about 1235 by a courtier named Sadaiye, and has been translated into English by F. V. Dickins.

The Chinese influence, which was so great in the tenth century that the development of the Japanese language and literature was left almost entirely to the ladies of the court, became even more pronounced during the Tokugawa-Shôgunate (1603-1867). This period was productive of many writings, more remarkable for their pedantry and extravagances than for their literary merit. Considerable attention was given to the geography of Japan, as well as to matters pertaining to art. The drama has never held the same place as in European countries, and no classic author has arisen. The plays are always of a popular character. Another large portion of the literature consists of romances and fairy stories. The foremost novelist in Japan is Kiokutei Bakin (1767-1848), whose most famous novel is *Hakkenden.* One of the greatest literary undertakings was the *Dai Nihonshi* in 240 books, prepared under the patronage of the celebrated Mitsukuni, daimio of Mito (1622-1700). This is a history of Japan from the reign of the first mikado, Jimmu Tennô, 660 B. C., to the abdication of Go Komatsu, 1413, and is written in a concise and polished style. This standard work was first printed in 1851.

The downfall of the Shôgunate in 1867 gave a decisive blow to Chinese influence. As in other departments of Japanese national life, European models were set up in place of the Chinese, and were studiously copied and adopted. A band of new writers came forward who popularized the life and institutions of Europe. Of these authors the most conspicuous was Fukuzawa, whose *Seiyô Jijô* ("Things European") was issued in 1866. Many English books were translated, and about 1872 a new impetus was given to the spread of European knowledge by

the rise of a magazine and newspaper press. The influence of Europe on Japanese literature proper dates from the translation of Lytton's *Ernest Maltravers* in 1879. Gradually a reaction set in against the high-flown style and the drawn-out stories of the older writers. The leader of this salutary movement was Tsuboüchi Yuzō, whose *Shōzetsu Shinsui* ("Spirit of Fiction") is a merciless attack on the methods of Bakin and his school. Bimyōsai, author of *Natsu Kadachi*, and the realistic novelist Kōyō, introduce the colloquial dialect, which differs very considerably from the literary language. The most popular and voluminous writer of the present day is "Rohan" (Kōda Nariyuki). Fiction holds a very prominent place in modern Japanese literature, and these are only a few names out of a host of writers.

ENGLISH LITERATURE.

I. Its Beginnings (600-1066).—The story of English literature, from its rise in a barbaric age to the splendor of its manhood, is one that has kept pace with the nation's progress, and reflects the growth and greatness of the Anglo-Saxon race. Though no prose has come down to us from before the reign of Ælfred, we have the remains of many of the earlier poems, written in that strong, unpolished tongue from which our language has been evolved. There is *Widsiδ*, the fargoer; *Deor's Complaint*—the earliest English lyric; *The Wanderer; The Seafarer; The Fates of Men; The Ruined City;* and that famous, though unfinished epic, *Beowulf*. These were the songs of prehistoric bards, who, like the rhapsodists of Homeric times, journeyed from court to court, chanting their wild lays of "battle and bale," and rousing their hearers with the stirring minstrelsy of the sea.

The introduction of Christianity, and with it the use of the Latin tongue, bade fair to stifle all native song. But in virile Northumbria, the "scops" or gleemen clung to the language dear to their heart, and shaped the course of a national literature. It is remarkable that for long after the North became Christianized, the ritual of the church was in the native tongue. But a new spirit entered into English song, and the minstrel sang of the deeds and battles of the triumphant King of kings. The theme alone was changed; the form and the fervor remained the same. Cædmon, the aged Yorkshire bard, sang the story of Genesis and Exodus, and told of Christ and the life to come. These were the first really English poems, but their fame alone has survived. About the year 1650 Junius (Francis Dujon), a scholar of Amsterdam, published a manuscript which he believed was the work of Cædmon. The *Genesis* is worthy of the "Anglo-Saxon Milton," and is believed to have inspired that greatest of English epics—*Paradise Lost*. To another Northumbrian, Bæda, we owe the beginnings of English prose. Bæda's earlier writings were in Latin, and his *Historia ecclesiastica gentis Anglorum* is the chief authority for early England. By his scholarship he raised the standing of the English tongue, and translated into English *The Gospel of St. John*. The story of Bæda's death told by his pupil, Cuthbert, is the first record of English prose writing. Cynewulf, the greatest of the Northumbrian singers, flourished about a century after Cædmon, and was the first of the Old English poets who signed his verse. His name appears in runic letters in four of his religious poems: *Elene, The Crist, Juliana,* and *Fates of the Apostles*. Under King Ælfred, English became the language of letters, and the *English* or *Anglo-Saxon Chronicle* rose to the dignity of a national history. The *Chronicle* preserves for us that fine war poem, *The Song of Brunanburh* (937), as well as many songs of the time. Ælfred was truly the father of English prose; and as Yorkshire is the cradle of English verse, so is Winchester of our prose. The *Chronicle* lived on till the death of Stephen (1154); and at its close, we catch the last strains of Old English minstrelsy, and see in its quaint historical records the last traces of Old English prose.

II. From the Conquest to Elizabeth (1066-1558).—For a century and a half after the coming of the Normans, English literary history is a barren waste. French became the language of court and cloister; and English singers and writers became outcasts in their own land. But the tongue lived on among the masses and in time absorbed the Norman speech, until in the reign of Edward I. English literature was again supreme. The Normans brought with them their Chroniclers; and these Latin historians, the greatest of whom was William of Malmesbury, paved the way for historic romance and English story-telling. Geoffrey of Monmouth recounted the half-mythical tales of Arthur and Merlin, the stories immortalized in the *Idylls of the King*. From the Latin, Geoffrey's "History" (as he humorously styled it) was translated into French, and next put into English garb in Layamon's *Brut*. Layamon, who flourished about 1250, is the first English poet after the Norman Conquest. About 1300 story-telling gave rise to historical poems, and Robert of Gloucester penned his *Rhyming Chronicle* from Brutus to Edward I. Within the next 50 years French and Latin words streamed into our language, and the spirit of French romance pervaded the writings of those times. The reign of Edward III. not only saw the consolidation of the English people, but the fixing of the standard of the English tongue. The "King's English" became the language of court and letters. It was the East-Midland dialect that prevailed—the tongue of Oxford and Cambridge, of London and the heart of England. Langland's *Vision Concerning Piers Plowman* was, however, written in a dialect, and so was Wiclif's translation of the Scriptures. But both these works were meant to reach the hearts of the simple masses, and were given to them in words they well could understand. The Bible was read eagerly in every corner of the land, and did much to mold the style of mediæval writers.

The courtly Gower wrote little of value, and we turn from the dreariness of the *Confessio Amantis* (written in English verse) to Geoffrey Chaucer, "the morning star of English song." Chaucer wrote many poems which are colored by his sojourn first in France, and afterwards in Italy. Of such are the *Compleynt unto Pite, Troilus and Criseyde*, the *House of Fame*, and the *Legende of Good Women*. But it is as the author of the *Canterbury Tales* that Chaucer

is loved and remembered best. Like Dante, he wrote in his native tongue and made it at once the tongue of literature. A popular book in its day was that strange mixture of fact and fancy, the *Voiage and Travaile of Sir John Mandeville*. With the death of Chaucer in 1400, the brilliance of the dawn was followed by a century of almost total eclipse. Imitators of the great master arose, such as Thomas Hoccleve and John Lydgate; but these feeble rays only deepened the darkness. The coming of Caxton with his printing press worked a silent revolution in England's intellectual life. The first book printed in England was *The Game and Play of the Chesse*, 1474; but the first book bearing the imprint of William Caxton is *The Dictes and Sayings of the Philosophers*. Caxton was not only a printer, but an editor and translator; and, by his enterprise and zeal, saved the English of Chaucer from further degradation. His most important publication was *La Morte d'Arthur* of Sir Thomas Malory, the greatest masterpiece of prose before the revival of learning. What fixed our language once for all was Tyndale's *Translation of the New Testament* (1525). Tyndale's Bible, revised by Coverdale and issued as *Cromwell's Bible*, 1539, and in the following year as *Cranmer's Bible*, was set up in every church in England. After its revival in 1611, this same Bible was brought by the Puritan Fathers to New England, and fixed the standard of English in the New World. No book ever published has had so great and lasting an influence on the purity of language and the style of prose. The *English Prayer Book*, 1549-1552, edited by Cranmer, also gave balance to the English tongue. Not in Tyndale alone, but also around Sir Thomas More and Roger Ascham did the new learning center. More's most famous work is the *Utopia*, written in Latin, 1516, but afterwards translated by Ralph Robinson in 1551. More also wrote many works in English, his most valuable being the *Life of Richard III.* and the *Life of Edward V.* Ascham's most important works are the *Toxophilus*, or Lover of the Bow, and *The Scholemaster*, both written "in the English tung, for English men." The Renaissance in Italy was far reaching, and in the lyrics of Wyatt and Henry Howard, Earl of Surrey, we see the Italian sentiment wedded to the English tongue. Wyatt and Surrey gave us a new kind of poetry, and heralded the dawn of the Elizabethan splendor. The *Miscellany* of Richard Tottel, 1557, contains a number of poems by Wyatt, Surrey, and "Uncertain Authors." This is the first English anthology, and marks an epoch in the history of English verse.

III. The Golden Age (1558-1625).—The Elizabethan era presents a galaxy of genius far outshining the glory of any other age. Seldom have such giants of intellect been crowded into so short a span. The creative spirit overshadowed the nation: the poets burst forth into immortal song, and from the old Mysteries and Morality plays rose the drama to swell the triumph of the age. To merely name the poets, dramatists, and great prose writers of this period is to tell the brightest stars in the firmament of English literature. Spenser, Sidney, Shakespeare, Ben Jonson, Beaumont and Fletcher, Raleigh, Bacon,—what age has produced their like? At the threshold of this new era stand two well-known figures: Spenser, "the poets' poet," gazing dreamily backward, and Sidney, the "jewell of his times," living devotedly in the present; both destined to shape the age, of which they also were the product. Spenser's two greatest works, *The Shepheard's Calendar*, in 1579, and that exquisite allegory, the *Faerie Queene* (1590), delighted the England of his day as they have charmed true lovers of poetry ever since. Spenser sang of the ideal and the spiritual, and out of this subtle substance he wrote for England her first great ideal poem. His influence on all later poetry has been considerable. He was the originator of the English Spenserian stanza—a form of poetry only inferior in individual beauty to the sonnet, and which has been used with such telling effect by Thomson, Shelley, and Tennyson. The impress of Sidney on English poetry is very clear. Sir Philip Sidney, who died in the heyday of his fame, 1586, produced more artistic prose than any previous author; but it is as a writer of verse he excels, and his matchless sonnets by their influence created the greatest sonnet era in the history of English literature.

It was an age of action, and looked to the drama for an expression of national life. Shakespeare's was the master mind which seized the occasion and shaped it to his will. Whatever Shakespeare wrote he impressed with his titanic individuality. He settled forever the form of the English tongue and the English drama. Beginning in 1589 with *Love's Labour's Lost* (though the dates and order of his plays are not known with exactness), we can trace the growth of his skill and power in the *Comedy of Errors*, the *Two Gentlemen of Verona*, and the *Midsummer Night's Dream*. His dramas are preëminently human, and show us every side of human life, thought, and passion. He voiced the nation's patriotism in that grand series of historical plays, beginning with *Richard II.*, *Richard III.*, *Henry IV.*, and *King John*. In the *Merchant of Venice* the mastery over his art has become complete, and then follow his four great tragedies, *Hamlet*, *Othello*, *Macbeth*, and *King Lear*, each overtowering the one before in dramatic strength and grandeur of conception. In *King Lear* he reaches the summit of his tragic power. The grand development of his genius, from the first imperfect efforts to the sublime achievements of his riper years, has led some critics to believe that Lord Bacon, and not the man of humble birth, was the author of the plays; but such a conjecture is idle and baseless. His minor works include the poems, *Venus and Adonis*, and *Lucrece*, besides a collection of sonnets which reach the high-water mark of English poetry. Shakespeare is the greatest poet of our modern world. He is a literature in himself. Not only is his imagination complete, but all the elements of his many-sided strength are evenly adjusted. His is the one towering figure amid a band of giants; and this is as true to-day as 300 years ago. Such is Shakespeare, and such is his influence.

"Rare Ben Jonson" (1573-1637), the other leading dramatist of the Golden Age, stands out in striking contrast to Shakespeare. Jonson's was a mighty intellect, but void of passion. His

chief success was in comedy, his best works being *Every Man in His Humour* (1596), *The Alchemist*, *The Silent Woman*, and *Volpone the Fox*—the finest play he ever wrote. His tragedies are *Sejanus* and *Catiline*. Jonson's masques mark the beginning of the reaction against the imaginative school. They are material and not spiritual, and appeal to the intellect and not to the heart, thus sounding the first notes of the decadence of the drama. As a lyrist he excelled, and such songs as "Drink to me only with thine eyes" led the way for such as Herrick. Beaumont and Fletcher, the "twin stars," who ruled the drama after Shakespeare and Jonson had quit the stage, are striking examples of the creativeness of the times. Of their 52 collaborated plays the best known are *The Two Noble Kinsmen* (in which the hand of Shakespeare is evident), *The Maid's Tragedy*, and *Philaster*. "Beaumont," as Lowell has it, "contributed the artistic judgment and Fletcher the fine frenzy." Their plays, though brilliant, bore no message, and pandered to the coarseness of a declining age. That lovely pastoral, *The Faithful Shepherdess*, is by Fletcher alone, and anticipates the *Comus* of Milton. The Elizabethan age produced many distinguished dramatists whose fame has been eclipsed by the brilliance of the masters. The four most important writers in the earlier years are Peele, Greene, Kyd, and Marlowe. Marlowe (1564-1593) was the greatest of these, and may be said to have created the English tragic drama, laying the corner stone for the temple of Shakespeare. He wrote *Doctor Faustus* and *Edward II.*, and is the author of that beautiful lyric, "Come live with me and be my love." Other contemporaries of Shakespeare are Middleton, Marsden, Chapman, Heywood, and Dekker, whilst belonging more exclusively to the reign of James are Webster, Ford, and Massinger. The literary fame of the ill-fated Raleigh (1552-1618) rests not so much on his poems as on his *History of the World*, written during his 13 years' imprisonment in the Tower. This work shows an English historian for the first time looking beyond the British Isles.

The Renaissance left its influence on English prose. On the borderland between the old style and the new—between the strong, rugged writings of Tyndale and Latimer and the smoother periods of the later stylists — Raleigh and Hooker are the two chief figures. Hooker's *Laws of Ecclesiastical Polity* laid the foundations of moral and political science. The era of modern prose is ushered in by one predominant name—Francis Bacon (1561-1626). Unlike the writers of the Renaissance, who wrote only for the present, Bacon wrote for the future. His one desire was immortal fame; "a cosmopolitan philosopher writing for all ages and all nations." To this end he wrote principally in Latin, and even his English works he translated into Latin, "the universal language"; for he had no faith in the permanence of the English tongue. Of his Latin writings only the *Novum Organum* is of present importance (and this mainly academic); but his English works, especially the *Essays* and *The Advancement of Learning*, are read wherever the English language is known. The word "essay" was borrowed from Montaigne, and Bacon meant by it an attempt to record in compressed form his "dispersed meditations." He was not an investigating scientist, but a seer and idealist pointing the way. In the words of Macaulay, "he moved the intellects which have moved the world." Bacon was strangely lacking in passion. The cold rhetoric of his *Essay on Love* compared with the impassioned eloquence in Shakespeare's plays, reveals a striking contrast between these two vast intellects.

The crowning achievement of the age was the production of the Authorized Version of the Bible in English (1604). The King James Version—the greatest prose masterpiece of any age or language—fixes the standard of English prose for all time. No book in the history of the world has had so great an influence on life and letters. The Bible is the epic of the English-speaking race, and is woven into all that is noblest in our literature.

IV. The Age of Milton and Dryden (1625-1700). — Milton (1608-1674), though born in the reign of James, was really an Elizabethan, fired with the poetic zeal of the age just closed. The first 30 years of his life were productive of many fine lyrics, and amongst them those five immortal poems, *L'Allegro*, *Il Penseroso*, *Arcades*, *Comus*,—the last and greatest of English masques,—and *Lycidas*, in which shone the final rays of Elizabethan inspiration. For the next 20 years Milton laid aside the lyre, and hurled his fierce invective against the foes of the Commonwealth. Style was cast to the winds in the bitter fight for liberty; and, except his *Areopagitica* and the *Letter to Hartlib*, none of these prose writings command notice as literature. From 1660 to his death, Milton, blind and outlawed, turned once more to his art. Then grew that sublime, imperishable epic, *Paradise Lost*, magnificent in its conception, intensity, and unworldliness. This inspired poem, reflecting the loneliness of him "whose soul was like a star and dwelt apart," stands in our literature like some stately cathedral upon a heaven-rapt mount. Two other poems followed: *Paradise Regained* and *Samson Agonistes*, but both these fall short of the sublimity of his masterpiece. Milton is the greatest English poet save Shakespeare, and his strong personality is stamped on every line.

Of the many writers of this period, though dwarfed into insignificance by the side of Milton, may be mentioned those five religious poets of the "Caroline" period: Crashaw, Herbert, Vaughan, Wither, and Quarles, and the last of the lyric writers—Robert Herrick. Then there is Jeremy Taylor, "the Shakespeare of the pulpit"; Hobbes, author of that philosophic treatise, the *Leviathan;* and Sir Thomas Browne, who wrote *Religio Medici*. These are the three leading prose writers. In 1678 Bunyan published his famous *Pilgrim's Progress*, a book which draws its power almost entirely from the Bible, and which inspired a plenteous crop of religious allegorical works.

With the Restoration the old ideals were swept away; "the age of prose and reason," of artificiality and hypercriticism, was entered upon. Prose began to take the place of poetry; whilst poetry no longer voiced the emotions, but lent itself to satire and the play of intellect. A new interest in individual life gave birth to

numerous biographies. The new school began with the poems of Waller, Denham, and Cowley, the immediate precursors of that literary autocrat, whose iron rules cramped English poetry for over 100 years,—John Dryden.

Dryden (1631-1700) was the first leader of the new critical and didactic school. His first noted poem, the *Annus Mirabilis*, appeared in 1667, but not till he was 50 years of age did he produce that foremost of English satires, *Absalom and Achitophel*. This was the first great example of political verse, which grew so fierce and personal in the hands of Pope. It was a gallery of ruthless portraits, and was followed in 1682 by the *Medal*, a diatribe against Shaftesbury. The *Hind and Panther* (1687) is a religious satire aimed at the foes of the Church of Rome. In the same year he produced the *Song for St. Cecilia's Day*, and 10 years later, for the same occasion, he wrote that beautiful ode, *Alexander's Feast, or the Power of Music*. This Macaulay deems "his greatest work." First in poetry, so was he also first in prose. In his essays *On the Historical Poem*, on *Heroic Plays*, and on *Dramatic Poesy*, we catch the first notes of modern literary criticism. Dryden wrote several plays, but few survived his life. His best known are his tragedies, the *Indian Queen*, *All for Love*, and *Don Sebastian*, and his comedy, the *Spanish Friar*. It is in his satires, translations, allegories, and prologues that his fame will abide. His mastery over heroics is unequaled. His poetry is not of the highest kind; but in the sweep and variety of versification, in argument, in satire, in fiery spontaneity, and in declamatory splendor, Dryden stands supreme and unapproached.

The philosopher, John Locke (1632-1704), belongs to this period. His celebrated *Essay Concerning the Human Understanding* constitutes him the founder of the analytical philosophy of mind.

V. From Pope to Johnson (1700-1784).—On the death of Dryden, literature was in a state of stagnation. The comic drama, represented by Congreve, Cibber, Vanbrugh, and Farquhar, alone showed signs of vitality. For the first time in the history of English literature, poetry became wholly subordinated to prose. Not that verse was inactive; elegiac, didactic, and occasional poems poured forth in plenty; but the divine afflatus was gone, and poetry, dethroned from its high estate, became the wanton of the imagination. Literature was the instrument of party strife and unbridled slander. With the triumph of prose, the critic came into prominence; and, influenced by French writers of the period, introduced into England the Aristotelian criticism of imaginative literature. The effect on prose was healthy. Elegance, perspicuity, and brevity adorn the prose of the "Augustan Age" (a time-honored misnomer); a finished style was achieved by the leading writers, and prose became a worthy vehicle for the worthiest thoughts.

During this whole period no "great" poet arose to claim the mantle of the Elizabethan singers. Pope (1688-1744) stands first among his contemporaries. As a metrical artist he is unrivaled, and, until the rise of Wordsworth, his verse set the fashion for two generations. His *Essay on Criticism* appeared in 1711. The next year gave us the *Rape of the Lock*, a masterpiece of most exquisite beauty. The writings of the great French satirist, Boileau the "Lawgiver of Parnassus," had been closely studied by Pope and his school; but the *Rape of the Lock* marks the turning point of English deference to French ideals, and henceforward England gives models to the world at large. Pope was imitated in every country in Europe, while in England for 30 years he may be said to have represented the poetry of his time, unchallenged and supreme. His *Dunciad* was issued in 1728, and shortly afterward appeared his celebrated *Essay on Man*. This poem of the English classical school, though weak in philosophy, has enriched our daily speech by countless lines and phrases. "Dear Mat Prior's easy jingle," as Cowper somewhere speaks of it, adds sparkle to these early years. Gay, now best remembered by his *Fables*, contributed between 1713 and 1726 a sprightly flow of songs, epistles, and short pastorals. The first reaction against the dictatorship, begun by Dryden and continued by Pope, was made by Thomson, who is the true pioneer of the whole romantic movement which culminated in Wordsworth. Thomson's *Seasons* inaugurated a new intellectual era. After writing two or three tragedies, the chief of which is *Sophonisba*, 1730, he produced the *Castle of Indolence*, 1748, a poem in the Spenserian stanza. His masque, *Alfred*, 1760, is noteworthy as containing the British national song of *Rule Britannia*. To mention Thomas Gray is to at once recall his *Elegy Written in a Country Churchyard*, which Wolfe declared he would rather have written than take Quebec. This exquisite poem, and the Odes which every schoolboy knows, now rank with the classics of our language. Gray's influence on Europe was delayed but certain, and in the *Elegy* both Chateaubriand and Lamartine found inspiration. William Collins, whose *Ode to Evening* must be numbered with the best lyrics of the century, was, like Gray and Thomson, a herald of a fairer dawn. Goldsmith disdained these innovations, and reverted to the old didactic couplets of Pope. *The Traveller* and *The Deserted Village* are perfect examples of the descriptive poem in heroics. His verse has infinite grace and charm, but marks no forward step in the art of poetry. Goldsmith's best known comedies are *The Good Natur'd Man* and *She Stoops to Conquer*. The latter is one of the great comedies of the world. His *Vicar of Wakefield* will live as long as the English tongue. Turning once more to the prose writers, Defoe in 1719 gave us the first great English novel, *Robinson Crusoe*, written at the age of 58. The most conspicuous figure in the beginning of the eighteenth century is Jonathan Swift (1667-1745), born in Dublin of English parents. He was the greatest satirist of the age, and wielded a vast influence over the essayists and prose writers of the period. Swift created a school of rhetorical diatribe on its better side. His prose is characterized by great originality, simplicity, mordant wit, and savage satire. *The Tale of a Tub*, the *Battle of the Books*, and that sinister but inimitable masterpiece, *Gulliver's Travels*, are his best known works.

Bishop Berkeley, the greatest English thinker between Locke and Hume and a pure metaphy-

sician of the foremost rank, clothed his philosophy in prose of classic beauty. His famous dialogue of *Hylas and Philonous* was published in that celebrated year, 1713, when Pope, Swift, Addison, Steele, were all at the summit of their power and fame. One of the landmarks in the history of literature is the date, April 12, 1709, when Steele issued the first number of the *Tatler*. This, though not the first English newspaper, marked the creation of modern journalism. Addison joined forces with Steele, and on March 1, 1711 (two months after the collapse of the *Tatler*), the *Spectator* appeared, only to die an early death at the close of 1712. But during this short time the periodical essay was created. Steele began it and contributed 188 out of the 271 numbers of the *Tatler;* 42 were by Addison, 36 by both conjointly, and 3 by John Hughes (1677-1720), a minor writer, author of *The Siege of Damascus*. But in the *Spectator* the polished pen of Addison took the lead. Of the 555 numbers, Addison wrote 274, Steele 236, Hughes 19, and Pope 1 (*The Messiah*). Addison was a great master of style, and was one of the first English prose authors to aim deliberately at beauty of execution and purity of language. In this way his style is often superior to his matter. His share in perfecting our prose, and spreading culture amongst the middle classes of his time, was very considerable. Recent biographers incline to do greater justice to Steele at the expense of Addison; but these illustrious colleagues were the natural complement of each other, and we may love them both. In the 49th *Tatler* occurs that famous phrase of Steele's, where, speaking of Lady Elizabeth Hastings, he says that "to love her is a liberal education."

The period was rich in letter-writers. Walpole, Gray, and Chesterfield excelled all their contemporaries in this department of letters. The name of Lady Mary Wortley Montagu (1689-1762) must be added; but her keen wit and breadth of view are too often marred by the freedom of her language. With the decay of the drama, and the need for new intellectual amusement, came the conception of the modern novel. In 1740—a memorable date in the history of literature—Richardson, the first great novelist, gave to the world his famous *Pamela*. Eight years later appeared his *Clarissa*, which created a great sensation both in England and France. Rousseau frankly copied it, and Alfred de Musset has called it the best novel in the world. The *History of Sir Charles Grandison* was published in 1754. Other great novelists made bids for fame. Fielding, the greatest of them all, produced his *Joseph Andrews* (1742), *Jonathan Wild* (1743), *Amelia* (1751); but it was in *Tom Jones* (1749), his masterpiece, that for the first time an attempt was made to portray the life of a normal person. Sterne has left us two incomparable works: *Tristram Shandy* and a *Sentimental Journey*, unrivaled in style, originality, and pathos. Smollett, inferior to the three great novelists, has given us three books worthy of note: *Roderick Random*, confessedly modeled on *Gil Blas*, *Peregrine Pickle*, and *Humphrey Clinker*. The type of the first English novels remained for over half a century the sole model for continental fiction.

Meanwhile a new dictator had arisen to wield the scepter of Pope and Dryden. Samuel Johnson (1708-1784), though not the greatest writer, is the most colossal figure in English literature; a man of wholesome humor and fearlessness, majestic in intellect and noble of heart, Johnson was the center of the literary life of his day. He tried his skill at every kind of composition—poetry: he wrote *London* and *The Vanity of Human Wishes;* the drama: *Irene* is his one attempt; periodical essays: he contributed to the *Rambler* (1750-1752) and afterward to the *Idler*. In 1755 appeared the *Dictionary of the English Language*, a monument of industry and scholarship. His famous letter to Chesterfield struck the final blow at patronage, and made Johnson the first literary man to find in the public the only paymaster. His *Rasselas* introduced the didactic novel. The *Lives of the English Poets* is his *magnum opus*, and lifts biography into a loftier place in English literature. This brilliant though inaccurate work brings the criticism of the eighteenth century to a close.

This was the age of the historians Hume, Robertson, and Gibbon, the founders of a school of history of purely English growth. History now became a branch of creative literature, no longer to be classed with the "good old prattle" of the chronicles of Bishop Burnet. Hume (1711-1776), the philosopher and the greatest utilitarian of the age, led the way with his *History of England* from the union to his own time. The work was a new departure, but, though brilliant and lucid in style, it lacked the thoroughness of the later historians, and is no longer regarded as authoritative. Hume's success inspired Robertson (1721-1793), who wrote a *History of Scotland*, a *History of America* (1777), and a *Disquisition on Ancient India*. His style is colorless and lacks the graces of his predecessors, but the success of his books was phenomenal. But a greater than either of these now appeared, a brilliant exponent of modern historical research—Edward Gibbon (1739-1794). That stupendous work, the *Decline and Fall of the Roman Empire*, which Freeman regards as "the grandest of all historical designs," was launched in 1776 and completed in 1788. Gibbon's style is one of ornate splendor, and his treatment is broad and accurate. His work is raised on such solid foundations that it can never become obsolete or unnecessary. In the words of the historian Freeman: "Whatever else is read, Gibbon must be read, too."

One or two more names call for attention during this period: Edward Young (1683-1765), whose reputation as a poet rests almost entirely on his *Night Thoughts*, a work which inspired many imitators both in England and Germany; Adam Smith, the founder of the science of political economy, whose *Wealth of Nations* was published in 1776; Sir William Blackstone, whose *Commentaries on the Laws of England* appeared from 1765 to 1768; and Joseph Butler, the author of the famous *Analogy of Religion*, 1736.

A striking characteristic of this era is that literature is no longer the preserve of a leisured clique, but becomes the privilege of the multitude. Culture spreads beyond the pale of the metropolis, and for the first time English literature, breaking away from its long insularity, forms the taste of cultured Europe.

VI. The Age of Wordsworth and Byron (1784-1837).—Poetry once more came suddenly to the front and threw off the fetters of an uncompromising classicism. The revival of romanticism shadowed forth by Collins, Gray, and Thomson set free the spirit of true poetry. Men's ideals were ennobled and broadened; no longer was poetry treated as an exact science void of all passion, imagination, and feeling, but it again rang true with the melody and fervor of the soul. The vast political upheaval on the continent, and the wide acceptance of revolutionary teachings, left their mark on the literature of the day. Romanticism swept over Europe like an overwhelming wave. The voice of Rousseau rang out like a prophet; the oneness of man and nature was proclaimed, and the underlying law of Love was revealed. The harmonies between man and external nature, which Rousseau had perceived, were widened and spiritualized by Wordsworth, Keats, and Coleridge. The Romantic poet rekindled the "naturalness" of the past and combined it with the art of the present, standing toward his brother man as a seer and interpreter of life and nature. Clinging to the old traditions, but voicing the new ideals, Cowper is the leading poet of the transition. The unity of the race first found expression in his verse. His greatest work is the *Task*, 1785, which marks an epoch in modern English literature. His *Table Talk*, and the well-known ballad, *John Gilpin*, are his best known works. Crabbe and Blake in England and Burns in Scotland, each in his own way, promoted the new ideals. Burns (1759-1796), the poet of passion and spontaneity, has left us some immortal ballads—glimpses of his wasted genius. Burns gives expression to the brotherhood of man, and love lives blithely in his songs. He is the national poet of Scotland, and as a writer of Scottish verse he holds the foremost place.

The false canons of the rhetorical school were finally broken down by Wordsworth (1770-1850), who, in the words of Macaulay, "was the high priest of a worship in which Nature was the idol." Both in Nature and in man Wordsworth perceived the "hiding places of infinite powers." He was a true son of the human race, and voiced its inmost needs and strivings. He is a poet of childhood, for in the child the bond with nature is more perfect. "The Child is father of the Man," and the instinctive communion with nature should not be outgrown with childhood. Coleridge placed Wordsworth "nearest of all modern writers to Shakespeare and Milton, yet in a kind perfectly unborrowed and his own." Though he has not the vastness of Shakespeare nor the sublimity of Milton, no poet since the Elizabethan era has added so much to the lasting wealth of English verse. He has sounded the depths of the soul, and gives us strength, purpose, and peace. His philosophy is outlined in that noble poem, *Ode on Intimations of Immortality from Recollections of Early Childhood*. This is one of the few great odes of English literature, and would alone place Wordsworth among our greatest poets.

The fame of Coleridge (1772-1834) rests on his poems rather than on his prose. The *Rime of the Ancient Mariner* and *Christabel* are matchless specimens of poetic realism. Like his friend Wordsworth, Coleridge was a prophet of nature inspired by the impulses of the times. The weird, the supernatural, and tumultuous he interpreted with power and subtle insight. As a metaphysician he is a spent influence, but as a great poet his fame is undiminished. The friend of these two master poets, Robert Southey, can hardly claim rank as a writer of verse, though pulsing with the true poetic instinct. Southey's fame must rest on his *Life of Nelson* and *Life of Wesley*. The former is one of the most perfect biographies, on a small scale, known to modern literature. Scotland produced one more lyrist, Thomas Campbell, whose name will be preserved by such poems as *Ye Mariners of England*, *The Battle of the Baltic*, and *Hohenlinden*. Though no admirer of the Lake Poets, he was a romanticist, and a sturdy ally in the fight against didactic classicism. Even Samuel Rogers, whose *Pleasures of Memory* appeared in 1792, felt called upon to swell the growing choir when the romantic movement was at its height. His *Italy* was written in 1822, but though containing some fine phrases, can hardly rank as poetry. A melodious singer of this epoch, and one to whom modern criticism is perhaps unjust, is Thomas Moore, the Irish lyrist. Moore wrote a number of songs and ballads, but his most ambitious work is *Lalla Rookh*, for which Longmans paid him 3,000 guineas. Romanticism was further popularized by the great "Wizard of the North," Sir Walter Scott (1771-1832), whose *Lay of the Last Minstrel* in 1805 aroused the enthusiasm of Europe. *Marmion* followed in 1808, the *Lady of the Lake* in 1810, and the *Lord of the Isles* in 1815, besides other epical narratives which were less successful. As Wordsworth phrased it, Scott was "the whole world's darling"; but when Byron sprang into universal fame, Scott laid aside the harp to join in the praises of the greater poet. But the love of ancient chivalry welled up within him, and found expression in the world-famed series of *Waverley Novels*. *Waverley*, his first novel, was published in 1814; and his last, *Count Robert of Paris* and *Castle Dangerous*, in 1831. History lives in the deathless pages of these novels. His greatest results are wrought by the simplest means, and in this consummate mastery over his art Scott is excelled only by Shakespeare, and rivaled only by Goethe. His poetry is rich in color, and owes its force to its simplicity and vividness of phrase. But beneath this power of description and stirring narrative there are no depths that call to our deepest nature; there are no heights which bid our souls to soar. The age needed poetry throbbing with the passions and promises of the present. An unintelligible world hungered for a voice to express its hopes, its bitterness, and its rage; and turned with eagerness to the wild, unbridled verse of Byron. The pent-up spirits of the revolutionary era at last found an outlet, and England fell at the poet's feet dazzled by his brilliance and his daring. On the publication of *Childe Harold's Pilgrimage* Byron (1788-1824) "awoke one morning and found himself famous." His popularity was increased by the *Giaour* and the *Bride of Abydos*, 1813, and the *Corsair* and *Lara*, 1814; "and at twenty-four," writes Macaulay, "Byron found himself on the highest pinnacle of literary

fame, with Scott, Wordsworth, Southey, and a crowd of other distinguished writers at his feet." A reaction was caused by his domestic delinquencies, and Byron left England, in April, 1816, never to return. In temperament he was reactionary, but, as he was the hero of his own poems, he was a Romantic in spite of himself. The *Vision of Judgment*, *Beppo*, and *Don Juan* belong to the last six years of his life. *Don Juan* is considered his masterpiece, and reveals to perfection his many-sided power. In the words of a Quarterly Reviewer (October, 1871), "it forms the copestone of Byron's fame." Byron must be numbered with the greatest English poets. Modern criticism decries his art and his faulty meters; but he was a writer of force and passion, hurling his riotous numbers in proud defiance of all convention. Though not an original thinker, he imbibed the ideas of his age, and flung them wide in storm-swept verse. His poetry never reaches the sublime, and its influence on English verse is inappreciable. Prose writers, like Bulwer, it directly inspired; whilst on the continent, a legion of poets were fired by its spirit. The revival of Polish and Russian literature is due to Byron's influence, and the romantic writers of France worshiped at the altar of his genius.

Unlike Byron, Shelley (1792-1822) was a poet of supreme imaginative power. Like his own skylark he soared in the boundless realms of imagination, filling the heavens with the glory of his song. His fine lyrical drama, *Prometheus Unbound*, portrays a regenerated universe when the love in man and nature shall be all in all, and stands alone in modern poetry for the splendor of its conception and the beauty of its form. Who will forget his *Adonais* or the charm of his matchless lyrics? The *Ode to a Skylark* is the most perfect lyric of modern literature. As a prose-writer, too, Shelley holds a distinguished place. The sadness of his music slowly died, and the love he sang lifted his soul to the Fount of Love; until near his untimely death we find him writing an essay in praise of the Christ he once had despised.

The close of the revolutionary movement is marked by Keats (1795-1821), who, unmoved by the spirit of his age, sought inspiration from Spenser and the minor poems of Shakespeare. His *Endymion* and *Hyperion* are exquisite poems, rich in promise. His every ode is "a thing of beauty." The influence of Keats on English poetry has been considerable. He was the unconscious founder of the school of ornate and artistic poetry, which holds that art exists only for its own sake, and that beauty and loveliness alone are worthy to be worshiped.

Mention must be made of Leigh Hunt (1784-1859), a graceful poet and an essayist of the *Spectator* school; Walter Savage Landor (1775-1864), best known for his *Imaginary Conversations of Greeks and Romans*, and *Pericles and Aspasia*, as well as some dainty "occasional pieces"; Felicia Dorothea Hemans (1793-1835), whose poetry was long deservedly popular; and James Montgomery (1771-1854), author of the *West Indies*, the *Pelican Island*, and other poems.

Turning once more to the prose writers, the eighteenth century closed with the brilliant orations, the trenchant and melodious prose of Edmund Burke (1729-1797). His most powerful works are the *Reflections on the French Revolution*, 1790, *Letter to a Noble Lord* (the Duke of Bedford, who had attacked him for taking a pension), 1795, and the *Letters on a Regicide Peace*, 1796. His famous *Essay on the Sublime and Beautiful* belongs to the days of Johnson and Goldsmith. The close of the century gave us the inimitable *Life of Johnson*, by Boswell, and henceforward biographies came into great prominence. We must pass over the "School of Terror," founded by Mrs. Radcliffe, M. G. Lewis, Beckford, and William Godwin, in whose romances fear was the dominant passion; Miss Burney, a social satirist, whose *Wanderer* was produced simultaneously with *Waverley*, 1814; and Maria Edgeworth, whose delightful sketches of Irish life and manners charmed the readers of the first half of the last century. But the name of Jane Austen (1775-1817) bids us pause. Amongst the creators of literature Jane Austen takes a foremost place. Her six immortal novels, the best of which is perhaps *Pride and Prejudice* (the MS. of which went a-begging for nearly 20 years), were issued between 1811 and 1818. She wrote "with an exquisite touch which renders commonplace things and characters interesting from truth of description and sentiment"; and in her own province she has never been surpassed. Her influence on English fiction was wholesome and lasting. This is the age, too, of Hallam, Mill, and Mitford, the historians; of Paley, Hall, and Chalmers, the theologians; of Hazlitt, Broughton, Jeffrey, and Sydney Smith, the most celebrated of that brilliant coterie which gathered round the newly-founded critical organs—the *Edinburgh* and the *Quarterly Reviews*. William Gifford was the first editor of the *Quarterly*, 1808 to 1824. His most celebrated successor was J. G. Lockhart, whose biographies of Scott, Burns, and Napoleon are well known. The *London Magazine* came out in 1820, and in its pages first appeared Lamb's *Essays of Elia*, De Quincey's *Opium Eater*, and, later, Carlyle's *Life and Writings of Schiller*. De Quincey was one of the most brilliant writers of modern prose, a dreamer of exquisite dreams, though too rarely is the substance worthy of the style which enshrines it. Autobiography — impassioned, psychological, minute—was made by him a fertile branch of literature. The death of Byron was followed by a host of writers of "fashionable" novels, chief amongst whom were Edward Lytton Bulwer (afterwards Lord Lytton) and Benjamin Disraeli. Bulwer's *Pelham* (1828) and Disraeli's *Vivian Grey* (1826) were the beginnings of the "Dandy School" of fiction. A new era in criticism was begun in 1825 when Macaulay contributed his essay on Milton to the *Edinburgh Review*. This was the first of those famous essays, which now are "known to every schoolboy," and which have done so much to raise the level of cultivation. Such was literature when Queen Victoria came to the throne.

VII. The Modern Era.—In the lull which followed the outburst of the Byronic period, the voice of Thomas Carlyle thundered a newer message to a generation not yet ready to receive it. His *The French Revolution* burst upon the world in 1837, and the despised *Sartor Resartus* appeared in the following year. As an historian he had carved out a new path, laying bare

the minutest facts, and probing into the very souls of men. Herein lies his greatness. The "Seer of Chelsea," rugged and stern like an Alpine peak, was the greatest force in the literature of his day. His mission was to reconstruct, and *Sartor*, his most original and in some respects his greatest work, grappled with the perplexities of the times, and offered a grim solution. Walt Whitman aptly remarked that the army of British thought during this period with Carlyle left out "would be like an army with no artillery." His influence now is well-nigh spent, but his was the cry that stirred the blood of men like Ruskin. His later style was a deliberate creation by which to thrust home his gospel. The critics branded it as a chaos of capitals, compounds, and broken English; but, though Teutonic in form and in its labyrinthian periods, it was well fitted to his turn of thought. In striking contrast to Carlyle, though like him in his fundamental conception of history, is the ever-popular Macaulay. His *History of England* began to appear in 1848, and here his style is seen at its best. The accuracy of the *History* has been challenged; but Macaulay's weakness lay in too often drawing biased conclusions from statements too incomplete. His philosophic endowment was unequal to the immensity of his literary genius. The minstrelsy of Macaulay is as well known as that of Scott. The *Lays of Ancient Rome* were published in 1842. There is an unfading charm in the dash and swing of the noble lines, the clash of steel and the lust of battle. From two great prose writers we now turn to two great poets—Tennyson and Browning, both true descendants of the romantic school, both swayed in turn by Byron and Wordsworth, Shelley and Keats. Tennyson's one desire was to excel in epic narrative. The *Idylls of the King* are surpassed only by *Paradise Lost* as examples of non-dramatic blank verse in our language. Tennyson cannot equal the sublime stateliness of Milton, but to no other poet can the creator of the Idylls be compared. His *In Memoriam* (1850), a series of short poems woven together by a common sentiment, contains the most perfect representation of his genius, and is, moreover, a complete expression of the spirit of his age. His noblest work is pervaded by the true religious spirit. The Unseen is to him intensely real, and, gazing into "the abysmal deeps of personality," he is ever conscious of the greatness and immortality of the soul. In his tenderness and reverence towards woman Tennyson has never been excelled. As a dramatist, except in *Becket* (1885), he was not successful. From the death of Wordsworth to his own death, he wielded a vast power over English letters, and none challenged his supremacy as the greatest poet of his time. He lacks the inward strength of Milton, and the consummate ease of Wordsworth. It was Emerson who gave it as his opinion that the latter was *the* poet of modern England, and that "other writers have to affect what to him is natural."

We turn now to a greater mind, though not to so great an artist—Robert Browning. He is the Carlyle of poetry, and heeds not the form that bears his message. Strength to him is more than beauty. His style—rugged, condensed, involved—is the stumbling-block to the multitude; but his poetry has influenced the minds of the few, and these the leaders of the world of thought. His masterpiece, the *Ring and the Book*, is the most stupendous work of genius of our time; while his *Paracelsus* is one of the greatest poems in our literature. Elizabeth Barrett Browning, his wife, ranks as a great poet, though her writings are of uneven merit. *Sonnets from the Portuguese* and *A Child's Grave at Florence* are her best efforts. *Aurora Leigh*, an ambitious metrical romance, was extravagantly praised by Ruskin as the greatest poem of the century. The marriage of these two poets is one of the most beautiful unions in the history of any literature.

Among the dwellers on the slopes of Parnassus place must be found for Matthew Arnold and the three "pre-Raphaelite" poets, Rossetti, Morris, and Swinburne. Arnold (1822-1888) is at his best in his elegies, and his *Thyrsis* is no unworthy second to Milton's *Lycidas*. A purely intellectual poet, he speaks to the mind and never to the heart. Romanticism left him untouched and unmoved. He figured as a prose writer to a later generation, and his clear, classical style is seen to advantage in his *Essays on Criticism*, published in 1865. No poet in recent years has so greatly influenced the trend of verse as Dante Gabriel Rossetti (1828-1882). The excellence of his ballads, *The King's Tragedy* and *Rose Mary*, almost equals the beauty of his well-known sonnets. His sister, Christina Rossetti (1830-1894), "the soul whose breath among us was a heavenward song," is less great, though possessed of greater spontaneity. Most of her poems are of a devotional nature. Her sonnets, as in *Monna Innominata*, are almost perfect. The greatest work of William Morris (1834-1896) is *The Earthly Paradise*, modeled on the art of Chaucer, but lacking the master's spirit. Morris modestly describes himself as "the idle singer of an empty day." Algernon Charles Swinburne (1837-1909), a great metrical artist, enriched English literature by his *Atalanta in Calydon* (1865), a fine drama on the Greek model. His *Poems and Ballads* (1866), many of which are unworthy of him, at once "raised a storm, and founded a school." The lesser lights need not detain us long. Philip James Bailey's commonplace poem *Festus* came out in 1839. The following year Barham published his *Ingoldsby Legends*, the most popular of any humorous verse of the century. Of Hartley Coleridge, his sister, Sara Coleridge, Henry Taylor (author of *Philip Van Artevelde*), R. H. Horne (best-known by *Orion, an Epic Poem*), C. S. Calverley (the witty writer of *Verses and Translations* and *Fly Leaves*), the dramatists, T. N. Talfourd and J. W. Marston, A. H. Clough, Jean Ingelow, and the graceful writer, Adelaide Anne Procter (daughter of the poet "Barry Cornwall"), we can only make the barest mention.

The melodious paraphrase of the *Rubaiyat* of Omar Khayyâm published by Edward Fitzgerald in 1859 must be noted in passing. The school of poetry nicknamed by the Scotch poet Aytoun (1813-1865) "the Spasmodic," calls for little attention. Sydney Dobell (1824-1874) and Alexander Smith (1829-1867) were its two chief members, all of whom were better endowed with passion than intellect. The mystical lyrist, Cov-

entry Patmore (1823-1896), has more originality. His greatest work is *The Angel in the House*. His odes, *The Unknown Eros*, are well known. "Owen Meredith," the second Lord Lytton, published his *Clytemnestra and other Poems* in 1855. A better, though unrecognized poet, was J. B. Leicester Warren (Lord de Tabley), whose first volume of importance, *Praeterita*, was issued in 1863 under the pen name of "William Lancaster." His *Poems Dramatic and Lyrical* appeared in 1893.

The earlier works of fiction were characterized by naturalness, spontaneity, and absence of any underlying "purpose." The writers were content to unfold a tale. The evolution of the novel is not marked by well-defined shapes; but it may be noted that romantic fiction culminated in Scott, domestic fiction had its origin in Jane Austen, the "purpose" novel came into being with Thackeray, while with Dickens the spirit of humanitarianism and democratic sympathy first entered into fiction. Thackeray (1811-1863) created a new school; for his philosophy of life permeated his writings. Not only was he a great novelist, but one of the greatest masters of style in English literature. Thackeray wrote in all 26 volumes, but his fame must rest on his five great novels: *Vanity Fair*, *Pendennis*, *Esmond*, *The Newcomes*, and *The Virginians*. Closer to the nation's heart was his great contemporary, Charles Dickens (1817-1870). Dickens was a true lover of his fellow men, and his novels reveal his sympathies. The range of his creative genius was immense. *Pickwick*, *Oliver Twist*, *Nicholas Nickleby*, *The Old Curiosity Shop*, *Martin Chuzzlewit*, *David Copperfield*—these are household words; for truly has Dickens peopled our imagination with the creatures of his art. It is the fashion to magnify his faults and limitations; but his genius is bound up with the life of the race, and his name is among the immortals.

We now turn to the Brontë sisters, Charlotte (1816-1855), Emily (1818-1848), Anne (1820-1849), children of the wind and the Yorkshire moorland. Anne wrote *Agnes Grey* and *The Tenant of Wildfell Hall*, but these were eclipsed by the novels of her greater sisters. Charlotte owes her fame to three great stories, *Jane Eyre*, *Shirley*, and *Villette*. Emily's only novel is *Wuthering Heights*, a work of genius, though artistically faulty. Each wrote in a poet's prose, strong with passion. Charlotte Brontë undoubtedly ranks with the foremost novelists of the century. Another woman writer, George Eliot (Mary Ann Evans, 1819-1880), brings the race of giant novelists to a close. Her *Scenes from Clerical Life*, considered by some critics her masterpiece, appeared in 1856; and was followed by *Adam Bede* (her most popular novel), *The Mill on the Floss*, *Silas Marner*, *Romola*, *Felix Holt*, *Middlemarch*, *and Daniel Deronda*. Though her art is too often marred by weight of learning and philosophy, she is a great creative artist, great in mind and nature, and her place in literature is well secured. One of the most prominent writers of genius is Charles Reade (1814-1884), whose masterpiece is *The Cloister and the Hearth*. His popular book, *It is Never Too Late to Mend*, is one of the best examples of the novel of purpose. Charles Kingsley (1819-1875) shares with Reade a leading place in the secondary rank of novelists. His best novel is *Westward Ho!* In this, as in his *Alton Locke* and other novels, he preaches his "Muscular Christianity." Kingsley wrote some charming poems; *The Three Fishers*, *The Sands of Dee*, and *Oh, That We Two Were Maying* strike a note of rare genius. A writer of less pretension is Anthony Trollope (1815-1882), a portrayer of middle-class life in provincial England. His best work is *Barchester Towers*. Among the romancers of later days Robert Louis Stevenson (1850-1894) holds a place apart. His novels, *Treasure Island*, *Kidnapped*, and *Catriona*, though frankly written for boys, have won a permanent place in literature by their abiding charm and the beauty of their style. His poems, essays, and familiar letters all bear the stamp and glamour of his personality. The impulse given by Stevenson to the new romantic movement is seen in the novels of many writers of to-day, notably Stanley Weyman, "Anthony Hope," Max Pemberton, "Q" (A. T. Quiller-Couch), and Conan Doyle, the creator of *Sherlock Holmes*. One of the greatest and most intellectual novelists of recent times was George Meredith (1828-1909), who was a great poet expressing himself in prose. *The Ordeal of Richard Feverel* and *The Egoist*, both rich in satire and humor, are considered his best novels; but, owing to the style of this "Browning of novelists," his works were for many years caviare to the general reader. Less polished, but of striking originality, are the works of Thomas Hardy (1840-1928), some of which have been dramatized for the stage. Of his many books five are worthy of high place in English fiction: *Far From the Madding Crowd*, *The Return of the Native*, *The Woodlanders*, *The Mayor of Casterbridge*, and *Tess of the D'Urbervilles*. These two novelists have left their impress on almost all recent English fiction. Not far below them is R. D. Blackmore (1825-1900), author of *Lorna Doone*, a quasi-historical novel of the West of England, popular on both sides of the Atlantic.

The influence of Dickens is apparent in the novels of Wilkie Collins (1824-1886), the chief exponent of the "sensational" school, and in the works of those three *amuseurs*, James Payn (1830-1898), William Black (1841-1898), and Sir Walter Besant (1836-1901). The latter's *All Sorts and Conditions of Men* gave the idea for the People's Palace in the East End of London, opened by Queen Victoria in May, 1887. Of women novelists during this epoch, not the least distinguished is Mrs. Gaskell, whose *Cranford* and *The Life of Charlotte Brontë*, 1857, are likely to delight many generations. Two of the most remarkable religious novels are by women: *Robert Elsmere* by Mrs. Humphry Ward, whose best novel is *Marcella;* and the *Story of an African Farm* by Olive Schreiner. George Macdonald and J. H. Shorthouse, author of *John Inglesant*, also deal with religion from different standpoints. Amongst writers for children two names deserve more than passing notice: "Lewis Carroll" (Rev. C. L. Dodgson), author of *Alice's Adventures in Wonderland*, 1865, with its sequel, *Through the Looking-Glass*, 1872, and Andrew Lang, that versatile writer whose fairy-tales enchant the younger generation. There are many writers of deciduous fame, whose names are all too prominent in our lending libraries; writers who reflect the prevailing versatility and

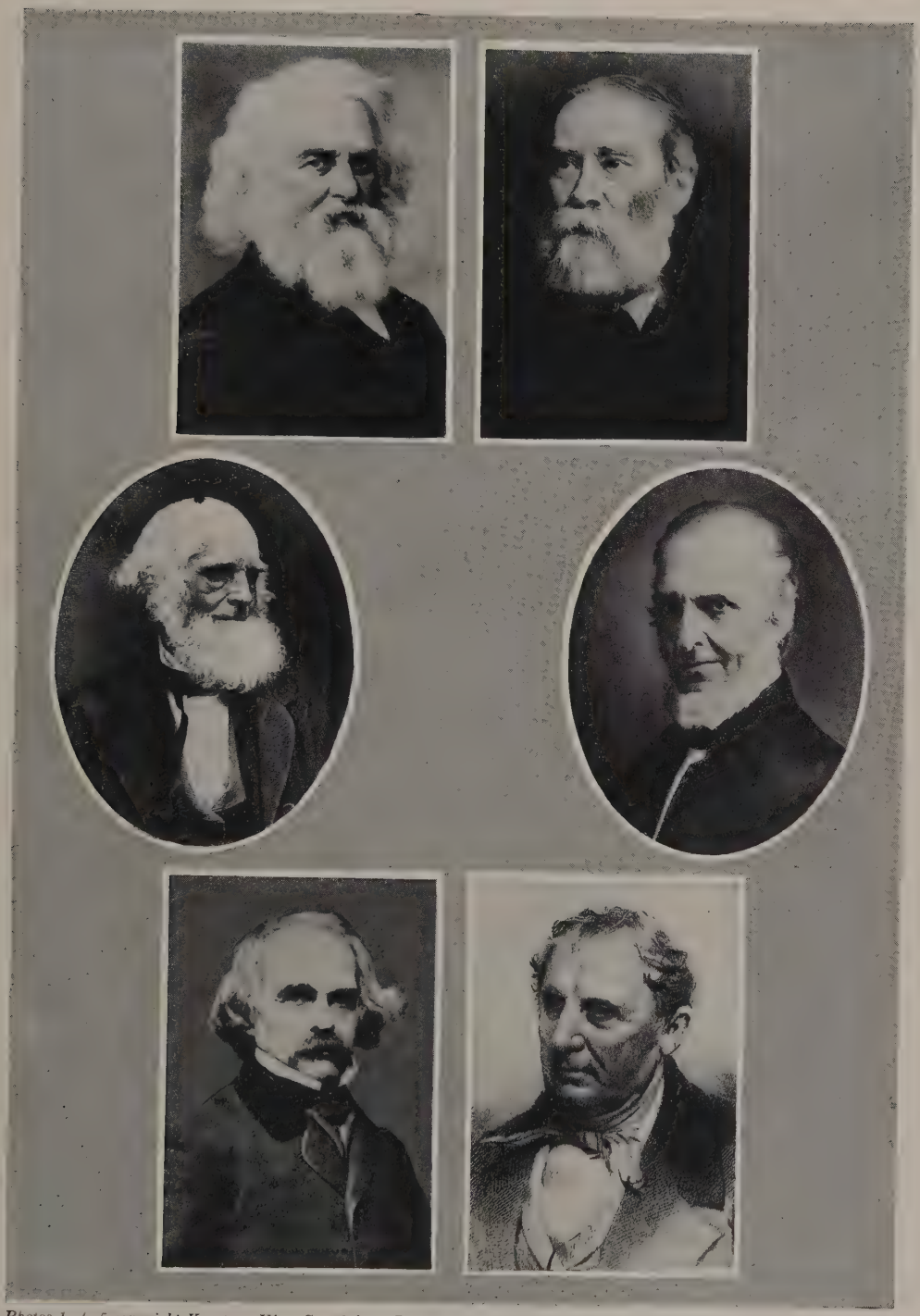
want of thoroughness, and whose popularity is determined by their ability to amuse rather than their genius to create.

In the domain of criticism one name stands out preëminent. The enthusiasm of John Ruskin (1819-1900) has fired more minds to the quest of beauty than has been effected by any other writer in the history of the world. His sympathies, though at times violent and paradoxical, are well-nigh universal. He has written on art, literature, morals, economics, society, and almost everything; but as an art critic he will be best remembered. Ruskin is the greatest prose writer of modern times, and one of the most perfect masters of style and language that has ever lived. His three greatest works are *Modern Painters* (1843), *Seven Lamps of Architecture* (1849), and *Stones of Venice* (1851-1853). His social and economic writings are not always marked by soundness of thought or sobriety of judgment, but the nobility of their aim can never be gainsaid. Besides Ruskin and Matthew Arnold, another Oxford man calls for notice as a great critic. Walter Pater (1839-1894), whose genius was grudgingly recognized, has become a force in contemporary literature. He has been called "the most rhythmical of English prose writers," and his *Renaissance: Studies in Art and Poetry* and *Appreciations* give him high rank among modern writers. Benjamin Jowett (1817-1893), the celebrated master of Balliol, won his place in literature by his brilliant translations of Plato, Thucydides, and *The Politics* of Aristotle.

Of scientific writers. Charles Robert Darwin (1809-1882), the father of evolution, demands attention in a survey of literature. His epoch-making works, the *Origin of Species* (1859) and *The Descent of Man* (1871), have revolutionized thought, not only in regard to biology, but in philosophy, religion, literature, and literary criticism. John Tyndall (1820-1893), the physicist, was known as a popularizer of scientific truths rather than as an original investigator. Thomas Henry Huxley (1825-1895), the distinguished biologist, was a man of great literary power; and, besides winning fame for his original research, was a vigorous defender of the pioneers of evolution. He loved to "war upon the lions in the wood." Herbert Spencer (1820-1903) made a deep impression on the world's thought, and his philosophy is the most comprehensive application of the evolutionary principle that has ever been attempted. John Stuart Mill (1806-1873), the famous empirical philosopher, is no longer the stimulating force he once was. His reputation chiefly rests on his *System of Logic* and *Political Economy* (1848). Mill was assisted in his *Logic* by Alexander Bain (1818-1903), best known for his book on *Mental and Moral Science*. The leader for many years of the Hegelian school of philosophy at Oxford was Thomas Hill Green (1838-1882), whose *Prolegomena to Ethics* appeared after his death. One of the best-known scientific writers of his time was Sir John Lubbock, author of *Prehistoric Times, The Origin of Civilization and the Primitive Condition of Man* (1870), and the *Pleasures of Life*, a collection of miscellaneous essays whose popularity far exceeds their intrinsic merit. The name of Friedrich Max Müller (1823-1900) is known to every student of philology and ethnology. His most popular books are his *Lectures on the Science of Language*, and *Chips from a German Workshop*.

Of the many eminent historians who belong to the modern era, space will only permit of the barest mention. George Grote's *History of Greece* was published between 1846 and 1856. Dean Milman's *History of Christianity* (1840) and its continuation, the *History of Latin Christianity* (1854-1856), are still valuable books of reference. Froude's great work, the *History of England, from the Fall of Wolsey to the Defeat of the Spanish Armada*, is distinguished by the brilliance of its style, but unfortunately marred by inaccuracy and partisanship. In striking contrast to Froude is the greater historian, Freeman (1823-1892), who combined a remarkable breadth of historic view with the most scrupulous accuracy. William Stubbs, born at Knaresborough, Yorkshire, in 1825, published his monumental work, *The Constitutional History of England* in the years 1874 to 1878. He illuminated the byways of history, and as Regius Professor of Modern History at Oxford he gave a lasting stimulus to historical study and research. Sir Thomas Erskine May traced the growth of the English Constitution from where Hallam left off, and, by his *Constitutional History of England since the Accession of George III.*, made a valuable contribution to historical literature. Maine's great work on *Ancient Law* was produced in 1861, and established the author's name as an original thinker. Mandell Creighton's great work, *A History of the Papacy from the Great Schism to the Sack of Rome*, is of the highest value. The *Short History of the English People*, by John Richard Green, made a sensation on its appearance in 1874. It treated history in a new vein, and was written in a picturesque style of poetic beauty and brilliance. Green expanded the *Short History*, but the larger work as a literary effort was not so successful. Of Samuel Rawson Gardiner, Sir John Seeley, W. E. H. Lecky, and James Bryce, as historians, and Walter Bagehot, the great authority on banking and finance, we must be content with recording their names.

Edwin Arnold continued the Victorian interest in religion in his poems on Buddha and Christ the *Light of Asia* and *Light of the World*. Men like John Morley, Andrew Lang, Edmund Gosse, Arthur Symonds, George W. Russell, and Hilaire Belloc, brought critical literature to a high level. Later poets like Alfred Austin, Robert Bridges, Alfred E. Housman, Mrs. Alice Meynell, Lionel Johnson, and Francis Thompson gave nature and lyric poetry new repute. Kipling charmed millions with his stories of India and his poems of soldier life. Robert Louis Stevenson added new charm to the personal essay, and revived the novel of romantic adventure, while Thomas Hardy stood for a sterner realism. The exotic Oscar Wilde, who wrote clever dramas, gave us one terrible picture in his poetic *Ballad of Reading Gaol*. Henry A. Jones, Arthur W. Pinero, and Bernard Shaw raised drama to new heights, while John Synge, William Butler Yeats, and Lord Dunsany revived a distinct Irish literature of play and story. Strachey "debunked" biography, and Conan Doyle, Joseph Conrad, and J. M. Barrie exalted the short story.



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FAMOUS AMERICAN WRITERS—I

Henry Wadsworth Longfellow
William Cullen Bryant
Nathaniel Hawthorne
James Russell Lowell
John Greenleaf Whittier
James Fenimore Cooper

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FAMOUS AMERICAN WRITERS—II

Ralph Waldo Emerson
William Dean Howells
Mary Roberts Rinehart

Oliver Wendell Holmes
Winston Churchill
Edward Bok

Washington Irving
James Whitcomb Riley
Gene Stratton Porter

AMERICAN LITERATURE.

There is a tendency among many writers on the history of American literature to include in the survey everything in the nature of a book. In this way they seek to show that the literature of the country is extensive and they measure the literary growth and progress in quantity only. But the day has long passed by when it was at all, if ever, necessary to bolster up the national achievements by such padded methods. It is infinitely better to measure the literary activity of our country by the same methods which are applied to the study of the literature of other though much older countries, and see in the accomplishments of its literary forces the promise of greater things yet to be done.

It is not at all strange that there is little worthy of record prior to the year 1700. From 1608, when John Smith's *True Relation* was published in London, until 1639, when Stephen Daye set up his first printing press in Cambridge, Mass., such books as were written by those who lived in America were printed in England. While Milton and Shakespeare were producing their glorious works in England, their fellow-countrymen in America were writing nothing of the slightest æsthetic value in their new homes across the seas. Their writings are of value to the historian and the antiquarian only. Captain Smith's contribution to the history of Virginia, William Strachey's story of the wreck of Sir Thomas Gates, Colonel Norwood's account of the wreck of Governor Berkeley, Governor Berkeley's share in the *Burwell's Papers*, John Hammond's *Leah and Rachel*, George Anson's *Character of the Province of Maryland*, Daniel Denton's *Brief Description of New York*, and Gabriel Thomas's *Account of Pennsylvania and New Jersey* are all that the South and Middle American colonies contributed to the literature of America before 1700.

But in New England there was no dearth of literary contributions. Governor Bradford of Plymouth and Governor Winthrop of Massachusetts in history; Thomas Hooker, Thomas Shepard, John Cotton, and Peter Bulkley in religion and theology; Roger Williams, one of the greatest of the early Americans; Daniel Gookin on the Indians; Nathaniel Ward in satire; John Josselyn in adventure; the *Bay Psalm Book* of 1640; Mrs. Anne Bradstreet, Michael Wigglesworth, Peter Folger, and Rev. Urian Oakes in poetry are the chief names in New England literature in the seventeenth century. Early in the next century are the famous and voluminous writers Increase and Cotton Mather, Judge Sewall's *Diary* (1673-1729), Mrs. Sarah Kemble Knight's *Diary* of a horseback ride from Boston to New York (1704), and the verse of Rev. Mather Byles and Joseph Green. The history by Rev. Thomas Prince and the *Summary* by William Douglass are notable works of the early eighteenth century. In metaphysics, Jonathan Edwards, who ranks as the most original theologian and metaphysician America ever produced, is famed alike for his *Freedom of the Will* (1754) and his awe-inspiring sermons, such as the famous one of Enfield, Conn. Benjamin Franklin, with all of his contributions to the study of natural science, politics, and homely moral philosophy, gave us in his *Autobiography* the only truly literary classic which America produced before the nineteenth century. John Trumbull, the author of *McFingal*, and his companion satirist, Francis Hopkinson; Thomas Godfrey, who gave us in *The Prince of Parthia* our first real poetical tragedy; Joel Barlow's *Columbiad;* Thomas Hutchinson, historian and dramatist; Mrs. Mercy Otis Warren; Phillis Wheatley, the negro poetess; the "Hartford Wits"; Mrs. Susanna Haswell Rowson, author of *Charlotte Temple;* Thomas Paine, who contributed much towards the spirit of '76; and Crèvecœur in his *Letters from an American Farmer* (1784); Royall Tyler, with the first important American comedy, *The Contrast* (1786); the philologists, Noah Webster and Lindley Murray; and our first novelist, Charles Brockden Brown, with his *Wieland, Ormond,* and *Arthur Mervyn,* published 1797-1800, are noteworthy at the close of the eighteenth century. Glancing over these names, which are only a few of the most prominent, it is hard to understand the statement that has sometimes been made by writers that practically nothing worth while had been done in literature in America until after 1800. It is well to modify that criticism and to say that, while every one recognizes that the best in American literature was done after 1800, there was much good work accomplished in those early days while a great nation was being built by practical, resolute men with little leisure to devote to æsthetic development.

The nineteenth century begun with John Marshall's *Life of Washington* (1804); Washington Irving's *History of New York;* the poetical works of Washington Allston, John Pierpont, and Mrs. Sigourney; and the dramas of John Howard Payne. The *North American Review,* founded in 1815, and the publication of *Thanatopsis* by Bryant in 1816 were important literary events; and before the first twenty years of the century had elapsed we had the works of Joseph Rodman Drake, author of *The Culprit Fay,* and the poems of Fitz-Greene Halleck.

Then followed James Fenimore Cooper, whose *Leatherstocking Tales* were the event of the third decade. They gave him a world-wide fame such as has been achieved by few American writers. Contemporary were James Gates Percival, Edward Coate Pinkney, Jared Sparks, George Ticknor, Lydia Maria Child, Edward Everett, Channing the elder, and Bronson Alcott. Webster's reply to Hayne belongs also to this time. From 1830 to 1840 is a period of beginnings. The *Liberator* was founded by William Lloyd Garrison in 1831 and the anti-slavery movement began with this and his association with Whittier, who published his first book in this decade. Nathaniel Parker Willis was the most representative man of letters in New York. Simms, Kennedy, and Bird were writing their romances in the South, and George Bancroft was beginning his career. In the early forties the Transcendental movement began in New England. This is the most important literary event in America before the Civil War. Apart from the literary excellence of the work of that school, it marks the transfer of the center of the most brilliant activity from New York to New England. The very names of Thoreau, Emerson, Hawthorne, and Poe mark this era as the most important in American literature. It is strange

that in America Hawthorne, through his *Scarlet Letter* (1850), and Emerson, as philosopher and poet, vie in the public minds as the foremost man of letters; yet, in Europe, that place is unhesitatingly given to Edgar Allan Poe, whose haunting poems and tales have gained a higher place abroad than has the work of any other American writer. At home, however, he is refused a niche in the Hall of Fame by his countrymen.

Of Longfellow's work it is almost sufficient to speak of its great cultural influence upon the American people. The question of literary merit or demerit or of relative rank pales before the recognition of his great value as the man who above all others taught the people of the country to love poetry. It has been for years more or less the fashion in literary circles to depreciate the genius of this best loved of American writers. That this criticism has been carried too far there is no doubt, and it is equally certain that in the inevitable reaction he will measure up at least nearly the equal of his greatest contemporary. Oliver Wendell Holmes has broken through the panoply of local fame and is attaining to national fame commensurate with his great gifts. James Russell Lowell's *Biglow Papers* (1848) gave him first place as poetical humorist and satirist among the antebellum writers. He afterwards became one of our foremost literary critics and letter writers. Between 1850 and 1860 those estimable historians, William H. Prescott and John Lothrop Motley, were building their fame, which is, perhaps, only excelled by that of their brilliant rival, Francis Parkman. Among these greatest names one must not lose sight of Richard Henry Dana, Jr., with his *Two Years before the Mast* (1840), and Herman Melville, writers of our best books of adventure; nor of Bayard Taylor, Donald G. Mitchell, Richard Grant White, James T. Fields, Thomas Wentworth Higginson, Charles Eliot Norton, George William Curtis, E. P. Whipple, Paul H. Hayne, Henry Timrod, Harriet Beecher Stowe, and Walt Whitman. Between 1860 and 1870, that period of tremendous national disturbance, we find, strangely enough, that prince of humorists, "Mark Twain," who at this day is probably the one American writer who enjoys a world-wide fame. Edward Everett Hale's *Man without a Country* appeared in 1863 at a time most fitted to develop a loyalty to the Union. To this time also belonged those two writers cut off in their early success, Theodore Winthrop and Sidney Lanier. From 1870 dates the rise of Francis Bret Harte, whose *Luck of Roaring Camp* (1868) ushered in that peculiar form of short story which deals with local phases of national life in all parts of the country. Previous to this time literature was centralized; New York and New England dominated the literary realm. The change is now perceptible and a score of names present themselves in other sections—names which have since become inseparably connected with the nation's literature. There are Joel Chandler Harris from the South with his *Uncle Remus* creation; Edward Eggleston with the *Hoosier Schoolmaster;* George W. Cable with his tales of Creole life around New Orleans; Mary Noailles Murfree ("Charles Egbert Craddock") with stories of the mountain whites of Tennessee, Kentucky, and Georgia; Harold Frederic from western New York state; Hamlin Garland from the Northwest; James Lane Allen from Kentucky; Mary E. Wilkins Freeman with her delightful delineations of New England life; and Frank Stockton's *Rudder Grange* pictures of a composite American country life. This was the beginning of the widespread literary activity and of the end of that literary supremacy which New England had so long enjoyed.

The work of such naturalists as John Burroughs gave way in popularity before the newer animal story writers, of which Ernest Thompson Seton was the pioneer. The immense popularity of General Lew Wallace's *Ben Hur* (1880) is a peculiar phase of literary appreciation. Francis Marion Crawford gave us the dramatic novel; William Dean Howells created the novel of American social life; Henry James planned novels so subtly psychological and of a style so refined as to be hard reading; the romantic novel was introduced by Anthony Hope Hawkins, an English writer, and rapidly taken up by such writers as Winston Churchill, Mary Johnston, Charles Major, Maurice Thompson, S. Weir Mitchell, Paul Leicester Ford, and others; and novels dealing with an individual struggle against social obligations, as Robert Grant's *Unleavened Bread*, Elizabeth Stuart Phelps's *A Singular Life*, and Booth Tarkington's *A Gentleman from Indiana*, were extremely popular.

After 1870 a few poets who rose above mediocrity were Thomas Bailey Aldrich, Edmund Clarence Stedman, Richard Henry Stoddard, Richard Watson Gilder, Henry C. Bunner, Richard Hovey, Clinton Scollard, and Theodosia Garrison. Eugene Field and James Whitcomb Riley idealized common life. Amy Lowell developed the vogue of free verse. Edgar Lee Masters amazed the world by the frankness of his *Spoon River Anthology*. Robert Frost made nature poetry more virile, while Carl Sandburg turned to steel and skyscrapers, Vachel Lindsay to chant of heroisms, Stephen Vincent Binét and John G. Neihardt to try for an American epic. Perhaps Edward A. Robinson excelled them all, mainly as a poet of human limitations. Sara Teasdale, Elinor Wylie, and Edna St. Vincent Millay attained distinction and power. Paul Lawrence Dunbar created a new negro lyric.

History favored human interests in the work of John Fiske, John B. McMaster, James Ford Rhodes, Woodrow Wilson, and James Harvey Robinson. Later criticism finally rose to independence in the classical essays of Paul Elmer More, Irving Babbitt, William C. Brownell, Henry S. Canby, Stuart P. Sherman, and in the iconoclast, Henry L. Mencken. Gamaliel Bradford led in a new biography like that of Strachey in England.

Drama in America showed new vigor, worthy of the days of Fitch, Thomas, and Belasco. William Vaughan Moody, Josephine Preston Peabody, Percy MacKaye, and Charles Rann Kennedy led the literary dramatists, while Eugene O'Neill, Sidney Howard, George Kelly, with their followers, excelled in technique. The novel and the short story, the glory of America, developed such later masters as O. Henry, Mary Wilkins, Alice Brown, Joseph C. Lincoln, Hamlin Garland, and George W. Cable, who pictured various localities, and such psychologists as Hergesheimer, Willa Cather and Dreiser. Sinclair Lewis for his novels won the Nobel Prize.

CANADIAN LITERATURE.

For a young nation whose early life was a constant battle for existence, Canada holds a prouder place in the republic of letters than any other British colony. The germs of a national literature are steadily unfolding, and, although no towering genius has yet arisen, there are a legion of writers who have interpreted their native land with distinction. But first we must notice the writings of the old French explorers and missionaries. Seventeen years before the *Mayflower* sighted these shores, Samuel de Champlain produced his work on the Indian tribes, and ten years later his well-known *Voyages*. The first poems written in the New World were *Les Muses de la Nouvelle France* by Lescarbot, who records the founding of Port Royal on the Bay of Fundy in 1605. The romantic history of New France has attracted such able writers as Charlevoix, Abbé Ferland, Garneau, and others. In the domain of poetry many French-Canadian writers have won considerable distinction. We may mention Casgrain, author of *Les Légendes;* Tassé, who wrote *Les Pionniers de l'Ouest;* Crémazie, author of the fine elegy *Les Morts;* Le May, Sulte, and Fréchette. The latter, who is a brother-in-law of W. D. Howells, the American novelist, was honored in 1880 by the French Academy.

Of the earlier Canadian writers who made English their vehicle none is more famous than Judge Haliburton, whose immortal *Sam Slick, the Clockmaker* (first published in Joseph Howe's newspaper, the *Nova Scotian*), is treasured wherever true wit and humor are appreciated. John Galt, by his *Lawrie Todd, Bogle Corbet*, and other books dealing with Canadian life, is, though only a three years' sojourner in the country, a worthy contributor to Canadian letters. Charles Heavysege (1816-1876) wrote a number of poems, novels, and tragedies; but it is as the author of *Saul*—a noble theme nobly treated—that he is best remembered.

The poets of Canada have drawn their inspiration largely from the motherland; but many writers have arisen who have voiced the patriotism of their native country. *Dominion Day*, by John Reade, is one of the best of these patriotic poems. More popular, though of less poetic value, is *The Maple Leaf Forever*, which has been set to music by the author, Alexander Muir. The versatile writer, Charles G. D. Roberts, has given us some polished verse of a similar character. Like most Canadian poets he has found his greatest inspiration in the lavish wealth which nature has provided. We see this in such of his poems as *Resurrection* and *Kinship*. William Alfred Campbell drew from the same source, but perhaps the foremost nature-poet is Archibald Lampman. His work is uneven, but some of his poems, such as *April in the Hills* and the sonnet *Midsummer Night*, are marked by strength and originality. His biographer, Duncan Campbell Scott, is fired by the same muse, and his *Labor and the Angel* have a calm and freshness of their own. The poems of Alexander McLachlan, who has been called "The Burns of Canada," and William Edward Hunt, are in true accord with nature. Wilfred Campbell. the "Lake Poet of Canada," is best known by his *Lake Lyrics*, although *The Dread Voyage* and *Mordred and Hildebrand* have been widely commented upon in America and England. The first native poet whose verses met with recognition by the leading English critics was George Frederick Cameron (1854-1885). His defiant *What Reck We of the Creeds of Men?* will not be forgotten. Though every true Canadian is a lover of nature, with a due appreciation of what is noble and sublime. yet other themes have been sung by many of the most successful poets. The romance of Canadian history has not unnaturally fired the native bards, and the heroic deeds of Champlain, Cartier, Montcalm, Daúlac, Wolfe, Brock Tecumseh, and Laura Secord, have been enshrined in noble verse. George Murray's *How Canada Was Saved*, M. J. Ratzmann Lawson's *The Battle of Grand Pré*, Sarah Ann Curzon's *The Loyalists*, and Frederick George Scott's *In Memoriam*, are amongst the best poems of this description. Perhaps Canada's greatest lyrist and most original verse writer is Bliss Carman. His *Low Tide on Grand Pré* and *Behind the Arras* reveal a true poetic genius wedded to a fine technique. Space will not allow of more than the briefest mention of other poets, whose healthy verse is helping to mold a truly national literature. Francis Sherman, whose work recalls that of William Morris, aspires to the first rank with his idyllic *Matins;* Arthur Weir's *The Snowflake, and Other Poems*, contains much that is meritorious; Theodore H. Rand is associated with all that is best in Canadian poetry; John Stuart Thomson shows exceptional talent in his *Estabelle* and *A Day's Song;* Arthur J. Stringer has given us some lyrics of rare promise and originality; Charles Mair, author of the drama *Tecumseh*, has written some fugitive poems of undoubted talent; John Henry Brown's *Poems Lyrical and Dramatic* are deserving of wider attention; Bernard McEvoy's *Away from Newspaperdom* are pregnant with human interest; William T. James is the author of *Rhymes Afloat and Afield;* William Douw Lighthall has written some vigorous verse; E. B. Brownlaw has produced some scholarly lines; Dr. Thomas O'Hagan has contributed his two books of poems, *In Dreamland* and *Songs of the Settlement;* while the ever-popular Dr. W. H. Drummond, who stands in a class alone, has given us a number of French-Canadian poems combining humor, pathos, and picturesqueness in no stinted measure. In embodying the speech and thought of the *habitant* he has struck a rich and original vein. Of the women writers who have courted the muse, the most distinguished are Isabella Valancy Crawford, best remembered by her lyrics, *The Master Builder* and *The Axe of the Pioneer;* S. Frances Harrison ("Seranus"), the author of many poems descriptive of French-Canadian life; Ethelwyn Wetherald, Jean Blewett, Agnes Maule Machar ("Fidelis"), Elizabeth Roberts MacDonald, Mrs. McLeod, and Pauline Johnson—a lady with Mohawk blood in her veins—these have contributed freely to the great wealth of Canadian verse.

Of the prose writers Gilbert Parker has won an international reputation by the brilliancy of his works. His best known volumes are *Pierre and His People, Tales of the Far North, An Adventurer of the North, A Romany of the Snows, A Lover's Diary, The Trail of the Sword,*

The Seats of the Mighty, The Trespasser, and *The Battle of the Strong.* William Kirby is the author of the remarkable historical novel, *The Chien d'Or.* Another novel of Quebec is *The Bastonnais,* by John Lesperance. Among other story writers may be mentioned Major John Richardson, G. M. Adam, Susanna Moodie (sister of the accomplished Agnes Strickland), Lily Dougall, Miss M. M. Saunders, William McLennan, W. A. Fraser, Sara Jeannette Duncan (Mrs. Cotes), Jean McIlwraith, E. W. Thomson, Ralph Connor, Ernest Thompson Seton, and Grant Allen (a Canadian by birth though usually counted amongst English authors).

In the more serious departments of letters, such as science, history, and philosophy, Canada can boast of many able writers. Sir William Logan, the eminent geologist, is the first Canadian scientist to take European rank. Sir J. W. Dawson and his son, Dr. G. M. Dawson, have worthily maintained the tradition, and are numbered amongst the greatest scientists of modern times. Among historians, besides the world-famed Goldwin Smith, must be noted Sir John Bourinot, Sir James Lemoine, Dr. Kingsford, C. G. D. Roberts, Robert Christie, James Hannay, George Bryce, J. C. Dent, Doughty, whose six volumes on Wolfe's campaign is an important contribution to Canadian history, Dr. Todd, author of the authoritative *Parliamentary Government in England,* and Dr. Theal, famous for his monumental *History of South Africa.* Sir John Murray, who was born at Coburg, Ontario, is the great authority on oceanography; while Dr. Crozier, who has settled in England, is one of the most original thinkers to whom Canada has given birth.

LATIN-AMERICAN LITERATURE.

The literature of South America has not received the attention from the North that it certainly has merited; yet there is no country south of the Rio Grande but what can boast of an extensive literature and men of letters whose work commands a wider recognition. Long before Harvard opened its doors to students, colleges and universities flourished in the Spanish settlements. The University of the City of Mexico was founded in 1553, and the University of San Marcos at Lima in Peru in 1555. The best of Spanish culture was carried to the New World, and a community of intellectual interests was maintained between Spain and her colonies so long as the political ties existed. But this continental influence was not without its drawback on the native-born product, for the deterioration of letters in Spain followed by the corruption of taste known as Gongorism, was reflected in the Spanish-American literature of the seventeenth and eighteenth centuries.

In due course the influence of the Encyclopedists and of Rousseau began to be felt; while the scientific expeditions of José Celestino Mutis (1760), also of Humboldt and Bonpland (1799-1804), revived an interest in the physical sciences, and exercised a salutary influence on South American culture. Independence of thought was stimulated and a race of native writers arose whose continuity has never been broken.

The most noted poet of the revolutionary period was José Joaquín Olmedo of Ecuador (1781-1847), whose chasteness of style and magnificence of rhetoric earned for him the title of "the American Pindar." The impress of romanticism is apparent in the verse of the Guatemalan José de Batres and of the Cuban J. M. Heredia, whose *Ode to Niagara* is justly celebrated.

The foremost name in the history of Spanish-American literature is unquestionably that of the illustrious Andrés Bello (1781-1865), one of the greatest masters of Castilian verse. Much admired are his *Agricultura en la Zona Torrida* and *Oración por Todos,* the latter of which was inspired by Hugo's *Prière pour Tous.* Another revolutionary hero and writer was Carlos Maria de Bustamante (1774-1848), whose greatest literary achievement was the history of the Mexican revolution. Meanwhile in Brazil Domingo Borges de Barros, Viscount of Pedra Branca (1783-1855), established himself as the favorite poet with his pleasure-breathing *Poesias offerecidas ás Senoras Brazileiras.*

In Latin-America politics and letters have gone hand in hand, and it is the rule rather than the exception for public men to be also writers. No branch of literature has been more assiduously cultivated than criticism. Among the leading critics may be mentioned Calixto Oyuela, Torres Caicedo, Miguel Luis Amunátegui, Rafael M. Merchán, Martin Garcia Mérou, and Garcia Velloso.

The novel was not seriously attempted till the latter half of the nineteenth century. The Colombian poet, Jorge Isaaks, is well-known by his *Maria,* and his compatriot, Julio Arboleda, has written a bright romance, *Casimiro el Montañés.* Mexico has produced four novelists of distinct merit: José T. del Cuellar, I. M. Altamirano, Orozco y Berra, author of *Escenas de Treinta Años,* and Dr. J. J. Fernández Lizardi, better known by his nom de plume "El Pensador Mexicano." The Argentine historian, Vicente Fidel Lopez, has written a stirring historical novel entitled *La Novia del Hereje;* his compatriot José Mármol is the author of a really fine romance *Amalia.* Among the more noted Chilean novelists are Vicente Grez, Ramón Pacheco, Alberto del Solar, and the poetess Rosario Orrego de Uribe. Brazil has produced three eminent writers of fiction, Martiniao Alencar, Joaquin Manoel de Macedo, and Bernardo Guimaraes.

The output of poetry has always been enormous, due chiefly to the ease with which the Spanish and Portuguese languages lend themselves to versification. The names of the poets are therefore legion. In Mexico four names will serve to represent the different styles of poetry cultivated: Fernando Calderón, Manuel Carpio, J. J. Pesado, and Manuel Acuña. One of the finest examples of South American verse is *Gonzalo de Oyón* by the Colombian Julio Arboleda (1817-1862). Among modern poets and dramatists may be mentioned Silveria Espinosa de Rendón and A. J. Restrepo, of Colombia; Estebán Echeverria (1809-1851), M. Coronado Adán Quiroga, Rafael Obligado, of Argentina; Arnaldo Márquez, M. N. Corpancho, Cleménte Althaus, and Numa Pompilio Llona, of Peru; C. W. Martinez, and G. B. Gana, of Chile; F. Javier de Acha, of Uruguay; J. Batrés y Montufar, M. Cordoba and Garcia Goyena, of Guatemala; Antonio G. Dias and D. J. G. Magalhaes, of Brazil.

OUTLINES OF THE WORLD'S LITERATURE.

A CONTEMPORANEOUS AND CONSECUTIVE ARRANGEMENT OF BOOKS AND AUTHORS FOR REFERENCE AND STUDY.

Alphabet.—The earliest form of written description, or thought transference, was by means of pictures. This has been used by nearly all primitive people from the early Egyptians to the North American Indians. The latter, however, never developed a written language. The picture language, or hieroglyphic form, succeeded the ideogram, or picture, and gave rise to the alphabetic or sign form. The hieroglyphic form was used by the Egyptians (until 700 B.C.), Chinese, Babylonians, and Mexicans. In 700 B.C. the hieroglyphic form in Egypt was superseded to some extent by the demotic or popular form of writing. Hieroglyphics are so called because the form was largely confined to the priestly class. The Babylonian took the form of wedge-shaped or cuneiform signs.

Cuneiform or wedge-shaped writing is one of the earliest forms of the alphabet. It originated in Mesopotamia and spread even to Armenia and Egypt. The earliest texts are at least 6,000 years old. The characters were impressed on soft clay with a tool, but a chisel was used for the rock-cut inscriptions. The most remarkable inscription is cut on the almost perpendicular side of Mount Behistun over 300 feet from the ground. It records the reign of Darius I. (521 B.C.) and is in three languages: the Old Persian, Babylonian, and the New Susian.

The Assyro-Babylonian alphabet is the most important and complicated of all. In 1887, at Tel-el-Amarna on the Nile, about 180 miles south of Memphis, were discovered 320 bricks with inscriptions, some so minute that there were six lines to the inch and had, evidently, been cut with the aid of a magnifying glass. The tablets vary in size from nine inches by six inches to one inch square.

Other cuneiform alphabets are in the New Susian, the Armenian, and the Old Persian languages.

The oldest inscription in the Phœnician language is on the Moabite Stone, detailing the wars of Mesha and Ahab about 853 B.C., found at Dibon in Moab in 1868. This and the inscription at the pool of Siloam, telling how the tunnel was cut through, are in the North-Semitic languages.

The Phœnicians, who were the early world-traders, first developed the alphabet and gave it to the world about 1000 B.C. From the Greeks all Europe derived their alphabets, either directly as the Russian, or through the Latin.

A peculiar form of writing known as Runes, or Runic writing, was used by the early Germanic tribes and communicated by them to Denmark, Norway, Sweden, Ireland, Germany, Great Britain, France, Spain, and Roumania. Its origin is obscure, but is believed to date from about the second century A.D., though some place it as far back as 600 B.C. It is an adaptation of the Greek alphabet and was much used in carving inscriptions on stone, metal, and wood.

Materials.—The earliest literature was engraved on stone or on baked brick or on metal. In the temple of Nippur tablets were discovered which are believed to have been written 6000 B.C. They are in the Chaldean language, and measure nine inches by six and one-half inches. They are hymns and invocations used in worship in the temple.

The earliest Egyptian literature other than the inscriptions on certain tombs is the "Book of the Dead," which was placed in tombs and in mummy-cases. This is a collection of prayers, hymns, psalms, and magical incantations. These date back to about 2500 B.C.

The earliest Chinese is about 1150 B.C. The book is called the Y-King, the Book of Metamorphoses or of Developments.

The Ten Commandments were written on tablets of stone.

The Laws of Solon (about 594 B.C.) were inscribed on wooden planks.

The skin of goats dressed on one side only came into early use and was the first step toward parchment.

Papyrus was used as far back as 3600 B.C. It was made into rolls from the pressed pith of a species of reeds. The plant is from 3 to 10 feet high. The sheets of papyrus seldom exceeded 15 inches wide, though from 8 to 12 inches is very commonly met with. One roll measured 144 feet in length. It was soft, easily mutilated, and the wonder is that any have survived.

The earliest extant Greek papyrus belongs to the fourth century B.C.

Parchment was known as early as 500 B.C. In Rome the manufacture of parchment rose to great importance in the first century B.C. This was the medium for writing until the invention of paper by the Chinese at an early unknown date. The first paper mill in Europe was erected in Fabriano, Italy, in 1150.

Parchment that has been used a second time by erasing the original writing is called a palimpsest.

B.C.	EGYPT, BABYLONIA, INDIA, CHINA.
4000	"Book of the Dead." Some portions profess to date back so far, though the greater part was written 10 centuries later. "Proverbs" as contained in the Prisse Manuscript, attributed to a writer of the III. Dynasty about 4000 B.C. **King Athothis,** also a physician, wrote anatomical works.
3700	**Seneferu,** first of the pyramid kings, the earliest Egyptian monarch to leave behind an inscription, which is at Wady Magharah.
3300	A papyrus on "Ethics," written during the reign of Tat-ka-ra by **Ptah-hotep,** probably the oldest manuscript in the world.
3000	Biographical inscription of Una, found on a slab in the cemetery of Abydos, about 3000 B.C. Hymn to Usertesen III., about 3000 B.C.
2800	"Story of the Shipwrecked Sailor," author unknown, written about 2800 B.C. Manuscript in St. Petersburg.
2500	"Story of Sanehat," author unknown, written about 2500 B.C. Manuscript in Berlin. "Teaching of Amenemat," author unknown, written about 2500 B.C.
2200	Code of **Hammurabbi,** king of Babylonia, engraved on stone about 2200 B.C., contains 280 edicts in four columns.
2000	"Songs to the Harp," a collection dating back to 2000 B.C. Egyptian.
1700	Hymns to Amen Ra, written about 1700 B.C. Egyptian.
1700	Rhind papyrus in the British Museum, a mathematical work. "Directions for Obtaining Knowledge from all Dark Things," copied before 1700 B.C. by Ahmes, an Egyptian scribe, from a treatise written in 2500 B.C.
1650	**Pentaour,** "epic poet," celebrates the deeds of Rameses II. Public library founded at Thebes and copies of manuscripts made.
1600	Chronology of Kings of Egypt, made by direction of **Thothmes III.**
1500	Papyrus Ebers, a hieratic or sacred treatise on medicine, written about 1500 B.C., discovered by Ebers in 1872. One of the best preserved Egyptian papyri in existence. Vedas of India, more than 100 books, extending over centuries of time, but begun about 1500 B.C., shortly after the Aryan migration into India. The three divisions are the Rig-Veda, Yajur-Veda, and Sama-Veda. They consist of Hymns, Psalms, Prayers, Melodies, Blessings, and Curses.
1500	"Maxims of Any," written about 1500 B.C. Egyptian.
1450	"Story of the Doomed Prince," written about 1450 B.C. Manuscript in the British Museum. Egyptian. "Hymn to the Aten," **King Akhenaten,** written about 1450 B.C. Egyptian.
1400	The Tel-el Amarna letters: 320 bricks or tablets found south of Memphis in Egypt in 1887. Written about 1400 B.C. **Abdi-chiba** (1403-1385 B.C.), Governor of Jerusalem, wrote at least six of them. They are state documents.
1300	"Story of the Two Brothers," written about 1300 B.C. "Story of Setna," written about 1300 B.C. Egyptian.
1200	**Wen Wang,** the founder of the Chow dynasty in China, wrote the "Book of Changes."
1100	The Abbott papyrus containing a full account of the tomb robberies in Egypt in the reign of Rameses IX.; written about 1100 B.C.

B.C.	GREECE	ASIA, EGYPT
1000	**Homer** wrote or compiled "Iliad" in 15,693 lines and the "Odyssey" in 11,670. Herodotus dates them about 850, but they seem to be of the age about 950. Homer or imitators wrote hymns and many poems now lost.	
900	**Hesiod's** "Works and Days" describes life of men; his "Theogony," the gods; his "Shield of Herakles," a national hero.	**Chinese** odes collected, but later revised for the Confucian "Shih Ching" in 6th. century.
800	Songs, hymns, and other early literature mentioned later, and a few fragments have come down to us.	Conquest of Egypt by King Piankhi of Nubia told on huge **stele** found at Gebel in 1862.
700	**Terpander** of Lesbos began choral lyric. **Alkman** wrote nature and war songs for a chorus. **Kallinos** made elegies, **Tyrtaeos** wrote of law and order, **Archolochos** satirized the girl who refused to marry him and was long admired for his dash and fire. **Solon** is known for his oratory and work on reform. **Sappho,** of Lesbos, delighted her friends by her songs.	**Aryan lyrics** collected. Early Vedic or priestly literature. First great Vedas polished by the priests. They include songs of praise, melodies, liturgies and blessings, and religious myths. Came to be known as **Brahmanas.**
600	**Alkaios** and **Stesichoros** imitated Sappho, but also wrote on politics in the 42d Olympiad. **Anakreon** later wrote of the joys of life and regret for old age. **Theogonis** perfected the moral elegy. Many other good poets in Greece.	"Upanishads" by 600 explained the Vedas, gave rise to a new Buddhism, and stressed transmigration of souls.
500	**Pindar,** born about 522, carried the lyric to perfection. The Attic drama soon arose to take its place. We now have many of Pindar's odes. **Simonides** wrote for many occasions and so sang for his bread.	"Sutras," last of the great Vedic literature, explain the rituals, home life, and laws.
	Thespis began classic Greek drama about 550. Called "father of tragedy."	The "Avesta" of the Zoroastrians of Persia, contained prayers, priestly code, and 21 hymns. We have only a part now. The Magi who came to Bethlehem were of this faith.
	Seven tragedies by Æschylus: "Suppliants," "Persians," "Prometheus Bound," "Seven against Thebes" in three parts.	
	Also seven, with fragments of 80 others, by **Sophocles,** about 495-406 B. C. "Ajax," "Electra," "Antigone," and the Edipus plays.	**Buddha,** sage of India, compiled ancient lore in three "baskets," the "Triptika," made up of discipline, discourses, and psychology.
	Eighteen plays, and hundreds of fragments, from **Euripides** (before 400 B. C.) include "Alcestis," "Helena," "Medea," "Ion," and two Iphigenia dramas.	In this century began Persian literature with the cuneiform or wedge-shaped inscriptions. Darius I, about 515, started three tablets, 410 lines, carved in the lime stone rock of Behistun (modern Bi-stun), some 1,700 feet above the plane. They are in three languages, Old Persian, Babylonian, and Elamite. By finding the key to these characters Rawlinson (1835-1847) gave us knowledge of Babylonia.
	Of 54 plays by **Aristophanes,** 11 comedies are extant, such as the "Clouds," "Wasps," "Birds," and "Frogs."	
	Zenophanes and **Anaxagorus** wrote philosophy. **Andocides, Isocrates,** and **Lycurgus** are best known of the early Attic orators.	
	Herodotus, "father of history," wrote his "Travels" and "History" before 440, and **Thucydides,** by 400, had written his "Peloponnesian War." Before 355 Xenophon finished the last, described the campaign of Cyrus in his "Anabasis," and the education of Cyrus in the "Cyropaedea."	**Confucius,** Chinese scholar, wrote the "Annals of Lu," or "Spring and Autumn." He edited the "Shih King" or ancient poems, and his grandson wrote a remarkable work "The Doctrine of the Mean." Mencius compiled the teachings of Confucius.
	Socrates left no written records, but **Plato** explained his teachings in the "Crito," "Dialogues," "Symposium," and others. His "Republic" describes a model state.	
400	**Demosthenes** (384-322), greatest ancient orator, known for his speeches against Aphobus, Leptines, Ctesiphon, and "On the Crown," "On the False Embassy," and "On the Chersonese."	
	Aeschines and Hypereides, his rivals, known for their speeches, and the latter for his "Funeral Oration" and the "Athenogenes."	

B.C.	GREECE	ASIA, EGYPT
400	**Aristotle** (484-322) compiled over 30 books on logic, science, and philosophy, a summation of much of ancient learning.	**Panini**, great scholar of India, compiled a grammar of Sanskrit in nearly 4,000 poetic stanzas.
	He was followed by **Theophrastus**, who wrote on plants, minerals, and some "characters," or witty descriptions of people, a model for many later authors.	India was still given to writing comments on the ancient philosophers.
	Epicurus (d. 270) wrote scores of books and founded a school based on happiness, but little of his work has survived.	Cuneiform records of Persia now made on stone, and on tablets of gold and silver.
300	**Callimachus** of Alexandria wrote six hymns, and **Rhianus** of Crete was another noted poet. Of many others, **Bion** and **Moschus** are known for their pastoral elegies, following their master **Theocritus**, leader in this form. Bion's "Lament for Adonis," in memory of Moschus, was Shelley's model for his "Adonais."	The Ptolemies established a library of 700,000 scrolls at Alexandria, Egypt, the seat of learning. Euclid lived there for a time. The Greek poet, **Callimachus**, made the library catalog in 120 sections or books.
	Euclid at Alexandria wrote on science and geometry, such as his "Elements," "Data," "Optics," and "Division of the Scale." **Eratosthenes**, also at Alexandria, later wrote on geography and astronomy. **Aratus** made an epic on astronomy.	**Manetho**, during the reign of Ptolemy II, wrote in Greek a chronology of Egypt, but only a partial list of kings and some fragments remain.
	The "Argonautica," an epic by **Apollonius of Rhodes**, broke away from the style and doctrines of Callimachus about 250 B. C.	"Septuagint," earliest known translation of the Hebrew Testament into Greek, was made by 72 scholars sent from Jerusalem to Alexandria.
200	Of the 40 books of history by **Polybius**, only 5 survive, with fragments of 18 others. He wrote Greek history for the Romans to read.	About this time the two great epics of India took final form. They are the "Mahabharata," 20,000 lines describing heroes of the west and their acts and the "Ramayana," celebrating the great warrior of the east in 48,000 lines.
	The library at Pergamon in Asia rivaled that at Alexandria. Anthony gave 200,000 volumes from it to Cleopatra for the collection at Alexandria. Criticism flourished at Pergamon; so did **Antigonus**, philosopher and naturalist.	INDIA, EGYPT, PERSIA, CHINA
	Nicander of Colophon wrote two long medical poems.	**Patanjali** made further comments on the Vedic texts. In his "Yoga Sutras" he introduced the idea of union (**yoga**) with a Supreme Being. Somewhat before him, possibly in the 3rd century, in his "Vartikhas," **Katyayana** had explained the grammar of Panini.
100	**Strabo's** "Geography" in 17 books, a sequel to Polybius. After 20 B. C. he lived at Rome for some years.	
	"Library of History" in 40 books (of which we have 1-5, 11-20, and fragments) by **Diodorus of Sicily** brought universal history down to Caesar. **Dionysius of Halicarnasus** described the grandeur of Rome and sought to revive great classic Greek prose. He was also a famous critic. His essay "On the Arrangement of Words" is helpful today as it was to his Roman pupils.	"Shih Chi" by **Ssu-ma Ch'ien** of China, about 100 B. C., compiled a great history in 5 parts: Annals of Reigns, Tables of Dates, Monographs, Annals of Subject Princes, Biographies. His work was the model for many later histories. In 1747 his "Shih Chi" was translated in 219 volumes.
A. D.		
100	**Flavius Josephus**, a Jewish scholar, wrote "History of the Jewish War" in Hebrew, but learned Greek to translate this for Hellenic readers. Later historians were **Arrian** (cir. 95-175), a desciple of Epictetus, who covered 336-323 B. C. in an account of the age of Alexander the Great. **Appian**, his contemporary, compiled an elaborate history of Rome in the manner of Polybius, but free from rhetorical flourishes.	**Wang Chung** (27-97 A. D.), an independent philosopher, taught a new form of Confucianism.
	The teachings of **Epictetus**, in 12 books, were compiled by Arrian.	**Hsu Chen** (d. about 120 A.D.), made a dictionary of Chinese characters according to 540 radicals or types.
	Pausanias made a guide book to Greece, in 10 books, which are of great value today to travelers.	
	"Parallel Lives" of famous Greeks and Romans by **Plutarch** gives us much of our knowledge of famous men of classic times. Shakespeare drew heavily on North's translation from a French version of this Greek work.	
	Galen (Claudius Galenus) compiled treatises on medicine and philosophy, of which we have 83 today. **Ptolemy** (Claudius Ptolomaeus) developed the system of astronomy current till after the Middle Ages.	
	"On Hunting" by Oppian; "Sequel to the Iliad" by Quintus; "Dionysus" by Nonnus; "Hero and Leander" by Museus, borrowed in part by Marlowe in 1590, and various Greek anthologies represent the cream of later Greek poetry.	

B.C.	ROME.
200	Twenty out of 130 comic plays by **Titus Maccius Plautus** (about 254-184 B.C.), the greatest comic poet of ancient Rome.
	Fragments of the "Annals," a history by **Quintus Fabius Pictor** (about 254 B.C.), the first writer of Roman history in prose.
	Fragments of tragedies, comedies, satires, and "Annals," by **Quintus Ennius** (239-169 B.C.), "the father of the Roman epos."
	Fragments of several of the 150 orations and "De Agri Cultura," and "De Re Rustica," by **Marcus Porcius Cato**, known as Cato the Censor, Cato Major (Cato the Elder), or Cato Priscus (234-149 B.C.), a Roman statesman and orator.
	Six comedies by **Publius Terentius Afer** (known as Terence) (about 185 to about 159 B.C.).
	800 fragments of satires (the longest with only 13 verses) by **Gaius Lucilius**, the originator of Latin satirical composition (149-103 B.C.).
	750 lines, fragments of 40 tragedies written by **Lucius Attius** or **Accius** (about 170-90 B.C.), perhaps the greatest of the Roman tragic writers.
100	"De Re Rustica Libri III," the most important treatise on ancient agriculture known to us; "De Lingua Latina," a grammatical work originally in 24 books—of which we have 6 by **Varro** (Marcus Terentius), "the most learned of the Romans" (116-27 B.C.)
	Fifty-seven orations, the most famous being the four against Catiline, the fourteen philippics against Antony, the orations on behalf of L. Murena and Marcus Cælius; his treatises including "De Senectute" (concerning Old Age), "De Amicitia" (concerning Friendship), and others by **Cicero** (Marcus Tullius), Rome's greatest orator and an illustrious man of letters and statesman (106-43 B.C.).
	"Commentaries on the Gallic and Civil Wars" by **Cæsar** (Gaius Julius), one of the most remarkable men of all time (100-44 B.C.).
	"De Rerum Natura," a poem in six books, 7,500 lines, by **Lucretius** (Titus Lucretius Carus) (about 99 to about 55 B.C.), a Roman poet of the first rank.
	Twenty-five biographies of warriors and statesmen, mostly Greeks, by **Nepos** (Cornelius), a Roman historian (about 99 to about 24 B.C.).
	116 poems by **Catullus** (Gaius Valerius), the greatest of the Roman lyric poets (about 87 to about 54 B.C.).
	"Catilinia," or "Bellum Catilinarium," descriptive of Catiline's Conspiracy in 63 B.C.; "Jugurtha," describing the Jugurthine War, by **Sallust** (Gaius Sallustius Crispus), a Roman historian (86-34 B.C.).
	The "Æneid," or wanderings of Æneas after the siege of Troy; ten "Eclogues" or "Bucolics," the "Georgics," by **Vergil** (Publius Vergilius Maro), one of the most celebrated of Roman poets (70-19 B.C.).
	"Odes," "Epistles," "Satires," "Liber de Arte Poetica" ("Art of Poetry"), by **Horace** (Quintus Horatius Flaccus), the greatest Latin poet of his time after Vergil (65-8 B.C.).
A.D.	"History of Rome" in 142 books of which 35 have come down to us, by **Livy** (Titus Livius Patavinus), the great Roman historian (59 B.C.-17 A.D.).
	"Epistles" on moral subjects and philosophical treatises; ten tragedies and "Satires," by **Seneca** (Lucius Annæus), or Seneca the Elder (about 4 B.C. to about 65 A.D.).
	"Metamorphoses," a treatise on all the transformations recorded in legend from the Creation to the time of Julius Cæsar; the "Heroides" and several other poems, by **Ovid** (Publius Ovidius Naso) (43 B.C.-18 A.D.).
	"Historia Naturalis," comprising all the natural sciences, divided into 37 books on 20,000 subjects by **Pliny the Elder** (Gaius Plinius Secundus) (23-79).
	"Epigrammata" in 14 books, by **Martial** (Marcus Valerius Martialis), the first of the Roman epigrammatists (about 40 to about 104).
	"Annals" and histories by **Tacitus** (Publius Cornelius Tacitus), an important historian of Rome (about 55-117).
100	Sixteen "Satires" by **Juvenal** (Decius Junius Juvenalis), a satirist of indignation, well translated by Dryden and others (38-120).
	"Epistulæ," or ten books of letters; "Panegyricus," an adulation of the Emperor Trajan, by **Pliny the Younger** (Gaius Plinius Cæcilius Secundus), a nephew of Pliny the Elder (62-110).
	"Lives of the Cæsars," "Lives of Eminent Grammarians," "Lives of Eminent Rhetoricians," by **Suetonius Tranquillus** (75 to about 160), an eminent historian of Rome.
	Two "Apologies for the Christians," "Dialogue with Tryphon the Jew," by **Justin Martyr** (about 100 to about 165), a Christian writer and philosopher.
	"Institutes," and other legal works of **Gaius the Jurist** (about 110 to about 180). From these 535 extracts were taken for the "Institutes" of Justinian. Gaius is the chief source of our knowledge of Roman law.
	"Apologia," "Metamorphoses," or the "Golden Ass," a novel or romance, by **Lucius Apuleius**, a satirist of Rome (born about 125).
	"Proscription of Heretics," "Apology to the Nations," "Against the Jews," "Against Marcion," "Against the Valentinians," "Against Praxeas," and many tracts on morals and church discipline by **Tertullian** (Quintus Septimius Florens Tertullianus), one of the earliest of the Latin Church Fathers (about 150 to about 230).

A. D.	LATER LATIN AND GREEK WRITERS.
100	"Dialogues of the Gods," "Dialogues of the Dead," "Auction of Philosophers," "Timon," and the "Veracious History," by **Lucian of Samosata** (about 120-about 200), a famous satirist and humorist.
	"Against Heresies," a valuable history of doctrine and fragments of other theological works, by **Saint Irenæus** (about 130-202), one of the leading Church fathers of the West.
	"Exhortation to the Greeks," the "Instructor," "Stromata" or miscellanies, by **Clement of Alexandria** (Titus Flavius Clemens, about 150-about 215), a celebrated Greek father of the Church.
	Rhetorical treatises by **Hermogenes** (second half of the second century), the greatest technologist of his times.
to	A Roman history (180-238) by **Herodianus**, a Greek resident in Italy; born about 170; died about 240. "Hexapla," "Tomoi," "De Principiis," "Against Celsus," by **Origen** (about 185-254), called also **Adamantius**, the most famous Christian writer of the third century.
	Lives of the Greek philosophers in 10 books, very valuable, by **Diogenes Laertius**, who lived about 200.
	Eighty-two letters, and treatises on "Unity of the Church," "Dress of Virgins," "Lapsed," "Lord's Prayer," "Vanity of Idols," "Against the Jews," and other very instructive works, by **Saint Cyprian** (Thascius Cæcilius Cyprianus, about 200-258), the great leader, as Bishop of Carthage, of the African Church.
	"Enneads," philosophical works, by **Plotinus** (204-270).
200	Works of criticism and philosophy (and, perhaps, the essay "On Sublimity") by **Longinus** (210-273), tutor at the court of Zenobia.
	"Against the Christians" (15 books), "Life of Plotinus," "Life of Pythagoras," "On Aristotle," by **Porphyry** (about 233-about 305), a teacher of philosophy at Rome.
	Autobiography, letters, and numerous philosophyical works, orations, and declamations, by **Libanius** (born about 314), the best known sophist of the fourth century.
	"Life of Pythagoras," "Exhortation to Philosophy," and many mathematical and philosophical works, by **Iamblichus** (died about 330).
	Six volumes of theological works by **Saint Ambrose** (about 340-397), Bishop of Milan, and one of the most celebrated of the ancient fathers of the Church, one of the four doctors of the Western Church.
	"Translation of the Bible," the best up to its time. "Illustrious Men," more than one hundred "Letters" and "Epistles," by **Saint Jerome** (Hieronymus, about 340-420), the most learned of the early fathers of the Roman Church.
	Ten books of "Letters" and the fragments of nine orations by **Symmachus** (Quintus Aurelius, about 345-about 405), a distinguished Roman orator, scholar, and statesman.
	CONTINENTAL EUROPE
300	Bishop Ulfilas translated the Bible into his native Gothic. He introduced Christianity to his people. His translation is the oldest specimen of Germanic literature that has come to our age. The Gothic Bible was written in silver letters on purple parchment. The volume is now in the library of the University of Upsala, Sweden.
500	Migration of tribes from northern Europe gave rise to homely sagas which made the basis for later epic poems.
600	From this century some fragments of poetry, monkish literature, and a little prose remain, but they are of little worth.
700	"Merseberg Charms," "Wessobrunn Prayer," and "Muspilli," a picture of the Last Day, belong to this century or a bit later.
800	French literature begins with the text of an oath taken in 842 by Louis and Charles, grandsons of Charlemagne, to dethrone their brother Lothaire, whom they had beaten in battle.
	Latin continued to be the medium of religious, scientific, and court literature. Lyric poetry and native drama from this age have not come down to us. One interesting religious poem, "The Heliad," founded on the Gospels, may have been written at the request of Louis the Pious, youngest son of Charlemagne.
	"Lay of Hildebrand," a Saxon poem, described the duel between Hildebrand and his son, after years of separation, not knowing each other. "Ludwigslied" (dating from about 881), the earliest German historical ballad, celebrates the victories of Louis III over his enemies.
900	From 800 on various epic fragments were developed. In the ninth and tenth centuries, they became well known. Charlemagne was the center of many hero tales. These finally culminated in the epic "Song of Roland," which describes the death of a French hero at Roncesvalles in the Pyrenees, with the revenge taken by Charlemagne on the enemies of Roland.
1000	About this time German translations were made of Boethius, Aristotle, and Latin works of former times. The "Consolations of Philosophy" by Boethius became famous, and Aristotle's idea colored all later thought.
	Various cycles developed in France in this age of troubadours. The chief ones are:
	(1) "Cycle de France" made up of the Roland story and related tales.

A. D.	LATER LATIN AND GREEK WRITERS.
200	"Daily Rounds, or Cathamerinon," a collection of twelve lengthy hymns: "The Soul's Conflict. or Psychomachia," or religious allegories; "The Crowns, or Peri Stephanion," fourteen hymns in praise of martyrs; two books "Against Symmachus"; and more poems, by **Prudentius** (Aurelius Clemens Prudentius, 348-about 405), the greatest Christian poet of the early Latin Church.
to	"Confessions," an autobiography; "City of God," in 22 books; "Retractions"; 270 "Epistles" and numerous treatises by **Saint Augustine** (354-430), Bishop of Hippo in northern Africa, the greatest of the Latin fathers, and most celebrated of the four doctors of the Western Church.
400	Nine books of "Letters" of great value; twenty-four poems by **Apollinaris Sidonius** (430-487), Roman author, political leader, and Bishop of Clermont.

	ENGLAND	ASIA
300	Traditions of songs by bards who later gave way to Angles and Saxons.	
500	**Gildas** wrote history and letters in Latin. British consciousness developing. The scops or composers of verses and the gleemen or signers of popular songs are mentioned in this age. **Ethelbert**, king of Kent (d. about 616) left some native laws, our earliest prose nearly dated.	Early Arabian literature is varied and rich. Seven odes called "Moallakat," literally "the suspended," belong to the century ending about 600. Collected in 8th century. Chief authors: **Amru'ul-Qais**, of a noble house, said by some to be the greatest early poet; **Tarafa**, a literal poet; **Antara**, a black slave; **Labid**, the only one who turned to Islam.
600	"Beowulf," greatest epic of early Germanic people, may date here or later. It is a poem of 3183 lines celebrating the overcoming of Grendal and his mother by a hero imported from north Germany. May not be an English but north Europe product. **Caedmon's** "Creation" and a "Hymn" written before 700. Fragment of the "Hymn" is quoted by Bede. Other early poetry "Battle of Maldon" "Battle of Brunanburgh," "Waldhere" "Deor's Complaint," "The Seafarer," are other early poems, not later than the 10th century.	Two groups of fragments, two to 20 lines each, contain praises of the tribes, accounts of journeys, elegies (some by women), and various other occasional types. The **Koran**, or bible of Islam, compiled mainly by the secretary of Mohammed after his death. It has 114 suras or chapters, 77,639 words, instructing the faithful in their worship.
700	**Aldhelm**, before 700, wrote various ecclesiastical works. **Beda** or **Bede** (d. 735) compiled in Latin "The Six Ages of the World," "Ecclesiastical History," and other works now lost. **Alcuin** (d. 804), is known for his scholarly works of various kinds. **Cynewulf** (d. 825) greatest poet of Old English times, excepting the "Beowulf." His works appear in the Exeter and Vercelli books of the 11th century. They are the "Elene," "Juliana," "The Ascension"; perhaps the "Christ," "Phoenix" and "Andreas," the last a noble work. "Dream of the Rood" seems earlier.	Science, grammar, and biography highly developed. **Abu Hanifah**, a church father, compiled a code of laws. The "Al Muwatta" code, later collected by **Malik ibn Anas**, standard in Mohammedan lands until today. **Azraqi's** "History of Mecca" a fine work. **Ibn Ishaq**, in his biography of Mohammed, began history in Arabia, before 750. **Ibn Muqaffa** (d. 760) translated the "Fables of Bidpai," still regarded as a world classic. This work has many entertaining moralized tales. **Abu-Tammam** compiled the "Al-Hamasa" in 10 books, 884 poems in all, made up of all previous publications.
800	**Nennius** wrote in Latin a "Historia Brithonum" in 8 parts. Contains legends and some fact. "The Anglo-Saxon Chronicle," a record of events, with many gaps, kept evidently by monks and coming down to the time of Alfred. Our best source for early English history. **Alfred the Great** (871-901) made the West Saxon dialect supreme. Under his direction many scholars labored for years. The chief results are translations of Boethius, Orosius, Bede, and other old authors. The court also compiled laws and records.	Biographies of Mohammed, **Al-Farghani's** "Cyclopedia of Astronomy," codes of laws and traditions, **Abu Ubaidah's** 105 monographs on history are the chief prose works of this age. Great Arabian histories before 925 by **Ya'qubi**, "Handbook of History" by **Ibn Qutaiba**, and **Baladhuri's** "Arab Conquests" of high repute today. **Abu Jafar-al-Tabari**, a Persian, compiled a universal history, the earliest of its type. He later wrote a comment on the "Koran."
900	**Ælfric's** "Homilies" represent this century. He made a Latin Grammar and wrote a "Colloquium."	Persia leads in literature. Some great works: **Rudaki's** translation of Bidpai; **Daqiqi's** poetical history of Iran or Persia; **Altarabi's** "Philosophy" studied in Europe in the Middle Ages.
1000	Old English fast breaking down, and Latin the medium of scholars and the church. After 1066, Norman French greatly influenced English.	**Firdausi's** "Book of Kings" a great work of world literature. He and **Mutanabbi** among the noblest poets, still widely read.

A. D.	GERMANY.	FRANCE.
1100	"Rolandslied," descriptive of Roland at Roncesvalles and of Charlemagne. "Alexanderlied," on the deeds of Alexander. Both epic poems by unknown authors prior to 1130. "Tagelieder" (Dawn-songs), "Parzival," the basis of Wagner's "Parsifal, Story of the Holy Grail"; by **Wolfram von Eschenbach** (about 1165 to about 1220). "Kreuzlied," in celebration of the Crusade of Frederick II., by **Walther von der Vogelweide** (about 1165 to about 1230), a Middle High German minnesinger. Peasant lyrics, forerunners of the Volkslied, by **Neidhart von Reuenthal** (about 1180 to about 1240).	(2) "Cycle de Brétagne." The chief poet is **Chrétien de Troyes.** The motive is love. It deals with the search for the Holy Grail, King Arthur and the Round Table, the romance of "Tristan and Iseut." In this cycle are "Lays of Bretagne," by **Marie de France,** the earliest French poet. Poem of 2,300 lines on St. Patrick's Purgatory, animal fables called "Ysopet"; the "Lais" of 14 narrative poems each from 100 to 1,200 lines; loves of "Tristan and Iseut"; "Eliduc"; "Le rossignol" (the nightingale); "Les deux amants"; "Yonec," a fairy tale of the bluebird and Lanval, by **Marie de France.** (3) "Cycle Antique" deals with the ancient heroes of Greece and Rome; the "Roman d'Alexandre" with 12,000 verses of 12 syllables, by **Alexandre de Bernay** (twelfth century), the "Roman de Thebes," and the "Roman de Troie," by **Benoist de Sainte-Maure,** "Roman de Rou, et des ducs de Normandie," by **Wace** (1100-1175). "Conquête de Constantinople" and particulars of the Fourth Crusade, by **Geoffroi de Villehardouin** (1155-1213).
1200	"Tristan and Isolde," the subject of Wagner's opera, a poem in 19,552 verses, by **Gottfried von Strasburg** (about 1200). "Nibelungenlied" (Song of the Nibelungs). A great High German epic, by an unknown poet at the beginning of the thirteenth century. Ten complete manuscripts are known. The Iliad of Germany. "Gudrun," chief of the Low German epic sagas, preserved in a High German poem, by an unknown author, at the beginning of the thirteenth century. The Odyssey of Germany. "Eneit," by **Heinrich von Veldeke,** father of Middle High German courtly poetry. "Sermons," by **Berthold von Regensburg,** a German Franciscan preacher (about 1220-1272). "Poems," mainly mocking and sensuous, excepting one, "Penitential Ode" by **Tannhauser,** a German knight and minnesinger (died about 1270). Sermons and philosophical works by **Johannes Eckhart** or **Eckhardt,** a mystic and reformer (about 1260-1327). "Autobiography," "Book of Everlasting Wisdom," and poems, by **Heinrich Suso** or **Seuse,** a German mystic (about 1295-1366).	Lyric poems, by **Thibaut,** Count of Champagne and King of Navarre (1201-1253). "Le roman du Renart" of 32,000 verses of satires. "Le roman de la rose," by **Guillaume de Lorris** (about 1215 to about 1240), of 4,000 verses, left unfinished. An addition of 18,000 verses in an entirely different vein was made by **Jean de Meun** in 1277. There are over 300 MSS. of this extant. "Histoire de St. Louis" (Louis IX.), "Credo," by **Jean de Joinville** (1225-1317). Lyric poems, by **Colin Musset,** a wandering minstrel (about 1250). "Le miracle de Théophile," a miracle play; numerous satirical poems, by **Ruteboeuf;** real name unknown. Mass sung at the coronation of Charles V. (1364); collection of poems; by **Guillaume de Machault** or **Machaut** (about 1284-1370), a poet and musician.

	ENGLAND.	FRANCE.
1300	**John Wiclif** (about 1320-1384). Two treatises, "Concerning Human Lordship," and "Concerning the Lordship of the Church," and a translation of the Bible into English. **John Gower** (1325-1408). Poems. **William Langland** (about 1332-1400?). The greatest poet of the century excepting Chaucer. "Piers Plowman," an allegorical poem descriptive of human life. **Geoffrey Chaucer** (about 1340-1400). The first great English poet. "Legende of Good Women," "Troylus and Crysede," "The House of Fame," "Palamon and Arcite," and "Canterbury Tales." **James I.** of Scotland (1394-1437). Poems.	"Chroniques," or Chronicles in four books of history; poems: "The Little Thane of Love," "Meliador," a lengthy poem on chivalry and legend, by **Jean Froissart** (about 1338-1410). "De l'art de dicter," by **Eustache Deschamps** (about 1350). "Oeuvres poétiques," "Life of Charles V.," by **Christine de Pisan** (about 1363-1431). "Miroir de mariage," of 13,000 lines; ballad to Chaucer. "History of Charles VII.," "Bréviaire des Seigneurs," "Lay de la belle dame sans merci," and other lovers' poems, by **Alain Chartier** (about 1390-1440). Poems of Love and Spring, written during twenty-five years' imprisonment in England, by **Charles of Orleans,** father of Louis XII. of France (1391-1465). The last of the French mediæval poets.
1400	**William Caxton** (1412-1492). "The Game and Playe of the Chesse." **William Dunbar** (1460-1530?). Poems. **William Tyndale** (1484-1536). Translation of the Bible. **Miles Coverdale** (1488-1568). Translation of the Bible. **Sir David Lindsay** (1490-1557). Poems and comedy. **Hugh Latimer** (1491-1555). Sermons.	"Poems," "Le petit testament," "Le grand testament," a "Codicille" of ballads, "Le jargon," a "Dialogue," and a "Monologue," "Le franc archier de Bagnolit," by **Francois Villon** (1431-1484). "L'avocat Panthelin," first masterpiece of French comic theater, author unknown (about 1475). "Mémoires," a complete political review of the times, by **Philippe de Comines** (1445-1509). "Prognostication Pantagrueline," "Gargantua," "Pantagruel," by **Francois Rabelais** (1495-1553). "Letters," "Poems," "Marguerites de la marguerite," "Dernières poésies," and parts of the "Heptaméron" by **Marguerite of Navarre** (1492-1549). Collection of fables, epistles, epigrams, and songs, by **Clement Marot** (1495-1544).

A. D.	ENGLAND.	PERSIA, ARABIA, ETC.
1100	"Ormulum," a paraphrase of scripture, by **Orm** (1187-1237).	Astronomical tables, reforming the calendar; a treatise on algebra—extracting the square and cube roots, on cubic equations, and on expanding a binomial; three books on natural science and three on metaphysics; the Rubaiyat (rhymed quatrains, translated by Edward Fitzgerald), by **Omar Khayyam** (about 1045-1123). "Surgery," by **Abu-l-Kasim** (1107). "Philosophy," a text-book in the Middle Ages in European universities, by **Al-Ghazali** (1058-1111), and similar works by **Ibn Badjah** or Avenpace (1138), **Ibn Tufail** (died 1185), and **Ibn Roshd** or Averroes (1153-1198). "Mantig ut-Tair," or parliament of birds, an allegorical poem, the most famous of the works of **Farid-ud-Din Attar** (about 1119-1229), who in his 110 years left over 120,000 couplets of poetry. One of the most famous mystics and Sufis.
1200	The "Brut," a metrical chronicle of Britain, describing the founding of Britain by Brutus, great grandson of Æneas, the history to the death of Cadwalader, last of the Celtic kings; the deeds of King Arthur; Cymbeline, King Lear; written 1200 and 1250. The older MS. contains 32,243 lines, written in Anglo-Saxon and containing not more than one hundred French words. The author was **Layamon**, who flourished about 1200. "Opus Majus," a work on philosophy, by **Roger Bacon** (1214-1294). "Ancren Riwle" (the Rule of Nuns), by an unknown author, appeared in 1220. "Historia Major," by **Matthew Paris** (died 1259). "Havelok the Dane," "The Gest of King Horn," "Bevis of Hampton," and "Guy of Warwick," by an unknown writer, appeared in 1280. "Willie Grice," "The Owl and the Nightingale," in poetry, by an unknown writer, appeared in 1280. "Summer is y-comen in," author unknown. "The Land of Cockayne," by **Michael of Kildare.** "Martyrdom of Thomas à Becket," by **Robert of Gloucester** (1255-1307).	**Jabir ibn Aflah** in 1196 constructed the first observatory at Seville. "Divan," and five great poems: "The Book of Alexander" (Iskander-Namah), "The Storehouse of Mysteries," "Khosrau and Shiran," "Majnun and Laila," and "The Seven Fair Faces," by **Nizami** (1141-1203), one of the seven epic poets of Persia. "Euclid," by **Nasir ed-Din al-Tusi** (about 1150). History of religious and philosophical sects, still the chief authority on the subject, by **Mohammed al-Shahrastani** (1153). "Medicine" by **Abd al-Malik ibn Zuhr** (1162). Histories of Damascus, by **Ali ibn Asakir** (1175). "Bustan" (Flower Garden) or "Sadináma" (Book of Sadi), a didactic poem in 10 cantos, "Gulistan" (Rose-Garden), still highly esteemed in Persia; lyric poems, eulogies, elegies, ghazals, and a number of prose works by **Sadi** (about 1184 to about 1291), one of the greatest of Persian poets. "Mathnavi," a collection in 40,000 couplets in 6 books of tales and moral precepts; a "Divan" of lyrics by **Jalal-ud-Din Rumi** (1207-1273), the greatest of all the mystics of the East and the most important of the Persian Sufis. Ghazals or love poems, oriental odes making up the "Divan" or collection of poems, by **Hafiz** (?-about 1389), one of the world's greatest names in lyrical poesy.

	GERMANY.	ITALY, SPAIN, AND PORTUGAL.	SCANDINAVIA AND RUSSIA.
1300	"Book of Spiritual Poverty," and "Sermons," by **Johann Tauler**, a German mystic (1300-1361). "Limburg Chronicle" (1336-1398), "Alsace Chronicle" (about 1430), all of great historical value, authors unknown. University of Prague founded, 1348. University of Vienna founded, 1365. University of Heidelberg founded, 1386. University of Cologne founded, 1388.	"Divina Commedia" by **Dante Alighieri** (1265-1321). Italian. Prose writings by **Don Juan Manuel** of Spain (1282-1349). Poems by **Juan Ruiz de Hita** of Spain (1300-1350). "Canzoniere," and many works in Latin, by **Petrarch** (1304-1374), Italian. "Decameron" by **Giovanni Boccaccio** of Italy (1313-1375). Spanish poems by **Pedro Lopez de Ayala** (1332-1407). "Amadis de Gaula," written by a Portuguese, **Vasco de Lobeira** (about 1360-1408). Chronicles of Alfonso XI. in Spanish verse by **Rodrigo Yanez** (fourteenth century).	The Eddas were collected in the eleventh and twelfth centuries. **Henrik Harpestrings** (died 1244), Danish medical writer. Danish ballads by unknown writers between 1300-1500. **St. Bridget** (1302-1373), Revelations. "Act of Union at Calmar," by an unknown writer, published in 1397.
1400	University of Leipzig founded, 1409. University of Rostock founded, 1419. "Sermons," by **Geiler von Kaysersberg**, famous preacher (1445-1510). University of Greifswald founded, 1456. The "Ship of Fools" (a mirror of the times), a remarkable book, by **Brant** or **Brandt**, (about 1458-1521). The first printed book that dealt with contemporary events and living persons, instead of old German battles and French knights. Work on "Fortification," "Measuring with a Compass," and "Four Books of Human Proportion," by **Durer** (1471-1528). Sermons, religious poems, and "Eulenspiegel," a sort of chap book, "Translation of the Æneid," by **Murner** (1475-1537). University of Tübingen founded, 1477.	Spanish sonnets by **Inigo Lopez de Mendoza**, Marquis of Santillana (1398-1458). Spanish poems by **Juan de Mena** (1411-1456). Italian poems by **Luigi Pulci** (1431-1487). Spanish poems by **Juan de la Enzina** (1468-1534). Historical and political works (Italian) by **Niccolo Machiavelli** (1469-1527). "Orlando Furioso" (Italian verse) by **Ludovico Ariosto** (1474-1533).	**Johannes Budde** (d. 1484) translated the Bible into Swedish. University of Upsala founded (1477). **Christian Pedersen** (1480-1554) translated the Bible into Danish and wrote "Karl Magnus" and "Ogier the Dane." First Swedish Book printed, 1495. **Niels**, a monk, is credited with a history of Denmark and rhymed Danish verse, which was the first Danish book printed (1495). **Olaus Petri** (1497-1552) wrote a Swedish chronicle of history.

A. D.	ENGLAND.	FRANCE.
1400		
		"Commentaires," and "Mémoires," by **Blaise de Montluc** (1502-1577).
		"Poems, Epigrams, and Anagrams," written in Latin, by **Jean Daurat** or **Dorat** (1508-1588).
		"Institutes of the Christian Religion," with the famous preface to Francis I., "De Necessitate Reformandae Ecclesiae," "Commentaires sur la concordance ou harmonie des évangélistes," "In Novum Testamentum Commentarii," and others, by **John Calvin** (1509-1564).
		Translation of "Plutarch's Lives," and "Plutarch's Morals," and of several Greek romances, by **Jacques Amyot** (1513-1593).
1500	**Sir Thomas Wyatt** (1503-1542). Poet.	Theological writings, including a translation of the New Testament into Latin; editions of the Greek Testament; biography of John Calvin, first ever written; and "Codex Bezae," an uncial MS. of the New Testament, presented to the University of Cambridge, by **Theodore Beza**, properly **de Beze** (1519-1605).
	Roger Ascham (1515-1568). Essayist.	"Odes," "Amours," "Hymnes," "Franciade," by **Pierre de Ronsard** (1524-1585).
	John Foxe (1516-1587). Theology.	"La défense et l'illustration de la langue française," "Poems," "Sonnets," "Les regrets," "Les jeux rustiques," "Lettres," by **Joachim du Bellay** (1524-1560).
	Henry Howard (Earl of Surrey) (1517-1547). Poems.	"Petites inventions," "Bergeries," "Amours et nouveaux échanges de pierres précieuses," "La reconnue" (Recognition), a rhymed comedy, by **Remy Belleau** (1528-1577).
	Thomas Sackville (1536-1608). Poet and dramatist.	"Thesaurus Linguae Graecae," by **Henricus Stephanus** or **Estienne** (1528-1598).
	Sir Walter Raleigh (1552-1618). Historian and poet.	"Traité de la servitude volontaire," "Contr'un," by **Etienne de la Boetie** (1530-1563).
	Edmund Spenser (1552-1599). Poet.	"Discours politiques et militaires," and "Correspondance," by **Francois de la Noue** (1531-1591).
	Richard Hooker (1553-1600). Theology.	Collége Royal de France (now Collége de France), established by Francis I., 1531.
	Sir Philip Sidney (1554-1586). Poet.	"Cléopâtre captive," "Didon se sacrifiant" (tragedies), "Eugène" (comedy), by **Etienne Jodelle** (1532-1573).
	John Lyly (1554-1606). Essayist.	"Poésies choisies," "Mimes, enseignments, et proverbes," by **Jean Antoine de Baif** (1532-1589).
	George Chapman (1557-1634). Translation of Homer.	"Apologie de Raimond Sebond," his most famous essay in skepticism, "Essays," by **Michel Eyquem de Montaigne** (1533-1592).
	Robert Greene (1560-1592). Poet.	"Vies des hommes illustres et des grands capitaines français," "Vies des dames illustres," "Vies des dames galantes," "Anecdotes touchant les duels," "Rodomontades et jurements des Espagnols," by **Pierre de Bourdeilles, Abbe de Brantome** (about 1540-1614).
	Francis Bacon (1561-1626). Essayist and philosopher.	"Traité des trois vérités," "Traité de la sagesse," and "Sermons," by **Pierre Charron** (1541-1603).
	Michael Drayton (1563?-1631). Poet.	"Poems," "Contr'une nuit trop claire," "Rosette pour un peu d'absence," sonnets and elegies, by **Philippe Desportes** (1546-1606).
	Christopher Marlowe (1564-1593). Poet and dramatist.	"Les tragiques," a poem in seven cantos, "Histoire universelle," "Confession catholique du Sieur de Sancy," "Aventures du Baron de Foeneste," by **Theodore Agrippa d'Aubigne** (1550-1630).
	William Shakespeare (1564-1616). Dramatist and poet.	Nine prose comedies by **Pierre de Larivey** (about 1550-1612).
	Sir Henry Wotton (1568-1639). Poems.	"Works" consisting of 125 poems, "Commentaire sur Desportes," translation of letters, "Ode of Consolation," by **Francois de Malherbe** (1555-1628).
	Ben Jonson (1573-1637). Poems.	"Astrée," a most popular novel, by **Honore d'Urfe** (1568-1625).
	Thomas Heywood (1575?-1650?). Poems.	Sixteen satires, including "Le goût décide de tout," "L'honneur ennemi de la vie," "L'amour qu'on ne peut dompter," "Régnier apologiste de lui-même," "La folie est générale," and "Le mauvais lieu" by **Mathurin Regnier** (1573-1613).
	Robert Burton (1577-1640). Essays.	"La satire Ménippée," by **Leroy, Gillot, Passerat, Rapin, Chrestien, Pithou,** and **Durant,** published in 1594.
	John Fletcher (1579-1625). Poems.	"Discours de la méthode," "Meditationes de prima Philosophia," "Principia Philosophiae," "Géométrie," "De l'homme," and other philosophical works, by **Rene Descartes** (1596-1650).
	Philip Massinger (1583-1640). Poems.	
	William Drummond (1584-1649). Poems.	
	Francis Beaumont (1584-1616). Poems.	
	John Ford (1586-1639). Poems.	
	George Withers (1588-1667). Poems.	
	Thomas Hobbes (1588-1679). Philosophy.	
	Robert Herrick (1591-1674). Poems.	
	Francis Quarles (1592-1644). Poems.	
	George Herbert (1593-1633). Poems.	
	Izaak Walton (1593-1683). Essays.	

GERMANY.	ITALY, SPAIN, AND PORTUGAL	SCANDINAVIA AND RUSSIA.
Hymns, including "A Mighty Fortress is our God," numerous theses, religious and political, and translation of the Bible, by **Luther** (1483-1546).	Historical works in Spanish, by **Las Casas** (1474-1566).	**Mikkel**, a priest at Odense, wrote, "Rose Garden of Maiden Mary," "The Creation," and "Human Life."
Sermons and contributions to Reformation literature, by **Zwingli** (1484-1531).	Historical and political (Italian) works, by **Francesco Guicciardini** (1482-1540).	**Laurentius Petri** (1499-1573). Psalms in Swedish.
Latin poems, letters, and orations, dialogues and letters in Latin and German, "Epistolæ Obscurorum Virorum," by **Hutten** (1488-1523), scholar, poet, and reformer. Satirical letters published in the furtherance of the Reformation at Hagenau in 1505. The cleverest satire of the period.	Portuguese dramas, by **Gil Vicente** (1485-1577).	
Collection of German proverbs, native humor, morality, and patriotism, which endeared him to the heart of scholarly Germany, by **Johann Agricola** (1492-1566).	Poems and burlesques (It.), by **Francesco Berni** (1490-1536).	
Hymns, fables, allegories, merry tales, dialogues, comedies, Shrovetide plays, by **Hans Sachs** (1494-1576), 6,300 pieces, best and most prolific of the meistersingers.	Prose satires (It.), by **Pietro Aretino** (1492-1557).	
A universal history (first attempt), and "Sprichwörter," by **Sebastian Franck** (1499-1542), reformer and humorist.	Poems (Sp.), by **Juan Boscan Almogaver** (1493-1543).	
	Poems (Sp.), by **Cristobal de Castillejo** (1494-1556).	
	Epistles in verse, by **Francisco de Miranda** (1495-1558). Portuguese.	
	History (Port.), by **Joao de Barros** (1496-1571).	
"Schweizerchronik," valuable still, and "Gallia Comata," by **Ægidius** (or **Gilg**) **Tschudi** (1505-1572), Swiss antiquarian.	Poems (Sp.), by **Garcilaso de la Vega** (1503-1536).	**Martin Bielski** (1500-1576). Polish historian.
	History and poems (Sp.), by **Diego Hurtado de Mendoza** (1503-1575).	
	Ascetic and mystic treatises, meditations, and letters (Sp.), by **Santa Teresa** (1515-1582).	**Rey of Naglowice** (1505-1569). Father of Polish poetry.
	Novels (Port.), by **Jorge de Montemayor** (1520-1561).	
	"Lusiad," Portuguese epic, by **Luiz de Camoens** (1525-1580).	**John Kochanowski** (1530-1584) Polish poet.
	Antonio Ferreira (1528-1569). Portuguese poet.	**A. G. Vedel** (1542-1616). Danish philologist. He translated Saxo Grammaticus.
"True Christianity," "Garden of Paradise," by **Arndt** or **Arnd** (1555-1621).	**Luis Ponce de Leon** (1529-1591), Spanish poet and prose writer.	
	"La Araucana" (Sp.), by **Alonzo de Ercilla y Zuniga** (1533-1595).	**Hieronymus Rauch** (?-1607). Danish biblical tragedies.
	Lyric poems (Sp.), by **Fernando Herrera** (1534-1597).	
	Historical works (Sp.), by **Juan de Mariana** (1536-1623).	**Peder Claussen** (1545-1623). Danish geographer.
	"Jerusalem Delivered" and other poems (It.), by **Torquato Tasso** (1544-1595).	
	"Don Quixote," Spanish romance, by **Miguel de Cervantes Saavedra** (1547-1616).	**Tycho Brahe** (1546-1601). Danish astronomer.
Collected poems by **Georg Rudolf Weckherlin** (1584-1653).	**Vicente Espinel** (1551-1634). Spanish poems and novels.	**Arild Hvitfeld** (1549-1609). Danish Chronicles.
	Luis de Gongora y Argote (1561-1627). Spanish poems.	
	Lope de Vega Carpio (1562-1635), Spanish dramas.	Printing press set up in Moscow (1564).
	Galileo Galilei (1564-1642). Italian scientific works.	
	Allesandro Tassoni (1565-1635). Italian poet.	**Johan Messenius** (1579-1637). Swedish historian and poet.
	Giambattista Marini (1569-1625). Italian poet.	
Witty and realistic works, by **Johann Laurenberg** (1590-1658), satirist.	**Guillen de Castro** (1569-1631). Spanish dramas.	**Joost van den Vondel** (1587-1679). Dutch poet.
	Diego Arduarte (1570-1637). Spanish history.	
	Gabriel Tellez (1571-1648). Spanish dramas.	**Anders Arreboe** (1587-1637). Danish poet.
	Francisco Gomez de Quevedo y Villegas (1580-1645). Spanish satirist.	
	Juan Ruiz de Alarcon y Mendoza (1588?-1639). Spanish dramas.	**Gustavus Adolphus** (1594-1632), king of Sweden. Speeches.
	Manuel de Faria (1590-1649). Portuguese-Spanish historian and poet.	
Three volumes of poetry, including the words of the oldest German opera, "Dafne," by **Martin Opitz** (1597-1639).	**Manuel de Villegas** (1596-1669). Spanish lyrics.	**Georg Stjernhjelm** (1598-1672). Swedish philologist and poet.

A. D.	ENGLAND.	FRANCE.	GERMANY.
1604	**Sir Thomas Browne** (1605-1682). Theology.	"La comédie des comédiens," "La mort de César," "Arminius," "Alaric," by **Georges de Scudery** (1601-1667).	"Book of Visions," by **Moscherosh** (16 1669), satirist.
	Edmund Waller (1605-1687). Poet.	"Le Cid," from which modern French drama dates, "Horace," "Cinna," "Polyeucte," "Rodogune," "La mort de Pompée," "Théodore," and many other dramas, by **Pierre Corneille** (1606-1684).	Collection of epigrams by **Logau** (1604-16
	Thomas Fuller (1608-1661). Theology.	"Ibrahim," "Artamène, ou le Grand Cyrus," "Clélie," "Almahide," "Mathilde," by **Madeleine de Scudery** (1607-1701).	
		"Roman comique," "Nouvelles tragi-comiques," by **Paul Scarron** (1610-1660).	
	John Milton (1608-1674). Poems.	Ten plays, the best of which are: "La mort de Mithridate," "Bradamante," "Jeanne d'Angleterre," "Le comte d'Essex," "Edouard, roi d'Angleterre." Three novels: "Cassandre," "Cléopâtre," "Faramonde, histoire de France," by **Gauthier de Costes de la Calprenede** (1610-1663).	Hymns, "O Sacred Head once Wounde "Commit Thou all Thy Griefs," and "Jes Thy Boundless Love for Me," and ma others, by **Paulus** (or **Paul**) **Gerha** (1607-1676), after Luther the greatest hy writer of Germany.
	Sir John Suckling (1609-1642). Poems.		
	Edward Hyde, Earl of Clarendon (1609-1674). Historian.	"De la fréquente communion," "Théologie morale des Jesuites," "La perpetuité de la foi de l'église catholique défendue," "L'impiéte de la morale des Calvinistes," and other works, in over 100 volumes, by **Antoine Arnauld** (1612-1694).	
		"Maximes" ("Réflexions ou sentences et maximes morales"), "Mémoires," "Lettres," by **Francois la Rochefoucauld** (1613-1680).	Collected poems by **Paul Fleming** or **Fle ming** (1609-1640).
		"Works," principally memoirs, by **Cardinal de Retz** (1614-1679).	
	Samuel Butler (1612-1680). Satires.	"Le pédant joué," a comedy, "Histoire comique des états et des empires du soleil," by **Savinien Cyrano de Bergerac** (1619-1655).	
	Jeremy Taylor (1613-1667). Theology.	"L'école des femmes," "Don Juan," "L'amour médecin," "Le misanthrope," "Le médecin malgre lui," "L'avare," "Le bourgeois gentilhomme," "Psyché," "Les femmes savantes," "Le malade imaginaire," and other plays by **Moliere**, pseudonym of **Jean Baptiste Poquelin** (1622-1673).	**Andreas Greif** or **Gryphias** (1616-16 First to introduce regular five-act trag into German.
	Richard Baxter (1615-1691). Theology.	"Lettres provinciales," 18 in controversy with the Jesuits, "Pensées sur la religion et sur quelques autres sujets," "Apologie de la religion chrétienne," "Geometry of Conics" written at 16, by **Blaise Pascal** (1623-1662).	
	Sir Richard Lovelace (1618-1658). Poems.	"La logique, ou l'art de penser," "Essais de morale," by **Pierre Nicole** (1625-1695).	Love lyrics by **Hofmannswaldau** (1617-16
	Abraham Cowley (1618-1667). Poems.	Theological works: "Exposition de la doctrine de l'église catholique sur les matières de controverse," "Histoire des variations des églises protestantes," "Discours sur l'histoire universelle jusqu'à l'empire de Charlemagne," "Politique tirée de l'Ecriture Sainte," "Select Sermons and Funeral Orations," "Sermon on the Mount," "Méditations," by **Jacques Benigne Bossuet** (1627-1704).	
	Andrew Marvell (1620-1678). Poems.		"Rosamond of the Adriatic," novel of adv ture, also grammar and verse, by **Ze** (1619-1689), poet and romancer.
	John Evelyn (1620-1706). Diary.	"Le siècle de Louis le Grand," a poem; "Parallèle des anciens et des modernes," answers to the attacks of Boileau; two studies of "Les hommes illustres qui ont paru en France pendant ce siècle," and "Mother Goose" stories of Sleeping Beauty, Little Red Riding Hood, Bluebeard, Puss in Boots, Cinderella, and Tom Thumb, by **Charles Perrault** (1628-1703).	
	George Fox (1624-1690). Journal.		"Simplicissimus," the only German fictio the seventeenth century that can be r now with pleasure, by **Grimmelshau** (about 1625-1676), the author's advent in the Thirty Years' War.
	John Bunyan (1628-1688). Allegory.	"Sermons and Moral Discourses," "Married Life, Its Obligations, Trials, etc.," by **Louis Bourdaloue** (1632-1704).	
		"Oraisons funèbres," "Carmen Eucharisticum," "Circus Regius," "Mémoires sur les grand jours de Clermont," by **Valentin Esprit Flechier** (1632-1710).	
	John Dryden (1631-1700). Poems.	"La princesse de Clèves," a novel; "Mlle. de Montpensier," a short story; "Zayde," a novel; "La Comtesse de Teude," a short story; and "Mémoires," by **Marie Madeleine Pioche de la Vergne, Comtesse de la Fayette** (1634-1693).	
	Samuel Pepys (1632-1703). Diary.	"Lettres," by **Madame Francoise d'Aubigne, Marquise de Maintenon** (1635-1719).	Lyrics, tragedies, and a long novel, by **henstein** (1635-1683).
	John Locke (1632-1704). Metaphysics.	"L'art poétique," "Dialogue des héros de roman," "Réflexions critiques sur Longin," "Le lutrin," a mock-heroic poem, and many other poems, by **Nicholas Boileau-Despreaux** (1636-1711).	
	Sir Isaac Newton (1642-1727). Philosophy.	"Recherche de la vérité," "Conversations metaphysiques de chrétiennes," "Traité de la nature et de la grâce," "Réponses de Malebranche à Arnauld," by **Nicolas Malebranche** (1638-1715).	Theological works (180) by **Spener** (1635-1 founder of the German Pietists.
		"Andromaque," "Phèdre," "Iphigénie," "Athalie," "Esther," "Bérénice," "Bajazet," "Mithridate," "Les plaideurs," by **Jean Racine** (1639-1699).	

ITALY AND SPAIN.	SCANDINAVIA AND RUSSIA.	AMERICA.
Hieronomo de Contreras (1600-1648). Spanish poet and novelist.	**Erik Pontoppidan** (1616-1678). Danish grammarian.	"A True Relation of Such Occurrences and Accidents of Note as hath Happened in Virginia," by **John Smith,** published in London (1608).
		"A True Reportory of the Wrack and Redemption of Sir Thomas Gates, Knight, upon and from the Islands of the Bermudas, his coming to Virginia and the Estate of that Colony then and after under the Government of the Lord La Ware," by **William Strachey,** published in London in 1610. Possibly suggested "The Tempest" to Shakespeare.
Pedro Calderon de la Barca (1600-1681). Spanish dramas.	**Rosenhane** (1619-1684). Swedish poet and sonneteer.	"A Map of Virginia, with a Description of the Country, the Commodities, People, Government, and Religion," by **John Smith,** Oxford (1612).
		"Good News from Virginia," by **Alexander Whitaker,** London (1613).
		"A Description of New England," by **John Smith,** London (1616).
		"Mayflower Compact," written by the Pilgrim Fathers in 1620.
		"New England's Trials," by **John Smith,** London (1620).
Francisco de Zorrilla (1607-1660). Spanish dramas.	**Waclaw Potocki** (1622-1697). Noted Polish poet.	"A Relation or Journal," by **Bradford** and **Winslow,** covering the period from November 9, 1620, to December 18, 1621. London (1621), and long known as "Mourt's 'Relation.'"
		"Sin and Danger of Self-Love," the first published discourse delivered in New England, by **Robert Cushman,** London (1624).
		"Good News from New England," by **Edward Winslow,** London (1624).
		"Nova Anglia," in Latin verse and English pentameter paraphrase, by **William Morrell,** London (1625).
Antonio de Solis y Ribadeneira (1610-1686). Spanish historian and dramatist. Author of "Conquest of Mexico."	**Clas Arrhenius** (1627-1695). Swedish historian.	"Translation of the Fifteen Books of Ovid's Metamorphoses," by **George Sandys,** London (1626).
		"New England's Plantation," by **Francis Higginson,** London (1629).
		"History of Plymouth Plantation," by **William Bradford,** written from 1630 onward, and first published in full in 1856.
		"The History of New England," by **John Winthrop,** written between March 29, 1630, and November, 1648, first published in full in 1825 and 1826.
Manuel de Melo (1611-1666). Portuguese historian and poet.		"The Humble Request of his Majesty's Loyal Subjects, the Governor and the Company lately gone for New England, to the Rest of the Brethren in and of the Church of England," by **John Winthrop** and others, published in 1630.
		"True Travels, Adventures, and Observations," by **John Smith,** published in 1630.
	Olaf Rudbeck (1630-1702). Swedish physiologist and botanist.	"Advertisements for the Inexperienced Planters of New England," by **John Smith,** published in 1631.
		"The Soul's Preparation; or, a Treatise of Contrition," by **Thomas Hooker** (1586-1647), published in 1632.
Salvator Rosa (1615-1673). Italian painter. Wrote satires, odes, and letters.		"New England's Prospect," with map, by **William Wood,** published in 1634.
		"The Soul's Implantation," and "The Soul's Humiliation," by **Thomas Hooker,** in 1637.
		"New English Canaan," by **Thomas Morton,** published in 1638.
	Thomas Kingo (1634-1703). Danish divine. Wrote psalms and hymns.	Several religious treatises, by **Thomas Hooker,** published in 1638.
		"New England's Teares for Old England's Feares," by **William Hooke,** published in 1639.
Agustin Moreto y Cabana (1618-1669). Spanish dramas.		"An Almanac for 1639; calculated for New England," by **William Pierce,** and printed by Daye at Cambridge (Mass.). **Stephen Daye** set up the first printing press in America in 1639 at Cambridge. "Freeman's Oath," the first product of the press in America, printed by Daye in 1639.
		"The Whole Book of Psalms Faithfully Translated into English Metre," by **Richard Mather, John Eliot,** and other "Chief Divines in the Country," known as the "Bay Psalm Book," the first English book printed in America (1640).
Lorenzo Magalotti (1637-1712). Italian prose writer.		"The Way of Life," in four treatises, by **John Cotton,** London (1641).
		"The Sincere Convert. Discovering the Paucity of True Believers and the Great Difficulty of Saving Conversion," by **Thomas Shepard** (1641).
		"The Body of Liberties," compiled by **Nathaniel Ward** (1641).
		"An Abstract of the Laws of New England" (1641).
		"A Catechism Agreed upon by the Elders at the Desire of the General Court" (1641).
		"A Brief Exposition of the Book of Canticles," by **John Cotton** (1642).
		"Plain Dealing; or, News from New England," by **Thomas Lechford** (1642).
Vincenzo da Filicaja (1642-1707). Italian lyric poet.		"Theses of the First Graduates of Harvard College" (1642).

A. D.	ENGLAND.	FRANCE.	GERMANY.
1600	**Jeremy Collier** (1650-1726). Sermons.	"Caractères," "Pensées," "Discours," "Lettres," by **Jean de la Bruyere** (1645-1696).	Works of originality and power in menta science and mathematics by **Leibnit** (1646-1716).
	Thomas Otway (1652-1685). Dramas.	"Historical and Critical Dictionary," "Pensées sur la comète," "Critique générale sur l'histoire du Calvinisme du Père Maimbourg," and many philosophical treatises, by **Pierre Bayle** (1647-1706).	
	Daniel Defoe (1661-1731). Tales and essays.	"De l'éducation des filles," "Fables," "Dialogues des morts," "Abrége des vies des anciens philosophes," "Vie de Charlemagne," "Maximes des saints," "Télémaque," by **Francois de Salignac de la Mothe Fenelon** (1651-1715).	
	Matthew Prior (1664-1721). Poems.	"La Provençale," a novel; "Le joueur," "Le distrait," "Démocrite," "Les folies amoureuses," "Les Ménechmes," and other plays, by **Jean Francois Regnard** (1655-1709).	Odes, satires, and elegies, by **Canitz**, poe and statesman (1654-1699).
	Jonathan Swift (1667-1745). Tales and essays.	"Histoire des oracles," "Entretiens sur la pluralité des mondes," "Dialogues des morts," by **Bernard le Bovier Fontenelle** (1657-1757).	First German magazine by **Thamasius** (165 1728).
	William Congreve (1670-1729). Dramas.	"Traité des études," an educational work; "Histoire ancienne," "Histoire romaine," by **Charles Rollin** (1661-1741).	
	Sir Richard Steele (1671-1729). Essays.	"Le notaire obligeant," "Le chevalier à la mode," and other plays; a metrical version of the Psalms and a sacred tragedy, by **Florent Carton Dancourt** (1661-1725).	Theological and pedagogical works b **Franke** (1663-1727), educator and philan thropist.
	Joseph Addison (1672-1719). Essays and poems.	Funeral orations and sermons in 15 volumes, by **Jean Baptiste Massillon** (1663-1742).	
	George Farquhar (1678-1708). Dramas.	"Turcaret," a comedy; "Gil Blas," a novel; and other works, by **Alain Rene Le Sage** (1668-1747).	
		Thirteen volumes of works comprising "Lettres inédites" and political and legal utterances, by **Henri Francois d'Aguesseau** (1668-1751).	Philosophy and mathematics by **Wolf** o **Wolff** (1679-1754), disciple of Leibnitz.
	Bishop Berkeley (1684-1753). Philosophy.	Epigrams, satires, and lyric poems in 5 volumes, by **Jean Baptiste Rousseau** (1670-1741).	
	Edward Young (1684-1765). Poems.	"Idoménée," "Atrée et Thyeste," "Electre," "Rhadamiste et Zénobie," "Pyrrhus," and other plays, by **Prosper Jolyot de Crebillon** (1674-1762).	
	Allan Ramsay (1686-1758). Poems.	"Mémoires," by **Louis de Rouvroy, Duc de Saint-Simon** (1675-1755).	
	John Gay (1688-1732). Fables and poems.	"Le dissipateur," "Le glorieux," "Le philosophe marié," "La faussée Agnes," and other plays by **Philippe Nericault Destouches** (1680-1754).	Collection of poems (13 vols.), "Translatio of Thomson's Seasons," by **Brockes** (168 1747).
	Alexander Pope (1688-1744). Poems.	"Arlequin poli par l'amour," "Les surprises de l'amour," "Le triomphe de Plutus," "Le legs," "Les fausses confidences," and other plays: "Marianne," and other novels, by **Pierre Carlet de Chamblain de Marivaux** (1688-1763).	
	Samuel Richardson (1689-1761). Novels.	"Lettres persanes," "Considérations sur les causes de la grandeur et la décadence des Romains," "Dialogues de Sylla et d'Eucrate et de Lysimaque," "Esprit de lois," by **Charles de Secondat, Baron de la Brede et de Montesquieu** (1689-1755).	Collection of poems by **Gunther** (1695-1723 lyric poet, most gifted poet of an unpoeti age.
	Lady Mary Wortley Montagu (1690-1762). Letters.	"Arlequin Deucalion," a monologue in three acts: "La métromanie," and other plays in 7 volumes, by **Alexis Piron** (1689-1773).	Translation of Milton's "Paradise Lost" b **Bodmer** (1698-1783), poet and critic.
	Bishop Joseph Butler (1692-1752). Theology.	"Oedipe," a tragedy; "Poëme de la Ligue," "Le pour et le contre"; "La Henriade," a poem; "Brutus," "Zaïre," "Sémiramis," tragedies; "Histoire de Charles XII., roi de Suede," "Letters Concerning the English Nation," "Lettres philosophiques," "Contes philosophiques," "Candide," "Tancrède," by **Voltaire**, name assumed by **Jean Francois Marie Arouet** (1694-1778).	
		"Mémoires d'un homme de qualité," "Manon Lescaut," and other novels, by **Antoine Francois Prevost d'Exiles** (1697-1768.)	
1700	**James Thomson** (1700-1748). Poems.	"Histoire de Louis XI.," "Considérations sur les moeurs de la règne de Louis XIV.," "La régence et le règne de Louis XV.," by **Charles Pinot Duclos** (1704-1772).	Literary criticism amounting almost to a di tatorship, by **Gottsched** (1700-1766), drama and poetry.
	Henry Fielding (1707-1754). Novels.	"Natural History" in 44 volumes, "Discours sur le style," by **Georges Louis Leclerc, Comte de Buffon** (1707-1788).	"Physiological Elements of the Huma Body," by **Haller** (1708-1777), scientist ar poet.
	Samuel Johnson (1709-1784). Dictionary and essays.	"Vert-vert," "Chartreuse," "Carême impromptu," "Lutrin vivant," "Edouard III.," "Sydney," "Le méchant," and other plays, by **Jean Baptiste Louis Gresset** (1709-1777).	Unparalleled progress in letters under **Fred erick II.** (1712-1786). **Rabener** (1714-1771), satirist. "Des Frühling," "Gedichte," by **Kleist** (171 1759), eminent nature poet.
	Thomas Reid (1710-1796). Philosopher.	Contributions to the Encyclopedia of Diderot and 24 volumes, principally of political science, including "Entretiens de Phocion," "Doutes proposés aux philosophes économistes," "Observations on the laws and government of the United States of America," by **Gabriel Bonnot de Mably** (1709-1785).	Poems, didactic and religious, fables, storie very popular in their day, 10 vols. of worl by **Gellert** (1715-1769).
	David Hume (1711-1776). Historian.		Songs and collected poems and modern gle by **Hagedorn** (1718-1754).
	Laurence Sterne (1713-1768). Novelist.		Collection of witty and caustic epigram "Sinngedichte," by **Kastner** (1719-1800).
	Thomas Gray (1716-1771). Poet.	"Confessions," "Discours sur l'inégalite," "Discours sur les sciences et les arts," "Letter on Providence," "Du contrat social," "La nouvelle Héloïse," "Emile," "Lettres écrites de la montagne," "Dialogues," by **Jean Jacques Rousseau** (1712-1778).	"Preussische Kriegslieder von einem Gren dier," vigorous and thrilling (Seven Yea War), by **Gleim** (1719-1803). "Allgemeine Theorie der schönen Künste by **Sulzer** (1720-1779).
	Gilbert White (1720-1793). Naturalist.		
	William Collins (1721-1756). Poet.		

ITALY AND SPAIN.

Alessandro Guidi (1650-1712). Italian lyric poet.

Pier Jacopo Martelli (1655-1727). Italian poet and dramatist.

Giovanni Battista Vico (1668-1744). Italian historian.

Apostolo Zeno (1668-1750). Italian dramatist.

Ludovico Antonio Muratori (1672-1750). Italian annalist.

Count of Ericeyra (Francisco Xavier de Menezes) (1673-1744). Portuguese historian.

Niccolo Forteguerri (1674-1735). Italian satirist.

Francesco Scipione Maffei (1675-1755). Italian poet, archæologist, and dramatist.

Francisco Benito Feyjoo y Montenegro (1676-1764). Spanish essayist and critic.

Antonio Conti (1677-1749). Italian poet and philosopher.

Pietro Metastasio (1698-1782). Italian poet and dramatist.

Ignacio Luzan (1702-1754). Spanish poet

Don Juan de Yriarte (1702-1771). Spanish proverbs.

Carlo Goldoni (1707-1793). Italian dramatic and comic author.

Carlo Gozzi (1722-1806). Italian dramatist

Giuseppe Parini (1729-1799). Italian poet.

Giralamo Tiraboschi (1731-1794). Italian literary historian.

Ramon de la Cruz (1731-1795). Spanish dramatist.

SCANDINAVIA AND RUSSIA.

First book printed in **Norway**, an almanac, 1643.

Peder Dass (1647-1708). Norwegian poet.

Gustaf Adlerfeld (1671-1709). Swedish historian.

Eric Benzel (1675-1743). Swedish moralist.

Ludwig Holberg (1684-1754). Danish historian and dramatist.

Vasili Tatishcheff (1686-1750). Russian historian.

Emanuel Swedenborg (1688-1772). Philosopher, founder of Swedenborgianism

Hans Adolphus Brorson (1694-1764). Danish hymns.

Stepkn Konarski (1700-1773). Polish essayist.

Prince Chakhofskoi (1705-1772). Russian poet.

Johan Ihre (1707-1780). Swedish dictionary.

Olof Dalin (1708-1763). Swedish historian and poet.

Mikhail Lomonosoff (1711-1765). Founder of Russian literature.

Princess Dolgoroukaia (1713-1770). Russian poet.

Jacob Henrik Mork (1714-1763). Swedish novelist.

Charlotte Nordenflycht (1718-1763). Swedish poet.

Johann Ernest Gunnerus (1718-1773). Norwegian botanist.

Alexander Sumarokoff (1718-1777). Russian prose and verse.

C. B. Tullin (1728-1765). Danish poet.

AMERICA.

"A Looking-Glass for the Times," by **William Hubbard** (1621-1704).

"Church Government and Church Covenant," by **Richard Mather** (1643).

"An Help to the Language of the Natives in New England" (verse and prose), by **Roger Williams** (1643).

"New England's First Fruits. In respect, first, of the Indians. Second, of the Progress of Learning in the College at Cambridge" (1643).

"The True Use of Synods," by **Richard Mather** (1644).

"A Short History of the Rise, Reign, and Ruin of the Antinomians, Familists, and Libertines that Infested the Churches of New England," by **Thomas Welde** (1644).

"Queries of Highest Consideration," "The Bloody Tenet of Persecution for the Cause of Conscience," by **Roger Williams** (1644).

"The Way of the Churches of Christ in New England," by **John Cotton** (1645).

"The Sound Believer," by **Thomas Shepard** (1645).

"Christening makes not Christians," by **Roger Williams** (1645).

"A Declaration of Passages and Proceedings Between the English and the Narragansetts," by **Governor Winthrop** (1645).

"The Gospel Covenant," by **Peter Bulkley** (1646).

"Concerning the Power of Magistrates and Synods," by the Cambridge Synod (1646).

"Milk for the Spiritual Nourishment of Boston Babes in Either England," by **John Cotton** (1646).

"Simplicitie's Defence against Seven-headed Policie," by **Samuel Gorton** (1646).

"Hypocrisie Unmasked," by **Edward Winslow** (1646.)

"The Grounds and Ends of the Baptism of the Children of the Faithful," and "Singing of Psalms a Gospel Ordinance," by **John Cotton** (1647).

"The Day Breaking if not the Sun Rising of the Gospel with the Indians in New England," by (probably) **Thomas Shepard** (1647).

"The Simple Cobbler of Agawam," by "Theodore de la Guard," *nom de plume* of **Nathaniel Ward.** Ran through three editions in 1647.

"New England's Salamander," by **Edward Winslow** (1647).

"Way of Congregational Churches Cleared," by **John Cotton** (1648).

"Survey of the Summe of Church Doctrine," by **Thomas Hooker** (1648).

"Responsio ad Totum Questionem Syllogen a Clariss. Viro Guilielmo Apollonio Propositam (circa Politiam Ecclesiasticam in Anglia)," by **John Norton** (1648). The first Latin book written in New England.

"A Platform of Church Discipline," by the Cambridge Synod, in 1649.

"The Controversy Concerning Liberty of Conscience in Matters of Religion," by **John Cotton,** in 1649.

"The Glorious Progress of the Gospel among the Indians," by **John Eliot** and others, in 1649.

"Theses Sabbaticæ; or, the Doctrine of the Sabbath," by **Thomas Shepard,** in 1649.

"Disturbances made in New England by Samuel Gorton and his Accomplices," by **Edward Winslow,** in 1649.

"The Tenth Muse lately Sprung up in America," a book of poems, by **Anne Bradstreet,** published in London in 1650.

"Astronomical Calculations," by **Urian Oakes,** in 1650.

"A Catechism," by **Richard Mather,** in 1650.

"The Day of Doom; or a Poetical Description of the Great and Last Judgment"; "Meat Out of the Eater," by **Michael Wigglesworth** (1631-1705).

Several religious works, by **Increase Mather** (1639-1723).

A natural history of New England and other scientific works, by **John Josselyn** (died about 1680).

"New England's Crisis" (in verse on King Philip's War), by **Benjamin Thompson** (about 1650).

Several religious and poetical works, by **Cotton Mather** (1663-1728).

"A Journal of One Thousand Miles of Travel among the Indians," and a "Description of Carolina," by **John Lawson** (?—1712).

"A Two Years' Journal in New York," by **Charles Woolley** (about 1680).

"History of Virginia," by **Robert Beverley** (1675-1746).

A. D.	ENGLAND.	FRANCE.	GERMANY.
1700	**Mark Akenside** (1721-1770). Poet. **Tobias Smollett** (1721-1771). Novelist. **William Robertson** (1721-1793). Historian. **Sir William Blackstone** (1723-1780). Jurist. **Adam Smith** (1723-1790). Economist. **Oliver Goldsmith** (1728-1774). Essays, poems, and plays. **Bishop Percy** (1728-1811). Poet. **Edmund Burke** (1729-1797). Speeches and essays. **William Cowper** (1731-1800). Poet. **James Macpherson,** "Ossian" (1736-1796). Poet. **Edward Gibbon** (1737-1794). Historian. **James Boswell** (1740-1795). Biographer. **William Paley** (1743-1805). Theologian. **Hannah More** (1745-1833). Novelist and poet. **Jeremy Bentham** (1748-1832). Philosopher and essayist. **Richard Brinsley Sheridan** (1751-1816). Speeches, plays, and poems. **Thomas Chatterton** (1752-1770). Poet. **Frances Burney** (1752-1840) Novelist. **Dugald Stewart** (1753-1828). Philosopher. **George Crabbe** (1754-1832). Poet. **William Blake** (1757-1827). Poet. **Robert Burns** (1759-1796). Poet. **William Cobbett** (1762-1835). Essayist. **Joanna Baillie** (1762 - 1851). Poet. **Samuel Rogers** (1763-1855). Poet. **Isaac D'Israeli** (1766-1848). Literary essayist. **Maria Edgeworth** (1767-1849). Novelist. **James Hogg,** "The Ettrick Shepherd" (1770-1835). Essayist and poet. **William Wordsworth** (1770-1850). Poet. **Sir Walter Scott** (1771-1832). Novelist and poet. **Sydney Smith** (1771-1845). Sermons, essays, and satires **James Montgomery** (1771-1854). Poet. **John Lingard** (1771-1851). Historian. **David Ricardo** (1772-1823). Political economist. **Samuel Taylor Coleridge** (1772-1834). Essayist, poet. **Robert Southey** (1774-1843). Poet and biographer. **Charles Lamb** (1775-1834). Essayist. **Walter Savage Landor** (1775-1864). Essayist. **Jane Austen** (1775-1817). Novelist. **Henry Hallam** (1777-1859). Historian. **Thomas Campbell** (1777-1844). Poet. **William Hazlitt** (1778-1830). Essayist. **Thomas Moore** (1779-1852). Poet	"Encyclopédie," "Le fils naturel," and "Le père de famille," plays; and many essays, by **Denis Diderot** (1713-1784). Contributions to Diderot's "Encyclopédie," "Révolution d'Amerique," by **Guillaume Thomas Francois Raynal** (1713-1796). "Introduction à la connaissance de l'esprit humain," "Réflexions," "Maximes," by **Luc de Clapier, Marquis de Vauvenargues** (1715-1747). Contributions to Diderot's "Encyclopédie," "De l'esprit," "De l'homme, ses facultés intellectuelles, et son éducation," by **Claude Adrien Helvetius** (1715-1771). "Traité de dynamique," "Réflexions sur la cause générale des vents," Contributions to Diderot's "Encyclopédie," by **D'Alembert,** the name assumed by **Jean Le Rond** (1717-1783). "Le philosophe sans le savoir," "La gageure imprévue," and "Oeuvres choisies," in three volumes, by **Michel Jean Sedaine** (1719-1797). Contributions to Diderot's "Encyclopédie," "Système de la nature," by **Paul Henri Thyry, Baron d'Holbach** (1723-1789). "Contes moraux," "Bélisaire," "Les Incas," popular novels; "Denys le tyran," "Aristomène," tragedies; contributions to Diderot's "Encyclopedie," and "Mémoires," by **Jean Francois Marmontel** (1723-1799). Contributions to Diderot's "Encyclopédie," "Le petit prophète de Boehmischbroda," "Correspondance littéraire, philosophique, et critique," by **Friedrich Melchior, Baron Grimm** (1723-1807). "Le barbier de Séville," "Le mariage de Figaro," "Eugénie," "Les deux amis," and other plays; "Mémoires," by **Beaumarchais,** a name assumed by **Pierre Augustin Caron** (1732-1799). "Voyage à l'Ile de France," "Etudes de la nature," "Paul et Virginie," "La chaumière indienne," "Harmonies de la nature," by **Jacques Henri Bernardin de Saint-Pierre** (1737-1814). Translation of Vergil's "Georgics," "Les jardins ou l'art d'embellir les paysages," "L'homme des champs en les georgics françaises." Translation of "Paradise Lost," "La pitié," Vergil's "Enéide," "L'imagination," "La conversation," and other poems, by **Jacques Delille** (1738-1813). "La jeune indienne," "Maximes et pensées," by **Sebastien Roch Nicolas Chamfort** (1741-1794). "Considérations sur la France," "Essai sur le principe générateur des constitutions politiques," "Du pape," "De l'église gallicane," "Lettres," "Mémoires," by **Joseph de Maistre** (1754-1821). "Galatée," "Numa Pompilius," "Estelle," "Gonsalve de Cordoue," "Fables," by **Jean Pierre Claris de Florian** (1755-1794). "Les révolutions de France et de Brabant," "Jeu de paume," a Pindaric ode; "A Versailles," "A Fanny," "Jeune captive," and other lyric poems, by **Andre Marie de Chenier** (1762-1794). "Voyage autour de ma chambre," "Les prisonniers du Caucase," "Le lépreux de la cité d'Aoste," "Prascovie, ou la jeune Sibérienne," and essays, by **Xavier de Maistre** (1763-1852). "Charles IX.," "Tableau historique de progrès de la litterature française," and the poems, "Chant du départ," "Sur la mort de Mirabeau," "Sur l'oligarchie de Robespierre." Also the satires, "Lettre à Voltaire," "Epître sur la calomnie," by **Marie Joseph de Chenier** (1764-1811). "Les Natchez," "Atala," "René," "Essai sur les révolutions," "Les martyrs," "Les aventures du dernier des Abencérages," "Itinéraire de Paris à Jerusalem," "De Buonaparte et des Bourbons," "Translation of Paradise Lost," "Mémoires d'outre tombe," by **Francois Rene Auguste, Vicomte de Chateaubriand** (1768-1848). **Georges Leopold, Baron de Cuvier** (1769-1832). Naturalist. **Francois Fourier** (1772-1837). Sociologist (Fourierism). **Jean Baptiste Biot** (1774-1862). Philosopher and mathematician.	"Patriotische Phantasien," "Osnabrückische Geschichte," by **Moser** (1720-1794), historian. "Sieg des Liebesgottes," "Poetische Schriften," by **Uz** (1720-1796), poet. "Der Messias," "Art of Poetry," 12 vols. of works, by **Klopstock** (1724-1803), poet. "Critique of Pure Reason" and an immense number of metaphysical works, by **Kant** (1724-1804). "Lieder der Deutschen," "Lyrische Blumenlese," by **Ramler** (1725-1798). Lyrics and books for children—the first to appeal to them, by **Weisse** (1726-1804). "Der junge Gelehrte," "Literatur Briefe," "Minna von Barnhelm," "Laokoon," "Nathan der Weise," by **Lessing** (1729-1781), Father of German criticism. "Pope, ein Metaphysiker," "Briefe über die Empfindungen," "Ueber die Evidenz in den metaphysischen Wissenschaften," "Phädon," "Jerusalem," and "Morgenstunden," by **Mendelssohn** (1729-1786), philosopher. "Tibullus," editions of Latin and Greek authors, and reviews of books, by **Heyne** (1729-1812), classical scholar. "Der Tod Abels," "Idyllen," and "Daphnis," by **Gessner** (1730-1788). "Sebaldus Nothanker" and literary reviews by **Nicolai** (1733-1811). "Oberon," an epic, "Translations of Horace," "Letters of Cicero," "Dialogues of Lucian," 53 volumes of complete works, by **Wieland** (1733-1813). "Vom Verdienste," "Vom Tod für's Vaterland," by **Abbt** (1738-1766), author and mathematician. "Fragmente über die neuere deutsche Literatur," "Kritische Wälder," "Ueber den Ursprung der Sprache," "Ideen zur Philosophie der Geschichte der Menschheit," volumes, by **Herder** (1744-1803), critic works. "Lenore," a ballad, "Der wilde Jäger," "Leonardo und Blandine," by **Burger** (1748-1794), poet. Poetical works by **Holty** (1748-1776). "Wilhelm Meister," "Faust," "Dichtung und Wahrheit," by **Goethe** (1749-1832), greatest German writer, one of the greatest in the world. "Der Hofmeister," and short poems, by **Lenz** (1751-1792), dramatic poet. "Julius von Tarent," drama, by **Leisewitz** (1752-1806). "Geschichte der Schweizer," "Darstellung des Fürstenbundes," "Briefe zweier Deutscherron," by **Muller** (1752-1809), historian. "Die Zwillinge," tragedy; "Sturm und Drang" and "Faust" by **Klinger** (1752-1831). Die Räuber," "Don Carlos," "Der Taucher," "Der Handschuh," "Das Lied der Glocke," "Wallenstein," "Maria Stuart," "Die Jungfrau von Orleans," "Wilhelm Tell," by **Schiller** (1759-1805). "Critique of all Revelation," "Doctrine of Science," "Science of Rights," "System of Ethics," etc., by **Fichte** (1762-1814). "Schulmeister Wuz," "Quintus Fixlein," "Hesperus," and pedagogical works, by **Richter** (1763-1825), humorist. Poems, "Spanish Theater," and southern lyrics, by **Schlegel** (1767-1845), critic, poet, orientalist. "Philosophy of Mind," "Logic," "Philosophy of Right," "Philosophy of Religion," "Philosophy of History," "History of Philosophy," by **Hegel** (1770-1831). "Heinrich von Ofterdingen," "Hymnen an die Nacht," by **Novalis** (1772-1801). "History of Greek and Roman Poetry," "Lucinde," by **Friedrich von Schlegel** (1772-1829). "Volksmärchen," "Romantische Dichtungen," translations of Shakespeare and Don Quixote, by **Tieck** (1773-1853), novelist, translator, and critic. "Identitats-Philosophie," etc., by **Schelling** (1775-1854). "Die Elixire des Teufels," "Lebensansichten des Katers Murr," "Nachtstücke," "Der Goldene Topf," by **Hoffmann** 1776-18

ITALY AND SPAIN.

Giovanni Meli (1740-1815). Sicilian poet.

Alessandro Verri (1741-1816). Italian novelist.

Gaspar Melchor Jove-Llanos (1744-1811). Spanish prose.

Felix Maria de Samiengo (1745-1801). Spanish fables.

Alessandro Volta (1745-1827). Italian scientist.

Vittorio Alfieri (1749-1803). Italian poems and dramas.

Tomas de Yriarte (1750-1791). Spanish poet and translator.

Tomas Jose Gonzales Carvahal (1753-1834). Spanish poems

Juan Melendez Valdez (1754-1817). Spanish poet.

Ippolito Pinde Monte (1754-1825). Italian poet.

Vincenzo Monti (1754-1828). Italian poems.

Leandro Moratin (1760-1828). Spanish dramas and poems.

Antonio Cesari (1760-1828). Italian editor.

Carlo Botta (1766-1837). Italian historian.

Juan Bautista de Arriaza (1770-1837). Spanish poems.

Manuel Jose Quintana (1772-1857). Spanish poet.

Jean Charles de Sismondi (1773-1842). Swiss historian.

Jose Maria Blanco (1775-1841). Spanish philosopher.

SCANDINAVIA AND RUSSIA.

Peter Frederik Suhm (1728-1798). Danish historian.

Gustaf Philip Creutz (1731-1785). Swedish poet.

Adam Naruszewicz (1733-1796). Polish poet and historian.

Mikhail Kheraskoff (1733-1807). Russian epic poet.

Ignacy Krasicki (1735-1801). Polish poet.

Johan Clemens Tode (1736-1806). Danish medical writer.

Karl M. Bellman (1740-1795). Swedish poet.

Johan Herman Wessel (1742-1785). Danish dramatist and poet.

Johan Ewald (1743-1781). Danish poet.

Gabriel Romanovitch Derzhavin or **Derjavine** (1743-1816). Russian lyric poet.

Hans Werner Frederic Abrahamson (1744-1812). Danish critical writer.

Ivan Ivanovitch Khemnitzer (1745-1784). Russian fabulist.

Claus Fasting (1746-1791). Danish poet.

Johan Oxenstjerna (1750-1818). Swedish poet.

Gudmund G. Adlerbeth (1751-1818). Swedish poet, dramatist, and translator.

Niels Treschow (1751-1833). Norwegian philosopher.

Anna Maria Lenngren (1754-1817). Swedish poet.

Johan Henrik Kellgren (1757-1795). Swedish lyric poet.

Thomas Thorild (1759-1808). Swedish critic.

Knud Lyne Rahbek (1760-1830). Danish novelist.

Jens I. Baggesen (1764-1826). Danish humorous poet.

O. C. Olafsen (1764-1827). Danish geographer and economist.

Nikolai Mikhailovitch Karamzin (1765-1826). Russian historian, novelist, and poet.

Ivan Andreyevitch Krylov (1768-1844). Russian fabulist.

Adolph Schack-Staffeldt (1769-1826). Danish poet.

Franz Franzen (1772-1847). Swedish poet.

Countess Gyllembourg-Ehrensvard (1773-1856). Danish novelist.

AMERICA.

History of the Pirates on the Island of Providence," by **Charles Johnson** (about 1700).

"Freedom of the Will," "Original Sin," "Sermons," and other religious works, by **Jonathan Edwards** (1703-1758).

The Boston *News-Letter*, established on April 24, 1704, was the first and, for fifteen years, the only newspaper in what is now the United States; it continued until 1776.

"Poor Richard's Almanac," "Essays," Scientific Moral, and Ethical papers, by **Benjamin Franklin** (1706-1790).

"History of the Province of Massachusetts Bay," by **Thomas Hutchinson** (1711-1780).

Boston *Gazette*, established on December 21, 1719; incorporated in 1741 with the New England *Weekly Journal*.

The American *Weekly Mercury* established at Philadelphia, on December 22, 1719; discontinued soon after.

"Catalogus Librorum Bibliothecæ Collegii," published by Harvard College in 1723; the first library catalogue published in this country.

The New York *Gazette*, established in 1725; the first paper of New York City.

The *Weekly Rehearsal*, established in Boston in 1731; followed by the Boston *Evening Post*, which was discontinued in 1775.

"Rights of Man," by **Thomas Paine** (1737-1809). His "Age of Reason" was published in 1794-1796.

"Battle of the Kegs" and "Rising Glory of America," in verse, by **Francis Hopkinson** (1738-1791).

"Modern Chivalry," by **H. H. Brackenridge** (1748-1816).

"McFingal, by **John Trumbull** (1750-1831), was published between 1775 and 1782.

Poems by **Phillis Wheatley** (Peters) (about 1753-1794), a negress born in Africa.

"The Vision of Columbus," "Hasty Pudding," and "The Columbiad," by **Joel Barlow** (1755-1812).

New Hampshire *Gazette* established in 1756.

"American Spelling Book," by **Noah Webster** (1758-1843), issued in 1783.

"Charlotte Temple," by **Susanna Rowson** (1762-1824).

Georgia *Gazette* established at Savannah in 1763.

"American Ornithology," begun by **Alexander Wilson** (1766-1813), and finished by **Charles Lucien Bonaparte** (1803-1857).

"Hail, Columbia," written in 1798, by **Joseph Hopkins** (1770-1842).

"Wieland," "Ormond," "Arthur Mervyn," "Edgar Huntley," "Clara Howard," and "Jane Talbot," by **Charles Brockden Brown** (1771-1810).

"The Invention of Letters," "The Ruling Passion" "Adams and Liberty," and "The Steeds of Apollo," by **Robert Treat Paine** (1773-1811).

Philadelphische Zeitung, the first German paper in America, established in 1773.

"The Declaration of Independence," by **Thomas Jefferson**, issued in 1776.

A. D.	ENGLAND.	FRANCE.	GERMANY.
1700	**James Henry Leigh Hunt** (1784-1859). Poet and essayist.	**Pierre Jean de Beranger** (1780-1857). Lyric poet.	"Ueber die Religion," "Monologe," "Glaubenslehre," by **Schleiermacher** (1768-1834).
	James Sheridan Knowles (1784-1862). Poet and playwright.	**Amable Barante** (1782-1866). Historian.	"Römische Geschichte," "Griechische Heroengeschichte," "Lectures on Ancient History," by **Barthold Georg Niebuhr** (1776-1831), historian.
	Henry Kirke White (1785-1806). Poet.	**Francois Guizot** (1787-1874). Historian.	Dramas, "Der zerbrochene Krug," "Die Familie Schroffenstein," and others; and "Michael Kohlhaas," a story, by **Kleist** (1777-1811).
	John Wilson, "Christopher North" (1785-1854). Essays and poems.	**Alphonse de Lamartine** (1790-1869). Historian.	"Sigurd der Schlangentödter," "Des Zauberring," "Jahreszeiten," "Undine," and "Sintram" by **Fouque** (1777-1843), novelist and poet.
	Thomas De Quincey (1785-1859). Essayist.		
	Sir William Napier (1785-1860). Historian.		"Des Knaben Wunderhorn," a compilation of German ballads, comedies, and fairy tales, by **Brentano** (1778-1842), novelist and poet.
	George Noel Gordon, Lord Byron (1788-1824). Poet.	**Abel Francois Villemain** (1790-1870). Historian and educator.	Numerous histories by **Friedrich von Raumer** (1781-1773), historian.
	Richard Harris Barham, "Thomas Ingoldsby" (1788-1845). Poet.	**Augustin Scribe** (1791-1861). Dramatist.	"Der Wintergarten," "Die Gräfin Dolores," "Halle und Jerusalem," "Die Kronenwächter," by **Ludwig Joachim von Arnim** (1781-1831), novelist and poet.
	Mary Russell Mitford (1787-1855). Novelist and dramatist.	**Antoine E. Genoude** (1792-1849). Historian.	"Peter Schlemihl," "Frauenliebe und- Leben," "Lebens-Lieder und- Bilder," by **Chamisso** (1781-1838), poet and naturalist.
	Sir William Hamilton (1788-1856). Philosopher.	**Victor Cousin** (1792-1867). Philosopher and metaphysician.	"Correspondence of Goethe with a child," letters, by **Bettina von Arnim** (1785-1859).
	Charles Wolfe (1791-1823). Poet.		"*Le Balance*," "Menzel der Franzosenfresser," "Denkrede auf Jean Paul," by **Borne** (1786-1837).
	Henry Hart Milman (1791-1868). Historian.	**Jean Delavigne** (1793-1843). Poet and dramatist.	
	Charles Knight (1791-1873). Historian.	**Charles Paul de Kock** (1794-1871). Novelist and dramatist.	"Deutsche Grammatik," by **Jakob Grimm** (1785-1863); "Altdanische Heldenlieder," by **Wilhelm Grimm** (1786-1859); "Deutsche Wörterbuch," "Deutsche Sagen," "Kinder- und Hausmärchen," and other works by the Brothers **Grimm** in collaboration.
	Percy Bysshe Shelley (1792-1822). Poet.		
	Captain Frederick Marryat (1792-1848). Novelist.	**Jacques N. Augustin Thierry** (1795-1856). Historian.	Ballads and romances: "Der wirten Töchterlein," "Der gute Kamerad," "Das Schloss am Meer," etc., "Gedichte und Dramen," by **Uhland** (1787-1862).
	Sir Archibald Alison (1792-1867). Historian.	**Francois Mignet** (1796-1884). Historian.	"Aus dem Leben eines Taugenichts," and poems, translations, and criticisms, by **Eichendorff** (1788-1857).
	Felicia Hemans (1793-1835). Poet.	**Amedee Thierry** (1797-1873). Historian.	
	Anna Jameson (1794-1860). Essayist.		"Die Welt als Wille und Vorstellung," "Ueber die vierfache Wurzel des Satzes vom zureichenden Grunde," and other philosophical works, by **Schopenhauer** (1788-1860).
	George Grote (1794-1871). Historian.	**Louis Adolphe Thiers** (1797-1877). Historian.	
	Thomas Arnold (1795-1842). Histories, essays, and sermons.	**Auguste Comte** (1798-1857). Philosopher.	Fifty-four volumes of history including history of the Reformation and the "Weltgeschichte," by **Ranke** (1795-1886).
	Thomas Carlyle (1795-1881). Historian and essayist.	**Joseph Xavier Boniface Saintine** (1798-1865). "Picciola."	"Der Jesuit," "Der Jude," "Der Invalide," "Der Vogelhändler von Imst," by **Spindler** (1796-1855).
	John Keats (1795-1821). Poet.		"Gedichte" (Poems), "Lyrisches Intermezzo," "Heimkehr" and "Nordsee"; "Harzreise," "Reisebilder," "Buch der Lieder," "Romanzero," by **Heine** (1797-1856).
	Agnes Strickland (1796-1874). Historian.	**Jules Michelet** (1798-1874). Historian.	
	Samuel Lover (1797-1868). Novelist and poet.	**Honore de Balzac** (1799-1850). "Comedies of Human Life."	"Walladmor," "Schloss Avalon," "Cabinis," "Der falsche Waldemar," "Ruhe ist die erste Bürgerpflicht," by **Wilhelm Haering** (Wilibald Alexis) (1798-1871).
	Thomas Hood (1798-1845). Poet and humorist.		"Geschichte der Deutschen," "Die Geschichte Europas," "Rübezahl," "Narcisus," "Furore," "Deutsche Litteratur," by **Wolfgang Menzel** (1798-1873).
		Alfred Victor Vigny (1799-1864). Novelist and poet.	

ITALY AND SPAIN.

Nicolo Ugo Foscolo (1777-1827). Italian poems, etc.

Juan Gallego (1777-1853). Spanish poet.

Giovanni Niccolini (1782-1861). Italian dramas.

Alessandro Manzoni (1784-1873). Italian novels and dramas.

Gabrielle Rossetti (1785-1854). Political writer.

Cesare Baldo (1789-1853). Italian historian and publicist.

Silvio Pellico (1789-1854). Italian dramatist, poet, novelist.

Gioacchino Belli (1791-1863). Italian sonnets.

Angel de Saavedra, Duque de Rivas (1791-1865). Spanish dramatist.

Gino Capponi (1792-1876). Italian historian.

Cecilia Bohl von Faber (Fernan Caballero) (1797-1877). Spanish novels.

Giacomo Leopardi (1798-1837). Italian poet.

Serafin Estebanez Calderon (1799-1867). Spanish essayist.

Terenzio Mamiani (1799-1885). Italian poet.

SCANDINAVIA AND RUSSIA.

Bishop Mynster (1775-1854). Danish theologian.

Peter Thun Foersen (1777-1817). Danish translator of Shakespeare.

Hans Christian Oersted (1777-1851). Danish scientist.

Johan Olaf Wallin (1779-1839). Danish national poet and divine.

Johan Berzelius (1779-1848). Swedish chemist.

Adam Gottlob Oehlenschlager (1779-1850). Danish dramatist and poet.

Esaias Tegner (1782-1846). Swedish poet.

Steen Steensen Blicher (1782-1848). Danish novelist and poet.

Erik Gustav Geijer (1783-1847). Swedish historian and poet.

Christian Molbech (1783-1857). Danish dictionary.

Nikolai F. S. Grundtvig (1783-1872). Danish theologian and poet.

Julia Kristina Nyberg (1785-1854). Swedish poet.

Swedish Academy founded, 1786.

Rasmus E. Rask (1787-1832). Danish grammarian and philologist.

Wilhelm F. Palmblad (1788-1852). Swedish novelist and biographer.

Joachim F. Schouw (1789-1852). Danish botanical geographer.

Mikhail Zagoskin (1789-1852). Russian novelist and dramatist.

Thaddeus Bulgarin (1789-1859). Russian novelist.

Bernhard S. Ingemann (1789 1862). Danish poet and novelist.

Gustav Gaemelius (1789-1877). Swedish historian and novelist.

Peter Daniel Atterbom (1790-1855). Swedish poet and literary historian.

Johan Borjesson (1790-1866). Swedish poet.

Kasimierz Brodzinski (1791-1835). Russian poet.

Karl Johan Dahlgren (1791-1844). Swedish poet and novelist.

Adolf Ivar Arwidsson (1791-1858). Swedish poet.

Johan Ludvig Heiburg (1791-1860). Danish poet.

Niels M. Petersen (1791-1862). Danish historian and philologist.

H. A. Bjerregaard (1792-1842). Norwegian poet and dramatist.

Erik Johan Stagnelius (1793-1823). Swedish poet and dramatist.

Jan Kollar (1793-1852). Czech poet.

Alexander Fredro (1793-1876). Polish playwright.

Karl Jonas Ludwig Almqvist (1793-1866). Swedish novelist.

Anders Fryxell (1795-1881). Swedish historian.

Bernhard von Beskow (1796-1868). Swedish dramatist and poet.

Christian Winther (1796-1876). Danish pastoral poet.

Adam Mickiewicz (1798-1855). Polish poet.

Henrik Hertz (1798-1870). Danish poet and dramatist.

Karl August Nicander (1799-1839). Swedish poet.

Alexander Pushkin or Pouchkine (1799-1837.) Russian poet.

AMERICA.

"Sylphs of the Season," "Monaldi," "Lectures on Art and Poems," by **Washington Allston** (1779-1843).

"Salmagundi" (with Irving), "The New Pilgrim's Progress," "The Dutchman's Fireside," "Westward, Ho!" "Life of Washington," "The Old Continentals," and "The Backwoodsman," by **James Kirke Paulding** (1779-1860).

"The Visit of St. Nicholas," by **Clement Clarke Moore** (1779-1863).

Aisop, Dwight, Hopkins, Trumbull, Barlow, and others were known as the "Hartford Wits."

"The Birds of America" and "The Quadrupeds of North America," by **John James Audubon** (1780-1851).

The first English Bible published in America was printed at Philadelphia in 1782.

"Thirty Years' View," by **Thomas Hart Benton** (1782-1858), published in 1856.

"Diedrich Knickerbocker's History of New York" (1809), "Sketch Book" (1819), "Bracebridge Hall" (1822), "Tales of a Traveler" (1824), "Life of Columbus" (1828), "Conquest of Granada" (1829), "Alhambra" (1832), "Tour on the Prairies" (1835), "Astoria" (1836), "Adventures of Captain Bonneville" (1837), "Oliver Goldsmith" (1849), "Wolfert's Roost" (1855), and "Life of Washington" (1855-1859), by **Washington Irving** (Geoffrey Crayon) (1783-1859).

"Champions of Freedom" and poems, by **Samuel Woodworth** (1785-1842).

"The Pilgrim Fathers," "Passing Away," and other poems, by **John Pierpont** (1785-1866).

The Constitution of the United States, issued in 1787.

"The Idle Man," "The Buccaneers," by **Richard Henry Dana** (1787-1879).

"Percy's Masque" and other poems, by **James A. Hillhouse** (1789-1841).

"The Spy" (1821), "The Pioneers," "The Pilot" (1823), "Last of the Mohicans," "The Prairie" (1827), "The Pathfinder" (1840), "The Deerslayer" (1841), "Red Rover," "The Water-Witch," and other novels (1841), by **James Fenimore Cooper** (1789-1851).

"New England Tale," "Redwood," "Hope Leslie," "The Linwoods," by **Catherine Maria Sedgwick** (1789-1867).

"Twilight," "Fanny," and other poems, by **Fitz-Greene Halleck** (1790-1867).

"Moral Pieces in Prose and Verse," and many poems, by **Lydia Huntley Sigourney** (1791-1865).

"Home, Sweet Home" (1813), written by **John Howard Payne** (1792-1852). This is a song in "Clari; or, The Maid of Milan."

Thirty-six stories and several schoolbooks, by **Samuel Griswold Goodrich** (Peter Parley) (1793-1863).

"Principles of Political Economy," "The Credit System," "Principles of Social Science," by **Henry Charles Carey** (1793-1879).

Poems by **William Cullen Bryant** (1794-1878).

"The Culprit Fay," "The American Flag," and other poems, by **Joseph Rodman Drake** (1795-1820).

Poems by **James Gates Percival** (1795-1856).

"Swallow Barn," "Horseshoe Robinson," "Rob of the Bowl," "Quod Libet," and other works, by **John P. Kennedy** (1795-1870).

"Ferdinand and Isabella" (1838), "The Conquest of Mexico" (1843), "The Conquest of Peru" (1847), "Philip II. of Spain" (1855-1858), and other works, by **William H. Prescott** (1796-1859).

"History of New England," in five volumes, by **John Gorham Palfrey** (1796-1881).

"Farewell Address," by **Washington**, in 1796.

"Law of Business," "Deus Homo," "Infinite and Finite," and "Religion and Philosophy of Swedenborg," by **Theophilus Parsons** (1797-1882).

A. D.	ENGLAND.	FRANCE.	GERMANY.
1800	**Thomas Babington Macaulay** (1800-1859). Historian, essayist, and poet. **George Payne Rainsford James** (1801-1860). Novelist. **Hugh Miller** (1802-1856). Geologist. **Harriet Martineau** (1802-1876). Essays, histories, and novels. **Sir Edward Bulwer Lytton** (1803-1873). Novelist. **Francis Mahony,** "Father Prout" (1804-1866). Poet. **Benjamin Disraeli,** Lord Beaconsfield (1804-1881). Novelist. **Charles Lever** (1806-1872). Novelist. **John Stuart Mill** (1806-1873). Philosopher and political economist. **Elizabeth Barrett Browning** (1806-1861). Poet. **Samuel Warren** (1807-1877). Novelist. **Charles Darwin** (1809-1882). Scientist. **Alexander William Kinglake** (1809-1891). Historian. **Alfred Tennyson,** first Lord Tennyson (1809-1892). Poet. **Mary Cowden Clarke** (1809-1898). "Concordance to Shakespeare." Poet. **Martin Farquhar Tupper** (1810-1889). Poet. **William Makepeace Thackeray** (1811-1863). Novelist. **Charles Dickens** (1812-1870). Novelist. **Robert Browning** (1812-1889). Poet. **Samuel Smiles** (1812-1904). Miscellaneous writer. **Arthur Helps** (1813-1875). Essayist and historian. **Charles Reade** (1814-1884). Novelist. **Anthony Trollope** (1815-1882). Novelist. **George Rawlinson** (1812-1902). Historian, Orientalist, and theologian. **Charlotte Bronte** (1816-1855). "Jane Eyre" and other novels. **George Henry Lewes** (1817-1878). Essayist and philosopher. **James Anthony Froude** (1818-1894). Historian and biographer. **Charles Kingsley** (1819-1875). Novelist and poet. **George Eliot** (Marian Evans Cross) (1819-1880). Novels and poems. **John Ruskin** (1819-1900). Art critic and writer. **John Tyndall** (1820-1893). Scientist. **Herbert Spencer** (1820-1903). Philosopher and essayist. **Henry Thomas Buckle** (1821-1862). History of civilization in England. **Matthew Arnold** (1822-1888). Poems, critiques, and essays. **Friedrich Max Muller** (1823-1900). Essays on philology and religion. **Edward A. Freeman** (1823-1892). Histories. **Thomas Hughes** (1823-1896). Tom Brown series of novels, etc. **William Wilkie Collins** (1824-1889). Novels. **George MacDonald** (1824-1905). Novelist and poet.	**Frederic Bastiat** (1801-1850). Political economist. **Victor Hugo** (1802-1885). "Les Misérables," "Toilers of the Sea," "Notre Dame," and other novels. **Alexandre Dumas pere** (1803-1870). "Monte Cristo," "Three Musketeers," and other novels. **Prosper Merimee** (1803-1870). Historian, literary critic, archaeologist, and novelist. **Edgar Quinet** (1803-1875). Historian, philosopher, and poet. **Marie Joseph Sue** (better known as Eugene) (1804-1857). "Mysteries of Paris," "Wandering Jew," etc. **Charles Augustin Sainte-Beuve** (1804-1869). Literary criticisms. **Jules Gabriel Janin** (1804-1874). Novels and critiques. **Mme. Dudevant** (George Sand) (1804-1876). Novelist and playwright. **Alexis Charles Henri de Tocqueville** (1805-1859). "Democracy in America." **Alphonse Karr** (1808-1891). Novels. **Francisque Michel** (1809-1887). Essays. **Alfred de Musset** (1810-1857). Novels, dramas, and poems. **Charles Forbes R. Montalambert** (1810-1870). Historian, orator, and publicist. **Bon Louis Henri Martin** (1810-1883). French history. **Theophile Gautier** (1811-1872). Novels, poems, and criticisms. **Leonard Sylvain Jules Sandeau** (1811-1883). Novelist and dramatist. **Jean Victor Duruy** (1811-1894). Histories of Rome and of modern times. **Louis Blanc** (1811-1882). Essays. **Elie Bertrand Berthet** (1815-1891). Novels. **Eugene Labiche** (1815-1888). Dramas. **Arsene Houssaye** (1815-1896). Novels. **Paul Henri Corentin Feval** (1817-1887). Novelist. **Charles Marie Leconte de Lisle** (1818-1894). Poems. **Emile Auguste Deschanel** (1819-1904). Essays. **Guillaume Victor Emile Angier** (1820-1889). Dramas. **Gustave Flaubert** (1821-1880). Novels. **Octave Feuillet** (1821-1890). Novels and dramas. **Emil Erckmann** (1822-1899) Novels. **Charles Baudelaire** (1821-1867). Romanticist. **Edmond de Goncourt** (1822-1896). Novels. **Henri Lavedan** (1822-1892). Novels and dramas. **Theodore de Banville** (1823-1891). Poems. **Joseph Ernest Renan** (1823-1892). "Life of Christ," etc. **Alexandre Dumas fils** (1824-1895). Novels. **M. Alexandre Chatrian** (1826-1890). Novels in collaboration with Erckmann. **Charles Loyson, Pere Hyacinthe** (1827-1912). Sermons and pulpit orations. **Hippolyte Adolphe Taine** (1828-1893). "History of English Literature," etc.	"Pfefferrösel," "Hinko," "Die Günstling "Der Glöckner von Notre Dame," " Frau in Weiss" (Wilkie Collins, Woma White), "Die Waise von Lowood" (J Eyre), by **Charlotte Birch-Pfeiffer** (1 1868). "Märchenalmanach," "Der Mann im Mond "Lichtenstein," by **Hauff** (1802-1827). "Nibelungenlied," "Parzival," "Reine Fuchs," "Edda," and modifications, by **Simrock** (1802-1876). "Holland in 1831-1832," "Latest Literatu by **Wienbarg** (1803-1872). "Geschichte der deutschen Dichtu "Shakspere," in 4 vols., "Händel Shakspere," "Händel's Oratorientex by **Gervinus** (1805-1871). "Uhlrich," "Zwei Frauen," by **Ida Ha Hahn** (1805-1880). "Volkslieder aus Krain," "Robin Ho "Der letzte Ritter," "Spaziergänge, **Anton Alexander von Auersp** (Anastasius Grün) (1806-1876). "Das junge Europa," "Das Glück," " Prätendent," "Gottsched und Gel "Graf Essex," "Montrose," by **La** (1806-1884). "Geschichte der hellenischen Dichtku "Ueber Shakspere's dramatische Kun "Das Grundprincip der Philosop "System der Logik," "Gott und Natur," "Gott und der Mensch," **Ulrici** (1806-1884). "Griseldis," "Der Adept," "Camoe "Der Sohn der Wildniss" (Ingoma Barbarian), "Der Fechter von Raven "Wildfeuer," by **Karl von Halm** 1882). Translations of Longfellow, Shakespeare Burns, "Ca ira," "Löwenritt," " Eugen," "Der Blume Rache," by **Fre rath** (1810-1876). "Wally, die Zweiflerin," "Richard Sav "Zopf und Schwert," "Das Urbild de tüffe," "Die Ritter vom Geiste," "De berer vom Rom," by **Gutzkow** (1811- "Der Stellvertreter," "Klementi "Jenny," "Nella," "Stella," "Für wieder die Frauen," "L'Arrabbi "Kinder der Welt," "Im Parad "Ueber allen Gipfeln," "Thekla, **Fanny Lewald** (1811-1889). "Das Judentum und die neueste Litter "Spinoza," "Dichter und Kaufm "Schwarzwälder Dorfgeschichten" lage Tales), "Auf der Höhe," by **bach** (1812-1882). Librettos of his operas by **Wagner** (181 "Friedrich der Grosse und sein Hof," by **Klara Mundt** (Luise Mühlbach) 1873). "Gedichte," "Die Amazone," "Das des Barneveldt," by **Dingelstedt** 1881). "Griechische Geschichte," "Attische dien," "Altertum und Gegenwart **Ernst Curtius** (1814-1896). "Gedichte," "Otto der Schütz," "D christliche Kunst," "Nimrod," "Tan by **Kinkel** (1815-1882). "Gedichte," "Juniuslieder," "Gedich Gedenkblatter," "Brunhild," by (1815-1884). "Soll und Haben," "Die verlorene schrift," "Die Technik des Dramas," Ahnen," "Bilder aus des deutsche gangenheit," by **Freytag** (1816-1895). "Metaphysik," "Logik," "Mikroko "Geschichte der Aesthetik in D land," by **Lotze** (1817-1881). "Liederbuch dreier Freunde," "Volk "Immensee," "Auf der Universität, Regentrude," by **Storm** (1817-1888). "Die Kinder Gottes," "Verirrt und "John Milton und seine zeit," "Göt Götzen," "Sieg der Liebe," by **Rin** 1901). "De Collegiis et Sadaliciis Roman "Die unteritalischen Dialekte," "R Geschichte," "Corpus Inscriptionu narum," by **Mommsen** (1817-1903).

ITALY, SPAIN, AND PORTUGAL.	SCANDINAVIA AND RUSSIA.	UNITED STATES AND CANADA.
Manuel Breton de los Herreros (1800-1873). Spanish dramatist, over 150 dramas.	**Emil Aarestrup** (1800-1856) Danish poet.	"History of the United States to 1789," by **George Bancroft** (1800-1891). This work appeared between the years 1834 and 1884.
Antonio Castilho (1800-1875). Portuguese poet.	**Per Wieselgren** (1800-1877). Swedish literary historian and poet.	Lyrics, including "Woodman, Spare that Tree," "When We Were Boys Together," by **George P. Morris** (1802-1864).
Vincenzo Gioberti (1801-1852). Italian controversialist.	**Fredrika Bremer** (1801-1865). Swedish novelist.	**Catherine Parr Traill** (1802-1899). Canadian naturalist author.
Tommaseo Niccolo (1802-1874). Italian author.	**Niels Henrik Abel** (1802-1829). Norwegian mathematician.	"Nature and the Supernatural," "Moral Use of Dark Things," by **Horace Bushnell** (1802-1876).
Giuseppe Mazzini (1805-1872). Italian political author.	**Gustaf Henrik Mellin** (1803-1876). Swedish novelist.	"Essays" (first and second series), (1841 and 1844), "Representative Men" (1850), "English Traits" (1856), "Conduct of Life," and several poems, by **Ralph Waldo Emerson** (1803-1882).
Cesare Cantu (1804-1895). Italian historian and novelist.	**Johann Ludvig Runeberg** (1804-1877). Swedish poet.	Juvenile Tales, such as the Rollo Books, etc., by **Jacob Abbott** (1803-1879).
Pier Angelo Fiorentino (1806-1864). Italian novelist.	**Maurycy Mochnachi** (1804-1835). Polish critic.	Poems and numerous tales, by **William Gilmore Simms** (1806-1870).
Michele Amari (1806-1889). Italian historian.	**Michal Grabowski** (1805-1863). Polish critic.	"Compendious Dictionary of the English Language," by **Noah Webster** (1758-1843) published in 1806.
Patricio de la Escosura (1807-1878). Spanish novelist, poet. and dramatist.	**Adam Gurowski** (1805-1866). Polish poet.	"Outre-Mer" (1835), "Hyperion" (1839), "Voices of the Night" (1839), "Wreck of the *Hesperus*" (1841), "Spanish Student" (1843), "Evangeline" (1847), "Golden Legend" (1851), "Hiawatha" (1855), "Miles Standish" (1858), and other poems, by **Henry Wadsworth Longfellow** (1807-1882).
Mariano Jose de Larra (1809-1837). Spanish satirist and dramatist.	**Hans Christian Andersen** (1805-1875). Danish fairy tales.	"History of the United States to 1821," by **Richard Hildreth** (1807-1865).
Giuseppe Giusti (1809-1850). Italian satirist.	**Johan Sebastian Cammermeyer Welhaven** (1807-1873). Norwegian poet.	Prose and verse, by **Nathaniel P. Willis** (1807-1867).
Juan Donosa Cortes (1809-1853). Spanish essayist.	**Karl Vilhelm Bottiger** (1807-1878). Swedish poet.	"Mogg Megone" (1836), "Voices of Freedom" (1841), "Songs of Labor" (1848), "Old Portraits" (1850), "Ballads," "Home Ballads," "In War Time" (1863), "Snow-Bound" (1865), and other poems, by **John Greenleaf Whittier** (1807-1892).
Don Jose de Espronceda (1810-1842). Spanish poet.	**Henrik Arnold Wergeland** (1808-1845). Norwegian poet.	"Amir Khan and Other Poems," by **Lucretia Maria Davidson** (1808-1825).
Jaime Balmes (1810-1848). Spanish critic.	**Nikolai Gogol** (1809-1852). Russian novelist.	"My country, 'tis of thee" and "The morning light is breaking," by **Samuel Francis Smith** (1808-1895).
Antonio Carlo Napoleone Gallenga (1810-1895). Italian historian.	**Juliusz Slowacki** (1809-1849). Polish poet of note.	"Earlier Poems" (1830-1836), "Old Ironsides," "The Chambered Nautilus" (1858), "The One-Hoss Shay" (1858), "Autocrat of the Breakfast Table" (1858), "Professor at the Breakfast Table" (1860), "Elsie Venner" (1861), "Poet at the Breakfast Table" (1872), by **Oliver Wendell Holmes** (1809-1894).
Luigi Carlo Farini (1812-1866). Italian historian.	**Frederik Paludan-Muller** (1809-1876). Danish dramatic poet.	**Edgar Allan Poe** (1809-1849). Stories and poems.
Aleardo Aleardi (1812-1878), Italian poet.		**Henry James** (1811-1882). Essayist and philosopher
Paolo Emiliani Giudici (1812-1872). Italian literature and history.	University of Christiania founded, 1811.	**John William Draper** (1811-1882). Historian.
Giuseppe Ferrari (1812-1876). Italian philosopher and historian.	Gothic Society (Swedish) formed, 1811.	**James McCosh** (1811-1894). Essayist and philosopher.
Giovanni Prati (1815-1884). Italian verse.	**Karl Ferdinand Allen** (1811-1871). Danish historian.	**Harriet Beecher Stowe** (1812-1896). Novelist.
Ramon de Campoamor (1817-1901). Spanish poet and philosopher.	**Alexander Hertzen** (1812-1870). Russian novelist and sociologist.	**George Ticknor Curtis** (1812-1894). Historian.
Jose Zorrilla y Moral (1817-1893). Spanish lyric poet.	**Zygmunt Krasinski** (1812-1859). Distinguished Polish poet.	**John Lothrop Motley** (1814-1877). Historian.
Giacomo Zanelli (1820-1889). Italian poems.		"The Star-Spangled Banner," by **Francis Scott Key** (1779-1843), written in 1814.
		The North American Review, founded in Boston, in May, 1815; bi-monthly until November, 1818, quarterly to 1877; bi-monthly in 1877-1878; monthly 1879-1894.
		Richard Henry Dana, Jr. (1815-1882). Travels and adventure.
		John G. Saxe (1816-1887). Poet.
		Charles Heavysege (1816-1876). Canadian poet.
		Samuel Austin Allibone (1816-1889). Bibliographer.
		Bryant's "Thanatopsis," published in *The North American Review* in 1817.
		"Dictionary of the English Language," by **Joseph Emerson Worcester** (1784-1865), published in 181.
		Henry D. Thoreau (1817-1862). Naturalist.
		James Thomas Fields (1817-1881). Essays and poems

A. D.	ENGLAND.	FRANCE.	GERMANY.
1800	**Thomas Henry Huxley** (1825-1895). Scientific works.	**Edmond Francois V. About** (1828-1885). Novels.	"Geschichte der Philosophie," "Römisch Geschichte," "Metaphysik," by **Albe Schwegler** (1819-1857).
		Jules Verne (1828-1905). "Twenty Thousand Leagues Under the Sea," "Round the World in Eighty Days," etc.	"Gedichte," "Der grüne Heinrich," "D Leute von Seldwyla," "Romeo und Juli auf dem Dorfe," "Der Schmied sein Glücks," "Sieben Legenden," by **Gottfrie Keller** (1819-1890).
	Dinah Maria Mulock (Mrs. Craik) (1826-1887). "John Halifax, Gentleman," etc.		"Poetische Ukranie," "Lieder de Mirz Schaffy," translations of Shakespeare, b **Friedrich Martin von Bodenste** (1819-1892).
		Adolphe Belot (1829-1890). Novels and dramas.	"Gedichte," "Balladen," "Vor dem Sturm "Der Stechlin," "Meine Kinderjahre 'Von Zwanzig bis Dreissig," by **Theod Fontane** (1819-1898).
	Richard D. Blackmore (1826-1900). "Lorna Doone" and other novels.	**Charles Victor Cherbuliez** (1829-1899). Novels.	"Iridische Phantasien," "Schaum," "Den urgos," "Die Nibelungen," by **Wilhel Jordan** (1819-1903).
		Jules de Goncourt (1830-1870). Novels.	"Völkerwanderung," "Vaterlandische B laden," "Die Walkyren," "Neue Gedichte "Meine Lebensreise," by **Lingg** (1820-190
			"Deborah" (Leah the Forsaken), "Der Sc nenwendhof," "Die lustigen Weiber v Windsor," "Die Königin von Saba," **Salomon Hermann Mosenthal** (18 1877).
	Dante Gabriel Rossetti (1828-1882). Poems.	**Victorien B. Sardou** (1831-1908). Dramas.	"Das Lied vom neuen deutschen Reic "Amaranth," "Odilo," "Hermann Starl "Philippine Welser," by **Oskar v Redwitz** (1823-1891).
	George Meredith (1828-1909). Novels and poems.	**Antoine Gustav Droz** (1832-1895). Novels.	"Gedichte," "Carlo Zeno," "Pitt und Fo "German National Literature of the Ni teenth Century," "Im Banne des schwar Adlers," "Portraits und Studien," **Rudolph von Gottschall** (1823-1909).
	Samuel R. Gardiner (1829-1902). Histories.		
		Andre Theuriet (1833-1907). Poems and novels.	"Geschichte der neuern Philosophi "Kants Leben und die Grundlagen sei Lehre," "Schiller als Philosoph," "Goet Schriften," by **Ernst Kuno Berth Fischer** (1824-1907).
	Jean Ingelow (1830-1897). Poems.	**Ferdinand Fabre** (1833-1898). Poems and novels.	"Die zwölf Apostel," "Goldelse," " zweite Frau," "Reichsgräfin Gisela," " deprinzessche," by **Marlitt** (Euge John) (1825-1887).
		Ludovic Halevy (1834-1908). Dramas.	"System der Logik," "Grundriss der schichte der Philosophie," by **Friedr Ueberweg** (1826-1871).
	Justin McCarthy (1830-1936). Histories and novels.	**Paul B. du Chaillu** (1835-1903) Travel and geographical explorations.	"Der Trompeter von Säckingen," "E hard," "Gaudeamus," by **Joseph Vic von Scheffel** (1826-1886).
			"Problematische Naturen," "Durch N zum Licht," "Die von Hohenste "Sturmflut," "Der neue Pharao," "Fre boren," by **Friedrich Spielhagen** (1911).
	Edward Robert, Earl of Lytton, "Owen Meredith" (1831-1891). Poems and biography.	**Mme. Juliette Lamber Adam** (1836-1936). Journalist.	"Francesca da Rimini," "Die Brud "Urica," "Das Buch der Freundsch by **Johann Ludwig Paul Heyse** (1914).
		Leon Louis Lucian de Rosny (1837-). Orientalist.	"Erzählungen," "Dorf- und Sch geschichten," "Ein kleiner Rom "Miterlebtes," "Gesammelte Schrif by Baroness Marie von E Eschenbach (1830-1916).
	Edmund H. Yates (1831-1894). Novels.	**Louis Marie Ernest Daudet** (1837-1921). Histories and novels.	"Ein Frühling," "Der heilige B Der hunger Pastor," "Abu Telfan," Wilhelm Raabe (1831-1910).
	Edwin Arnold (1832-1904). Poems.		"Die Könige der Germanen," "Poems, lads, and Songs," "Odhins Trost," Kampf um Rom," by **Felix Dahn** 1912).
		Rene Francois Sully-Prudhomme (1839-1907). Poet.	"Der Aufstand in Gent unter Karl V.," Vermächtnis Kains," by **Sacher-M** (1835-1895).
	Philip G. Hamerton (1834-1894). Essays.	**Theodule Armand Ribot** (1839-1914). Psychology.	"Regum Egyptorum," "Aegypten in und Bild," "Uarda," "Homo Sum," Schwestern," "Eine ägyptische K tochter," "Der Kaiser," "Serapis, Georg Moritz Ebers (1837-1898).
	William Morris (1834-1896). Poems.	**Marie Therese Blanc,** "Th Bentzon" (1840-1907). Journalist and novelist.	"Adams Söhne," "Hermann Ilinger," Dornenweg," "Schleichendes Gift," erblumen," "Villa Maria," "Der Gra Hammerstein," "Die Maler," "J liebe," "Nathalie," by Wilbrandt 1911).
	George du Maurier (1834-1896). "Peter Ibbetsen," "Trilby," and other novels.	**Jules Claretie** (1840-1913). Dramatist.	

ITALY, SPAIN, AND PORTUGAL.

Joao de Lemos (1819-1889). Portuguese poet.

Pietro Cavallotti (1824-1898). Italian dramatist.

Camillo Castello Branco (1825-1890). Portuguese novelist.

Alessandro Arnaboldi (1827-1898). Italian lyric poet.

Juan Valera (1824-1905). Spanish novelist.

Pasquale Villari (1827-1919). Italian historian.

Lopez de Ayala (1828-1879). Spanish dramatist.

Ruggiero Bonghi (1828-1895). Italian essayist.

Antonio Canovas del Castillo (1828-1897). Spanish historian.

Manuel Tomayo y Baus (1829-1898). Spanish dramatist.

Joao de Deus (1830-1895). Portuguese lyric poet.

Luigi Cossa (1831-1896). Italian political economist.

Thomaz Rebeiro (1831-1901). Portuguese poet.

Pedro Antonio de Alarcon (1833-1891). Spanish novelist.

Adolfo Bartoli (1833-1894). Italian literary historian.

Jose Echegaray (1833-1916). Spanish dramatist.

Gaspar Nunez de Arce (about 1834-1903). Spanish poet and dramatist, the "Spanish Tennyson."

Jose Maria de Pereda (1834-1906). Spanish novelist.

Alessandro d'Ancona (1835-1914). Italian literary historian.

Domenico Comparetti (1835-1927). Italian philologist.

Gustavo Adolfo Becquer (1836-1870). Spanish poet.

Giosue Carducci (1836-1907). Italian poet.

Cesare Lombroso (1836-1909). Italian criminologist.

SCANDINAVIA AND RUSSIA.

Aleksey Koltsoff (1808-1842). Russian lyric poet.

Solomon Drier (1813-1842). Danish zoölogist.

Soren A. Kierkgaard (1813-1855). Danish philosopher.

Camilla Collett (1813-1895). Norwegian novelist.

Ivar Andreas Aasen (1813-1896). Norwegian philologist, botanist, and poet.

Mikhail Lermontoff (1814-1841). Russian poet.

Nicholas Ivanovitch Kostomaroff (1817-1885). Russian historian.

Ivan Sergeyevitch Turgueniev (1818-1883). Russian novelist.

Jens Christian Hostrup (1818-1892). Danish poet and dramatist.

Zachris Topelius (1818-1898). Finnish poet and novelist.

Meyer Aaron Goldschmidt (1819-1887). Danish publicist and novelist.

Magdalena Thoresen (1819-1903). Danish novelist.

Feodor Mikhailovitch Dostoyevski (1821-1881). Russian novelist.

Karl Andersen (1828-1883). Danish lyric and epic poet.

Henrik Ibsen (1828-1906). Norwegian dramatist, poet, and essayist.

Count Lyeff or Lyoff (Leo) Tolstoy (1828-1910). Russian novelist, social reformer, and religious mystic.

Viktor Rydberg (1829-1895). Swedish historian and novelist.

Bjornstjerne Bjornson (1832-1910). Norwegian novelist, essayist, and dramatist.

Jonas Lie (1833-1908). Danish sea stories.

UNITED STATES AND CANADA.

William Kirby (1817-1906). Canadian author.

John Bigelow (1817-1911). Editor.

Josiah Gilbert Holland (1819-1881). Novelist, essayist, and poet.

Julia Ward Howe (1819-1910). Essays and poems.

Edwin Percy Whipple (1819-1886). Essayist

James Russell Lowell (1819-1891). Poet.

Walt Whitman (1819-1892). Poet.

William Kingsford (1819-1898). Canadian author.

John Mercier McMullen (1820-1907). Canadian historian.

Thomas Buchanan Read (1822-1872). Poet.

Richard Grant White (1822-1885). Essayist.

William Taylor Adams, "Oliver Optic" (1822-1897). Juvenile writer.

James Parton (1822-1891). Biographer.

Donald G. Mitchell, "Ik Marvel" (1822-1908). Essayist.

Edward Everett Hale (1822-1909). Essayist.

George H. Boker (1823-1890). Poet.

Francis Parkman (1823-1893). Historian.

Thomas Wentworth Higginson (1823-1911). Historian and essayist.

Goldwin Smith (1823-1910). Canadian essayist

George William Curtis (1824-1892). Essayist, orator, and journalist.

John Foster Kirk (1824-1904). Historian.

Adeline D. T. Whitney (1824-1906). Novelist and poet.

Bayard Taylor (1825-1878). Travels, essays, and poems.

Richard Henry Stoddard (1825-1903). Poet and critic.

Stephen Collins Foster (1826-1864). Songs and poems.

The Youths' Companion, established in 1827.

Rose Terry Cooke (1827-1892). Poet.

Lew Wallace (1827-1905). Novelist.

Charles Dudley Warner (1829-1900). Essayist.

Godey's Lady's Book, established in Philadelphia, in 1830.

Daniel Webster's reply to Hayne, in 1830.

Mary Virginia Terhune, "Marion Harland" (1830-1922). Stories.

John Esten Cooke (1830-1886). Novels and essays.

Paul Hamilton Hayne (1831-1886). Essays.

Justin Winsor, (1831-1897). Historian.

Louisa May Alcott (1832-1888). Stories.

David R. Locke, "Petroleum V. Nasby" (1833-1888). Humorist.

Edmund Clarence Stedman (1833-1908). Poet and literary essayist.

Frank R. Stockton (1834-1902). Stories and novels.

Alexander Muir (1834-1906). Canadian poet.

The *Congressional Globe* (the forerunner of the *Congressional Record*), established in 1834.

The New York *Herald*, established in 1835.

Harriet Prescott Spofford (1835-1921). Novels.

Moses Coit Tyler (1835-1900). Literary historian.

Samuel L. Clemens, "Mark Twain" (1835-1910). Humorist.

Lyman Abbott (1835-1922). Sermons and essays.

Thomas Bailey Aldrich (1836-1907). Novels and poems.

John Burroughs (1837-1921). Naturalist.

A. D.	ENGLAND	FRANCE.	GERMANY.
1800	S. Baring-Gould, (1834-1924). Hymns, folk-lore, novels. "Iceland," "Curious Myths," "Lives of the Saints." John Richard Green (1837-1883). "History of the English People," "The Making of England." Algernon Charles Swinburne (1837-1909). "Atalanta in Calydon," "Bothwell," "Mary Stuart," "Tristram of Lyonese." Walter Besant (1838-1901). "Dorothy Forster, "All Sorts and Conditions of Men," other novels and histories. John Morley (1838-1893). "Edmund Burke," "Rousseau," "Studies in Literature," "Life of Gladstone." James Bryce (1838-1922). "The Holy Roman Empire," "The American Commonwealth," "Studies in Contemporary Biography." William E. H. Lecky (1838-1903). "History of England in the Eighteenth Century," "Democracy and Liberty." Thomas Hardy (1840-1928). "Far from the Madding Crowd," "Tess of the D'Urbervilles," "Wessex Tales." William Black (1841-1898). "A Daughter of Heth," "A Princess of Thule," "Judith Shakespeare." Robert S. Bridges (1844-1930). "Nero," "Return of Ulysses," "Shorter Poems," "Essay on John Keats," and other poems, dramas, and criticisms. Andrew Lang (1844-1912). Miscellaneous author of many books. "Ballads in Blue China," "Blue Fairy Tale Book," "Custom and Myth," "Historical Mysteries," "Odyssey" (trans. with S. H. Butcher). William F. DeMorgan (1837-1917). "Joseph Vance," "Alice-for-Short," and several other novels. John Watson (Ian Maclaren), (1850-1907). "Beside the Bonnie Brier Bush," "Days of Auld Lang Syne." Robert Louis Stevenson (1850-1894). Novels like "Treasure Island," "David Balfour," "The Master of Ballantrae"; "New Arabian Nights" and "Merry Men," etc., short stories; "Child's Garden of Verses." Hall Caine (1853-1931). Novelist and critic. "The Christian," "The Eternal City," "The Deemster." H. Rider Haggard (1856-1925). Novels like "King Solomon's Mines," "She." Henry A. Jones (1851-1929). Dramatist and essayist. "Michael and his Lost Angel," "Mrs. Dane's Defense," "Mary Goes First," "Foundation of a National Theatre." Arthur W. Pinero (1855-1934). Playwright. "Second Mrs. Tanqueray," "Iris," "A Seat in the Dark."	Alphonse Daudet (1840-1897). "L'Evangeliste," "Sapho," "Tartarin de Tarascon." Novels, poems, dramas. Emile Zola (1840-1902). "L'Assommoir," "Pecheur d'Islande," "Ramuntcho," and other novels. Francois Coppee (1842-1908). "Les Humbles," poems, dramas, stories. Stephane Mallarme (1842-1898). "Poesies," "Le Coup de des," "Le Musique et les Lettres." Paul Verlaine (1844-1896). "Fetes galantes," "Romances sans Paroles," "Choix de Poesies," and other poems. Anatole France (Jacques Anatole Thibault) (1844-1924). Novelist and critic "Le Crime de Sylvester Bonnard," "Thais," "L'Etui de Nacre," "L'Ile des Pinguins," and many other imaginative works. Leon Bloy (1846-1917). Novelist and critic. "Mon Journal," "Le Femme Pauvre," "Le Salut par les Juifs." Joris-Karl Huysmans (1848-1907). Novelist. "A Rebours," "Le Cathedral." Octave Mirbeau (1848-1917). Dramatist. "Le Jardin des Supplices," "Les Affaires sont les Affaires," "Dingo." Frederick Brunetiere (1849-1906). Critic. "Etudes Critiques sur l'Histoire de la Litterature Francaise," "Le Roman Naturaliste," and other studies in history and literature. Guy de Maupassant (1850-1893). "Boule de Suif," "Une Vie," "Notre Coeur," novels. Short stories, *Odd Number* (Eng. trans). Pierre Loti (M. Julien Viaud). (1850-1923). Novels, etc. "Le Mariage de Loti," "La Mort de Philae," "Un Pelerin d'Angkor." Paul Bourget (1852-1935). Novelist and critic. "Essais de psychologie contemporaine," "Le Disciple," "Le Demon de Midi." Jules Lemaitre (1853-1914). Critic and dramatist. "Les Contemporains," "Impressions de Theatre," "En Marge des Vieux Livres." Francois de Curel (1854-1928). Dramatist. "Les Fossiles," "La Nouvelle Idol," "La Danse devant le miroir." Edouard Rod (1857-1910). Novelist. "Michel Teyssir." Eugene Brieux (1858-1932). Journalist and dramatist. "La Robe Rouge," "Les Avaries," (Damaged Goods), "La Francaise." Paul E. Hervieu (1857-1915). Essayist and dramatist. "L'Inconnu," "La Course du flambeau."	Wilhelm Jensen (1837-1911). Novelist. "der Fremde," "Vom Morgen zum Abend "Gesammelte Gedichte." Ludwig Anzengruber (1839-1889). Dram tist. "Meineidbauer," "Gewissenwurm "Der Doppelselbstmord." Paul Lindau (1839-1919). Journalist a dramatist. Of 60 works, some are "Dram turgische Blatter," "Herr and Frau wer," "Spitzen" (novel), "Der Abend." Karl R. E. Hartmann (1842-1906). Philo pher. "Philosophy of the Unconsciou "Ethical Consciousness," "The Ghos "Theory in Spiritism." Peter K. Rosegger (1843-1918). Novel "Zither und Hackbrett," "Die Schrift des Waldschulmeister," "Peter Mayr." Frieda von Sutner (1843-1914). Novel "Ein Manuscript," "Die Wassen neide Friedrich W. Nietsche (1844-1900). Philo pher. "Thus Spake Zarathustra." (E trans.) "Herrenmoral." "Carmen Sylvia" (Elizabeth, Queen of mania) (1843-1916). Works in Germ "Leidens Erdengang," "Handwerkerlied Detlev von Liliencron (1844-1909). "N und Sonne," "Der Machen," "Poggfr and other novels and poems. Ernst von Wildenbruch (1845-1909). Dra tist. "Harold," "Der neue Herr," " edle Blut." Karl Emil Franzos (1848-1904). Nove "Junge Liebe," "Die Juden von Barn "Tragische Novellen." Gustav Falke (1853-1916). Poet. "Myr der Tod," "Mit dem Leben." Lola Kirschner (1848-1904). "Ehre," "U uns," "Gloris Victis." Hermann Sudermann (1857-1928). Dram and novelist. "Die Ehre," "Frau So "Der Katzensteg," "Sodoms Ende," " mat," "Es lebe das Leben." Rudolph Herzog (1859-). Novelist. Wiscottens," "Der Graf von Gleic "Die Burkinder."

ITALY, SPAIN, AND PORTUGAL.

Giovanni Verga (1840-1922). Italian novelist. "Rusticâne," (source of Mascagni's "Cavalleria Rusticana"), "Medda."

Antonio Foggazaro (1842-1911). Italian poet, novelist. "El Santo," "Misteria del Poeta."

Mario Ripsardi (1844-1912). Sicilian poet. "Catullo e Lesbia," "Manfred," "Elegie."

Olindo Guerrini ("Lorenzo Stecchetti") (1845-1918). "Postuma," "Polemica," "Brandelli."

Edmondo de Amicis (1848-1908). Italian writer on travel. "Bozetti della Vita Militare," "La Spagna," "Memorie," "Ultima Pagine."

Salvatore Farini (1846-1912). Italian novelist. "Il Signor Jo," "Il Tesoro di Donnino," "Il Numero 13."

Arturo Graf (1848-1912). Italian poet. "Medusa," "Poemetti Dramatici."

Giovanni Pasoli (1855-1912). Italian classical poet. "Myrical," "Poemetti."

Madame Matilde Serao (1856-1927). Italian novelist. "Fantasia," "Le Conquista di Roma."

Gabriele D'Annunzio (1864-). Italian poet, dramatist, and critic. "San Pantaelone," "Chimera," "Il Piocre," "La Giaconda," "Francesca di Rimini."

Benedetto Croce (1866-). Italian philosopher and critic. "Esthetica," "European Literature in the Nineteenth Century," "History."

E. A. Butti (1875-1910). Italian comic dramatist. "Fiamme nelé ombra."

Giovanni Papini (1881-). Editor and critic. "Tragic of Every Day," "History of Christ."

Benito Perez Galdos (1845-1920). Spanish novelist and dramatist. "La Tintana de Oro," "Trafalgar," "Leon Roch."

Emilia Pardo-Bazan (1851-1921). Spanish novelist. "La Pazos de Ulloa," "La Revolucion y la Novela en Russia."

Leopoldo Alas (1852-1901). Spanish critic. "Sir Unico hijo," "Pipa," "La regenta."

Armando Palacio-Valdes (1853-1938). Spanish novelist. "La Espuna," "La Fe," "La Hornana san Sulpicio."

Marcelino Menendez y Palayo (1856-1912). Spanish critic and essayist. "Historia de los heterodoxos espanoles," "Calderon y su teatro."

Juan A. Cavestany (1861-). Spanish playwright. "El esclavo de su cupla," "El casimo," "La noche antes."

SCANDINAVIA AND EASTERN EUROPE.

Yngvar Nielson (1843-1916). Norwegian historian. "Del Halve Kongerie."

Alexander L. Kielland (1849-1906). Norwegian novelist. "Garman og Worse," "Skipper Worse."

Knut Hamsun (1859-). Norwegian novelist and dramatist. "Sult," "Mysterier," "Redaktor," "Lynge," "Victoria."

Karl J. Snoilsky (1841-1903). Swedish poet. "Digte og Sange," "Orchideer," "Unge Viser."

Johan A. Strindberg (1849-1912). Swedish dramatist and novelist. "Red Room," "The Confessions of a Fool," "Toward Damascus," "The Father."

Verner V. Heidenstam (1859-). Swedish novelist. "Karolinerna," "Endymion."

Selma Lagerlof (1858-1940). Swedish story teller. "Gosta Berling Saga," "From a Swedish Homestead," "Legends of Christ."

T. F. Troels-Lund (1840-1921). Danish historian. Voluminous histories of Denmark.

Georg Brandes (1842-1927). Danish critic. "Main Literary Currents of the Nineteenth Century," "Danish Poems," "Essays," and "Shakespeare."

Holgar Drachman (1846-1908). Danish dramatist, poet and novelist. "Daempe der Melodier," "Den Nellige Ild," "Forskrevet."

Alexander Glowacki (1847-1912). Polish novelist. "Early Tales," "Placowa," "The Children."

Henrik Pontoppidan (1857-). Danish Novelist. "Muld," "Domens Dag," "Lykke Per."

Karl A. Gjellerup (1857-1919). Danish novelist. "En Idealist," "Der unge Denmark," "Pastor Mors."

Julian Klaczko (1828-1906). Polish critic. "Die deutschen Hegemon," "Causeries florentines."

Eliza Orzeszko (1842-1910). Polish novelist. "The Modern Argonauts."

Henryk Sienkiewicz (1846-1916). Polish novelist. "Quo Vadis?" "Knights of the Cross," "The Deluge."

Vitezslav Halek (1835-1874). Bohemian poet. "The Black Flag," "The Heirs of the White Mountain," "The Tatra Maiden."

Svatopluk Cech (1846-1908). Czech poet. "Lestinsky Kovan (The Smith of Lesetin)," "Besne otroka (The Songs of a Stone)."

UNITED STATES AND CANADA.

William Dean Howells (1837-1920). Prose author. "The Rise of Silas Lapham," "Italian Journeys," "The Parlor Car," "Literary Friends and Acquaintances."

Edward Eggleston (1837-1902). Novelist and historian. "Hoosier Schoolmaster."

F. Bret Harte (1839-1902). "Luck of Roaring Camp," "Tales of the Argonauts," and other volumes of stories.

Joaquim Miller (1841-1913). Poet. "Songs of the Sierras."

Sidney Lanier (1842-1881). Poet and critic. "Poems," "English Novel," "Boy's Froissart."

John Fiske (1842-1901). "The Unseen World," "The Discovery of America," "The Beginnings of New England," and other historical and critical works.

Henry James (1843-1916). "Daisy Miller," "The American," other novels; many short stories.

G. W. Cable (1844-1925). "Old Creole Days." "The Grandissimes," and other novels and stories of life in Louisiana.

Joel Chandler Harris (1848-1908). "Nights with Uncle Remus," and other vols. of similar folk fables.

Sarah Orne Jewett (1849-1909). "Deephaven," "The Tory Lover," and other New England stories.

James Ford Rhodes (1848-1927). Histories of the United States in several volumes.

Mary N. Murfree (Charles Egbert Craddock), (1850-1922). "In the Tennessee Mountains," "Prophet of the Great Smoky Mountains," and other long and short stories.

Robert Grant (1852-1940). "Unleavened Bread," "The Chippendales" and other novels.

Thomas Nelson Page (1853-1922). "In Ole Virginia," other short stories and novels.

F. Marion Crawford (1854-1909). "Mr. Isaacs," "Saracinesca," and other novels.

Kate Douglas Wiggin (1857-1923). "The Bird's Christmas Carol," "Rebecca of Sunnybrook Farm," other novels.

Margaret W. Deland (1857-). "Old Chester Tales" and several other vols. of short stories; "John Ward, Preacher," and other novels.

Alice Brown (1857-). "Tiverton Tales," "Country Neighbors," other stories; "Children of Earth," ten thousand dollar prize drama.

Mary E. Wilkins-Freeman (1862-). "New England Nun," "Silence," "Wind in the Rose Bush," and other volumes of short stories.

	ENGLAND.	FRANCE.	GERMANY.
1900	**Lady Augusta Gregory** (1853-1932). "Gods and Fighting Men," "Kiltartan History Books," "Seven Short Plays."	**Remy de Gourmont** (1858-1915). Poet and dramatist. "Chemin de Velours," "Physique de l'Amour," "Le Pelerin du Silence."	**Clara Viebig** (1860-). Novelis "Kinder der Eifel," "Das schlafend Herr," "Die mit 1000 Kindern," "Di Passion."
	G. Bernard Shaw (1856-). Dramatist, critic. "Man and Superman," "Candida," "Press Cuttings," "Fanny's First Play."	**Jean L. Jaures** (1859-1914). Critic. L'Armee nouvelle, Etudes Socialistes.	**Gerhardt Hauptmann** (1862-). "D Weber," "Die versunkene Glocke," "De arme Heinrich," and other dramas.
	Joseph Conrad (1857-1924). Born in Poland. "Lord Jim," "Youth," "Typhoon," "A Set of Six," "Chance," "Victory," "The Arrow of Gold," and other short stories and romances.	**Albert Samain** (1859-1900). Poet. "Au Jardin de l'Infante," "Le Chariot d'Or."	**Ludwig Fulda** (1862-1939). Dramati and poet. "Das verloren Paradies "Der Talisman," "Der Dummkopf."
	A. Conan Doyle (1859-1930). "A Study in Scarlet," "Sign of the Four," "Adventures of Sherlock Holmes," "Last Bow." "Lost World," and other detective and mystery tales.	**Henri Bergson** (1859-1941). Critic and philosopher. "L'Evolution Creatrice."	**Arthur Schnitzler** (1862-1931). Austri dramatist. "Paracelsus," "Lebendi Stunden," "Der Ruf des Lebens."
	James M. Barrie (1860-1937). "A Window in Thrums," "Little Minister," "Peter Pan," "What Every Woman Knows," and other sketches, novels, stories, and plays.	**Jules Laforgue** (1860-1887). Poet. "Poesies," "Moralties Legendaries."	**Richard Dehmel** (1863-1920). Po "Aber die Liebe," "Lucifer," "Mic Michael."
	Maurice Hewlett (1861-1923). Novelist. "The Forest Lovers," "Little Novels of Italy."	**Paul Adam** (1862-1920). Novelist. "La Force," "Le Trust."	**Arno Holz** (1863-1929). Dramatist. "Bu der Zeit," "Phantasus I und II."
	Anthony Hope (Hawkins), (1863-1933). "The Prisoner of Zenda," "Rupert of Hentzau, "Dolly Dialogues," and other fiction.	**Maurice Barres** (1862-1923). Man of Letters. "Le Jardin de Bernice," "La Cultede Moi," "La Colline inspiree."	**Gustav Frenssen** (1863-). Noveli "Die Sandgrafin," "Die drei Getreuen "Peter Moors Fahrt nach Sudwest."
	Israel Zangwill (1864-1926). "Children of the Ghetto," "Ghetto Tragedies," "Comedies," "The Melting Pot," plays and stories.	**Marcel Prevost** (1862-). Novelist. "Les Demi-Vierges," "Lettres a Francoise."	**Ricarda Huch** (1864-). Poet a novelist. "Der Kampf um Ro "Neue Gedichte."
	Rudyard Kipling (1865-1936). "Plain Tales from the Hills," "Soldiers Three," "Day's Work," "Jungle Book," "Just So Stories," "Barrack Room Ballads," "Kim," stories, novels, and poems.	**Maurice Maeterlinck** (1862-). Belgian poet and dramatist. "Le Tresor des Humbles," "La Sagesse et la Destinee," "Monna Vanna," "La Mort," "Pelleas and Melisande."	**Frank Wedekind** (1864-1918). Dra tist. "Erdgeist," "Schloss Wet stein," "Franziska." He also wr poetry and novels.
	William Butler Yeats (1865-1939). Stories and Celtic plays. "Wanderings of Oisin," "Celtic Twilight," "Cathleen ni Houlihan," "Deirdre," "Hour Glass."	**Henri de Regnier** (1864-1936). Poems. "Les Medailles d'Argile," "Le Bon Plaisir," "Vestigae f'lammae."	**Otto J. Bierbaum** (1865-1910). Man letters. "Erlebte Degichte," "St und Antonie."
	Herbert G. Wells (1866-). "The War of the Worlds," "New Worlds for Old," "Mr. Britling Sees it Through," "Outlines of History," and other works.	**Romaine Rolland** (1866-). Biographies, plays, novels. Lives of Beethoven, Michael Angelo, Tolstoi, and Gandhi; plays, "Le 14 Juillet" "Danton," "Liluli"; novels, "Jean Christophe," "Pierre and Luce."	**Ludwig Thoma** (1867-). "Agricol "De Lokalbahn," "Tanta Frieda."
	Arnold Bennett (1867-1931). "Old Wives' Tale," "Matador of the Five Towns," "Cupid and Common Sense," and various others.	**Edmond Rostand** (1868-1920). Playwright, "Les Romanesques," "Cyrano de Bergerac," "L'Aiglon," "Chantecler."	**Stefan George** (1868-1933). Nove poet. "Die Fibel," "Hymnen," " Jahn der Seele."
	John Galsworthy (1867-1933). "Fraternity," "Five Tales," "The Forsythe Saga," "The White Monkey," and plays.	**Paul Claudel** (1868-). Poet, dramatist, ambassador. "Cinques Grandes Odes," "Poemes de guerre," "Proteus," "L'oiseau noir dans le soleil levant."	**Hugo von Hofmansthal** (1874- Dramatist and poet. "Der Tod Tizian," "Elektra," "Der Rosenk lier."
	Stephen Phillips (1868-1915). Poetic Dramatist. "Ulysses," "Nero," "Herod."	**Francis Jammes** (1868-). Poet. "Le Poete rustique," "Ma France poetique," "La Vierge el les Sonnets."	
	John Millington Synge (1871-1909). Irish playwright. "Playboy of the Western World," "Well of the Saints," "Shadow of the Glen," "Riders to the Sea."	**Charles Maurras** (1868-). Critic and politician. "Le chemin de paradis," "Les amants de Venise," "Les conditions de la victoire," (8 vols. on the World War), "La musique interieure" (poems).	
	Gilbert K. Chesterton (1875-1936). Critic and wit. "Dickens," "Irish Impressions," "What I Saw in America," and many others.	**André Gide** (1869-). Man of letters. Translated Shakespeare, Tagore, Whitman. "Letters a Angele," "Isabelle," "Les caves de Vatican," "Corydon," "Voyage du Congo."	
	John Masefield, (1875-). Poet. "Salt Water Ballads," "Reynard the Fox," "The Locked Chest."	**Henri Bordeaux** (1870-). Novelist. "Le Pays natal," "Le Captifs delivres," "Le Lac noir," "La Neige sur le pas."	
		Marcel Proust (1871-1922). Man of letters. "Les plaisirs et le jours," "A la recherche du temps perdu," (15 fictions).	
		Paul Valery (1871-). Poet and novelist. "Le Jeune Parque," "Charmes," "Le Platane," "Ame et la Danse."	

ITALY, SPAIN, AND PORTUGAL.

Raphael Altamira y Crevca (1861-). Spanish critic. "De Historia y Arte."

Juan Menendez Pidal (1861-1915). Spanish critic and philosopher. "Dios y el Cesar," "Poesia Popular."

Jacinto Benavente (1866-). The Spanish Shakespeare. "Autumnal Roses," "The Evil Doers of Good," "Princess Bebe," and translations of Shakespeare.

Vincute Medina (1866-). Spanish dramatist. "Obras Completos," (1923).

Ramon Menendez Pidal (1869-). Spanish philologist. "Grammatica Historica Espagnola," "El Romancero Espagnol."

Thomas A. Robeiro-Ferreira (1831-1901). Portugese poet. "Vesperos," "Don Jaime," "Dissonancios."

Arthuro de Quental (1842-1891). Portugese poet. "Odes Modernos," "A Poesia na Actual Idade."

Jose M. Eca de Queiros (1843-1900). Portugese poet. "O Defunto," "A Suave Milagre."

Theophilo Braga (1843-1924). Portugese poet, scholar, and statesman. "Historia de Poesia Popular Portugueza," "Alma Portgueza," and a Life of Camoens.

SCANDINAVIA AND EASTERN EUROPE.

Emil B. Frida (1853-1912). Czech poet. "At the Chasm."

Vladimir Korolenko (1853-1921). Russian novelist. "The Vagrant and other Tales," "The Blind Musician," "Makar's Dream."

Volvolod M. Garshin (1855-1888). Russian novelist. "The Signal and other Tales," "Four Days," "The Red Flower," and others.

Anton Chekhov (1860-1904). Russian story writer. "Black Monk," "The Cherry Garden," "The Kiss," and other short tales.

Maxim Gorki (Alexei M. Pyeshkov). (1868-1936). Short story writer and novelist. "Chelkash," "Konovalov." His "At the Lowest Depths," is a powerful play.

Ivan Bunin (1870-). Russian poet. "Spring," "The God of the Moon."

Alexander I. Kuprin (1870-). Russian story writer. "Stories for Children," "Humorous Tales," "The River of Life."

Leonid M. Andreev (1871-1919). Russian novelist. "The Red Laugh," "The Seven Who were Hanged."

Valery Brusov (1873-). Russian novelist. "The Trust," "Benediction," "Eventide."

Michael Artsybashev (1878-1927). Russian novelist and short story writer. "Sanin," "Tales."

Alex Blok (1880-1921). Russian poet. "The Unknown Woman," "Russia," "Scythians."

Sergey Gorodetzky (1884-1921). Russian poet. "Yarila," "The Birch Tree."

UNITED STATES AND CANADA.

Edith Wharton (1862-1937). Novelist and short story author. "The Greater Inclination," "House of Mirth," "Crucial Instances."

James Whitcomb Riley (1853-1916). Poet. "Neighborhood Poems," "Green Fields," and many others.

Hamlin Garland (1860-1940). Novelist, short story writer, historian. "Main Traveled Roads," "Son of the Middle Border," "Daughter of the Middle Border."

Richard Harding Davis (1864-1916). War correspondence, short stories. "Gallegher and other other Stories," "Van Bibber and Others."

Clyde Fitch (1865-1909). Dramatist. "Beau Brummel," "The Girl with the Green Eyes," "The Last of the Dandies," and many other plays.

"O. Henry" (William Sidney Porter). (1867-1910). "Cabbages and Kings," "The Four Million," and ten other volumes of clever stories.

William Allen White (1868-). Novelist, short story writer, journalist. "A Certain Rich Man," "The King of Boyville," prize editorials.

Boothe Tarkington (1869-). "The Gentleman from Indiana," "Monsieur Beaucaire," "Penrod," and other stories and plays.

Mary Johnston (1870-1936). "To Have and to Hold," "Audrey," "Pioneers of the Old South," and other novels.

Jack London (1876-1916). Novelist. "Call of the Wild," "The Sea Wolf," "The Game," and other novels; "John Barleycorn," and other discussions.

Palmer Cox (1840-1924). Canadian artist and story teller. "The Brownies, Their Book," and other "Brownie" books; "How Columbus Found America," "Queer People with Wings and Stings."

William Henry Drummond (1854-1907). Canadian "habitant" poet. "Habitant," "Voyageur," and other poems.

C. G. D. Roberts (1860-). Canadian poet. "In Divers Tones," "By the Marshes of Minas," and many other poems.

Bliss Carman (1861-). Canadian poet. "Low Tide at Grand Pre," "Pipes of Pan," "Songs from Vagabondia" (with Richard Hovey), and many other volumes.

"Ralph Connor" (Chas. William Gordon) (1860-1937). Novelist. "Sky Pilot," "Black Rock," and others.

Duncan C. Scott (1862-). Canadian poet. "Magic House," "New World Lyrics," "Beauty and Life."

Gilbert Parker (1862-1932). Canadian novelist and story teller, now living in England. "Pierre and his People," "Right of Way," "Seats of the Mighty."

Robert Service (1876-). Canadian poet. "Rhymes of a Rolling Stone," "Rhymes of a Red Cross Man," "Ballads of a Bohemian."

	ENGLAND.	FRANCE.	GERMANY.
1900	**Oscar Wilde** (1856-1900). Playwright and poet. "Lady Windemer's Fan," "The Importance of Being Ernest," "Ballad of Reading Gaol," "De Profundis." **Arthur Symonds** (1865-). Man of letters. "The Symbolist Movement in Literature," "Poems," "Confessions," "London," "Tragedies." **Laurence Housman** (1865-). Man of letters. "Little Plays of St. Francis," "An Englishwoman's Love Letters," "Selected Poems," "Religious Advance toward Rationalism." **George W. Russell** (1867-1935). Poet and essayist. "Collected Poems," "Imaginations and Reveries," "Co-operation and Nationality." **Walter de la Mare** (1873-). Poet. "Poems" (1920), "Old Rhymes and New," "The Connoisseur" (short story), "Peacock Pie." **Hilaire Belloc** (1870-). Essayist and historian. "Algerian Studies," "On Nothing and Kindred Subjects," "Paris," "Waterloo," "Wolsey," "The Bad Child's Book of Beasts." **W. Somerset Maugham** (1874-). Prose author. "Liza of Lembeth," "The Trembling of a Leaf," "The Circle," "The Gentleman in the Parlour." **Lord Dunsany** (Edward Morton Plunkett) (1878-). Stories and Plays. "Tales of Wonder," "A Dreamer's Tales," "Five Plays," "If I were Dictator." **Lytton Strachey** (1880-1932). Historian. "Eminent Victorians," "Queen Victoria," "Books and Characters." **James Joyce** (1882-1941). Novelist and poet. "Ulysses," "Chamber Music," "Dubliners." **Virginia Woolf** (1882-). Fiction and Essays. "To the Lighthouse," "Flush, a Biography," "The Common Reader." **David H. Lawrence** (1885-1930). Novelist, essayist, painter. "The Plumed Serpent," "Collected Poems," "England, my England," "Studies in Classic American Literature." **Huxley, Aldous** (1894-). Man of letters. "Selected Poems," "Point Counter Point," "Mortal Coils," "Essays Old and New."	**Charles Peguy** (1873-1914). Poet and critic. "Jeanne d'Arc," "Innocents," "Eve," "Note sur M. Bergson." **Henri Barbusse** (1874-1935). Novelist and critic. "Le Feu," "Les Suppliants," "Nous autres" (short stories), "Les Judas et Jesus." **Georges Duhamel** (1884-). Man of letters. "Vie des Martyrs," "Civilisation," "Deux Hommes," "Selon ma Loi," "Compagnons." **Francois Mauriac** (1885-). Novelist. "La Fleuve du Feu," "Genitrix," "Le Roman." **Jules Romains** (1885-). Poet and novelist. "Odes et Prieres," "Les Copains," "Lucienne," "Dr. Knocke." **Andre Maurois** (1885-). Novelist and essayist. "Les Silences du Colonel Bramble," "Ariel, ou le vie de Shelley," "La vie de Disraeli," "Etudes anglaises." **Paul Morand** (1888-). Novelist. "Tendres Stocks," "Ouvert la Nuit," "New York." **Jean Cocteau** (1891-). Poet and novelist. "Le Prince Frivole," "La Machine infernal," "Le Potomac," "Opium," "Essai de critique indirecte." **Henry de Montherlant** (1896-). Novelist. "Le Songe," "Les Onze devant la Porte Doree," "Les Bestiaires," "Mors et Vita."	**Jakob Wassermann** (1873-19 Novelist. "Die Juden von Z dorf," "Die Geschicte der gen," "Mein Weg als D scher," "Gold," "Faber." **Thomas Mann** (1875-). No ist. "Buddenbrooks," "T tan," "Der Tod in Vened "Der Zauberberg," (The M Mountain) **Rainer M. Rilke** (1875-19 Lyric poet. "Vom lieben G "Das Buch, der Bilder," " Gedichte," "Sonette an pheus." **Hermann Hesse** (1877-). of letters. "Romantische der," "Gedichte," "Boccac a biography, "Franz Assissi," "Unwege." **Georg Kaiser** (1878-). Dr atist. "Vom Morgen Mitternacht," "Gas," "Er "Die Flucht nach Vened "Zweimal Oliver." **Anton Wildgans** (1881-19 Austrian poet and drams "Herbstfruhling," "Dies L "Kain," "Kirbisch." **Fritz von Unruh** (1885- Dramatist. "Prinz von Pr sen," "Opfergang," "Ein Ge lect," "Bonaparte." **Paul Ernst** (1888-). Dr tist. "Der schmale Weg Gluch," "Ariadne auf Na "Die Naturliebe Tochter." **Franz Werfel** (1890-). of letters. Dramatist. "Spi mensch," "Der Weltfreu "Der Abituriententag," "Pa unter den Juden." **Ernst Toller** (1893-1939). and dramatist. "Masse-Mens "Gedichte der Gefangen "Das Schwalbenbuch." **Erich M. Remarque** (1900- Novelist. "Nicht Neues Westen" (All Quiet on Western Front), "The Back."

NOBEL PRIZES FOR LITERATURE.

Alfred B. Nobel of Sweden, inventor of dynamite, who died on Dec. 10, 1896, left about $9,000,000, of which the interest is annually awarded to those who have done most to benefit mankind. The Nobel prizes have been divided into five classes,—awards for physics, chemistry, physiology and medicine, literature, and peace. In each group about $40,000 is given annually to one or more persons.

The Nobel Prizes for Literature, since the first awards in 1901, have gone to these persons: Sully Prudhomme, French, 1901; Theodor Mommsen, German, 1902; Bjornstierne Bjornson, Norwegian, 1903; Frederic Mistral, French and Jose Echegaray, Spanish, 1904; Henryk Sienkiewicz, Polish, 1905; Giosue Carducci, Italian, 1907; Rudyard Kipling, English, 1908; Rudolf Eucken, German 1908; Selma Lagerlof, Swedish, 1909; Paul Heyse, German, 1910; Maurice Maeterlinck, Belgian, 1911; Gerhardt Hauptmann, German, 1912; Rabindranath Tagore, Bengalian, 1913; not awarded, 1914; Romain Rolland, French, 1915; Verner von Heidenstam, Swedish, 1916; Karl Gjellerup and Henrik Pontoppidan, both Danish, 1917; not awarded, 1918; Carl Spitteler, Swiss, 1919; Knut Hamsun, Norwegian, 1920; Anatole France, French, 1921; Jacinto Benevente, Spanish, 1922; William Butler Yeats, Irish, 1923; Vladislav St. Reymont, Polish, 1924; George Bernard Shaw, English, 1925; Signora Grazia Deledda, Italian, 1926; Henri Bergson, French, 1927; Mrs. Sigrid Undset, Norwegian, 1928; Thomas Mann, German, 1929; Sinclair Lewis, American, 1930; Erik Axel Karlfeldt, Swedish, 1931; John Galsworthy, English, 1932; Ivan Bunin, Russian, 1933; Luigi Pirandello, Italian, 1934; no award, 1935; Eugene O'Neill, American, 1936; Roger M. du Gard, French, 1937; Pearl Buck, American, 1938; Eemil Sillanpaa, Finnish, 1939.

ITALY, SPAIN, AND PORTUGAL.

Alfredo Panzini (1863-). Italian novelist. "La Fiabe della Virtu," "La Lanterna Diogene."

Arturo Farinelli (1867-). Italian critic. "Il Romanticismo in Germania," "Petrarcha in Deutschland."

Luigi Pirandello (1867-). Italian man of letters. "Elegie Renan," "Beffe della morte e della vita," "Il fu Mattia Pascal," "Arte e scienza," "La Morsa," "Enrico IV."

Filippo T. Marinetti (1878-). Poet, painter. "Mafarka le futuriste," "Democrazia futurista," "Futurismo e fascismo."

Ramon del Valle-Indan (1870-). Spanish poet and novelist. "Flor de Santidad," "Las Marquesa Rosalinda," "Divinas Palabras."

Ramon Perez de Ayala (1881-). Spanish poet, critic, and diplomatist. "La Paz del Sendero," "El Sendero Andante," "Prometeo," "El Curondero de su Houra."

Juan R. Jimenez (1881-). Spanish poet. "Platero y yo," "Artas Tristes," "Elegias."

Pedro Salinas (1891-). Spanish essayist and poet. "Presagios," "Poema del Cid," "Vispera de Gozo."

Manuel Machado (1874-). Portuguese poet. "Alma," "El Mal Poema," "Iulianillo Valcacel," (with his brother Antonio).

Aquilino Ribeiro (1882-). Portuguese novelist. "A Via Sinuosa," "Filhas de Biblonia," "Estrada de Santiago."

SCANDINAVIA AND EASTERN EUROPE.

Kostes Palamas (1859-). Greek Poet. "The King's Flute," "The Grave," "The Twelve Lays of a Gipsy," "Five Syllables and the Pathetic Whispers."

Juhani Aho (1861-1921). Finnish novelist. "The Fortunes of Matthias," "The Old Man of Korpela," "Findland's Flag."

Fedor Sologub (1863-1927). Russian poet and dramatist. "The Little Demon," "The Sorcery of Death," "The Created Legend."

Eric A. Karlfeldt (1865-1931). Swedish poet. "Songs of Land and the Open," "Fridolin's Poetry," "Flora and Ballona."

Dmitri S. Merezhkovsky (1865-). Russian novelist and critic. "Eternal Companions," "Christ and Antichrist," "The Birth of the Gods," "Akhnaton."

Wladislas S. Reymont (1867-1925). Polish novelist. "Lily," "The Promised Land," "From a Diary," "The Peasants."

Johan Bojer (1872-). Norwegian novelist and dramatist. "The Power of a Lie," "The Great Hunger," "Last of the Vikings," "Brutus."

Johannes V. Jensen (1874-). Danish man of letters. "The Gothic Renaissance," "Stories from Himmerland," "The Long Journey," "History of the Northern Races."

Alexander A. Block (1880-1921). Russian poet and playwright. "The Unexpected Joy," "Snow-mask," "Night Watches," "The Twelve."

Sigrid Undset (1882-). Norwegian novelist. "Jenny," "Kristin," "Lavransdatter," "Olav Audunsson."

Michael Babits (1883-). Hungarian poet. "Kartyavar," "Karacsonyi," and translations of Dante, Shakespeare, and Baudelaire.

UNITED STATES AND CANADA.

Edward Arlington Robinson (1869-1935). Poet. "Captain Craig," "The Man Who Died Twice," "Sonnets," "Collected Poems."

Theodore Dreiser (1871-). Novelist. "The Financier," "An American Tragedy," "Twelve Men." Also poetry, drama, and prose.

Amy Lowell (1874-1925). Poet and critic. "Pictures of the Floating World," "Ballads for Sale," "Six French Poets," "John Keats."

Robert Frost (1875-). Poet. "North of Boston," "Selected Poems," "West-Running Brook."

Percy MacKaye (1875-). Poet and Dramatist. "Jeanne d'Arc," "Scarecrow," "Caliban," "This Fine-Pretty World," "Canterbury Pilgrims."

Vachel Lindsay (1879-1931). Poet. "General Booth Enters into Heaven," "The Chinese Nightengale," "Golden Whales of California," "Johnny Appleseed."

Carl Sandburg (1878-). Poet. "Chicago Poems," "Slabs of the Sunburnt West," "Good Morning, America," "Abraham Lincoln" (biography).

Dorothy Canfield Fisher (1879-). Novelist, writer on education. "Brimming Cup," "Rough-Hewn," "Hillsboro People," "Her Son's Wife."

Joseph Hergesheimer (1880-). Novelist. "Java Head," "The Three Black Pennys," "Cytherea," "Quiet Cities."

Sinclair Lewis (1885-). Novelist. "Main Street," "Babbitt," "Elmer Gantry," "Dodsworth."

Eugene O'Neill (1888-). Dramatist. "Gold," "The Moon of the Caribees," "Emperor Jones," "Hairy Ape," "Strange Interlude."

Sidney Howard (1891-1939). Dramatist. "Swords," "They Knew What they Wanted," "Lucky Sam McCarver," "Silver Cord."

Stephen Leacock (1869-). Canadian economic and humorous writer. "Unsolved Riddle of Social Justice," "Nonsense Novels," "Moonbeams from the Larger Lunacy."

Lucy M. Montgomery (1877-). Canadian novelist. "Anne of Green Gables," "Anne's House of Dreams," "Emily of New Moon."

Albert Lozeon (1878-1924). Canadian poet writing in French. "Le Miroir des Jours," "Les Images du Pays."

Marjorie Pickthall (1883-1922). Canadian poet. "The Drift of Pinions," "The Lamp of Poor Souls," "The Wood-Carver's Wife," Angels' Shoes (stories).

MEMBERS OF THE FRENCH ACADEMY.

Perhaps the most distinguished honorary society in the world is the French Academy. It was founded by Cardinal Richelieu in 1635. There are 40 members elected for life, often called the Forty Immortals. The membership in 1939, in order of election was as follows: Gabriel Hanotaux, 1897; Henri Emile Lavedan, 1898; Maurice Donnay, 1907; Marcel Prévost, 1909; Henri Bergson, 1914; Alfred Baudrillart, 1918; Henri Bordeaux, 1919; André Chevrillon, 1920; Georges Goyau, 1922 (died, 1939); Edouard Estaunié, 1923; Georges Lecomte, 1924; Émile Picard, 1924; Louis Bertrand, 1925; Auguste De Caumont, Duc de la Force, 1925; Paul Valéry, 1925; Abel Hermant, 1927, Émile Mâle, 1927; Louis Madelin, 1927; Maurice Paléologue, 1928; Marshal Pétain, 1929; J. H. André Chaumeix, 1930; Maxime Weygand, 1931; Pierre Benoit, 1931; Abel Bonnard, 1932; François Mauriac, 1933; Duc de Broglie, 1934; Marshal Franchet d'Espérey, 1934; Léon Bérard, 1934; Claude Farrère, 1935; André Bellessort, 1935; Georges Duhamel, 1935; Louis Gillet, 1935; Edmond Jaloux, 1936; Joseph de Pesquidoux, 1936; Lucien Lacaze, 1936; George Grente, 1936; Jacques de Lacretelle, 1936; Charles Maurras, 1938; André Maurois, 1938; Jerome Tharaud, 1938.

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SCENES IMMORTALIZED IN WRITING—I

1 Old blacksmith shop, East Walpole, Mass., said to be the one which inspired Longfellow's "The Village Blacksmith," built in 1829. It is still in use. 2 Sleepy Hollow Road, Tarrytown, New York, along which Washington Irving depicted the ride of "The Headless Horseman."

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SCENES IMMORTALIZED IN WRITING—II

1 "House of the Seven Gables," Salem, Mass., scene of Hawthorne's now famous classic.
2 "Evangeline's Well," Nova Scotia, topic of Longfellow's masterpiece.
3 "Snowbound," Home of Whittier, Haverhill, Mass.

A DICTIONARY OF MYTHOLOGY.

A'BAS. A king of Argos, son of Lynceus and Hypermnestra, grandson of Danaüs, father of Acrisius, and grandfather of Perseus.

ABSYR'TUS. Brother of Medea.

ACHELO'US. A son of Oceanus and Terra. He had the power of assuming all shapes, and in a conflict with Hercules he turned himself into a serpent, and then into a bull, but he was finally defeated, and he then turned himself into a river, which has since been called Achelous.

ACH'ERON. One of the rivers of the infernal regions to which the spirits of the dead resorted, and waited there till Charon the ferryman took them over.

ACHIL'LES. The most valiant of the Greek heroes in the Trojan War. He was the son of Peleus, king of Thessaly. His mother, Thetis, plunged him, when an infant, into the Stygian pool, which made him invulnerable wherever the waters had washed him; but the heel by which he was held was not wetted, and that part remained vulnerable. He was shot with an arrow in the heel by Paris, at the siege of Troy, and died of his wound.

ACIDA'LIA. A name given to Venus, from a fountain in Boeotia.

A'CIS. A Sicilian shepherd, loved by the nymph Galatea. One of the Cyclops who was jealous of him crushed him by hurling a rock on him. Galatea turned his blood into a river—the Acis at the foot of Mount Etna.

ACTAE'ON. The son of Aristaeus, a famous huntsman. He intruded himself on Diana while she was bathing, and was changed by her into a deer, in which form he was hunted by his own dogs and torn in pieces.

ADO'NIS. The beautiful attendant of Venus, who held her train. He was killed by a boar, and from his blood sprang the anemone.

ADRASTAE'A. Another name of Nemesis, one of the goddesses of justice.

ADSCRIPTI'TII DII. The gods of the second grade.

AE'ACUS. Son of Jupiter and Aegina; one of the judges of the infernal regions, who was appointed to judge the Europeans.

AECAS'TOR. An oath used only by women, referring to the Temple of Castor.

AED'EPOL. An oath used by both men and women, referring to the Temple of Pollux.

AEGE'ON. A giant with 50 heads and 100 hands, who was imprisoned by Jupiter under Mount Etna.

AEGIP'ANS. Rural deities who inhabited the forests and mountains, the upper half of the body being like that of a man, and the lower half like that of a goat.

AE'GIS. The shield of Jupiter, so called because it was made of goat skin; used as a defensive armor in his war with the Titans; afterwards intrusted by him to Minerva.

AE'GLE. The fairest of the Naiads.

AEL'LO. The name of one of the Harpies.

AENE'AS. The son of Anchises and Venus. He was one of the few great captains who escaped the destruction of Troy. He behaved with great valor during the siege, encountering Diomed, and even Achilles himself. When the Grecians had set the city on fire Aeneas took his aged father, Anchises, on his shoulders, while his son, Ascanius, and his wife, Creusa, clung to his garments. He saved them all from the flames. After wandering about during several years, encountering numerous difficulties, he at length arrived in Italy, where he was hospitably received by Latinus, king of the Latins. After the death of Latinus, Aeneas became king.

AE'OLUS. The god of the winds. Jupiter was his reputed father, and his mother is said to have been a daughter of Hippotus.

AESCULA'PIUS. The god of physic, was a son of Apollo. He was physician to the Argonauts in their famous expedition to Colchis.

AE'SON. Father of Jason, and was restored to youth by Medea.

AE'TES. A king of Colchis, was father of Medea.

AGAMEM'NON. The son of Plisthenes and brother of Menelaus. He was king of the Argives. His brother's wife was the famous Helen, daughter of Tyndarus, king of Sparta; and when she eloped with Paris, Agamemnon was appointed leader of the Greeks in their expedition against Troy.

AGANIP'PIDES. A name of the Muses, derived from the fountain of Aganippe.

AGLA'IA. One of the three Graces.

AG'NI. The Hindu god of fire.

A'JAX. One of the bravest of the Greek warriors in the Trojan War. His father was Telamon, and his mother Eriboea. Some writers say that he was killed by Ulysses; others aver that he was slain by Paris; while others again assert that he went mad after being defeated by Ulysses, and killed himself. Another Ajax, son of Oïleus, also took a prominent part in the Trojan War.

ALCES'TIS. Wife of Admetus, who, to save her husband's life, died in his stead, and was restored to life by Hercules.

ALCI'DES. One of the names of Hercules.

ALCME'NA. The mother of Hercules, was daughter of Electryon, a king of Argos.

ALEC'TO. One of the Furies. She is depicted as having serpents instead of hair on her head, and was supposed to breed pestilence wherever she went.

ALEC'TRYON. A servant of Mars, who was changed by him into a cock because he did not warn his master of the rising of the sun.

AL'FADUR. In Scandinavian mythology the Supreme Being—Father of all. One of the names of Odin.

AMAL'THAE'A. The goat which nourished Jupiter.

AM'AZONS. A nation of women-soldiers who lived in Scythia. Hercules totally defeated them, and gave Hippolyte, their queen, to Theseus for a wife. The race seems to have been exterminated after this battle.

AMBARVA'LIA. Festivals in honor of Ceres, instituted by Roman husbandmen to purge their fields. At the spring festival the head of each family led an animal, usually a pig or ram, decked with oak boughs, round his grounds, and offered milk and new wine. After harvest there was another festival, at which Ceres was presented with the first fruits of the season.

AMBRO'SIA. The food of the gods.

AMPHI'ON. The son of Jupiter and Antiope. He was greatly skilled in music; and it is said that, at the sound of his lute, the stones arranged themselves so regularly as to make the walls of the city of Thebes.

AMPHITRI'TE or **SALATIA.** The wife of Neptune, was a daughter of Nereus and Doris. She was the mother of Triton, a sea god.

AMY'CUS. King of Babrycia. He was a son of Neptune, and was killed by Pollux.

ANCAE'US. A son of Neptune, who left a cup of wine to hunt a wild boar, which killed him, and the wine was untasted. This was the origin of the proverb —"There 's many a slip 'twixt cup and lip."

ANCIL'IA. The 12 sacred shields. The first Ancile was supposed to have fallen from heaven in answer to the prayer of Numa Pompilius. It was kept with the greatest care, as it was prophesied that the fate of the Roman people would depend upon its preservation. An order of priesthood was established to take care of the Ancilia, and on March 1 of each year the shields were carried in procession, and in the evening there was a great feast called Coena Saliaris.

ANDROM'EDA. The daughter of Cepheus, king of the Ethiopians, was wife of Perseus, by whom she was rescued when she was chained to a rock and was about to be devoured by a sea monster.

ANEM'ONE. Venus changed Adonis into this flower.

ANGERO'NIA. Otherwise Volupia, was the goddess who had the power of dispelling anguish of mind.

ANNA PEREN'NA. One of the rural divinities.

ANTAE'US. A giant who was vanquished by Hercules. Each time that Hercules threw him the giant gained fresh strength from touching the earth, so Hercules lifted him off the ground and squeezed him to death.

AN'TEROS. One of the two Cupids, sons of Venus.

ANTIC'LEA. The mother of Ulysses.

ANTI'OPE. Daughter of Nycteus, king of Thebes, and mother, by Zeus, of Amphion and Zethus.

ANU'BIS or **HERMAN'UBIS.** "A god half a dog, a dog half a man." Called *Barker* by Vergil and other poets.

AON'IDES. A name of the Muses, from the country Aonia.

APH'RODI'TE. A Greek name of Venus.

A'PIS. A name given to Jupiter by the inhabitants of the Lower Nile. Also the miraculous ox, worshiped in Egypt.

A'PIS. King of Argivia. Afterwards called Serapis, the greatest god of the Egyptians.

APOL'LO. This famous god, sometime king of Arcadia, was the son of Jupiter and Latona. He was known by several names, but principally by the following: Sol (the sun); Cynthius, from the mountain called Cynthus in the Isle of Delos, and this same island being his native place obtained for him the name of Delius; Delphinius, from his occasionally assuming the shape of a dolphin. His name of Delphicus was derived

from his connection with the splendid Temple at Delphi, where he uttered the famous oracles. Some writers record that this oracle became dumb when Jesus Christ was born. Other common names of Apollo were Didymaeus, Nomius, Paean, and Phoebus. The Greeks called him Agineus because the streets were under his guardianship, and he was called Pythius from having killed the serpent Python. Apollo is usually represented as a handsome young man without beard, crowned with laurel, and having in one hand a bow, and in the other a lyre. The favorite residence of Apollo was on Mount Parnassus, a mountain of Phocis, in Greece, where he presided over the Muses. Apollo was the accredited father of several children, but the two most renowned were Aesculapius and Phaëton.

APOTHE'OSIS. The consecration of a god. The ceremony of deification.

ARACH'NE. A Lydian princess, who challenged Minerva to a spinning contest, but Minerva struck her on the head with a spindle, and turned her into a spider.

ARCA'DIA. A delightful country in the center of Peloponnesus, a favorite place of the gods. Apollo was reputed to have been king of Arcadia.

AR'CAS. A son of Calisto, was turned into a he-bear; and afterwards into the constellation called Ursa Minor.

AREOP'AGI'TAE. The judges who sat at the Areopagus.

AREOP'AGUS. The hill at Athens where Mars was tried for murder before 12 of the gods.

ARETHU'SA. Was one of the nymphs of Diana. She fled from Alpheus, a river god, and was enabled to escape by being turned by Diana into a rivulet which ran underground. She was as virtuous as she was beautiful.

AR'GONAUTS. This name was given to the 50 heroes who sailed to Colchis in the ship Argo under the command of Jason, to fetch the Golden Fleece.

AR'GUS. Was a god who had a hundred eyes which slept and watched by turns. He was charged by Juno to watch Io, but, being slain by Mercury, was changed by Juno into a peacock.

ARIAD'NE. Daughter of Minos, king of Crete. After enabling Theseus to get out of the labyrinth by means of a clew of thread, she fled with him to Naxos, where he ungratefully deserted her; but Bacchus wooed her and married her, and the crown of seven stars which he gave her was turned into a constellation.

ARI'ON. Was a famous lyric poet of Methymna, in the island of Lesbos; rescued from drowning by a dolphin.

ARISTAE'US. Son of Apollo and Cyrene, was the god of trees. He also taught mankind the use of honey, and how to get oil from olives. He was a celebrated hunter. His most famous son was Actaeon.

ARMA'TA. One of the names of Venus, given to her by Spartan women.

AR'TEMIS. This was the Grecian name of Diana, and the festivals at Delphi were called Artemesia.

ARUS'PICES. Sacrificial priests.

ASCAL'APHUS. Was changed into an owl, the harbinger of misfortune, by Ceres, because he informed Pluto that Proserpine had partaken of food in the infernal regions, and thus prevented her return to earth.

ASCA'NIUS. The son of Aeneas.

ASCOL'IA. Bacchanalian feasts, from a Greek word meaning a leather bottle. The bottles were used in the games to jump on.

ASO'PUS. A son of Jupiter, who was killed by one of his father's thunderbolts.

ASSABI'NUS. The Ethiopian name of Jupiter.

ASTAR'TE. One of the Eastern names of Venus.

ASTE'RIA. Daughter of Caeus, was carried away by Jupiter, who assumed the shape of an eagle.

ASTRE'A. Mother of Nemesis, was the goddess of justice. She returned to heaven when the earth became corrupt.

ATALAN'TA. Daughter of Caeneus. The oracle told her that marriage would be fatal to her, but, being very beautiful, she had many suitors. She was a very swift runner, and, to get rid of her admirers, she promised to marry any one of them who should outstrip her in a race, but that all who were defeated should be slain. Hippomenes, however, with the aid of Venus, was successful. That goddess gave him three golden apples, one of which he dropped whenever Atalanta caught up to him in the race. She stopped to pick them up, and he was victorious and married her. They were both afterwards turned into lions by Cybele, for profaning her temple.

A'TE. The goddess of revenge, also called the goddess of discord and all evil. She was banished from heaven by her father Jupiter.

ATHE'NA. A name obtained by Minerva as the tutelary goddess of Athens.

AT'LAS. King of Mauritania, now Morocco, in Africa. He was also a great astronomer. He is depicted with the globe on his back, his name signifying great toil or labor. For his inhospitality to Perseus that king changed him into the mountain which bears his name of Atlas. A chain of mountains in Africa is called after him, and so is the Atlantic Ocean.

AT'REUS. The type of fraternal hatred. His dislike of his brother Thyestes went to the extent of killing and roasting his nephews, and inviting their father to a feast, which Thyestes thought was a sign of reconciliation, but he was the victim of his brother's detestable cruelty.

AT'ROPOS. One of the three sisters called "The Fates," who held the shears ready to cut the thread of life.

A'TYS. Son of Croesus, was born dumb, but when in a fight he saw a soldier about to kill the king, he gained speech, and cried out, "Save the king!" and the string that held his tongue was broken.

A'TYS. A youth beloved by Aurora, and was slain by her father, but, according to Ovid, was afterwards turned into a pine tree.

AUG'AEAS. A king of Elis, the owner of the stable which Hercules cleansed after 3,000 oxen had been kept in it for 30 years. It was cleansed by turning the river Alpheus through it. Augaeas promised to give Hercules a tenth part of his cattle for his trouble, but, neglecting to keep his promise, Hercules shot him.

AU'GURY. This was a means adopted by the Romans for forming a judgment of futurity by the flight of birds, and the officiating priest was called an augur.

AURO'RA. The goddess of the morning, "whose rosy fingers ope the gates of day." She was daughter of Sol, the sun, and was the mother of the stars and winds.

AUS'TER. The south wind, a son of Jupiter.

AVER'NUS. A poisonous lake, referred to by poets as being at the entrance of the infernal regions, but it was really a lake in Campania, Italy.

AVERRUN'CUS DEUS. A Roman god, who could divert people from evil doing.

BA'AL. A god of the Phoenicians.

BA'AL-PE'OR. A Moabitish god, associated with licentiousness and obscenity. The modern name is Belphegor.

BACCHAN'TES. The priestesses of Bacchus.

BAC'CHUS. The god of wine, and the son of Jupiter and Semele. He is said to have married Ariadne, daughter of Minos, king of Crete, after she was deserted by Theseus. The most distinguished of his children is Hymen, the god of marriage.

BA'LIOS. A famous horse given by Neptune to Peleus as a wedding present, and afterwards given to Achilles.

BASSAR'IDES. The priestesses of Bacchus were sometimes so called.

BELISA'MA. A goddess of the Gauls. The name means the Queen of Heaven.

BELLER'OPHON. A hero who destroyed a monster called the Chimaera.

BELLO'NA. The goddess of war, and wife of Mars. The 24th of March was called Bellona's day, when her votaries cut themselves with knives and drank the blood of the sacrifice.

BE'LUS. The Chaldean name of the sun.

BERECYN'THIA. A name of Cybele, from a mountain where she was worshiped.

BI'FORMIS. A name of Bacchus, because he was accounted both bearded and beardless.

BO'NA DE'A. "The bountiful goddess," whose festival was celebrated by the Romans with much magnificence.

BO'NUS EVEN'TUS. The god of good success, a rural divinity.

BO'REAS. The north wind, son of Astraeus and Aurora.

BRAH'MA. The great Indian deity, represented with four heads looking to the four quarters of the globe.

BRIS'AEUS. A name of Bacchus, referring to the use of grapes and honey.

BRONT'ES. One of the Cyclops. He is the personification of a blacksmith.

BUBO'NA. Goddess of herdsmen, one of the rural divinities.

BUD'DHA. The founder of Buddhism; later supposed to be the manifestation of the Vishnu of the Hindus.

BYB'LIS. A niece of Sol, mentioned by Ovid. She shed so many tears for unrequited love that she was turned into a fountain.

CAB'IRI. The mysterious rites connected with the worship of these deities were so obscene that most

writers refer to them as secrets which it was unlawful to reveal.

CAC'ODAE'MON. Greek name of an evil spirit.

CA'CUS. A three-headed monster and robber.

CAD'MUS. One of the earliest of the Greek demi-gods. He was the reputed inventor of letters, and his alphabet consisted of 16 letters. It was Cadmus who slew the Boeotian dragon, and sowed its teeth in the ground, from each of which sprang up an armed man.

CADU'CEUS. The rod carried by Mercury. It has two winged serpents entwined round the top end. It was supposed to possess the power of producing sleep, and Milton refers to it in *Paradise Lost* as the "opiate rod."

CALLI'OPE. The Muse who presided over epic poetry and rhetoric. She is generally depicted using a stylus and wax tablets, the ancient writing materials.

CALLIS'TO. An Arcadian nymph, who was turned into a she-bear by Jupiter. In that form she was hunted by her son Arcas, who would have killed her had not Jupiter turned him into a he-bear. The nymph and her son form the constellations known as the Great Bear and Little Bear.

CAL'PE. One of the pillars of Hercules.

CALYP'SO. Queen of the island of Ogygia, on which Ulysses was wrecked, and where he was persuaded to remain seven years.

CA'MA. The Indian god of love and marriage.

CAMIL'LUS. A name of Mercury, from his office of minister to the gods.

CAN'ACHE. The name of one of Actaeon's hounds.

CANO'BA. The Indian Apollo.

CANO'PUS. The Egyptian god of water, the conqueror of fire.

CAP'IS or **CAP'ULA.** A peculiar cup with ears, used in drinking the health of the deities.

CAPITOLI'NUS. A name of Jupiter, from the Capitoline hill, on the top of which a temple was built and dedicated to him.

CAPRIP'EDES. Pan, the Aegipans, the Satyrs, and Fauns were so called from having goats' feet.

CASSAN'DRA. A daughter of Priam and Hecuba, who was granted by Apollo the power of seeing into futurity, but having offended that god he prevented people from believing her predictions.

CASSIOPE'IA. The Ethiopian queen who set her beauty in comparison with that of the Nereides, who thereupon chained her daughter Andromeda to a rock and left her to be devoured by a sea monster, but she was delivered by Perseus.

CASTA'LIA. One of the fountains in Mount Parnassus, sacred to the Muses.

CASTALI'DES. A name of the Muses, from the fountain Castalia or Castalius.

CAS'TOR. Son of Jupiter and Leda, twin brother of Pollux, noted for his skill in horsemanship. He went with Jason in quest of the Golden Fleece.

CAU'THER. In Mohammedan mythology, the lake of paradise, whose waters are as sweet as honey, as cold as snow, and as clear as crystal; and any believer who tastes thereof is said to thirst no more.

CELE'NO. One of the Harpies, progenitor of Zephyrus, the west wind.

CEN'TAUR. A huntsman who had the fore part like a man, and the remainder of the body like a horse. The Centauri lived in Thessaly.

CEPH'ALUS. Married to Procris, whom he accidentally slew by shooting her, while she was secretly watching him, he thinking she was a wild beast. Cephalus was the type of constancy.

CERAU'NIUS. A Greek name of Jupiter, meaning The Fulminator, from his thunderbolts.

CER'BERUS. Pluto's famous three-headed dog, which guarded the gate of the infernal regions, preventing the living from entering, and the inhabitants from going out.

CE'RES. Daughter of Saturn, the goddess of agriculture, and of the fruits of earth. She taught Triptolemus how to grow corn, and sent him to teach the inhabitants of the earth.

CES'TUS. The girdle of Venus, which excited irresistible affection.

CHA'OS. Allegorically represented the confused mass of matter supposed to have existed before the creation of the world, and out of which the world was formed.

CHAR'ON. The son of Nox and Erebus. He was the ferryman who conveyed the spirits of the dead, in a boat, over the rivers Acheron and Styx to the Elysian Fields. "Charon's toll" was a coin put into the mouth of the dead with which to pay the grim ferryman.

CHARYB'DIS. A dangerous whirlpool on the coast of Sicily. Personified, it was supposed to have been a woman who plundered travelers, but was at last killed by Hercules. Scylla and Charybdis are generally spoken of together to represent alternative dangers.

CHE'MOS. The Moabitish god of war.

CHIMAE'RA. A wild illusion, personified in the monster slain by Bellerophon. It had the head and breast of a lion, the body of a goat, and the tail of a serpent. It used to breathe forth fire.

CHI'RON. The centaur who taught Achilles hunting, music, and the use of medicinal herbs. Jupiter placed him amongst the stars, where he appears as Sagittarius the Archer.

CHLO'RIS. The Greek name of Flora, the goddess of flowers.

CHOU. An Egyptian god corresponding to the Roman Hercules.

CHRO'NOS. Time, the Greek name of Saturn.

CIR'CE. The daughter of the sun. The knowledge of poisonous herbs enabled her to destroy her husband, the king of the Sarmatians, for which act she was banished. When Ulysses landed at Aecea, where she lived, she turned all his followers into swine.

CISSE'TA. The name of one of Actaeon's hounds.

CITHER'IDES. A name of the Muses, from Mount Citheron.

CLI'O. One of the Muses, daughter of Jupiter and Mnemosyne. She presided over history.

CLOACI'NA. The Roman goddess of sewers.

CLO'THO. One of the Fates. She was present at births, and held the distaff from which was spun the thread of life. See ATROPOS and LACHESIS.

CLOWNS OF LY'CIA, THE. Changed into frogs by Latona, because they refused to allow her to drink at one of their streamlets.

CLUACI'NA. A name of Venus, given to her at the time of the reconciliation of the Romans and the Sabines, which was ratified near a statue of the goddess.

CLYTEMNES'TRA. Wife of Agamemnon, slew her husband and married Aegisthus. She attempted to kill her son Orestes, but he was delivered by his sister Electra, who sent him away to Strophius. He afterwards returned and slew both Clytemnestra and Aegisthus.

CLYT'IE. A nymph who was changed into a sunflower because her love of Apollo was unrequited. In the form of this flower she is still supposed to be turning towards Sol, a name of Apollo.

CNEPH. In Egyptian mythology the creator of the universe.

COCY'TUS. The river of lamentation. One of the five rivers of the infernal regions.

COE'CULUS. A violent robber, a son of Vulcan.

COE'LUS. Also called Uranus (or Heaven), the most ancient of the gods.

COLLI'NA. One of the rural deities, the goddess of hills.

CO'MUS. The god of revelry. He presided over entertainments and feasts.

CON'CORD. The symbol of concord was two right hands joined, and a pomegranate.

CONCOR'DIA. The goddess of peace. One of the oldest Roman goddesses. She is represented as holding a horn of plenty in one hand, and in the other a scepter, from which fruit is sprouting forth.

CONSUA'LIA. Games sacred to Neptune.

CON'SUS. A name given to Neptune as being the god of counsel.

COPHET'UA. A legendary king of Africa, who disliked women, but ultimately fell in love with a "beggar-maid," as mentioned in *Romeo and Juliet*.

CO'PIA. The goddess of plenty.

CO'RAN. One of Actaeon's hounds was so named.

CORO'NIS. A consort of Apollo and mother of Aesculapius. Another Coronis was daughter of a king of Phocis, and was changed by Athena into a crow.

CORYBAN'TES. Priests of Cybele. They obtained the name because they were in the habit of striking themselves in their dances.

CORY'DON. A silly love-sick swain mentioned by Vergil.

CORY'THAIX. A name given to Mars, meaning Shaker of the Helmet.

COTYT'TO. The Athenian goddess of immodesty.

CU'PID. The god of love, the son of Jupiter and Venus. He is represented as a naked, winged boy, with a bow and arrows and a torch. When he grew up to be a man he married Psyche.

CUVE'RA. The Indian god of wealth, corresponding to the Greek Plutus.

CYB'ELE. The mother of the gods, and hence called Magna Mater. She was wife of Saturn. She is sometimes referred to under the names of Ceres, Rhea, Ops, and Vesta.

CY'CLOPS or **CY'CLOPES.** The gigantic, one-eyed workmen of Vulcan, who made Jove's thunderbolts.

Hesiod gives their names as Arges, Brontes, and Steropes.

CYG'NUS. The bosom friend of Phaëton. He died of grief on the death of his friend, and was turned into a swan.

CYL'LAROS. One of Castor's horses. The color is mentioned as being coal black, with white legs and tail.

CYL'LO. The name of one of Actaeon's hounds, which was lame.

CYLLOP'OTES. A name given to one of Actaeon's hounds, which limped.

CYN'OSURA. One of the nurses of Jupiter, turned by the god into a conspicuous constellation, Ursa Minor.

CYPARIS'SUS. A boy of whom Apollo was very fond; and when he died he was changed, at Apollo's intercession, into a cypress tree, the branches of which typify mourning.

CY'PRIA. A name of Venus, because she was worshiped in the island of Cyprus.

CYTH'ERA. A name of Venus, from the island to which she was wafted in the shell.

DACTY'LI. Priests of Cybele. They were given the name because, like the fingers, they were 10 in number.

DAED'ALUS. A great architect and sculptor. He invented the wedge, the axe, the level, and the gimlet, and was the first to use sails. Daedalus also constructed the famous labyrinth for Minos, king of Crete.

DA'GON. A god of the Philistines, half man, half fish, like the mermaid. Milton describes him as "Upward man and downward fish."

DA'HAK. The Persian devil.

DAI'TYAS. In Hindu mythology the devils or evil gods.

DAN'AE. A daughter of Acrisius and Eurydice. She had a son by Jupiter, who was drifted out to sea in a boat, but was saved by Polydectes and educated.

DANA'US. King of Argos. The father of 50 daughters, who, all but one, at the command of their father, slew their husbands directly after marriage. For this crime they were condemned to the task of forever trying to draw water with vessels without any bottoms.

DAPH'NE. The goddess of the earth. Apollo courted her, but she fled from him, and was, at her own request, turned into a laurel tree.

DAR'DANUS. A son of Jupiter, who built the city of Dardania and by some writers was accounted the founder of Troy.

DEIANI'RA. Daughter of Oeneus, wife of Hercules. See HERCULES.

DE'LIUS. A name of Apollo from the island in which he was born.

DEL'PHI. A town on Mount Parnassus, famous for its oracle, and for a temple of Apollo.

DEL'PHOS. The place where the temple was built from which the oracle of Apollo was given.

DE'MARUS. The Phoenician name of Jupiter.

DE'MOGOR'GON. The tyrant genius of the soil or earth, the life and support of plants. He was depicted as an old man covered with moss, and was said to live underground. He is sometimes called the king of the elves and fays.

DEUCA'LION. One of the demigods, son of Prometheus and Clymene. He and his wife, Pyrrha, by making a ship, survived the deluge which Jupiter sent on the earth (about 1503 B. C.).

DIAN'A. Goddess of hunting and of chastity. She was the sister of Apollo, and daughter of Jupiter and Latona. She was known among the Greeks as Diana or Phoebe, and was honored as a triform goddess. As a celestial divinity she was called Luna; as a terrestrial, Diana or Dictynna; and in the infernal regions, Hecate.

DICTYN'NA. A Greek name of Diana as a terrestrial goddess.

DI'DO. A daughter of Belus, king of Tyre. It was this princess who bought a piece of land in Africa as large as could be encompassed by a bullock's hide, and, when the purchase was completed, cut the hide into strips, and so secured a large tract of land. Here she built Carthage; and Vergil tells that when Aeneas was shipwrecked on the neighboring coast, she received him with every kindness, and at last fell in love with him. But Aeneas did not reciprocate her affections, and this so grieved her that she stabbed herself.

DI'ES PA'TER. Father of the Day, a name of Jupiter.

DII SELEC'TI. Composed the second class of gods. They were Coelus, Saturn, Genius, Oreus, Sol, Bacchus, Terra, and Luna.

DINDYME'NE. A name of Cybele, from a mountain where she was worshiped.

DIOME'DES. The cruel tyrant of Thrace, who fed his mares on the flesh of his guests, was overcome by Hercules, and was given to the same horses as food.

DIO'NE. A poetic name of Venus.

DIONY'SIA. Festivals in honor of Bacchus.

DIONY'SUS. A name of Bacchus, either from his father Jupiter (Dios), or from his nurses, the nymphs called Nysae.

DIOS'CURI. Castor and Pollux, the sons of Jupiter.

DI'RAE. A name of the Furies.

DIS. A name of Pluto, god of Hades, signifying riches.

DISCOR'DIA. Sister of Nemesis, the Furies, and Death, was driven from heaven for having sown discord among the gods.

DODO'NA. A celebrated oracle of Jupiter.

DODONAE'US. A name of Jupiter, from the city of Dodona.

DOLA'BRA. The knife used by the priests to cut up the sacrifices.

DOOR'GA. A Hindu goddess.

DO'RIS. Daughter of Oceanus, and sister and wife of Nereus. From these two sprang the several tribes of water nymphs.

DO'TO. One of the Nereids or sea nymphs.

DRA'CO. One of Actaeon's hounds.

DRAGON. Seven headed. See GERYON.

DRY'ADS. Rural deities, the nymphs of the forests, to whom their votaries offered oil, milk, and honey.

DWEUR'GAR. Scandinavian god of the Echo—a pigmy.

EB'LIS. The Mohammedan evil genius.

ECHID'NA. A woman having a serpent's tail.

ECHNO'BAS. One of Actaeon's hounds.

ECH'O. A nymph who fell in love with Narcissus. But when he languished and died she pined away from grief and died also, preserving nothing but her voice, which repeats every sound that reaches her.

"Oft by Echo's tedious tales misled."—*Ovid.*

EGE'RIA. A nymph who is said to have suggested to Numa all his wise laws. She became his wife, and at his death was so disconsolate, and shed so many tears, that Diana changed her into a fountain.

E'GIL. The Vulcan of northern mythology.

ELEUSIN'IAN MYSTERIES. Religious rites in honor of Ceres, performed at Eleusis in Attica.

ELYS'IUM or the **ELYSIAN FIELDS.** The temporary abode of the just in the infernal regions.

EMPYRE'AN, THE. The fifth heaven, the seat of the heathen deity.

ENDYM'ION. A shepherd who acquired from Jupiter the faculty of being always young. One of the lovers of Diana.

ENY'O. The Grecian name of Bellona, the goddess of war and cruelty.

E'OS. The Grecian name of Aurora.

E'OUS. One of the four horses which drew the chariot of Sol. The word is Greek, and means red.

EPH'IAL'TES. A giant who lost his right eye in an encounter with Hercules, and the left eye was destroyed by Apollo.

ER'ATO. One of the Muses, the patroness of light poetry. She presided over the triumphs and complaints of lovers, and is generally represented as crowned with roses and myrtle, and holding a lyre in her hand.

ER'EBUS. Son of Chaos, one of the gods of Hades, sometimes alluded to as representing the infernal regions.

EREC'THEUS. Fourth king of Athens, the son of Vulcan.

ERGA'TIS. A name given to Minerva. It means the work-woman, and was given to the goddess because she was credited with having invented spinning and weaving.

ERIN'YS. A Greek name of the Furies. It means Disturber of the Mind.

ERISICH'THON. He was punished with perpetual hunger because he defiled the groves of Ceres and cut down one of the sacred oaks.

ER'OS. The Greek god of love.

EROS'TRATUS. The rascal who burned the temple of Diana at Ephesus, thereby hoping to make his name immortal.

ERYCI'NA. A name of Venus, from Mount Eryx in Sicily.

ERYTHRE'OS. The Grecian name of one of the horses of Sol's chariot.

E'THON. One of the horses which drew the chariot of Sol. The word is Greek and signifies hot.

ET'NA. A volcanic mountain, beneath which, according to Vergil, there is buried the giant Typhon, who breathes forth devouring flames.

EU'DROMOS. The name of one of Actaeon's hounds

EUME'NIDES. A name of the Furies, meaning

mild, and referring to the time when they were approved by Minerva.

EUPHRO'SYNE. One of the three Graces. See GRACES.

EU'RUS. The east wind. A son of Aeolus.

EURY'ALE. One of the Gorgons, daughter of Phorcus and Ceto.

EURYD'ICE. Wife of Orpheus, who was killed by a serpent on her wedding night.

EURYTH'ION. A seven-headed dragon. See GERYON.

EU'TERPE. One of the Muses, the patroness of instrumental music. The word means agreeable.

EU'VYHE. An expression meaning "Well done, son." Jupiter so frequently addressed his son Bacchus by those words that the phrase at last became one of his names.

FAME. A poetical deity, represented as having wings and blowing a trumpet. A temple was dedicated to her by the Romans.

FATES or **PARCAE.** The three daughters of Necessity. Their names were Clotho, who held the distaff; Lachesis, who turned the spindle; and Atropos, who cut the thread with the fatal shears.

FAUNS. Rural divinities, half man and half goat. They were very similar to the Satyrs. The Fauns attended the god Pan, and the Satyrs attended Bacchus.

FAVO'NIUS. The wind favorable to vegetation, that is, Zephyr—the west wind.

FE'BRIS (fever). One of the evil deities, worshiped that she might not do harm.

FEB'RUUS. A name of Pluto, from the part of the funeral rites which consisted of purifications.

FERO'NIA. The Roman goddess of orchards; was patroness of enfranchised slaves. Some authors think Feronia is the same as Juno.

FI'DES. The goddess of faith and honesty, who had a temple in the Capitol of Rome.

FLATH'IN'NIS. In Celtic mythology, Paradise.

FLEECE, GOLDEN. See GOLDEN FLEECE, ARGONAUTS, and JASON.

FLO'RA. Goddess of flowers and gardens; was wife of Zephyrus. She enjoyed perpetual youth. Her Grecian name was Chloris.

FLORA'LIA. Licentious games instituted in honor of the goddess Flora.

FORTU'NA. The goddess of fortune, who had a temple erected to her by Servius Tullius. She was supposed to be able to bestow riches or poverty on mankind, and was esteemed one of the most potent of the ancient goddesses.

FRAUD. One of the evil deities; was represented as a goddess with a human face and a serpent's body, and in the end of her tail was a scorpion's sting. She lived in the river Cocytus, and nothing but her head was ever seen.

FREY. The Scandinavian god of fertility and peace. The patron god of Sweden and Iceland.

FREY'JA. The Scandinavian Venus. The goddess of love.

FRI'GA. The Saxon goddess of earthly enjoyments. The name Friday is derived from her. In Scandinavian mythology she is the goddess of marriage.

FRO. The Scandinavian god of tempests and winds.

FURIES, THE. The three daughters of Acheron and Nox. They were the punishers of evil doers. Their names were Tisiphone, Megaera, and Alecto, and were supposed to personify rage, slaughter, and envy.

GABRIEL. In Jewish mythology, the prince of fire and thunder, and the angel of death to the favored people of God.

GALATAE'A. A sea nymph. Polyphemus, one of the Cyclops, loved her, but she disdained his attentions and became the lover of Acis, a Sicilian shepherd.

GAL'LI. Priests of Cybele who used to cut their arms with knives when they sacrificed, and acted so like madmen that demented people got the name of Gallantes.

GAN'ESA. The Indian Mercury. The god of wisdom and prudence.

GANGA. One of the three Indian river goddesses.

GAN'YMEDE. A beautiful Phrygian youth, son of Tros, king of Troy. He succeeded Hebe in the office of cupbearer to Jupiter. He is generally represented sitting on the back of a flying eagle.

GAUTA'MA. The name of Buddha most used in Burmah.

GENII. Domestic divinities. Every man was supposed to have two of these genii accompanying him; one brought him happiness, the other misery.

GEN'ITOR. A Lycian name of Jupiter.

GE'RYON. A triple-bodied monster who lived at Gades, where his numerous flocks were guarded by Orthos, a two-headed dog, and by Eurythion, a seven-headed dragon. These guardians were destroyed by Hercules, and the cattle taken away.

GLAU'CUS. A fisherman who became a sea god through eating a seaweed, which he thought invigorated the fishes and might strengthen him.

GLAUKO'PIS. A name given to Minerva, because she had blue eyes.

GNOMES. A name given by Plato to the invisible deities who were supposed to inhabit the earth.

GNOS'SIS. A name given to Ariadne, from the city of Gnossus in Crete.

GOLDEN FLEECE, THE. A ram's hide, sometimes described as white, and at other times as purple and golden. It was given to Phryxus, who carried it to Colchis, where King Aetes entertained Phryxus, and the hide was hung up in the grove of Mars. Jason and 49 companions fetched back the golden fleece.

GOPY'A. Indian mythological nymphs.

GOR'GONS, THE. Three sisters, named Stheno, Euryale, and Medusa. They petrified every one they looked at. Instead of hair, their heads were covered with vipers. Perseus conquered them, and cut off the head of Medusa, which was placed on the shield of Minerva, and all who fixed their eyes thereon were turned into stone.

GRACES, THE. The attendants of Venus. Their names were Aglaia, so called from her beauty and goodness; Thalia, from her perpetual freshness; and Euphrosyne, from her cheerfulness. They are generally depicted as three cheerful maidens with hands joined, and either nude or only wearing transparent robes,—the idea being that kindnesses, as personified by the Graces, should be done with sincerity and candor, and without disguise. They were supposed to teach the duties of gratitude and friendship, and they promoted love and harmony among mankind.

GRADIV'US. A name given to Mars by the Romans. It meant the warrior who defended the city against all external enemies.

GRA'GUS. The name by which Jupiter was worshiped in Lycia.

GRAP'SIOS. A Lycian name of Jupiter.

HA'DA. The Babylonian Juno.

HADES. The Greek name of Pluto, the god of the lower world, the word signifying hidden, dark, and gloomy; the infernal regions; sometimes written **ADES.**

HALCY'ONE. One of the Pleiades; was a daughter of Atlas and Pelione.

HAL'CYONS. Sea birds, supposed to be the Greek kingfishers. They made their nests on the waves, and during the period of incubation the sea was always calm. Hence the modern term "Halcyon days."

HAMADRY'ADS. Wood nymphs, who presided over trees, with which they lived and died.

HAROE'RIS. The Egyptian god, whose eyes are the sun and moon.

HAR'PIES. Animals with the heads and breasts of women, the bodies of birds, and the claws of lions. Their names were Aello, Ocypete, and Celeno. They were loathsome creatures, living in filth and poisoning everything with which they came in contact.

HARPI'KRUTI. The Egyptian name of the god Harpocrates.

HARPOC'RATES. Son of Isis; was the god of silence and meditation. He is usually represented as a young man holding a finger of one hand to his lips, while in the other hand he holds a cornucopia.

HA'ZIS. The Syrian war god.

HE'BE. The goddess of youth. She was cupbearer to Jupiter and the gods, until she had an awkward fall at a festival, and so displeased Jupiter that she was deprived of her office, and Ganymede was appointed in her stead.

HEC'ATE. There were two goddesses known by this name, but the one generally referred to in modern literature is Hecate, or Proserpine, the name by which Diana was known in the infernal regions. In heaven her name was Luna, and her terrestrial name was Diana.

HEC'UBA. The mother of Paris; was allotted to Ulysses after the destruction of Troy, and was afterwards changed into a hound.

HELEN. When a child was so beautiful that Theseus and Perithous stole her, but she was restored by Castor and Pollux. She became the wife of Menelaus, king of Sparta, but eloped with Paris, and thus caused the Trojan War. After the death of Paris she married Deiphobus, his brother, and then betrayed him to Menelaus. She was strangled by order of Polyxo, king of Rhodes.

HE'LIADES. The daughters of Sol, and the sisters of Phaeton, at whose death they were so sad that they

stood mourning till they became metamorphosed into poplar trees, and their tears were turned into amber.

HEL'ICON. A mountain in Boeotia sacred to the Muses, from which place the fountain Hippocrene flowed.

HELICO'NIDES. A name of the Muses, from Mount Helicon.

HELIOP'OLIS. In Elysium; was the city of the sun.

HE'LIOS. The Grecian sun god, who went home every evening in a golden boat which had wings.

HEL'LE. Drowned in the sea, into which she fell from off the back of the golden ram, on which she and Phryxus were escaping from the oppression of their stepmother Ino. The episode gave the name of the Hellespont to the part of the sea where Helle was drowned, and it is now called the Dardanelles.

HEMPH'TA. The Egyptian god Jupiter.

HEPHAES'TOS. The Greek Vulcan.

HE'RA. The Greek name of Juno.

HER'CULES. The son of Jupiter and Alcmena. The goddess Juno hated him from his birth, and sent two serpents to kill him, but though only eight months old he strangled the snakes. As he became older he was set by his master Eurystheus what were thought to be 12 impossible tasks, which have long been known as the "Twelve Labors of Hercules." They were:—

First, To slay the Nemean Lion.

Second, To destroy the Hydra which infested the marshes of Lerna.

Third, To bring to Eurystheus the Arcadian Stag with the golden horns and brazen hoofs.

Fourth, To bring to his master the Boar of Erymanthus.

Fifth, To cleanse the stable of King Augeas, in which 3000 oxen had been kept for 30 years, and which had never been cleaned out.

Sixth, To destroy the Stymphalides, terrible carnivorous birds.

Seventh, To capture the Bull that was desolating Crete.

Eighth, To capture the mares of Diomedes, which breathed fire from their nostrils, and ate human flesh.

Ninth, To procure the girdle of Hippolyte, queen of the Amazons.

Tenth, To bring to Eurystheus the flesh-eating oxen of Geryon, the monster king of Gades.

Eleventh, To bring away some of the golden apples from the garden of the Hesperides.

Twelfth, To bring up from Hades the three-headed dog, Cerberus.

All these tasks he successfully accomplished, and, besides, he assisted the gods in their wars with the giants.

HER'MAE. Statues of Hermes (Mercury), which were set up in Athens for boundaries, and as direction marks for travelers.

HERMATHE'NAE. Statues of Mercury and Minerva placed together.

HER'MES. A Greek name of the god Mercury.

HERMI'ONE. Daughter of Mars and Venus, who was turned into a serpent, and allowed to live in the Elysian fields. There was another Hermione, daughter of Menelaus. She was betrothed to Orestes, but was carried away by Pyrrhus, the son of Achilles.

HE'RO. A priestess of Venus, with whom Leander was so enamored that he swam across the Hellespont every night to visit her, but at last was drowned, when Hero threw herself into the sea and was drowned also.

HESPER'IDES. Three daughters of Hesperus, king of Italy. They kept in their garden the golden apples which Juno gave Jupiter on their wedding day.

HES'PERUS. Brother of Atlas; was changed into the evening star.

HES'TIA. The Greek name of Vesta.

HIL'DUR. The Scandanavian Mars.

HIPPOCAM'PUS. The name of Neptune's favorite horse.

HIPPOCRE'NIDES. A name of the Muses, from the fountain of Hippocrene (the horse fountain), which was formed by a kick of the winged horse Pegasus.

HIPPÓLY'TE. Queen of the Amazons, daughter of Mars. Her father gave her a famous girdle, which Hercules was required to procure (see HERCULES). She was conquered by Hercules, and given by him in marriage to Theseus.

HIPPOLY'TUS. Son of Theseus and Hippolyte. He was killed by a fall from a chariot, but was raised to life again by Diana, or, as some say, by Aesculapius.

HIPPO'NA. A rural divinity, the goddess of horses.

HO'RAE. The daughters of Sol and Chronis.

HORAE'A. Certain sacrifices offered to the goddesses of the seasons to invoke fair weather for the ripening of the fruits of the earth.

HORTEN'SIS. A name of Venus, because she looked after plants and flowers in gardens.

HO'RUS. A name of Sol, the Egyptian day god.

HOSTIL'INA. A rural divinity; goddess of growing corn.

HYACIN'THUS. A boy greatly loved by Apollo, but he was accidentally slain by him with a quoit. Apollo caused to spring from his blood the flower Hyacinth.

HY'ADES. Seven daughters of Atlas and Aethra, who form a constellation which, when it rises with the sun, threatens rain.

HY'DRA. A famous monster serpent, which had many heads. It was slain by Hercules.

HYGE'IA. The goddess of health, a daughter of Aesculapius and Epione. She was represented as a young woman feeding a serpent, which is twined round her arm.

HY'LAS. A beautiful boy beloved by Hercules. The nymphs were jealous of him, and spirited him away while he was drawing water for Hercules.

HY'MEN. The Grecian god of marriage, either the son of Bacchus and Venus, or, as some say, of Apollo and one of the Muses. He was represented as a handsome youth, holding in his hand a burning torch.

HYPE'RION. Son of Coelus and Terra. The model of manly beauty, synonymous with Apollo. The personification of the sun.

HYPERMNES'TRA. One of the 50 daughters of Danaus, who were collectively called the Danaides. She was the one who refused to kill her husband on the wedding night.

IAP'ETUS. Son of Coelus and Terra, husband of Clymene. He was looked upon by the Greeks as the father of mankind.

IO'ARUS. Son of Daedalus, who, with his father, made himself wings with which to fly from Crete. They were fixed to the shoulders by wax. Icarus flew too near the sun, and the heat, melting the wax, caused the wings to drop off, and he fell into the sea and was drowned.

ICHNOBA'TES. One of Actaeon's hounds. It means tracker.

IDAE'A. A name of Cybele, from Mount Ida, where she was worshiped.

IDAE'AN MOTHER. Cybele was sometimes so called.

IDA'LIA. A name of Venus, from Mount Idalus.

IMPERA'TOR. A name of Jupiter, given to him at Praeneste.

IN'ACHUS. One of the earliest of the demigods or heroes.

IN'CUBUS. A Roman name of Pan, meaning The Nightmare.

INDIG'ETES. Deified mortals, gods of the fourth order. They were peculiar to some district.

IN'DRA. The Hindu Jupiter. His wife was Indrant, who presides over the winds and thunder.

IN'NUS. A name of Pan, the same as Incubus.

I'NO. Second wife of Athamas, king of Thebes, father of Phryxus and Helle. Ino had two children, who could not ascend the throne while Phryxus and Helle were alive. Ino therefore persecuted them to such a degree that they determined to escape. They did so on a ram, whose hide became the Golden Fleece (see PHRYXUS and HELLE). Ino destroyed herself, and was changed by Neptune into a sea goddess.

INO'A. Festivals in memory of Ino.

I'O. A daughter of Inachus, and a priestess of Juno at Argus. Jupiter courted her, and was detected by Juno, when the god turned Io into a beautiful heifer. Juno demanded the beast of Jupiter, and set the hundred-eyed Argus to watch her. Jupiter persuaded Mercury to destroy Argus, and Io was set at liberty, and restored to human shape. Juno continued her persecutions, and Io had to wander from place to place till she came to Egypt, where she became wife of King Osiris, and won such good opinions from the Egyptians that after her death she was worshiped as the goddess Isis.

IOLA'US. Son of Iphicles; assisted Hercules in conquering the Hydra, by burning with hot irons the place where the heads were cut off; and for his assistance he was restored to youth by Hebe. Lovers used to go to his monument at Phocis and ratify their vows of fidelity.

IO'THUN. Celtic mythological monsters, or giants.

IPH'ICLUS. Twin brother of Hercules, and father of Iolaus.

IPHIGENI'A. A daughter of Agamemnon. He made a vow to Diana which involved the sacrifice of Iphigenia, but just at the critical moment she was spirited away by the goddess, and taken to Tauris, and a beautiful goat was found on the altar in her place.

I'RIS. Daughter of Thaumas and Electra; was the attendant of Juno, and one of the messengers of the gods. Her duty was to cut the thread which detained

expiring souls. She is the personification of the rainbow.

I'SIS. Wife of Osiris.

I'TYS. Killed by his mother Progne when six years old, and given to his father Tereus as food. The gods were so enraged at this that they turned Itys into a pheasant, Progne into a swallow, and Tereus into an owl.

IXI'ON. Son of Phlegyas, king of the Lapithae. For attempting to produce thunder, Jupiter cast him into Hades, and had him bound to a wheel, surrounded with serpents, which is forever turning over a river of fire.

JAN'I. A place in Rome where there were three statues of Janus, and it was a meeting place for usurers and creditors.

JA'NITOR. A title of Janus, from the gates before the doors of private houses being called Januae.

JA'NUS. A king of Italy said to have been the son of Coelus, others say of Apollo. He sheltered Saturn when he was driven from heaven by Jupiter. Janus presided over highways, gates, and locks, and is usually represented with two faces.

JA'SON. Son of Aeson, king of Iolcos. He was brought up by the centaur Chiron. His uncle Aetes sent him to fetch the Golden Fleece from Colchis (see ARGONAUTS). He went in the ship Argo with 49 companions, the flower of Greek youth. With the help of Juno they got safe to Colchis, but the King Aetes promised to restore the Golden Fleece only on condition that the Argonauts performed certain services. Jason was to tame the wild fiery bulls, and to make them plow the field of Mars; to sow in the ground the teeth of a serpent, from which would spring armed men who would fight against him who plowed the field of Mars; to kill the fiery dragon which guarded the tree on which the Golden Fleece was hung. The fate of Jason and the rest of the Argonauts seemed certain; but Medea, the king's daughter, fell in love with Jason, and with the help of charms which she gave him he overcame all the difficulties which the king had put in his way. He took away the Golden Fleece and Medea also. The king sent his son Absyrtus to overtake the fugitives, but Medea killed him, and strewed his limbs in his father's path, so that he might be delayed in collecting them, and this enabled Jason and Medea to escape. After a time Jason got tired of Medea, and married Glauce, which cruelty Medea revenged by killing her children before their father's eyes. Jason was accidentally killed by a beam of the ship Argo falling on him.

JOCAS'TA, otherwise **EPICASTA.** Wife of Laius, king of Thebes, who in after life married her own son, Oedipus, not knowing who he was, and, on discovering the fatal mistake, hanged herself.

JOVE. A very general name of Jupiter.

JUDGES IN HADES, THE. Rhadamanthus for Asiatics; Aeacus for Europeans. Minos was the presiding judge.

JUGATIN'US. One of the nuptial deities.

JU'NO. Daughter of Saturn and Ops, alias Cybele. She was married to Jupiter, and became queen of all the gods and goddesses, and mistress of heaven and earth. Juno was the mother of Mars, Vulcan, Hebe, and Lucina. She prompted the gods to conspire against Jupiter, but the attempt was frustrated, and Apollo and Neptune were banished from heaven by Jupiter. Juno is the goddess of marriage, and the protectress of married women; and she had special regard for virtuous women.

JU'PITER. Son of Saturn and Cybele (or Ops); born on Mount Ida, in Crete, and nourished by the goat Amalthaea. When quite young Jupiter rescued his father from the Titans; and afterwards, with the help of Hercules, defeated the giants, the sons of earth, when they made war against heaven. Jupiter was worshiped with great solemnity under various names by most of the heathen nations. The Africans called him Ammon; the Babylonians, Belus; and the Egyptians, Osiris (see JOVE). He was represented as a majestic personage seated on a throne, holding in his hands a scepter and a thunderbolt; at his feet stood a spread eagle.

KA'LI. A Hindu goddess, after whom Calcutta is named.

KA'LOC. One of the chief of the Mexican gods.

KAM'A. The Hindu god of love.

KEB'LAH. The point of the compass to which worshipers look during their invocations. Thus the Sol or Sun worshipers turn to the east, where the sun rises, and the Mohammedans turn towards Mecca.

KE'DERLI. In Mohammedan mythology, is a god corresponding to the English St. George, and is still invoked by the Turks when they go to war.

KI'UN. The Egyptian Venus.

KNEPH. An Egyptian god, having a ram's head and a man's body.

KRISH'NA. An Indian god, the revenger of wrongs; also called the Indian Apollo.

KRO'DO. The Saxon Saturn.

KU'MA'RA. The war god of the Hindus.

KU'VERA. The Hindu god of riches.

LA'BE. The Arabian Circe, who had unlimited power of metamorphosis.

LACH'ESIS. One of the three Fates or Parcae. She spun the thread of life.

LACTU'RA. One of the goddesses of growing corn.

LA'DON. The dragon which guarded the apples in the garden of the Hesperides. Also the name of one of Actaeon's hounds. Also the river to which Syrinx fled when pursued by Pan, where she was changed into a reed, and where Pan made his first pipe.

LAE'LAPS. One of Diana's hunting dogs, which, while pursuing a wild boar, was petrified. Also the name of one of Actaeon's hounds.

LAKSH'MI. Hindu goddess of wealth and pleasure. One of the wives of Vishnu.

LAM'IA. An evil deity amongst the Greeks and Romans, and the great dread of their children, whom she had the credit of constantly enticing away and destroying.

LAM'PUS. One of Aurora's chariot horses.

LAOC'O-ON. One of the priests of Apollo, who was, with his two sons, crushed to death by serpents, because he opposed the admission of the wooden horse to Troy.

LAOM'EDON. Son of Ilus, a Trojan king. He was famous for having, with the assistance of Apollo and Neptune, built the walls of Troy.

LAP'IS. The oath stone. The Romans used to swear by Jupiter Lapis.

LAP'ITHUS. Son of Apollo. His numerous children were called Lapithae, and they are notorious for their fight with the centaurs at the nuptial feast of Perithous and Hippodamia.

LA'RES AND PENA'TES. Sons of Mercury and Lara, or, as other mythologists say, of Jupiter and Lamida. They belonged to the lower order of Roman gods, and presided over homes and families.

LATO'NA. Daughter of Coeus and Phoebus, mother of Apollo and Diana. Being admired so much by Jupiter, Juno was jealous, and Latona was the object of the goddess's constant persecution.

LAVER'NA. The goddess of thieves.

LE'DA. The mother of Castor and Pollux, their father being Jupiter, in the shape of a swan. After her death she received the name of Nemesis.

LEM'URES. The specters of departed souls. Milton, in his *Ode to the Nativity*, says "Lemures moan with midnight plaint." They are sometimes referred to as the Manes of the dead.

LER'NA. The lake near Argos where Hercules conquered the Hydra.

LE'THE. One of the rivers of the infernal regions, of which the souls of the departed are obliged to drink to produce oblivion or forgetfulness of everything they did or knew while alive on the earth.

LEUCOTH'EA. The name of Ino after she was transformed into a sea nymph.

LEVA'NA. The deity who presided over newborn infants.

LIAK'URA. Mount Parnassus.

LIBITI'NA. The chief of the funeral deities.

LIB'YSSA. Queen of fays and fairies.

LIGE'A. A wood nymph, dryad.

LI'LITH. In Jewish myth, a great enemy to newborn children. She was said to have been Adam's first wife, but, refusing to submit to him, was turned from Paradise and made a specter.

LI'NA. The goddess of the art of weaving.

LIN'DOR. A lover in the shape of a shepherd, like Corydon; a love-sick swain.

LO'FEN. The Scandinavian god who guards friendship.

LOF'UA. The Scandinavian goddess who reconciles lovers.

LO'KI. The Scandinavian Satan, the god of strife, the spirit of evil.

LO'TIS. A daughter of Neptune, who fled from Priapus, and only escaped from him by being transformed into a lotus plant.

LU'CIAN. The impersonation of folly, changed into an ass.

LU'CIFER. The morning star.

LUCI'NA. The goddess who presides at the birth of children. She was a daughter of Jupiter and Juno.

LUD. In ancient British mythology the king of the Britons.

LU'NA. The name of Diana as a celestial divinity. See DIANA and HECATE.

LU'PERCUS or PAN. The Roman god of fertility. His festival day was 15th February, and the festivals were called Lupercalia.

LYCAON'IAN FOOD. Execrable viands, such as were supplied to Jupiter by Lycaon. To test the divine knowledge of the god he served up human flesh, which Jove discovered, and punished Lycaon by turning him into a wolf.

LYCIAN CLOWNS. Turned into frogs by Latona or Ceres.

LYMNI'ADES. Nymphs who resided in marshes.

LYN'CEUS. One of the Argonauts. The personification of sharp-sightedness.

LYRE. This musical instrument is constantly associated with the doings of the ancient deities. Amphion built the walls of Thebes by the music of his lyre.

MAEN'ADES. Priestesses of Bacchus.

MAHA'SOOR. The Hindu god of evil.

MA'IA. The mother of the Grecian Mercury.

MAM'MON. The money god.

MA'NES. The souls of the departed. The god of funerals and tombs.

MA'NU. The Hindu god of law.

MARI'NA. A name of Venus, meaning sea foam, from her having been formed from the froth of the sea.

MARS. The god of war, the son of Jupiter and Juno. Venus was his favorite goddess, and amongst their children were Cupid, Anteros, and Harmonia. In the Trojan War Mars took the part of the Trojans, but was defeated by Diomede.

MAR'SYAS. The name of the piper who challenged Apollo to a musical contest, and, being defeated, was flayed to death by the god. He was the supposed inventor of the flute.

MA'RUT. The Hindu god of tempestuous winds.

MATU'RA. One of the rural deities who protected the growing corn at time of ripening.

MAX'IMUS. One of the appellations of Jupiter, being the greatest of the gods.

MEDE'A. Wife of Jason, chief of the Argonauts.

MEDU'SA. One of the Gorgons. Minerva changed her beautiful hair into serpents. She was conquered by Perseus, who cut off her head, and placed it on Minerva's shield. Every one who looked at the head was turned into stone.

MEGAE'RA. One of the three Furies.

MELLO'NA. One of the rural divinities, the goddess of bees.

MELPOM'ENE. One of the Muses, the goddess of tragedy.

MEN'DES. An Egyptian god like Pan. He was worshiped in the form of a goat.

MENELA'US. A Spartan king. The elopement of his wife Helen with Paris was the origin of the siege of Troy.

MER'CURY. The son of Jupiter and Maia; was the messenger of the gods, and the conductor of the souls of the dead to Hades. He was the supposed inventor of weights and measures, and presided over orators and merchants.

ME'RU. The abode of the Hindu god Vishnu. It is at the top of a mountain 80,000 leagues high. The Olympus of the Indians.

MI'DAS. A king of Phrygia, who begged of Bacchus the special gift that everything he touched might be turned into gold. The request was granted, and as soon as he touched his food it also was turned to gold, and for fear of being starved he was compelled to ask the god to withdraw the power he had bestowed upon him. He was told to bathe in the river Pactolus. He did so, and the sands which he stood on were golden forever after. It was this same king who, being appointed to be judge in a musical contest between Apollo and Pan, gave the Satyr the palm; whereupon Apollo, to show his contempt, bestowed on him a pair of asses' ears. This gave rise to the term "Midas-eared," as a synonym for ill-judged, or indiscriminate.

MI'LO. A celebrated Croton athlete, who is said to have felled an ox with his fist, and to have eaten the beast in one day.

MIMALLO'NES. The "wild women" who accompanied Bacchus, so called because they mimicked his actions.

MI'MIR. In Scandinavian mythology the god of wisdom.

MINER'VA. The goddess of wisdom, war, and the liberal arts; is said to have sprung from the head of Jupiter fully armed for battle. She was a great benefactress of mankind, and patroness of the fine arts. She was the tutelar deity of the city of Athens.

MI'NOS. The principal of the three judges of the lower world, before whom the spirits of the departed appeared and heard their doom.

MIN'OTAUR. The monster, half man, half bull, which Theseus slew.

MITH'RA. A Persian divinity, the ruler of the universe, corresponding with the Roman Sol.

MNEMOS'YNE. Mother of the Muses and goddess of memory. Jupiter courted the goddess in the guise of a shepherd.

MOAK'IBAT. The recording angel of the Mohammedans.

MO'LOCH. A god of the Phoenicians to whom human victims, principally children, were sacrificed. Moloch is figurative of the influence which impels us to sacrifice that which we ought to cherish most dearly.

MO'MUS. The god of sarcasm. The god who blamed Jove for not having made a window in man's breast, so that his thoughts could be seen. His bitter jests occasioned his being driven from heaven in disgrace.

MONE'TA. A name given to Juno by those writers who considered her the goddess of money.

MOON. The moon was, by the ancients, called Hecate before and after setting; Astarte when in crescent form; Diana when in full.

MOR'PHEUS. The god of sleep and dreams, the minister of Somnus.

MORS. Death, a daughter of Nox.

MUN'IN. The Scandinavian god of memory, represented by the raven that was perched on Odin's shoulder.

MUSCA'RIUS. A name given to Jupiter because he kept off the flies from the sacrifices.

MU'SES, THE. Nine daughters of Jupiter and Mnemosyne. They presided over the arts and sciences, music and poetry. Their names were Calliope, Clio, Erato, Thalia, Melpomene, Terpsichore, Euterpe, Polyhymnia, and Urania. They principally resided in Mount Parnassus, at Helicon.

MY'THRAS. The Egyptian name of Apollo.

NAI'ADS, THE. Beautiful nymphs of human form who presided over springs, fountains, and wells. They resided in the meadows by the sides of rivers. Vergil mentions Aegle as being the fairest of them.

NAN'DI. The Hindu goddess of joy.

NARA'KA. The name of the infernal regions amongst the Hindus.

NARA'YANA. The mover of the waters. The Hindu god of tides.

NARCIS'SUS. Son of Cephisus and the Naiad Liriope; a beautiful youth, who was so pleased with the reflection of himself which he saw in the placid water of a fountain that he could not help loving it, imagining that it must be some beautiful nymph. His fruitless endeavors to possess himself of the supposed nymph drove him to despair, and he killed himself. There sprang from his blood a flower, which was named after him, Narcissus.

NAS'TROND. The Scandinavian place of eternal punishment, corresponding with Hades.

NA'TIO. A Roman goddess who took care of young infants.

NEM'ESIS. The goddess of vengeance or justice, one of the infernal deities. Her mother was Nox. She was supposed to be constantly traveling about the earth in search of wickedness, which she punished with the greatest severity.

NEPHA'LIA. Grecian festivals in honor of Mnemosyne, the mother of the Muses.

NEP'TUNE. God of the sea, a son of Saturn and Cybele, and brother of Jupiter and Pluto. He quarreled with Jupiter because he did not consider that the dominion of the sea was equal to Jupiter's empire of heaven and earth; and he was banished from the celestial regions, after having conspired with Pluto to dethrone Jupiter.

NEREIDES, THE. Aquatic nymphs. They were daughters of Nereus and Doris, and 50 in number. They are generally represented as beautiful girls riding on dolphins, and carrying tridents in the right hand.

NERE'US. A sea deity, husband of Doris. He had the gift of prophecy, and foretold fates; but he had also the power of assuming various shapes, which enabled him to escape from the importunities of those who were anxious to consult him.

NES'US. The name of the Centaur which was destroyed by Hercules for insulting Deianira.

NES'TOR. A grandson of Neptune, his father being Neleus, and his mother Chloris. Homer makes him one

of the greatest of the Greek heroes. He was present at the famous battle between the Lapithae and the Centaurs, and took a leading part in the Trojan War. He was the wise counselor of the Greeks.

NID'HOGG. In Scandinavian mythology the dragon which dwells in Nastrond.

NIF'LHEIM. The Scandinavian hell. It was supposed to consist of nine vast regions of ice beneath the North Pole, where darkness reigns eternally. See NASTROND.

NI'OBE. A daughter of Tantalus, and the personification of grief. By her husband Amphion she had seven sons and seven daughters. By the orders of Latona the father and sons were killed by Apollo, and the daughters (except Chloris) by Diana. Niobe, being overwhelmed with grief, escaped further trouble by being turned into a marble statue.

NO'MIUS. A lawgiver; one of the names of Apollo. This title was also given to Mercury for the part he took in inventing beneficent laws.

NORNS. Three Scandinavian goddesses, who wove the woof of human destiny.

NOX. The daughter of Chaos, and sister of Erebus. She personified night, and was the mother of Mors, Nemesis, and the Fates.

NUN'DINA. The goddess who took charge of children when they were nine days old—the day on which the Romans named their children.

NUPTIA'LIS. A title of Juno. When the goddess was invoked under this name, the gall of the victim was taken out and thrown behind the altar, signifying that there should be no gall (bitterness) or anger between married people.

NU'RIEL. In Hebrew mythology the god of hailstorms.

NYCTE'LIUS. A name given to Bacchus, because his festivals were celebrated by torchlight.

NYMPHS. This was a general name for a class of inferior female deities who were attendants of the gods. Some of them presided over springs, fountains, wells, woods, and the sea.

NY'SAE. The names of the nymphs by whom Bacchus was nursed.

NY'SEUS. A name of Bacchus, because he was worshiped at Nysa.

NY'SUS. A king of Megara who was invisible by virtue of a particular lock of hair. This lock his daughter Scylla cut off, and so betrayed her father to his enemies. She was changed into a lark, and the king into a hawk, and he still pursues his daughter, intending to punish her for her treachery.

OAN'NES. An Eastern god, represented as a monster, half man, half fish. He was said to have taught men the use of letters in the daytime, and at night to have retired to the depth of the ocean.

OBAM'BOU. A devil of African mythology.

OCEAN'IDES. Sea nymphs, daughters of Oceanus and Tethys. Their numbers are variously estimated by different poets, some saying there were as many as 3000, while others say there were as few as 16. The principal of them are mentioned under their respective names, as Amphitrite, Doris, Metis, etc.

OCE'ANUS. Son of Coelus and Terra, and husband of Tethys. Several mythological rivers were called his sons, as Alpheus, Peneus, etc., and his daughters were called the Oceanides.

OCRID'ION. A king of Rhodes, who was deified after his death.

OCY'PETE. One of the Harpies, who infected everything she touched. The word means swift of flight.

OCY'ROE. A daughter of Chiron, who had the gift of prophecy. She was metamorphosed into a mare.

O'DIN. In Scandinavian mythology the god of the universe, and reputed father of all the Scandinavian kings. His wife's name was Friga, and his two sons were Thor and Balder.

OED'IPUS. A son of Laius, king of Thebes, best known as the solver of the famous enigma propounded by the Sphinx.

OENO'NE. Wife of Paris, a nymph of Mount Ida, who had the gift of prophecy.

OGYG'IA. An island, the abode of Calypso, in the Mediterranean Sea. It was so beautiful in sylvan scenery that even Mercury (who dwelt on Olympus) was charmed with the spot.

OLE'NUS. A son of Vulcan, husband of Lethaea, a woman who thought herself more beautiful than the goddesses, and as a punishment she and her husband were turned into stone statues.

OLYM'PIUS. A name of Jupiter, from Olympia, where the god had a splendid temple, which was considered to be one of the seven wonders of the world.

OLYM'PUS. The magnificent mountain on the coast of Thessaly, 9000 feet high, where the gods were supposed to reside. There were several other smaller mountains of the same name.

OLY'RAS. A river near Thermopylae, which, it is said, attempted to extinguish the funeral pile on which Hercules was consumed.

OMOPHA'GIA. A Bacchanalian festival at which some uncooked meats were served.

OM'PHALE. The queen of Lydia, to whom Hercules was sold as a bondsman for three years for the murder of Iphitus. Hercules fell in love with her, and led an effeminate life in her society, wearing female apparel, while Omphale wore the lion's skin.

ONA'RUS. A priest of Bacchus.

ONU'VA. The Venus of the ancient Gauls.

OPA'LIA. Roman festivals in honor of Ops, held on 14th of the calends of January.

OPS. Mother of the gods, a daughter of Coelus and Terra. She was known by the several names of Bona Dea, Rhea, Cybele, Magna Mater, Proserpine, Tellus, and Thya; and occasionally she is spoken of as Juno and Minerva. She personified labor, and is represented as a comely matron, distributing gifts with her right hand, and holding in her left hand a loaf of bread. Her festival was the 14th day of the January calends.

ORBO'NA. The goddess of parents bereft of their children.

O'READS. Mountain nymphs, attendants on Diana.

ORGIES. Drunken revels. The riotous feasts of Bacchus were so designated.

ORI'ON. A famous handsome giant, who was blinded by Oenopion for a grievous wrong done to Merope, and he was expelled from Chios. The sound of the Cyclops' hammers led him to the abode of Vulcan, who gave him a guide. He then consulted an oracle, and had his sight restored, as Longfellow says, by fixing

"His blank eyes upon the sun."

He was afterwards slain by Diana and placed amongst the stars, where his constellation is one of the most splendid.

ORITHY'IA. A daughter of Erechtheus, whose lover, Boreas, carried her off while she was wandering by the river Ilissus. Her children were Zetes and Calais, two winged warriors who accompanied the Argonauts.

OR'MUZD. In Persian mythology the creator of all things.

O'ROS. The Egyptian Apollo.

OR'PHEUS. Son of Apollo and the muse Calliope. He was married to Eurydice; but she was stung by a serpent, and died. Orpheus went down to Hades to claim her, and played so sweetly with his lute that Pluto allowed Eurydice to return to the earth with Orpheus, but on condition that he did not look behind him until he had reached the terrestrial regions. Orpheus, however, in his anxiety to see if she were following him, looked round, and Eurydice disappeared from his sight, instantly and forever.

OSI'RIS. The Egyptian god of the sun. He was worshiped under the form of an ox.

OS'SA. The mountain which the giants piled on the top of Pelion to enable them to ascend to heaven and attack the gods.

PACTO'LUS. The river in Lydia where Midas washed himself by order of Bacchus, and the sands were turned to gold.

PAE'AN. A name given to Apollo, from *paean*, the hymn which was sung in his honor after he had killed the serpent Python.

PALAE'MON or **MELICERTA.** A sea god, son of Athamas and Ino.

PA'LES. The goddess of shepherds and protectress of flocks. Her festivals were called Palilia.

PALLA'DIUM. A famous statue of the goddess Pallas (Minerva). She is sitting with a spear in her right hand, and in her left a distaff and spindle. Various accounts are given of the origin of it. Some writers say it fell from the skies. It was supposed that the preservation of the statue would be the preservation of Troy; and during the Trojan War the Greeks were greatly encouraged when they became the possessors of it.

PAL'LAS or **MINERVA.** The name was given to Minerva when she destroyed a famous giant named Pallas.

PAN. The Arcadian god of shepherds, huntsmen, and country folk, and chief of the inferior deities; usually considered to have been the son of Mercury and Penelope.

PANDO'RA. According to Hesiod, the first mortal

female. Vulcan made her of clay, and gave her life. Venus gave her beauty; and the art of captivating was bestowed upon her by the Graces. She was taught singing by Apollo, and Mercury taught her oratory. Jupiter gave her a box, the famous "Pandora's Box," which she was told to give to her husband, Epimetheus, brother of Prometheus. As soon as he opened it there issued from it numberless diseases and evils which were soon spread all over the world, and from that moment they have afflicted the human race. It is said that Hope alone remained in the box.

PAN'THEON. The temple of all the gods, built by Agrippa at Rome, in the reign of Augustus.

PAP'REMIS. The Egyptian Mars.

PAR'CAE, THE. Goddesses who presided over the destiny of human beings. They were also called the Fates, and were three in number, Atropos, Clotho, and Lachesis.

PARIS. Son of Priam, king of Troy, and his mother was Hecuba. It had been predicted that he would be the cause of the destruction of Troy, and his father therefore ordered him to be strangled as soon as he was born; but the slave who had been intrusted with this mission took the child to Mount Ida, and left it there. Some shepherds, however, found the infant and took care of him. He lived among them till he had grown to man's estate, and he then married Oenone, a nymph of Ida. At the famous nuptial feast of Peleus and Thetis, Discordia, who had not been invited, attended secretly; and when all were assembled, she threw amongst the goddesses a golden apple, on which was inscribed, "To the fairest." This occasioned a great contention, for each thought herself the fairest. Ultimately, the contestants were reduced to three, Juno, Pallas (Minerva), and Venus; but Jove himself could not make these three agree, and it was decided that Paris should be the umpire. He was sent for, and each of the goddesses courted his favor by offering all sorts of bribes. Juno offered him power, Pallas wisdom, and Venus promised him the most beautiful woman in the world. Paris gave the golden apple to Venus. Soon after this episode Priam owned Paris as his son, and sent him to Greece to fetch Helen, who was renowned as being the most beautiful woman in the world. She was the wife of Menelaus, king of Sparta; but during his absence Paris carried Helen away to Troy, and this gave rise to the celebrated war between the Greeks and the Trojans, which ended in the destruction of Troy. Paris was among the 676,000 Trojans who fell during or after the siege.

PARNAS'SIDES. A name common to the Muses, from Mount Parnassus.

PARNAS'SUS. The mountain of the Muses in Phocis, and sacred to Apollo and Bacchus. Any one who slept on this mountain became a poet. It was named after one of the sons of Bacchus.

PAR'THENON. The temple of Minerva (or Pallas), at Athens. It was destroyed by the Persians, and rebuilt by Pericles.

PAR'THENOS. A name of Juno, and also of Minerva.

PASIPH'AE. The reputed mother of the Minotaur killed by Theseus. She was said to be the daughter of Sol and Perseis, and her husband was Minos, king of Crete.

PASITH'EA. Sometimes there are *four* Graces spoken of; when this is so, the name of the fourth is Pasithea.

PA'VAN. Hindu god of the winds.

PEG'ASUS. The famous winged horse which was said to have sprung from the blood of Medusa when her head was cut off by Perseus. His abode was on Mount Helicon, where, by striking the ground with his hoof, he caused water to spring forth, which formed the fountain afterwards called Hippocrene.

PE'LEUS. A king of Thessaly, who married Thetis, one of the Nereids.

PE'LIAS. A son of Neptune and Tyro. He usurped the throne of Cretheus, which Jason was persuaded to relinquish to take the command of the Argonautic expedition. On the return of Jason, Medea, the sorceress, undertook to restore Pelias to youth, but required that the body should first be cut up and put in a caldron of boiling water. When this had been done, Medea refused to fulfill her promise.

PE'LIAS. The name of the spear of Achilles, which was so large that none could wield it but the hero himself.

PE'LION. A well-wooded mountain, famous for the wars between the giants and the gods, and as the abode of the Centaurs, who were expelled by the Lapithae.

PE'LOPS. Son of Tantalus, king of Phrygia. His father killed him, and served him up to be eaten at a feast given to the gods, who, when they found out what the father of Pelops had done, restored the son to life, and he afterwards became the husband of Hippodamia.

PENA'TES. Roman domestic gods.

PERSEPH'ONE. The Greek name of Proserpine.

PER'SEUS. A son of Jupiter and Danae, the daughter of Acrisius. His first famous exploit was against the Gorgon, Medusa. He was assisted in this enterprise by Pluto, who lent him a helmet which would make him invisible. Pallas lent him her shield, and Mercury supplied him with wings. He made a speedy conquest of the Gorgon, and cut off Medusa's head, with which he flew through the air, and from the blood sprang the winged horse Pegasus. As he flew along he saw Andromeda chained to the rock, and a sea monster ready to devour her. He killed the monster, and married Andromeda. When he got back, he showed the Gorgon's head to King Polydectes, and the monarch was immediately turned into stone.

PHA'ETON. A son of Sol, or, according to most mythologists, of Phoebus and Clymene. Anxious to display his skill in horsemanship, he was allowed to drive the chariot of the sun for one day. The horses soon found out the incapacity of the charioteer, became unmanageable, and overturned the chariot. There was such great fear of injury to heaven and earth, that Jove, to stop the destruction, killed Phaëton with a thunderbolt.

PHA'ON. A boatman, who received from Venus a box of ointment, with which, when he anointed himself, he grew so beautiful that Sappho became enamored of him; but when the ointment had all been used Phaon returned to his former condition, and Sappho, in despair, drowned herself.

PHILOCTE'TES. Son of Poeas, and one of the companions of Jason on his Argonautic expedition. He was present at the death of Hercules, and received from him the poisoned arrows which had been dipped in the blood of the Hydra. These arrows, an oracle declared, were necessary to be used in the destruction of Troy, and Philoctetes was persuaded by Ulysses to go to assist at the siege. He appears to have used the weapons with great dexterity and with wonderful effect, for Paris was among the heroes whom he killed.

PHILOME'LA. A daughter of Pandion, king of Athens, who was transformed into a nightingale.

PHLEG'ETHON. A river of fire in the infernal regions. It was the picture of desolation, for nothing could grow on its parched and withered banks.

PHLE'GON (earth loving). One of the four chariot horses of Sol.

PHLE'GYAS. Son of Mars and father of Ixion and Coronis. For his impiety in desecrating and plundering the temple of Apollo at Delphi, he was sent to Hades, and there was made to sit with a huge stone suspended over his head, ready to be dropped on him at any moment.

PHOE'BUS. A name of Apollo, signifying light and life.

PHOR'CUS. A son of Neptune, father of the Gorgons.

PHRYXUS. Brother of Helle. He escaped from his step-mother, Ino, on the back of the golden ram, which took him to Colchis. Phryxus sacrificed the ram to Jupiter and gave the golden fleece to Aetes. It was hung in the garden of Ares and guarded by a sleepless dragon.

PICUM'NUS. A rural divinity, who presided over the manuring of lands, called also Sterentius.

PI'CUS. A son of Saturn, father of Faunus; was turned into a woodpecker by Circe, whose love he had not requited.

PIER'IDES. A name of the Muses, derived from Pieria, a fountain near Mount Olympus, where they were supposed to have been born. Also, the daughters of Pierus, a king of Macedonia, who settled in Boeotia. They challenged the Muses to sing, and were changed into magpies.

PILUM'NUS. A rural divinity, who presided over the corn while it was being ground.

PIRITH'OUS. A son of Ixion and great friend of Theseus, king of Athens.

PI'THO. The goddess of persuasion, daughter of Mercury and Venus. She is sometimes referred to under the name of Suada.

PLEI'ADES, THE. Seven daughters of Atlas and Pleione. Their names were Electra, Alcyone, Celaeno, Maia, Sterope, Taygete, and Merope.

PLU'TO. King of the infernal regions. He was a son of Saturn and Ops, and husband of Proserpine, daughter of Ceres. He is sometimes referred to under the name Dis, and he personifies Hades. His principal attendant was the three-headed dog Cerberus, and about his throne were the Eumenides, the Harpies, and the Furies.

PLU'TUS. The god of riches; was son of Jason and Ceres. He is described as being blind and lame; blind because he so often injudiciously bestows his riches, and lame because fortunes come so slowly.

PLU'VIUS. A name of Jupiter, because he had the rain in his control.

PODALIR'IUS. A famous surgeon, a son of Aesculapius, who was very serviceable among the soldiers in the Trojan War.

POL'LEAR. Son of Siva, the Hindu god of wisdom.

POL'LUX. Twin brother of Castor. Their father was Jupiter and their mother Leda. He and his brother form the constellation Gemini. His Greek name was Polydeuces.

POLYBO'TES. One of the giants who made war against Jupiter.

POLYDEC'TES. Turned into stone when Perseus showed him Medusa's head.

POLYHYM'NIA. Daughter of Jupiter and Mnemosyne. One of the Muses, who presided over singing and rhetoric.

POLYPHE'MUS. One of the most celebrated of the Cyclops, a son of Neptune. He captured Ulysses and 12 of his companions, and it is said that six of them were eaten. The rest escaped by the ingenuity of Ulysses, who destroyed the Cyclop's one eye with a firebrand.

POLYX'ENA. Daughter of Priam, king of Troy. It was by her treachery that Achilles was shot in the heel.

POMO'NA. The Roman goddess of fruits and gardens.

PORTU'NUS (PALAEMON). Son of Ino; was god of harbors.

POSEI'DON. A name of Neptune.

PRAC'RITI. The Hindu goddess of nature.

PRI'AM. The last king of Troy.

PRIA'PUS. The guardian of gardens and god of natural reproduction; was son of Venus and Bacchus.

PRIS'CA. Another name of Vesta.

PRO'CRIS. Daughter of the king of Athens.

PROME'THEUS. Son of Iapetus and father of Deucalion. He presumed to make clay men, and animate them with fire which he had stolen from heaven. This so displeased Jupiter that he sent him a box full of evils, which Prometheus refused; but his brother Epimetheus, not so cautious, opened it, and the evils spread over all the earth. Jupiter then punished Prometheus by commanding Mercury to bind him to Mount Caucasus, where a vulture daily preyed upon his liver, which grew in the night as much as it had been reduced in the day, so that the punishment was a prolonged torture. Hercules at last killed the vulture and set Prometheus free.

PROS'ERPINE. A daughter of Jupiter and Ceres. Pluto carried her off to the infernal regions and made her his wife. She was known by the names of "the Queen of Hades," Hecate, Juno Inferna, and Libitina.

PRO'TEUS. A marine deity, who could foretell events and convert himself at will into all sorts of shapes.

PSY'CHE. The wife of Cupid. The name is Greek, signifying the soul or spirit.

PYGMA'LION. A famous sculptor, who had resolved to remain unmarried, but he made such a beautiful statue of a goddess that he begged Venus to give it life. His request being granted, Pygmalion married the animated statue.

PYLO'TIS. A Greek name of Minerva.

PYR'ACMON. One of the chiefs of the Cyclops.

PY'ROIS (luminous). One of the four chariot horses of Sol.

PY'THIA. The priestess of Apollo at Delphi, who delivered the answers of the oracle. Also the name of the games celebrated in honor of Apollo's victory over the Python.

PY'THON. A famous serpent killed by Apollo.

QUAD'RATUS. A surname given to Mercury, because some of his statues were four-sided.

QUAD'RIFRONS. Janus was sometimes depicted with four faces instead of the usual two, and he was then called Janus Quadrifrons.

QUI'ES. The Roman goddess of rest. She had a temple just outside the Collini gate of Rome.

QUIRI'NUS. A name given to Mars during war time; and Vergil refers to Jupiter under the same name.

RA'MA. A Hindu god, who was the terrestrial representative of Vishnu.

REM'BHA. The Hindu goddess of pleasure.

RHADAMAN'THUS. A son of Jupiter and Europa; was the judge of the Asiatics in the infernal regions.

RHAMNU'SIA. A name of Nemesis, from Rhamnus, a town in Attica, where she had a temple in which was her statue, made of one stone 10 cubits high.

RHE'A. The Greek name of Cybele.

RIM'MON. A Phrygian god of whom Milton says—

> ". . . Rimmon, whose delightful seat
> Was fair Damascus, on the fertile banks
> Of Abana and Pharpar, lucid streams."

ROM'ULUS. The traditional founder of Rome. He was a son of Mars and Ilia, and twin brother of Remus. The infants were thrown into the Tiber, but were miraculously saved and suckled by a she-wolf till they were found by Faustulus, a shepherd, who brought them up. Remus was killed in a quarrel with his brother, and Romulus became the famous emperor.

RUMI'A DEA. The Roman goddess of babes in arms.

RUNCI'NA. The goddess of weeding or cleansing the ground.

SA'GA. The Scandinavian goddess of history.

SAL'AMANDERS. The genii who, according to Plato, lived in fire.

SAL'II. The priests of Mars who had charge of the sacred shields.

SALMO'NEUS. A king of Elis who, for trying to imitate Jupiter's splendors, was sent by the god straight to the infernal regions.

SA'LUS. The Roman god of health.

SAPPHO. A celebrated poetess, a native of Lesbos, who flourished B. C. 610. Her only connection with the goddesses of the time is that the Greeks called her "the tenth Muse."

SAT'URN. King of the Universe; was father of Jupiter, Neptune, and Pluto. These gods quarreled among themselves as to the division of their father's kingdom, which ended in Jupiter having heaven and earth, Neptune the sea, and Pluto the infernal regions.

SATURNA'LIA. Festivals held in honor of Saturn about the 16th or 18th of December. Principally famous for the riotous disorder which generally attended them.

SATUR'NIUS. A name given to Jupiter, Neptune, and Pluto, as sons of Saturn.

SATYAVRA'TA. The Hindu god of law. The same as Menu.

SA'TYRS. The attendants of Silenus, who were similar in most respects to the Fauns who attended Pan.

SCYL'LA. A beautiful nymph who excited the jealousy of Neptune's wife, Amphitrite, and was changed by the goddess into a frightful sea monster, which had six fearfully ugly heads and necks, and who, rising unexpectedly from the deep, used to take off as many as six sailors from a vessel, and carry them to the bottom of the sea. An alternative danger with Charybdis.

SCYL'LA. A daughter of Nysus, who was changed into a lark for cutting off a charmed lock of her father's hair.

SEGES'TA. A rural divinity who protected corn during harvest time.

SEM. The Egyptian Hercules.

SEM'ELE. The mother of Bacchus, who was born in a miraculous manner after Jupiter had visited her, at her special request, in all his terrible splendor. She was deified after her death and named Thyone.

SEMI-DEI. The demi-gods.

SEMO'NES. Roman gods of a class between the "immortal" and the "mortal," such as the Satyrs and Fauns.

SEPTE'RION. A festival held in honor of Apollo, at which the victory of that god over the Python was grandly represented.

SERA'PIS. The Egyptian Jupiter, and generally considered to be the same as Osiris.

SERPENT. The Greeks and Romans considered the serpent as symbolical of guardian spirits, and as such it was often engraved on their altars.

SESHA or **ANANTA.** The Egyptian Pluto.

SILE'NUS. A Bacchanalian demi-god, the chief of the Satyrs. He is generally represented as a fat, drunken old man, riding on an ass, and crowned with flowers.

SI'RENS, THE. Sea nymphs, who by their music allured mariners to destruction. To avoid the snare when nearing their abode, Ulysses had the ears of his companions stopped with wax, and had himself tied to the mast of his ship. They thus sailed past in safety; but the Sirens, thinking that their charms had lost their powers, drowned themselves.

SIS'YPHUS. Son of Aeolus and Enaretta. He was condemned to roll a stone to the top of a hill in the infernal regions, and, as it rolled down again when he reached the summit, his punishment was perpetual.

SI'VA. In Hindu mythology the "changer of form."

SLEIP'NER. The eight-legged horse of Odin, the chief of the Scandinavian gods.

SOL. The sun. The worship of the god Sol is the

oldest on record, and though he is sometimes referred to as being the same as the god Apollo, there is no doubt he was worshiped by the Egyptians, Persians, and other nations long before the Apollo of the Greeks was heard of.

SOM'NUS. The god of sleep, son of Nox (Night). He was one of the infernal deities, and resided in a gloomy cave, void of light and air.

SOS'PITA. A name of Juno, as the safeguard of women.

SO'TER. A Greek name of Jupiter, meaning deliverer.

SPHINX, THE. A monster having the head and breasts of a woman, the body of a dog, the tail of a serpent, the wings of a bird, the paws of a lion, and a human voice. She lived in the country near Thebes, and proposed to every passer-by the following enigma: "What animal is that which walks on four legs in the morning, two at noon, and three in the evening?" Oedipus solved the riddle thus: "Man is the animal; for when an infant he crawls on his hands and feet, in the noontide of life he walks erect, and as the evening of his existence sets in he supports himself with a stick." When the sphinx found her riddle solved she destroyed herself.

STEREN'TIUS. The Roman god who invented the art of manuring lands. See PICUMNUS.

STER'OPES. One of the Cyclops.

STYMPHALI'DES. The carnivorous birds destroyed in the sixth labor of Hercules.

STYX. A noted river of Hades, which was held in such high esteem by the gods that they always swore, "By the Styx," and such an oath was never violated.

SUA'DA. The goddess of persuasion.

SURADE'VI. The Hindu goddess of wine.

SURY'A. The Hindu god corresponding to the Roman Sol, the sun.

SYLPHS. Genii who, according to Plato, lived in the air.

SYLVES'TER. The name of Mars when he was invoked to protect cultivated land from the ravages of war.

SYR'INX. The name of the nymph who, to escape from the importunities of Pan, was by Diana changed into reeds, out of which he made his celebrated pipes, and named them "The Syrinx."

TAC'ITA. The goddess of silence.

TAN'TALUS. Father of Niobe and Pelops, who, as a punishment for serving up his son Pelops as meat at a feast given to the gods, was placed in a pool of water in the infernal regions; but the waters receded from him whenever he attempted to quench his burning thirst. Hence the word tantalizing.

TAR'TARUS. An inner region of hell, to which the gods sent the exceptionally depraved.

TELCHI'NES. Priests of Cybele, who were famous magicians.

TEL'LUS. A name of Cybele, wife of Saturn.

TEMPLE. An edifice erected to the honor of a god or goddess, in which the sacrifices were offered.

TENTH MUSE. Sappho was so called.

TER'EUS. A son of Mars. He married Progne, daughter of the king of Athens, but became enamored of her sister Philomela, who, however, resented his attentions, which so enraged him that he cut out her tongue. When Progne heard of her husband's unfaithfulness she took a terrible revenge (see ITYS). Progne was turned into a swallow, Philomela into a nightingale, Itys into a pheasant, and Tereus into a hoopoo, a kind of vulture,—some say an owl.

TERGEMI'NA. A name of Diana, alluding to her triform divinity as a goddess of heaven, earth, and hell.

TER'MINUS. The Roman god of boundaries.

TERPSICH'ORE. One of the nine Muses. She presided over dancing.

TER'RA. The earth; one of the most ancient of the Grecian goddesses.

THALES'TRIS. A queen of the Amazons.

THALI'A. One of the nine Muses. She presided over festivals and comedy.

THALI'A. One of the Graces.

THAM'YRIS. A skillful singer, who presumed to challenge the Muses to sing, upon condition that if he did not sing best they might inflict any penalty they pleased. He was, of course, defeated, and the Muses made him blind.

THI'A. A daughter of Coelus and Terra; wife of Hyperion.

THE'MIS. A daughter of Coelus and Terra, and wife of Jupiter; was the Roman goddess of laws, ceremonies, and oracles.

THE'SEUS. One of the most famous of the Greek heroes. He was a son of Aegeus, king of Athens.

THE'TIS. A sea goddess, daughter of Nereus and Doris. Her husband was Peleus, king of Thessaly, and she was the mother of the famous Achilles, whom she rendered all but invulnerable by dipping him into the river Styx. See ACHILLES.

THOR. The Scandinavian war god (son of Odin), who had rule over the Aerial regions, and, like Jupiter, hurled thunder against his foes.

THOR'S BELT. A girdle which doubles his strength whenever the war god puts it on.

THOTH. The Mercury of the Egyptians.

THYA'DES. Priestesses of Bacchus, who ran wild in the hills, wearing tiger skins and carrying torches.

THYR'SUS. The staff of Bacchus.

TIME or SATURN. The husband of Virtue and father of Truth.

TISIPH'ONE. One of the Furies.

TI'TAN. Elder brother of Saturn, who made war against him, and was ultimately vanquished by Jupiter.

TI'TANS. The supporters of Titan in his war against Saturn and Jupiter.

TITHO'NUS. The husband of Aurora. At the request of his wife the gods granted him immortality, but she forgot at the same time to ask that he should be granted perpetual youth. The consequence was that Tithonus grew old and decrepit, while Aurora remained as fresh as the morning. The gods, however, changed him into a grasshopper, which is supposed to moult as it gets old, and grows young again.

TIT'YUS. A son of Jupiter. A giant who was thrown into the innermost hell for insulting Diana. He, like Prometheus, has a vulture constantly feeding on his ever-growing liver.

TRIPTOL'EMUS. A son of Oceanus and Terra. He was a great favorite of the goddess Ceres, who cured him of a dangerous illness when he was young, and afterwards taught him agriculture.

TRITERI'CA. Bacchanalian festivals.

TRI'TONS. Sons of Triton, a son of Neptune and Amphitrite. They were the trumpeters of the sea gods, and were depicted as a sort of mermen—the upper half of the body being like a man, and the lower half like a dolphin.

TROPHO'NIUS. One of Jupiter's most famous oracles.

TROY. The classic poets say that the walls of this famous city were built by the magic sound of Apollo's lyre.

TRUTH. A daughter of Time, because Truth is discovered in the course of Time. Democritus says that Truth lies hidden at the bottom of a well.

TUTEL'INA. A rural divinity—the goddess of granaries.

TY'PHON. A monster with a hundred heads who made war against the gods, but was crushed by Jove's thunderbolts, and imprisoned under Mount Etna.

TY'PHON. In Egyptian mythology the god who tried to undo all the good work effected by Osiris.

UL'LER. The Scandinavian god who presided over archery and duels.

ULYS'SES. A noted king of Ithaca, whose exploits in connection with the Trojan War, and his adventures on his return therefrom, are the subject of Homer's *Odyssey*. His wife's name was Penelope, and he was so much endeared to her that he feigned madness to get himself excused from going to the Trojan War; but his artifice was discovered, and he was compelled to go. He was of great help to the Grecians, and forced Achilles from his retreat and obtained the charmed arrows of Hercules from Philoctetes, and used them against the Trojans. He enabled Paris to shoot one of them at the heel of Achilles, and so kill that charmed warrior. During his wanderings on his homeward voyage he was taken prisoner by the Cyclops, and escaped, after blinding Polyphemus, their chief. At Aeolia he obtained all the winds of heaven, and put them in bags; but his companions, thinking that the bags contained treasure which they could rob him of when they got to Ithaca, cut them and let out the winds, and the ships were immediately blown back to Aeolia. After Circe had turned his companions into swine on an island where he and they were shipwrecked, he compelled the goddess to restore them to their human shape. As he passed the islands of the Sirens he escaped their allurements by stopping the ears of his companions with wax, and fastening himself to the mast of his ship. His wife Penelope was a pattern of constancy; for, though Ulysses was reported to be dead, she would not marry any one else, and had the satisfaction of having her husband return after an absence of about 20 years.

UN'DINE. A water nymph, or sylph.

UNX'IA. A name of Juno, relating to her protection of newly-married people.

URA'NIA. A daughter of Jupiter and Mnemosyne —one of the Muses, who presided over astronomy.
URA'NUS. The Greek name of Coelus. His descendants are sometimes called Uranids.
UR'GUS. A name of Pluto, signifying the Impeller.
UT'GORD LO'KI. In Scandinavian mythology the king of the giants.

VALHAL'LA. The Scandinavian temple of immortality, inhabited by the souls of heroes slain in battle.
VA'LI. The Scandinavian god of archery.
VALLO'NIA. The goddess of valleys.
VARU'NA. The Hindu Neptune—generally represented as a white man riding on a sea horse, carrying a club in one hand and a rope in the other.
VEJO'VIS. A god of the under world whose power to injure corresponded to that of Jupiter to help; sometimes identified with Apollo.
VE'NUS. The goddess of beauty, and mother of love. She is said to have sprung from the foam of the sea, and was immediately carried to the abode of the gods on Olympus, where they were all charmed with her extreme beauty. Vulcan married her, but she permitted the attention of others of the gods, and notably of Mars, their offspring being Hermione, Cupid, and Anteros. After this she left Olympus and fell in love with Adonis, a beautiful youth, who was killed when hunting a wild boar. Venus indirectly caused the Trojan War, for, when the goddess of discord had thrown among the goddesses the golden apple inscribed "To the fairest," Paris adjudged the apple to Venus, and she inspired him with love for Helen, wife of Menelaus, king of Sparta. Paris carried off Helen to Troy, and the Greeks pursued and besieged the city (see HELEN, PARIS, and TROY). Venus is mentioned by the classic poets under the names of Aphrodite, Cypria, Urania, Astarte, Paphia, Cythera, and the laughter-loving goddess. Her favorite residence was at Cyprus. Incense alone was usually offered on her altars, but if there was a victim it was a white goat. Her attendants were Cupids and the Graces.
VERTICOR'DIA. A Roman name of Venus, signifying the power of love to change the hard hearted. The corresponding Greek name was Epistrophia.
VERTUM'NUS. God of spring, or, as some mythologists say, of the seasons; the husband of Pomona, the goddess of orchards.
VES'TA. Daughter of Saturn and Cybele; was the goddess of fire. She had under her special care and protection a famous statue of Minerva, before which the Vestal Virgins kept a fire or lamp constantly burning.

VES'TAL VIR'GINS. The priestesses of Vesta, whose chief duty was to see that the sacred fire in the temple of Vesta was not extinguished. They were always selected from the best families, and were under a solemn vow of chastity, and compelled to live perfectly pure lives.
VIA'LIS. A name of Mercury, because he presided over the making of roads.
VIC'TORY. A goddess, the daughter of Styx and Acheron, generally represented as flying in the air holding out a wreath of laurel.
VI'DAR. A Scandinavian god, who could walk on the water and in the air. The god of silence (corresponding with the classic Harpocrates).
VIR'TUE. A goddess worshiped by most of the ancients under various names. The way to the temple of honor was through the temple of virtue.
VISH'NU. The Preserver; a principal Hindu god.
VUL'CAN. The god of fire; was the son of Jupiter and Juno. He offended Jupiter, and was by him thrown out of heaven. He was nine days falling, and at last dropped into Lemnos with such violence that he broke his leg, and was lame forever after. Vulcan was married to Venus. He is supposed to have formed Pandora out of clay. His servants were the Cyclops. He was the patron deity of blacksmiths.
VULCANA'LIA. Roman festivals in honor of Vulcan, at which the victims were thrown into the fire and burned to death.

WO'DEN. The Anglo-Saxon form of the Scandinavian god Odin; Wednesday is called after him.

XAN'THUS. The name of the wonderful horse of Achilles.

YA'MA. The Hindu devil, generally represented as a terrible monster of a green color, with flaming eyes.
YGDRA'SIL. The famous ash tree of Scandinavian mythology, under which the gods held daily council.
Y'MIR. The Scandinavian god corresponding to Chaos of the classics.

ZEPH'YR. The god of flowers, a son of Aeolus and Aurora; the west wind.
ZE'TES. With his brother Calais, drove the Harpies from Thrace.
ZE'THUS. Twin brother of Amphion.
ZEUS. The Greek name of Jupiter.

Distinctive Names of Gods and Goddesses.

Apollo, Canoba, Cynthius, Delius, Delphicus, Demarus, Horus, Khrishna, Mythras, Numius, Oros, Paean, Phoebus, Pythius, Sol.
Aurora, Eos.
Bacchus, Biformis, Brisaeus, Dionysus, Nyctelius, Nyseus.
Buddha, Gautama.
Ceres, Cybele, Hestia, Ops, Prisca, Rhea, Vesta.
Cupid, Eros, Kama.
Diana, Artemis, Dyctinna, Hecate, Luna, Phoebe, Proserpine, Tergemina.
Flora, Chloris.
Hercules, Alcides, Sem.
Juno, Hada, Hera, Moneta, Nuptialis, Parthenos, Sospita.
Jupiter, Ammon, Apis, Assabinus, Belus, Capitolinus, Ceraunius, Demarus, Dies Pater, Dodonaeus, Genitor, Gragus, Grapsios, Hemphta, Imperator, Indra, Jove, Maximus, Muscarius, Olympius, Osiris, Pluvius, Saturnius, Soter, Zeus.
Mars, Corythaix, Gradivus, Quirinus, Papremis, Sylvester.
Mercury, Camillus, Caresa, Hermes, Quadratus, Thoth, Vialis.
Minerva, Athena, Ergotis, Glaukopis, Pallas, Pylotis.
Neptune, Consus, Poseidon, Varuna.
Pan, Incubus, Innus, Mendes, Supersus.
Pluto, Dis, Februus, Hades, Shesa, Urgus.
Saturn, Chronos, Krodo.
Venus, Acidalia, Aphrodite, Armata, Astarte, Clucina, Cypria, Cythera, Dione, Erycina, Hortensis, Idalia, Onuva.
Vulcan, Hephaestos.

The Name of God in Forty-Eight Languages.

Ædian ..... Ilos	French ..... Dieu	Lithuanian ..... Diewas
Anglo-Saxon ..... God	Gaelic ..... Diu	Low Latin ..... Diex
Arabic ..... Allah	German ..... Gott	Mahrati ..... Deva
Armenian ..... Teuti	German, Old ..... Diet	Malay ..... Alla
Assyrian ..... Eleah	German, Old High ..... Got	Modern Egyptian ..... Teun
Chaldaic ..... Eiliah	Gothic ..... Guth	Norwegian ..... Gud
Chinese ..... Prussa	Greek ..... Theos	Norse, Old ..... Tiwar
Cretan ..... Thios	Gujarati ..... Khuda	Persian ..... Khoda
Danish ..... Gud	Hebrew ..... Eleah, Jehovah	Polish ..... Bog
Dorian ..... Ilos	Hindustani ..... Khuda	Portuguese ..... Deos
Dutch ..... God	Hindi ..... Brahmā	Punjabi ..... Deva
Egyptian, Old ..... Teut	Icelandic ..... Gud	Sanskrit ..... Deva
English ..... God	Italian ..... Dio	Spanish ..... Dios
Erse (Irish) ..... Dia	Japanese ..... Goezer	Swedish ..... Gud
Finnish ..... Jumala	Lapp ..... Jubinal	Tatar ..... Magatai
Flemish ..... God	Latin ..... Deus	Turkish ..... Allah

DICTIONARY OF PSEUDONYMS.

Comprising pen names of noted writers, and epithets applied to famous personages.

Abimelech Coody,	Gulian C. Verplanck.
Abraham, Brother,	Rev. Richard King.
Academicus,	Rev. Aulay Macaulay.
Achitophel, "Achitophel and Absalom,"	Earl of Shaftesbury (1621-1638).
Ackermann, Gottlieb,	Franz Xavier Mayer.
Acworth, John,	Rev. F. R. Smith.
Adams, Moses,	Geo. Wm. Bagley.
Adams, Stephen,	Michael Maybrick.
Addison of the North, "The Man of Feeling,"	Henry Mackenzie.
Adeler, Max, "Out of the Hurly Burly,"	Charles Heber Clark.
Admirable Doctor,	Roger Bacon.
Adonais, "Adonais,"	Keats (name given by Shelley).
Agate,	Whitelaw Reid.
Agläus,	Henry Timrod.
Akers, Elizabeth,	Mrs. E. M. Allen.
A. K. H. B.,	Rev. A. K. H. Boyd.
Alcaeus,	James Montgomery.
Alcibiades, *Punch*, 1846,	Lord Tennyson.
Alexander, Mrs.,	Mrs. A. F. Hector.
Alexander, Sir Drawcansir,	Tobias George Smollett.
Alexander the Coppersmith, LL.D.,	Thomas Erskine, Baron Erskine.
Alexander the Corrector,	Alexander Cruden.
Alexander of the North, The,	Charles XII. of Sweden.
Allen, F. M.,	Edmund Downey.
A. L. O. E. (i. e., A Lady of England),	Charlotte Maria Tucker.
Alte Fritz, Der,	Frederick the Great.
Amateur Casual,	James Greenwood.
Anacreon Moore,	Thomas Moore.
Anacreon of Painters,	Francesco Albani.
Anacreon of Persia,	Hafiz.
Anacreon of the Guillotine,	Bertrand Barrere.
Ane of that Ilk,	Prof. W. E. Aytoun.
Angler, An, "Salmonia,"	Sir Humphry Davy.
Anstey, F.,	Thomas Anstey Guthrie.
Apostate, Julian The	Roman Emperor Julian.
Apostle of Germany,	St. Boniface.
Apostle of Ireland,	St. Patrick.
Apostle of Temperance,	Rev. Theobald Mathew.
Apostle of the English,	St. Augustine.
Apostle of the French,	St. Denis.
Apostle of the Frisians,	St. Wilbrord or Willibrod.
Apostle of the Gauls,	St. Irenaeus.
Apostle of the Goths,	Ulfilas.
Apostle of the Indians,	Rev. John Eliot.
Apostle of the North,	Anscharius or Ansgar.
Apostle of the North,	Bernard Gilpin.
Apostle to the Indies,	St. Francis Xavier.
Astrophel,	Sir Philip Sidney.
Attic Bee,	Sophocles.
Attic Muse,	Xenophon.
Atticus,	Joseph Addison (name given by Pope in "Prologue to the Satires").
Austrian Hyena,	Baron Julius Jakob von Haynau.
Autocrat, The,	Dr. Oliver Wendell Holmes.
Bab, "Bab Ballads,"	W. S. Gilbert.
Baba, Ali,	Alberigh Mackay.
Badinguet,	Napoleon III.
Balfour, Clara,	Mrs. Felicia Dorothea (Browne) Hemans.
Bard, The,	Edw. Jerningham.
Bard of Avon,	Shakespeare.
Bard of Ayrshire,	Robert Burns.
Bard of Rydal Mount, The,	Wm. Wordsworth.
Bayard, The Polish,	Prince Joseph Poniatowski.
Beau Brummel,	George Bryan Brummel.
Beauclerc,	Henry I. of England.
Beau Nash,	Richard Nash (also called "King of Bath").
Bede, Cuthbert,	Rev. Edward Bradley.
Bell, Acton,	Anne Bronte.
Bell, Currer,	Charlotte Bronte.
Bell, Ellis,	Emily J. Bronte.
Bell, Lilian,	Mrs. Arthur Hoyt Bogue.
Bell-the-Cat,	Archibald Douglas, Fifth Earl of Angus.
Belted Will,	Lord William Howard.
Benson, Carl,	Charles Astor Bristed.
Berwick, Mary,	Adelaide Anne Procter.
Bess, Good Queen,	Queen Elizabeth of England.
Bettina,	Elisabeth (Brentano) von Arnim.
Bibliophile,	L. A. Allibone.
Bibliophile, Jacob,	Paul Lacroix.
Bickerstaff, Isaac,	Sir Richard Steele.
Biglow, Hosea,	James Russell Lowell.
Billings, Josh,	H. W. Shaw.
Black Douglas,	(Generic name of Scotch family of Douglas.)
Black Prince, The,	Edward, Prince of Wales, son of Edward III. of England.
Blacksmith, The Learned, "Sparks from the Anvil,"	Elihu Burritt.
Blind Harry,	Henry the Minstrel.
Bluff Hal, or Harry,	King Henry VIII. of England.
Boisgilbert, Edmund,	Ignatius Donnelly.
Boldrewood, Rolf,	Thomas A. Browne.
Bon Gaultier,	Prof. W. E. Aytoun and Sir Theo. Martin.
Bouverie, Bartholomew,	Rt. Hon. W. E. Gladstone, M.P.
Boz,	Charles Dickens.
Bozzy,	James Boswell.
Braddon, Miss M. E.,	Mrs. John Maxwell.
Breitmann, Hans,	Charles Godfrey Leland.
Brown, Tom,	Thomas Hughes, Q.C., M.P.
Brown, Tom, the Younger,	Thomas Moore.
Burlington Hawkeye Man,	Robert Jones Burdette.
Byron, the Russian,	Alexander Sergeivitch Puschkin.
Cadenus,	Jonathan Swift.
Caliban,	Robert Buchanan.
Caliban,	Louis Jean Emmanuel Gonzalès.
Candidus,	Samuel Adams.
Carmen Sylva,	Elizabeth, Queen of Roumania.
Carroll, Lewis,	Rev. C. Lutwidge Dodgson.
Caskoden, Edward,	Charles Major.
Catholicus,	Cardinal John Henry Newman.
Cato,	Alexander Hamilton.
Chicot,	Epes Winthrop Sargent.
Chinese Gordon,	Maj. Gen. Charles George Gordon.
Citizen King,	Louis Philippe.
Cleisthbotham, Jedediah,	Sir Walter Scott.
Colman, R. W.,	James Hogg, the Ettrick Shepherd.
Common Sense,	Thomas Paine.
Condroux, Alfred,	Honoré de Balzac.
Confessor, The,	Edward III., King of Anglo-Saxons.
Connor, Ralph,	Rev. C. W. Gordon.
Conqueror, William the,	Duke of Normandy.
Conway, Hugh,	F. J. Fargus.
Coolidge, Susan,	Sarah C. Woolsey.
Cornwall, Barry,	Bryan Waller Procter.
Corrector, Alexander the,	Alexander Cruden.
Cotonnet,	Alfred de Musset.
Craddock, Charles E.,	Mary N. Murfree.
Crayon, Geoffrey,	Washington Irving.
Creyton,	J. T. Trowbridge.
Crichton, The Admirable,	James Crichton.
Croaker & Co.,	Joseph Rodman Drake, Fitz Greene Halleck.
Crowfield, Christopher,	Mrs. H. Beecher Stowe.
Cruiser, Benedict	G. A. Sala.
Curate of Meudon (le Cure de Meudon),	Rabelais.
Curtius,	Noah Webster.
Damsel of Brittany,	Eleanora, granddaughter of Henry II. of England.
Danbury Newsman,	J. M. Bailey.
Davy,	Alexandre Dumas.
Dean, The,	Jonathan Swift.
Defender of the Truth,	Henry VIII. of England
Delorme, Joseph,	Chas. Augustin Sainte Beuve.

Democratic Tory, A,	"Benj. Disraeli: the Past and the Future," John Skelton.
Democritus, Junior,	"Anatomy of Melancholy," Robert Burton.
Dix, Dorothy,	Elizabeth M. Gilmer.
Doctor Angelicus,	Thomas Aquinas.
Doctor Authenticus,	Gregory of Rimini.
Doctor, The,	Robert Southey.
Doe, John,	Geo. Cavendish Bentinck.
Drapier, M. B.,	Jonathan Swift.
Duchess, The,	Mrs. Hungerford.
Dunshunner, Augustus,	Prof. Wm. Edmondstoune Aytoun.
Editor, The,	Ambrose Eccles.
Elia,	Charles Lamb.
Eliot, George,	Mrs. J. W. Cross, *née* Marian Evans.
Elmwood,	James Russell Lowell.
English Officer, An,	Lieut. Col. Alexander Jardine.
Enemy to Peace, An,	Jonathan Swift.
English Opium Eater,	Thomas De Quincey.
English Rabelais, The,	Dean Swift.
English Republican, An,	Algernon Chas. Swinburne.
English Roscius, The,	David Garrick.
English Tory,	Sir Richard Steele.
Englishman, An,	Thomas Paine.
Ettrick Shepherd,	James Hogg.
Expounder of the Constitution,	Daniel Webster.
Fancy, One of the,	Thomas Moore.
Fat Contributor, The,	W. M. Thackeray.
Father of Angling,	Izaak Walton.
Father of English Poetry,	Title given by Dryden to Chaucer.
Father of Epic Poetry,	Homer.
Father of His Country,	Given by Roman Senate to Cicero.
Father of His Country,	George Washington.
Father of His People,	Louis XII. of France.
Father of History,	Herodotus.
Father of Jests,	Joseph Miller.
Father of Letters,	Francis I., King of France.
Father of Letters,	Lorenzo de' Medici, Ruler of Florence.
Father of Medicine,	Hippocrates.
Father of Music,	Giovanni, Pierluigi da Palestrina.
Father of Tragedy,	Title bestowed by Athenians upon Aeschylus.
Federalist, A,	Noah Webster.
Fellow of the Royal Society, A,	Cotton Mather.
Female Howard,	Mrs. Elizabeth Fry.
Fern, Fanny,	Mrs. James Parton.
Fitz-Boodle, George,	W. M. Thackeray.
Fitznoodle,	B. B. Vallentine.
Fitzvictor, John,	Percy Bysshe Shelley.
Forrester, Frank,	Henry Wm. Herbert.
Foucher, Paul,	Victor Hugo.
Fra Diavolo,	Michele Pezza.
Fra Elbertus,	Elbert Hubbard.
France, Anatole,	Jacques Anatole Thibault.
Freeman, A,	Jean Joseph Louis Blanc.
Freeman, Mrs.,	First Duchess of Marlborough.
Froissart, Jean,	Alphonse Daudet.
Gaston, Marie,	Alphonse Daudet.
Gay, Mr. Joseph,	Alexander Pope.
Gazul, Clara,	Prosper Merimee.
Gentleman, A,	Edmond Hoyle.
German Milton, The,	Friedrich Gottlieb Klopstock.
German Plato, The,	Friedrich Heinrich Jacobi.
German Voltaire, The,	Christoph Martin Wieland.
Gladiolus,	Wm. Ewart Gladstone.
Good Gray Poet,	Walt Whitman.
Good Knight, without Fear and without Reproach, The,	Pierre de Terrail Bayard.
Goodwell, Godek,	Horace Greeley.
Gorky, Maxim,	A. M. Peshkov.
Goslett, Paul,	Chas. Lever.
Gower, The Moral,	John Gower.
Graduate of Oxford,	John Ruskin.
Grand, Sarah,	Miss Clarke; Mrs. Haldane McFall.
Gray, Maxwell,	Miss Tuttiett.
Great Commoner,	William Pitt.
Great Elector,	Frederick William, Elector of Brandenburg.
Gushington, Angelina,	Lady Dufferin.
Gyp, Gabrielle Sybille,	Comtesse de Martel.

"H. H.,"	Helen Hunt Jackson.
Hamilton, Gail,	Mary Abigail Dodge.
Harland, Marion,	Mrs. Mary V. Terhune.
Harlequin,	Robert Harley.
Helvidius,	James Madison.
Hero of the Nile,	Horatio Nelson.
Heron, E. and H.,	Mrs. Kenneth and Mr. Hesketh Prichard.
Harte, Bret,	Francis Bret Harte.
Hibernia,	Jonathan Swift.
Hierro,	Victor Marie Hugo.
Historicus,	George Grote.
Hobbes, John Oliver,	Miss Richards; Mrs. Craigie.
Hoffmann, Prof. Louis,	Angelo John Lewis.
Holm, Saxe,	Helen Hunt Jackson.
Honeycombe, Henry,	Leigh Hunt.
Hope, Anthony,	Anthony Hope Hawkins.
Hope, F. T. L.,	Dr. Farrar.
Huntington, Faye,	Theodosia T. Foster.
Ignatius, Father,	J. L. Lyne.
Inchiquin,	Robert Southey.
Incorruptible, The,	Robespierre.
Ingham, Col. Frederick,	Edward Everett Hale.
Ingoldsby, Thomas,	Rev. R. H. Barham.
Irish Gentleman, An,	Thomas Moore.
Iron Duke,	Duke of Wellington.
Iron Hand, The,	Gottfried von Berlichingen.
Iron, Ralph,	Miss Olive Schreiner; Mrs. Cronwright.
Ironside,	Edmund II. (989-1016).
Ironside, Nestor,	Sir Richard Steele.
Irrefragable Doctor,	Alexander of Hales.
Isa,	Mrs. Isa Craig-Knox.
J. S. of Dale,	Frederick J. Stimson.
Jacob Omnium's Hoss,	W. M. Thackeray.
James, S. T.,	Horace E. Scudder.
Jeames,	W. M. Thackeray.
Jean Jacques,	Jean Jacques Rousseau.
Jessamine, James,	Bryan Waller Procter.
Jessamy Bride,	Mary Horneck; Mrs. Gwyn.
Jewish Plato, The,	Philo Judaeus.
Jobber, A,	Daniel Defoe.
Josiah Allen's Wife,	Marietta Holley.
Kata Phusin,	John Ruskin.
Kerr, Sherrill,	Julia Magruder.
King Maker, The,	Richard Nevil.
King of Courts,	Quintus Hortensius.
Kit,	Prof. John Wilson.
Knickerbocker, Diedrich,	Washington Irving.
Lady, A,	Mrs. Julia Ward Howe.
Lady, A,	Jane Austen.
Lady of Massachusetts,	Mrs. Lydia Maria Child.
Laicus,	Rev. Lyman Abbott.
Langstaff, Launcelot,	Washington Irving.
Last of the Fathers,	St. Bernard.
Last of the Goths,	Roderick of Spain.
Last of the Romans,	Aetius, a Roman general.
Last of the Tribunes,	Cola di Rienzi.
Laughing Philosopher,	Democritus of Abdera.
Laurence Slingsby,	George Henry Lewes.
Lee, Vernon,	Violet Paget.
L. E. L.,	Letitia Elizabeth Landon; Mrs. Maclean.
Leviathan of Literature,	Dr. Samuel Johnson.
Liberator, The,	Simon Bolivar.
Light-Horse Harry,	General Henry Lee.
Lion of the North,	Gustavus Adolphus.
Little Comedy,	Catharine Horneck; Mrs. Bunbury.
Little Corporal,	General Bonaparte.
Little Giant,	Hon. Stephen A. Douglas.
Little Mac,	Gen. George B. McClellan.
Little Magician,	Hon. Martin Van Buren.
Little Master,	Hans Sebald Behan.
Little Thomas,	Thomas Moore.
Lothrop, Amy,	Anna B. Warner.
Loti, Pierre,	Louis M. J. Viaud.
Ludlow, Johnny,	Mrs. Henry Wood.
Luska, Sidney,	Henry Harland.
Lyall, Edna,	Miss Ada Ellen Bayly.
Lycidas,	Edward King.
Maartens, Maarten,	J. H. W. Van der Poorten Schwartz.
Maclaren, Ian,	Rev. John Watson.
Mad Anthony,	General Anthony Wayne.
Madman of the North,	Charles XII. of Sweden.
Maid of Orleans,	Joan of Arc.
Maid of Saragossa,	Augustina Zaragoza.
Maitland, Thomas,	Robert Buchanan.
Malachi Malagrowther,	Sir Walter Scott.
Malet, Lucas,	Mrs. Harrison.
Man of December,	Napoleon III.
Man of Destiny,	Napoleon Bonaparte.
Man of Ross,	John Kyrle.
Mantuan Swan,	Vergil.

Market Gardener, A,	R. D. Blackmore.
Marlitt, E.,	Henriette Eugenie John.
Mars, Victor de,	Joinville.
Marshal Forward,	Field Marshal von Blucher.
Marvel, Ik,	Donald Grant Mitchell.
Mathetes,	John Wilson.
Matthaeus, Thomas,	John Tindal.
May, Sophie,	Rebecca Sophia Clarke.
Meredith, Owen,	Lord E. R. Bulwer Lytton.
Merlin,	Lord Tennyson.
Merriman, Henry Seton,	Hugh S. Scott.
Merry Monarch,	Charles II. of England.
Merrypebble, Mr.,	Wm. E. Gladstone.
Mill-boy of the Slashes,	Henry Clay.
Miller, Joaquin,	C. H. Miller.
Miller, Olive Thorne,	Harriet Mann Miller.
Moderator,	Thomas Chatterton.
Modern Messalina,	Catharine II. of Russia.
Monk, Lewis,	Matthew Gregory Lewis.
Morley, Mrs.,	Queen Anne.
Morning Star of the Reformation,	John Wiclif.
Morris, Peter,	John Gibson Lockhart.
Mother Ann,	Ann Lee.
Muhlbach, Luise,	Mme. Klara (Muller) Mundt.
Nasby, Petroleum V.,	David Ross Locke.
Nero of the North, The,	Christian II. of Denmark.
Nesbit, E.,	Mrs. Hubert Bland.
Noble Lord, A,	Lord Byron.
Nobleman, A,	Oliver Goldsmith.
North, Barclay,	William C. Hudson.
North, Christopher,	Prof. John Wilson.
Northern Herodotus,	Snorro Sturleson.
Novalis,	Friedrich von Hardenberg.
Octogenarian, An,	Walter Savage Landor.
O'Down, Cornelius,	Charles Lever.
Officer, An,	Major Alexander Jardine.
Ogilvy, Gavin,	J. M. Barrie.
O'Hara Family,	J. and M. Banim.
Old Bachelor, An,	George William Curtis.
Old Bard, The,	Edw. Jerningham.
Old Bullion,	Col. Thomas Hart Benton.
Old Ebony,	William Blackwood.
Old Hickory,	Gen. Andrew Jackson.
Old Noll,	Oliver Cromwell.
Old Public Functionary,	James Buchanan.
Old Rowley,	Charles II. of England.
Oldstyle, Jonathan.	Washington Irving.
Only, The,	Jean Paul Friedrich Richter.
Optic, Oliver,	William Taylor Adams.
O'Rell, Max,	Paul Blouet.
Oriana (*Oriens Anna*, The Dawning Anna),	Anne, queen of James I.
Otis, James,	James Otis Kaler.
Ouida,	Louise de la Ramee.
Pacificus,	Alexander Hamilton.
"Pansy,"	Isabella Macdonald Alden.
Papaverius, Thomas,	Thomas De Quincey.
Parley, Peter,	Samuel G. Goodrich.
Partington, Mrs.,	Benj. P. Shillaber.
Pathfinder of the Rocky Mountains,	Maj. Gen. John C. Fremont.
Pattieson, Peter,	Sir Walter Scott.
Paul,	Sir Walter Scott.
Paul, Jean,	Jean Paul F. Richter.
Peasant Bard,	Robert Burns.
Pellegrin,	Lamotte Fouqué.
Pendennis, Arthur,	W. M. Thackeray.
Pennsylvania Farmer,	John Dickinson.
Pfaal, Hans,	Edgar Allan Poe.
Philosopher of Malmesbury,	Thomas Hobbes.
Plon-Plon,	Prince Napoleon Joseph Charles Bonaparte.
Plymley, Peter,	Sydney Smith.
Polish Byron, The,	Adam Mickiewicz.
Poor Richard,	Benjamin Franklin.
Porcupine, Peter,	William Cobbett.
Pretender, The Old,	James Francis Edward Stuart.
Pretender, The Young,	Charles Edward Stuart.
Prince of Destruction,	Tamerlane, *or* Timour.
Protestant Pope,	Pope Clement XIV.
Prout, Father,	F. S. Mahony.
Q.,	Douglas Jerrold.
Q.,	Arthur T. Quiller-Couch.
Quad, M.,	Chas. B. Lewis.
Quaker Poet,	Bernard Barton.
Quaker Poet,	John Greenleaf Whittier.
Quarles,	Edgar Allan Poe.
Queen of the East,	Zenobia of Palmyra.
Quir, Peter de,	John Henley.
Quixote of the North,	Charles XII. of Sweden.
Quiz,	Charles Dickens.
Rail-splitter, The,	Abraham Lincoln.
Rare Ben,	Ben Jonson.
Republican, A,	Charles Pinckney.
Reybaud, Mme. Charles,	Henriette Arnaud.
R'Hoone, Lord,	Honoré de Balzac.
Rita,	Mrs. E. M. J. von Booth.
Rohan,	Koda Nariyuki.
Ross, Adrian,	A. Reed Ropes.
Rough and Ready,	General Zachary Taylor.
Roving Englishman,	Hon. E. C. Grenville-Murray
Royal Martyr,	Charles I. of England.
Royce, Ashley Allen,	Nathaniel Hawthorne.
Runnymede,	Benjamin B. Disraeli.
Rupert of Debate,	Earl of Derby.
Rusticus,	J. K. Fowler.
Sailor King, The,	William IV. of England.
Salem, Hezekiah,	Freneau.
Samian Sage,	Pythagoras.
Sand, George,	Madame Dudevant.
Sand, Jules,	Jules Léonard Sylvain Sandeau.
Saunders, Richard,	Benjamin Franklin.
Sauzade, John S.,	James Payn.
Savonarola, Jeremy,	Francis S. Mahony.
Scottish Solomon, The,	James VI. of Scotland, and I. of England.
Scourge of God,	Attila, king of the Huns.
Scriblerus, Martinus,	Swift, Pope, and Arbuthnot.
Scriblerus Secundus,	Henry Fielding.
Semiramis of the North,	Margaret, daughter of Waldemar III. of Denmark.
Semiramis of the North,	Catherine II. of Russia.
Seraphic Doctor,	St. Bonaventura (1221-1274).
Sharp, Luke (Look Sharp!),	Robert Barr.
Single-speech Hamilton,	William Gerard Hamilton.
Slick, Sam,	Hon. T. C. Haliburton.
Slingsby, Philip,	N. P. Willis.
Smith, T. Carlyle,	John Kendrick Bangs.
Soldiers' Friend,	Frederick, Duke of York.
Sparks, Timothy,	Charles Dickens.
Stella,	Miss Esther Johnson (so called by Swift).
Stonewall Jackson,	Thomas Jonathan Jackson.
Subtle Doctor,	Duns Scotus.
Swan, Annie S.,	Mrs. Burnett Smith.
Swan of Cambrai,	Fenelon.
Swedish Nightingale,	Jenny Lind (Madame Goldschmidt).
Sweet Singer of Israel,	King David.
Sword of God,	Khaled (582-642).
Sylvander,	Robert Burns.
Syntax, Dr.,	Wm. Combe.
Templeton, Laurence,	Sir Walter Scott.
Teufelsdrockh,	Thomas Carlyle.
Thanet, Octave,	Alice French.
Thomas, Karl,	Karl Thomas Richter.
Thurston, Henry T.,	Francis Turner Palgrave.
Tippecanoe,	General W. H. Harrison.
Titcomb, Timothy,	J. G. Holland.
Titmarsh,	W. M. Thackeray.
Toby,	Chas. Dickens.
Toby,	Jonathan Swift.
Twain, Mark,	S. L. Clemens.
Two Brothers,	Alfred and Charles Tennyson.
Uncle Remus,	Joel Chandler Harris.
Uncommercial Traveller,	Chas. Dickens.
Universal Doctor,	Thomas Aquinas.
Upper Servant, An,	Jonathan Swift.
Vagabondia,	Frances Hodgson Burnett.
Valens,	Richard Burke.
Vandergrift, Margaret,	Margaret T. Janvier.
Venerable Nestor Ironsides,	Richard Steele.
Viator Vacuus,	Thomas Hughes.
Vicar of Bray,	Rev. Symon Symonds.
Violinist, A,	Eric Mackay.
Virgin Queen, The,	Queen Elizabeth.
Voltaire,	François Marie Arouet.
Wagstaff, Simon, Esq.,	Jonathan Swift.
Ward, Artemus,	Charles F. Browne.
Wetherell, Elizabeth,	Susan Warner.
Winter, John Strange,	Mrs. Henrietta E. V. Stannard.
Wizard of the North,	Sir Walter Scott.
Yellowplush, Charles, Esq.,	W. M. Thackeray.
Yendys, Sidney,	Sydney Dobell.
Yorick,	Laurence Sterne.
Z. Z.,	Louis Zangwill.
Zeta,	J. A. Froude.

OUTLINES OF INTERESTING BOOKS.

Often it is necessary to know something about a certain book before one begins to study it. The outlines given below are not designed to include all the world's great books, but some of those best adapted to the general reader. Many of them are well known to students in our schools, and others may be used for home or supplementary reading. Great care has been exercised in the choice of titles for interest, adaptability to young and old readers alike, and genuine moral and educational worth. Not all the books in the list could be called English classics; for many have been noticed because of their human appeal and easy readability. Only those foreign works have been mentioned which all the world acknowledges as beyond the narrow interests of one nation or one people. The main purposes of the selection may be thus summarized:

1. To introduce growing youths to some of the best literature.
2. To provide interesting books for reading outside of school.
3. To guide older persons to good reading for their leisure hours away from the office and the manufactory.
4. To summarize only those works, characters, and plots that have genuine human appeal.
5. To represent the great moral forces of the world, excluding every word that is not educational and character building.
6. To show in brief outline what the books themselves contain.
7. To exalt above everything else wholesome character, heart and soul interest, and appeal to a large circle of readers.
8. To enable the student, to gain the important facts of each synopsis easily, the writer's nationality, when he lived, why famous. To learn why his work was famous, as, his style, why his work is significant, to learn the type, the character of the work with ease.

Abbott, The, by Sir Walter Scott, combines history with romantic fiction. The historical portions describe the virtual imprisonment of Mary Queen of Scots at Loch Leven Castle on an island in a lake north of Edinburgh. Apart from Mary, some of the main characters are Roland Graeme, a noble stripling; his mysterious mother, who plays the part of sibyl; Catherine Seyton, Mary's waiting maid; and George Douglas, who is romantically faithful to Mary. Some of the best scenes show the early life of Roland, the forced abdication of Mary by command of the Scotch nobles, the escape at dead of night from Lock Leven, and the final adandonment of the cause—when Mary leaves for France. Roland at times is greatly mystified, but, when his loyalty is confirmed by his actions, he shares the secrets of the flight of Mary, actively assists, and finally wins the love of the elusive Catherine.

Abou Ben Adhem, a short poem by Leigh Hunt, teaches the lesson of love for one's fellow man. When Abou first saw an angel writing the names of those who loved the Lord, he asked if his was in the angel's "book of gold." When the angel replied that it was not, Abou said, "Write me as one who loves his fellow men." The next night, when the angel opened the book, Abou's name led all the rest. The line just quoted is carved on the monument to Leigh Hunt in Kensel Green Cemetary in England.

Absalom is the symbolical name given the Duke of Monmouth by Dryden in *Absalom and Achitophel.* His father, Charles II, is named David, and the first Earl of Shaftsbury, called Achitophel, is described as trying to act as a false friend to David. Using this parallelism with the story of David and Absalom in the Scriptures, Dryden built up an elaborate satirical poem, one of the most brilliant, but also one of the most bitter in our language.

Absolute, Sir Anthony, is a crochety, overbearing, and suspicious character, outwardly, but at heart somewhat kind and generous, in *The Rivals,* a satirical drama by R. B. Sheridan. As a picture of such a type, this is admirable and often mentioned by lovers of the older drama of sentiment.

Acadia or Acadie, the old and now poetic name of Nova Scotia, was derived from one of the Indian names given to rivers. In 1755 the French inhabitants, charged with disloyalty, were removed by English soldiers and transported to various parts of the United States. This incident gave rise to the beautiful story of *Evangeline* as narrated by Longfellow.

Acres, Bob, a boastful but timid country fellow in Sheridan's comedy, *The Rivals,* who swears large genteel oaths but refuses to fight a duel with his rival to defend himself from the charge of cowardice.

Adams, Abraham, is as kindly a clergyman as he is impractical, in Fielding's *Joseph Andrews.* He makes numerous laughable and awkward blunders of speech and manner, but is truly lovable, generous, and simple as a child.

Adonais is a beautiful elegy written by Shelley in 1821, when he learned of the death of John Keats. It was then reported that certain harsh criticisms of the poetry of Keats hastened his death in Rome. Though this idea was largely erroneous, Shelley made it the basis of some noble invective in his poem. Our chief regard, however, is for the beautiful lyric spirit of the whole, the descriptions of Keats as a part of nature,—though objectionable as theology are pleasing as poetic sentiment—and of the final conclusion of Shelley that Keats is still "a presence to be felt in darkness and in light."

Aeneid, the great Latin epic by Vergil, gives a detailed account of the life of Aeneas, founder of Italy, after his escape from Troy following the defeat of Priam and his sons in the Greek war. In twelve books the author includes many old story fragments. In the confusion of flight, Aeneas loses his wife, but manages to bear away his aged father, Anchises, and his own son. After mistaking the import of an oracle at Delphi, the hero leaves Thrace for Crete, being driven finally on the shores of northern Africa at Carthage. Here he is hospitably received by Dido, to whom he recites the story of his previous wanderings. Book two tells of the capture of Troy through the device of the wooden horse of Sinon, in which soldiers were carried into the heart of the town. Book three brings up the story to the death of old Anchises and the landing of Aeneas at Carthage. Dido falls hopelessly in love with the visitor, but he departs on his travels, leaving her to die a suicide. Books five to seven describe the sojourn in Sicily, the visit to the infernal realm, and the arrival in Italy. At last he wins the love of the daughter of the king of the region, who has been betrothed to Turnus, a noble of the country. War now ensues between the armies of the two rivals. Turnus makes a spirited attack on the camp of Aeneas, burns the enemy ships, and finally challenges the Trojan to a moral combat, in which Turnus himself meets death. At the end of the epic, the death of Aeneas, too, is fully described when he is killed in a battle with the Rutulians, after having governed the country since the death of his wife's father. A simple outline of the plot gives little idea of the wealth of the descriptions, the vitality of the narrative, and the beauty of many noble passages.

Aladdin, son of a poor widow in China, falls into possession of a magic lamp and a wishing ring. Through these, aided by a genie, who appears at his command, he wins the daughter of the Sultan, builds a fine palace, and has everything that heart could wish. When he loses the lamp, the princess and their possessions are transported to Africa. Again the genie of the ring helps him reclaim the lamp and all that he has lost.

Alhambra, The, by Washington Irving, 1832, is a series of sketches and tales of the old Moorish palace at Granada in Spain. All the romance of the ancient days, and many legends of the castle and town, invest the whole with peculiar glamor and charm. Some of the wonderful pictures show the Hall of the Ambassadors in the Alhambra, the Court of Lions, the mysterious chambers, and the gala days of the old city. Among the enchanting legends are those of the Moor's Legacy, the Three Beautiful Princesses, and Governor Mancho and the Soldier. For graceful and romantic coloring, they have long been highly appreciated by critical readers.

Ali Baba and the Forty Thieves, like the story of Alladin, is one of the fascinating tales that now go under the name of the *Arabian Nights.* Kassim married a rich wife; his brother, Ali Baba, a poor one. To escape a band of robbers, Ali Baba, who was a wood chopper, once took refuge in a tree. While there he overheard the captain of the band informing others that a certain place in the hillside would open when one pronounced the magic words, "Open Sesame." Thus having the secret, he found a cave filled with gold and treasure, a share of which he took home with him that day. Kassim, the brother, learning part of the secret, went to the cave, but cried, "Open Barley," "Open Wheat," and so on, and never gained access to the robbers' cave. Yet he was discovered there and slain. The robbers, guessing that Ali Baba knew their secret, tried various schemes to punish him. These were all brought to naught by a female slave in the home of Ali Baba. All the robbers finally were decoyed to town and there slain by a clever device.

Alice in Wonderland is a whimiscal tale by Charles L. Dodgson, an English mathematician, writing under the name of Lewis Carroll. A normal English lassie follows a rabbit down his hole, and, after a time, finds herself in a wonderful country, in the midst of strange and droll adventures. She becomes acquainted with various beings, including the March Hare, a Mad Hatter, a Mock Turtle, a strange Caterpillar, Pig and Pepper, a cranky Duchess, and the King and Queen of Hearts, in their court with animated cards. Alice at last finds herself in a court, where the jury is investigating "who stole the tarts." Finally, someone suggests that sentence should be pronounced, after which a verdict may be reached. Alice protests that by this means the proceedings are reversed from those of well-regulated courts of justice. She remarks to the Queen of Hearts that the people around are only cards anyway. At this the whole pack rises in the air and tumbles upon Alice, and she awakens to find it all a dream. Through a Looking Glass, a sequel dream, takes Alice through a mirror to a land where the people are chessmen, moving up and down over the squares of turf as men of a real chessboard. At a climax to a new series of adventures, Alice is crowned queen, realizes the absurdity of it all, and again awakens.

Allan-a-Dale, according to an old ballad, desired to marry a fair dame, who was betrothed against her will to another suitor. Robin Hood and his men appeared at the wedding, displaced the bridegroom, led Allan to the altar, and married him and the lady, after Friar Tuck had pronounced the bans seven times, instead of the usual three. Allan, in Scott's *Ivanhoe,* is a harper to Robin Hood.

Allworthy, a kind country squire, is pictured by Fielding as the foster parent of Tom Jones. The author remembered a friend, Ralph Allen, in his good-natured and benevolent character study. See *Tom Jones.*

Alton Locke, a social novel by Charles Kingsley, illustrates the humanitarian movement of the nineteenth century. Published in 1851, it shows how a humble man rose from the ranks of the sweat shop to be a poet and leader of his fellows. Besides the hero, a noble group of unselfish friends makes profound impression on England for many years. Some of the realistic descriptions of workers in England are profoundly impressive, and many of them are deeply pathetic.

Amaryllis is the conventional name for a rustic lass or shepherdess in many nature and pastoral poems from Vergil to the present.

Amelia, a realistic novel by Henry Fielding, was published in 1751. The heroine, whom Thackeray pronounced "the most charming" feminine creation in our fiction, is strongly contrasted with her weak and ignoble husband. Some of the powerful scenes of the book show Booth, the husband, in jail or in his own home, drunk, surrounded by his little children playing innocently. While in prison, he has a notorious Miss Matthews as a companion, who was sentenced for murdering a man that betrayed her. Through the patient love and long-suffering labors of Amelia, he is reclaimed, and the family enjoys many days of happiness in better fortunes.

American, The. This novel by Henry James, published in 1877, is probably the most readable of his early long stories. Christopher Newman, a self-made American on vacation, is trying to acquire some culture in Europe. He is willing to buy any work of art that shows taste. Madame de Cintre, a beautiful widow who is half English and half French, attracts him powerfully. After a time the family of this lady in Paris consents to allow Newman to become a suitor, and finally to think of him as a member of the household. They desire his money, but at last decide that they cannot tolerate him, or indeed any man who has made money manufacturing wash tubs. Through an old servant Newman discovers that the mother of Madame de Cintre has helped her own husband out of this world. This knowledge he attempts to use to assist him to reclaim his betrothed, but she flees from him in consternation and enters a convent, out of fear of the members of her family. Newman returns to America. This story, like others by Henry James, contrasts the manners, customs, and ideals of a highly cultured with a virile but somewhat raw society.

Amoret, the type of faithful wife in Spenser's *Faerie Queen,* is imprisoned by a false enchanter, who has tricked her into his power. Through many trials she remains firm and true. The name is also found in Fletcher's pastoral, *The Faithful Shepherdess;* and the name *Amoretti* was chosen by Spencer for the group of sonnets written in honor of his wife.

Anabasis, The, tells the story of the retreat of the Greek army from Persia, 401–399 B. C. Cyrus, the younger, employed some Greek mercenaries to help unseat his brother, Artaxerxes, from the royal throne of Persia. After several battles, just as final success was assured, Cyrus was killed in the fight at Cunaxa, leaving his hosts leaderless. Nearly all the other generals were then killed in an ambush when they were summoned supposedly to confer with Artaxerxes regarding terms of peace. Xenophon, a Greek without military rank, volunteered to lead his countrymen to their homeland. Under his guidance the remnant of the army crossed the hot sands of Arabia, the snowy mountains of Armenia, and the plains infested by hostile Persians and Kurds, until at last they came to Trebizond. Many of the survivors finally reached Greece, but a large number took service in Asia Minor, helping to free some of the Greek cities from foreign domination. Xenophon, in his *Anabasis,* using the third person for the narrative, recounts the story of the cities, peoples, mountains, military adventures, and amusing incidents of the retreat. Many parts are fascinating and almost modern in spirit.

Ancient Mariner, The. In 1798 the poets Coleridge and Wordsworth brought out a collection of *Lyrical Ballads,* and reached the high-water mark of romantic feeling in the literature of the age. Coleridge's *Ancient Mariner* at once attracted both favorable and hostile attention, eventually becoming an acknowledged imaginative classic. The poet revived an old story such as found in the tales of the Flying Dutchman, the account of a sailor condemned to wander because of some sin. Thus the ancient sailor in the poem at times is compelled to unburden himself to anybody whom he can force to listen, while he holds his hearer spell-bound.

Everything goes well on board the mariner's ship until they drift into great fields of ice in the southern seas. Day after day an albatross follows in their path. Finally, in an idle moment of wickedness, the mariner shoots the bird with his cross bow. At once all his superstitious companions begin to hate him, because of the evil destiny that would follow their ship. They hang the bird around the mariner's neck. One by one all drop down dead on the deck, leaving the mariner all alone in the midst of living death. Everything else takes on life, while the ocean swarms with odd and uncanny creatures. In contrast to the mariner, these creatures seem happy. Distress of body, mind, and soul become terribly intense. At last two specters dice for the ancient mariner's soul. These are called Death and Death-in-Life, and the latter wins, while the mariner begins anew his living death. Everything now seems to rot; ghastly gleams flit about the ship, and ghosts appear at night; no rain falls for many, many days. Only at last is the spell broken by true repentance and prayer, when the mariner falls down in agony on the deck and begs forgiveness for killing one of God's fellow creatures. Then the albatross drops from his breast, beginning the restoration of something like normal life on board the ship. As the craft nears the shore, the dead men rise up, resume their stations, and the mariner leaps for joy on seeing lights along the land.

Few poems in English equal *The Ancient Mariner* in vivid and dramatic touches. Originality, picturesque diction, an atmosphere of mystery, a narrative forged white-hot are the main characteristics. Some of the figures of speech, flights of imagination, and romantic colorings make this poem also unique in our language.

Andrea del Sarto, a dramatic lyric by Browning, introduces us the life of artists and their works in the flowering of art in Florence. Andrea (son of a tailor) was called the faultless painter, because his drawing was so delicate and true. Yet the man himself lacked soul, and his works seem unreal and inhuman. Browning makes the painter explain his own failure. His wife is model for many of Andrea's best works, but she is soulless and unfaithful. Perfect in form, both she and the pictures

lack the finer essence of nobility. Andrea tries to explain his failure by charging it to his wife, but Browning shows that much of the fault lies in the painter himself. See Browning's other art poems, *Fra Lippo Lippi, Old Pictures in Florence, Pictor Ignotus.*

Annus Mirabilis by Dryden is our best poem in heroic stanzas,—four lines of five feet each, riming alternately. Gray in the *Elegy* and Byron in much of his work followed this form. For imagination, terseness of phrase, and ease of movement Dryden's poem excells. He describes the London fire and the Dutch war in the wonderful year, 1666.

Apologia Pro Vita Sua by John Henry, Cardinal Newman, was written to justify his change of faith from that of the Church of England to the Church of Rome. Having been attacked by Charles Kingsley, among others, for leaving the established church, Newman in 1865 gave the world this wonderfully frank and detailed history of his religious experiences. The *Apologia* is justly famous for its spiritual insight, logical arguments, and earnest vindication of Newman from any charge of being a mere turn-coat. In literary style the work keeps pace with the subject matter.

Apparition of one Mrs. Veal is a ghost story by Defoe, dating from 1706. To the readers who then believed in the return to our earth of departed spirits, this simple, honest narrative made a profound appeal. To us it shows the typical methods of Defoe in putting every touch on his work to make it seem truthful in all regards. Mrs. Veal, "a maiden gentlewoman," a victim of "fits" was living unhappily with her brother not far from the home of a certain Mrs. Bargrave, who afterward told the story. These religious ladies often spent hours together reading works of spiritual consolation. They held common beliefs of the hereafter. Finally, Mrs. Veal moved to a distant town, and Mrs. Bargrave saw little of her from that time until one day, not long after noon, her old friend came to call, but she seemed not quite herself, passing her hand over her eyes at times, and suddenly breaking off in her conversation. They talked together for some time. Afterward Mrs. Bargrave was amazed to learn that Mrs. Veal had died shortly before her ghost appeared for this parting visit.

Arabian Nights, The. Early in the eighteenth century a French scholar named Galland translated an Arabic manuscript of the *Thousand and One Nights.* From time to time certain oriental stories have been added in various editions. The time of the stories ranges from the eighth to the sixteenth century, but many of them undoubtedly go back several hundred years in oral tradition at least. They belong to the older type of frame collection,—a list of stories joined by some series of events connected with the time and manner of telling them. The *Nights* were supposed to be some stories told by a princess. She had married an eastern potentate to save her sisters; for this absolute monarch decreed that each wife should be executed on the second day after their marriage. To prolong her life, the princess began a story each evening, but never finished it till another night. After a thousand and one nights the emperor decreed that his entertaining wife should live forever, as she indeed does in these wonderful tales.

Arcadia, Sir Philip Sidney's lengthy pastoral romance, was published in 1590, four years after the author's death. Sidney was banished from the court in London to the home of his sister, the Countess of Pembroke, and for her he wrote this story, with no thought of publication. It is a long, rambling, unrevised narrative, but here the ancient and the modern world meet in vivid life. Both pagan and Christian heroes associate on terms of intimacy and friendship. The demi-gods of Greece appear in medieval dress, speak modern languages, and tilt with heroes of chivalry. Page after page succeeds in ever-changing delights. It is a book to be read at leisure, part by part, story by story, and not as a connected novel.

Archimago, a clever magician in *The Faerie Queen,* a poem by Edmund Spenser, separates the Red Cross Knight and Una through deceit. He appears in a number of disguises, to represent hypocrisy as opposed to truth and honor.

Areopagitica, which contains some of John Milton's best prose writing, is a "Speech on the Liberty of Unlicensed Printing." This was prepared as if spoken to Parliament in defense of printing without a government license. Some of the poet's own pamphlets were issued contrary to the wish of the official licenser. Milton argues with great eloquence and fervor that difference of opinions should not justify refusing a license to any work not contrary to the sense of morality or of political expediency. He cites classical works to show that only immoral doctrines and traitorous utterances, especially blasphemy against the gods, were forbidden. Mere party differences, or doctrines contrary to the party in power, or to the opinions of the majority, should not be allowed to throttle free speech.

Artful Dodger, The, is a criminal named John Dawkins who skilfully eludes the police at every turn. Dickens shows how this man with his fellow's tries to make a criminal out of the hero in *Oliver Twist.*

Arthurian Cycle of Romances. This is a general name for a group of several different legends bound into a whole by some old English chroniclers. Though Arthur is the central knight, five or six other characters share the honors with him in the Round Table. The chief parts are the stories of Merlin, the magician; Gawain and other perfect knights like Galahad and Percival; the story of Lancelot and his romantic love affairs with Elaine and especially with the Queen, Guinevere; the religious legend of the Holy Grail, the cup from which our Lord, according to an ancient story, drank at the Last Supper; the tragic love tale of Tristram and Iseult, sometimes a part of the cycle. Malory's *Morte d'Arthur,* in prose, and Tennyson's *Idylls of the King,* in verse, represent both an old and a recent version of some of these tales, which have been used by many authors in both French and English.

Ashton, Lucy, tragic heroine of Scott's novel, *The Bride of Lammermoor,* which is described on a later page.

As You Like It, one of Shakespeare's most delightful comedies, is as fresh and simple as the Forest of Arden, in which some of the scenes are enacted. Though composed of three different elements, the plot is easily understood, fairly probable, and decidedly romantic. The old duke, banished from court by a usurping brother, lives in idyllic ease among the rangers and visitors who come to do him honor in his forest retirement. By his consent Rosalind, his beloved daughter, has remained at court as a companion for her cousin, Celia, daughter of the usurping Duke Frederick. A strong youth named Orlando, being hated by his brother, engages in a wrestling match with a champion, who has really been sent to put him out of the way. Orlando, because of a victory over this wrestler, is banished by his brother, but he has already won the favor of Rosalind. Duke Frederick, too, is furious, because Orlando is not to his liking, and he banishes Rosalind. Disguised as a shepherd, with Celia and Touchstone as companions, she at last arrives at the sylvan court of the banished Duke. Orlando has met them in the forest, but has not recognized the party. At last everything turns out well, including the repentence of Orlando's cruel brother and of the usurping duke.

Besides the artificial elements of the pastoral, this drama presents some real rustics in William, a simple fellow, who thinks he is to marry Audrey, a tittering wench, until Touchstone persuades him of his mistake. Jaques, a wilful man of wit and melancholy, makes wise comments on the vanity of human life; Touchstone, one of the funniest and also one of the wisest of the Shakespeare clowns, adds a delightful spirit of fun. Few dramas have such a pleasing out-of-door atmosphere.

Aurora Leigh, an ethical story in poetic form, issued by Mrs. Elizabeth Barrett Browning in 1857, reveals what the author called her "highest convictions on life and art." The moral and religious tone of the work of this lady was never so highly developed as in this noble poem. Aurora, a creature of wealth and society, has been brought up by a maiden aunt. She refuses to marry her rich cousin, Romney, because he has socialistic ideas. At last she is brought to realize that she should marry him when he accidentally becomes blind.

Autocrat of the Breakfast Table, a series of witty, rambling, and delightful conversations, brings out several typical characters, the chief one being the leader of the group, who is called the autocrat. Some of the others are the Schoolmistress, the Old Gentleman Opposite, the Landlady and her Daughter, the Young Man John, the Poor Relation, and the Divinity Student. O. W. Holmes, the author, illustrates many topics of interest in art, literature, science, and politics of the middle of the nineteenth century. For a number of years his collection of genial, personal essays in this volume set the fashion for discourses on many familiar subjects.

Baconian Theory, The, assigns the Shakespeare plays and other Elizabethan works to the authorship of Francis Bacon, a philosopher and politician, who wrote several learned treatises. Since the middle of the last century, the battle has raged, with the writing of many books and the spinning of many elaborate arguments. All of the evidence is negative. Advocates of the Baconian theory cite the small education of Shakespeare, the merit of

Bacon as a thinker, the dark problems of the *Sonnets*, which seem to fit into what we know of Bacon's life, and especially the piecing of various words and phrases into a so-called Bacon cypher that is claimed to reveal many secrets.

Bacon's Essays, fifty-eight in number in the last of several editions during the life of Francis Bacon, are indisputably his work. They summarize his opinions on many subjects in terse sentences, which more closely resemble modern forms of writing than those of Bacon's own time. Some of the essays are highly polished; others appear in what seems a rougher state of thought and language. Bacon's counsel on the reading of books should be framed for every schoolroom: "Some books are to be tasted, others to be swallowed, and some few to be chewed and digested." Many sentences stand out forever in one's memory, like this one: "Men fear death as children fear to go in the dark," or this: "Revenge is a sort of wild justice." Bacon writes best on subjects like Adversity, Atheism, Friendship, Riches, Studies, and Revenge.

Barkis, the diffident stage-driver, asks David Copperfield to bear a simple message to Clara Peggotty. He believes this will be understood as a proposal of marriage. The phrase has become proverbial for willingness in general. It is, "Barkis is willin'."

Battle of the Books. This amusing satirical story by Dean Swift was called forth by a controversy in his time as to the relative merits of ancient and modern authors. The Bee, flying straight, symbolizes the classics; the Spider, always involved in a web, represents the moderns. These creatures begin a dispute in St. James Library. At last all the books join in, and a lively battle results, with much scattering of dust. Though Swift does not tell how the contest results, it is perfectly evident that he sympathizes with the ancients. By great shafts of his wit and ridicule, he strikes down many authors of his generation, not sparing even Dryden.

Battle, Sarah, is a lady in one of Charles Lamb's whimsical essays. She speaks of playing whist as her destiny, her born duty in life, and of reading as a pleasant diversion after business, a mere incidental pursuit.

Bedivere, one of the earliest knights created by King Arthur, is the last companion to leave him, when all others flee after the breaking up of the order of chivalry. Just before Arthur returns to the mere from which, as a babe, he came, Sir Bedivere is entrusted with the task of throwing his sword, named Excalibur, into the lake, where a white hand from the bosom of the water rises up and receives it. Tennyson's *Passing of Arthur* tells the story in lines of great musical and imaginative beauty.

Beggar's Opera, composed by John Gay and first used in 1728, was the earliest of that kind of musical play called variously ballad, light, or comic opera. With its tuneful lyrics and sparkling dialogue, it struck the popular fancy at once, and long remained a favorite on numerous stages. It often rivaled the more serious, Italian "grand" opera. Speaking of Rich, the manager of the playhouse when Gay's opera first came into notice, one wit said, "It made Gay rich, and Rich gay."

Belle Dame Sans Merci, La. This being translated means "The beautiful lady without pity." Though the name was old, the poet John Keats first wrote this story in all its romantic coloring and music. The ballad narrates the wandering of a knight, who met a lady in the meads and became enchanted forthwith. She took him to an elfin bower, sang a song of love and devotion to him, promised to love him truly; but the knight at last found himself on a cold hillside alone.

Benedick, a bluff and witty soldier in Shakespeare's *Much Ado about Nothing*, vows that he will remain a bachelor. The vivacious and sarcastic Beatrice, in spite of apparent contradictions on both sides, attracts his notice. Finally, some friends of both arrange to allow Beatrice and Benedict to overhear them tell that one is madly partial to the other. When Benedict at last announces that he will marry, his old friends taunt him, and say, "Behold, Benedick, the married man." The name, now usually spelled Benedict, is often used synonymously of a recently married man.

Ben Hur, General Lew Wallace's tale of the Christ, represents the noblest type of historical fiction with oriental setting. Early in the novel the three wise men bring their gifts to the manger at Bethlehem. Fifteen years afterward, Judah Ben Hur, now grown up, is living at Jerusalem with his mother and sister. One day, when the Roman governor is passing, Ben Hur crowds too near the edge of the roof to see him. A tile falls off and lands at the side of the governor. At once Ben Hur is arrested and condemned to the galleys for life. Messalla, his closest friend, deserts him in his great need. Later Ben meets John the Baptist, and is converted to the faith by seeing a miracle performed by Christ himself. Many fine passages of description bring ancient times home to us with tremendous vitality. Two of the most vivid episodes are the sea fight and the chariot race in the arena.

Beowulf is the oldest long epic in our language, and structurally is one of the best of all the ages. Its single manuscript, containing 3183 lines, is somewhat incomplete at the close. There has been much discussion as to whether the background is that of our England or of some other northern shore to the eastward of Britain. The language of the poem is old English, the predecessor of the speech before the time of the Middle Ages. From this narrative one gains an intimate idea of how our ancient forefathers lived and felt. Little is said of agriculture, and much of warfare. The story falls into two large parts, with episodes in each, but the whole is fairly unified, except for a break of several decades between the first and second parts. Beowulf, a bold superman, comes across the sea to defend his English friends from the ravages of a terrible monster called Grendel, who comes forth from the moor at night to carry off the thanes of the Saxon Hall. Beowulf traps Grendel, a terrific battle ensues, in which much of the furniture of the hall is wrenched from place. Beowulf at last wins, and Grendel skulks off, leaving one arm behind. The noble hero now follows him to his lair under the mere, and then finds the mother of Grendel, whom he crushes. After being feasted by the joyful thanes, Beowulf departs for his own shores, bearing rich gifts from the king and his nobles.

Late in life he comes forth once more and slays a terrible fire-drake that is burning up huge patches of country. In this last encounter he is mortally wounded and soon dies. At the end of the poem a lofty funeral pyre has been erected, and a beacon to mark the resting place of the hero has been set in place on a rocky shore. The imaginative background is wild and primitive, unchristian, and essentially fatalistic and heathen. For richness of language and compression of form throughout, this is a notable world epic.

Beside the Bonnie Briar Bush, by Dr. John Watson writing as Ian Maclaren, reveals the wholesome joys and sorrows in small Scotch communities. All the parts, or stories, of this book are sentimental, suffused with richest feeling, and simply told with powerful effect. There is poor Geordie Howe, dedicated to the ministry, but dead before his mother's best dream could be realized. There is Dr. Willum Maclure, the country doctor, truly one of God's noblemen, who risks life and health and spends his small earnings that a patient may have the best medical and professional attention. He is worthy of the warm praise of the great Edinburgh specialist, whom he has called to assist in saving a poor man's wife from death. There is dear old Domsie, the village schoolmaster, who lives in his boys, especially those he sends to college; he is determined to have his town represented in the University by a "lad o' pairts." There are the Rev. Dr. Davidson and many other sturdy villagers.

Biglow Papers, The, by James Russell Lowell, have been considered his most original contributions to the thought of his age. They comprise more than twenty verse letters, all full of humor, Yankee dialect, and shrewd observations of men and politics. Hosea Biglow, a quaint rustic, writes letters in verse, some of which are interpreted by others, including the Rev. Homer Wilbur. Even Birdofredum Sawin, a volunteer from Massachusetts in both the Mexican and Civil wars, has something to say that is typical and interesting. Lowell expresses the strongest anti-slavery sentiment of his time in these letters.

Black Beauty, the autobiography of a horse, as told by Anna Sewall, always engages our sympathy in favor of kindlier treatment of domestic animals. Brutally crippled by a drunken groom, a finely bred horse is sold to the keeper of a livery stable. In succession he passes on to be a cab horse, a cart horse, and a cab horse once more, until he finally is sold to a farmer, who soon recognizes his worth, nurses him back to robust health, and gives him a happy old age.

Blatant Beast, a terrible monster with a hundred heads, as described by Spenser, typifies slanderous tongues, or the rabble crying with many discordant voices.

Blessed Damozel, The, is a romantic poem full of imagery and symbolism, written by Dante Gabriel Rossetti and published in 1851 in its first form. In this and other descriptions, the poet, who was also a painter, tried to fuse the methods of the two arts. Both musically and metrically the work interprets the heart and soul of a young girl in Heaven, who leans out over the golden boundary and sighs for her lover on earth.

Blithedale Romance, The. Hawthorne in this narrative, published in 1852, remembers some of the events of the celebrated Brook Farm community, of which he was for a time a member. Though highly idealized as a romantic picture of the life at Brook Farm, the story introduces a mysterious Zenobia, whom many have identified as a picture of Margaret Fuller, the American mystic and editor. Zenobia falls in love with the leader of the experiment, who is too practical and unromantic to notice her growing regard for him until it is too late. His lack of understanding and coldness lead to the suicide of his mysterious friend, who shows resemblances, also, to Miriam in *The Marble Faun* by Hawthorne.

Boniface, a name now given to a landlord, came from a drama by Farquhar, in which there is a realistic picture of an inn-keeper named Boniface.

Bower of Bliss is the home of the witch Acrasia on a floating island as described in Spenser's *Faerie Queen.* The knight, Sir Guyon, being sent to destroy the place, succeeds only by catching Acrasia in a net. This name also occurs in Tasso's *Jerusalem Delivered* as a pleasure garden; and more recently it has been applied to any beautiful or artistic enclosure.

Braggadoccio, a boastful coward in *The Faerie Queen,* has bequeathed the name *brag* to describe high-sounding talk.

Bride of Lammermoor, The, is one of the most tragic stories of literature. Though the plot of betrayed love is conventional, Sir Walter Scott in his romance has made it livid with new interest. After the death of his father, Edgar Ravenswood falls in love with Lucy Ashton, whose father was the inveterate enemy of the elder Ravenswood. Edgar and Lucy meet, break a coin between them as sign of their troth, and part while Edgar goes abroad on state business. His letters to Lucy are intercepted, and the family succeeds in persuading her to marry Sir Arthur Bucklaw, a wealthy fop, whose money is needed. Just after Lucy has signed the contract of marriage, Edgar bursts into the hall at Ashton castle, inquires if she has consented of her own free will, and is answered by Lady Ashton that she has. Lucy seems to assent. Edgar goes out to prepare his revenge. Soon afterward Lucy, in a sudden fit of madness, slays the bridegroom, and finally falls in death, calling on the name of Edgar. Ravenswood runs upon the point of his sword among the tombs of his ancestors near by. Like other novels by Scott, this fiction furnished the basis for good acting plays, and for the celebrated Italian opera by Cammarano and Donizetti, called *Lucia di Lammemoor.* In the fine Sextette the music rises to sublime heights.

Buzfuz, a pompous and pedantic lawyer for Mrs. Bardell, bullies all the witnesses for Mr. Pickwick, who is being sued by the widow for breach of promise of marriage. See *The Pickwick Papers.*

Cædmon, often called the father of English song, is the earliest English poet known to us by name. At a religious house of Whitby, in north England, he often went to the stable when others at the feast were making merry and improvising songs. He was an unlettered man, with no gift of riming, until a vision came to him and bade him sing the story of the Creation. Other works, formerly attributed to him, seem now to have been the work of imitators or poetic pupils.

Canterbury Tales are the mature work of Chaucer, the greatest English singer before the Elizabethan age. They belong to the third quarter of the fourteenth century. This gifted poet made a new English from the broken older language, minus the case endings, and from the introduction of Norman words into the vocabulary. The *Tales* consist of stories taken from a number of sources, foreign and native, and woven into a common frame. Thirty pilgrims are going from London to the shrine of St. Thomas a Becket at Canterbury. On the way, as proposed by the witty host and leader, each member of the party is to tell two stories and two on the return trip. Only twenty-seven or eight tales are complete, however. They range all the way from the story by the knight of the party, who tells of Palamon and Arcite, two old lovers enamored of the same maiden, to the burlesque poem by Chaucer in which he made fun of the romances of chivalry. For kindliness, gentle satire, knowledge of human nature, musical and imitative poetry, and a broad view of life and society, these verse stories contain some of the best work before Shakespeare. They throw some light on customs and types of character in 1400.

Camelot is the seat of the court of King Arthur, in the south of England, described in many old romances of chivalry, as in the Welsh *Mabinogion,* Malory's *Morte D'Arthur,* and in modern poems like Tennyson's *Idylls* and *Lady of Shalott.*

Cassandra, daughter of Priam of Troy, foretold the disastrous end of the war with the Greeks; but, by decree of Apollo, whom she had offended, none of her prophecies were believed. Her name is now given to any foreteller of calamity or improbable event.

Castle of Otranto, published in 1764 by Horace Walpole, describes many fantastic adventures at an old Italian castle; it set the fashion for what is now called the Gothic Romance. Stories of this type picture mysterious dungeons in old ruinous castles, youths and maidens imprisoned or at least deprived of their rightful fortunes by some usurper or tyrant, with supernatural machinery, rescues in the moonlight, and indeed all varieties of romantic scenery. In *Otranto* the prophecy was made that the castle would fall when the rightful heir became too large to inhabit it. This ambiguous doom led to various peculiar events. An old gentleman, for instance, gravely walks down from the frame of his picture. Mysterious hands and gusts close doors and frighten garrulous servants, who scamper about confusedly. A statue sheds blood from the nose, and a gigantic helmet falls down and crushes the reputed heir to the Otranto estates. Yet the castle has been stolen by a usurper, who finally comes to grief, and the rightful peasant is given his due possession. See *The Mysteries of Udolpho* for another gothic story.

Castle Rackrent, 1801, is an account of an old Irish estate, as told in a short fictitious narrative by Maria Edgeworth. Thaddy Quick, for years a servant of the Rackrents, tells of the gradual decay of the family and mortgaging of the estate. Sir Patrick Rackrent was a gay entertainer, famed for magnificent hospitality and a large funeral. He was followed by Sir Murtaugh, a man of abstruse legal knowledge (which never helped his tenants any) and for a wife, one of the Skinflint family, who maintained a charity school for children who spun gratis for her. Next came Sir Kit, worse spendthrift than Sir Patrick, who locked his Jewish wife in her room for seven years because she refused to part with her diamonds to him. Sir Condy, the last, died from quaffing a large horn of punch on a bet, having already used up the rest of the ready money and sold much of the estate. This tale gives a vivid picture of land conditions in Ireland about 1782. A companion story, *The Absentee,* shows how peasants were ground down by factors, or agents of landlords living in England, some of whom never had seen their own estates across the Irish Sea.

Chevy Chase, an ancient ballad, celebrates the Battle of Otterburn of the year 1388, without adhering strictly to the real events.

Childe Harold's Pilgrimage is the most notable poem by George Gordon, Lord Byron. Childe is an old term of honor or romance; in the poem it signifies Byron himself. The four cantos of this narrative give us a fairly good bird's eye view of Europe. Byron describes most clearly some of the old Roman ruins, notably the Colisseum. The best passages are the account of the battle of Waterloo, written for a second part of Childe Harold, the ball on the evening before the battle, Lake Leman, Venice and the Bridge of Sighs, old Rome, and the wonderful apostrophe to Ocean at the close of the fourth part. The poem is full of the spirit of past centuries, picturesque touches, unrestrained action, melancholy, and posing for favor among Byron's countrymen. He sometimes turns aside from a magnificent scene to bemoan his own lot or to speak of the unkindness of the public.

Children of the Ghetto is one of several works by Israel Zangwill, an English author of Hebrew parentage. These reveal the life of the Jewish people in London, with much of tragedy and comedy. *A Rose of the Ghetto,* an amusing short story, tells of the marriage customs of some of the people of the Ghetto. His drama, *The Melting Pot,* attempts to show how all nations may be fused into one people, as in free America.

Circumlocution Office is a term used by Dickens to characterize official delays and the unwinding of "red tape." The name is used in *Little Dorrit.*

Clarissa Harlowe, second of three long fictions by Samuel Richardson, father of the modern analytic novel, 1751, presents powerfully two main types of character,—a polished but scheming profligate, and a noble heroine, who is driven to apparent wrong by unfortunate conditions in her home. For a time Clarissa, according to family command, refuses to encourage Lovelace, until her father insists that she must marry a country bumpkin whom she never could admire. Not knowing what to do, Clarissa allows Lovelace to become her escort to London, but he

violates his pledges to her, though he tardily offers her marriage. In disgrace, and heart-broken because everybody repudiates her, Clarissa dies in a poor but respectable lodging house in London. Colonel Morden, a cousin, vindicates her on the field of honor by killing Lovelace. This story, one of the world's tragic narratives, is told in form of letters from Clarissa and her friends, and from Lovelace to his chief male confidant. For intensity of emotion, poignancy of despair, and final resignation because of her innocence, Clarissa set the standard of sentimental novels for a generation.

Lovelace, on his side, was drawn as too engaging a villain to be sent to perdition. While the novel was being published in parts, Richardson received many letters from ladies, who begged him to reform and spare such a polished society man. Having been censured for a like change in *Pamela*, his first novel, the author wisely refused all these pleas; but later composed a third novel, *Sir Charles Grandison*, to show a noble and perfect gentleman. Men like Dr. Johnson and Macaulay have praised Clarissa for being one of the noblest heroines in literature.

Clinker, Humphrey. This is a realistic novel by Tobias Smollett. The hero, a Methodist postilion, finally attracts the kindly attention of Matthew Bramble, a squire traveling for his health through England. The story describes watering places, with much comic insight. Winnifred Jenkins, a maid in the family, entertains us with her bad spelling and amusing religious ideas.

Compleat Angler, 1653, by Isaac Walton, is a narrative giving an account of the proper ways of fishing. Besides the technical part, which is of interest still to anglers, the book contains quaint remarks on life and literature, a simple piety, and a joy of living in the out-of-doors. Many parts are a perpetual charm.

Comus, a masque by John Milton, was first enacted at Ludlow Castle, near the border of Wales, in 1634. This type of drama, including some historical, legendary, or fanciful scenes, tableaux, music, and sometimes dancing, formed a chief court entertainment in England in the reign of James I and later. Lawes, the eminent musician, arranged the music, and Inigo Jones, the celebrated artist, painted the scenes for *Comus*. Milton chose a theme quite familiar to him,—the conflict between good and evil. A Lady, Attendant Spirit, and Sabrina, the water nymph, embody the life of virtue and humanity; Comus, with his "rout of monsters, headed like sundry sorts of wild beasts," typifies materialism and the love of fleshly pleasures. Having lost her way in the forest, the Lady arrives at the abode of Comus, who endeavors to force her to drink a magic potion. She valiantly refuses, in spite of elaborate arguments by Comus, which represent the materialistic philosophy of Milton's age. Sabrina, the Attendant Spirit, and others, finally come to the rescue, and shame the false enchanter, who is described as a son of Circe. "Sweet echo, fairest nymph," and "Sabrina fair" were long popular among the songs of Comus.

Confessions of an English Opium Eater, published anonymously by Thomas DeQuincey, 1821, reveals the weaknesses and dreams of a man addicted to laudanum. The author bares his own heart and soul in many musical and intimate passages, so that this work soon won him recognition among the essayists of his age. Two of the best chapters in the *Confessions* are The Pleasures of Opium, and The Pains of Opium, showing the alternation of gorgeous dreams and high spirits with the utmost lassitude and depression of body and soul.

Cophetua, an African king, married an humble beggar maid because of her beauty and virtues. Percy's *Reliques*, a collection of old English poetry, quotes a ballad giving the story of the happy pair, which Tennyson repeats in his Beggar Maid.

Cotter's Saturday Night, The, a poem by Robert Burns, reveals the annals of the humble Scots peasant. The narrative tells of the return of the elder children to their father's house at the week-end, the coming of a suitor for their daughter, with the joy of the parents to find him "nae wild worthless rake," the simple fare around the board, and family prayers. "From scenes like these," says Burns, "old Scotia's grandeur springs."

Coverley, Sir Roger de, a lovable country squire, is one of the Spectator Club, a group of gentlemen said to be responsible for the papers written by Addison and Steele for the *Spectator*. Few descriptions of men in the eighteenth century are more delightful. Sir Roger is shown at church, at his country estate, at the club, at the theater, even in love, and finally in the last moments of his noble life. Before the novel came into being with Richardson in 1740, these papers, as near as anything else, anticipated modern analytic fiction in the kindly picture of Sir Roger and other men of the Club.

Cranford, a series of sketches by Elizabeth Gaskell, 1853, reveals the intimate affairs of a small English village, with kindly pictures of prim old ladies and their conventional and sedate ways. The story introduces us to Miss Matty Jenkins, her older sister, and various friends of theirs. There is a long-past love affair, the memory of which is as fragrant as old roses, with a romance of some young people of the town, and a return from India of Peter Jenkins, a long absent brother. The ladies of Cranford have their etiquet of calls, parties, teas, and the management of all the little affairs of life.

Damocles was an accomplished flatterer at the court of Dionysus of Syracuse. Tired of hearing of the fortunate condition of kings and princes, Dionysus had Damocles seated at a banquet, with a sword above his head hanging by a single hair. When the flatterer observed its keen edge, he decided it best to sing another song to the king. The phrase, the sword of Damocles, is now used for impending danger.

Darby and Joan, an old couple in England early in the eighteenth century, became known as a model husband and wife, who never had any quarrel or unpleasant words. Their happy life was described in a popular ballad, and they have become proverbial for contented married life.

David Balfour, a romantic novel by Stevenson and a sequel to *Kidnapped*, narrates the further adventures of a sturdy Scotch lad. He now succeeds in helping Allan Stuart to escape from England, but he himself gets into prison for trying to help Allan's brother, unjustly accused of murder. David has also fallen in love with Catriona Drummond, whose father is a scoundrel. After David's release from prison, for a time he and Catriona live in Holland, till they are separated by the scheming of her father. Eventually Allan Stewart assists them to meet and marry in Paris.

David Copperfield, published in 1850, was called by Dickens his "favorite child." This novel teems with interesting and droll characters, many of whom are sketches of persons known to Dickens in his London rambles. Though not strictly autobiographical, some of the chapters recall incidents in the early life of Dickens, such as the employment of David in Murdstone's warehouse.

Not a few of the characters of the book have taken their places in the gallery of life-like portraits in literature. The Peggotty group, in their humble kindliness, is made up of David's old nurse, who married the Barkis who was "willin';" her brother, a bluff, hearty old seaman, who adopted Ham and Little Emily, children of deceased relatives; and the housekeeper, Mrs. Gummidge, always crying for "the old one," as she described her late husband. David Copperfield's old schoolmate, James Steerforth, stole Little Emily away and broke her heart and ruined the entire family. Ham lost his life along the rocky shore trying in vain to rescue Steerforth from a wreck at sea. In the description of the tragedy of the Peggotty home, Dickens is at his best. The second group includes Micawber, famous for his long words and grandiloquent posing, the man who always waited for "something to turn up." Late in life he emigrated to Australia, taking Little Emily with him, and there they lived in peace and good cheer. The third group is composed of David, his kindly old aunt Trotwood, who once turned Mr. Murdstone, David's step-father out of her estate; David's weak but loving mother, who was completely subjected to Murdstone; his first child wife, Dora, a beautiful girl, but not a suitable companion; and his second wife, Agnes, who brought his success and urged him on to nobler endeavor.

This novel also contains the polished hypocrite, Uriah Heap, who is always assuming humility, and who all but wrecks the business of David Copperfield and his partners. Even the large group of subordinate persons is sketched with wonderful clearness and truth to nature,—the odd and humorous dwarf, Miss Mowcher; Mr. Mell and Mr. Creakle, the schoolmasters; Tommy Traddles, David's childhood friend and companion; the benevolent Dr. Strong; and the virulent Rosa Dartle, who tried in many ineffective ways to insinuate herself into the heart of David. All these portraits are drawn as only Dickens could touch them with life.

Davy Jones is the jocose name for the evil spirit of the sea, into whose "locker" the sailors fall when they die and are buried in the ocean, or perish in a great storm. Smollett's *Roderick Random*, contains an early reference, but the name must have been much older than the year 1751, when this nautical tale was published.

Decline and Fall of the Roman Empire, The, has frequently been mentioned as the most elaborate and scholarly historical work in English. Edward Gibbon, the

writer, spent many years in research in all the great cities of Europe, completing the last volume in 1787. For brilliance of conception and vividness of narrative, few similar works compare with the *Decline*. Except for a bias against Christianity, this work is almost faultless. Almost thirteen centuries are shown in bird's-eye view, ending with the fall of Constantinople to the Turks in 1453.

Dr. Jekyll and Mr. Hyde is Stevenson's tale of the double personality in mankind. This theme engaged his attention also in *A Lodging for the Night* and in *Markheim*, two short stories of almost faultless technique. Dr. Jekyll, a kindly and handsome physician, transforms himself by means of a secret powder into a dwarfish and malignant Mr. Hyde, whose sole desire seems to be wanton mischief. Gradually the latter type persists, so that larger doses of the drug have to be taken to effect the transformation back into the part of Dr. Jekyll. At last the powder fails to work and Hyde no longer can become the kindly doctor. In despair and cynicism he commits suicide. *Markheim* develops the power of conscience in rousing a man from his ignoble self. The character of Markheim is unstable. He kills a curio dealer of whom he is trying to buy a Christmas present, the motive being robbery, but Markheim is seized by an uncontrollable impulse because of the remarks of the dealer. He finally decides to give himself up to the police. *A Lodging for the Night* is a romantic account of an old French poet named Villon, who is both scholar and vagabond.

Deserted Village, The, by Oliver Goldsmith, 1770, is a delightful nature poem, describing an abandoned village in England. The past is contrasted with the present; the simple life of the old town with the luxury of modern cities. The parson, schoolmaster, children, the broken soldier living over his old campaigns by the fireside, and other simple folk, are described with sympathy and infinite charm. Many lines have passed into our store of quotations: "One only master grasps the whole domain" (the large landowner), "And passing rich on forty pounds a year," (the vicar), "In all the glaring impotence of dress" (stylish persons), "Well had the boding tremblers learned to trace The day's disasters in his morning face" (the awe of the children before the schoolmaster).

Dogberry, a conceited constable in Shakespeare's *Much Ado about Nothing*, makes peculiar blunders in the use of words, as he directs the watch to beware of prowlers in the streets at night.

Dolly Varden, a handsome and engaging miss, in *Barnaby Rudge*, by Dickens, dresses in the height of fashion. The name is now sometimes applied to a girl who dresses well and assumes a mincing and genteel manner.

Dominie Sampson, a learned private chaplain in the home of Guy Mannering, forgets to come to dinner, uses scraps of Latin most curiously, and often exclaims "prodigious." Though bashful and forgetful, he at times rouses himself to some noble deed, as when he assists Meg Merrilies to thwart the abduction of Henry Bertram. In the stage version of Scott's romance, the Dominie long held the center of interest as a comic foil to Meg Merrilies. See *Guy Mannering*.

Don Juan is a character like Faust, in old legends and literature, who sells himself to the devil to enjoy a life of base pleasures. He is a chief character in Mozart's operatic *Don Giovanni* and in a poem left incomplete by Lord Byron.

Don Quixote, a crack-brained hero of many droll and uncommon adventures, is the hero of a novel by the Spanish author Cervantes. He is shown as a Christian knight, learned and gentle, whose mind in unsettled by the reading of many old romances of chivalry. Seeing that the world is imperfect, he arrays himself in fantastic armor, chooses a raw and ignorant villager to be his squire, and sets forth on noble quests. The novel itself stands high among the great fictions of the world. By turning knight-errantry into ridicule, Cervantes diminished the reading of the tales of chivalry in his age. His great work was published in 1605, with a second part ten years later; and Cervantes died in the same month (some have thought on the same day), April, 1616, as Shakespeare.

Dry-as Dust, a learned clergyman, is a fictitious personage who was said to have been the editor of some of the Waverley novels. Not caring to attach his name to his romances, Scott adopted various expedients of attracting attention through Dry-as Dust, and later through a mysterious Jedediah Cleishbotham, another minister, the reputed author of some of the following novels. Until Scott made public acknowledgment at a dinner after the failure of his firm in 1827, not more than twenty-five people knew positively that he was the author of the novels, though it was a common conjecture. Dry-as Dust is now the name often applied to a pedantic critic, commentator, or author.

Duessa, a clever witch in Spenser's *Faerie Queen*, calls herself Fidessa, or the Faithful. She entices the Red Cross Knight into the lair of Orgoglio, a hideous giant. Duessa and Orgoglio live together in considerable splendor, while she dresses in gold and purple clothing, wears a crown, and rides on a monster having seven heads. When she is stripped at last of her false raiment, she becomes once more a hideous old hag and imposter. In a political sense, Duessa is allegorical for Mary Queen of Scots.

Dunciad, The, by Alexander Pope, is a mock heroic poem in form of an Iliad of the Dunces. The author vents his spite on the poor poetasters, who presumed to complete with him for laurels in the age of Queen Anne and later. In an early edition of *The Dunciad*, Bishop Theobald was made the monarch of all dunces, but subsequently Colley Cibber, a dramatist, was given this doubtful honor. Theobald had made some clever emendations of the text of Shakespeare in an edition that rivaled Pope's. The second book shows the nature of the whole. Certain booksellers engage in a race for a phantom poet. Then follows a contest in tickling and braying, until all the actors jump into the mud of Fleet Ditch. For punishment all of them have to listen to the reading of works by two voluminous authors, who put hearers into a profound sleep at last. Next, in his sleep the king is shown the entire history of Dullness in the fields of the shades. In the last book the goddess of the dull establishes her reign over Britain, to the end that all arts and sciences are blotted out; finally, she utters a mighty yawn, and all the earth reels back into chaos and night.

Dundreary is a lord that first attracted wide attention in a play by Tom Taylor called *Our American Cousin*. He is presented as a very aristocratic and genteel blunderer in speech and action. The part, created by the elder Sothern, more recently was revived by his son.

East Lynn, a sentimental romance by Mrs. Henry Wood, reached a wide vogue in both novel and stage versions after it was first published in 1861. In spite of obvious improbability, the plot is handled with skill and vitality. After Lady Isabel Vane is orphaned by the early death of her father, who was obliged to sell his estate of East Lynn, she is wooed by two suitors, one noble and the other a profligate. After her marriage to the more desirable lover, she is persuaded to elope, only to learn soon that she has been deceived by the base rival. Several years later, she returns to her old home as a nurse to her children. When her husband learns of her identity, he offers to forgive her. In the meantime, however, he has married, thinking his first wife dead. Unable to stand the shock of the tragedy, the innocent and wronged lady dies.

Elaine, who is called by Tennyson the lily maid of Astolat, dies of a broken heart after being deserted by Lancelot, bravest knight of all the Round Table. At her request she is placed in a beautiful barge, which is rowed down the stream to the city where Lancelot then is living. In one hand she holds a letter for him, in the other a lily; and in death she is so beautiful that even the heart of the faithless lover is touched with pity.

El Dorado was a fabled land in South America between the great rivers, where gold was so plentiful that the streets were paved with it, and precious gems were used as playthings. Several expeditions from England, including one by Raleigh, tried to find this region among the Indian tribes. As late as 1700 the average person believed in the reality of this paradise. The word is now a symbol of a land where plenty abounds. See Kingsley's *Westward Ho*.

Elegy Written in a Country Churchyard, as finally perfected by Thomas Gray, is the most famous elegiac poem in modern English. Few lyrics have so caught the sentiment and interest of all men. Like Goldsmith's *Deserted Village*, it glorifies the simple annals of the poor and humble peasants who live, love, and then pass into complete oblivion. Gray emphasizes also the common destiny of mankind; for even "the paths of glory lead but to the grave." Yet those whose resting place is not even marked by a simple slab or headstone have not lived in vain; they, too, are immortal in the progress of the world.

Elia is a name borrowed by Charles Lamb from a clerk in the India House, where Lamb for years was a clerk. The *Essays of Elia*, in two different collections dating from 1823 and 1833, embody the humor, kindliness, and whimsical thoughts of the most loved English essayist.

Lamb is most delightful when most discursive, and most human when he speaks of the love of children which a bachelor has missed and which he imagines in the tender sketch called *Dream Children*. For variety of subjects, Lamb offers us "Mrs. Battle's Opinions on Whist," "The Praise of Chimney Sweeps," "Witches," "Old China," "Poor Relations," and the account of how the flesh of animals came to be roasted in his *Dissertation on Roast Pig*, an elaborate, fantastic narrative.

Elsie Venner introduces minute analyses of life in a New England village, combined with many acute and witty observations, and the captivating love story of a young girl. This novel by Oliver Wendell Holmes shows how Elsie, a very odd girl, became the puzzle of the town and the despair of her father, a widower. She appears to be a mysterious combination of noble girlhood and subtle, serpent cunning. Only by a powerful love does Elsie awake to her best self.

English Humorists of the Eighteenth Century is a series of criticisms by W. M. Thackeray, delivered first as lectures and then published in 1853. The different parts reveal the temper of the age of Queen Anne as few similar works do, in their witty characterization of men like Swift, Addison, and Pope. Thackeray most admired the novelist Fielding, his literary model, as he admits in his vivid sketch of this English dramatist, novelist, and judge.

English Literary Reviews date from the age of Addison, but few attained wide fame before the founding of the *Quarterly* in 1800, the *Edinburgh* in 1802, *Blackwood's* in 1816, and the *London's Magazine* in 1817. The *Edinburgh* was as strongly Whig as the *Quarterly* was Tory in its politics. Critics unfortunately paid more attention to the party a man belonged to, to his education, and to his companions than to his actual merits as a poet. They judged according to rules of the past age, and therefore could never appreciate romantic authors like Wordsworth and Coleridge, though eventually they gave some others like Byron their due, especially after Byron had replied caustically in his brilliant poem, *English Bards and Scotch Reviewers*. Notable among the attacks by the critics was the scathing indictment of Wordsworth in a review beginning, "This will never do; the case of Mr. Wordsworth is now manifestly hopeless." Some of the writers advised Keats, who had studied surgery and medicine, to "go back to his pills and plasters." One article spoke of the Cockney School of Poetry, of which Leigh Hunt was pictured as the "hierophant" and leader. In derision they called Coleridge, Southey, and Wordsworth "Lakers," since they lived in the midst of the English lakes and wrote of them in their poems. Not until Lamb, De Quincey, Walter Scott, and Macaulay contributed many real critical articles did the reviews take on urbanity and tolerance. Yet the reviews, by paying authors for their articles, established a real school of literary criticism, for which the best could afford to write.

Enoch Arden is a narrative poem of domestic life by Tennyson. It is a real idyl in its simple treatment of a romantic story. Returning after an absence of several years, caused by a shipwreck, a seafaring man finds his wife happily married to another. She has thought him dead. Enoch withdraws and lives unknown in the town till the time of his death.

Eppie, child in *Silas Marner*, which title please see.

Essay on Man and **Essay on Criticism** are two verse discussions by Alexander Pope. The first gives an account of the nature of man, his relation to his fellows and to God, how happiness may be attained by not inquiring too deeply into the secrets of nature, and how everything is ordained for the best. "Whatever is, is right" is the prevailing sentiment. The *Essay on Criticism* suggests both a theory of forms and a few simple rules for judging. Pope tells us it is as great a fault to judge ill as to write ill; nature is the best guide to the formation of correct taste; the ancients should be our models; pride, partiality, and prejudice hinder true criticism, and the good critic must have candor, truth, modesty, and good breeding. Pope also discusses the varieties of metrical effect and satirizes conventional diction, always holding Aristotle up as a pattern to imitate.

Euphuism is the name for a fantastic kind of writing developed to a high degree in a romantic narrative by John Lyly in the age of Shakespeare. The hero discusses various questions of etiquet. Courtship is one of the favorite topics, with such questions as, Does the man or the lady fall in love first? This book was found in every fashionable home for many years after its publication in 1580. The style is fantastic, being a combination of balanced parts, in which other groups balance, in both sound and arrangement of words. Sidney's *Arcadia* is somewhat euphuistic, and some of Shakespeare's plays, like *Much Ado*, have the witty contrasts, puns, and other devices in a large degree.

Evangeline is Longfellow's graceful and pathetic narrative of the expulsion of the French from Nova Scotia by the English. The heroine wanders over a good part of the United States in search of Gabriel, the young man to whom she was betrothed. They meet at last, when Gabriel is brought to the hospital where Evangeline is a nurse. Just after recognition, he quietly passes away with a smile on his lips.

Evelina is a wonderfully realistic account of the introduction of a young lady into the society of England in the second half of the eighteenth century. The author, Frances Burney, succeeded in reproducing the little foibles, gentility, and conventionality of the age. Evelina is constantly humiliated by her vulgar relatives, who almost prevent Lord Orville from making a proposal of marriage. Her grandmother, Madame Duvall, somewhat frenchified, is held up to ridicule for her vanity and presumption. Many chapters are delightfully humorous. Like many of the fictions of the time, this novel is in letter form.

Everyman, an old morality play of unknown authorship and date, tells of the journey of every person from this world to the next. It is replete in subtle characterization, dignity of treatment,—though mixed at times with humor,—and underlying moral, not too strongly emphasized. All the friends and companions of Everyman, on learning that they cannot return from the long journey, refuse to accompany him. Only Good Deeds remains till the last breath, though Conscience and Religion approach very near the gates of death.

Faerie Queen, The. This elaborate allegorical poem by Edmund Spenser is one of many glorious literary monuments of the age of Elizabeth. It is impossible here to outline the many stories of the different parts. These narratives come from all ancient and modern sources known to the poet. The author originally planned twelve books, fashioned according to the moral virtues as named by Aristotle. Yet only six books, with two or three fragments, were completed, the first three in 1590, the remainder in 1595-6; but they contain thirty-six thousand lines. Each book has its pattern hero, who engages in various adventures in which many others join. The Red Cross Knight typifies Holiness; Sir Guyon, Temperance; Sir Calidore, Courtesy, for instance. Glorianna and Mercilla, two chief characters, are intended as graceful compliments to Queen Elizabeth, who is characteristically flattered. The initial plan was to marshall all the characters at the court in the last book, but the magnitude of the story was too large. Prince Arthur, appearing at some time in all six books, is the pattern of perfection. Some of the many great stories of the *Faerie Queen* are those of Una and the milk white lion; Britomart and her imprisonment in the enchanted castle; Acrasia and her vile Bower of Bliss; Artegal, who represents justice, and his iron flail; and the various devices and impostures of the false Duessa. Though few persons finish reading all of this epic, one may find interesting stories in every canto.

Falk is a sea captain in a story by Joseph Conrad of the same title. No more vivid picture of a man exists in the writings of this gifted Polish gentleman and sea captain, who adopted English as his literary language.

Fall of the House of Usher, The. Edgar Allan Poe in this short story reaches the summum bonum in temperamental and impressionistic narrative. The entire atmosphere is gloomy, mysterious, and supernatural. Roderick Usher, a melancholy nervous patient, summons his friend, if the latter would see him once more alive. Both in look and in action Usher has greatly changed. His sister, even now, is wasting away of some incurable malady. At last she is entombed in the depths of the castle. Some days later, while Roderick and his companion have reached a particularly imaginative passage in a book of magic, they hear noises in the cellar, and then suddenly the Lady Madeline bursts open the door, falling prostrate within the room. Roderick, now wrought to highest tension, staggers and falls, never to rise again. The friend escapes, but sees a great fissure in the side of the house gradually enlarge till the castle itself is tumbled in ruins. Poe throws in some hints to make us understand that the story is prompted by the neurotic imagination of Usher.

Faust is the great drama by the German poet, Goethe. According to a favorite story in the Middle Ages, a student sold himself to the Devil on condition that

he be allowed a certain time for any pleasure he might choose. At the end of the compact, the young man is carried away by Satan or one of his messengers. Marlowe, a dramatist of Shakespeare's time, used the same story in his *Dr. Faustus,* which rises to a high pitch of imaginative and poetic grandeur. Several later operas have used parts of the Faust legend.

Flying Dutchman is the subject of numerous tales in German and other modern languages. In one version a man is condemned to sail forever around Cape Horn without finding any safe harbor. Sailors claimed that it was an exceedingly bad omen to come in sight of the Flying Dutchman and his phantom ship. Scott once said that the ship originally was laden with bullion, and a plague broke out aboard as a punishment for a murder by one of the crew. Coleridge modified the idea to include punishment by drought and suffering for killing an albatros. Wagner based an opera on the legend.

Fortunatus, according to various folk tales since 1500, came into possession of a wishing-cap and purse that never became empty. Some version has appeared in many stories and dramas, notably in a romantic play by Thomas Dekker, a shoemaker and author of Shakespeare's age.

Forty Thieves. See *Ali Baba and the Forty Thieves.*

Frankenstein, a novel by the wife of the poet Shelley, tells the terrible mistake of a young medical student who created a sort of man monster out of fragments from the graveyard and dissecting room. By means of galvanism, he succeeded in endowing the creature with life, but eventually Frankenstein himself suffered. The monster at last became disgusted with its own deformity and wrought a terrible revenge on the student.

Gallegher, one of the best stories of atmosphere of the newspaper, tells how the young office "devil," hearing of a prize-fight, outwitted both his competitors and the police and brought back the story to make a "scoop" in a special edition. The author, Richard Harding Davis, a news correspondent, also wrote the Van Bibber stories of New York club life.

Gettysburg Address by Abraham Lincoln is a model of clear and effective English prose. Though it was written with deliberation, and not in haste as some have asserted, the few lines show the power of our great President in simple, homely diction. Edward Everett delivered a long and studied oration on the same day, but told Lincoln afterward that these few words would be remembered long after his own elaborate effort was forgotten. This prophecy has been fulfilled.

Gesta Romanorum (Deeds of the Romans) is a collection of many tales, dating from 1200 or shortly afterward. It includes stories besides those of classical times. Gower and Chaucer borrowed some of their plots from this work; and Shakespeare apparently drew some of the story of *King Lear* from it. It has indeed been a perennial store of plots for many authors.

Gold Bug, The. This is one of Poe's detective stories. Two men, sitting by a grate in a hut on Sullivan's Island, off Charleston, South Carolina, discover a mysterious writing on a parchment. One man makes a cipher which gives him the key to the meaning. By interpreting the parchment, he learns of a treasure buried by Capt. Kidd or some other pirate. A negro furnishes some grotesque humor in the story. Much of the narrative shows how the cipher was interpreted.

Golden Treasury of Songs and Lyrics, by F. T. Palgrave, is a celebrated collection of short poems in English from Shakespeare to Tennyson. Though now somewhat out-of-date, it still contains about the best collection of poetry of the last three centuries.

Grace Abounding, the autobiographic narrative by John Bunyan, tells much of the inner soul experiences of the great English preacher. Bunyan gives an account of his early years, his conversation, and spiritual history while he was confined in Bedford gaol, for preaching without a license. Forged red-hot out of a volcanic soul, this narrative abounds in picturesque words, as expressive as they are homely. It is a human document in the history of religious toleration.

Gradgrind, a man in Dickens' *Hard Times,* has become a name for a hard-fisted, practical man of affairs. In the novel he is always calling for "facts," which he treats as his pawns. He also fits people into his mechanical way of thinking. The rest of the Gradgrind family have their own peculiarities and humours.

Grail, The Holy, was always mentioned as the mysterious chalice out of which Christ drank at the Last Supper. According to legend, it was brought to England by Joseph of Arimathea. Through the spiritual fault of its keepers, the Grail suddenly disappeared and then became the quest of all knights of the Round Table. Only a man of perfect nobility and purity could see it. Tennyson tells the story in one of the *Idylls of the King.*

Grandison, Sir Charles, is a novel with a faultless hero in a trilogy of romances written by Samuel Richardson. He rescues a noble lady named Byron from the machinations of false suitors, yet he can not marry her because of an engagement with another. The second lady at last withdraws on account of religious and other differences, leaving the perfect knight to marry the lady he loves. Grandison has a high sense of honor, which is sometimes rather far-fetched.

Griselda is the type of patient wife in the literature of the Middle Ages. The story is told by Chaucer, who took it from Boccaccio or some other old Italian romancer. A prince, wishing to test the faithfulness of his wife, forces her to do all sorts of menial tasks, takes her children from her, treats her as a servant, and finally supplants her in the home by another woman. Griselda bears all this with angelic resolution and patience, until she wins the respect and full confidence of her husband. Doubtless this story is allegorical, and it may come from early ages. Griselda in old literature is often cited to wives for them to imitate.

Grundy, Mrs. One of the ladies in Morton's *Speed the Plow* frequently alludes to a certain Mrs. Grundy, whose opinions and conduct are worthy of attention. "What will Mrs. Grundy say?" is the common question, but the lady alluded to never appears in the open. The name is now used for public opinion, or the old lady who censures the conduct of all her neighbors, the personification of a critic of manners.

Grub Street in London, now called Milton Street, was once the resort of poor authors who wrote for their daily bread. Those who were not so dependent on their earnings looked down upon them. The phrase was used by Dr. Johnson of a hack author who turns out a certain amount of copy at a certain price, dependent on what the publisher will give him. Pope, Swift, and other satirists constantly allude to Grub Street men.

Gulliver's Travels, a powerful narrative satire by Jonathan Swift, violently ridicules "the beast called man." Capt. Gulliver, a retired ship surgeon, makes four remarkable voyages. First, he is shipwrecked on the coast of the Lilliputians, a race of dwarfs hardly visible to man. Here he learns of their social customs, their controversies, and their warfare with neighbors. Next, he lands on the shores of Brobingnag, where men are sixty feet in height, and Gulliver seems utterly contemptible to them. On the third voyage, among fantastic places, he visits the floating island of cement, on which the philosophers wander about in a maze, thinking of impossible schemes like extracting sunlight from cucumbers. On his last voyage he finds himself in the land of the Houyhnhnms, a race of intelligent horses, much more capable than men on earth. They indulgently tolerate Gulliver as a rather fine specimen of a debased class of beings. Few books are more powerful in satire, more bitter because of the faults of humanity, or more the evidence of genuine creative genius, even though distorted.

Guy Mannering, second of the novels by Walter Scott, 1815, contains the romantic story of the abduction and recovery of Henry Bertram, last heir of the house of Ellangowan. Much of the interest of the novel derives from the faithful Meg Merrilies, an old gypsy, who thwarts the plots of smugglers and a rascally lawyer to put Henry Bertram to death. The story of two sets of lovers is not remarkable for interest or originality. Meg, though half crazed, moves about as the nemesis of the action. Daniel Terry, friend of Scott, with some assistance from the novelist himself, composed a drama in which Charlotte Cushman, the great American actress, won considerable fame in England, Scotland, and the United States. Dominie Sampson, a kindly but abstracted tutor, furnished much of the comic interest of the novel and play.

Hakim, the Soldan in disguise, is one chief character of Scott's novel, *The Talisman,* described elsewhere.

Hamlet, the most thoughtful tragedy and longest play by Shakespeare, is a story of the intellect, the soul, and the instincts of man. Hamlet learns from his father's spirit that Claudius, now his step father, instigated the

murder of the elder Hamlet. He devises a symbolical masque to touch the conscience of the guilty king and queen as played by a group of strolling actors. Hamlet kills a wise old courtier, who is eavesdropping, by a thrust of his rapier through the arras around the wall; he breaks off his engagement to Ophelia, a daughter, who drowns herself; and is at last sent to England by Claudius on a dangerous mission in charge of pirates who are instructed to make way with him on the voyage. He cleverly changes their written instructions, and escapes when the ship is attacked by pirates, who conduct him back to Denmark. There he is fatally wounded by a poisoned rapier in the hands of Laertes, the brother of Ophelia. Previously he has stabbed the king, after having forced Claudius to drink of a poisoned cup. Hamlet's soliloquies, hesitation, and general traits of character have given rise to much speculation, especially in regard to his sanity, which modern scholars do not doubt, since they believe he was feigning madness to effect his plans more surely.

Heart of Midlothian, The, a novel by Walter Scott, published in 1818, preserves for all time the heroism of a simple Scotch lassie, who would not lie to save even a sister from the gallows. Jeanie Deans, the heroine, however, walks all the way to London to secure a pardon from Queen Caroline. This romance has fewer characters than most novels by Scott, fewer passages of description, and yet the country of the Midlothian district, the Tolbooth or old jail in Edinburgh, and the scenes of Jeanie's trip to London are quite memorable. Madge Wildfire, a sybil type of crazed woman, helps the plot by rescuing Jeanie from impending harm, but she complicates it in other ways. Effie Deans, accused of murdering her child, at last is proved innocent, since it is shown that Madge stole the child away.

Henry Esmond by Thackeray takes us back to the age of Queen Anne, a period which is reproduced with historical fidelity. Henry is the real heir to the Castlewood estates, but he is brought up by a second cousin, the possessor, whose beautiful wife is eight years older than Esmond. When Lord Castlewood is slain in a duel, Henry learns that the property belongs to him by right, though he refuses to claim it or to make his secret known. On returning from the wars on a furlough, he falls in love with Beatrix Esmond and woes her for ten years, while she holds him in reserve in case she fails to make a larger conquest. Beatrix is involved in a friendship with the young Pretender, whom Henry and others seek to place on the throne when the Queen dies; but the Prince spoils all the plans by running off to see Beatrix at the critical moment, and so is not available when Anne breathes her last. Despite the seeming differences of age and training, Henry feels that he cares for Lady Castlewood, who consents to marry him. Leaving a son of his wife in charge of the estate, Esmond and his wife emigrate to Virginia. In a sequel, *The Virginians*, some of the further history of their descendants in the time of Washington is chronicled. Society and romance in Virginia are pictured with great vividness. One of Esmond's grandsons finally rescues the other from the baneful influence of the old Baroness Bernstein, an antiquated beauty who is none other than Beatrix, now grown fat and despicable in every way.

Heroes and Hero-Worship, a work by Thomas Carlyle, shows the place of great leaders in history. Every age, says the author, produces its eminent men, but some ages do not discover them at once. The hero as prophet is exemplified by Mahomet, the founder of Islam; as divinity by the Norse heroes; as poet by Dante and Shakespeare, each standing for different qualities and ages; as man of letters by Johnson, Rousseau, and Burns; as king by Cromwell and Napoleon, in quite opposite charac teristics.

Hero and Leander, two tragic lovers, are much lamented in old song and story. Leander lived opposite to the shrine of Hero on the shore of the Hellespont, which he was in the habit of swimming to visit his beloved. One night he was seized by a cramp and sank to his death; and Hero desperately cast herself into the sea. Marlowe, the great Elizabethan poet and playwright, began a picturesque poem describing the two lovers, and it was completed after his early death by George Chapman.

Hiawatha, a poem by Longfellow, in imitation of the old Greek six-foot meter, embodies some of the primitive legends of the great chieftain, who is spoken of as the father of his people, the Six Nations or Iroquois. According to legend, Hiawatha departed to the land of the Hereafter when the white settlers arrived.

Highland Mary was a girl celebrated by Burns in several of his tenderest poems. Though still a subject of dispute, she is commonly believed to have been a young servant girl, to whom Burns pledged his faith as a lover, but who died before their marriage.

Hohenlinden, a martial lyric by Thomas Campbell, memorializes a battle near Munich in which some French defeated an Austrian army. The name, meaning "high linden trees," is the name of a village. Campbell also wrote many patriotic lyrics, two of which now well remembered are "Ye Mariners of England," and "The Battle of the Baltic."

Hoosier Schoolmaster, The, is an amusing narrative of primitive days in the state of Indiana. Ralph Hartsook, the village teacher, proves that he can handle a school in spite of opposition of boys older and larger than himself. Some of the memorable chapters include the story of the spelling bee, the visit of the "Hardshell" preacher to the schoolmaster, and the wooing of a fine-spirited girl whom Ralph finally makes his wife. This is one of our best early local color novels.

Horatio, the friend of Hamlet, is spoken of as a philosopher and gentle spirit.

House of Seven Gables, The, one of four long romances by Hawthorne, shows four cousins and others in a stern but romantic New England atmosphere at Salem. Old Judge Pyncheon, a wily and avaricious politician, is trying to commit his cousin, Clifford, to an asylum, after having been instrumental in keeping him in prison for years. Hephzibah, a sister of Clifford, lives in poverty and constant fear. To eke out her scanty living, she has set up a cent-shop, which is the resort of the children of the neighborhood. Phœbe, another cousin, lives in the house of seven gables, where there is also a lodger, who loves Phoebe and afterward tells the story, as recorded in the novel. The schemes of the judge are thwarted one day as a stroke of apoplexy cuts him off while he sits in Hephzibah's parlor, waiting for her to bring in Clifford for an interview. Then follows a wonderful chapter of apostrophe by Hawthorne, one of the finest in all our language. In the background of the entire narrative is the idea of an hereditary curse which has blighted the Pyncheon family for generations.

Huckleberry Finn, narrates the story of Tom Sawyer and his friend, as they journey down the Mississippi on an improvised raft. They are accompanied by an interesting negro, Jim, who assists them to weather many an adventure that might have swamped them. In this story, as in *Tom Sawyer*, Mark Twain shows that he well understands the country of the Mississippi basin.

Hudibras is a mock-heroic satire lampooning the Puritans in England in the second half of the seventeenth century. This work by Bishop Samuel Butler adopts the machinery and some of the incidents of Cervantes' *Don Quixote*, applying them to a Presbyterian and his squire, who fall into many absurd and peculiar adventures. All of these are described with dash, abandon of language and metrical form, and scathing wit, full of venom.

Iago, a villain in Shakespeare's **Othello**, is scarcely less than satanic in all his thoughts and actions. He preys on the credulity of Othello until he makes him believe that both his wife and his faithful lieutenant, Cassio, are untrue to him. By clever argument and insinuation, he works Othello up to such a pitch of insane fury that the Moor strangles Desdamona, his noble wife, without giving her any chance to prove the charges unfounded. In many of the gothic romances of the late eighteenth and early nineteenth centuries, Iago became the pattern for cruel and devilish tyrants.

Idylls of the King, thirteen narrative poems by Tennyson, form a group of stories of King Arthur and the knights of his Round Table. They date from 1859 and were completed in 1885. Many of the characters typify human beings, with their faults, virtues, and whims. Tennyson drew a large part of his material from the old prose romantic account by Malory called *Morte d'Arthur*, but he invested the entire number with a modern atmosphere and interpretation, quite foreign to the old chroniclers. Arthur is a noble, but cold monarch, who somewhat neglects his Queen and the sentiments of life. Guinevere, therefore, turns to Lancelot for sympathy, and they at last elope and disrupt the Round Table. Others make war on Arthur while the whole court falls into bloodshed and ruin. Percival and Galahad are described as perfect knights, but the latter only sees the Holy Grail, which is also beheld by Percival's sister. At the end Arthur is mortally wounded and asks to be returned to the sea from which he originally came. The last idyll describes how he is attended by Bedivere, a single faithful knight, who witnesses the coming of a barge with three white

ladies that receive the king for his last voyage. Every idyll of the entire group contains many nobly musical and imaginative lines. Some of the best versification of the nineteenth century is found in *The Passing of Arthur.*

Iliad, The, a Greek poem dating from about eight hundred years before the present era, contains many episodes taken from different sources and seemingly woven into a complete epic. It has been credited to Homer, a blind bard, who may have collected and polished existing material. Apart from some irrelevant details, the story describes the siege of Troy by the Greek armies, after the abduction of Helen from Greece by one of the sons of Priam of Troy. After three introductory books, describing the preparations for war, the coming of the invaders and some skirmishing, Paris and Menelaus, the husband of Helen, engage in a combat. The Trojan is wounded, but is carried off safely by Venus. Then the Trojans refuse to fulfil their compact to return the stolen wife if their champion should fall in the fight. In a succeeding attack on the city of Troy, the gods range themselves on one side or the other, with terrible slaughter as a result. Achilles, who at first sulked in his tent, now kills Hector, and old Priam comes to the Greeks to claim the body of his son. The entire epic concludes with an episode of the funeral rites over the slain hero. Vergil's poem, *The Aeneid,* takes up the narrative where the Greek epic ends.

Il Penseroso, a poem by Milton. See *L'Allegro.*

Inland Voyage describes a journey by Robert Louis Stevenson down the canals and rivers of France and Belgium to the sea. The different chapters abound in vivid accounts of the natives, odd adventures, and humorous comments. Even the trivial takes on a wealth of color and romantic charm. *Travels with a Donkey,* a companion narrative, outlines a trip made by Stevenson in the Cevennes in Spain.

In Memoriam, a series of one hundred thirty-one poems, reflects the scientific and religious trend of the nineteenth century as represented in the thought of the author, Tennyson. These lyrics were written in memory of Arthur Henry Hallam, son of the historian, who died while he was still a young man. For about fifteen years Tennyson dedicated many short meditative poems to this group, which is notable for sincere thought, beautiful nature descriptions, lines of musical charm, and a gradual development of thought from doubt to robust Christian faith. The series might almost be called an epitome of the religious questionings of the age.

Ivanhoe, one of the most popular of the novels by Scott, records the adventures of many characters. The chief group includes Wilfred of Ivanhoe, Rebecca and her father, (two Jews), Brian de Bois Guilbert and other knights of the cross, Richard the Lion Heart, just fresh from a crusade in Palestine, Robin Hood and his men, with a group in the home of Cedric, father of Ivanhoe, including Rowena, whom the hero at last marries. Many stirring events make up the different parts. Some of these are the coming of the Templar, the Unknown Knight, and others to the home of Cedric, to which also Isaac and Rebecca resort for protection; various humorous scenes in which Gurth and Wamba, domestics, play jokes and debate; the imprisonment of Rebecca and Isaac, and a most dramatic scene in which some black servants of their captors demand ransom in gold of Isaac; and the noble resistance of Rebecca when she is pursued by the unworthy Templar and forced to the edge of the parapet at Torquilstone Castle, before he would withdraw and leave her in peace. All rises to a climax when Rebecca, condemned as a sorceress, pleads for a champion, and Ivanhoe rides into the lists to engage and overcome Brian de Bois Guilbert. Robin Hood and his tuneful companions in the forest contribute some interesting melodies. As a picture of life in the early days, about 1200, this novel has been highly appreciated. Scott failed somewhat in making the marriage of Rowena, a palish damsel, and Ivanhoe seem reasonable, but he always stated that the times of the novel never would have permitted a Christian like the hero and a Jewess like Rebecca to marry, and, further, that poetic justice does not demand that all noble characters in fiction should be amply rewarded with some positive favor.

Jaques, the contemplative man in *As You Like It,* which please see.

Jane Eyre, one of our best autobiographic novels, written by Charlotte Bronte, one of three gifted sisters. The story reveals the terrible loneliness of an orphan girl in the midst of unsympathetic and even cruel relatives, her life in a charity school, where she suffered somewhat but enjoyed the companionship of other girls, and of her service as a governess in the home of an eccentric man, whom she afterwards marries. Most of the incidents seem as real as if the author herself actually lived in them. Mr. Rochester, the employer, has a wife living, but fails to notify Jane, though he considers himself morally freed, since the wife is a helpless maniac. Others arrive to separate Jane and Rochester at the altar; and then Jane escapes to resume her life as a school teacher. While she is absent, Mr. Rochester is stricken blind when he tries to rescue his wife as their estate is burning. His misfortune leaves him a chastened man, kindly disposed and wishing forgiveness for trying to deceive the one he loved best. Jane returns to him, and they continue to live at Mr. Rochester's smaller country estate.

Jarley, Mrs. is the proprietor of the traveling "wax works" as described in Dickens' novel *The Old Curiosity Shop.* The name is now used for tableaux in general as a form of entertainment.

Jarvie, Bailie Nicol, a droll, clannish, and opinionated Scotsman, is a companion and distant relative of Rob Roy in the novel by Scott. Scott himself warmly praised the stage character, as impersonated by Charles Mackay, which he said was realism itself.

Jerusalem Delivered, a great epic in twenty books, is the work of Torquato Tasso, an Italian poet of the sixteenth century. It relates the tale of the capture of Jerusalem by some of the late crusaders under Godfrey. One of the romantic elements is the love of Rinaldo, the great Christian champion, for Arminda, a lady sent from Damascus to beguile him. Godfrey at last persuades him to return to the conquest, and victory is then assured. Afterward he wins the love of Arminda, though in the meanwhile she has sought to cause his death by poison. With other romantic adventures, including two or three additional love stories, the poem concludes with a magnificent picture of the entry of the victorious hosts into the Holy City.

John Halifax, Gentleman, as written by Dinah M. Craik, is the story of the rise to fortune and fame of "one of nature's noblemen," as the title character has frequently been named. Becoming an orphan at eleven, John Halifax works for three years in the country, then engages himself to a Mr. Fletcher, who owns a tannery. His employer's invalid son, taking a fancy to him, teaches him and assists him to further his education. Ursula March is the chief feminine character. The main interest of the novel lies in its faithful portrait of true nobility, irrespective of success, wealth, or social status.

Julius Caesar, like other Roman plays by Shakespeare, came mostly from *Plutarch's Lives,* a work describing many old Latins. The dramatic events arise out of the death of Cæsar and the subsequent effect on the people of Rome. Mark Anthony, friend of the slain general, incites the populace to declare war on Brutus, who has aided in the conspiracy against Cæsar for patriotic reasons. Though departing from the story in some questionable details, the great dramatist has written a wonderful account of the effects of ambition on the heart and soul of Roman men. This play contains many noble lines of declamation,—such as the passages in which the superstitions of the mob are described; Anthony's oration over the dead Cæsar; the quarrel between Brutus and Cassius at Philippi; and the speech of the tribune Marcullus. Other interesting passages show the tenderness and fidelity of Portia, wife of Brutus, with her lamentable death; the scene in the last act at midnight, with the little page waiting before the tent of Brutus, when the general is troubled with visions and waking dreams; and the self-destruction of both Brutus and Cassius. In dramatic construction the play has obvious faults, but in characterization and force of action, it is one of Shakespeare's noblest.

Junius was the name signed to a series of polemical letters contributed to the *London Daily Advertiser* from late in 1768 to early in 1772. Apparently written by a lawyer, they show an intimate knowledge of men, politics, and social conditions of England in the time. Not a few speak in flaming terms against ministers of the Crown and even against the King himself at times. The anonymous author champions the cause of democracy and the good of the state as a whole, as opposed to the rule and interest of the few. He lays down this as one of his first theorems: "The admission of a free people to the executive authority of government is no more than compliance with laws which they themselves have enacted." These remarkable documents created a tremendous furor in the time, and even now they have a certain sting. At least thirty-five authors have variously been named as the writers of the series, which may not all have come from a single hand. Edmund Burke, Lord Temple, and Dr.

Butler had their proponents. Sir Philip Francis was even then suggested as the probable author, and his grandson afterward offered certain conjectural proofs to support the view, but the subject is not yet wholly cleared of doubt. Macaulay said that enough evidence had been presented to convince any reasonable judge in a court that Francis was the author.

Kenilworth, thirteenth in order of publication in the Waverley novels by Sir Walter Scott, gives a clear picture of life in the age of Elizabeth. Like some other romances by Scott, this story introduces both historical and fictitious characters. The many events, as concerning Amy Robsart, have been taken out of their true setting and presented in a light not favored by historical research. The secret marriage of the Earl of Leicester with a daughter of Sir Hugh Robsart forms the central motive. Richard Varney, the villain, who resembles Iago in Shakespeare's *Othello,* is always seeking to persuade Leicester to allow him to claim Amy as his wife. He thus hopes to marry the Earl to the Queen, and to have Amy indeed for himself. Leicester prepares an opening for the tragedy when he delays acknowledging at court that Amy and he are truly man and wife. When the revelation comes, under most dramatic circumstances, in presence of the Queen herself, the monarch issues certain commands, and Leicester orders Amy put to death, thinking she is faithless to him. Though the Earl sends a quick countermand of his first wishes, Varney has seen that the death took place before the second message could reach Cumnor Hall, where Amy had been a virtual prisoner, and to which place she returned at once after her interview with Elizabeth. Apart from the narrative itself, the novel shows some of the customs, inns, statesmen, poets, and royal interests of Elizabeth as both woman and queen. Especially vivid and historical is the description of the visit of Queen Elizabeth to the castle of Leicester at Kenilworth.

Kidnapped, a romance of adventure by Robert Louis Stevenson, presents some scenes hardly equalled for tenseness in average books of fiction. It was first issued in 1886. David Balfour, a sturdy lad in Scotland, finds his uncle and guardian a miser and villain. David is finally shipped on board a vessel bound for America, where his uncle has planned to sell him into service. David, on the journey, falls into a friendship with Alan Stewart and other Highland Jacobites, with whom he joins in many hair-raising escapades. Eventually he returns to Scotland and foils his rascally uncle in his plan of stealing the lad's estate. Several fights in the story are memorable for dash and heroism.

Kubla Khan, a fragmentary poem by Coleridge, sets out to describe in detail the appearance and history of a "pleasure dome" erected by an Eastern potentate. The author said that the introduction to this came as a dream to him, and he was unable to complete the narrative in his waking moments. For rich musical effects, showing the power of sound to suggest vagueness and luxury, this gorgeous fragment has few compeers.

Lady of the Lake is a character in various old stories. In the metrical romance by Walter Scott, she is Ellen Douglas, daughter of an outlawed noble living on an island in Lake Katrine. An unknown huntsman, who calls himself Fitz-James, appears at the shore just as the Lady of the Lake is emerging from her boat. Old Douglas kindly receives him and assists him to continue his journey. A bold Highland chieftain, named Roderick Dhu, is chosen to lead the wanderer into the unfrequented paths of the north. The poem describes the entrancing beauty of the Highlands, the gathering of the clans for warfare, and the conflict between Fitz-James and Roderick Dhu, who is jealous of him and seeks to vanquish him in personal combat. At the end of many stirring events, Fitz-James is recognized as the King in disguise, who gives the Lady of the Lake to Malcolm Graeme and also pardons Douglas and his clan. To read this poem is almost like a visit to the old Highlands of Scotland in the days of chivalry.

Lady or the Tiger, The, is a puzzle story or hoax by Frank R. Stockton, an American author of numerous clever narratives. It gives a detailed account of a barbaric princess, in very early ages, whose lover is betrayed to her imperial father, and condemned to face the beasts of the arena. Yet, in a spirit of offering some chance, the emperor decrees that two doors shall be arranged so that out of one a beautiful lady shall come, and a tiger out of the other. In some way, by ingenuity or bribery, the princess learned which compartment sheltered the lady. If the lover should choose one door, he and the lady emerging through it would at once be married. Otherwise, he most certainly would be devoured by a ferocious tiger. The barbaric princess, therefore, nodded to the young man in the arena, giving him a signal as to which door to choose. Nobody but he saw her thus communicate. Now, the question is, which door did the young man choose? Each reader is left to judge for himself.

Lake Poets or "Lakers," as a contemptuous reviewer called Wordsworth, Southey, Coleridge, and their fellows, settled in the lake district of northwestern England to meditate, study nature, and write. In these simple surroundings, they broke away from some of the old traditions and conventionalities of the past age, expressing a love for simple themes, homely words, and sincere emotions.

Lallah Rookh, a somewhat fantastic oriental romance in verse by Thomas Moore, written in 1817, ran through six editions in a single year. When the *Edinburgh Review,* however, pronounced it "a public nuisance," Moore engaged Jeffrey, the writer of the article, to meet him in a duel, but both were arrested after they had arrived and were about to fire blank cartridges from their pistols. This affair led to a lasting friendship between them. The story of the poem is that of an eastern princess, to whom several tales are told, while she is journeying to the home of her husband in another land.

L'Allegro and the companion lyric, Il Penseroso, by Milton show the interests and studies of a man in different moods, or of two separate men. One is serious and meditative; the other is gay and companionable. *L'Allegro* reviews some of the simple pleasures from dawn to midnight. These include the early song of the lark and the clarion of the cock at daybreak, the coming of the farmer and the milkmaid, with a description of meadows, brooks, and trees, dinner in the shade at noon, sports later toward evening, and the studies and recreations of the home. *Il Penseroso,* the meditative and pensive man, begins with evening and concludes with the pleasures of the forenoon. It speaks of the nightingale, "most musical, most melancholy" of singing birds, of the ringing of the curfews, with reading of philosophy, drama, or one of Chaucer's works until the sun comes to "fling his flaring beams" across the world, and a final appreciation of music and the life of a student. The metrical form of these two poems is varied, graceful, and musical to a large degree.

Land of the Leal, in the beautiful poem by Lady Nairne, means the heavenly country. Once it meant any land where happiness, virtue, and valor were supreme, —a kind of no man's land of the poet's dreaming, or a haven of kindly sentiments.

Last Days of Pompeii, as a subject for a novel was suggested to Edward Bulwer, Lord Lytton, by the excavations in the old buried Roman city. The action of the book occurs at the time of the eruption of Vesuvius that overran the country roundabout. Glaucus and Ione, two lovers, are likely to be separated by the girl's guardian, who is a scheming man of base motives. Nydia, the blind flower girl, though also in love with Glaucus, leads the two lovers out of the burning city. Lord Lytton portrays here a beautiful and heroic soul. The romance is permeated with learning, contrasts of character, and fine descriptive scenes. Some of the notable ones that stand out in memory are the gladiatorial combat, the Roman banquet, with other domestic sketches, and the striking and terrible events during the time of the destruction of Pompeii. The novel was written in 1834.

Last of the Mohicans, a Leatherstocking Tale by James Fenimore Cooper, is a prose epic of the American forest in primitive times. Chingatchgook and his son Uncas, last of the tribe, share our admiration for the white hero, Hawkeye; while Magua, a bad redman, justly merits the punishment he gets for his baseness and treachery. Cooper, of course, idealized the Indian, making him at times better, at times worse than he really was. The story narrates the stirring events of a journey in the time of the French and Indian War near Lake Horicon in eastern New York. Constant vigilance against treachery by Indians in ambush, forced marches to the northward, solicitude for the ladies of the party, make up the chief interests.

Leatherstocking Tales, five novels by Cooper, are his tribute to the early pioneers who opened up the country west of the Hudson in New York. This series includes *The Deerslayer, The Last of the Mohicans, The Pathfinder, The Pioneers,* and *The Pirate,* ranging in date of writing from 1826 to 1841. The chief hero appears in different novels as Leatherstocking, Hawkeye, Natty Bumppo, and La Longue Carabine (The Long Rifle). He wanders over hundreds of miles of dark, unsettled forest, acting as trapper, guide, and agent of the government. Force, honesty, and absolute fearlessness are the main traits of this and other characters of the Leatherstocking group.

Leaf in a Storm, A, by Louise de la Ramée, better known as Ouida, is a tract against the inhumanities of war between nations. When the conflict with Germany broke out in 1870, many simple French peasants lived happily in a small hamlet toward the eastern part of France. Like a great unstayed tide the armies rush over them, leaving a burned town, many homes without fathers, and many sweethearts without their young men. Just as a leaf is blown before a storm, the cruel breath of war carries the noblest away never again to return. Ouida's story is fresh, vivid, and sympathetic. Another story from the same pen is *A Dog of Flanders*, one of our noblest animal short narratives.

Legend of Sleepy Hollow, The, a short tale by Washington Irving, was first published in 1819. It tells mainly of the startling adventure of one Ichabod Crane, who looked much like a scarecrow in his ungainly ugliness. Ichabod, the village schoolmaster, is interested in Katrina Van Tassel, daughter of a prosperous farmer, but he has at least one formidable rival, Brom Bones. On one occasion, as Ichabod returns home late at night, he is pursued by the Headless Horseman, a legendary rider of the neighborhood. Ichabod is speechless on seeing a head hanging at the saddle. The horseman finally rises in his stirrups and casts the head at Ichabod, who is so terrified that the region never afterward sees him. Later, when the story was told in the presence of Brom Bones, that gentleman was known to assume a peculiar, knowing look. Irving's tale, as well as the *Rip Van Winkle*, makes humorous use of local legends with singularly telling effect.

Les Miserables by Victor Hugo is one of the world romances of tremendous power. It describes the Paris of the nineteenth century, with the evils of the professional police system, and the fatalism which may pursue an innocent man when he is persistently hunted down by officers of the law. Jean Valjean, the hero, is an epitome of French peasant character, noble against odds and willing to undergo superhuman trials for those who will trust him. For stealing bread for his sister's starving children, Jean is condemned to the galleys for five years, a time eventually lengthened to nineteen because of his attempts to escape. When he is released at last, Jean persuades a Bishop to accept him as servant; but he cannot resist the temptation to steal the churchman's silver, since a long imprisonment has made him indifferent and cynical. Jean is brought back for identification by the police, but the good bishop, understanding the situation, swears that he has given Jean the things he has stolen. This unexpected kindness softens a heart made stony by injustice.

The police prefect, however, named Javert always pursued Jean, on the principle that a man once in prison must, of necessity, always remain a criminal. Through almost endless ramifications the story runs with increasing interest. Jean becomes a rich manufacturer, mayor of his town, and a friend of the poor and downtrodden. Yet the police pursue him, and he is recognized as a former conviet, disgraced, and stripped of most of his old friends. He rescues from shame a girl named Fantine, who soon dies leaving a child named Cosette. Again Jean Valjean serves in prison for another man whom he resembles. He returns from the galleys in time to rescue Cosette, who is engaged to marry a young man named Marius. The latter misunderstands Jean Valjean, who goes away, so that no suspicion may fall on those he loves. Finally, Marius learns that Jean has really saved his life, but, when he at last finds his benefactor, it is almost too late; for Jean is at the point of death.

Besides the details of the narrative itself, forged white-hot out of a great imagination, Hugo introduces some famous descriptions of the battle of Waterloo; of the sewers of Paris, though which Jean flees with Marius; and of the barricade across the streets where many meet death and a French lad stands heroically gathering bullets as he is exposed to the enemy fire.

Lilliput is the land of diminutive men in Swift's *Gulliver's Travels*. The entire account of these people is a satire on the smallness of mankind. Swift narrates at length the story of the Big-endians and Little-endians, who fought for many years over the proper way of breaking an egg. "All true believers break their eggs on the convenient end," said their book of law. An ancient emperor, happening to cut his finger while breaking the large end of his breakfast egg, decreed that henceforth all the faithful must break the small end. Thus the controversy arose; many learned books added fuel to the flame; and at last some of the noblest of the tribe suffered martyrdom for their faith.

Little Nell, as described by Dickens in his *Old Curiosity Shop*, is among the most pathetic characters in literature. Driven by fear of a rascally man named Quilp and by the strange actions of her grandfather, an old man in his dotage, Little Nell finally persuades him to leave their home and wander forth in search of a better place. They live for a time in the fields and endure many hardships, until finally Little Nell comes to a sad deathbed among strange scenes.

Lochinvar, a bold Highlander in Walter Scott's *Marmion*, loved a lady, who was betrothed against her will to another, a man who is called a "laggard." He asked a dance of the bride at the wedding, and, before the astonished bridegroom and guests could interfere, lifted her up beside him on his horse, and dashed away. This story in Scott's poem revives an old ballad.

Locksley Hall and **Locksley Hall Sixty Years After,** two poems by Alfred Tennyson, were published in 1842 and 1886 respectively. The petulant hero of both declaims against his cousin, Amy, who forsook him, at command of her father, to marry a man of wealth. He takes refuge from his bitterness in the contemplation of the future of England and of science. "Thro' the shadow of the globe we sweep into a younger day, Better fifty years of Europe than a cycle of Cathay." In the second poem, with some bitterness left, the speaker recalls the death of Amy many years ago and now that of her husband, late master of Locksley Hall. Both lyrics have a wealth of description and considerable nervous energy.

Lord Jim is a picturesque romance in the best style of Joseph Conrad. Realizing that he has been a coward, a man finds a new life far off in a land of uncivilized tribes. They learn to trust and love him, and tragedy comes only when other white men arrive to disillusion the natives who have thought all men of their kind as noble as Tuan Jim, who is truly large and heroic, strong in death.

Lorna Doone is a brilliant romance of the country of Exmoor in Devon, west England. It is the masterpiece of R. D. Blackmore, being written in the style of the seventeenth century when the events are supposed to occur. John Ridd, a lad of fourteen, whose father has been slain by the wild Doones, ventures up a small stream in search of fish and meets with a fair young miss who says she is Lorna Doone. When he is older grown, he returns again, and from that day thinks of eventually rescuing Lorna from the cruel and vicious life that is common among her people in Doone Valley. For years nothing further happens, while the farmers of the region are content to leave the Doones alone, just so long as they do not steal too many cattle from the neighborhood. At last, during a great storm in winter, John succeeds in bearing Lorna out of the valley. As they stand at the altar of the little church not far away, a bullet from the gun of Carver, one of the last Doones, strikes Lorna down in apparent death. John rushes out to seek his revenge. He encounters Carver Doone on the edge of a morass, into which Carver sinks in trying to protect himself from the strength of his antagonist. Later John and Lorna live through many happy and peaceful years. Though the story is of cruel and bloody days, simple strength and unassuming beauty mark it as uncommonly attractive. An atmosphere of lyrical charm pervades almost every description and bit of story.

Luciad is the national epic poem of Portugal or Lusitania, as this land was once called. In form and spirit it resembles some of the old classic poems, with many noble passages.

Luck of Roaring Camp, The, is the title narrative of a volume of short stories by Bret Harte. It revives the days of the early rush for gold in the western part of the United States. The "Luck" is a baby, born to the only woman of the town, who soon dies, leaving the child to rude and lawless men. Through the child a new spirit settles among the entire population. At last both the babe and its keeper are drowned in a great flood.

Lycidas, the pastoral elegy by Milton, remembers the life and characteristics of his friend, Edward King, who had been drowned in attempting to cross the Irish Sea. Milton introduces the classical mythology into the poem, speaks of the days when he and King were students together, calls on the shepherds to weep for Lycidas, and introduces a celebrated flower passage, which was sharply criticized by Ruskin for being not true to nature. This lyric became the model for later poems of the type, such as Shelley's *Adonais* and Arnold's *Thyrsis*.

Lydia Languish, in Sheridan's comedy *The Rivals*, is a young miss who reads romantic novels from the circulating libraries, when Mrs. Malaprop, her aunt, thinks she is reading more solid books.

Mab, queen of the fairies, finds a place in several English poems and dramas. Usually she is mentioned

as the wife of Oberon. Both Shakespeare and Milton speak of her more than once, but Titania is the consort of Oberon in *Midsummer Night's Dream*. In Welsh legend Mab came at night and played pranks on slovenly housewives.

Macaulay's Essays, a miscellaneous series, began with the publication of the essay on Milton in the *Edinburgh Review* in 1825 and concluded with the brilliant account of the Earl of Chatham in 1844. With a great store of information and concrete details, they bring to popular attention many historical, literary, and social subjects of the nineteenth century. In style they are rich, compact, vivid, and often rhetorical, with many antitheses and other figures for emphasis.

Macbeth, Shakespeare's great tragedy, is notable for its picture of the decline of two human souls. Macbeth, a highly imaginative man, lacks force of character; his wife, quite the contrary, lacks no degree of will to carry her designs into action. Blinded by ambition, they conspire to kill the old king Duncan, while he visits them, and Lady Macbeth takes the lead in seeking to avoid the consequences of their rash act. Macbeth meets the three weird sisters, on different occasions; they lead him on to his own doom by means of ambiguous prophecies of fame and power. A fellow officer with Macbeth must needs be silenced to avoid suspicion. Macbeth, by means of agents, adds the murders of Banquo and Macduff to his list of crimes. Unable to bear the strain longer, Lady Macbeth breaks in mind and reveals some of their secrets while she walks as in a dream. After her untimely death, Macbeth is left alone with his remorse and further plans to make his throne secure. Gradually the tide rises against him, and at last he meets death in a great battle, being swept onward by his confidence in the false prophecies and by his own ambition. This drama stands among the great plays of human retribution for energy of the plot, consistency of the characters, and wealth of imagination. Though the witches and the ghosts in the play now cause some confusion to a modern reader, they undoubtedly suited popular taste and belief in Shakespeare's time.

Mac-Flecknoe, a satirical poem by John Dryden, was published in 1682. It lampoons Thomas Shadwell, a rival dramatist and poet, making him out a son of Richard Flecknoe, an obscure and petty rimer of the age. Shadwell is set up as king in the realm of dunces. Two memorable lines, somewhat typical of all, are these: "The rest to some faint meaning make pretense, But Shadwell never deviates into sense." Dryden is never as vindictive and personal as Pope in his satires, and yet this poem stings like a taskmaster's lash.

MacIvor, Fergus and Flora, a Highland chieftain and his haughty sister, entertain Edward Waverley on his visit to the north, as fully described by Scott in his novel, *Waverley*, the first written of the series of some twenty-seven long stories. Fergus plans that the English visitor shall marry Flora, but she and Edward think otherwise. One of the great scenes of the novel is the parting of the hero and Flora from Fergus, when the latter is led away to be executed for treason.

Malaprop, Mrs., is a presumptuous dame in Sheridan's *The Rivals*. She uses many real words in wrong senses, as when she speaks of a "nice derangement of epitaphs" for *arrangement of epithets;* "caparisons" when she means *comparisons;* and "positive conjunctions," when she should have said *positive injunctions*. At present a malapropism is the unintentional misuse of words as if by Mrs. Malaprop herself. Sheridan may have had Dogberry of Shakespeare's play in mind, though this blunderer makes somewhat different mistakes.

Manfred somewhat resembles Faust in literature. As characterized in Byron's poem bearing this name, he has seven spirits to do his bidding,—earth, ocean, air, night, winds, mountains, and the star of his own destiny. Yet Manfred dwells in proud isolation at his castle among the Apennines, being punished for selfishness and presumption. Once he is visited by Astarte, whom he loves, but she foretells his own death on the following day.

Man Without a Country, The, a didactic story by Edward Everett Hale, tells of the pathetic life of Philip Nolan. In the early days of the American Republic, young Nolan fell under the baneful influences of Aaron Burr, who designed to found a great empire west of the Mississippi. When Nolan was called into court for his part in these plans, he swore with an oath that he never wanted to hear of the United States again. The judge sentenced him to have the wish fulfilled. Nolan was accordingly sent aboard one ship after another till the end of his long life. After a number of years, nobody at Washington knew anything about his case, and he was never pardoned, though some attempts were made to restore him to his country. Whenever the vessel bearing him neared a shore of the United States, poor Nolan was transferred to another outward bound. Several tense and pathetic incidents developed. On his death bed Nolan was permitted to learn of the history of his native land since the time of his sentence. Previously any papers handed him were clipped if they mentioned the United States. He bequeathed a lesson of patriotism to the youth of America.

Marble Faun, one of Hawthorne's romances, tells a powerful story of human retribution for sin. This book, written while Hawthorne was abroad, is filled with the spirit of old Rome and the art of former ages. Some of the events in the narrative are dark and mysterious, quite in keeping with Hawthorne's methods of philosophical analysis.

Marse Chan, one of many short stories by Thomas Nelson Page, interprets life in Virginia in the period of the Civil War. An old negro servant, for years in the family, is the narrator. Young Massa Channing loves the daughter of Colonel Chamberlain, a neighbor. Differences in politics separate the two families, until Marse Chan enlists in the army and soon afterward is killed in battle. Anne Chamberlain is remorseful because she sent him out with a very cold good-bye. She comes to live with Channing's old parents, and remains till she too is buried in the little family plot. Besides a moving and pathetic story of separation, this introduces us to the characteristics and genuine dialect of an old negro, who is always sympathetic with the family he served. Even Marse Chan's lazy and fat old dog to him is almost sacred.

Marvellous Boy is an epithet applied to Thomas Chatterton, son of a poor teacher in Bristol, England, born in 1752. He wrote poetry at twelve, soon afterward forged various documents which people of his town thought real, and later claimed to have found in an old church certain manuscripts of one Thomas Rowley. These were pronounced spurious. Chatterton wrote many excellent poems of his own, went to London in the spring of 1770, had for a time some prospects until his patron died, and committed suicide in August, at the age of seventeen years and nine months.

Meg Merrilies, the old gypsy, is able to save Henry Bertram in Scott's *Guy Mannering* at the cost of her own life. See the account of the novel on a previous page.

Merchant of Venice, The, is the combination of three ancient tales in Shakespeare's comedy: the story of the merchant who thought his ships were lost; the story of the rich but vindictive Jewish money-lender; and the story of the winning of a wife through the wise choice among three caskets containing various articles. Antonio borrows money of Shylock, the Jew, to help his own friend, Bassanio, agreeing in a fit of confidence to allow a pound of flesh to be cut from the spot just over his heart, if the money is not returned on a specified day. When the ships are thought lost, and the money falls due, Shylock refuses to take anything from others, insisting on the literal fulfillment of the agreement, as "nominated in the bond." At last, appealing to a learned doctor of the law, they are notified by Portia (sweetheart of Bassanio in disguise) that Shylock may have the flesh, but not a single drop of Christian blood with it. With terrible groans, Shylock abandons his purpose, offering to pay almost any amount if they will free him from the charges of extortion and intent to kill. In the meanwhile, Jessica, his daughter and another friend of Antonio have eloped, taking the keys and much of Shylock's treasure with them. Bassanio has chosen the casket that contains Portia's picture, and hence the lovers are permitted to wed. At last Antonio learns that some of his ships have weathered the storm. Besides a plot, replete with incidents and minor elements, this drama pictures human character most truly. Shakespeare also tries to secure some measure of sympathy for old Shylock, in spite of his seeming cruelty, which was brought forth by real and fancied wrongs.

Midsummer Night's Dream, one of the playful comedies by Shakespeare, combines many elements loved by playgoers of 1600. There is romance, three sets of characters, confused identity, much humor, and some mild horse-play, reconciliation and restoration. Two groups of lovers wander in the forest, but Demetrius has forgotten his love for Helena and is seeking Hermia, the beloved of Lysander. Oberon, the king of the fairies, in pity for Helena, sprinkles some magic juice of the flower called love-in-idleness on the eyes of Demetrius, and thus restores his love for her. Puck meanwhile has caused amusing confusions, since he has anointed the eyes of the

wrong man by mistake. The fairies, too, confuse their identity. Titania, Oberon's queen, imagines she is beloved by an ass; while Bottom, the weaver, touched by the magic liquor offered by Puck, calls for oats and hay. There is also a lightsome plot of a play of Pyramus and Thisbe, as enacted by some rustics and artisans, with queer stage properties. For instance, Snout, the joiner, represents a wall as he stands holding some lime, plaster, and a stone in one hand, while he uses the other to represent a chink in the wall for the lovers to talk through. Altogether things happen as they might indeed if all the actors of the play were really victims of midsummer madness.

Miller, Daisy, as portrayed by Henry James in his novelet, is a young, innocent, but very unconventional American girl in Rome. Contrary to advice of friends, she does not "do as the Romans do" in social matters, but conducts herself in a careless, free manner as she would in her own small town in a western state. Her former friends, therefore, one by one desert her; and when those she most respects treat her coldly, she is deeply hurt. When she dies of a fever caught in the night air, while viewing the moonlight from the Colisseum, the narrator of her story feels that some injustice has been done her. The novelet, when first published, ranged many people on both sides, as to whether it is a correct picture of an independent American girl.

Mill on the Floss, The, by George Eliot, is a novel of English middle-class life in a small community. Out of unfavorable surroundings, the life of a young girl develops into pathetic tragedy. Maggie Tulliver, an impressionable "clever" girl, is misunderstood by all except by her father. Most of her relatives are stolid, matter-of-fact people, with no atom of romance in their souls. Her brother Tom is typical of the unimaginative, practical, harsh brother, though he has some rude affection for Maggie. George Eliot paints a realistic picture of the trials and sorrows of child life among these circumstances. At last Maggie becomes interested in Philip Wakem, a deformed and girlish young man, who is the son of Mr. Tulliver's chief enemy, a lawyer who has helped win various suits started by Maggie's father over water rights at his mill. On positive commands of Tom, after her father's death, she gives up all thought of marriage with Philip. Quite unconsciously and innocently she allows Stephen Guest, the avowed lover of a cousin, to become enamored of her. He takes her out on the Floss rowing, and before Maggie fully realizes, they have gone so far that it is the next day before they can return. Maggie is then suspected by all her acquaintances, and even Tom turns harshly against her. Independently she learns to make her living as a teacher. When a great flood rushes down the River Floss, Maggie and Tom are caught in its fury, and both go down forever, "living again in one supreme moment the days when they had clasped their hands in love and roamed the daisied fields together." This powerful novel raises the question of whether an author should make a story terminate happily. George Eliot, however, shows from the first chapter that all the conditions are tending toward a tragic ending. Apart from the plot itself, and the study of the characters of Maggie and Tom, various relatives on both sides of the house, leave little to be desired in intimate, realistic, and vital humanity.

Mr. Isaacs, earliest novel by F. Marion Crawford, is the history of a highly-born Persian, who lacks no noble quality save reverence for women. He thinks and speaks of his three wives with indulgent contempt. Paul Griggs, who tells us the tale, meets Mr. Isaacs at Simla, admires him from the start, but suggests at once that women indeed do have souls. Shortly afterward, Mr. Isaacs meets and admires a beautiful and frank English girl. Gradually they fall in love with each other. Through various refinements, the affection of Mr. Isaacs rises to a height of sublimity, which even the death of his beloved does not materially change. Though a much saddened man, he continues to live in a lively hope for the return of the golden days of his courtship; or, as he expresses it, he awaits "longingly the first faint dawn of the day eternal." Much of the atmosphere of the romance is that of the mysticism and spiritual longing of the yogis of India.

Modern Painters by John Ruskin began in 1841 as a defense of the art of the English painter, J. M. W. Turner. In succeeding volumes Ruskin enters into the entire history and principles of art since the days before Raphael in Italy. Many florid descriptions make the first editions of this elaborate work unusually attractive. In later forms, however, Ruskin omitted some of the vivid passages, and toned down his entire enthusiasm for the art of Turner.

Mosses from an Old Manse, written in 1846, is a collection of short stories by Hawthorne. Like the *Twice Told Tales,* they divide into several classes, according to subject and style of treatment. Some of the earliest are hardly more than descriptive sketches like *Sights from a Steeple,* a detailed report of what a man might witness from the high spire of the town church; *The Old Manse,* a description of the home of the ministers of the parish church of Concord, where Hawthorne lived as he wrote some of these stories; *A Rill from the Town Pump,* avowedly a temperance sermon preached by a town pump at high noon of a hot day in summer at Salem; *The Maypole of Merry Mount,* a picturesque incident of the early Plymouth days showing that some of the earlier settlers desired thoughtless mirth; and *The Gray Champion,* a sketch of the resistance of the Colonists to the encroachments of the governors before the time of the actual Revolution. Another class includes *The Great Stone Face,* an allegory of character; *The Birthmark* and *The Artist of the Beautiful,* both different phases of unwise and tragic ambition, carried to an extreme; and *Rappaccini's Daughter,* a subtle discussion of relationships between rumor and actual truth as to the girl whose breath was supposed to be poisonous because she was fed on drugs or breathed the odors of noxious flowers. These, with other gradations of history and romance, make up two fine collections of tales that always appeal to the imagination of young readers. Though deficient in the sense of reality, or of actual life, many of these stories introduce one to the moral realm and the soul of mankind as shown in reference to action.

Mother Goose's Melodies, that captivating series of rimes for the nursery, has influenced generations of children. Some of the verses go back to a French collection of 1628, which was known in England as early as 1729 and translated in 1760. A few of the stories in modern collections go back to the age of Shakespeare in England; and a few may also be of American origin. Once it was thought that Elizabeth Vergoose, mother-in-law of Thomas Fleet, a Boston printer, was the originator of the rimes. This ascription is now doubted in view of the previous collections containing some of the stories printed in Boston, where editions surely appeared as early as 1824. *Little Boy Blue, Baa, Baa, Black Sheep, Bye, Baby Bunting,* and *Patty Cake,* with scores of others, are well known to many children of our age. Such stories do not contain elements that set children against going into the dark, or turn them toward bad dreams while they sleep, as many of the books of fairy tales do.

Mysteries of Udolpho, the masterpiece of Mrs. Ann Radcliffe, 1795, belongs decidedly to the moonlight type of fiction. It was once cited as the best of the gothic romances,—those tales of wonder, secret underground dungeons and caves, music coming from mysterious sources, old papers and wills newly discovered, and love-lorn maids separated from noble lovers and enduring torments of soul while imprisoned in dark towers, or while imagining they heard the sounds of voices or footsteps. Emily St. Aubyn, an English girl imprisoned in a castle in the Apennines, is the hero of Mrs. Radcliffe's novel. She is held virtually a prisoner by the husband of her deceased mother, until she is liberated by the Chevalier Velancourt. Walter Scott once said of this romance that "Its magnificence of landscape, and dignity of conception of character, secure it the palm."

New England Nun, A, is the title of a volume of short stories by Mary E. Wilkins, now Mrs. Charles Freeman. A prim New England old maid has waited a number of years for her lover to return from making his fortune in Australia. At last, when they meet once more, she begins to realize that she greatly prefers to live her own life in the old manner and not to have an untidy man around the house. Out of a sense of honor, she still is ready to marry, but feels justified in breaking off her engagement when she learns that another stands higher in the regard of her betrothed than she does. This story introduces us to one type of New England maiden lady, of which there are others in various books by the same author. *The Revolt of "Mother"* by Mrs. Freeman tells a somewhat different story.

New England Primer, The, passed through many editions before the coming of the modern spelling and reading books. It combined the catechism with secular instruction of various sorts, with selections for memory, moral instruction, spelling, and even bits of arithmetic. Some of the old crude wood-cuts are eloquent of Puritanic ideals of early days. "Time cuts down all, Both great and small" is the legend under a picture of the Grim Destroyer mowing with an ancient scythe. Job with his loathesome sores is pictured as an example of resignation and obedience.

Nicholas Nickelby, a young man in a novel of that name by Dickens, suffers early neglect of his mother, a talkative woman, who would rather gossip and complain than do any useful service. She is the type of woman to exclaim, "Well, I expected as much" when anything extraordinary happens. Nicholas becomes an usher in a school kept by Mr. Squeers of Dotheboys Hall, where pupils are whipped, starved, and abused in almost every manner, by an ignorant, over-bearing pedagog of no character or ability. At last Nicholas leaves, followed by an admirer named Smike, a poor boy who later dies. Nicholas at last becomes a prosperous merchant. In this novel, as in *Oliver Twist,* Dickens spoke so bitterly of certain kinds of private schools that many in England were forced to close their doors.

Novum Organum, one of the prose works of Francis Bacon, outlines his ideas of the scientific method, or the process of logical induction as applied to experiments. Thus he developed at length the system of proceeding through observation of facts to draw general conclusions from them. His view of life was mainly naturalistic, as shown by one of his favorite aphorisms, "Man, the minister and interpreter of Nature, can do and understand only so much as he has observed in her: more he can neither know or do." Bacon speaks of four idols that stand in the road to progress: Idola Tribus, or custom; Idola Specus, individual prejudice; Idola Fora, wrong notions or traditions formed from speech and human actions; and Idola Theatri, fables and fictions.

Nut-Brown Maid, one of the old ballads, narrates the story of an outlaw who woes a maid, but tells her frankly of the many trials and misfortunes she may have to undergo. She gladly promises to share them all with him, if he will remain her true knight. Then he reveals himself as an earl's son, wealthy and famous.

Oberon, king of the fairies, appears under different names and disguises in world literature. One old story relates how he and Titania once lived in India, but came to Europe centuries ago to dance in the moonlight. Shakespeare pictures them fancifully in *Midsummer Night's Dream.*

Old Chester Tales interprets the small country village and its different inhabitants, with humor, much insight, and sympathy. Old Dr. Lavender, the town rector, appears in many of the stories, as do some of the other people. Mrs. Deland, the author, also wrote the novel, *The Awakening of Helena Ritchie,* besides other volumes of Chester stories.

Old Creole Days, by George Washington Cable, a group of short stories, introduces us to life in New Orleans in the days over a century ago. They are characterized by a romantic local color, feeling for the old families, and deep regard for human character. Some of the best stories tell us of old Jean ah Poquelin, a man who sheltered his brother who was a leper, at great risk and cost to himself; Posson Jone', a humorous old colored preacher; and 'Tite Poulette, a young girl in need of friends in a city.

Oliver Twist, a famous novel by Dickens, introduces us to at least twenty types of character. The hero is a lad born in the workhouse and named Twist because the keeper had arrived at the *T's* in naming the waifs under his charge. Little Oliver distinguishes himself and greatly amazes an attendant when he calls for a second dish of porridge, an unheard of bit of boldness in that home for orphans. He escapes at length, finds his way to London, and there falls into the hands of the Artful Dodger and other vicious men who endeavor to teach him to steal in a school for criminals kept by one Fagan, a Jew. Oliver refuses to become a pickpocket, escapes, but is returned to assist Bill Sykes, a notorious house-breaker. Nancy, living with Sykes, a woman of no reputation, takes pity on Oliver and treats him kindly. His later life, with some discouragements, is spent with honest people; while friends protect him from the police, until Oliver finds his sister, of whom he had not previously known. At last the gang of thieves all meet an end due their boldness and treachery. Dickens professed that his motive in such writing was to show vice and crime in their true repulsiveness.

Omar Khayyam, or the Rubaiyat of Omar Khayyam, a Persian poem of some uncertain date, was translated into English by Edward Fitzgerald in 1859. It consists of a string of meditative verses, some of which are musical and attractive. Man is likened to a pot of clay; life to a mere day's journey. Since existence is thus so short, why not enjoy it to the full while it lasts? This is the philosophy of *Omar Khayyam.*

Ossian or Oisin, an ancient Gaelic bard, according to James MacPherson, a Scotch teacher, left some manuscripts which were translated into modern English. The Ossianic poems, as given to the world by MacPherson, consist of rhapsodies in a measured prose, full of strangeness, repetition of epithets, wild scenery, and a moaning of old heroes. Dr. Johnson and others since his day have pronounced the poems as we have them a forgery, but many still believe that MacPherson had at least oral tradition, possibly some fragments, that he used in the various parts.

Painter's Palace of Pleasure, a collection of many narratives, published in 1566, became the storehouse from which dramatists and poets drew many tales and plots. Our chief interest lies in the fact that this work brought many of the best stories from the Orient, and contributed to Shakespeare some material for his *Timon of Athens, Romeo and Juliet,* and the main plot of *All's Well that Ends Well.*

Palamon and Arcite illustrates the stories that travel from age to age and country to country. Boccaccio gave it to Chaucer, and Chaucer bequeathed it to Dryden. Others also have used it as a whole or in parts. Arcite, a young knight of Thebes, is made prisoner and confined in a tower by Duke Theseus of Athens. One day, as they are viewing the scene in the yard below, he and Palemon, a fellow prisoner, notice a beautiful lady, who proves to be Emily, the king's sister-in-law. One man insists that Emily must be his bride, since he saw her first; the other, because he thinks he actually loved her first. After they are released, Theseus holds a tournament to determine the affair. Though Arcite wins in the combat, he dies of a fall from his horse; and so Palamon, after all, wins Emily.

Pamela, first of three romances by Samuel Richardson, is usually called our earliest novel of character and analysis. Before it was published in 1740, many long stories had been written, but few of them, if indeed any, covered more than the outlines of the plot. Richardson, a printer, conceived the idea of weaving a story into some familiar letters. He had a highly moral motive in mind, that of instructing the young in virtue and manners. His heroine, a serving girl, is pursued by the young man of the household. After many repulses, he finally offers to marry her, and Pamela consents. A second part describes the life of Pamela and her Mr. B. at their beautiful estate in the country. Many critics found fault with the conclusion of the story, saying it might teach all servants to try to win their masters. The change of motive in Mr. B. was not very convincing. This novel, however, set the fashion of long fictions for many years.

Paradise Lost, the sublimest epic poem in English was written by John Milton "to justify the ways of God to men." It contains some of our finest blank verse for musical effect, and was published in 1667. Book one opens with the awakening of the angels from the stupor into which they were cast when they fell for nine days from Heaven into a burning lake of marl. After a consultation, described with great poetic power, the demon hosts agree to send Satan as an emissary to spy out a new land called Earth, on which report says a new race called Man has been created. The rest of the first four books details the flight of Satan through the vast universe to the planet where man resides. The angel Raphael, in the second set of four books, describes the war in Heaven, bringing the account up to the time when the angels awoke upon the burning pool. The final four books describe in considerable detail and vividness the temptation of man by the serpent sent by Satan, his fall and expulsion from Paradise, and some of the plans for his final redemption.

Pickwick Papers, a long rambling narrative by Dickens, contains the experiences of the club founded and presided over by Mr. Pickwick. The gentlemen described as chief members travel through England, fall into many droll adventures, which culminate in the celebrated suit of Mrs. Bardell against Mr. Pickwick for breach of promise. Mr. Pickwick, a lodger with Widow Bardell, starts to inform her that he is about to change his condition by taking a man servant. Before he has time to explain, Mrs. Bardell thinks he is proposing to her, and afterward enters a suit for damages. The companions of Mr. Pickwick, overhearing only a part of the conversation, and putting some wrong constructions on Mr. Pickwick's acts, offer rather ambiguous testimony in court, and their chief loses in the suit. Sam Weller, man of all work for Pickwick, proves the star witness, provoking much amusement in the court room.

Pied Piper of Hamelin, originally a German folk legend, as used by Robert Browning, has become a popular story

for the young. A wandering musician for a reward agrees to rid the town of Hemel of its myriads of rats. He completes his task and claims the reward, which is withheld from him. In revenge he blows his horn once more, and all the little children of the place flock out and follow, as the rats have done, wherever he leads, until they enter the side of a mountain and never more return. Thus the ingratitude of the town is punished.

Piers Plowman is the work of an obscure poet in the time of Chaucer, who wrote what has been called "The Divine Comedy of the Poor." It is in form of a dream, descriptive of a fair field full of people, of all conditions of life. The author speaks against luxury, oppression of the poor by the wealthy, and announces himself as a champion of the oppressed working classes. William Langland or Lack-land is the name given as that of the author of this poem.

Pilgrim's Progress, the most imaginative allegory in English, is a prose narrative by John Bunyan, which was published in 1678. After forming a resolve to journey to the Celestial land, Christian sets forth from his home alone, all others having refused to accompany him. Many hard passages of the journey are traversed with great peril and pain, some of which are the Slough of Despond, the Hill Difficulty, the Castle of Giant Despair, the country where Appolyon stands guard, and at last over the ferry to the shores of the better land. Along part of the way, Interpreter offers him companionship and good advice. Many worldly people try to dissuade him or attract him to their own plans or pleasures. Faith, Hope, and Charity at last are his main reliance. Few works have charmed the imagination of old and young, rich and poor, lettered and unlettered, as has this simple story of Christian and his Progress.

Pilot, The, by James Fenimore Cooper, is one of the finest sea tales in English. Written by a man who knew the sea at first-hand, the narrative abounds in nautical terms, discourse on the management of a great schooner in a storm, and the fascinating story of a battle on the high seas. The pilot turns out to be John Paul Jones, founder of the United States Navy. Though there is romance in the novel, we turn away from the fine ladies and conventional lovers in all Cooper's books, and here we follow the fortunes of Long Tom Coffin, as true a tar as ever walked the deck. Long Tom is the Leather-stocking of the Navy. It has been asserted that this novel was called forth in 1823, when Cooper became disgusted with the descriptions in Scott's *Pirate*.

Pippa Passes is a lyrical drama by Browning. A little shop girl, out for her single holiday from work in the whole year, goes along the streets singing her happy song, "God's in his heaven, all's right with the world." Quite unconsciously she influences the lives of a number of careless and sinful people and makes them think of nobler deeds. At night Pippa returns homeward, feeling that she has enjoyed every minute of her holiday.

Pride and Prejudice by Jane Austin is a model of realistic style in a novel of country life. Published in 1813, but written in 1796, it shows how pride in a man and prejudice in a lady kept them both from realizing how much they cared for each other. Elizabeth Bennett thinks Mr. Darcy is conceited and proud; he believes her to be prejudiced and distant. Of the five sisters in the family, Elizabeth is preferred by her father, who is a humorsome, cynical man, given to tart remarks, but at heart a kind father. Mrs. Bennett is a busy-body, trying to marry off her daughters; and at times she does not seem to pick future husbands very wisely. She designs that Elizabeth shall marry a clergyman named Collins, who pays the family a visit and proves he is impossible from almost every angle, since he is a narrow, pedantic, patronizing man. Various balls and parties among the gentry of the region are described happily. Along with the interest in the progress of a seemingly impossible romance, one is charmed by the gentle satire and insight of the author. Some of the minor characters move in a clear sunlight. Jane Bennett, the eldest daughter, marries Mr. Bingley, a young man who has taken a neighboring place for a time. Finally, Mr. Darcy writes Elizabeth a proposal of marriage, and thus relieves a situation which looks almost hopeless up to that point.

Princess, The, a narrative poem by Tennyson brings out some of his thoughts on the education of women, management of business, and the franchise. Certain learned ladies founded a college, from which men are to be rigorously excluded; but the heart triumphs over the head, and the love of children and home come uppermost and break up the model community in which the college is situated.

Prisoner of Zenda, The, is one of our best adventure novels. Almost every page thrills with tense situations, plots, and counter plots. An Englishman named Rassendyl, happening to be in Ruritania when a new king is to be crowned, becomes an unwilling actor in many events. The king is a member of a drinking party, on the eve of his coronation day, is drugged, and cannot be made presentable at court. A wily brother hopes to steal the throne. The foreigner strikingly resembles the recreant monarch, and very reluctantly he assumes his place in the coronation exercises. All three men,—king, brother, and the visitor from England,—admire the Princess Flavia. She shows a decided partiality toward Rassendyl, thinking he is the king; and so new complications arise, for the Englishman constantly fears that she will detect that he is playing a part. After many narrow escapes, all events mold themselves so that the king is restored to his honors and to the affection of the Princess. *Rupert of Hentzau* is a sequel to *The Prisoner of Zenda*. Anthony Hope is the author.

Quentin Durward, a dramatic novel by Scott issued in 1823, is the characterization of Louis XI of France, a Scotch lad, and minor persons. Quentin Durward, on a visit to a relative in the King's guard of honor, is noticed by Louis, and later saves the monarch's life from an attack by a wild boar while the king is hunting. Louis sends two noble ladies to the court of the Duke of Burgundy, where they nominally belong. Quentin, chosen as their escort, runs through several puzzling adventures. It transpires later that Louis designed that the ladies should fall into the hands of William de la Marck, called the Wild Boar of the Ardennes. Quentin delivers the ladies into the care of the Bishop of Liege, whom William slays with his own hand most brutally. At last Louis XI pays a visit to the Duke of Burgundy, and in a tense situation, convinces the rival monarch that he is a faithful ally. In a tournament, proposed by the Duke, Quentin bears off the prize of the lists, with the help of his uncle. The fair Isabelle is that prize, and fortunately she already has a high regard for the Scotch youth. Despite a few historical errors, this novel revivifies the reign and character of the wily Louis in a manner that has greatly pleased the French themselves. The craft, superstition, and tremendous ability of this French king appear in true colors.

Rab and his Friends, one of our best dog stories, was written by a physician in England, Dr. John Brown. The faithfulness of a dog to his true friends is pathetically illustrated.

Rabbi Ben Ezra, Robert Browning's optimistic poem, celebrates the joys of growing old. "Grow old along with me, The best is yet to be,— The last of life, For which the first was planned," the first lines, give the sentiment of the lyric.

Ralph Roister Doister, our first native English comedy, shows in a humorous series of scenes the courtship of Ralph and a wealthy widow. Not being able to write, he employs a scrivener, who so contrives an epistle that it may be read two ways by varying the pauses. When it is read to the widow, much confusion results, which only the writer himself clears up when he takes the letter and reads it. The whole belongs to the comedy of manners, bordering on farce.

Rape of the Lock, The, by Alexander Pope, belongs to the literature of cleverness. Almost no other poem shows as vividly as this the fashionable society of the age of Queen Anne. In mock-heroic fashion it celebrates the theft of a lock of hair from the brow of a fair lady, called Belinda in the poem, but really Miss Isabella Fermor in life. Her friends insist that the lock must be returned. The partisans of the thief (Lord Petre in real life) stoutly deny the right to demand it. Pope was called into the controversy, and wrote the poem to reconcile the factions. Much negotiation back and forth followed with stubborn delay, until the lock mysteriously disappeared, or was carried into the air by the sylphs. In terse description, full of vivid strokes, Pope almost excells himself in the description of ombre, a fashionable card game of the period, and in the account of the toilet as made by the lady when she rose about noon.

Rasselas, a prose romance by Dr. Samuel Johnson, relates the adventures of a prince in Abysinnia, who stole away from court without his father's permission. After many experiences in different regions, he is perfectly willing to return home, for there happiness dwells. Like the two long poems by Johnson, this story teaches the lesson that happiness is most elusive when most eagerly sought.

Return of a Private, by Hamlin Garland, contrasts the going of volunteers to the Civil War and their return after the conflict. Mr. Smith (really Mr. Garland'

father) returns from the South to find his farm in a sad state of neglect, with the fences down, the buildings unrepaired, and everything else looking at its worst.

Rip Van Winkle, the story by Washington Irving, has been a favorite since 1819. Some of its elements of popularity are the descriptions of quaint old Dutch times, of the family life of the Van Winkles, of the dog and Rip, the little men on the mountain, and the return after Rip's long sleep of twenty years. Though not a real short story, in the narrow sense, because too many things are mentioned without sufficient emphasis on the main elements, it has been a model for later authors. Irving's urbanity and humor silver the whole plot. As played by Joseph Jefferson, in a dramatic version, Rip Van Winkle became known to thousands of delighted theatre patrons.

Rob Roy, a national romance by Sir Walter Scott, in both the novel and stage versions proved a perennial favorite in Scotland. It is replete with mystery, good descriptions of the Highlands, with their rugged passes, rocks, and mountain lakes, and fine delineations of interesting characters. The story centers in the attempts of Rashleigh, a cousin of Francis Osbaldistone, to steal the family fortunes and wreck the business house of Osbaldistone and Company. In the background are suggestions of the conflicts between religious sects in Scotland, and the warfare between freebooter and English troops. Rob Roy, pictured as a modern Robin Hood, assists in saving the fortunes of the Osbaldistones and in bringing Rashleigh to his death. He also assists Sir Frederick Vernon, who appears as Father Vaughan in a disguise; and at last helps Francis to escape from numerous dangers. Diana Vernon, daughter of Sir Frederick, finally consents to marry Francis, even though he is a Protestant. The chief humor of the play derives from the antics of Bailie Nicol Jarvie, a cousin of Rob Roy a number of times removed. One of the great scenes, when the character was impersonated by Charles Mackay, was the adventure in which the Bailie lost some of his coat-tails when others had to cut him from a tree into which he had fallen in trying to escape from English soldiers. The dramatic version made by Isaac Pocock was the most popular melodrama in Scotland for forty years or more.

Robinson Crusoe stands high among the greatest adventure stories of the world. The details are too familiar to be rehearsed here. Everything is so vividly told that one can hardly believe that the tale did not happen as Defoe tells it. Readers in his day were encouraged by a second part, including the alleged diary of Crusoe, to believe the account substantially that of the mariner himself. Alexander Selkirk, a sailor, had spent some time on an island west of South America, but Crusoe's home is now identified as the modern Tobago, near the mouth of the Orinoco. Yet Defoe's story, in spite of realism, was his own product.

Sartor Resartus, called by Thomas Carlyle, the author, a philosophy of clothes, discusses various subjects and affords a chance to reveal some of the current thought of the early nineteenth century. It is an original combination of narrative, discussion, and sketches. Carlyle calls nature the garments of God. In a biographical portion, the hero passes from the Everlasting No through the Center of Indifference to the Everlasting Yea, "wherein all doubts are solved." The conclusion is that man may do without happiness and find instead true blessedness. The philosophy itself glorifies the mysterious; for all life, says Carlyle, is based on wonder, and everything about us is inexplicable. The style and structure typify the best work of this great author.

Saul, a poem by Robert Browning, has often been called a spiritual tonic. Based on several verses in the Old Testament in which it is said that David called the king back from his melancholy, the poem shows how the lad awakened Saul from a trance by appealing to higher and higher themes, until he announced boldly the coming of the Messiah at some future date. Browning makes David understand fully the nature of the hope of mankind in a sacrifice beyond ordinary men.

Scenes from Clerical Life, are three short stories by George Eliot, in which the romance and the sorrow of a clergyman's life in a small community are faithfully revealed.

Scottish Chiefs, a glowing picture of the stirring days of Wallace and Bruce in Scotland, is historical in its main outlines. It shows how the patriots of the North felt in 1300 toward their southern neighbors beyond the Tweed, vividly retells the story of the wars of liberation, with the succeeding jealousy of the chiefs and the death of Wallace.

Sesame was the magic word used by Ali Baba in opening the door in the mountain where the treasure of the robbers was concealed. *Open sesame*, as a phrase, now means any magical or key word or means of solving some problem. See *Ali Baba and the Forty Thieves*.

Shakespeare's Plays. Several of Shakespeare's plays have been outlined already. Since readers and critics each have individual favorites, a condensed list for beginners is hardly possible. Altogether Shakespeare is credited with thirty-seven plays, three or four of which seem to be not entirely his own work, notably *Timon of Athens*, which has a large section inserted from another hand, and *Pericles*, which has considerable inferior workmanship in various places. Besides, not less than seventeen other plays, in part, have been assigned by some critics to the great dramatist. These are not now included in complete editions of the acknowledged dramas.

Nor is it entirely possible to determine the dates of many of the plays. Only the relative order may be assigned with any confidence, and in regard to this scholars still differ somewhat in minor details. *Romeo and Juliet*, possibly *Hamlet*, *Richard III*, and others in places, were revised and again put on the stage after first production. Many of the original texts are composite products as arranged by scholars from the various quartos and the first folio, or collection of all the plays, published in 1623 by two fellow actors of the dramatist. Textual and linguistic study of Shakespeare is almost a science in itself, but such details do not interest the casual reader, who likes to observe the works as we now have them. In the list printed below, those that apparently are the best are printed in capitals, but not all critics would agree as to the choices.

Shakespeare's work falls into four fairly well defined periods of authorship. These are:

1. From about 1590 to 1595 or 1596. This is the period of beginnings, showing the preparatory work. The dramas are comedies, histories (plays based on English or other chronicles), and tragedies. The technique is not certain, many rimes abound, the characterization and language are not yet perfected. These plays are fairly certain as belonging to this first period:

Henry VI, parts 2 and 3.
Henry VI, part 1.
RICHARD III, *Edward II*.
Comedy of Errors.
Titus Andronicus.
Taming of the Shrew.
Love's Labors Lost.
ROMEO AND JULIET.
MIDSUMMER NIGHT'S DREAM.
Two Gentlemen of Verona.
King John.

2. From 1596 to 1601. This is often called the period of the middle comedies. In three great humorous plays, Shakespeare perfected his characterization, beautified his poetry, and compacted his plots.

Richard II.
MERCHANT OF VENICE.
Henry IV, *part 1*.
Henry V, *part 2*.
JULIUS CÆSAR.
Merry Wives of Windsor.
AS YOU LIKE IT.

3. From 1601 to 1608. This is the period of the greatest tragedies, characterized by depth of insight, turning away from mere word artistry, and dark broodings or the mysteries of life and character.

HAMLET.
Twelfth Night.
Troilus and Cressida.
All's Well that Ends Well.
Measure for Measure.
OTHELLO.
MACBETH.
KING LEAR.
Anthony and Cleopatra.
CORIOLANUS.
Timon of Athens.

4. From 1608 to the end of his writing, about 1614. This is the period of the romantic and poetic comedies. It is characterized by a return to beautiful and leisurely description, poetic diction, and a most kindly view of life as a whole. The plots of the last plays are more simple and the stories less complicated than are those of the other periods.

Pericles.
WINTER'S TALE.
TEMPEST.
Henry VIII.

She Stoops to Conquer, a humorous comedy by Goldsmith, still retains its popularity whenever it is revived on the stage. It was first acted in 1773. Marlow, a diffident young man, is bound for the estate of a Mr. Hardcastle, whose daughter is recommended as an eligible partner for life. Tony Lumpkin, a frolicking ignoramus, the son of Mrs. Hardcastle by a former husband, points out the house of the Hardcastles as an inn for which Marlow and a friend inquire. Various mistakes arise from the mistake of treating Mr. Hardcastle as a landlord, his place as a public hotel, and his daughter as a supposed barmaid. Marlow throws off his supposed bashfulness when he makes love to Kate as the assumed character of daughter of the inn, and she leads him on by allowing him to suppose his early impression is correct. By thus stooping to conquer, she makes her conquest doubly sure. Many droll passages make the play humorous and quite human. Besides Tony, who plays several practical jokes, the servants of Mr. Hardcastle, while taking instructions as to how to appear well before company add a ludicrous part.

Sherlock Holmes, prince of modern detectives in fiction, solves many riddles through his common sense and "science of deduction" in the short stories written by Dr. A. Conan Doyle. When other means fail, and the professional police give up a strange case, somebody appeals to this great man, who smokes a few pipefuls, takes some mysterious liquid from a peculiar looking bottle, or some opiate by means of a needle, and then goes into a brown study. Dr. Watson, friend of Holmes, listens to his explanations and then reports them to the reader. Some of the most fascinating stories are *The Speckled Band, A Scandal in Bohemia, The Red Headed League, A Case of Identity, The Dancing Men,* and *The Copper Beeches.*

Silas Lapham, The Rise of, is by William Dean Howells, an American novelist of the realistic school. It traces the history of a strong New England man from his days of poverty to those of wealth, and from a small country town to Beacon Hill in Boston.

Silas Marner pictures with fine artistry the life of Raveloe, a small mid-England community. George Eliot, the author, was right at home in these surroundings, and gave us some of her best description and character study in this short novel. The main character is Silas, who many years before was driven out of another hamlet by false rumors as to his honesty. His best friend and his sweetheart turned against him. Now a saddened and hard-hearted man, he is living alone in his humble cottage, where he earns his living at the loom. All of his money has been saved, except a mere pittance for his few wants. Silas, soon after the story begins, returns home one night to find that his pile of gold has been stolen. He becomes more of a recluse than ever. At last one evening, as he sits dozing, he looks toward his hearth and sees something like his lost gold. When he becomes fully awake, he finds there a little golden-haired girl. This child gradually wins Silas back to himself again. He comes to regard the welfare of his foster child as much better than all the gold of the world. Refusing aid of all the neighbors, except for some advice from a kindly Mrs. Winthrop, Silas continues to rear Eppie, the child, until she is old enough to marry. Her own father, a prosperous farmer, now comes forward to claim her, but Eppie decides to remain with the man who brought her up rather than go to a fine house to live with the father who refused to acknowledge her all these years. Eppie marries the son of Mrs. Winthrop, and continues to live with Silas. An older brother of Godfrey Cass, her real father, has stolen the gold, which is found, along with his bones, when some stone quarries nearby are finally drained. Few novels describe as impressively as this the wonderful power of a child to transform hard, sodden, and selfish humanity.

Sir Patrick Spens, one of the many old English ballads, in forty-four simple, rugged lines, tells a story that is infinitely pathetic. Sir Patrick Spens, a bold mariner, was commissioned by the Scotch king to go across to Norway to bring home the daughter of the Norse monarch, who was to become the king's bride. The story is founded on a real event that happened in 1281. Sir Patrick knows that to go is almost to commit suicide, but he willingly obeys his king. On the return the boat founders in a great storm and all are lost. It is impossible to tell this plain tale in prose as it is brought out by swift, vivid, and strong diction in the ballad itself.

Sohrab and Rustum, a beautiful epic poem by Matthew Arnold, relates an incident in the warfare between two eastern armies. Sohrab and Rustum are chosen as champions to decide the contest in personal combat, while the armies look on from either side. The fight is described in simple, but most effective words. At last the younger man is wounded. It is only then that they discover that they are father and son. The grief and despair of the old father are powerfully touching.

Spectator, The, an essay in newspaper form, was founded by Joseph Addison and Richard Steele in 1711 and ran for about three years. Modern journalism dates from this foolscap journal, which was found at the breakfast table of many English homes of the period. Addison also set the taste for more than a hundred years for all sorts of genial and familiar essays. Washington Irving was called the American Addison because of his urbanity and graceful style, resembling that of the Spectator papers. Many subjects were treated, but the most celebrated describe the life of Sir Roger de Coverley and other gentlemen associated with him in the Spectator Club, as Addison called his company of friends. Johnson said that whoever would wish to "attain an English style, familiar, but not coarse, and elegant, but not ostentatious, should give his days and nights to the reading of Addison."

Stella was the name given to Esther Johnson by her old teacher and friend Swift. They exchanged tender and sentimental letters, which have led many to believe they were married, but Swift wished for some unknown reason or whim to keep their secret from the world. These epistles, now published though never intended for other eyes by the authors, reveal Swift as a tender and kind man beneath a harsh and overpowering exterior.

Tale of Two Cities, A, differs from the other novels of Charles Dickens, in that incidents are specially stressed, though Dickens here, too, shows his powerful technique as a delineator of human traits. The story affords a colorful picture of many events during the French Revolution, with a weaving of fact and romance in the lives of four people, one of whom pays a great price to save his friend. Dr. Manette for more than eighteen years has served in the Bastile on some unfounded charge. His daughter, Lucie, is now married to Charles Darney, who has also been in prison and has barely saved himself from death. Mr. Lorry, a solicitor of a London business house, and Sidney Carton are their friends, the latter because of a high regard for Dr. Manette and his daughter.

During these days of the Revolution, nobody knows from hour to hour who next will be charged with treason and who will be led to the guillotine because of the testimony of lying witnesses, fired with the zeal of getting rid of enemies of the state. Madame Dufarge and her husband, keepers of an inn, again have Darney, who is a nobleman, arrested on a trumped up charge. Carton realizes that little hope remains. His own life, as he reviews it, has been far from noble or successful; and he now decides to sacrifice all for the good of his friends. Accordingly, he secures access to the prison room of Darney, tries to persuade him, and finally uses other means to get him to leave the place. He quickly changes clothing with Darney who is conducted to freedom outside, and Carton goes to the guillotine, while the old French knitting women sit by and count the number of those executed that day. Darney finds a friend in a little French seamstress as both are on their way in the same batch for execution. The closing scenes of the novel are among the best in our fiction for interest, vividness, and nobility of purpose, in contrast with prejudice, hysteria, and cool inhumanity. Dickens also paints some good pictures of London and Paris throughout the book.

Tales from Shakespeare by Charles and Mary Lamb summarize for young readers the plots of the great dramas. Even for mature students they provide a convenient prose summary of the narratives.

Talisman, The, a romantic story of Walter Scott, outlines some of the incidents of the third crusade about 1200, with much of the imaginary. During a lull in the fighting in Palestine, a Scotch knight whose symbol is a couchant leopard on his shield, falls in love with Edith Plantagenet, nominally a ward of King Richard the Lion Heart. The chief crusader has been suffering of a mysterious malady. An Arab physician (really the Soldan in disguise) comes to Richard's tent and effects a cure by melting the precious talisman in liquid. This amulet or magic stone cures Richard, and Hakim, the reputed physician, leaves for his own abode. Later in the novel he and Richard battle in a personal combat before their armies. The Scotch knight (calling himself Kenneth) falls into disgrace while guarding the English banner from the jealous Austrians under Conrad, who finally tear it down. Richard now disgraces the Knight of the Leopard by sending him away under guard. Eventually, Kenneth proves his faithfulness when he saves Richard from the plots of an assassin, and Richard rewards him with the hand of Edith. The Soldan himself in person has requested Richard to spare this valiant knight. Many stirring scenes add to the vitality of the novel.

Tam O'Shanter, a convivial Scot, according to a poem by Burns, one dark night is returning from the inn to his home. He has to pass by Alloway Kirk, famed for being the haunt of midnight gatherings of witches and other sprites. Tom has been braced by good liquor and incautiously looks into the kirk to see the dance there. He is at once recognized. The whole crew chase him at furious speed till he arrives at the bridge over the River Doon. No witch could cross a running stream. Tom therefore escapes, but his old nag loses a considerable part of her tail in the hands of a witch.

Tanglewood Tales by Hawthorne, 1853, borrow some of the old classical stories and adapt them to young readers. He invests them all with his own peculiar charm of human appeal. Some of the best tales are those of the Minotaur of Circe, which turned men into pigs and was finally slain by Theseus, and of Jason and his companions who made a journey in quest of the Golden Fleece.

Tempest, The, by Shakespeare begins with a storm but ends with a decided romantic calm. It is one of the plays of his last period, when his view of life was kindly and most poetic. Though charming in many details, the plot is frankly that of a fairy story. A generous old magician, Prospero, with his daughter has been cast upon an island far from their realm, from which Prospero has been expelled by a brother, who usurped his throne. On the island are various creatures, chief of which are Caliban, a brutish half-man, who acts as servant to Prospero in doing rude tasks, and Ariel, who is servant in doing the lightsome tasks of the air. The ignoble duke and his party are cast upon the island by a storm. Prospero plays a number of practical jokes on different members of the party, through Ariel, and at last reveals himself to his astonished brother. The latter is willing to acknowledge that he has been punished enough and greatly wishes to restore to Prospero all his rights that he had usurped. For slightness of the plot, Shakespeare compensates with delightful play and kindly sentiment.

Thanatopsis, a didactic poem by William Cullen Bryant in noble blank verse, counsels us in regard to life and death.

Tinturn Abbey was written by William Wordsworth after he and some friends had taken a walk to the banks of the Wye. It contains some of his best blank verse, nature descriptions, and serious thoughts on life, and also illustrates his poetic creed in that the poem expresses "emotion recollected in tranquillity."

Tom Brown's School Days appeals to every red-blooded youth in his school age. This novel by Thomas Hughes explains how a young boy rose through the various "forms" or grades at Rugby, the famous English preparatory school, and finally attained fame at Oxford. For manliness, good nature, and sympathy with young life, this book has long been a classic in English literature. Some of the parts, like the bullying of Tom by older boys, the football match, and the boat race, never fail to charm all readers. There is also a fine portrait of Dr. Thomas Arnold, the great headmaster of Rugby for years.

Tom Jones has often been called the greatest realistic novel in our language. Henry Fielding, the author, admitted in the preface that this story contains no real hero, in the conventional sense, because Tom has numerous faults. Fielding was dissatisfied with the fine pictures of men in novels, which, in great degree, he said were quite untrue to life. Tom has many faults, but also several redeeming qualities, such as generosity, truthfulness, and a strong sympathy for right conduct. He is a foundling, brought up by Mr. Allworthy (as noble as his name intimates), and early in life he falls in love with Sophia Western, daughter of a neighboring squire. Both his guardian and Mr. Western object to the marriage, since Tom is thought to be too reckless and headstrong. In company with a tutor, who is a lovable, hearty man, Tom sets out to travel a bit about England. Before he returns he has covered many towns and has fallen into numerous adventures, some of which are not to his credit. His guardian and Squire Western at last overtake him and persuade him to return. Tom eventually marries Sophia. Two other characters drawn with great realism are Squire Western, an ignorant, blustering country squire and Blifil, foster brother of Tom's, who succeeds for a long time in deceiving Mr. Allworthy by his own hypocrisy and false reports of Tom.

Tom Sawyer is another boy's classic among our novels. Mark Twain (Samuel L. Clemens) in this has revived many of his boyhood days along the Mississippi River. Of all active boys in stories, Tom is one of the most interesting. His clever ruses are often laughable, as his plan to get the fence whitewashed by making out to his companions that the job was highly desirable, and even worth money for the privilege of attempting. Tom and Huck Finn, his less fortunate friend, survive many daring experiences, such as their visit to a cave not often explored by men.

Travels with a Donkey by R. L. Stevenson. See *The Inland Voyage.*

Treasure Island by Robert Louis Stevenson, 1883, is a fascinating adventure romance. Jim Hawkins, the youthful hero, is the son of an English tavern keeper, who inherits the plan and a map of some buried treasure from an old seaman, who finally dies at the inn. The landlord and his friends fit up a vessel, but some desperate men, learning of the venture, enlist among the crew and bring about a mutiny after the boat is well out at sea. Stevenson has painted several desperate characters with life-like realism. Long John Silver, the cook with one leg, is the arch conspirator and greatest villain. Considerable blood is spilled in various hair-raising adventures, much in the manner of the blood-and-thunder novels. Throughout, however, the story is so well written as to be in a class almost by itself among the stories of breathless interest. At last the treasure is found, Jim Hawkins comes into his own and returns safely to his native land, and the guilty are punished as they deserve.

Twice Told Tales by Hawthorne. See *Mosses from an Old Manse.*

Two Years Before the Mast tells with truthful details the story of a voyage around Cape Horn to California in early days before the rush for gold in the West. It was published first in 1837, but a supplementary chapter was added in 1869. The joys, hardships, and brutalities are told in a way to win this novel a place along with *Roderick Random, The Pilot, Mr. Midshipman Easy,* and other celebrated tales of seafaring life. William Cullen Bryant, who secured the publication for Dana, pronounced the narrative equal to *Robinson Crusoe,* for interest and realism of details. This book was chosen by the British Board of Admiralty for distribution among all sailors of the English fleets. The author was a young Harvard graduate in search of health while he shipped as a common sailor before the mast. When he reached California, he left the original sailing vessel, spent some time as a trapper in the southern part of the territory, and later returned on another craft to the shores of the Atlantic.

Uncle Remus is the old colored man reputed to be the teller of various folk lore stories as written by Joel Chandler Harris. They have all the imagination, sympathy, and drollery of the negro dialect narratives. Uncle Remus usually has a little boy as his auditor, who listens and also asks questions while the ex-slave entertains him with accounts of Brer Rabbit, Brer Fox, and other animal creatures. Some of the stories in plot and moral resemble ancient narratives found in early fables. Many of them were collected by Mr. Harris from old legends and tales handed down from generation to generation among the colored folk of the South. Stories like *Brer Rabbit's Cradle, The Wonderful Tar Baby,* and *How Mr. Rabbit was too Sharp for Mr. Fox* are typical.

Vanity Fair, the masterpiece of William M. Thackeray, has been classed among the eminent novels that describe society in its varied aspects. The chief woman character is Becky Sharp, another Beatrix Esmond, or the kind of adventuresome woman found in several of the novels by the same author. Becky is resourceful, captivating, and thoroughly unprincipled in her numerous flirtations. She is shown gradually acquiring her subtle arts from the time she throws Dr. Johnson's *Dictionary* out of the window of the coach as she leaves school for the last time. Contrasted with her is poor Amelia Sedley, a pliable, faithful, and long-suffering wife of a nondescript husband. When one resigns, the other designs further conquests. Among the fine descriptions in the novel are those of various characters of the Sedley family, the battle of Waterloo, and the various schemes of Becky Sharp. All is mellowed by Thackeray's kindly but incisive satire, while no corner of society or no foible of human nature seems to escape his notice.

Vicar of Wakefield, The, one of the pleasantest books in literature, is a hearty tribute to human nature at its best. Goldsmith, the author, pictures the idyllic life and sentiments of an English vicar,—three men in one, "vicar, husbandman, and father of a family." Dr. Primrose is a modern Job: he loses his small property, his house by fire, and his daughter through a neighboring squire of doubtful character, but always maintains his calm and simple philosophy. Some of the outlines of the picture are probably borrowed from the traits of Goldsmith himself. Mrs. Primrose is trying to appear

genteel, takes great pride in her housekeeping, and often distresses the kindly husband with her worldly ideas. Peace, good luck, and happiness are at last restored through Sir William Thornhill, who marries one of the daughters, makes his nephew, who eloped with the other, behave himself like a gentleman, and builds up the family fortunes once more, securing the release of the vicar and his sons from the debtor's prison.

Vision of Sir Launfal, a beautiful poem by Lowell, tells the story of a knight who seeks a great adventure but, for a time, misses simple charity and christian kindness near at home. Only when his love and real humanity go out toward the beggar to whom he throws a crust does the face of the mendicant change to that of Christ.

Walden, a prose work by Henry D. Thoreau, still retains its interest after seventy years since publication. Thoreau built himself a hut, lived most humbly on the shores of Walden Pond, entertained callers, and watched the birds and animals in their native pursuits. His book makes all those simple events human and fascinative to lovers of nature.

Wandering Willie's Tale is one of five or six short narratives written by Sir Walter Scott. Steven or Steenie Stevenson, a poor tenant of the old lord Redgauntlet, by dint of borrowing scrapes enough money together to pay his rent. The violent old landlord, whom everybody fears, is seized by a paroxysm before he makes out a proper receipt after he receives the money from Steenie. From this attack, the old lord never recovers. Steenie rushes out, the money is lost sight of, and the new landlord demands either the receipt or the money. While Steenie is going home one evening, a strange black man meets him in the forest, offers to assist in finding the paper, and at last leads the astonished tenant into another world, where old Redgauntlet is found among his violent boon companions. By refusing to touch or taste anything, and only to demand his own receipt, he succeeds in getting the paper and returning to the outer world. The young son of the old laird accepts the receipt, but cautions Steenie not to tell of his adventure to any man. Scott adds some humorous touches to the story and introduces us to a racy and typical Scotch dialect.

Webster-Hayne Debate consists of speeches delivered in the United States Senate in 1830 by Daniel Webster and Robert Y. Hayne. Though the discussion arose out of a plan of dividing the public domain in certain western states, it grew into a somewhat broader discussion of the conflicting notions of North and South over the question of the extension of slavery into new states. Healy's celebrated painting to represent the audience at the time now hangs in Fanuel Hall in Boston.

Westward Ho, published by Charles Kingsley in 1855, glorifies the mariners of the age of Queen Elizabeth in England. Both real and fictitious persons are found in the novel. Sir Walter Raleigh, Francis Drake, Sir John Oxenham, Richard Grenvil, and Edmund Spenser appear among the historical persons. The real hero is Amyas Leigh, a lad who goes on several expeditions with famous mariners, one with Drake around the world, twice to South America, and to other places. One voyage is made to find Rose Salterne, an old friend of the Leigh family, now married to a Spaniard. The fight of Grenvil in the Atlantic, the defeat of the Spanish Armada, and the voyages to South America in quest of gold and revenge are described with lifelike color. In the background is always the idea of the maritime glory of England about 1600. Kingsley also wove into the story a romantic love plot.

Window in Thrums is one of the best examples of humor and pathos as combined by the Scotch author, James M. Barrie. In a series of intimate pictures of a simple Scots family in a mill town, the author reveals the heroism, kindliness, and nobility of humble folk. Jess, the cheerful shut-in, Jamie and Leeby, brother and sister, are friends that remain long in memory.

Wuthering Heights, a romantic tragedy in novel form by Emily Bronte, was first issued in 1848. Indeed the subject is dark and sometimes depressing for the book contains a vivid picture of hate and human retribution, with many touches of deep melancholy and pathos. Two families intermarry, but the almost devilish hatred of one man keeps several from enjoying any peace or happiness. At the end only two of the chief characters are left to enjoy their remaining days in kindness.

Youth, one of the many fascinating sea tales by Joseph Conrad, is an account of a voyage made by a young man in an old unseaworthy sailing craft. Contrasted with the age of the vessel is the inexperience of the boy just shipping on his first voyage. A cargo is being carried from England to Bangkok, Siam. Much of the narrative describes various means of combating a fire which breaks out while the ship is in mid-ocean. When Bangkok is practically in sight, the signal to abandon the ship is given, and the crew escapes through the kindness of another boat.

LITERARY TERMS AND DEFINITIONS.

Acrostic, a verse or set of verses in which the initial letters, taken in succession, form a word, phrase, or sentence. Sir John Davies, for example, wrote twenty-six poems, each one forming in its first letters the words *Elisabetha Regina*, Elizabeth, Queen. The form is very ancient.

Age of prose and reason is a phrase often used to characterize the period roughly from 1700 to 1750, when little poetry was written, and imagination and originality gave way to conversation and taste.

Allegory is a literary or artistic work in which a hidden meaning or likeness to some other subject, thought, person is intended. It has been called an extended metaphor. Some allegories in English literature are *Piers Plowman, Faerie Queen, Pilgrim's Progress.*

Anagram is a transposition of the words or letters of a phrase or word to make a new combination that has some related meaning. Like the acrostic it is an ancient device, and once highly regarded; but Addison once said it would be hard to discover which was "the greater blockhead," the man who invented the acrostic or the one who invented the anagram.

Apocalypse literally means a revelation, like the last book of the *Bible*. Many Hebrew writings, including certain parts of Isaiah, Ezekiel, and Daniel, are apocalyptic.

Apocrypha originally meant those books in Hebrew not considered genuine scriptures. Later it meant those books in the Greek and Latin manuscripts, but not in the Hebrew. Both Old and New Testaments have corresponding apocrypha, once printed in old Bibles, and now only in a separate volume. Anything not now thought genuine is called an apocrypha, as the Shakespeare Apocrypha, sixteen plays once ascribed to Shakespeare, but now known to be not wholly his work.

Apologetics are works written or spoken in defense of the Christian faith.

Apologue, a story resembling a fable, in which a moral truth is shown without direct mention. Many Middle Age stories took this form, as do some of the narratives of Hawthorne like *The Ambitious Guest*, in which the lesson intimated is one of the futility of earthly ambition, or in some of Kipling's stories like *.007*, and *The Walking Delegate*. Of late there has been a decided tendency to revive this form, as in some of the dramas of the Irish National Theatre.

Archaism is a word or expression out of date at the time it is used, as *yclept* for called, *whilom*, and similar words in poetry.

Assonance, a middle rime of vowel sounds, corresponding to regular or end rime, or initial or alliterative rime. *Shore* and *force*, *vast* and *waste* show assonance of the *o* and the *a* sounds respectively. Tennyson gives us many lines, like "The *bare black cliff clanged* round him."

Ballad is a narrative, poetical composition usually in irregular meter, vivid, spontaneous, and objective. All European literatures have these popular poems, commonly handed down by oral tradition. Whether they are communal and social in origin or individual is still debated. The English and Scottish popular ballads are celebrated for simple and rapid movements.

Bibliography is a list of the titles of books or other material bearing on a common subject. It is fast becoming a science almost in itself. A bibliography on Immigration would list all books and magazine articles one could find bearing on the general topic.

Climax, as a figure of speech, is an increasing emphasis on an ascending series of words, phrases, or ideas. In the study of the novel and the drama, however, it means the highest point of interest, the turning point of the

action, or the moment of intensest interest when something happens to change the course of the plot. After the climax comes the resolution or final clearing up of the story or action. In a play the climax usually comes before the end of the fourth act. Climax must not be confused with culmination or end of the plot or story.

Comedy once was said to be the form of drama that ridiculed the common man, while tragedy pictured the sufferings of the noble. Modern criticism confines the name to a play with a fortunate, happy, or pleasant turn of events, all of which are well foreshadowed from the start. Some plays begin as if they were to end in tragedy, then turn into comedies; and these are often named tragi-comedies, of which *The Merchant of Venice* is a good example in Shakespeare.

Criticism is judging the merits and defects of a work of art, be it painting, sculpture, or literature. Though somewhat formless in principles, it never should depend on caprice or mere personal liking, or on considerations outside the work being examined. For the average reader a good book on the subject is Winchester's *Principles of Literary Criticism,* or Shuman's *How to Judge a Book.*

Cycle in literature is a group of poems or prose works bearing on the same general topic, but written by different authors, at different times; or several poems, which have been fused into one related whole, the parts being somewhat individual. The *Niebenlungen Lied* is the great German cycle; the Charlemagne poems, the French; and the Arthur stories, the English.

Denoument is a French word, adopted into English, meaning the final stage of the unraveling of the complication of a plot, or the clearing up of the story after the climax has been reached. Another name is Resolution to explain approximately the same part. See *climax* above.

Drama is that form of art which shows persons as if in real life,—planning, thinking, and doing. For the various kinds of early dramas before Shakespeare's age, see the section on Language in this book. These include Miracle and Moral plays and Interludes.

Dramatic Unities are three in number in classical and later French plays. They are the unities of time, place, and action. All the action should occur within the space of a day or a little more, in the same general locality or city, and the characters should be consistent in what they do,—or, otherwise, "consistently inconsistent" as Aristotle said. In English the third unity is the only one rigidly followed. Some French dramatists added a fourth, the unity of style,—each play must be all tragic, or comic, or lyric, etc. Shakespeare consistently violated this canon in his alternation of grave and gay scenes.

Elegy is a lyric form of poem dealing with thoughts of melancholy or death that are real or imaginary. Milton, Gray, and Arnold wrote beautiful elegies, now justly famous. Tennyson's *In Memoriam* is a fine elegy.

Epic poetry. See section on Language in this book.

Essays in literature are discussions of topics in either a formal or informal manner. Montaigne, a French author in 1580, published his *Essais,* and he was followed in English by Bacon. Some attempt has been made to divide essays into two classes, scientific and familiar, but one class often overlaps upon the other. Cowley, Dryden, Addison, Johnson, Burke, Hazlitt, DeQuincey, Lamb, Emerson, Carlyle, Walter Pater, Macaulay, Bagehot, and Stevenson are some of the great English essayists.

Fables are now defined as stories with moral implications in which men are represented usually by animals and even inanimate objects like trees. Fables by Aesop, La Fontaine, Anderson, Grimm Brothers, and Joel Chandler Harris are among the best known in English, but the form is ancient and the literature is prolific. Once the word fable was used for story, plot, or deeper significance of a literary work. Dryden uses the word often in this secondary sense.

Fabliaux were groups of entertaining verse compositions of satirical and comic interest. They were often quite realistic and first became known in French literature in the middle periods.

Fallacy is often spoken of as a mistake in thought or some wrong opinion. In logic a fallacy is a mistake in reasoning from premise to conclusion. The kinds of fallacies are numerous and hard to distinguish, but the most common ones are hasty generalization, fallacy of mistaking an effect or a cause, if one is known and the other to be found, wrong analogy, arguing in a circle, and shifting ground by taking different positions in successive parts of an argument.

Farce is a variety of comic drama that is designed wholly to please. It has been defined as "improbable people doing impossible things." In a farce there is little attempt to present people or events in their true light. Many farces are accompanied by horse play or crude practical jokes.

Fiction, in its widest sense, is opposed to reality and fact. In a literary work it designates an imaginative composition, some parts of which may be based on reality. Though fiction is found in both poetry and prose, the word is popularly used to designate a prose story, novel or romance, short or long. See *novel* and *romance.*

Folio in printing is a sheet, approximately 17 by 22 inches, that is folded twice only; hence, a book of largest size, as distinguished from quartos, duodecimos, etc. In books used for keeping accounts, a folio is a single sheet thus folded, or two,—right and left hand,—numbered alike, and used for debtor and creditor sides of a ledger.

Free verse, a popular form of unrimed poetry, at present designated by considerable irregularities in metrical form, length of line, and other variations from conventional, regular poetry. Authors of free verse profess to depend more on beauty or nobility of thought than on metrical and musical graces.

Idyll is a poem in simple diction treating usually of rustic or pastoral themes. Some idylls are lyric poems in praise of nature; others are narrative or descriptive, with persons and emotions brought into the foreground. Tennyson's *Dora* and *The Gardner's Daughter* are true idylls, but his *Idylls of the King* are too ornate and artistic to be more than idylls in name.

Laureate as a name originated in the ancient classical custom of crowning with laurel a famous poet, or the victor in a literary contest. Chaucer was granted a pension in England and wrote court poems, as succeeding poets did, but the office of poet laureate was not formally established till it was given to Dryden by letters-patent in 1670. Of the numerous laureates since the eighteenth century, Southey, Wordsworth, and Tennyson are best remembered.

Lyric poetry expresses emotions, real or assumed, of the author himself. Epic poetry is almost wholly objective, and dramatic has been called a combination of the other two forms. See the article on *Prosody* in the section entitled *Language* in this book.

Masque is the name applied to a light, musical, allegorical play as represented in amateur theatres. In the age of James I the court allegory in masque form attained great vogue. With the rise of spectacular and musical or ballad operas, the form declined greatly. One of the celebrated masques in English is Milton's *Comus;* others were more imaginative and gay.

Melodrama flourished in France long before it was introduced into England by Thomas Holcroft about 1800. At first the name was applied only to a musical and spectacular play, full of peculiar and sudden effects. At present the word is usually applied to any play of strong situations, unmotived action, and startling changes of fortune. When the novels of Walter Scott were transferred to the stage shortly after 1815, melodrama drew largely on such prose romances for subjects. The songs, scenery, and highly emotional acting characterized such plays for a quarter of a century.

Meter and various verse forms are discussed in the section on *Prosody* elsewhere in this volume.

Metrical Romances grew up in the centuries at the end of the Middle Age in English literature. The long poems of Scott revived some of the main characteristics of the type. These really are novels or at least short stories in verse. They are notable for action, swift description, and strong pictures of people.

Mixed Metaphors are incongruous assortments of words and rhetorical figures of likeness. "I smell a rat, I see him floating in the air, I'll nip him in the bud" has been given as a sample of mixed metaphors from the halls of Parliament. The best metaphors are those that might be taken literally, without too much violence to reason or sense.

Novel, as a general term, is applied to all long prose fictions. In the narrow sense, the class falls into two divisions, novels proper and romances. In novels the story and characterizations follow human nature and actual or possible facts; in romances the persons are likely to be ideal and the events not probable to the same degree as they are in novels. Scott and Hawthorne are romancers, for instance; while George Eliot and Dickens are novelists.

Panegyric is an oration or prose writing that extols some person, event, or principle. Recently, however, the word has been broadened to include any laudatory account.

Pastoral poetry and drama show a real or ideal life in the country. Most of our pastorals in English literature are highly artificial, and written by men who lived in towns and knew the rural districts only at second hand. Men like Barnes, William Browne, and James Hogg, the Ettrick shepherd, approach toward reality in pastorals. Prose fiction, too, often has pastoral elements like Sidney's *Arcadia*, or the Spanish pastoral romances like the *Diana* of Montemayor. Shepherds named Lycidas, Corydon, Daphnis, Chloe, Amaryllis appear in all pastorals since Theocritus, a Latin poet who lived three hundred years before Christ. Some of the fanciful pastorals in English are Spenser's *Shepherds Calendar*, Lodge's *Rosalynde*, in prose, from which Shakespeare got suggestions for his *As You Like It*, Jonson's dramatic *Sad Shepherd*, and Fletcher's *Faithful Shepherdess*, a romantic play. Pope, Ambrose Phillips, Gay, and Ramsey all wrote pastoral verses. Cowper, Wordsworth, and Tennyson in a few poems, wrote pastorals without much of the artificial elements. Elegies like Milton's *Lycidas*, Arnold's *Thyrsis*, and Shelley's *Adonais* are strongly marked by pastoral touches.

Poetry, its forms, and kinds are treated under *Prosody* on another page.

Polyglot strictly speaking is a book with several versions of the text in different languages printed side by each or in succession. Now the word is often used of many languages in general; or, a person who speaks several has been called a polyglot.

Realism as opposed to idealism more nearly approaches to realities, facts, events, and people as they actually exist in this world. Thus, the novel is realistic in that it closely simulates actual life and conditions that are probable. Whether the story is true or not is immaterial, so long as it might be true to human life and nature.

Refrain is the repetition of the same words, lines, exactly or approximately, from time to time in a poem. One form is the chorus in which all the hearers supposedly join with a soloist or reciter. Certain French stanza forms use beautiful refrains. The good refrain must seem spontaneous and musical.

Rhapsodists once in Greece wandered about singing their own poems. Later reciters use the works of others; and still later music was not used as an accompaniment. The word means literally, recital of poetry. In England the Anglo-Saxon scop was a reciting wanderer. So were the Welsh bards, the medieval minstrels. The minnie singers in Italy made popular modern romantic poetry. Probably the older ballads were sung by wandering bards.

Riddles, conundrums, and enigmas are ancient forms of entertainment. Samson propounded a celebrated riddle to the Philistines. Solomon and Hiram King of Tyre engaged in a guessing match with forfeits for not being able to guess the riddle. The Greek sphinx made riddles, and the sphinx of Thebes devoured those not able to solve them. In modern times the riddle has branched off into detective stories and simple stories with mysteries left unsolved at the end. Some of the oldest poems in English are in riddle form.

Runes are characters formed by arranging straight lines in various positions. Runic inscriptions are found in most of the countries of the north and west of Europe.

Satire attacks men, actions, and beliefs. It is an old form of the literature of criticism. Some of the old fables satirized the king, but were safe in that animals were the actors and doers. English satire dates from the time of Chaucer, whose writings have many sly hints and jokes of satirical import. Pope, Dryden, and other authors of the age between 1660 and 1800, developed satire to its highest point of perfection. For virulence Pope and Swift excell other satirists.

Short Story in its artistic form is not any narrative that happens to be short. Poe first gave us the theory of the short story, as a narrative to be read in one sitting, that rises from a beginning through a climax, to a swift and inevitable end. Poe says not a single word should be wasted in description or extraneous details. Unity of plot and unity of action are the chief marks of good short stories. As compared with the novel, the short story is just as complete in its own range, since nothing could be added, and nothing could be subtracted. In no sense, then, is a perfect short story a condensation. The novel is composed of many episodes, turns in character, and shifts of scene. The short story cannot afford to depart much from a straight line of plot or action.

Stanza is a group of lines or verses in a poem, a minor division of the whole. Incorrectly verse is often confused with stanza, but in reality, a verse is but a single line, a stanza a combination of two or more lines.

Tragedy is a form of literary art that shows how inevitable forces work to an end that is distressing or sad. A tragedy ends in defeat, misunderstanding, disaster, or even in death, but the last is not the main feature of a tragic story or drama. French classic tragedies are serious throughout; English, as imitating Shakespeare, sometimes have humorous or comic scenes in tragedies. Usually tragic emotions are those on a high plane, and the characters suffer nobly or with much strength of character, whether it be good or bad.

Tragi-comedy, a serious play that finally ends fortunately or happily. The dramas of Beaumont and Fletcher are good illustrations.

Verse, a single line of poetry, not a stanza or group of lines. Various English verse forms are described in the section on *Language*.

USEFUL BOOKS FOR THE STUDY OF ENGLISH.

A list of titles of useful books is given below to supplement the outlines and the discussion of English classics in the preceding pages. Those who wish to carry their studies in English further will find most of these books in any good library. Care has been taken to select only those texts best suited to the general reader. Prices are subject to some revisions.

Alden, Raymond M. "Introduction to Poetry." Holt, 1.50

Baker, Harry T. "The Contemporary Short Story." Heath, 1.50

Bates, Arlo. "Talks on the Study of Literature." Houghton, 1.50

Bennett, Arnold. "Literary Taste and How to Form It." Doran, 1.00

Brown, Rollo W. "How the French Boy Learns to Write." Harv. Univ. Press, 1.50

Burton, Richard. "How to See a Play." Macmillan, 1.50

Crawshaw, William H. "The Interpretation of Literature." Macmillan, 2.00

Cross, Wilbur L. "The English Novel." Macmillan, 1.90

Dixon, W. H. "Epic and Heroic Poetry." Dutton, 2.00

Emerson, Oscar F. "History of the English Language." Macmillan, 1.75

Esenwein, J. Berg. "The Study of Short Stories." Home Corr. School, Springfield, Mass., 1.75

Foster, William T. "Argumentation and Debating." Houghton Mifflin Co., 2.10

Garnet, Richard and Goss, Edmund. "English Literature; an Illustrated Record." 4 vols. Macmillan, 18

Gummere, Francis B. "Handbook of Poetics." Ginn, 1.25

Hitchcock, Alfred M. "Rhetoric and the Study of Literature." Holt, 1.50

Jespersen, Otto. "Growth and Structure of the English Language." G. E. Stechert, New York, 2.00

Jusserand, Jules J. "Literary History of the English People." Putnam, 5.00

Krapp, George P. "Modern English." Scribner, 1.50

Lounsbury, Thomas R. "English Spelling and Spelling Reform." Harpers, 1.50

Meikeljohn, J. D. M. "The English Language." Heath, 2.50

Moulton, Richard G. "The Modern Study of Literature." Univ. Chicago Press, 2.50

Pancoast, Henry S. "Introduction to English Literature." Holt, 2.00

Perry, Bliss. "A Study of Prose Fiction." Houghton, 1.50

Reed, Edward B. "English Lyrical Poetry." Yale Univ. Press, 2.25

Saintsbury, G. E. "The English Novel." Dutton, 1.50

Schelling, Felix E. "The English Drama." Dutton, 1.50

Slater, John R. "Freshman Rhetoric." Heath, 1.60

Smith, C. Alphonso. "What Can Literature Do for Me?" Doubleday, 1.25

Thorndike, Ashley H. and Neilson, William A. "The Facts About Shakespeare." Macmillan, 1.50

Ward, A. W., editor. "Cambridge History of English Literature." 14 vols. Putnams, each 3.50

White, H. A. "English Study and English Writing." Heath, 1.50

Woodberry, George E. "The Appreciation of Literature." Harcourt, 1.20

GRADED LIST OF TWO HUNDRED BEST BOOKS FOR CHILDREN

For home and supplementary school reading, grades one to eight inclusive, based on the experience and recommendations of the Carnegie Library of Pittsburgh, the Buffalo Public Library, and the Wisconsin Free Library Commission.

Thoughtful parents are constantly confronted with the problem of selecting the right books for their children. To aid in performing this important task, the following list has been prepared with extreme care, making use of the experience of several great libraries which have co-operated with parents and teachers for many years, as well as that of many teachers and library workers who have specialized upon the problem.

Object of List.—In order to make this list as valuable and useful as possible, three definite aims have been kept in view:—

First: To make a practical list of books, any one of which will be suitable for first purchase for the home, school, or community library.

Second: To include only books which the widest use has proved of greatest value.

Third: To include only books easily obtainable, giving publishers and price. More expensive editions of many of the books here listed are published, and, in a number of cases, less expensive ones also. But parents not infrequently make the mistake of buying children's books in too small type or so poorly illustrated or bound that their usefulness is annulled. In making this list the lowest-priced edition consistent with satisfactory service after purchase has been selected.

Method of Grading.—Many extremely helpful children's books are almost equally valuable for two or more grades. In order to prevent confusion and to avoid repeating the name of the same book under two or more grades, each book is listed under the earliest grade for which it is recommended. In a limited number of cases in the two highest grades, books are listed where the majority of authorities place them. In practice nearly all books in the list will be found almost equally suitable for children one or two grades more advanced. This overlapping of limits is so extensive in the sixth, seventh, and eighth grades that excellent authorities are inclined to place the books best adapted for them in one general group. However, even if some children in the sixth grade are capable of reading with profit books here listed under grade eight, they will do so with far greater benefit if they read those listed under grades six and seven first, and this list will prove of great value in indicating the order in which these books should be read. More advanced books will be needed on subjects about which a child's interest is keenest, a point to be kept in mind in making selections.

Since book prices at present are subject to some fluctuations, it is best to have your local bookseller consult his current catalog of published books to ascertain if any change has been made. Otherwise, you may communicate directly with the publisher or with any jobber or wholesaler of books.

FIRST GRADE

Blake, D. K., and **Alexander, Georgia**, compilers. "Graded Poetry Readers." First and second year. Merrill, .20

Burgess, T. W. "Old Mother West Wind." Little, .45

Coe, Ida, and **Christie, A. J.** "Story Hour Readers." First year, 2 vols. Am. Book, each .30

Cox, Palmer. "Brownies: Their Book." Century, 1.50

Dodge, Mrs. M., compiler. "New Baby World." Stories, pictures, and rhymes selected from St. Nicholas. Century, 1.50

Gaynor, Mrs. J. L. "Songs of the Child World," 2 vols. Church, each, 1.00

Greenaway, Kate. "Under the Window." Warne, 1.50

Grimm, J. L. and **W. K.** "Fairy Tales." Edited by S. E. Wiltse. 2 vols. Ginn, each, .35

Grover, E. O. "Overall Boys." Rand, .45

Grover, E. O. "Sunbonnet Babies' Primer." Rand, .40

Holbrook, Florence. "Hiawatha Primer." Houghton, .40

Ivimey, J. W. "Complete Version of Ye Three Blind Mice." Warne, .50

Lansing, M. F. "Rhymes and Stories." Well chosen nursery rhymes, nonsense tales, and folklore. Ginn, .45

Mother Goose. "Book of Nursery Rhymes." Arranged by Charles Welch. Heath, .30

Mother Goose. "Jolly Mother Goose Annual." Illustrated by B. F. Wright. Rand, 1.35

Mother Goose. "Our Nursery Rhymes." The original tunes harmonized by Alfred Moffat; illustrated by H. W. Le Mair. McKay, 1.50

Mott, S. M., and **Chubb, Percival.** "Indoors and Out." Nature and dramatic reader for primary grades. Scribner, .30

Norton, C. E., editor. "Heart of Oak Books," Vol. 1. Rhymes, jingles, and fables. Heath, .25

O'Shea, M. V., editor. "Six Nursery Classics." Contains The House that Jack Built, Mother Hubbard and Her Dog, Courtship of Cock Robin, Dame Wiggins of Lea, The Old Woman and Her Pig, and The Three Bears. Heath, .20

Parkinson, Ethel. "Dutchie Doings." Dodge, 1.00

Scudder, H. E., editor. "Book of Fables and Folk Stories." Houghton, .40

Van Sickle, J. H., and others, editors. "Riverside Readers." Houghton, Primer, .30; First Reader, .35

Wiltse, S. E. "Folk Stories and Proverbs." Well told and well illustrated with simple drawings. Ginn, .30

SECOND GRADE

Adelbourg, Ottilia. "Clean Peter and the Children of Grubbylea." Longmans, 1.25

Andersen, H. C. "Fairy Tales." Selected and edited by E. H. L. Turpin. Merrill, .40

Baldwin, James. "Fairy Reader." Adapted from Andersen and Grimm. Am. Book, .35

Baldwin, James. "Fairy Stories and Fables." Am. Book, .35

Bass, M. F. "Nature Stories for Young Readers: Animal Life." Heath, .35

Bass, M. F. "Nature Stories for Young Readers: Plant Life." Heath, .25

Beard, Lina and **A. B.** "Little Folks' Handy Book." Scribner, .75

Brooke, L. L. "Golden Goose Book," 4 pts.—Golden Goose, Three Bears, Three Little Pigs, Tom Thumb. Warne, 2.00

Caldecott, Randolph. Picture Books. 4 vols.
No. 1, "Diverting History of John Gilpin." "Three Jovial Huntsmen." "An Elegy on the Death of a Mad Dog."
No. 2, "The House that Jack Built." "Song of Sixpence." "The Queen of Hearts."
No. 3, "Hey Diddle Diddle." "Baby Bunting." "Ride a Cock Horse." "Where are you Going, My Pretty Maid." "The Frog he would A-wooing Go."
No. 4, "Come, Lassies and Lads." "The Fox Jumps Over the Parson's Gate." "Mrs. Mary Blaize." "The Great Panjandrum Himself." Warne, each vol., 1.25

Chance, L. M. "Little Folks of Many Lands." Ginn, .45

Coe, Ida, and **Christie, A. J.** "Story Hour Readers." Second year. Am. Book, .35

Grover, E. O., and **Chutter, F. E.** "Art Literature Readers." "Each contains about 40 excellent reproductions of paintings, well chosen. The easy text, original or selected, fits the picture."—N. Y. Lib. Best Books. Atkinson, Book 1, .30; Book 2, .40

Jataka. "Jataka Tales." Edited by E. C. Babbitt. Century, .40

Johnson, E. L., and **Barnum, M. D.** "Book of Plays for Little Actors." Am. Book, .30

Mott, S. M., and **Dunton, M. B.** "Fishing and Hunting." (World at Work Series.) Stories of the Eskimos, Indians, Alaska, and the Philippine Islands. Am. Book, .30

Norton, C. E., editor. "Heart of Oak Books." Vol. 2. Fables and nursery tales. Heath, .25

Perkins, Mrs. L. "Dutch Twins." Everyday life of a Dutch brother and sister. Houghton, .50

Stevenson, R. L. "Child's Garden of Verses." Rand, .75

Van Sickle, J. H., and others, editors. "Riverside Readers." Second reader. Houghton, .40

THIRD GRADE

Æsop. "Child's Version of Æsop's Fables." With a supplement from La Fontaine and Krilof. Edited by J. H. Stickney. Ginn, .35

Andrews, Jane. "Seven Little Sisters Who Live on the Round Ball that Floats in the Air." Ginn, .50

Baldwin, James. "Fifty Famous Stories Retold." Am. Book, .35

Blake, D. K., and Alexander, Georgia, compilers. "Graded Poetry Readers." Third year. Merrill, .20

Carroll, Lewis. "Alice's Adventures in Wonderland," with 42 illustrations by Sir John Tenniel. Macmillan, 75

Coe, Ida, and Christie, A. J. "Story Hour Readers." Third year. Am. Book, .35

Eggleston, Edward. "Stories of American Life and Adventure." Am. Book, .50

Eggleston, Edward. "Stories of Great Americans for Little Americans." Am. Book, .40

Field, Eugene. "Eugene Field Reader." Many poems included. Scribner, .40

Fultz, F. M. "The Fly-aways and Other Seed Travelers." Public School Pub., .60

Grimm, J. L. and J. K. "German Household Tales." Riverside School Library. Houghton, .60

Lansing, M. F., editor. "Fairy Tales," 2 vols. Ginn, each, .35

Lucia, Rose. "Stories of American Discoverers for Little Americans." Am. Book, .40

Maeterlinck, Maurice. "The Blue Bird." For children. Arranged for schools by F. O. Perkins. Silver, .68

Morley, M. W. "Bee People." McClurg, 1.10

Norton, C. E., editor. "Heart of Oak Books," Vol. 3. Fairy tales, narratives, poems. Heath, .40

Shaw, E. R. "Big People and Little People of Other Lands." Describing home life, appearance, manners, and dress. Am. Book, .30

Thorne-Tomsen, Mrs. Gudrun, compiler and translator. "East o' the Sun and West o' the Moon." Norwegian folk tales. Rowe, .60

Van Sickle, J. H., and others, editors. "Riverside Readers." Third reader. Houghton, .50

Wilson, G. L. "Myths of the Red Children." Folk-lore stories with description of the Indian implements. Ginn, .45

FOURTH GRADE

Aanrud, Hans. "Lisbeth Longfrock." Translated from the Norwegian by L. E. Poulsson. Ginn, .40

Andersen, H. C. "Stories." (Riverside Literature Series.) Houghton, .40
Also Everyman's Library. Dutton, .50

Atkinson, G. F. "First Studies of Plant Life." Ginn, .60

Bailey, C. S. "Children's Book of Games and Parties." Donohue, 1.00

Bible. "Bible for Young People," arranged from the King James version by Mrs. J. B. Gilder. Century, 1.50

Blake, D. K., and Alexander, Georgia, compilers. "Graded Poetry Readers." Fourth year. Merrill, .20

Brown, A. F. "In the Days of Giants." A book of Norse tales. Houghton, .50

Chamberlain, J. F. "How We are Sheltered." A geographical reader. Macmillan, .40

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Jenks, A. E. "Childhood of Jishib the Ojibwa." Reveals the real life and soul of the Indian boy. Atkinson, .35

Kaler, J. O. "Toby Tyler; or Ten Weeks with the Circus." Harper, .60

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Olcott, F. J., compiler. "Story-telling Poems." Houghton, 1.25

McDonald, Mrs. E. A., and Dalrymple, Julia. "Gerda in Sweden." (Little People Everywhere Series.) Little, .45

McDonald, Mrs. E. A., and Dalrymple, Julia. "Kathleen in Ireland." (Little People Everywhere Series.) Little, .45

Norton, C. E., editor. "Heart of Oak Books," Vol. 4. Fairy tales, ballads, poems. Heath, .45

Ruskin, John. "King of the Golden River." Page, .50

Schwartz, J. A. "Wilderness Babies." Little, .50

Scudder, H. E., editor. "Children's Book: a Collection of the Best and most Famous Stories in the English Language." Houghton, 2.25

Sewell, Anna. "Black Beauty." Educational Pub., 1.25

Spyri, Johanna, "Heidi." Charming story of child life in the Swiss Alps. Ginn, .40

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Allen, N. B. "Industrial Studies: United States." Ginn, .65

Arabian Nights. "Arabian Nights' Entertainments;" edited by F. J. Olcott. Holt, 1.50

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Interesting and reliable information concerning Indians.

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Tappan, E. M. "Old Ballads in Prose." Houghton, .40

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The best history of the Indians for young people.
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Hawthorne, Nathaniel. "Wonder Book for Girls and Boys." Houghton, .40
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Jacobs, Mrs. C. E. "Texas Blue Bonnet." Page, 1.50
Breezy story of a Texas girl's school life in New England.
Jewett, F. G. "Good Health." Ginn, .40
Kipling, Rudyard. "Jungle Book." Century, 1.50
Maule, H. E. "Boys' Book of New Inventions." Doubleday, 1.60
Mackay, C. D. "Patriotic Plays and Pageants for Young People." Three pageants and eight one-act plays, with directions for costumes, dances, and music. Holt, 1.35
McLean, J. K. "Heroes of the Farthest North and Farthest South." Crowell, .50
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Price, O. W. "The Land We Live In." Small, 1.50
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Rogers, J. E. "The Book of Useful Plants." Doubleday, 1.10
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Blake, D. K., and Alexander, Georgia, compilers. "Graded Poetry Readers." Seventh year. Merrill, .20
Bostock, F. C. "Training of Wild Animals." Century, 1.00
Chapman, F. M. "Bird Life: a Guide to our Common Birds." Appleton, 2.00
Darton, F. J. H. "Tales of the Canterbury Pilgrims." Illustrated by Hugh Thompson. Stokes, 1.35
Dix, B. M. "Merrylips." Macmillan, .75
An unusually fine story.
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Finnemore, John. "Japan." (Peeps at Many Lands Series.) Macmillan, .55
Gayley, C. M. "Classic Myths in English Literature and Art." Ginn, 1.60
Gibson, W. H. "Blossom Hosts and Insect Guests." Edited by E. E. Davie. Newson, .80
Goodrich, C. L. "First Book of Farming." Doubleday, 1.00
Guitteau, W. B. "Preparing for Citizenship." Houghton, .75
Emphasizes the ethical side of civic-political morality.
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Masefield, John. "Martin Hyde, the Duke's Messenger." Boy's book of adventure. Little, 1.30
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Norton, C. E., editor. "Heart of Oak Books." Book 6. Classic tales and masterpieces of literature. Heath, .55
Reinsch, P. S. "Civil Government." Sanborn, .60
Repplier, Agnes, compiler. "Book of Famous Verse." Houghton, .75
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Rogers, J. E. "Trees that Every Child Should Know". Claflin, .50
Seelye, Mrs. E. E. "Story of Columbus." Appleton, 1.75
U. S. Department of Agriculture. "Fifty Common Birds of Farm and Orchard." Superintendent Documents, Washington, D. C., .15
Wheeler, C. G. "A. B. C. of Woodworking." Putnam, 1.50
Wiggin, Mrs. K. D. "Rebecca of Sunnybrook Farm." Grosset, .75
Wiggin, Mrs. K. D., and Smith, N. A., compilers. "Golden Numbers." Excellent poetry collection. Doubleday, 2.00

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Blake, K. D., and Alexander, Georgia. "Graded Poetry Reader." Eighth year. Merrill, .20
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Cervantes-Saavedra, Miguel de. "Don Quixote." Edited by C. Johnson. Macmillan, .50
Chapin, A. A. "Story of the Rhinegold." Harper, 1.25
Clemens, S. L. (Mark Twain). "Tom Sawyer." Harper, 1.75
"Boys love it and broad-minded parents will put it into their hands before they borrow it."—Arnold.
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Cumnock, R. L., editor. "Choice Readings." McClurg, 1.50
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Hale, E. E. "Man Without a Country." Little, 1.50
One of the best stories of patriotism ever written.
Hart, A. B., and others. "Source Readers in American History." 4 vols. Macmillan
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Vol. 2. Camps and Firesides of the Revolution. .50
Vol. 3. How our Grandfathers Lived. .60
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The finest story of school life ever written for boys.
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Keeler, H. C. "Our Native Trees." Scribner, 2.00
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Fishing schooner life on the Newfoundland banks as experienced by a boy washed overboard from an Atlantic liner.
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Norton, C. E., editor. "Heart of Oak Books." Book 7. Classic tales and masterpieces of literature. Heath, .60

Pyle, Howard. "Men of Iron." Harper, 2.00
Boy's story of the time of Henry IV of England.

Pyle, Howard. "Story of King Arthur and his Knights." Illustrated by Howard Pyle. Scribner, 2.00

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Schauffler, R. H., editor. "Our American Holidays." 8 vols. Arbor day. Christmas. Flag day. Independence day. Lincoln's birthday. Memorial day. Thanksgiving. Washington's birthday. Moffat, each, 1.00

Stevenson, R. L. "Treasure Island." Grosset, .50

Toothaker, C. R., "Commercial Raw Materials." Ginn, 1.00

USEFUL BOOKS FOR MOTHERS AND TEACHERS.

This list embraces books for older persons to use with children, books to read aloud to children at home or at school, and also books from which to obtain suggestions for guiding children in their reading.

Mothers desiring to arouse the interest of children in home reading, in making things, in pictures or in nature study, will secure valuable assistance from these well tested books.

Teachers seeking readily available supplementary material of proved merit can make profitable use of the list.

Mothers and teachers engaged in promoting the mutual welfare of the home and school through co-operation in parent-teachers' associations will find the books on children's reading, story-telling, dramatics for children, plays and games, sex hygiene and citizenship, inspiring and instructive. Extensive use of the inexpensive publications issued by leading libraries, which have given special attention to this field, is recommended. Attention is also directed to the "Reading Course For Parents" conducted by the U. S. Bureau of Education, Home Education Division, Washington, D. C., which invites correspondence on the subject.

The full name and address of the publisher of each book may be found by consulting the key-list below. In case of library publications address the library direct.

Bailey, C. S. "For the Story Teller." Story telling and stories to tell. Bradley, 1.50

Boston Public Library. Finding List of Fairy Tales and Folk-stories. Published by the Library, Boston, Mass. .05

Brooklyn Public Library. "Books that Girls Like." Published by the library, Brooklyn, N. Y., .05

Bryant, S. C. "How to Tell Stories to Children." Houghton, 1.00

Cabot, Mrs. E., and others. "Course in Citizenship." Houghton, 1.25

Cabot, Mrs. E. "Ethics for Children." Houghton, 1.25

Chaucer, Geoffrey. "Stories of Chaucer's Canterbury Pilgrims," retold by K. L. Bates. Rand, .40
Excellent illustrated edition for teachers.

Cleveland Public Library. "Seventy Books of Adventure for Boys and Girls." Published by the library, Cleveland, O. .05

Fisher, Dorothy Canfield. "A Montessori Mother." Holt, 1.25

Forbush, W. B. "Manual of Play." Jacobs, 1.50

Hall, W. S. "From Youth to Manhood." Sexual physiology and hygiene for parents to use with boys. Assoc. Press, .50

Holton, M. A., and Rollins, A. F. "Industrial Work for Public Schools." Rand, .90
Practical both for mothers and teachers.

Houghton, Mrs. L. S. "Telling Bible Stories." Scribner, 1.25

Hurll, E. M. "How to Show Pictures to Children." Houghton, 1.00

McCormack, M. A. "Spool Knitting." Barnes, .75

Mackay, C. D. "How to Produce Children's Plays." Holt, 1.20

Morley, M. W. "Song of Life." McClurg, 1.10

New York Public Library. "Heroism." Published by the library. .05

Olcott, F. J. "The Children's Reading." Houghton, 1.00

Olcott, F. J., editor. "Good Stories for Great Holidays." 120 well selected stories. Houghton, 2.00

Olcott, F. J. "Story-telling Poems." Houghton, 1.00

Poulsson, Emilie. "In the Child's World." Stories for kindergarten, primary schools, and homes. Bradley, 2.00

Power, E. L. "List of Books for Older Girls." Public library, St. Louis, Mo. .05

Smith, N. M. "Three Gifts of Life." Sensible, easily understood sex hygiene for girls. Dodd, .50

Torelle, Ellen. "Plant and Animal Children." Heath, .50

Utica Public Library. "Books for Home Reading." Published by the library, Utica, N. Y., .05

Weed, C. M., and Emerson, Philip. "School Garden Book." Scribner, 1.25

Wiggin, Mrs. K. D., and Smith, N. A., compilers. "Story Hour; a Book for Home and Kindergarten." Houghton, 1.00

Wiggin, K. D., and Smith, N. A. "Children's Rights." Houghton, 1.00
The rights of a child; children's plays, stories, playthings, kindergarten, governing children, other people's children.

GOOD BOOKS FOR A HIGH SCHOOL LIBRARY.

For convenience the list is divided into two parts, non-fiction, and short stories and novels. Literary classics, such as those studied in school or familiar to all, are not included for obvious reasons. Prices are subject to revision. In some cases only strong, library bindings are recommended; in others the cheaper ones that may be easily replaced. Many publishers have cheaper editions of some of the books suitable for individual homes, but probably not durable for large libraries. The following list is compiled from publications of many libraries, the American Library Association, Bulletin of the Illinois Teachers of English, and the elaborate list published by the Department of Interior, Bureau of Education of the United States (Bulletin, 1917, No. 41).

Addams, Jane. "Spirit of Youth and the City Streets." Macmillan, 1.25

Alden, R. M., ed. "Essays, English and American." Scott, .90

Antin, Mary. "The Promised Land." Houghton, 2.50

Baker, E. K. "Stories from Northern Myths." Macmillan, 2.00

Baker, G. P. "Development of Shakespeare as a Dramatist." Macmillan, 2.60

Baker, G. P. "Modern American Plays." Harcourt, 1.72

Bartlett, John, comp. "Familiar Quotations." Little, 4.50

Bennett, Arnold. "How to Live on Twenty-four Hours a Day." Doran, .75

Bishop, Farnham. "Story of the Submarine." Century, 1.75

Bolton, Mrs. S. K. "Lives of Boys Who Became Famous." Crowell, 2.00

Bolton, Mrs. S. K. "Lives of Girls Who Became Famous." Crowell, 2.00

Bostwick, F. C. "Training of Wild Animals." Century, 1.75

Botta, Mrs. A. C. L. "Handbook of Universal Literature." Rev. ed. Houghton, 3.00

Boyle, Andrew. "Everyman's Encyclopedia." Dutton, 18.00

Brewer, E. Cobham. "Readers' Handbook." Lippincott, 3.00

Briggs, L. B. R. "School, College and Character." Houghton, 1.50

Bright J. W. and Miller, R. D. "Elements of English Versification." Ginn, 1.36

Bryce, James. "American Commonwealth," abridged ed. Macmillan, 3.00

Burroughs, John. "Birds and Bees." Houghton, 2.00

Burroughs, John. "Camping and Trapping with Roosevelt." Houghton, 1.50

Caffin, C. H. "How to Study Pictures." Century, 4.00

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Campbell, W. W., comp. "Oxford Book of Canadian Verse." Oxford, 3.40

Chapman, F. M. "Bird Life." Appleton, 4.00

Chubb, Percival, and others. "Festivals and Plays in School." Harper, 2.25

Chubb, Percival. "Teaching of English in the Elementary Schools." Macmillan, 1.60

Cohen, H. L., comp. "Longer Plays of Modern American Authors." Harcourt, 1.48

Cohen, H. L., comp. "One Act Plays." Harcourt, 1.48

Colby, J. Rose. "Literature and Life in School." Houghton, 1.80

Collins, A. F. "Boys' Airplane Book." Stokes, 1.50

Collins, A. F. and F. D. "Boys' Book of Submarines." Stokes, 1.50

Comstock, A. B. "Handbook of Nature Study." Comstock, Ithaca, N. Y., 3.25

Cooper, C. S. "Why Go to College?" Century, 1.75

Cross, W. L. "Development of the English Novel." Macmillan, 1.90

Crothers, S. McC. "Gentle Reader." Houghton, 1.75

Cunliffe, John W. "English Literature During the Last Half Century." Macmillan, 2.00

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Dickinson, T. H. "Chief Contemporary Dramatists." Houghton, 4.00

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Ely, R. T. "Monopolies and Trusts." Macmillan, 2.25

Emerson, O. F. "History of the English Language." Macmillan, 1.75

Fairchild, H. P. "Immigration." Macmillan, 2.40

Farmer, Mrs. F. M. "Boston Cooking School Book." Little, 2.50

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Foster, W. T. "Argumentation and Debating." Houghton, 2.10

Fowler, N. C. "How to Save Money." McClurg, 1.50

Gardiner, J. H. "The Bible and English Literature." Scribner, 2.00

Garland, Hamlin. "A Son of the Middle Border." Macmillan, .96

Garnett, Richard, and Goss, Edmund. "English Literature." 4 vols., highly illustrated. Macmillan, 15.00

Gauss, Christian. "Through College on Nothing a Year." Grosset, 1.50

Gulick, L. H. "Efficient Life." Doubleday, 1.75

Gayley, C. M., ed. "Classic Myths." Ginn, 1.92

Gayley, C. M., and Young, C. C. "English Poetry." Macmillan, 1.80

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Greenlaw, E. A., ed. "Familiar Letters." Scott, .60

Greenough, J. B., and Kittredge, G. L. "Words and the Ways in English Speech." Macmillan, 2.10

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Haskin, F. J. "American Government," second ed. Lippincott, 1.00

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Krehbiel, H. E. "How to Listen to Music." Scribner, 1.75

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Manly, John M., and Rickert, Edith. "Contemporary English Literature" (bibliography and reading lists). Harcourt, 1.25

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Page, C. H. "Chief American Poets." Houghton, 3.00

Palmer, G. H. "Self Cultivation in English." Houghton, 1.00

Pancoast, H. S. "Introduction to English Literature, 3rd. ed. Holt, 1.92

Pattee, F. L. "History of American Literature since 1870." Century, 2.50

Parkman, Francis. "Oregon Trail." Little, 3.00

Phelps, W. L. "Teaching in School and College." Macmillan, 1.40

Phyfe, W. H. P. "18,000 Words often Mispronounced," new ed. Putnam, 2.00

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Roosevelt, Theodore. "American Ideals." Putnam, 4.00

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Rorer, Mrs. S. T. H. "New Cook Book." Arnold, 2.50
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Aldrich, T. B. "Story of a Bad Boy." Houghton, 1.65
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Black, William. "Judith Shakespeare." Harper, 2.00
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Gaskell, Mrs. E. C. "Cranford." Queen's Treasure Series. Macmillan, 2.00
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Hugo, Victor. "Les Miserables." 2 vols. Dutton, .65 ea.
Kingsley, Charles. "Westward Ho." Dutton, .6[illegible]
London, Jack. "Call of the Wild." Grosset, .7[illegible]
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Wiggin, Mrs. K. D. "Rebecca of Sunnybrook Farm." Grosset, .75

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Conrad, Joseph. "Youth and other Tales." Doubleday, 1.75
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Garland, Hamlin. "Main Traveled Roads." Harper, 1.50
Grenfell, W. T. "Tales of Labrador." Houghton, 2.00
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Heydrick, B. A., ed. "Types of the Short Story." Scott, .60
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Kipling, Rudyard. "Day's Work." Doubleday, 2.00
Kipling, Rudyard. "Jungle Book." Century, 1.50
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Page, T. N. "In Ole Virginia." Scribner, 1.75
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DIVISION OF PLANTS
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PLANT LIFE

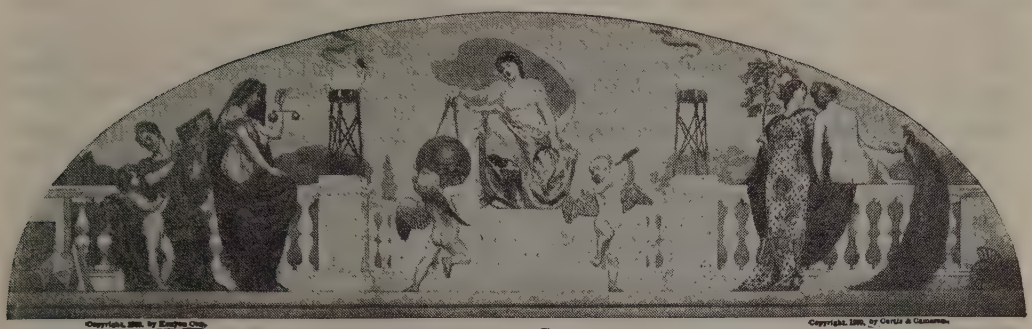
Geranium
Poinsetta
Dorothy Perkins Rose

Orange Blossoms
Azalea

Rhododendron
Mountain Laurel
Lady Banksia Rose

BOOK X.

SCIENCE.



THE ARTS AND SCIENCES.
Mural Painting in the Congressional Library, Washington.
BY KENYON COX.

AVIATION, AERONAUTICS, AERONAUTICAL TERMS, DICTIONARY OF PHYSICAL TERMS, PHYSICAL LAWS, MECHANICS, SOUND, HEAT, LIGHT, MAGNETISM, ELECTRICITY, AUTOMOBILE, RADIO, TELE-PHOTOGRAPHY, DICTIONARY OF CHEMICAL TERMS, CHEMICAL ELEMENTS, CHEMISTRY OF FOODS, GEOLOGY, MINERAL RESOURCES, MINERAL INDUSTRY BY STATES, BIOLOGY, BOTANY, CULTIVATED PLANTS, ZOOLOGY, DOMESTIC ANIMALS, DICTIONARY OF NATURAL HISTORY, PLANTS AND ANIMALS.

EARLY ATTEMPTS AT HUMAN FLIGHT.

No story of the *Arabian Nights* ever was more fascinating than the history of aviation. Man wanted to imitate the birds of the air for centuries. He wished to pass quickly from place to place without wasting time in slow travel; he also craved to behold the world from above the mountains and the lakes. Early literature is replete with legends of attempts to fly. Greece, Germany, the Norseland, England—indeed almost every land has produced some myth of man's attempt to conquer the air. The account of Daedalus, that ingenious Greek craftsman, who coated wings with wax and flew from Crete to Italy may have been more than a mere poetic fancy. So also may have been the sequel, when his daring son, disregarding his father's cautions, stole the machine, flew too near the sun, and crashed into the sea when the wax of the wings melted in the heat.

Dawning history records a host of characters who tried to rise into the air by means of wings. Simon the Magician at Rome is said to have tried to please his emperor by trying to glide through the air. So the Saracen of Constantinople likewise sought the favor of his monarch, only to fall to his death. Moors, other Saracens, even a legendary Briton all tried their hand at making primitive air craft. Since so many of these initial attempts proved fatal, the Middle Ages connected them with the black art, and named Satan as the father of all who desired to fly.

The learned Friar Roger Bacon imagined it possible to "beat the air after the manner of a flying bird." In such endeavors, several early experimenters came nearer to the possibility of success than they realized. Among those workers whose attempts were more than myths are probably the monk of Malmesbury in England who imitated the wings of Daedalus in 1065; a famous mathematician who tried to devise a mechanical eagle to greet Charles V on his entry into Nuremberg; one Italian named Danti, claimed by legend to have actually floated over Lake Trasamene, only to fall ignominously in his flight over Perugia in Italy; and John Damian, a doctor of the court of James IV of Scotland, who fixed a pair of wings to himself, jumped off the castle wall at Stirling, and "brake his thighbone."

Little, however, had been accomplished, even 250 years later, in 1742, when the Marquis de Bacqueville in France fell into the Seine in trying to fly from his house to another part of Paris by strapping planes to his legs. In the meantime some celebrated mathematicians attacked the problem, including Wilkins, Hooke, and other members of the English Royal Society. Even in 1648, before the Society existed, Wilkins discussed four ways of flying, that of a "flying-chariot" only being considered possible. In all this first period, however, man was trying to steal the secret of the birds, and he failed because he overemphasized certain features of the movements of the wings. Lana and Borelli, two Italian scientists, the latter in correspondence with the English Royal Society, made many observations. Borelli concluded that man could not fly by muscular power alone. In studying the flight of birds, however, he overestimated the importance of the downward motion of the wings in keeping the bird aloft.

HISTORY OF LIGHTER-THAN-AIR CRAFT.

Next we shall deal with the development of the balloon, at first uncontrolled. In 1670 Lana suggested suspension in the air by means of four globes, from which air could be exhausted so as to cause them to bear up the weight of men. To avoid the difficulty of making the globes strong enough to withstand external pressure when exhausted of air, Dr. Joseph Black of Edinburgh suggested a century later that the globes could be inflated with hydrogen gas, later recognized as the best gas for inflation. In 1783, the Montgolfier Brothers, makers of paper in Paris, amused themselves out of business hours by constructing small paper balloons, inflating them with hot air. One, ten feet in circumference, rose to the height of over a mile and floated for a mile and a half. Next followed a grand exhibition attended by some of the court of Louis XVI, together with the monarch and his consort, when a sheep, a cock, and a duck were sent up fifteen hundred feet. On Nov. 21, 1783, de Rozier and the Marquis of Arlandes, in the first human ascent by balloon, sailed over Paris at a height of three hundred feet for more than five miles. Two years later Rozier fell to his death in trying to steer a balloon across the English Channel, shortly after Blanchard had accomplished this feat without harm. One year later, an Italian named Lunardi floated continuously for some 24 miles in England. From this time on he and others popularized the sport, so that watching the movement of balloons became a great public spectacle, witnessed even by such notables as Dr. Samuel Johnson and Horace Walpole. Using coal gas for inflation, a balloon constructed by Green and Holland in 1836 flew for more than 500 miles.

All these primitive balloons were entirely uncontrolled. Man had not learned to steer them, to fit them with a rigid frame, or to propel them. He had to depend on the movements of air currents to blow him in a desired path or direction. It was only in 1852 that Giffard, a French inventor, realized a practical dirigible balloon or airship. He built a cigar shaped airship, equipped with a 5 horse power steam engine, driving an eleven-foot propeller and attaining a speed of 6 miles per hour. He was followed by other famous Frenchmen such as Dupuy de Lome and Renard. Another great pioneer was Santos Dumont of Brazil who spent much of his private fortune in building and sailing various types of balloons, making his first flight in 1898. By Sept. 6, 1901, he was using his sixth model, which flew almost seven miles in about one-half hour. Then he made several new designs, one of which—a racing model—flew sixteen miles an hour, and was directed without mishap into the hangar, a notable accomplishment for those days. Using still a more refined type of airship, he flew one just above the crowds of the Paris streets to his home for breakfast, which he took while attendants held the balloon outside, and then returned without accident to the hangar. All the models just mentioned were semi-rigid.

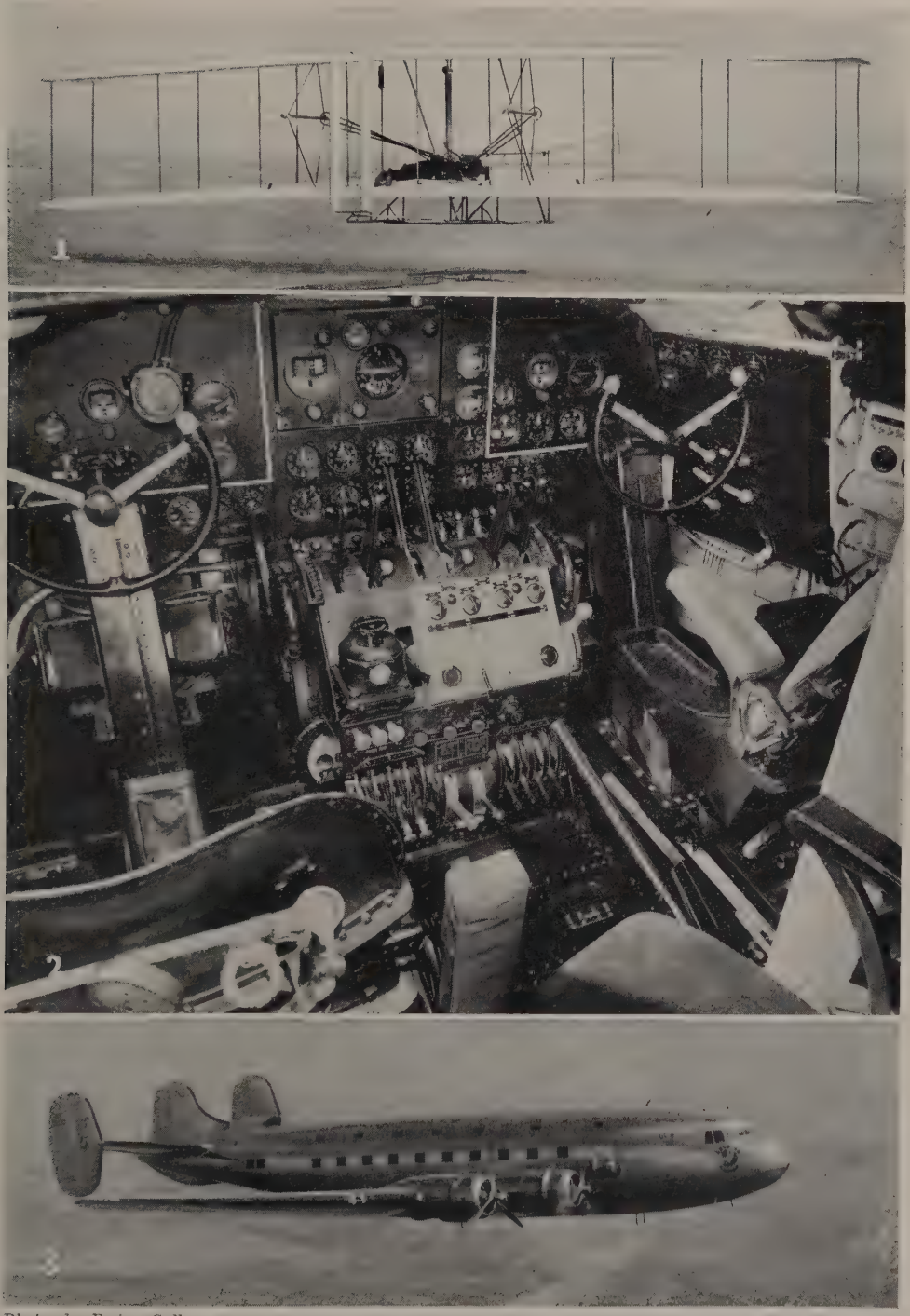
Either Speiss, an Alsatian, or Count F. von Zeppelin deserves the credit for making the first rigid balloon. As variously constructed, such a craft has an outer network of steel covering the gas bag, with rubberized cotton fabric covering the framework which is constructed of duralumin. Beginning in 1873 with the first design, by the end of the century Zeppelin made a memorable flight at the rate of nearly eighteen miles an hour. Five years later, in 1905, the Z3 landed successfully with all engines dead, but the wind then caught the framework and crumpled it. In 1906, another model covered 200 miles at twenty-eight miles an hour, and this was the record to that date for this type of airship.

The first large Zeppelin of 1900, with a length of 419 feet and a diameter of 38, contained 400,000 feet of gas, and had a net lift of 4.5 tons, somewhat less than half of which was available for passengers, baggage, and freight. Before the World War commercial airships had attained a length of 459 feet, a diameter of 49, a gas capacity of 670,000 cubic feet, a useful lift of 6 and a half tons, a speed of 24 miles an hour, and a passenger capacity of 24. As early as 1911 a regular schedule of service was established, and within three years five different airships were in commission. Without a single injury, between 1911 and 1914, these Zeppelins made over 1,500 flights, lasting over 3,100 hours, covering 107,000 miles, and carrying over 34,000 passengers.

Zeppelins developed with amazing rapidity during the World War. In one year 15 ships made 400 long flights and raided England some 30 times. At one time in October, 1917, a fleet of 11 made a concerted attack on some English cities, but they were driven off and some of them were wrecked in the return voyage. The English rigid airship, the R38, fell into the Humber River with a loss of forty-four men in 1921, but the R33, also modeled from a German rigid airship, after lying idle in England for almost seven years, successfully weathered a storm for 33 hours while it was driven from Pulham to Holland in 1925. In 1917, a Zeppelin had made a non-stop return trip from Bulgaria to Khartoum in Africa, with a total weight of 55 tons, flying some 4,200 miles in 95 hours. By 1918, the total gas capacity of these airships had risen to over two and a fourth million cubic feet, while the speed rose to nearly 60 miles an hour.

Other outstanding achievements of rigid and semi-rigid airships are the flight of the Los Angeles from Friedrichshafen, Germany, to Lakehurst, New Jersey, in October, 1924, a distance of over 5,000 miles in 81 hours; the successful trip of the semi-rigid *Norge* from Spitzbergen to Point Barrow, Alaska, in May, 1926, a total of 3,200 miles before landing; and the round trip of the *Graf Zeppelin*, the 127th of the type to be built, from Germany to Lakehurst in 1928. This last, after 28 years of building Zeppelins, is the firm's greatest achievement. It is a craft 776 feet long, 100 feet in diameter, with a gas capacity of 2,750,000 cubic feet, 5 reversible 530 horse power Maybach engines, and is capable of cruising 12,600 miles with 50 aboard.

England is planning a similar airship to carry 100 passengers for 4000 miles at 75 miles an hour, using 6 Rolls-Royce Condor engines of 700 horse power each. The *Los Angeles* is now the only very large airship in the United States since the fatal accident to the sister craft, the *Shenandoah*.



Photos by Ewing Galloway.

AERONAUTICS—I

1 Wright Plane at Kitty Hawk, N. C. 2 Control Cabin of DC-4, World's Largest Airliner. 3 DC-4 which carries 42 passengers and crew of 5.

Photos by Ewing Galloway.

AERONAUTICS—II

1 Modern Glider. 2 Looking up 80 ft. aisle of Yankee Clipper. 3 Boeing 307-B Stratoliner. 4 Looking down on Autogyro. 5 Passengers boarding Douglas Airliner.

Photos by Ewing Galloway.

1 U. S. S. Macon. 2 N. Y. Municipal Airport, LaGuardia Field, Administration Building and (3) Control Tower. 4 Airport, Tampa, Florida.

GLIDERS AND THE EARLY HISTORY OF THE AIRPLANE.

Returning now to the history of the heavier-than-air machine, we find that as early as 1500, the Italian artist, Leonardo da Vinci, declared that "a bird is an instrument working in accordance with mathematical law, which instrument it is within the capacity of man to reproduce." He even touched upon subjects that are of great importance today, like the "center of resistance" and equilibrium of the center of gravity with the "center of resistance," and designed a model which actually ascended straight upward with some success. A practical helicopter, or vertically-rising plane, is still the dream of modern aeronautics.

Sir George Cayley, a great pioneer of the early part of the nineteenth century, agreed with Borelli that man is not muscular enough to propel a machine capable of bearing his own weight. Like some of his predecessors, he realized that the reaction of the air should be utilized to keep

a machine in the air. Early experimenters had thought that the flapping of birds' wings should be imitated. Cayley stated that it was necessary to have a plane surface which will "support a given weight by the application of power to the resistance of the air." Some years even before Cayley, however, a Karlsruhe architect had estimated that a machine to carry 200 pounds must have a total wing surface of about 126 square feet. It was this principle of dynamic reaction which the Wright Brothers were able to study and apply on a scientific basis nearly a century later.

John Stringfellow, with preliminary assistance from W. S. Henson and some others, possibly had, by 1848, perfected a machine of the monoplane type which actually flew when propelled by a tiny steam engine for power. The model is now in the Smithsonian Institution at Washington, D. C. It is claimed as the first self-propelled, power-driven, heavier-than-air machine.

In 1843, Henson mentioned the possibilities of heavier aircraft in a published essay, but little came of his ideas, though before his death in the United States in 1857 he studied more fully the idea of gliders. The founding, in 1866, of the Royal Aeronautical Society of Great Britain stimulated experimentation. Two years later the "exhibition" of the Society at Crystal Palace contained 77 models of engines, aeroplanes, and airships, including a triplane built by Stringfellow, which was awarded 100 pounds as a prize for the lightest engine. Francis Wenham greatly increased interest by a notable paper before the Society at its initial meeting. Passing over a number of lesser names, we find that Le Bris, Otto Lilienthal, Percy Pilcher, Lawrence Hargreaves, Clement Ader and Chanute each contributed more or less to the development of heavier-than-air craft, prior to the great work of Samuel P. Langley and the final achievement of Wilbur and Orville Wright. There is no doubt that it was experimentation with the glider which laid the basis for the modern airplanes.

Le Bris, a French sailor, like some others tried to imitate the flight of birds, taking the albatross as a special model and was probably the first man to build a successful man-carrying glider. His craft, some 32 feet long, had 220 square feet of wing surface, with an appendage or tail that could be moved by a set of pulleys and levers. On the first attempt, a man who had been holding the craft down by ropes was entangled and carried aloft several hundred feet; on the second Le Bris himself fell and broke a leg. A fellow countryman, Clement Ader, built a number of models, one of which his friends asserted flew in 1897 for 300 meters.

Now passing over some experimenters in different lands who contributed little that is essential to flying, some of the most notable names are those of Alphonse Penaud, whose merits have been overlooked by many, Otto Lilienthal, Octave Chanute, and Samuel P. Langley. Though there has been some dispute as to the value of certain features of the experiments of these four pioneers, each seems to have added either some essential theory or some practical experience.

Penaud died too early in 1880 to realize the importance of his own efforts. C. L. M. Brown, in his recent book, *The Conquest of the Air*, speaks of this Frenchman as the greatest of his own land up to the time of his death. After several interesting experiments with a helicopter, his small model airplane or "planophore" in 1871 made successful flights before witnesses of a learned aviation society. Later his design of a full-sized machine, lacking an engine, approached very nearly the correct principles of the airplane. Penaud, following Prof. Pettigrew, used the torsion of rubber bands as his motive power, in a model which looks much like the toy airplanes of today which are propelled by screw actuated by releasing a twisted rubber band. Penaud also fitted an automatic elastic rudder to his model, and this had possibilities that the fixed rudders lacked. His plane, on release, would drop about two feet and then glide along near the ground for about fifty feet.

Since 1840, inventors had known that air pressure against the wing of a machine, under certain conditions, will keep it aloft. Otto Lilienthal, however, was the earliest to demonstrate that a curved wing-surface is superior to a flat one for planes. He entered into the problem as a scientist, making an original examination of the motion of birds in flight. Lilienthal altogether made 2,000 short trips in the air before a fatal accident in 1896. He constructed a glider biplane of willow, covered with tough cotton fabric, with a wing surface of about 100 square feet. Eventually he was able to steer his craft at will by moving his body to one side or the other and forward or backward much as the bicyclist does. The inventor held himself in the machine by passing an iron bar under his armpits but he left his legs dangle freely below. Lilienthal also experimented with a horizontal plane that would stabilize his aircraft.

In England Percy Pilcher, after visiting Lilienthal, carried out many interesting gliding experiments between the years 1895 and 1899. Pilcher added a horizontal tail to Lilienthal's design and made an interesting innovation in the form of a rudimentary under carriage. In 1896, he made a perfect gliding flight of 250 yards across a valley, towed only by a light fishing line, and encouraged by this, made investigations of the possibility of applying a light internal combustion engine. However, in 1899, Pilcher made a demonstration in which a guy-wire snapped, and the machine crashed. Pilcher died on the following day without having recovered consciousness.

Octave Chanute, taking up the work about where Lilienthal left off, finally developed multiplane and biplane gliders, the latter of which he adopted as being more satisfactory. Instead of relying on the movements of the pilot, Chanute sought stability and control within the glider itself, having wing surfaces that were adjustable to assist in keeping his gliders on an even keel. He was so successful in his hundreds of gliding experiments along the sand dunes of Lake Michigan that finally he allowed interested friends to fly alone, and no accidents of note happened. Chanute himself, not convinced that his own

device was safe enough, before 1900 gave up experiments and devoted the next dozen years to helping others and to studying the problem as a scientist, and he offered valuable hints to the Wrights when he visited them during their first experiments.

Samuel P. Langley approached the subject from a technical and scientific point of view. He was more anxious to prove that an airplane could be made to work than actually to acquire the technique of flight. By use of a revolving table with a long projecting arm suspending brass plates, he showed that the faster the arm moved the less tendency the plates had to fall, till they "almost floated in the air." Thus he confirmed theories of earlier men like Cayley, Wenham, and Stringfellow.

Having demonstrated to his own satisfaction the lifting power of a plane propelled through the air, he next thought of making a power plant for his model. After studying more than thirty toy designs, all fitted with rubber bands for power like Penaud's gliders, Langley at last produced in 1896 what he chose to call an "aerodrome" fitted with a steam engine. In two flights he made 3,200 and 4,200 feet respectively, but trouble lay in the control at start and finish. Persuaded by friends and aided by a Congressional grant, Professor Langley and his chief assistant, Charles M. Manly, sought to develop an engine and a plane that would be adequate to sustained flight with passengers.

In the end their large model had a steel frame, a total weight of about 730 pounds, a wing area of about a thousand square feet, and two propellers driven by a gas engine of at least 50 horse power. On October 17 and December 8, 1903, this craft was given initial trials, but at once on both occasions trouble developed at the start, and the machine fell into the Potomac River. The Langley machine later was made to fly by Glenn H. Curtiss at Hammondsport, New York, although there is some controversy as to the changes made prior to this flight. Just nine days after the second failure of the Langley aerodrome, the Wright brothers made their successful flight at Kitty Hawk, North Carolina.

Wilbur and Orville Wright deserve the credit jointly for making a practical airplane, designing and building a suitable engine, and demonstrating certain principles of stability and control. They have the honor of first managing as pilots a machine able to rise into the air by power generated within itself, to sail forward on a level course at even speed, and finally to land without definite mishap. Nobody before them had accomplished all this successfully, and they were certainly the first men to understand the complete control of the airplane.

From the start they shared a common aim: To make scientific flight an accomplished fact. By 1901, they had reduced the problem to its three main elements: First, the construction of the right type and size of wings; second, securing adequate propulsive force; third, stability and control in flight. Wilbur Wright, the literary man of the partnership, summarized the theories and results of their experiments in a number of magazine articles and public lectures. In 1901, he said that "inability to balance and steer still confronts students of the flying problem. . . . When this one feature has been worked out, the age of flying machines will have arrived, for all other difficulties are of minor importance." From the first no students ever worked more arduously and methodically than did the Wright brothers. They read everything they could of the past efforts of inventors to fly; they studied mathematics and made elaborate calculations; they looked upon the problem, finally, as a definite one to be solved simply and once for all. Wilbur and Orville Wright combined the scientific acumen of Langley with the practical zeal of Stringfellow and Lilienthal. It was this balance between theory and common sense that solved a problem that had baffled all men before them.

From 1896 to 1901, the brothers busied themselves with study, minor experiments, and observation of wing mechanism of every type available. Thus gradually, as Wilbur Wright has told us in one of his admirable essays on aviation, they passed "from the reading to the thinking, and finally to the working stage." Greatly impressed by the fatal accidents of both Lilienthal and Pilcher, they determined above everything else to secure safety. First, they checked the data on gliding flights already on record. Chanute had used a vertical rudder in the rear of his plane, whereas the Wrights also used a horizontal control in front. This led to stabilization of the plane fore and aft, which Lilienthal's machines had lacked.

Acting on advice of the Weather Bureau, they chose Kitty Hawk, North Carolina, as a place for experiments because of the favorable currents of wind and absence of sudden squalls. The results of their first summer, in 1900, were not quite satisfactory. With a larger plane having a wing surface of 308 square feet they made a gliding flight of 300 feet in 1901. Only by working the front elevator or rudder frequently could the plane be kept in right horizontal position. After modifying the depth of the "curvature" of the wings, flights came easily to them, and control became simple even in the face of strong breezes.

During the following winter they experimented zealously with a wind tunnel constructed at their home in Dayton, Ohio, with various types and spans of wing surfaces, and finally attacked the most troublesome problem (where all thus far had failed), the securing of lateral control. First, at Kitty Hawk in the autumn of 1902, they used a fixed vertical rudder or tail. Then they improved on this with a movable or adjustable vertical rudder. They also hit on the great principle of warping the ends of the wings to secure lateral control. The pilot now had three controls at his command, and the problem of control was finally solved. In this perfected glider they made over 700 flights at will with remarkable control of the mechanism and plane as a whole, and were able to glide in winds as high as 35 miles an hour.

Now the Wrights had a machine under perfect control by the operator. All that remained was the perfecting of the engine or motive power. Within a year they had designed an engine of

30 horse power, weighing but 7 pounds per horse power. By the autumn of 1903, everything was ready for the transition stage from glider to airplane. The Wright machine thus constructed was a biplane, with two main wings of a chord or span of 32 feet, and a width of 5 feet, giving a total wing surface of approximately 305 square feet. The front horizontal rudder, as they called it, had a sustaining area of 15 square feet, and the vertical rudder in the rear, an area of 6 square feet. Skids were used to support the machine on the ground, and the operator lay across the lower of the two planes. Without engine or load, the total weight was about 117 pounds; with pilot and engine, it was nearly 600 pounds.

When everything was ready in the autumn of 1903, they took the machine to Kitty Hawk for a final test. Before trying this, however, they made a few additional flights in the old glider. On December 17, 1903, the historic date of the first heavier-than-air flight, but five natives came to witness their great efforts, though the neighborhood had been freely invited to be present. On this memorable day, each brother made two flights, the first lasting 12 seconds and the last 59, covering a little over half a mile in the air and 852 feet over the ground. Wilbur Wright himself, in the *Century Magazine* in 1908, spoke of the first flight made that day as "the first in history of the world in which a machine carrying a man had raised itself in the air by its own power in free flight, had sailed forward on a level course without reduction of speed, and had finally landed without being wrecked."

During 1904 and 1905, experiments continued near Dayton, Ohio, in an improved machine, so that on September 26 of the latter year, they made a flight of somewhat over 11 miles, increased this little by little to over 24 on October 5, at a speed of about 38 miles an hour. So quickly did aviation develop that, when Wilbur Wright died in 1912, the airplane had already become important in commerce and war.

On December 17, 1928, just a quarter century afterward, Orville Wright again found himself at Kitty Hawk, North Carolina, this time as the guest of honor of the hundreds gathered to erect a monument in commemoration of the first successful flights. Here a granite boulder was unveiled, and this will be followed later with a large shaft erected from funds already authorized by Congress.

Contrast as you will in imagination the handful of spectators of that early experiment with the gathering of aviators and scientists from all areas of the civilized world in 1928.

THE PRINCIPLES OF LIGHTER-THAN-AIR CRAFT

Stones thrown into water will sink, but a stick of wood thrown into a pond will go down, and then rise, remaining partly submerged. The weight of the stick as a whole is exactly that of the water displaced by the part of the stick that lies below the surface. The weight of the water displaced is variously termed displacement, flotation or buoyancy.

The sustention of all lighter-than-air craft such as balloons or airships depends on this principle of displacement or buoyancy.

A balloon, for example, is filled with hydrogen which weighs roughly about 1/15th as much as air, and therefore must have buoyancy when placed in the atmosphere. For a rough estimate the weight of 1,000 cubic feet of air may be taken as 75 pounds, and of 1,000 cubic feet of hydrogen as 5 pounds. The buoyancy or lift of a balloon of 1,000 cubic feet displacement will therefore be only 75 minus 5, or 70 pounds. A gas bag of large volume, therefore, gives comparatively little lift, and this explains the tremendous dimensions to which airships have to be built when they are required to carry appreciable loads.

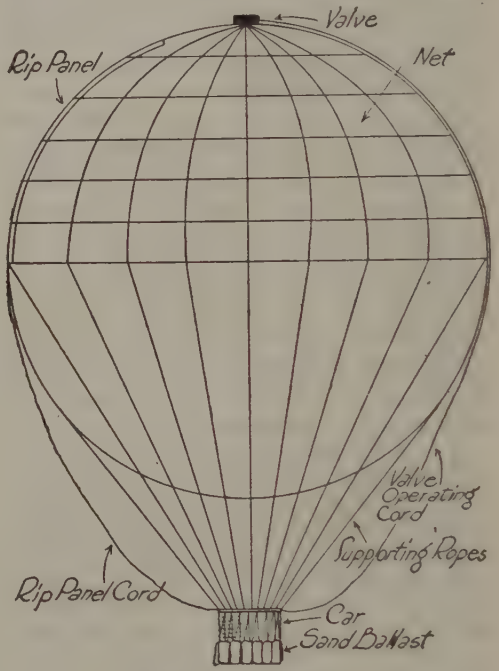


FIG. 1 Free Balloon

We have stated that the lift of 1,000 cubic feet of hydrogen is 70 pounds. But the lift depends evidently on the density of the air. In cold weather, air is much denser than in hot weather, and it is found in practice that the lifting power of an airship is greater in winter than in summer.

There is a great deal of theory involved in the maneuvering of a balloon, and balloon races are won by the most scientific competitors.

A free balloon when it leaves the ground is always "flabby," that is, not entirely filled out. As it rises and passes into a region of less dense air, the gas expands till the balloon becomes taut, It can only rise beyond the height where it becomes a full balloon, if the aeronaut (as the balloon pilot is called) throws out ballast in the form of sand. When all the ballast is expended, it is impossible to rise higher. To descend the aeronaut must valve gas, that is, allow some of

it to escape. Since the full balloon has a buoyancy exactly equal to its weight, the escape of a little gas may cause it to descend all the way to the ground, unless the descent is checked by the throwing out of ballast. A skilled balloon pilot will release only a few cubic feet of gas at a time, and throw out ballast in handfuls at a time.

A free balloon is usually constructed of rubberized fabric and varnished silk, and is filled with either hydrogen or coal gas. It is covered with a netting from which is suspended the basket carrying the pilot. The valve through which gas is allowed to escape at will is placed at the top of the balloon. In emergencies, when a quick descent must be made, a "rip panel" is used through which gas escapes much more rapidly than through the valve. The main parts of a free balloon are shown in the diagramatic sketch of Fig. 1.

an elevator for control in pitch. In addition, fixed fins are provided at the tail end or stern of the airship for stabilizing purposes. While in the non-rigid and in some semi-rigid types the passenger car is suspended at a distance from the envelope, in the rigid it is possible to build the car integrally with the structure and only the power cars are suspended away from the envelope.

The construction of the rigid airship is a particularly intricate one. In addition to the longitudinal girders which run the whole length of the ship, transverse frames or ribs are fitted at intervals. The transverse frames form compartments in each of which a gas bag of gold beater's skin is placed. This is enclosed in cord netting to distribute pressure and prevent chafing. The whole of the airship is covered with a waterproofed, rubber and cotton fabric which

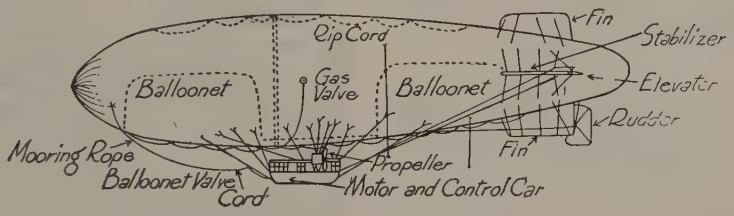


FIG. 2 Non-rigid Airship

A spherical balloon offers considerable resistance to side motion. Therefore, all lighter-than-air craft except balloons are not spherical, but streamline in form, and resemble a huge cigar.

Airships may be divided into three classes, non-rigids, which depend upon inflation of the envelope for maintaining the correct shape; semi-rigids, which rely partially on gas pressure and partially on a rigid keel running the whole length of the bottom of the ship; and rigids, which depend solely upon their structure for the maintenance of their form.

The three types of airships are illustrated in our diagrams. (Fig. 2, 3 and 4).

can be made to present a smooth surface to the air.

The propulsion of all types of airships is of similar type. A gasoline engine or engines mounted in a basket or power egg turns a propeller, which screws itself into the air like a giant screw, and in so doing produces a thrust or pull which drives the airship against the resistance of the air

PRINCIPLES OF HEAVIER-THAN-AIR CRAFT

Small, flat stones, even though heavier than water, so long as they are in motion, will slip

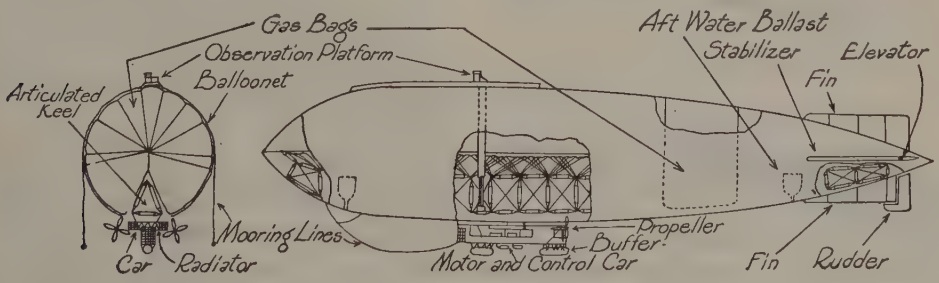


FIG. 3 Semi-rigid Airship

In the non-rigid and semi-rigid airships, balloonets or air bags are placed inside the main envelope. During the ascent, as the gas expands, these balloonets lose their air and fold up. On the descent as the gas contracts, the balloonets take in air through a scoop, fill out and keep the envelope from becoming flabby.

All airships, no matter what their type, are provided with a vertical rudder for steering, and

along the surface of the water. A man stationary in the water will sink. If he can propel himself by his arms and legs, the reaction of the water on his body will sustain him as long as he is in motion. Heavier-than-air craft, gliders and airplanes depend on the same principle of reaction.

If a board is towed through the water it will experience two forces: One at right angles to

the motion which is termed the lift, because it tends to raise the board; the other along the line of motion, which is termed resistance or drag, because it tends to oppose the motion.

trary to general belief, it is the upper surface which gives the greater part of the lift, namely two-thirds approximately.

Modern wings are beautifully streamlined and

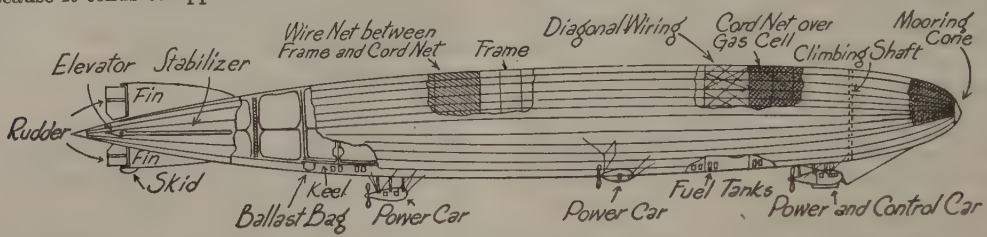


FIG. 4 Rigid Airship

The airplane or glider is sustained by a lift force produced in this fashion. The drag experienced has to be overcome by gravity in the case of the glider and in the case of the airplane by the thrust of the propeller, which in turn receives energy from the combustion of fuel in an engine.

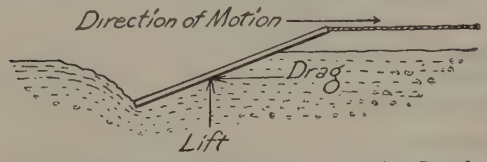


FIG. 5 Showing Lift and Drag on Moving Board

Naturally in the design of an airplane, we try to get as much *lift* as possible and as *little drag* as possible, or to make the lift over drag ratio high. An airplane weighing 2,400 pounds may need as much as 400 pounds thrust under certain conditions of flight. Its lift-over drag ratio is then said to be 2,400 ÷ 400, or six.

When a flat plate or surface is pulled through the air, the air flow is very much disturbed, with eddies or whirls on the top side as can be seen in Fig. 6.

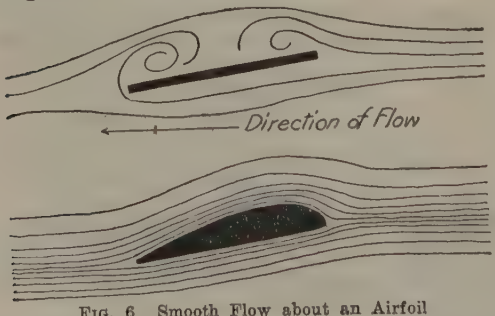


FIG. 6 Smooth Flow about an Airfoil

When a well designed wing or air foil is employed the *flow is free from eddies*, and is said to be *streamline*. This steady flow is also shown in a diagram.

Because the upper surface of a wing is cambered or curved, the air has to flow more rapidly above than below the wing. Owing to the rapidity of the flow, it loses some of its pressure and is said to be in suction. Accordingly, in an airplane wing, the air pulls up on the top surface, and pushes up on the lower surface. The pull and push of the air add up to give lift, but con-

surprisingly efficient. Their lift-over drag or efficiency ratio is sometimes as high as 20.

The length of a wing is called the *span;* the width is called the chord. The *aspect ratio* of a wing, as illustrated by our sketch, is the ratio of the span to the chord. A long, narrow wing is more efficient than a short, wide one because it experiences less tip loss due to the flow of air round the tips. For a monoplane, that is, an airplane with a single wing, the aspect ratio varies between 5 and 7. Designers would like to give the wing bigger aspect ratios, but then difficulties occur in making the wing strong enough. With biplanes, which it is somewhat easier to brace, it is possible to use larger aspect ratios up to eight or even ten.

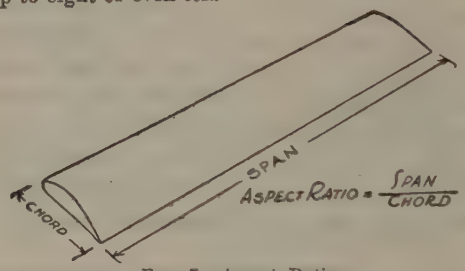


FIG. 7 Aspect Ratio

The *lift of a wing increases with its area, and with the square of the speed.* The lift varies with the square of the speed, because the faster the wing moves the more air comes in contact with it, and each particle of air coming in contact with the wing evidently exercises a greater reaction with increase in speed.

The more a wing is inclined to the flight path or wind direction, the more lift it will have for a given area and a given speed. The *inclination of* a wing is defined by the angle between the wind and the chord of the wing. This *inclination is termed the angle of incidence or attack.*

The lift of a wing does not increase indefinitely with the angle. When an angle of incidence of about sixteen degrees is reached, the lift reaches a maximum value. Beyond this angle, the streamline flow breaks down, the wing is said to *"burble" or stall,* and if inclined still more, it actually loses lift. One of the most frequent sources of accident is the "stall," in which placing the wing at too large an angle of incidence may result in loss of lift and control and a subsequent spinning nose dive.

There is no "best" wing in aviation. Thin

wings are generally most suitable for high speed planes. They have high efficiency at top speed, but poor maximum lift, and therefore planes with thin wings will tend to land fast. Heavily cambered wings are more suitable for commercial planes of moderate top speed, but are required to land slowly. In our diagram we show some typical wings, and indicate the uses to which they are most appropriate.

An important problem in the airplane is the maintenance of longitudinal equilibrium and

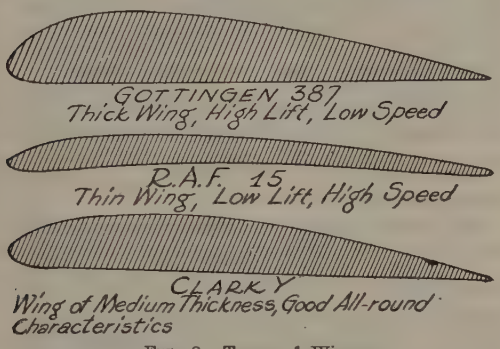

GOTTINGEN 387
Thick Wing, High Lift, Low Speed
R.A.F. 15
Thin Wing, Low Lift, High Speed
CLARK Y
Wing of Medium Thickness, Good All-round Characteristics

FIG. 8 Types of Wings

stability. Unfortunately most airfoils are unstable. The point at which the lift and drag act on the airfoil chord is termed the *center of pressure*. At small angles of incidence the center of pressure moves back, at large angles it moves forward. The center of gravity of an airplane, where all its weight may be considered concentrated, remains always at the same point, and is generally placed by the designer at one-third of the chord back of the leading edge. If the airplane had no horizontal tail surfaces, the movement of the center of pressure with reference to the center of gravity would produce instability. If the plane nosed up a little, the center of pressure would move forward, and would tend to nose the plane up more till it "stalled." If the plane

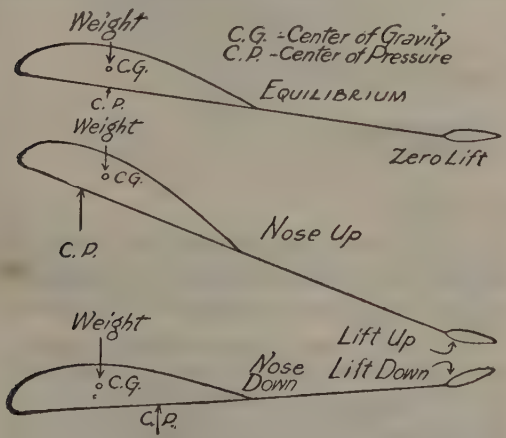


FIG. 9 Showing Instability of Wing and Manner in which Stabilizer Corrects It

nosed down, the center of pressure would move back, thus tending to nose the plane down still more until it would go down in a nose dive. This instability, illustrated by our sketch, is corrected by the fixed horizontal tail surface termed the stabilizer. This is placed at a negative angle to the wing. Accordingly, when the main wing goes to too small an angle of incidence, the stabilizer

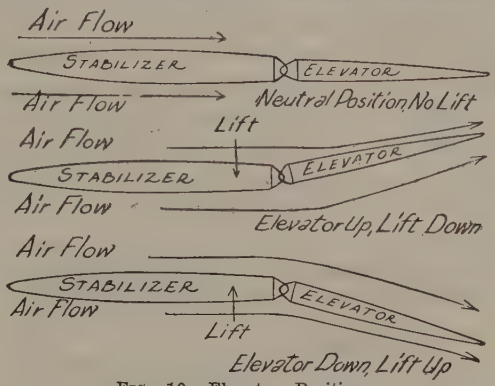


FIG. 10 Elevator Positions

has a downward force acting on it and therefore counteracts the diving tendency. If the main wing rises to too high an angle of incidence, the stabilizer has an upward force exercised on it by the stream of air and so the tendency to "stall" is checked.

Besides using a fixed horizontal stabilizer to secure longitudinal stability, it is necessary to provide a movable control surface, hinged at the rear of the stabilizer to provide longitudinal control. This movable surface is termed the *elevator*. Our drawing illustrates its action. When the elevator is turned up, the air strikes it from above, and the nose of the plane is turned up accordingly. When the elevator is turned down, the air strikes it from below, and the plane is accordingly nosed down.

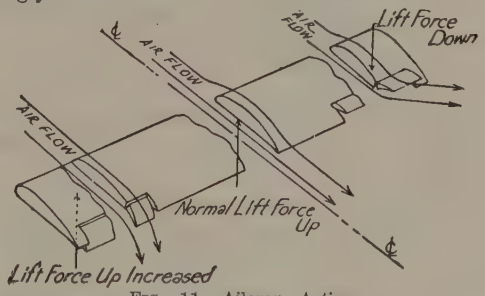


FIG. 11 Aileron Action

It was a great achievement of the Wright brothers that they saw the necessity of three controls, one for each axis of the airplane, and knew how to realize the three control system.

For lateral control in the modern airplane, movable surfaces termed *ailerons* are hinged at the rear outer portions of the wings. The control cables of the ailerons are so arranged that when one aileron is turned down, the other is turned up. If the wing of the airplane goes down on the right side, the pilot turns the right aileron down, the air strikes the aileron on its under surface and a restoring moment is introduced. The aileron on the other side is turned up, receives the air on its upper surface and also exercises a restoring moment, the effects of the two ailerons helping one another.

When a side wind hits an airplane, it is essential that its nose should turn into the wind, or that the plane behave like a weather cock. Weather-cock stability is achieved by placing a vertical fin at the tail of the fuselage. When the side wind strikes the fin, it is clear from our sketch that the nose of the plane will turn into the wind.

Steering is achieved by a vertical rudder hinged in back of the vertical tail fin. When the rudder is turned to the right, the air strikes it from the right, and the nose of the plane turns to the right. Conversely, when the rudder is turned to the left, the nose of the plane also turns to the left.

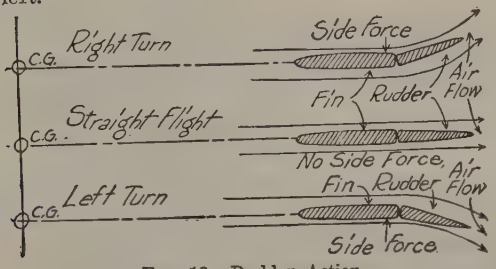


FIG. 12 Rudder Action

THE MAIN PARTS OF AN AIRPLANE

The airplane is far less standardized in its design than an automobile and always will be. The automobile is severely restricted in length of chassis, width of wheel base and the speed which can be safely employed. The airplane can be a tiny "flivver" or a giant transport machine of 25 tons gross weight, and it can have one, two or more wings, and its speed does not seem to have reached anything like its limit as yet. In describing the main parts of the airplane, we have selected one type only, which is representative of today's practice, namely, an enclosed cabin monoplane, which is shown in diagrammatic form.

The nine cylinder air-cooled engine of about 200 horse power is carried at the nose of the fuselage, with the rear part of the crank case bolted to a mounting ring. On the forward end of the crank case is an extension on which the hub of the propeller is fitted. The air intake to the carburetor is placed underneath the fuselage, so that fresh, clean air only is admitted to the carburetor. All the exhaust manifolds lead into a single exhaust ring, which has at its lowest point a single large exhaust pipe which leads the exhaust gases away from the passenger compartment. The oil tank is mounted close behind the engine, so as to lessen the length of oil piping. Throttle and spark controls run from the left side of the pilot's cockpit, close to the pilot's left hand. The throttle and spark controls consist of solid rods, with bell cranks at appropriate points. Cables are not advisable for engine controls because they are liable to become slack. The fuel tanks are mounted in the monoplane wing on either side of the fuselage, thus reducing the fire hazard. The fuel tanks are connected by simple piping to the float chamber of the carburetor. Fuel, therefore, flows to the carburetor by gravity alone, and all fuel pumps are thus avoided. A fuel tank gage is mounted in the tank, with its dial easily seen by the pilot. Careful power plant installation is a great factor in the reliability of an engine.

The pilot's cockpit is at the forward end of the cabin. Windows of non-shatterable glass give the pilot vision in all directions while protecting him from the weather. In front of the pilot are the instruments, grouped according to function. On one side are: The air-speed indicator which shows the speed relative to the air; the altimeter which shows the height above the ground; and the inclinometer in which a bubble of air in a curved tube filled with colored alcohol shows whether the plane is on an even keel or not. In the center of the instrument board is the compass which is indispensable for cross-country flying. On the left side of the instrument board are grouped the engine instruments, the tachometer which shows the revolutions per minute of the engine; the oil pressure gage which shows whether the engine is being properly lubricated and the oil temperature gage which serves a similar purpose.

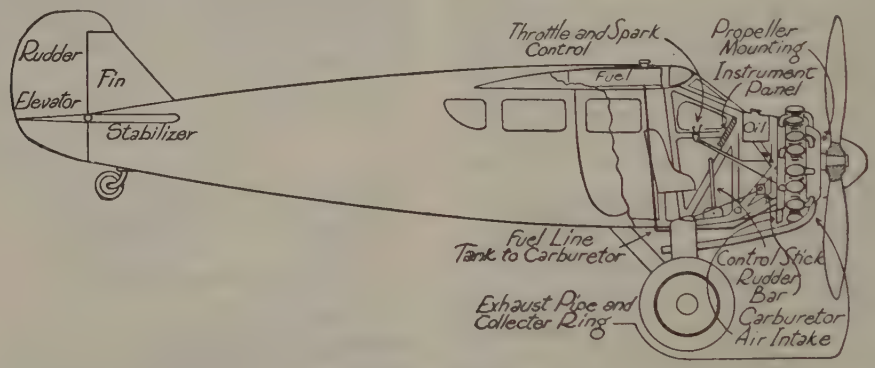


FIG. 13 Parts of Airplane

The pilot's flying controls consist of the control stick, commonly called the "joy" stick and the rudder bar. The ailerons, elevator and rudder are actuated by these two important parts of the airplane. The action of the flying controls is illustrated by the drawings, which show that a forward motion of the stick turns the elevator down, and therefore dips the nose of the plane. Pulling back on the stick turns the elevator up and raises the nose of the plane. The movements of the stick for longitudinal control are therefore

quite instinctive. In the same way, pushing the stick to the right will turn the right aileron up, the left aileron down, and therefore the plane as a whole will go down on the right side. Again the movement is instinctive. Pushing the right forward on the rudder bar will turn the nose of the plane to the right. This is somewhat different from the action required with the steering wheel of an automobile, but rudder action is soon learned. In fact the use of all the flying controls is but a matter of a few minutes.

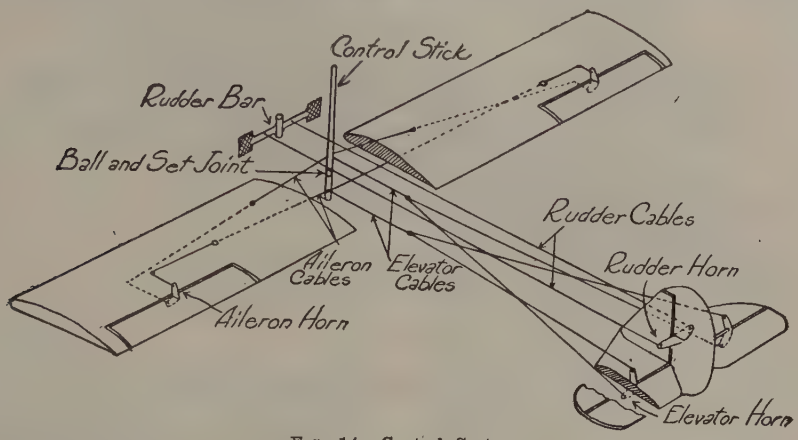


FIG. 14 Control System

Back of the pilot is the passenger's cabin, with ample vision through the sliding windows. Electric lighting by means of a battery, and heating by means of air which has been warmed by passing round the exhaust pipe are always available in a modern passenger plane.

The fuselage of the modern airplane, in which engine, pilot, passengers, etc., are housed, is generally made up of welded steel tubing. Formerly, wooden struts and wires were used, but welded steel tubing has replaced stick and wire, because alignment is better maintained, and because in a crash, tubing will bend but not break and splinter. Many fatalities have been avoided by the use of tubing.

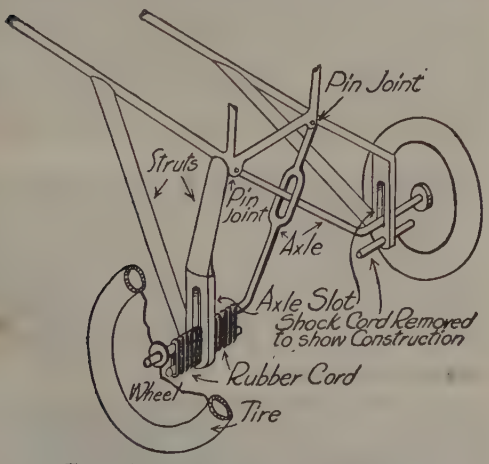


FIG. 15 Divided Axle Landing Gear

The landing gear of an airplane is a very important part. In the hands of a skilled pilot, a perfect three-point landing can be made after flattening out gently from a glide, without the slightest shock. But sometimes such a perfect landing is not possible. Therefore, the landing gear has to be so constructed that it can take up shock. This is done frequently by making use of rubber shock absorbers. As shown in our drawings the struts can descend relative to the wheels against the restraining action of rubber cords. The placing of the wheels of the landing gear is important. The center of the wheels should be some distance ahead of the center of gravity of the airplane, so that if the wheels meet a bump the airplane does not nose over.

While accidents still happen in airplanes, structural failure in the air never happens nowadays, so much care have engineers given to the design and construction of the wings. (See Fig. 16)

The contour of the airfold is maintained by the ribs, placed along the span of the wing at intervals of approximately one foot. The doped and varnished cotton fabric, which constitutes the wing, is sewed to the ribs, which are placed about one foot apart along the span of the wing. The ribs maintain the contour of the air and transmit the lift of the wing surface to the two spars which provide strength against bending. The front and rear spars are braced against the drag of the wing by an intricate trussing of wires and compression struts. The forces on the wing are relieved by the external lift struts which carry a part of the wing load directly to the fuselage.

AIRPLANE ENGINES

Historical Development

The four cylinder water-cooled engine built by the Wright brothers in 1903 had approximately 21 horse power and weighed 152 pounds, so that the weight per horse power was 12.7. Since that time, as a result of continued effort in every country, the aircraft engine has improved beyond recognition. Today there are air-cooled engines in production, weighing not much more than 1 pound per horse power, and the aircraft engine has become a most reliable and certainly the most refined prime mover built by man.

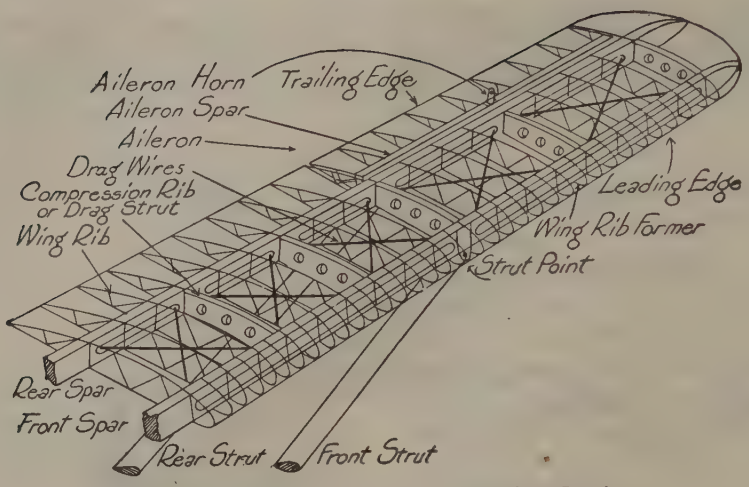


FIG. 16 Wing with Semi-Cantilever Monoplane Bracing

Prior to the World War aircraft engine horse powers remained quite moderate. The best known engine at the outbreak of the Great War was probably the Curtiss OX, which had eight water-cooled cylinders, arranged in V form, and developing 90 to 100 horse power at 1,400 revolutions per minute, and weighing a little over 4 pounds per horse power. In Europe, perhaps the most distinctive types were the rotary air-cooled engines such as the Gnome (80 horse power) and the Le Rhone (110 horse power). These were much lighter than the Curtiss OX and very compact. They played a very useful part in the early history of aviation. Their chief drawbacks were the windage losses of the rotating cylinders, the difficulty of securing perfect lubrication, and their lack of reliability. They were never built in larger powers than 110 horse power and have now been completely superseded.

The World War gave a tremendous impetus to the development of the engine. Since supremacy in the air was vital to the combatants, and since fighting supremacy was dependent on speed and climb, which in turn depended largely on horse power, each side tried to develop more and more powerful engines. At the end of the War the British and French were using the 300 horse power Hispano-Suiza, an 8-cylinder water-cooled V engine, with great success. The Germans concentrated their efforts on 6-cylinder vertical engines, developing not more than 225 horse power, somewhat heavy in construction but wonderfully reliable. The outstanding engine achievement of the United States was the famous Liberty motor. This was to some extent a derivative of the Hall-Scott engine, but involved a new design said to have been produced in a Washington hotel by Colonel J. G. Vincent and Colonel Hall. Not only did the United States produce the most powerful aircraft engines of the War, but with our understanding of production methods, enormous numbers of Liberty engines were built. Had the War continued the United States would have produced more engines than the rest of the Allies and the Germans combined.

As it was, the American government at the end of the War had an enormous surplus of Curtiss OX and Liberty motors on its hands. These were sold at low prices to commercial interests. The OX engines, costing thousands of dollars, were sometimes sold for as little as $32, and enabled designers to produce cheap two and three seater planes, which proved invaluable for training and aerial service work. The Liberty motors for several years gave invaluable service to the air mail planes, and continued to be widely used up to a year or so ago.

During the War, the rotary air-cooled engines had given away to the water-cooled type, nevertheless designers felt that air cooling was entirely logical for the aircraft engine. The automobile engine may be called upon to give its maximum power when the car is moving slowly, as in going up a steep hill, and air cooling is then a difficult proposition. In the airplane, there is always a rapid stream of air to be relied upon, and hence air cooling is far more plausible. It has also been found that most of the power plant failures are due to water-cooling troubles, and air cooling has therefore given the airplanes greater reliability. Air-cooled engines have also proved lighter than the water-cooled types, and also dispense with the weight of radiator and water.

In Europe, the development of the air-cooled type has been mainly in the hands of the Bristol Company of England, which starting with a 3-cylinder 100 horse power type, has now produced the Bristol Jupiter, a 9-cylinder type of 450 horse power, weighing approximately 1½ pounds. In England also has been produced the well-known Cirrus engine, with 4 air-cooled cylinders in line. This develops 85 to 95 horse power and weighs 270 pounds.

It is in the United States that the air-cooled engine has taken the greatest development. Charles L. Lawrance, in 1919 and 1920, produced the first successful American air-cooled engine, a 3-cylinder 60 horse power type. Since that time the development of such engines has been very rapid. The famous Wright Whirlwind carried Lindbergh across the sea, and has been employed on innumerable airplanes. Other well-known engines of the radial air-cooled type are the Pratt and Whitney Aircraft Company's Wasp and Hornet

which are being largely used in large mail and passenger planes.

At the same time the water-cooled engine has remained in favor with many designers, particularly in the large sizes. The Curtiss Company in the United States has remained a firm exponent of the water-cooled engine, on the ground that it allows a better streamline for the forward part of the fuselage, since there are no projecting cylinders exposed to the air stream, and that higher speeds may be attained by its use. The Curtiss Company is now placing on the Commercial market the Conqueror 12-cylinder water-cooled engine of 650 horse power. At very high speeds, there is no doubt that the water-cooled engine offers a real superiority over the air-cooled type. The Schneider Cup races, in which speeds of over 300 miles an hour have been attained, have always been won by water-cooled engines, in some cases developing 1,200 horse power for as many pounds.

European engineers have also held to the view that for large commercial planes flying in all weather conditions, greater reliability could be secured with water cooling. On most European aircraft engines have shown tremendous gain in reliability. It is not uncommon for modern engines to stand up to an endurance test of more than a hundred hours at full power, and whereas the Liberty motor required complete overhaul at the end of 100 or 150 hours, an engine such as the Wright Whirlwind needs a complete overhaul only at the end of 300 hours, and with proper care may have a life of 1,500 hours. Aircraft engines have also progressed in the reduction of frontal area, and in the matter of cost and efficiency. Progress has been achieved by no radical departures, but by steady increase in skill in design, particularly in regard to cutting down dimensions and to increasing the speed of revolution while still maintaining perfect intake and exhaust and combustion. Progress has also been dependent on the use of the strongest and most refined materials. More than 40 different materials go into an aircraft engine, such as magnesium (which is lighter than aluminum), aluminum-bronze for valve insets, duralumin forgings for connecting rods (duralumin is an alloy of aluminum, copper, nickel and magnesium), high strength alloy steels and many others.

MODERN PRACTICE

Name of Engine	Rated Horse Power	Rated Revolutions Per Minute	Type of Cooling	Weight Dry	Weight in Pounds Per Horse Power	Fuel Consumption Per Horse Power in Pounds	Arrangement of Cylinders
Cirrus	...	....	Air	...	....	....	4 line
Warner Scarab	110	1850	Air	270	2.45	.50	7 radial
Wright Whirlwind	200	1800	Air	500	2.50	.53	9 radial
Pratt & Whitney Wasp	400	1900	Air	670	1.67	.55	9 radial
Pratt & Whitney Hornet	500	1900	Air	760	1.52	.55	9 radial
Curtiss Conqueror	600	2400	Water	760	1.26	.52	60° V 12
Napier Lion	450	2000	Water	850	1.89	....	60° V 12
Rolls Royce Condor	600	1700	Water	1350	2.25	....	60° V 12

EARLY PRACTICE

Name of Engine	Rated Horse Power	Rated Revolutions Per Minute	Type of Cooling	Weight Dry	Weight in Pounds Per Horse Power	Fuel Consumption Per Horse Power in Pounds	Arrangement of Cylinders
Liberty Motor	421	1700	Water	845	2.00	....	45° V 12
Curtiss OX-5	90	1400	Water	375	4.17	.55	90° V 8
Gnome	100	1200	Air	220	2.2	....	9 Radial rotary

air lines, water-cooled engines such as the Napier "Lion," the Rolls-Royce "Condor" and the Hispano-Suiza are employed to this day.

So many aircraft engines are now available, that it is difficult to select the most representaaive types. The above table is, however, a fair indication of current practice, and gives an idea of earlier practice also.

Besides tremendous improvement in the weight per horse power as shown by the above table, aircraft engines have shown tremendous gain in reliability. It is not uncommon for modern engines to stand up to an endurance test of more than a hundred hours at full power, and whereas the Liberty motor required complete overhaul at the end of 100 or 150 hours, an engine such as the Wright Whirlwind needs a complete overhaul only at the end of 300 hours, and with proper care may have a life of 1,500 hours. Aircraft engines have also progressed in the reduction of frontal area, and in the matter of cost and efficiency. Progress has been achieved by no radical departures, but by steady increase in skill in design, particularly in regard to cutting down dimensions and to increasing the speed of revolution while still maintaining perfect intake and exhaust and combustion. Progress has also been dependent on the use of the strongest and most refined materials. More than 40 different materials go into an aircraft engine, such as magnesium (which is lighter than aluminum), aluminum-bronze for valve insets, duralumin forgings for connecting rods (duralumin is an alloy of aluminum, copper, nickel and magnesium), high strength alloy steels and many others.

Main Characteristics of the Aircraft Engine

The aircraft engine in its principle and main characteristics is similar to the automobile engine. It has to withstand higher continuous loads than the automobile engine and has to be much lighter for a given horse power, so that its design is very much more refined. The basic problems of both the automobile and the aircraft engine is to mix the fuel (gasoline) and air in-

timately in the correct proportions, to produce as perfect combustion as possible, and to convert the energy of combustion into mechanical power.

The combustion takes place inside the cylinder, which is the heart of the engine. The cylinder in aircraft practice is generally machined from a solid block of steel. The cylinder is open at its lower end; at the top is closed in by a cylinder head which is generally an aluminum casting, screwed in or shrunk into the cylinder. Inside the cylinder is the cup-shaped piston, arranged to slide up and down in the cylinder. The piston rings are carried in grooves in the piston, and press fairly tightly against the cylinder walls, so that leakage of gases past the piston is prevented. There is a piston pin in the piston round which the connecting rod can oscillate. The other end of the connecting rod embraces the crankpin, which is fixed in the crank arm of the crank shaft. As the piston moves up and down in the cylinder, its reciprocating motion is converted into rotational motion of the crankshaft. On the front end of the crankshaft is mounted the propeller, which gives propulsion to the aircraft. The intake valve and the exhaust valve are mounted in the cylinder head, and are operated by push rods, and springs. The push rods are themselves driven by the camshaft which in turn is driven by gearing from the crankshaft.

The conventional gasoline engine is said to have a four-stroke cycle, because the process of taking in gas, compressing, fixing and exhausting takes place in four strokes of the piston, two up and two down. At the beginning of a cycle, the piston is at the "top-center" position on the cylinder. As the crankshaft revolves (being moved either by starter or by the action of other cylinders) the piston descends and at the same time the inlet valve opens by means of the mechanism previously described. The downward movement of the piston, termed the suction stroke, produces suction or low pressure in the cylinder space above it, and a mixture of fuel and air is drawn in through the intake valve accordingly. When the piston reaches bottom center, the inlet valve closes. The further rotation of the crankshaft then moves the piston up again. Since the valves are closed, this stroke, termed the compression stroke, serves to compress the mixture of air and fuel to a high point. The efficiency and power of the engine are greatly increased by this compression of the mixture before its ignition by an electric spark. At or near the end of the compression stroke, a violent electric spark jumps across the points of the spark plug. The mixture is ignited, and the fuel burns or explodes rapidly, combining chemically with the air. The burning of the fuel produces a very high temperature in the cylinder (hence the necessity of cooling the cylinder walls) and a high pressure acting on top of the piston. This high pressure acting on the downwardly moving piston during the third stroke, which is termed the power stroke, delivers the energy of combustion in the form of turning moment to the crankshaft. Near the end of the power stroke, the exhaust valve opens, and on the last stroke of the cycle, when the piston is again moving upward, the burnt gases are ejected through the exhaust valve. The cylinder is then ready for another charge of fuel and air, and for another working cycle.

The pressure at the end of the compression stroke is about 95 pounds per square inch. Usually during the compression stroke the mixture of gas and air is compressed into a space 5½ times as small as that when the piston was at the bottom of the stroke. The compression ratio is then said to be 5½ to 1. Greater compression would mean better efficiency, but if too high compressions are used, without special fuels, the combustion becomes too rapid and severe knocking or detonation may be produced, with which motorists are also familiar.

The temperature in the cylinder after the combustion of the fuel is tremendously high—over 4,000 degrees Fahrenheit. Subjected to such enormous temperatures the cylinder walls, unless suitably cooled, would cause the piston to seize and the lubrication would fail. Hence the necessity for cooling the walls by means of water jackets containing circulating water, or by aluminum fins cast integrally with the cylinder head. Aluminum is a particularly good conductor of heat, and is used in the fins for this reason. Sometimes, for extra cooling, the steel cylinder also has fins machined on its outer wall as shown in our diagram. When a finned air-cooled cylinder is used it has to be subjected to the blast of the propeller, or slipstream as it is termed.

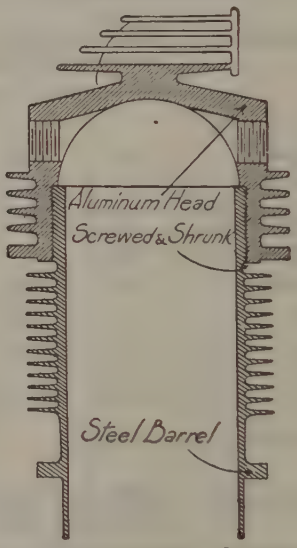


FIG. 17 Typical Cylinder Construction

The aircraft engine cannot function without a number of accessories, one of the most important of which is the carburetor. The working of the carburetor is perhaps more difficult to understand than the working of the engine itself. The diagram of Fig. 18 shows a carburetor in its simplest form. The full supply line is led from the fuel tank to a chamber in which there is a pivoted float. When too much fuel is coming from the fuel tank, the float shuts off the supply by means of a needle valve. From the float chamber the fuel passes to a small nozzle through a pipe bent at right angles. As air from the outside rushes into the engine under the pull of the suction stroke, it passes rapidly through a narrow channel or Venturi, and in so doing sucks

fuel from the nozzle and at the same time mixes the fuel intimately with the air. A throttle valve, controlled by the pilot, regulates the amount of fuel and air admitted to the engine, and hence the power output of the engine.

The ignition system of an aircraft engine generally consists of a high tension magneto in which coils of wire wound on an armature, rotated by gearing from the engine crankshaft, and revolving under the influence of a powerful magnet, produce electric energy. By a suitable system for interrupting the electric system and by a mechanically operated distributor, a high voltage spark is made to jump the points of the spark plug located in each cylinder at appropriate points on the engine cycle.

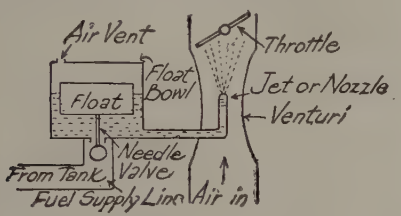


FIG. 18 Simple Carburetor

Correct lubrication is an essential part of the aircraft engine. Oil is supplied to the bearings of the crankshaft, by a pump driven from the engine crankshaft, and is led into holes drilled in bearings, and is then thrown out as a spray on the cylinder walls and the piston. After lubricating the various parts of the engine, the oil passes to the bottom of the crankcase from whence it is withdrawn to the oil tank by means of a scavenging pump. As the oil passes round and round, it is sometimes cooled by a special oil radiator.

Typical Engine Arrangements.

In the appended figure, the typical arrangements of the engine of today are illustrated. from where it goes back to the bottom of the water jackets. Designers have built water-cooled engines with three backs of 6-cylinders each, making 18 cylinders in all, and with four banks of 6 cylinders each. The two banks of 6 cylinders remain the most typical arrangement.

(b) The arrangement of cylinders in star or radial form gives a wonderfully light and compact arrangement, so this form remains very popular in spite of its head resistance and obstruction of the pilot's vision.

(c) To decrease the head resistance of the radial engine, various forms of cowling have been suggested, with the air entering at the center, but the top of the engine covered in by the streamline cowl. The use of such a cowl increases the speed of an airplane considerably.

(d) The four cylinder in line, is somewhat heavier in basic construction than the radial, but is simpler in construction, and has less head resistance. This type is becoming increasingly popular for the light plane, and for the training plane.

Future Developments of the Aircraft Engine

It is hard to forecast the future development of the aircraft engine, but competent observers predict that the Diesel engine, burning heavy, non-inflammable oil, will in a few years largely displace the gasoline aircraft engine of today. The Diesel engine besides greater safety offers the possibility of greater efficiency and lower cost of fuel. The difficulty in employing the Diesel is its weight, which is high because of the very large pressures developed inside the cylinder. The Packard Motor Company has, however, already successfully built an aircraft Diesel which weighs only 610 pounds for 200 horse

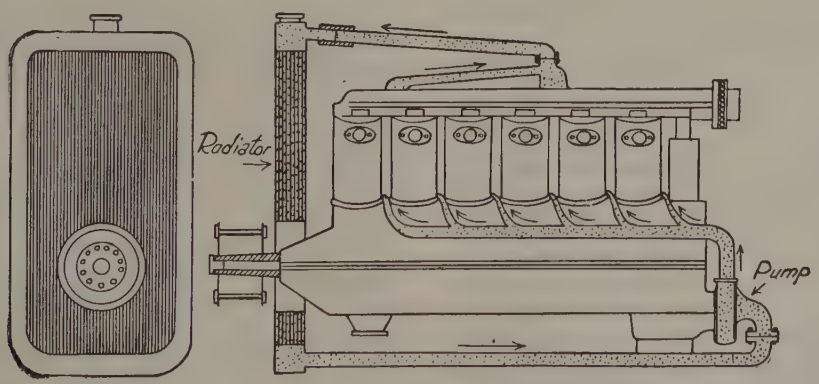


FIG. 19 Water Cooling System

(a) The diagram of Fig. 19 shows a 12-cylinder V engine of the water-cooled type, like the Liberty motor, together with its cooling system, in which water is circulated by means of a water pump. The hot water tends to rise naturally, and so the hot water from the top of the engine water jackets passes to the radiator, where it is cooled by the blast of air passing through the radiator, and then goes down to the water pump,

power. The Packard Diesel is a 7-cylinder radial air-cooled engine, but its characteristics have so far been kept jealously secret. In the more conventional gasoline engine, engineers believe that the vertical in-line engine will to some extent displace the radial engine, because the head resistance is thus diminished, and the pilot's vision is less impeded. For the very large planes of the future, water-cooled engines of over 1,000

horse power are likely to be developed. There is some possibility that some chemical having a higher boiling point than water will be used as a cooling medium.

RECENT TYPES OF COMMERCIAL AIRPLANES.

There are now some two hundred airplane manufacturers in the United States, building every variety of commercial airplane, and it is very difficult to select the most typical. A table of the characteristics of some of them is appended.

In the light plane class used for primary training and interesting to the sportsman owner, we can cite the Aeromarine-Klemm AKL-25-A. This is a two-seater monoplane, with cockpits in tandum. The spread of the wing is 40 feet 2 inches, and the over-all length is 24 feet 8 inches. The engine is a Salmson 9-cylinder air-cooled developing about 50 horse power. The high speed is about 85 miles an hour. The weight fully loaded is 1,430 pounds and the wing area is 210 square feet. The AKL-25-A is said to be a low wing monoplane because the wing is placed at the bottom of the fuselage or body. The wing is said to be tapered, because it is wider near the fuselage, where maximum strength is required, than at the top. This monoplane is said to be internally braced, because no external struts or wires are used to brace the wing. Dispensing with such external bracing diminishes the head resistance of the plane, although the weight of the wing is heavier than is the case when external bracing is employed.

For more advanced training, particularly for acrobatic work, it is customary to employ a more powerful engine. An excellent example of the advanced training plane is the "Trainer" manufactured by Great Lakes Aircraft Corporation, and powered with a 90 horse power Cerries engine. The monoplane is probably more efficient than a biplane, but a biplane is apt to give a smaller and more maneuverable craft, and the Trainer is a biplane accordingly. The instructor in such a place occupies the front cockpit, and the student occupies the rear cockpit. The wings are "staggered," the upper wing being somewhat ahead of the lower plane. This "stagger" gives better vision for the flyers, and also gives them a clear parachute jump in case of emergency. The Trainer lands faster than the Aeromarine-Klemm, but it has also a higher maximum speed, namely, 110 miles per hour.

For the long hauls and large loads of the Transcontinental air lines, it may be necessary to employ large three-engined planes (particularly when passengers are to be carried and the greatest possible security against power plant failure is needed). For shorter or feeder air lines, a smaller type of cabin plane is more popular. An excellent and typical feeder line plane is the Fairchild 71 built by the Fairchild Airplane Company. This carries a pilot and six passengers. Dual control is provided (dual control for planes of over four or five occupants now seems to be the rule). Since the weight of the plane fully loaded is 5,500 pounds, a much more powerful engine is employed, namely, the Pratt & Whitney "Wasp" of 425 horse power. The top speed is 138 miles per hour. The Fairchild 71 is termed a high wing monoplane, because the wing is placed above the body. The wing bracing is very typical of American practice and is said to be of the semi-cantilever type, with the wings supported at about midway of their length by lifting struts on either side of the fuselage. With the increase in the number of planes, our hangars are becoming crowded. In the F71 by removing a pin or two and in a few minutes, the wings can be folded back, and much less space is then required.

The main justification of the airplane is its speed. Two or three years ago a cruising speed of 100 miles an hour was considered quite good for air transport work, but requirements are growing steadily higher, and many authorities predict cruising speeds of 200 miles per hour in the next few years, in which case San Francisco will be only a night's run out of New York City. An example of this increasing requirement of speed is the Fokker Super-Trimotor which is powered with three Wasp engines of 425 horse power each. The Fokker Super-Trimotor can fly and even climb on any two of its three engines. It is a 14-place cabin monoplane with two pilots seated ahead of the cabin. The pay load is 2,250 pounds (that is load which can be commercially profitable, mail, express, and passengers) and the gross weight is 12,500 pounds. Fully loaded the Fokker Super-Trimotor can develop a speed of 145 miles per hour.

Seaplanes are becoming increasingly useful and popular. They can be either hydroairplane, flying boats or amphibions. The hydroairplane is built exactly like a land plane, but instead of a landing gear, one or two floats are used to give buoyancy in the water. In the flying boat, a regular boat hull is used both to give buoyancy and to house crew, passengers and equipment. The amphibion is a type of craft which can alight on either land or water, and is in many respects the most useful of all aircraft. It is particularly valuable for transport between large cities where the landing fields are at some distance from the center of the city, but river or other water areas are generally available in the very heart of the city. One of the best known amphibions is the Sikorsky S-38, in which wheels at the side of the main hull operate as a landing gear, but can be swung up by hydraulic means when a water landing is required.

One of the most pronounced tendencies in the construction of airplanes is the substitution of metal (particularly the light and strong aluminum alloy known as duralumin). Just as in the history of all other vehicles of transportation, it may be confidently expected that metal will ultimately displace wood altogether.

Particularly in Europe, very large planes are in process of construction. Junkers in Germany is building a 100-passenger plane, and Dornier will soon be testing a huge flying boat, equipped with twelve engines of 500 horse power each.

Recently La Cierva's Autogiro has attracted much attention by its successful flights and it is now being built in the United States by Pitcairn Aircraft. The Autogiro is neither an airplane nor a helicopter, although it resembles an air

plane in everything except the lifting surfaces. Instead of fixed wings, the Autogiro is supported by a huge four-bladed windmill, whose blades are free to rotate about a vertical shaft, and also move slightly up, so that no sidewise moments are introduced. The great advantage of the Autogiro is that while the craft as a whole may be moving very slowly, the blades are still moving rapidly and providing ample lift. As a result of this principle, the Autogiro can land very steeply and slowly and runs only a short distance after landing. This makes its use very attractive for the private flyer.

The helicopter or directly rising machine has attracted the attention of many workers, both in Europe and the United States, and is certainly a fascinating conception. The Berliner and De Bottiezat helicopters in the United States, the Pescara Damblanc and Oehmidieu helicopters in France have made short flights and shown possibilities. The difficulties of gearing in transmitting power, the inefficiency of the lifting airscrews in forward flight, and the difficulty of control while rising vertically or hovering are very great and all these inventors have ceased development work. Many well-informed authorities nevertheless believe that some day a practical helicopter will be achieved which will give man complete freedom in the air.

COMMERCIAL AVIATION.

Safety. The safety of commercial flying on regular air lines compares favorably with the transportation of passengers by automobile. Immediately after the World War a considerable stock of military aircraft remained which, purchased cheaply and employed without supervision, led to many accidents. This war material has been gradually used up or discarded to give way to modern planes, which have immensely improved in the last decade, especially in the last two or three years. The establishment of the Aeronautics Branch of the Department of Commerce with the licensing of pilots and planes, has also greatly increased safety. Another help to safety lies in the various aids to navigation now supplied by the government such as lighting and marking of airways, mapping of airways and weather service to pilots.

Flyers who attempt "stunts" for entertainment, or who run unusual risks, necessarily take their lives in their hands, and weather hazards such as gales, fogs, and thunderstorms always remain. But for aircraft operating with good ground organization, on regularly scheduled air lines the degree of safety already attained is quite remarkable, and the great majority of fatalities are confined to experimental, hazardous, or unusual conditions of aviation. Statistics as to safety are somewhat confused but a few figures will bear out the above argument. The Curtiss Company in the United States carried 4,000, and trained 60 pilots, in 1925 without a single major accident. In three years, the air mail service, which functions under all weather conditions, lost by death in flying a total of only

TYPES OF AIRCRAFT

	Type	No. of Passengers	Number of Motors	Total Horse Power	Length	Span	Wing Area	Maximum Speed	Landing Speed	Service Ceiling	Price
Keystone "Patrician"	CML	20	3	1,575	63′	90′	1,000	151	57	17,400	$90,000
Sikorsky "S-37"	CBL	18	2	1,000	45′-6″	100′	1,049	122	58	15,000	.....
Stout "4-AT"	CML	12	3	600	49′-10″	74′	785	114	55	14,000	.....
Fokker "Super-Universal"	CML	6-8	1	400	36′-7″	50′-7″	370	138	54	18,000	21,800
Loening "Cabin Amphibion"	CBA	8	1	525	34′-8½″	46′-8″	517	130	55	15,000	27,900
Boeing "40-B"	SBL	3	1	400	33′-4″	44′-2″	545	132	57	15,100	24,500
Stinson "SM-ID"	CML	6	1	200	32′	45′-10″	292	125	56	14,000	12,500
Ryan "B-1"	CML	5	1	200	27′-5″	42′	290	126	49	16,000	12,200
Curtiss-Robertson "Robin"	CML	3	1	90	25′-9′	41′	245	101	46	11,500	4,000
Alexander "Eaglerock A-2"	OBL	3	1	90	24′-11″	36′-8″	330	100	34	11,500	.....
Elias "Aircoupe"	CML	2	1	80	21′	28′-1½″	192	96	25	10,000	3,350
Fairchild "21"	OML	2	1	80	22′	28′	139	105	40	10,500	4,250

C—Closed; *O*—Open; *S*—Semi-closed; *M*—Monoplane; *B*—Biplane; *L*—Landplane; *A*—Amphibion

five pilots. In 1926, over 3,700 persons took air rides in Philadelphia at the Exposition or enroute from Washington, D. C., and points south as far as Norfolk, without a single injury. In the Aeromarine Services, 26,000 traveled from Florida to Havana with only one major accident. Four thousand persons have flown by air between Cleveland and Detroit, and 43,000 have crossed the English Channel with complete safety. These statistics are more or less typical, and it is estimated that but one death occurs for every 1,250,000 persons carried by air.

It is confidently expected that the next few years will see even greater advances in aviation safety, on the following grounds. The public, becoming acquainted with the work of the Department of Commerce, will refuse to patronize any but licensed aircraft manned by licensed personnel. The use of multi-engined planes for passenger transportation will eliminate the hazard of power plant failure. At the same time, the immense increase in the number of airports and landing fields will lessen the danger of forced landings. The Daniel Guggenheim Safe Aircraft Competition has focused the attention of designers on the construction of planes which without losing their speed qualities, will land far more slowly, and require only a short landing run. The national extension of the weather service will warn pilots of dangerous weather conditions. The dangers of fog flying are being lessened by the greater use of reliable instruments, and by the systematic instruction of pilots in "blind flying."

Air Transport in Europe. Shortly after the Great War, commercial aviation began to develop tremendously in various countries. Some typical figures will show the trend. For the year ending on May 1, 1920, aircraft transported in England some 70,000 people, on 38,954 flights, a total of 737,000 passenger miles, and in addition 116,000 pounds of goods. Valuable and perishable commodities lead necessarily, it being quite common to ship gold and money by air, but almost everything, even to a live tiger, has been carried. From London service by air radiates in nearly all directions except across the Atlantic. One can travel to almost all the European capitals, to Morocco and other points in Africa. Within six years more than 60,000 people crossed the Channel to or from England. In 1923 alone, 1,400 airplanes checked in or out of the London airport, and the value of goods carried rose to nearly $4,000,000, one-fourth of which went to Paris. In 1924, the Imperial Airways, under government control, replaced the four private companies, and under a subsidy British commercial aviation has developed fast. From the Croyden airport near London, the trip is made to Brussels in 2 hrs. 45 m., to Cologne in 5 hrs., to Hamburg in 6 hrs. 45 m., to Berlin in 7 hrs. 45 m., and to Paris in 3 hrs. or less, whereas the boat-train schedule calls for 7 or more hours.

By 1928, in England airplanes were in service or designed to carry from 10 to 40 persons. The French Farman Company carries from 12 to 20 passengers in each plane. A German seaplane is being constructed to carry 100 across the Atlantic; and the Italian Ricci quadruplane was expected to transport, under favorable conditions, at least 150 persons and 14,000 pounds of cargo as far as Brazil.

Between 1919 and 1925, commercial aviation in France increased 833 fold or from 9,124 letters to over 7,500,000. France, in 1924, had 5 companies, 9 lines, 80 pilots, 260 planes, which carried 16,728 passengers on 11,800 trips, with almost 2,000,000 pounds of freight and half as many of mail. In 1926, 35 planes were being flown, and 4,720,000 letters were carried in the first nine months. Germany increased rapidly in 1925 and 1926, with 50 lines in operation, carrying 56,000 passengers in 1926, while letters and freight increased 5 fold and distance 3 fold over 1925. England carried 21,000 passengers and 618 tons of freight over the Channel in six months of 1926. Altogether, in 1926, Europe had 33 commercial companies, most of which carried both cargo and passengers.

Air Transport in the United States. The air mail service was inaugurated between New York and Washington, D. C., in 1918. During the first year only two planes were used, one of them carrying in all 826,000 letters in 10,716 miles of flying, and for a total of 164 hours in the air. Nine contracts were let the private companies in 1926, which attained 378,000 miles by the end of the year. Between June and the end of December, 1926, the Boston-New York line covered 75,500 miles, carrying 6,600 pounds of mail; the Chicago-Dallas line covered 29,000 miles, carrying 58,000 pounds, and the Los Angeles-Salt Lake City line covered 328,000 miles, carrying 70,000, and 258 passengers.

One of the most reliable and comprehensive sources of information on American commercial aviation is to be found in the Aircraft Yearbook published by the Aeronautical Chamber of Commerce, from which the following information is largely drawn.

During the year 1928, commercial air transport in the United States underwent tremendous expansion.

At the end of 1928, there were 15,128 miles of airways in operation, with two-thirds of this mileage equipped for night flying. Twenty-two companies were operating 33 air mail lines under contract with the Post Office Department. There were 294 single and multi-engined planes in service. The mileage flown was 10,472,024 miles as compared with 5,242,839 miles in 1927. There was a similar increase in mail poundage. In 1927, the air lines carried 1,222,843 pounds of mail. In 1928, they carried 3,632,059 pounds. In 1927, 12,594 passengers were flown on regular scheduled service. In 1928, they numbered 52,934.

The tremendous increase in air mail poundage in 1928 was due to the decrease in postage, effective on August 1, from 10 cents to 5 cents for the first ounce. Many authorities predict that in time all first class mail will be carried by air, at the ordinary postage of 2 cents an ounce.

The appeal of time saving by the air mail is irresistible to business men. Air mail makes pos-

sible tremendous savings in interest on cheques and bank drafts. It is estimated that between $8,000,000,000 and $9,000,000,000 of such valuable paper will be carried by air in 1929.

The Night Transcontinental Service inaugurated on May 1, 1929, will give all cities on the transcontinental route twice-a-day service in either direction. The flying line between New York and San Francisco will now be only 32 hours. A letter mailed in New York or Los Angeles on Monday evening will be delivered on the other seaboard on Wednesday morning.

In the development of the night air mail much credit is due to the Department of Commerce, which has set up its powerful aerial beacons over immense distances, and is helping to give pilots weather service and other aids in navigation.

Airplane Manufacture. There has been an equally rapid expansion in airplane manufacture. After the war the surplus of war material purchased very cheaply for commercial purposes effectually prevented the construction of commercial planes. In 1921, not a single commercial airplane was built. In 1928, more than 5,000 commercial planes were built and 2,087 engines for commercial purposes. The retail market of this commercial production was in excess of $27,000,000. With the production of military airplanes and of spare parts, the total value of airplane manufacture was more than $75,000,000, this making airplane manufacture one of the great industries of the country.

Private Flying. A most gratifying sign of the growth of American aviation in 1928 was the increase in private flying. At the end of the year the Department of Commerce listed 4,844 licensed planes, and of this number, 3,000 were privately owned either by individuals or by corporations using them for private purposes. The most conspicuous private flyer was Colonel Charles A. Lindbergh, who, scorning to use trains or steamships, covered 65,000 miles in the year, flying to Central and South America, and crossing the continent some ten times. Several country flying clubs were formed during the year, and the movement promises to grow very rapidly. Members of flying clubs will be part owners of good light planes, and will be able to fly where they will at a cost not greater than involved in the operation of an automobile.

Other Peace-Time Work of Aircraft. Besides its work in carrying mail, freight and passengers, the airplane is rendering many industrial services. The United States Government has used airplanes for spraying poison to kill mosquitos in their breeding haunts, in killing caterpillars, and in destroying the gypsy moth in New England, the boll weevil in the South, leaf hoppers in the Southwest, and the coding moth in Oregon apple orchards. Cotton in Georgia has been dusted at the rate of from 200 to 1,000 acres a night, compared with not more than 30 by older methods, with one-fourth increase in crop yield; and peach trees have been sprayed against the "curl" disease at the rate of 200 acres an hour, compared with 8 by old hand methods.

News and pictures have been sent by air when other transportation was impossible, as in the case of pictures incident to the funeral of President Coolidge's father in Vermont during very heavy snow; news of the explosion at the Naval Arsenal at Dover, N. J.; of the Florida and Mississippi floods. A rush shipment of clothes from New York to Florida, of overshoes from Ohio to New York City during a great storm, of gold to Miami bankers at the time of the disaster there, of a woman suffering from lockjaw to a distant hospital, of a man suffering from gangrene to another, of food to an ice-bound tug in Lake Michigan, of antitoxin from New Jersey to New York—the list of airplane uses in such emergencies would fill a page.

For policing, exploring, rescue, reclamation, inspection, and other similar work the airplane has already been used numerous times. One man in a western state has his office in an airplane which he moves about at will and which serves also as his sleeping quarters, while he inspects hundreds of acres under his general management. In advertising by "sky-writing" the use of plane is well known. Other uses are in making aerial maps by photography and in aerial surveying. A mosaic map of New York City has been made with elaborate detail, some 620 square miles to a scale of 600 feet to the inch, so that every building, street, footpath, and automobile even are clearly shown. One township made an appraisal at a cost of only $22,000 by use of an airplane, whereas a similar one from the ground took four years and cost $80,000. For several years the United States Forest Service has maintained forest patrols, each covering about 300 miles, and in 1920 alone 35 pilots thus discovered 1,600 fires in western reserves.

Large industrial organizations have taken up the airplane seriously, using it in their business for sales purposes, advertising, and inspection trips by executives. For example, the directors of the Standard Oil Company of Indiana used a three-engine plane to fly 84,000 miles on inspection trips in one year. The Goodrich Rubber Company makes large use of planes in sales promotion work. Among other large corporations owning planes for commercial purposes are the Pittsburgh Plate Glass Company, the Royal Typewriter Company, the United Cigar Stores, etc.

Salesmen are buying planes to cover their territory more quickly. Doctors, in increasing numbers, are making their professional calls by air. New York business men use land planes and flying boats for commuting purposes. Timber companies, ranchers and planters make use of the airplane in many states.

MEMORABLE AIRPLANE FLIGHTS.

1903. Orville and Wilbur Wright each made two flights on Dec. 17 in biplane and engine both of their own construction. First successful flight in power-driven heavier-than-air machine with passenger without accident.

1904. Wright brothers made 105 flights. Best record 3 miles in 4 m. 30 s.

1905. Wright brothers made 49 flights. Best record 24 miles in 38 m.

1906. Santos-Dumont, a Brazilian, made biplane flight in France of 722 ft. in 21.5 s.

1908. Farman made best French record in biplane, 12.24 miles. Delagrange established biplane record in Italy, 10.5 miles. Glenn H. Curtiss

won *Scientific American* cup in biplane at Hammondsport, N. Y., 3,420 ft. Wilbur Wright, at Le Mans, France, won world's record and Michelin prize in his biplane, 77 miles in 2 h. 20 m. 23 s. at av. speed of about 34 miles.

1909. Record for speed: Glenn H. Curtiss. 18.8 miles in 23 m. 29 s. Rheims, France.
One man duration: Henry Farman. 144 miles in 4 h. 17 m. 53 s. Mourmelon, France.
Cross-country flight: Col. S. F. Cody. 40 miles in 1 h. 3 m. Aldershot, Eng.
Altitude: Hubert Lathan in Antoinette monoplane. 1,486 ft. Chalons, France.

1910. Labouchers first man to fly 200 miles without stop. Used a monoplane. 211.27 miles in 4 h. 37 m. at Rheims, France.
Paulham in biplane won London *Daily Mail* prize of $50,000 for flight from London to Manchester.
Morane in monoplane established world's record for speed at rate of 66.417 miles an hour. Rheims, France. Exceeded later in year by others.
Radley in monoplane flew 1 mile at 77.6 mi. an hour. World's straightaway record for monoplane to date.
Le Blanc in France flew circular course of 485 miles, 75 mi. in longest stage, in 10 d. 11 h. 55 m.
One man distance record: Maurice Tabuteauin Farman biplane.
Height: Leganeaux of France. 10,500 ft.
289.39 miles in 6 h. 1 m. 35 s. Buc, France.
Greatest speed: Le Blanc in Bleriot monoplane. 67.87 m. an hr., at Belmont Park, N. Y.
One man duration: Farman. 8 h. 23 m., 289 miles.
American records: Walter Brookins in Wright biplane, Chicago to Springfield, Ill., 175¾ miles in 5 h. 51 m. with two stops. Made 88 miles in one stage. No stop record, Arch Hoxsey in Wright biplane, 104 miles from Springfield, Ill., to near St. Louis, Mo. Ryan prize, for circling Statue of Liberty and returning to Belmont Park, N. Y., won by Moisant in monoplane. About 35 miles in 34 m. 38.8 s.

1911. Speed: E. Nieuport in Nieuport monoplane. 64.132 miles an hour. Mourmelon, France.
Duration: G. Fourny. 441.173 miles in 11 h. Buc, France.
One man distance: A. Gobe in Nieuport monoplane. 460 miles. Pau, France.
Altitude: R. Garros in Bleriot monoplane. 13,940. Parame, France.
Speed in vertical climb: T. O. M. Sopwith and R. Simon in Bleriot monoplane. 1,640 ft. in 3 m. 35 s.
Cross-country flight: Lieut. Jean Conneau in Bleriot monoplane. 1,073 miles in 58 hrs. 38 m.
E. Ely alighted on deck of a battleship and rose again from it at San Francisco.
Glenn H. Curtiss flew from water to land and land to water. First use of flying boats or hydroaeroplanes, as they were then called.
C. P. Rogers made first transcontinental flight. With many voluntary stops, this took from Sept. 17 to Nov. 5 to cover 3,390 miles.

1912. Speed record: J. Vedrines in Deperdussin monoplane, 107.4 an hour. Pau, France.
Duration: G. Fourny in Farman biplane, 628 miles in 13 hrs. 18 m. Buc, France.
Altitude for airships: Cohen at Conte, France, 10,102 ft.
Altitude: R. Garros in Bleriot monoplane, 19,032. Tunis, Africa.
Flying boats: Lieut. John H. Towers in a Curtiss machine remained aloft 6 hrs. 10 m. 35 s.

1913. Pegoud made first voluntary loop in air.
Speed record: M. Prevost, France, in Deperdussin monoplane, 126.59 miles an hour, and also 68.31 in 30 m.
Distance: M. Fourny, France, in a Farman biplane, 626.77 miles.

1914. Bleriot flew from Scotland to Norway. 4 hrs. 10 m.
Duration record: Bohm in an Albatross, with 100 h. p. Mercedes motor remained aloft for 24 hrs. 12 m. at Johannisthal, Germany.
Altitude: Oelrich ascended to 25,755 ft. Sikorsky in plane made by him at Leningrad, stayed aloft at 6,200 ft. for 1 hr. 26 m. 21 s., with 10 passengers, an impressive record for such conditions. With 16 passengers he remained aloft 18 m.

1915. No important civilian European records.
Victor Carlstrom in Curtiss biplane flew continuously from Toronto to Binghamton, N. Y., and then to New York City.
Duration in U. S.: B. I. Jones, of the U. S. Army, 8 hrs. 53 m., and with two passengers, 7 hrs. 5 m.
Altitude: J. E. Carberry, U. S. Army, 11,690 ft.

1916. Ruth Law made a non-stop flight from Chicago to Hornell, N. Y., 590 miles in 5 hrs. 45 m. Record for cross-country flying, and world record for endurance piloting by a woman.
A Curtiss *J. N.* plane rose to 16,500 ft.
V. Carlstrom made a non-stop flight of 661 M. in 5 hrs. 40 m.

1917. Germany tried to control torpedo boats by stationing airplanes above.
Distance: G. Laureati flew from Turin to Naples, 920 miles.
An Italian Caproni plane flew for 322 miles with 10 passengers.

1918. Regular U. S. air mail established between New York and Washington, D. C. New York, Cleveland, Chicago route attempted.
Loening 2-seated monoplane at Dayton, O., developed 145 miles speed, with load of 4 guns and equipment, and climbed to 25,000 ft. in record time.
Four army airplanes flew from San Diego to Jacksonville, Fla. First long trip in the United States in formation like this.
Altitude record: Major R. W. Shroeder, with Wright motor of 300 h. p. rose to 28,900 ft. Bristol, Eng.

1919. *NC-4*, a U. S. Navy flying boat plane went from Rockaway, N. Y., to Halifax, N. S., to Azores, to Lisbon, Portugal, and finally to Plymouth, Eng. Four 400 h. p. Liberty motors gave speed of 90 miles in air and nearly 60 on water. Distance, 4,116 miles. Manned by Com. A. C. Reed and crew of five.
Capt. John Alcock and Lieut. A. W. Brown, Eng. Air Forces, flew a Vickers Vimy bombing plane, with two Rolls-Royce Eagle engines, from Newfoundland to Ireland. First non-stop Atlantic crossing. 16 hrs. 12 m., 1,936 miles, av. speed 118 miles an hour. Alcock died by accident later in year in France.
Capt. Ross Smith flew a Vickers Vimy, Rolls-Royce engine plane from London to Port Darwin, Australia, 11,500 miles.
Major Macaulay, in a *DH-4*, made round trip from Americus, Ga., to San Diego, in total time of 44 hrs. 15 m., and Capt. White made non-stop flight, Chicago to New York, 727 miles at 106 miles an hour.
Farman Goliath plane carried 10 passengers from Paris to Morocco, 1,116 miles in 16 hrs. 20 m.
Altitude record: Roland Rohlfs climbed 30,800 ft. at Mineola, N. Y., in a Curtiss Wasp, with 400 h. p. motor, and later to 32,450 ft.
Army reliability record: Lieut. B. W. Maynard, with Sgt. W. E. Klein as passenger, Mineola, N. Y., to San Francisco, in 3 d. 6 hrs. 47 m., and return in 9 d. 4 hrs. 26 m. and 5 s.

1920. U. S. fire air patrol in Oregon and California, flying for a total of 1,995 hrs., discovered 464 forest fires.
Knight, in mail plane, carried 16,000 letters from Chicago to Cleveland in 2 hrs. 10 m., at average of 157 miles an hour.
Lieut. A. G. Hamilton dropped from Le-Pere plane by parachute, 20,900 ft. in 12 minutes.
Donald Hudson in Curtiss Wasp crossed Andes at 30,000 feet high.
NC-4, which crossed Atlantic in 1919, flew 6,690 miles in 129 hrs. flying time.
Monument dedicated to Wilbur Wright at Mons, France, where he made a world record in 1908.
Flights from Cape to Cairo, Africa; from Calcutta to Bombay; from Philadelphia to West Indies by U. S. Navy planes and back, 12,731

miles in 1, 192 flying hours with no injuries under very adverse wind and storm conditions; four U. S. *DH-4* planes from New York to Alaska and back, 7,000 miles.

Farman Goliath flew continuously for 24 hrs. 19 m. and 1,915 miles.

Speed record: Sadi Lecointe, France, at rate of 188 miles an hour.

Altitude: Major R. C. Shroeder at Dayton, Ohio, 33,114 feet, using 400 h. p. Liberty motor. Rendered unconscious by cold and rare atmosphere, he fell with plane 5 miles, but recovered in time to land safely.

1921. Larson all-metal monoplane secured world's endurance record.

Helium first used instead of hydrogen in the U. S. Navy *C-7*, a "blimp" of 181,000 cu. ft. gas capacity, at Hampton Roads, Va.

Helium has advantages of being inflammable and of not losing its value by remaining long in a gas bag.

Pulitzer Prize record: Bertrand Acosta at Omaha, Nebr., flew 153.595 miles at rate of 176.75 miles an hour in a Curtiss-CD-12 plane of 400 h. p.

Altitude record: John A. Macready in La Pere biplane, 37,800 feet (40,000 officially corrected). Dayton, O.

Parachute record: Sgt. Encil Chambers, 26,000 ft. descent in about 18 m., first 500 before silk parachute opened. Lawton, Okla.

1922. Pilotless airplane successfully flown in England, and 300 h. p. Voisin biplane in France directed by Hertzian waves.

Lieut. J. H. Doolittle, U. S. A., Atlantic to Pacific, in 20 h. 20 m., with one stop at Kelly Field, Texas for fueling.

Capts. Sacadura and Coutinho, after hardships and a cidents, completed flight from Portugal to Brazil.

Speed record: Russell L. Maughan at Mt. Clemens, Mich., at 248.5 an hour, unofficial.

Endurance: Lieuts. John A. Macready and Oakley G. Kelly, U. S. A., in Fokker monoplane, at San Diego. 35 hrs. 18 m.

Non-stop: Lieuts. Macready and Kelly, San Diego to Indianapolis, in *T-2* army monoplane, 2,060 miles.

Altitude: Lieut. Leigh Wade and two passengers, 33,350 ft.

Experiments with gliders and helicopters continued. World's glider endurance record: M. Maneyrolle in Peyret tandem monoplane.

Berliner helicopter at College Point, Md., indicated the possibility of using the same power plant and units for both upward and forward motion of a plane.

M. Pescara in France with a helicopter secured vertical motion by revolving two horizontal wings, and horizontal motion by means of a propeller.

1923. U. S. held officially 33 out of 42 world aviation records.

Non-stop record: Lieuts. John A. Macready and Oakley G. Kelly, in a Fokker Army *T-2*, flew from Roosevelt Field, N. Y., to San Diego, Calif., 2,516 miles in 26 hrs. 50 m. 48.2 s.

Speed: Lieut. J. A. Williams, U. S. N., officially timed by electricity at Mitchell Field, N. Y., 266.6 miles an hour in a *NC* (Navy-Curtiss) racing ship.

Refueling record: Capt. L. H. Smith and Lieut. J. P. Richter at San Diego. Remained in air 37 hrs., 15 m. 15 s. Furnished with 687 gal. of gasoline, 38 of oil, and 4 hot meals in air. Later they flew in one day from the Canadian to the Mexican border, including a non-stop stage of 1,300 miles.

Altitude: Sadi Lecointe in a Nieuport plane, 36,564 ft. France.

Flying boat (hydroplane): Jean Laporte, 18,159 ft. France.

1924. U. S. globe-circling flight. Each manned by a pilot and mechanic, four planes started across the Pacific. Of these, the *Seattle* struck a mountain and wrecked in Alaska, and the *Boston* had to discontinue at the Faroe Island off Scotland on the return. The *Chicago* and *New Orleans* completed the trip in 363 flying hours, 26,346 miles, between Apr. 6 and Sept. 28. Itinerary included Vancouver, the starting and finishing point, Alaska, Shanghai, Bangkok, Calcutta, Bagdad, Constantinople, Vienna, London, Iceland, Greenland, Boston, New York, Washington, and then across to Chicago, Omaha, Dallas, San Diego, San Francisco to the starting point. Lieuts. Eric H. Nelson and John Harding, Jr., piloted the *New Orleans*, and Lieuts. Lowell H. Smith and Leslie P. Arnold piloted the *Chicago*.

World endurance record: Coupet and Drouhin, 37 hrs. 58 m. 10 s.

Speed: Warrant Officer Bonnet, France, 278.48 miles an hour.

Speed: Lieut. Russell L. Maughan, U. S. Army flyer, on a third attempt, made a "dawn to dusk" flight from Curtiss Field, N. Y., to San Francisco, 4 a. m. Eastern time to 9:38 p. m. Pacific time—21 hours, 48 m. 50 s. for 2,670 miles. With five stops en route, the actual time in the air was only 17 hrs. 52 m. Contrast this with the first transcontinental flight by Rogers in 59 days with 68 stops and a longest single span of 133 miles to 575 for Maughan.

Helicopter record: Pescara in his machine, 2 propellers, Hispano-Suiza engine of 180 h. p., in France, 2,414 ft.

1925. Attempting to reach the North Pole with two flying boats, equipped with Rolls-Royce motors, Capt. Roald Amundsen and Lincoln Ellsworth, an American, were forced down at 88 degrees north and 10 west. With great difficulty they released themselves from the ice.

Donald B. MacMillan and party of eight, using three Loening amphibion U. S. Navy planes, were able to explore 30,000 sq. miles of northwest Greenland and Ellsmere island, securing much scientific data.

De Pinedo, with a Savoia amphibion flying boat, made a round trip to Australia, by way of India and Siam, returning by way of Japan, covering 34,500 miles.

Air line distance record: Com. John Rodgers and Lieut. Byron Connell, of U. S. Navy, in a *PN-9* plane, with 2 500 h. p. Packard engines, from Pablo Bay, Calif., till forced down near Hawaii, 1,730 nautical miles.

Duration and distance: Drouhin and Landry, in a Farman biplane with 450 h. p. motor, France. 2,734 miles in 45 h. 11 m. 59 s.

Speed: Lieut. J. H. Doolittle, Bayshore, N. Y., to Baltimore, Md., 245.7 miles an hour.

Duration for seaplanes: Lieuts. C. H. Schildhauer and J. R. Kyle, U. S. Navy *PN-9* with 2 500 h. p. Packard engines, 28 h. 35 m. 27 s.

Gliders: Com. Massaux in Poncelot Vivette glider at Vauville, France, 10 h. 19 m. 43.4 s.

1926. Com. R. Franco, in a Dornier Wal flying boat, flew by stages from Palos, Spain, to Buenos Aires, Argentine, 6,232 miles in 12 days. Noted for "long jumps" (five of the seven above 800 miles each), for freedom from serious accident, and for average daily speed.

Alan J. Cobham flew a de Havilland plane from Edgeware to Cape Town, South Africa, and return in about 170 flying hours, 16,130 miles. He beat the English mail steamer *Windsor Castle* on the return trip by two days, though he covered 3,000 more miles, and spent 15 days in 26 stops on the ground en route.

Alan J. Cobham also flew from London to Melbourne, Australia, and return, 26,000 miles in 320 hours actual flying time, using same plane as in his London to Cape Town flight.

Other distance flights were, Paris to Mesopotamia, non-stop, for 2,700 miles in 26 hrs. 30 m.; Paris to Omsk, Siberia, non-stop, for 2,937 miles in 29 hrs.; Paris to Djask, Persia, non-stop, for 3,415 miles in 32 hrs.; and New York to Buenos Aires, Argentine, by Bernardo Duggan, in a seaplane, for about 9,376 miles, with delays due to accidents, in actual flying time of 114 hrs.

Com. Richard Byrd and Floyd G. Bennett, in a Fokker three-engine plane equipped by the Ford Company and named the *Josephine Ford*, flew from Spitzbergen to the North Pole and back, 1,550 miles, in 16 hrs. The new

Bumstead sun compass directed their course precisely.
Two airplanes, with engines running were launched from the British dirigible *R-33*.
U. S. Navy Officers, in five amphibian planes, made a good-will tour of Mexico, Central and South America, covering 22,106 miles in 273 hrs. 15 m. actual flying time.

1927. Dole race to Hawaii from Oakland, Calif., won by Arthur Goebel and W. V. Davis in 26 hrs., 17. m., and 33 s.
Glider distance record: E. Chattanes in a *GO-1* glider, near Varese, Italy, 38,474 ft.
Charles A. Lindbergh flew alone from Roosevelt Field, New York, to Paris by way of Newfoundland, Ireland, and England, making a non-stop record of 3,610 miles in 33 hrs. 30 m. Average speed, 107.5 miles per hour.
Com. R. E. Byrd, with three companions, made record transatlantic flight, New York to France, 3,477 miles in 46 hrs. 6 m. Altitude record: R. Donati, in Italy, 38,792 feet.

1928. Record solo and other flights from England and California to Australia.
Capt. G. H. Wilkins and C. B. Eielson flew from Point Barrow across the Polar Sea to Spitzbergen, 2,200 miles in 20 hrs. and 30 m. Later they flew across the Antartic regions.
Juan de la Cierva flew his autogiro from London to Paris.

1929. Com. R. E. Byrd, with two aides, flew across the South Pole, giving Byrd the unique distinction of flying over the Atlantic and over both Poles.
A. H. Orelbar in England established record of 357.5 miles an hour. Col. and Mrs. C. A. Lindbergh made valuable aerial photographs of western pueblos, and of ancient ruins in Mexican jungles.

1930. Led by the Italian Air Minister, 14 Italian seaplanes flew to Brazil, then to the United States, and back home by the northern route. As one of his many records, Capt. F. M. Hawks, flew from Los Angeles (with three stops) to New York in 11 hrs. 47 m. flying time.

1931. Wiley Post and Harold Gatty circled the globe in 8 days 51 m. but only 4 days real flying time. Magellan, ending in 1522, took 1,083 days; Drake 31 less in 1580; Nelly Bly, 72 in 1889; and J. H. Adams 35 in 1913.
Amelia Earhart flew her autogiro from Newark, N. J., to the Pacific and return, 11,000 miles in 150 hours.
U. S. Army planes demonstrated strength and skill in flight from the eastern coast to Chicago and return—672 craft, flying nearly a million airmiles without mishap.

1932. Many records were broken—chief being flight of Amy Johnson Mollison from England to Cape Town; a new altitude record of 43,976 feet by Capt. Cyril Unwins in England; and Capt. Roscoe Turner broke all records from Pacific to Atlantic.
Amelia Earhart, from Newfoundland to Ireland, was first woman to fly solo across the Atlantic, in 13 hrs. 30 m. Congress gave her a Distinguished Flying Medal.

1933. Wiley Post, in first solo flight around the world, 15,600 miles in 11 hops, 7 days and 18 hrs., lowered his and Gatty's record by 21 hrs.
At 45 C. below zero and 30,000 feet in the air, two planes secured remarkable photographs in circling Mount Everest.
Col. and Mrs. C. A. Lindbergh crossed the north Atlantic by Greenland, then down to Africa, and back by south Atlantic to Brazil.
Col. Roscoe Turner broke all sustained speed records, covering 2,520 miles from Los Angeles to New York, in 9 hrs. 50 m. actual flying time, at average of 271 miles an hour.

1934. French fliers discovered ancient city, perhaps of Queen of Sheba, with 20 towers and temples plainly visible, in the jungles of Africa.
Soviet pilots rescued 102 Russian castaways of Wrangle Island expedition on moving Polar ice floes.
Pres. Roosevelt cancelled all airmail contracts, turning the mails over to Army pilots. After several deaths and other casualties, private firms were again allowed to bid.
Richard du Pont piloted a glider from Elmira, N. Y., to Somerset, N. J., 155 miles, a record for gliders, and later he also established a record height, 6,244 feet.
Maximum speed for 3 kilometers (1864 miles), Francesco Agello, Italy, Oct. 23, at 440.6 miles per hour.

1935. D. W. Tomlinson, in 11 hrs. 6 m., broke transcontinental transport plane records, and also eight world records.
Wiley Post flew 2,250 miles in 8 hrs. 4 m., at average of 279 miles an hour.
Piloted by an English aviator for the Italian Navy, an autogiro took off from an ordinary cruiser, and landed on it again.
Al and Fred Key established endurance flight record of almost 27 days, covering over 50,000 miles.
World altitude record, Anderson and Stevens, U. S. A., Nov. 11, at 22,066 meters (72,394.8 feet).

1936. Capt. James A. Mollison, Atlantic time record, from Harbor Grace, Newfoundland to Croyden, England, Oct. 29, 2300 miles, in 13 hrs. 17 min., at 177 miles per hour.
China Clipper initiated trans-Pacific regular service, from Alameda, Calif. to Manila and return, 8200 miles, going Oct. 7 and return, Nov. 22.

BALLOON AND AIRSHIP RECORDS.

1783. Mongolfier brothers made the first balloon and de Rozier first navigated one as pilot.

1785. J. P. Blanchard, a Frenchman, with Dr. John Jeffries, an American, as passenger and backer, crossed by balloon from Dover, England, to France. Prof. Charles used hydrogen for inflation.

1821. Charles Green first used coal gas for inflating balloons.

1836. Green, Robt. Holland, and Monck Mason flew 500 miles from London to Duchy of Nassau, Holland, in 18 hrs. A balloon was called a "nassau" afterward.

1852. Henri Giffard developed an airship with two propellers and a rudder.

1862. Glaisher and Coxwold made unofficial record ascent of about 7 miles. At 29,000 Glaisher became unconscious, and Coxwold nearly so later, pulling the valve rope with his teeth to let out the gas.

1870. Duel between French and German balloon, probably first in warfare.

1870. Balloon with two pilots driven from Paris to Norway, 600 miles in 13 hrs.

1872. Depuy de Lome completed a "dirigible" balloon with enormous propeller managed by eight men.

1884. Capts. Krebs and Renard made several trips in their airship.

1897. A. S. Andrée, of Sweden, scientist, with two companions, lost in attempt to reach the North Pole by balloon. Their fate was unknown until their bodies were discovered in 1930 on White Island.

1900. Count F. von Zeppelin made his first rigid airship.

1900. Count de la Vaulx flew a balloon from France to Russia, 193 miles in 35 hrs. 45 m.

1901. Santos Dumont, a Brazilian, won a prize of 4,000 pounds for successfully circling the Eiffel Tower, Paris, after several attempts. Built 14 dirigibles and several airplanes at his own expense.

1901. Dr. Surig and Prof. Berson, Germany, ascended 35,600 ft. in a balloon, a record for all aircraft till 1921, and for balloons till 1927.

1906. Count F. von Zeppelin navigated a rigid airship for 200 miles in 8 hrs.

1907. English airship, *Nulli Secundus*, flew over London at 30 miles an hour.

1908. Col. Schaesk made record of 72 hrs. from Berlin to coast of Norway.
A balloon flew from England to Russia, 1,117 miles in 31 hrs. 30 m.

1909. Duration record in U. S.: Harmon and Post, St. Louis to Edina, Mo., 48 hrs. 26 m.

1910. Walter Wellman, with four companions, in non-rigid *America*, rescued in mid-Atlantic by passing boat. Their balloon disappeared in air.

1911. Lahm and Hart, American balloon race, flew 480 miles in 22 hrs. 26 m.
The Zeppelin Company inaugurated passenger service, which by 1914 had carried 34,000 people without mishap.

1912. Emile Dubonnet flew from France to Russia in one day, 1,216 miles.
Rumpelmeyer established world's record by floating from Paris to Russia, 1,492 miles. H. Kaulen, Germany, established duration record of 87 hrs. in a balloon.

1914. Berliner balloon established record of 1,896.9 miles.

1917. A Zeppelin made a non-stop flight of 4,295 miles from Bulgaria to Central Africa and return, in 95 hrs., at av. speed of 57 miles.

1918. Of 67 Zeppelins used in World War, only 10 survived—34 lost by accident, 17 by enemy attack, and 6 by capture.

1919. The English *R-33*, of Zeppelin type, with 32 aboard, flew from near Glasgow to Mineola, N. Y., in 108 hrs. 12 m., at av. speed of 33.25 miles. Returning in 72 hrs. 3 m.
Goodyear dirigible, U. S. Navy *C-5*, flew from New York to Newfoundland, 1,115 miles.

1919. Two Zeppelins in less than five months carried 2,380 passengers, 11,000 pounds of mail, 6,600 of freight and express, and covered over 32,300 flying miles in 553 hours.

1920. *D-2*, a Goodyear airship of U. S. Army, flew from Akron, O., to Washington, D. C., 444 miles. Length 500 ft., width 58; cruising radius, 500 miles.
L-21, a Zeppelin, on trial trip, carried 85 passengers 10 hrs. at 8,200 feet altitude. Another, after assignment to Italy, the *L-120*, claimed a record of 105 hrs. flight.

1921. Small Goodyear airship (pony blimp), 95.5 by 28 ft., fitted with Lawrence 3 cyl. 50 h. p. engines, and with gas capacity of but 35,000 cu. feet, had a cruising range of 450 miles.
R-38 built by British Royal Aircraft Works for the United States, once the world's largest airship, on trial test before delivery, collapsed, exploded, and fell into the Humber River, killing 44 of crew.
Helium tried for *C-7*, a non-rigid airship; used finally in quantity in the *Shenandoah* in 1924.

1922. International (Gordon Bennett) Balloon Race won by Belgium, 852.33 miles in 25 hrs. 40 m.
Airship *Roma*, built in Italy and sold to United States, fell at Hampton Roads, Va., struck high tension electric wires and caught fire, burning to death 34 of crew of 45.

1923. French dirigible *Dixmude*, later lost mysteriously in the Mediterranean, flew 4,500 miles in 118 hrs. 41 m. without stopping.
Belgium won International balloon record for third year.

1924. National (Goodyear) balloon race won by W. T. Van Orman and C. K. Wallom, 1,072 miles in 44 hrs. 4 m. 44 s.
ZR-3, now called *Los Angeles*, with 32 aboard, flew from Germany to Lakehurst, N. J., without stop, 5,066 miles in 81 hrs. 17 m., at av. speed of 55. Atlantic crossed in 64 hrs.
The ill-fated *Shenandoah*, wrecked in 1925 in Ohio, made longest trip to date as first rigid airship built in the United States. After making numerous short test flights, it crossed from Lakehurst to Fort Worth, Texas, thence to San Diego, to Canadian border in Washington, and back to Lakehurst, a round trip of 9,317 miles in 235 hours record flying time. Moored to improvised masts en route and subjected to almost every condition of navigation and weather.
Duration and distance: both won by Georges Cormier, France, 22 hrs. 34 m., and 496.69 miles.

1925. *Los Angeles* made round trip to Bermuda and back, and moored successfully to *U. S. Patoka*, only ship afloat with mooring masts for such craft.
International balloon race again won by Belgian pilot, 835.7 miles.
Shenandoah wrecked in a line storm near Caldwell, Ohio.

1926. W. T. Van Orman and W. W. Morton, in a *Goodyear* balloon, won both the International (Gordon Bennett) and the National (Goodyear) records for the season. International record, 534.9, using for inflation 60% water gas and 40% hydrogen, national record 848 miles.
Capt. Roald Amundsen realized his life-long ambition to see the North Pole as well as the South, which he visited in 1911. With Lincoln Ellsworth, an American, and Col. Umberto Nobile, as commander, with a crew of 19 men, Amundsen dashed across the Pole from Spitzbergen to Teller, Alaska, 75 miles northwest of Nome, 3,400 miles in a non-stop flight lasting 71 hrs.

1927. Capt. H. C. Gray, U. S. Air Service, attained an altitude of 28,510 feet in a balloon at Scott Field, Ill. Lost his life by failure of oxygen supply.

1928. Italian semi-rigid airship, after circling North Pole, was wrecked on return, and most of crew were rescued after a month on the ice. (See biographies of Nobile and Amundsen).

1929. The *Graf Zeppelin* in 21 days circled the world.

1930. The English *R-101*, on maiden trip to India, exploded over France, killing all but seven aboard.

1931. Prof. Auguste Piccard and Charles Kipfer, in aluminum sphere, attached to a balloon, ascended to 51,775 feet, a new record, bettered in 1932 by almost 2,000 feet.

1932. The *Graf Zeppelin*, on June 28, completed her 250th flight, 261,000 miles, carrying in all 16,000 persons, 13 tons of mail, and 33 of freight.

1933. The *Graf Zeppelin* made new record of 72 hrs. 40 m. Germany to Brazil.
U. S. Navy, *Akron*, largest aircraft afloat, wrecked by storm off New Jersey, only 4 of crew of 78 being rescued.

1934. Three Russian balloonists, having risen to 72,178 feet, were killed in the descent by smashing of the gondola.
U. S. *Macon* made record trip across country, Sunnyside, Calif., to Miami, Fla., 54 hrs. 48 m.

1935. *Macon* wrecked off coast of California.

1937. German airship, *Hindenburg*, burned at landing field, Lakehurst, N. J., on May 7, with 36 killed of total of 99 aboard.

TERMS USED IN AERONAUTICS

(Standardized by National Advisory Committee for Aeronautics, but here simplified for general readers. Terms are explained only with regard to their use in aeronautics.)

Aerodynamics. Science treating of the flow air and the forces exercised on solid bodies by air in motion.

Aeronautics. Knowledge and skill applied to flight of aircraft.

Aerostat. Any aircraft lighter than air, like balloons and airships.

Aerostatics. The science of lighter-than-air craft.

Aerostation. Art of managing lighter-than-air craft.

Aileron. Hinged or pivoted surface placed at rear outer part of a wing, which, on being moved, tends to impart a rolling movement to the airplane.

Aircraft. Any device designed to fly through the air, including balloons, airships, and airplanes.

Airfoil. Any surface intended to be projected through the air so as to bring about useful dynamic reaction or support.

Airplane. Craft heavier than air, fitted with wings, propelled by an engine, and supported by dynamic action of the air upon wings and other exposed parts.

Airplane, pusher. Plane having propeller in rear of the main surfaces or wings.

Airplane, tractor. Plane having propeller in front of the main surfaces or wings.

Airport. Any place on land or water fitted for landings and takings off of aircraft, with facilities for the repair and refueling of such craft, and for the comfort of passengers.

Airship. Aircraft of the lighter-than-air type with propelling system and some means of controlling the direction of motion, differing in these regards from a free or merely floating balloon.

Airships, types of. Non-rigid airships are held to form by the internal pressure of gas bags and balloonets. The rigid is held in shape by a metallic internal structure. The semi-rigid combines elements of both types, combining a rigid keel with internal gas pressure to maintain their form.

Air speed. The rate of motion of an aircraft relative to the air. The air-speed indicator shows the rate of motion relative to the air.

Airway. Air route between ports or landing places.

Altimeter. A device that indicates the height of aircraft above sea level, and is based on the principle of the aneroid barometer.

Amphibion. An airplane designed to rise from either land or water and to alight on either.

Anemometer. An instrument designed to measure the speed of the air current or airstream.

Angle, critical, drift, etc. The critical angle is the angle of attack or incidence at which an airfoil attains its maximum lifting capacity. The drift angle is the angle between the longitudinal axis of an airplane and its path relative to the ground.

Apparatus, water-recovery. Device carried on airships for condensing and so recovering the water contained in gases exhausted from the internal combustion engines. By saving this water and maintaining the weight of the airship at a constant value, in spite of fuel consumption the release of gas from time to time is obviated.

Axes of aircraft. Fixed reference lines indicating the position of the plane from right to left, front to back, or up and down, with regard to normal or some fixed position.

Bag, gas. Skin or rubber container of gas in a balloon, or airship.

Ballast. Any substance, like sand or water, carried for release from a balloon or airship when it is necessary to rise higher. Conversely, gas is released from the gas bag or bags when it is necessary to drop to a lower level.

Balloonet. Bag containing air, placed within the gas bag itself, for the purpose of increasing the pressure within the balloon and keeping it from denting, crumpling, or otherwise getting out of a required shape. Air can be let out of the balloonet for ascent, or into it by means of an air scoop for descent. Must not be confused with gas bag, which contains gas only, whereas the balloonet contains air only.

Balloon. Any aerostat, or craft depending on buoyancy for its support and not provided with mechanical means of locomotion.

Balloon, free. Usually round in shape, caused to rise by release of sand or water bags, and caused to sink by release of gas from the bag. Its direction of flight depends on the wind.

Balloon, dirigible. A balloon that can be steered by an operator. Term should not be applied to an airship.

Bank. To incline an airplane sideways. To right bank, then, is to incline the airplane by forcing the right wing downward. As a noun, bank describes the position of the plane when its lateral axis is inclined to the earth's horizon.

Bar, suspension. One to which ropes are attached for supporting below the basket or carrier for passengers, ballast, cargo, etc. of a balloon.

Basket. Carrier, usually of a free balloon, for passengers, etc.

Biplane. An airplane with two main supporting surfaces one above the other. A triplane has three, a quadruplane four surfaces and so on, but more than three surfaces are rarely used.

Blimp. Slang name for a small non-rigid airship.

Body. The fuselage, or hull of an airplane, including the place for pilot, passengers, cargo, apart from wings and tail of the plane. A short enclosed shelter for passengers or power units is called the nacelle.

Buoyancy. Upward air force of an aerostat or lighter-than-air craft. It equals the weight of air displaced minus the weight of gas contained in the bag.

Cabane. Usually applied to framework for supporting the wings at the fuselage or hull of an airplane.

Capacity, gas. The volume of gas contained in the collection of gas cells of a balloon or airship. It varies under different conditions of pressure and inflation as determined by the operators or by changes in external air forces.

Car. Part of an airship designed to carry passengers, cargo, or supplies. It may be suspended or placed close up against the buoyant portion or main envelope. Name does not apply to parts for similar purpose fitted as a keel of a rigid or semi-rigid craft.

Cell, gas. One gas container or bag fitted in a rigid airship. The number varies from one or a few to a score or thirty.

Cloth. Untreated fabric before it is coated with some preparation for use in aircraft.

Cockpit. Space for pilot and passengers; when housed or enclosed, it is often called a cabin.

Compartment, control. Space or compartment of an airship where the operating machinery or controls are located. Like the pilot house of a ship.

Controls. Any devices for the pilot to use in directing the speed, direction, and attitude of an aircraft or its power plant.

Control stick. Often called "stick" simply. Vertical lever by which both the lateral and horizontal controls are operated. Moving forward or backward the stick controls pitching movements; moving the stick to one side or the other controls the rolling movements.

Control surface. A movable part of airfoil which the pilot moves to change the attitude of the airplane or airship.

Crow's-foot. System of diverging ropes in a non-rigid airship that distribute the pull or force of a single rope. By such an arrangement strands of rope or cord can be cemented to a fabric surface.

Deflation. Act of releasing or removing gas from the balloon or air from the balloonet.

Diaphragm of balloonet. Fabric partition within the envelope separating the gas compartment from the air compartment or balloonet in a rigid or semi-rigid aircraft.

Dirigible. As applied to balloon means steerable or manageable by man. Should not be applied to an airship.

Displacement. Weight or volume (mass) of air replaced by gas used for inflation.

Dive. Steep descent, with or without motive power, in which the speed of the craft exceeds that of the maximum in horizontal flight. A nose dive is one at an angle approaching 75 degrees or more with reference to an upright position or angle of 90 degrees. See glide.

Dope. Liquid substance applied to surface of an airplane cloth to make it stronger, air-proof, or tighter; or liquid applied to a rubberized airship fabric to increase gas-tightness.

Drag. Component parallel to the relative wind of the total air force of an aircraft or airfoil.

Drift. The lateral or side speed of an aircraft due to air currents.

Duralumin. An alloy of aluminum with small percentages of copper, manganese, and magnesium, now much used for airship and airplane construction. Has great strength for light weight.

Dynamics. Science of forces both in equilibrium and motion, and of the relative effects produced by increasing motion.

Dynamic factor. Ratio between load carried by

aircraft or any part of one when maneuvering as compared with the basic load in normal flight.

Elevator. Movable auxiliary airfoil, which gives a pitching motion to the aircraft.

Endurance. Maximum time an aircraft can remain in the air at a given speed and a given height.

Engine, rotary. An engine with cylinders arranged radially and moving round a common fixed crankshaft.

Envelope. Outer covering, usually treated fabric, of an aerostat. It may contain gas, or may enclose other gas bags or cells; and it may contain air cells or balloonets.

Fabric. Cotton, silk, or other cloth treated by rubber and other dope from which airship and airplane envelopes and wings are made.

Fabric (gold beater's skin). Layer of light, fine cloth like cotton, inside of which goldbeater's skins have been cemented and covered with varnish. It is used for gas cells of rigid airships.

Factor of ultimate safety. Ratio of ultimate safety of any part to the total load or strain it is likely to bear in actual use.

Fin. Some fixed vertical surface attached to increase stability, like a tail fin or skid fin, etc.

Flap. Drip flap is a ring of fabric arranged around the envelope so that it sheds water as eaves on a house. Pressure flap is a fabric valve in the envelope to allow air to pass in and out rapidly to stabilize the pressure and keep the balloon or airship on a level course.

Flying boat. Type of seaplane having a hull or hulls which shelter the personnel as well as providing flotation. On the ordinary or center type of hull, lateral stability is provided by tipfloats placed under the wing.

Free balloon. Ordinary round balloon from which ballast and air can be released, but dependent on the wind for velocity and direction.

Fuselage. The structure, roughly streamline in form, which carries passengers, engine, fuel, etc., and to which the wings and tail of an airplane are fixed.

Gap. Perpendicular distance from upper wing to the one below.

Glide. A descent or to descend at an angle without power or in a craft without an engine, according to laws of gravity.

Glider. Aircraft similar to an airplane, but lacking an engine or power plant.

Ground-speed meter. An instrument for measuring the speed of an aircraft with regard to the ground.

Hangar. Any shelter for housing aircraft, but more accurately applied only to heavier-than-air craft.

Height, pressure. Height or altitude at which gas cells of a rigid airship are full, or the gas bag of a non-rigid balloon is completely filled with gas.

Helicopter. Any aircraft supported in the air entirely by force or thrust produced by rotating airfoils. Has the advantage of rising vertically or nearly so, and for this reason requires only a small landing field.

Hull. Main framework of an airship, including gas cells; part of a flying boat (seaplane) used for housing passengers and cargo and for providing flotation on the water.

Inclinometer. An instrument showing the attitude of an aircraft, whether with regard to the vertical plane through the fore-and-aft axis, or the lateral as to side dip on left or right, or in both planes.

Indicator. One of various instruments designed to indicate the fullness of gas cells, the speed of an airplane, etc.

Keel. Of an airship, the structure at the bottom of the hull providing strength against disabling elements and also a means of distribution of the loads along the hull.

Kite. Any aircraft heavier than air, held by a towline and kept aloft by relative strength and movement of the wind.

Landing gear. Understructure which supports the aircraft on land or water or keeps it from damage when landing or taking off. The common forms are boat type, float type, skid type, and ski type. Some amphibion (land and water) airplanes have combinations of floats or boats with skis or wheels.

Landplane. Airplane capable of landing only on the ground.

Lift. Component or part of the total air force exerted on an aircraft, or some part of it as specified, which is perpendicular to the relative wind and in the plane of symmetry.

Lift of a gas. Difference, under same conditions, between density of the gas and of air. The dynamic lift is that impressed on an aerostat by aerodynamic forces.

Lift, useful. Net lift available after deducting weight of the craft, for crew, fuel, oil, cargo and passengers, and equipment.

Line. Any rope used to grasp objects, to moor the craft, to steady it, to stabilize it, or control it.

Load. Useful load is the weight of crew, fuel, oil, cargo, passengers and equipment. Full load is the weight of the craft plus useful load. Basic load is load on an aircraft at rest or in steady flight. Pay load is the weight or useful load from which revenue is derived, such as passengers and freight.

Lobe. An air or gas inflated bag fitted at the stern of some aircraft like a kite or balloon to give it stability.

Maneuver. To change the attitude or relative positions of an aircraft at will of the pilot.

Monoplane. An airplane of but one main supporting surface, which may be divided into two parts by the fuselage.

Mooring mast. Tower to which an airship may be moored at the top. Some have ways for passengers to go up and down and piping for gas and other motor supplies.

Mooring, three-point. System of anchoring an airship by ropes going to three stakes arranged in the form of a triangle. Takes the place of a mooring tower.

Multiplane. Airplane with two or more surfaces placed one above another.

Nacelle. Enclosed shelter for passengers or power plant, usually not as long as the fuselage, and not supporting the tail.

Net. Of a balloon or airship, rigging made of ropes and heavy twine around the envelope and supporting below the weight of the basket which carries the crew, passengers, ballast, and other equipment.

Nose dive. See dive and glide.

Nose heavy. Condition of an airplane in normal flight whereby the craft would go into a nose dive, or the nose would drop, if the longitudinal controls were released or broken.

Ornithopter. Heavier-than-air craft supported and propelled by the flapping of wings. Long the dream of inventors, before the modern airplane was made.

Over-all length. Total distance from extreme point of propeller to extreme end of tail of any aircraft, especially of an airplane.

Pancake, to. Method of leveling off an airplane at a higher point than normal and descending to earth on a steep path, with wings at a large angle of incidence.

Panel of an aerostat. Unit piece of fabric of the envelope or outer covering.

Panel, rip. Strip fitted into upper part of envelope, which may be ripped out when immediate deflation is desired.

Pontoon. Name formerly used for a float.

Proofing. Material incorporated into a fabric to increase its strength and to prevent leakage of gas through it.

Propeller. Rotating mechanism or blade which provides the propulsive force for an airship or airplane. It operates on the air as the propeller of a boat does on the water.

Pusher airplane. One with propeller mounted in the rear of the main supporting surfaces.

Quadruplane. An airplane with four surfaces, placed one above another.

Range. Distance an aircraft can cover without refuelling or landing.

Rate of climb. Upward or vertical velocity with reference to air.

Rigging. Attachment and adjustment of car, rudders, valves, controls, and other elements of an airship; or the similar arrangements of parts of an airplane.

Rope, drag. Any rope used to act as brake or variant ballast of a balloon in making a landing; on airships a similar device to help the crew in landing or hauling down the craft.

Rudder. Movable part or airfoil, usually attached to end or tail of an aircraft, to assist the pilot in directing or yawing the craft.

Sag. Distortion of airship so that both ends rise higher than the middle.

Seaplane. Any airplane designed to alight on the water and rise from it. Name applies to both boat and float types, though the latter is often designated as flying boat.

Skid. Runner used as part of landing gear to enable the aircraft to land, or to taxi over the ground. Tail skids and wing skids protect the tail and wings from harm by hitting the ground.

Sky writing. Making letters or figures from smoke emitted by the airplane as it is maneuvered for this purpose.

Slipstream. Stream of air driven astern by the propeller.

Soar. To make sustained free flight without self-propulsion.

Span. Lateral dimension of an airfoil; maximum distance across an airplane parallel to lateral axis and including the ailerons, or movable auxiliary surfaces.

Spin. Maneuver consisting of a combination of roll and yaw with the longitudinal axis inclined steeply downwards.

Spiral. Maneuver of airplane in which it descends along a path like a giant screw.

Stability. That property of a body which tends to cause it to return to a normal position after it is displaced from such a position.

Stabilizer. Horizontal fixed airfoil that gives the airplane longitudinal stability. Called also the tail plane, because it is usually located in the rear. The fin of an aerostat is called a stabilizer.

Stall. Condition of an airplane which has lost the air speed necessary for support of control, because its wing is at too great an angle relative to the direction of motion.

Statoscope. Instrument which records small changes in altitude of any aircraft.

Streamline. Path of small part of a fluid in relation to a solid body with respect to which the fluid is moving. The term is also commonly used of such flows as are not eddying or disturbed.

Streamline flow. Steady flow past a solid body.

Surface, control. Movable airfoil or surface which the pilot can rotate to change the attitude of the airplane or airship.

Tail (airship) Same as stern.

Tail-heavy. Condition in heavier-than-air craft in which the pilot has to move the control stick forward to maintain a given attitude; otherwise, if left to itself the tail would sink.

Tail-slide. Backward and downward motion of an airplane after stalling. Sometimes incorrectly called a tail spin.

Taxi, taxy. To run an airplane over the ground as in landing or taking off, or a seaplane over the surface of the water.

Trim. Attitude of an aerostat or lighter-than-air craft relative to fore and aft horizontal plane. When the forward end is down, the aerostat is said to have "trim by the bow"; when the after end is down, to have "trim by the stern."

Triplane. Airplane with three supporting surfaces, one above another.

Valve. Any device for releasing gas and gas cells, air from balloonets, or air or gas from the envelope of an airship or balloon.

Vertimeter. Device for measuring the rate of rise and fall of an aerostat.

Volume. Space occupied, measured in cubic feet or cubic inches.

Warp. To change the form of a wing by twisting it; lateral control of an airplane was formerly achieved by warping the ends of the wing.

Weight. Variously computed as that of engine without fuel or oil, of the aircraft with or without load, of necessary ballast, or units of gas or air, of an engine per each horse power, etc.

Wing. Whole or part of supporting surfaces of an airplane, often spoken of as right wing, upper wing, etc.

Wing heavy. The condition of an airplane in which either the right or left wing would drop, were the lateral control released or broken.

Wing surface. Total area of the supporting surfaces or wings, generally expressed in square feet.

Zoom. To climb for a short while at an angle to the earth's horizon greater than could be maintained in steady flight.

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LEADERS IN AVIATION

Colonel Charles A. Lindbergh

Orville Wright

Glenn H. Curtiss

Commander Richard E. Byrd

Photos by Ewing Galloway.

MODERN AERONAUTICS

1 U. S. Army Training Plane. 2 North American Q-47A in flight. 3 Pan-American Airway's "Dixie Clipper." 4 Curtiss P-36 in action. 5 Douglas DB-7 twin engine light bomber.

PHYSICS.

Physics is the science which treats of the related phenomena of matter and energy. It is not so much a science dealing with matter or with energy alone but one that involves a study of the underlying principles which operate in this universe in which we have our being. All physical phenomena are the results of the operation of physical laws and a careful scientific investigation of these laws not only leads to a better understanding of the actual happenings in this world of ours but also enables us to make practical applications of these underlying principles with which we can conquer nature and make the world a more habitable place in which to live. To love Physics for its own sake one must either be full of a spirit of curiosity regarding our existence, or imbued with an intense desire to serve his fellow men in some such way as devising a new instrument to save the labour of man's hands or discovering a means of saving man's life from disease.

Physics has many ramifications into some other sciences such as Astronomy, Geology, Chemistry, Biology, and Medicine. This sometimes becomes so extensive as to form a separate department of study such as *astrophysics, geophysics, physical chemistry* and *biophysics.* Although originally with the ancients it was included under the study of Philosophy, it has now developed, especially during recent years, further than any other science and includes highly developed *departments such as mechanics, sound, light, heat, magnetism* and *electricity.* There is no commercial industry today nor any productive activity of man such as that of mining or farming which does not involve the **Science of Physics.** To be an efficient and productive worker today, it is essential that one studies its laws and principles. Moreover only in its development by new investigations and research can man ever hope to make any progress in solving the riddle of the universe. It is this pursuit that has produced some of the world's greatest physicists and philosophers such as Archimedes, Galileo, Sir Isaac Newton, Huyghens, Cavendish, Coulomb, Faraday, Gauss, James C. Maxwell, Sir Joseph J. Thompson, Michelson, Sir Ernest Rutherford, Millikan and many others.

DEFINITIONS OF PHYSICAL TERMS.

MECHANICS.

That branch of Physics which treats of the motions of bodies and the causes of changes in these motions. The part that deals merely with the geometrical properties of the different kinds of motion is called *Kinematics,* while *Dynamics* deals with the change in the motion produced by applied forces. Statics is that subdivision which deals with cases where although force is applied, the body remains at rest. Under Mechanics comes the systems of fundamental and derived units. The former are the units of length, mass and time and there are two systems of length and mass, namely the English and the Metric. The *derived units* include the units of *area, volume, velocity, acceleration, force, work* and *power.* These are complete in the English and Metric systems. Mechanics also includes the study of translation and rotation, work and energy, periodic motions, equilibrium, friction and the principles of machines.

Acceleration. Increase in the velocity of a body. The acceleration of a falling body, or of one dropped from a height, caused by the attraction of the earth (gravity) is 32.2 feet per second. In calculations and formulae this is represented by g.

Adhesive forces. Molecular forces which bind unlike kinds of molecules together.

Brittleness. The physical property of matter by virtue of which it tends to break readily under the influence of a sharp blow.

Capillarity. Peculiar action by which the surface of a liquid, where it is in contact with a solid, is elevated or depressed; so called because the phenomena are best seen in tubes of such small diameters that they are comparable to a hair. Also known as capillary attraction.

Center of Gravity. That point in which, if the whole mass of the body were centered, the attraction of gravity would remain unchanged. The center of gravity of a square, rectangle, rhombus, or rhomboid is at the intersection of its two diagonals; of a circle, ellipse, or regular polygon, at the center of the figure; of a semicircle, the radius multiplied by .4244 will give the distance from the center on the radius erected perpendicular to the diameter; at the center of a cube, parallelopiped, cylinder, prism, sphere, spheroid, or ellipsoid; of a right pyramid or cone, in its axis one fourth the distance from the base.

Coefficient of Friction. Constant ratio of force applied over weight.

Cohesive Forces. Molecular forces which bind like kinds of molecules together.

Density. Ratio of mass, or quantity of matter, to bulk or volume, especially as compared with the mass and volume of a portion of some substance used as a standard.

Ductility. The physical property of matter by virtue of which it can be drawn down into thinner wire.

Dynamics. Branch of mechanics which treats of the motions of systems or of particles. It regards mass, forces, constraints, velocities, and positions. It tells about the circumstances under which certain motions take place. Dynamics is divided into statics and kinetics.

Elasticity. The characteristic property of matter of returning to its original length when the forces causing extension are removed.

Elastic Limit. The point beyond which a body must not be stretched in order to have it return to its original length.

Energy. The ability to do work. *Kinetic energy* is the energy a body possesses by virtue of its motion. *Potential energy* is the energy a body possesses by virtue of its position; for example, coiled or stretched springs, bent bars, lifted weights.

Force. That which tends to impart motion to a body at rest, or to change the direction or magnitude of the velocity of a body already in motion.

Hardness. The physical property of matter by virtue of which it does not tend to be scratched readily.

Horse Power. Nominal horse power or Watt's horse power supposes a horse able to lift 33,000 footpounds in one minute; actual tests with an average horse give but 22,000 footpounds in one minute. Indicated horse power is calculated from the pressure upon the piston as shown by an indicator card or diagram.

Hydraulic Press. Application of the principle that pressure upon a body of water is communicated equally in every direction throughout the entire mass regardless of its shape. Pressure by a piston or force-pump upon a small body of water is communicated to a piston of larger area through pipes. It is used in the hydraulic *block, crane, jack, dock, hoist, elevator, punch, shears,* and for *baling paper,* hay, etc.

Hydraulics. Branch of mathematical and engineering science which treats of fluids in motion and of the application of these laws and principles to machinery.

Hydrostatic Paradox. Principle that any quantity of water, however small, may be made to balance any quantity of water however great. It is the principle which underlies the hydraulic press.

Hydrostatics. Mathematical investigation of the pressure and equilibrium of incompressible fluids.

Kinematics. Branch of mechanics, treating of motion, its *direction, velocity, acceleration,* and *composition,* but not regarding mass or constraints.

Kinetics. That part of dynamical mechanics which treats of the forces which cause or change the motion of bodies.

Lever. Rigid rod moving about a fixed axis called the fulcrum.

Malleability. Physical property of matter by virtue of which it can be hammered down into a thinner sheet.

Mass. Means the quantity of matter that a body contains, without regard to the space that it takes up. The unit of measure is the quantity of matter contained in the piece of platinum-iridium known as the standard kilogram. It is kept by the International Board of Weights and Measures near Paris, France. It is equivalent to about two and two-tenths pounds. One one-thousandth of this measure was adopted as the fundamental unit of measure and was named the gram.

Mechanical Powers. May be classed under seven heads. They are based upon two fundamental principles, viz., lever and inclined plane. They are, *lever, wedge, pulley, block and tackle, inclined plane, screw* and *toothed wheel.*

Molecular Forces. The forces of relatively great magnitude which act between molecules, and gives rise to the various physical properties of matter.

Momentum. The quantity of motion of a moving body, and is the product of the mass multiplied by the velocity.

Motion. The property in virtue of which the position of a body in space may be changed.

Physical Properties of Matter. Are *hardness, brittleness, ductility, malleability, tenacity,* and *elasticity.* These depend on differences in the cohesive forces, operating between different molecules of the substance.

Power. The branch of dynamical mechanics which treats of the study of the circumstances under which it is possible for a body to remain at rest or in equilibrium.

States of Matter. Are *solid, liquid* and *gaseous.*

Tenacity. The resistance which a body opposes to the total separation of its parts. The various kinds of tenacity are: *tenacity* in the ordinary sense, or resistance to traction; *relative tenacity* or resistance to fracture; *reactive tenacity,* or resistance to crushing; *sheering tenacity,* or resistance to displacement of particles in lateral direction; and *torsional tenacity,* or resistance to twisting.

Velocity. The rate of change of position. It considers the distance travelled and the time consumed.

Volume. Space is of three dimensions: *length, breadth,* and *thickness.*

Weight. The measure of the force or downward pull due to the attraction of gravity exerted upon all bodies.

SOUND.

A department of Physics which embraces an investigation of the nature and production of sound. This department presents the explanation of the basis of musical sounds and their sources, and the experimental methods for the determination of the velocity of sound. Various practical applications of the principles of sound have been made such as in the study of the acoustic properties of halls and the invention of acoustic aids to navigation in foggy weather and listeners for enemy aircraft and submarines. Sound travels in the air at the rate of about 1,090 feet a second at 32 degrees F. or one mile in 4.84 seconds; in hydrogen its velocity is about four times as great as in air; in liquids the velocity is greater than in air (in water about four times greater, or 4,708 feet in a second); in wood or steel from two to three miles a second. If the vibrations do not exceed 24 a second or if they exceed from 30,000 to 40,000 a second, the ear cannot detect the sound. Sound waves respond very closely to the laws of light as to *reflection, refraction* and *interference.* Sound of low pitch are caused by slowly vibrating, long sound-waves; shrill, high-pitched sounds are produced when vibrations are rapid and the sound waves are short in wave-length.

Beats. These occur when two notes of almost the same frequency of vibration are sounded together and is the effect upon the ear of vibrations set up either in the sounding-body itself or in the air or other medium.

Loop or Anti-node. Is a point of maximum displacement.

Loudness or Intensity of a Note. Depends on the amplitude of the vibrations.

Node. Is a point of minimum displacement.

Pitch of a Note. Depends upon the number of *vibrations per second.* The greater the number of vibrations the higher the pitch.

Quality of a Note. Depends on the presence or absence of overtones.

HEAT.

In this department of Physics are studied the causes and effects of heat, the measurement of temperature, and its effects, also the practical applications of expansion. Methods of measuring and comparing specific heats which is the relative amount of heat necessary to change the temperature of unit mass of a body one degree and also the quantity of heat involved in changing the state of a body are explained together with the very practical industrial applications such as refrigerating plants. Our understanding of thermal phenomena has improved considerably since the adoption of the Kinetic Molecular Theory. This considers that the temperature of a body depends on the state of agitation of the molecules of matter which compose it. In gases the motion is in nearly uniform rectilineal direction; in liquids, in irregular directions; and in solids, orbital or oscillatory. This motion is sustained in all bodies until the absolute zero point, when it ceases. The important significance is emphasized of Joule's experiment on the mechanical equivalent of heat, which demonstrated that heat is one form of energy, and that all energy is indestructible and only convertible from one form to another in a definite relation. This section also discusses the various modes of transference of heat by *conduction, convection* and *radiation* together with the applications of the same, for example in heating and ventilation systems and steam and gas engines.

Absolute Zero. The lowest possible temperature; the temperature at which the undulatory motion in all bodies would cease. It has been shown to be about −273 degrees Centigrade.

Coefficient of Linear Expansion. The ratio of the increase in length of a rod of unit length for a rise in temperature of one degree to its original length at zero degrees Centigrade.

Conduction. The flow of heat through matter in contact but not accompanied by the bodily motion of the particles of matter themselves.

Convection. The transport of heat by the bodily motion of the heated particles themselves.

Heat of Condensation. The number of units of heat required to condense unit mass of the substance without changing its temperature.

Heat of Fusion. The number of units of heat required to melt unit mass of the substance without changing its temperature.

Heat Unit. The same amount of heat necessary to raise one pound of water through one Fahrenheit degree of temperature. One pound of coal in burning yields heat enough to raise 13,500 pounds of water through one degree F. of temperature; hence yields 13,500 B. T. U. meaning British Thermal Units. This is the Engineers' heat unit.

Interference. The action of waves of water, *sound-waves, heat-waves* or *light-waves* upon one another, by which, according to conditions, the effects are either increased, diminished or neutralized. A wave is composed of a *crest* and a *trough*. If two crests come together the waves are increased; if a trough and a crest, both waves are diminished; if two troughs both are neutralized. The colors of soap bubbles, of some iridescent glass, and of mother of pearl are due to interference of light waves.

Radiation. The passage of heat energy through space without the necessary presence of matter. This is called thermal radiation.

Specific Heat. The ratio between the quantity of heat necessary in order to raise a given mass of any substance through a given difference of temperature, and the quantity of heat necessary to raise the same mass of water through the identical difference of temperature.

Temperature. The condition of a body with respect to its power to absorb heat from or communicate heat to surrounding bodies.

LIGHT.

This is a very important section of Physics, and was formerly called Optics. It deals with the physical nature of Light, and its general properties such as its transmission through material substances and also empty space. Various methods have been devised for accurately determining the velocity of light through space and different media. A great development has taken place in the study of image formation after reflection and refraction and in the many convenient applications of these principles of optics in the form of optical instruments for various purposes. This subject also includes the intensive investigations of color whether from an incandescent source, from reflection or from transmission. This has led to our present wide knowledge of the spectra of different chemical elements and compounds. Another interesting development has been the physical demonstration of the existence and the properties of invisible "light" or radiation. This has been in conjunction with the interesting experiments which have been devised to illustrate special optical phenomena such as *diffraction* and *interference* which have an important bearing in connection with a complete theory of Light. This section of Physics has been one of the most fruitful studies in uncovering to us the wonderful phenomena of nature.

Aberration. The irregularities of a ray of light unequally refracted by a lens or reflected by a mirror and not meeting at a focus; the image resulting is indistinct, distorted, or colored at the edges. Indistinct images are produced by spherical aberration; coloring, by chromatic aberration.

Angle of Incidence. The angle formed by the incident beam and the normal or perpendicular to the reflecting surface.

Dispersion. The separation of the component colors of the spectrum, from a mixed beam of light.

Focus. The point at which rays of light converge or from which they diverge.

Focal length. The distance from the center of the lens to the principal focus.

Principal focus. That point through which parallel rays of light are made to pass after reflection or refraction.

Real focus. The point from which rays of light actually diverge.

Virtual focus. The point from which rays of light appear to diverge.

Illuminated Bodies. Those which are lighted by some other source.

Index of Refraction. The ratio of the sine of the angle of incidence to the sine of the angle of refraction.

Lens. A transparent body (usually glass) bounded by curved surfaces used to cause pencils of rays to converge or diverge after passing through it. *Convex lenses* are thickest in the center and magnify; *concave* lenses are thinnest at the center. The *double-convex lens* is convex on both sides; the *double-concave*, concave on both sides. The *plano-convex* has one side convex and the other flat. The *meniscus* is shaped in section like a crescent-one side concave, the other convex. The *axis* of a lens is the line joining the centers of the curvature of both surfaces.

Light. The undulatory theory explains the phenomena of light as the result of an undulatory motion which the luminous body excites in the luminiferous ether pervading all space and the molecular interstices of all bodies. Light travels in a vacuum at the rate of 186,000 miles per second. The emission or corpuscular theory has been abandoned in favor of the undulatory or wave theory.

Opaque Substances. Are those which absorb all the un-reflected incident light.

Penumba. The region of partial shadow surrounding the umbra behind the opaque object.

Radiation. The emission and diffusion of rays of light or heat by all bodies at all temperatures. When the radiant energy of a body is capable of producing light, it is called luminous; when no light is produced, obscure.

Reflection. When a ray of light, sound or radiant heat strikes a surface and is thrown back into the medium whence it came, it is said to be reflected. The *law of reflection* is that the angle of reflection is equal to the angle of incidence; and that both of these angles lie in the same plane with a normal to the surface. Mirrors, reflectors, sounding boards, and echoes are illustrations of reflection.

Refraction. The change in direction which rays of light, heat or sound undergo when passing from a medium to another of different density, as from air to water, glass to water, glass to air, and the like. Lenses, prisms and the spectrum depend upon refraction for the explanation of the phenomena which they manifest. Double refraction is the separation of a ray into two rays unequally refracted and is especially noticeable in certain crystals.

Translucent Bodies. Those which transmit light, but through which objects are faintly distinguished; such as water, gases, and polished glass.

Transparent Substances. Those which transmit a large portion of the incident light without scattering.

Umbra. The region of complete shadow behind an opaque object.

MAGNETISM.

That branch of Physics which studies the general properties of magnets and magnetic substances. Its real scientific development dates from the experimental results of Dr. William Gilbert, physician to Queen Elizabeth, who published a book in London called "De Magnetta" in 1600 A. D. He suggested that the earth's magnetic action on a compass needle was really due to the earth itself being a magnet possibly caused by the presence of large masses of magnetic ore in the interior. This was the basis of the study of terrestrial magnetism. A new and more recent development is *electro-magnetism* which studies the magnetic effects of an electric current.

Magnetization can be produced by three methods, *single touch*, *double touch*, and *by use of an electric current*. In using the single touch the polarity generated at the point last touched or stroked by the magnetic substance is of opposite kind to that of the pole used. In using an electric current, the substance to be magnetized is placed inside a coil carrying an electric current.

Coercivity. The power of retaining magnetization in spite of any subsequent treatment.

Critical temperature of a magnetic substance. That temperature at which it ceases to exhibit any magnetic properties.

Earth's Magnetic Poles. The places at which the magnetic dip needle is vertical. They do not coincide with the geographical north and south poles.

Induced Magnetism. Temporary polarity set up in a piece of iron or steel by introducing it into the magnetic field of a permanent bar-magnet, or of a solenoid.

Lodestone. Practically the only form of a natural magnet to be found, attracting fragments of itself and setting in one particular direction when suspended. It is an oxide of iron (Fe_3O_4) and the mineral ore is called magnetite. It is irregularly distributed throughout the world.

Magnetic Declination. The angle between the geographical and magnetic meridians.

Magnetic Dip or Inclination. The angle at any point between the earth's magnetic lines of force and a horizontal plane at that point.

Magnetic Force. Mechanical force, in dynes exerted on a unit magnetic pole placed at the point. It is equal to the number of lines of force crossing unit area surrounding the point at right angles to the direction of the magnetic field.

Magnetic Hysteresis. When a magnetizable substance lags in its state of magnetization behind the magnetizing force at any instance there results a transformation of magnetic energy into heat. It is usually measured by making cyclical reversals of magnetic flux.

Magnetic Induction. The process of setting up temporary polarity in a piece of iron or steel by introducing it into the magnetic field of a permanent bar-magnet or inserting it in a solenoid carrying an electric current.

Magnetic Line of Force. A line which at every point has the direction of the magnetic force at that point. It proceeds out of the north pole of a magnet and enters in at the south pole.

Magnetic Meridian. The vertical plane in which the magnetic axis of a freely suspended magnet comes to rest.

Magnetic Saturation. That condition obtained when the metal fails to acquire a higher degree of magnetization, however, much the magnetizing power is increased.

Magnetic Storm. Violent and periodic changes in the magnetic elements at a point on the earth's surface.

Magnetic Substances. Those which are attracted by a magnet.

Molecular Theory of Magnetism. This regards each individual molecule of the magnetic substance as a complete magnet. The process of magnetization is considered as the rotation of the molecular magnets into alightment with similar poles pointing in the same direction.

Permanent Magnetism. That kind of magnetism caused by the magnetization of a glass, hard piece of steel and then suspending it in a current of steam for twenty hours. This magnet is not subject to the gradual diminution which is evident in ordinary magnets.

Permeability. A measure of the ease with which lines of force may be established in any medium as compared with a vacuum. It is the ratio of the number of lines of force present in a substance subject to a magnetizing force to the number of lines present with the substance not present in the field.

Retentivity. The capacity of retaining magnetization after the magnetizing power has been removed.

ELECTRICITY.

The part of Physics which has yielded probably the most important applications affecting our civilization. It has also uncovered to us many mysteries of the Universe. Dr. William Gilbert was the first to make much advance but since the time of Michael Faraday, the world's most brilliant experimenter, the progress in the theory and application of electricity has been remarkably rapid. The study has been generally divided into three parts; electrostatics or electricity at rest, electricity in motion, induced currents.

Electrostatics takes up the general facts of electrification, the static electrical machines, potential, capacity and atmospheric electricity. In the study of *electricity in motion* there is the theory of the Voltaic cell and the chemical, thermal and magnetic effects of electric currents. These effects are made the basis of methods for measuring currents and there are many types of electrical measuring instruments as well as electrical appliances. These effects have also given rise to the electrical appliances for the ordinary pursuits of industrial and domestic life such as electromagnets, heaters, sources of illumination and electroplating and welding apparatus and storage batteries. The *phenomenon of an induced current* was discovered by Michael Faraday and has resulted in the development of the dynamo and motor, the induction coil and transformer, wireless waves, radio, and also X-Rays. This division of the subject includes the study of the principles and properties of the general electro-magnetic radiations, that pervade throughout empty space and penetrate even through matter to a varying degree. A recent interesting and important development is the study of the electron, the ultimate unit of electricity investigated by Sir Joseph J. Thomson of England and Robert A. Millikan of America. This promises to yield some very interesting information regarding the structure of matter itself.

Electrification can be produced by, *friction, induction* and by *conduction.* The first case arises on rubbing two unlike insulators together and then separating them. They are charged with equal quantities of electricity, the one with positive, the other with negative. The second case arises when an electrified body is suspended inside a hollow conducting vessel without touching it. The outside of the vessel becomes charged similarly to that of the electrified body and the inside oppositely. The last case arises when an initially uncharged and insulated metal body is connected with an electrified body by means of a conducting wire. The uncharged body becomes electrified by conduction.

Ampere. The practical unit of current; the current which will deposit silver at the rate of 0.001118 grams per second. See definition of the International Ampere also.

Conductivity. The property of an electric conductor depending on its dimensions, material and temperature which determines the current produced by a given electro-motive force.

Conductors. Bodies which readily conduct electricity. Insulators are bodies which conduct electricity very poorly at low temperatures, namely, lower than 1200° C.

Coulomb. The unit of quantity of electricity and equals a current of 1 ampere during 1 second of time. It is 1/10 units on the centimeter-gram second system, and deposits 1.118 milligrams of silver, and is named after C. A. DeCoulomb, (1736-1806).

Daniell Battery. In 1836, Daniell invented a battery in which the metals were exposed to the action of dilute acid in a glass jar. This form is more constant and requires less frequent cleansing than a voltaic pile. The solution is of copper sulphate (copperas or blue stone), in which a rod or amalgamated zinc contained in a porous cup is surrounded by a copper coil. Modifications are the Grove, Smee, and other cell batteries.

Dielectric Constant. The ratio of the charge which a condenser holds with the given medium as dielectric to the capacity which it has when air is used as a dielectric.

Eddy or Foucault Currents. Magnetic substances are also good conductors of electricity. Therefore, when the flux varies in the magnetic substance an electro-motive force and consequently an electric current is set up. These currents are very large in alternating currents instruments unless some precaution, such as laminating the core, is taken. Some non-magnetic substances also experience Eddy currents.

Electro-chemical Equivalent, of an element is the weight in grams which is deposited by the passage of the unit quantity of electricity (1 coulomb).

Electric Current is a flow of electrons more or less unidirectional and opposite in direction to that of the generally accepted current.

Electric Oscillations. These occur when an electromotive force is momentarily impressed upon an electric circuit where the damping by Ohmic resistance is negligible, or when the electromotive force is removed. The period of the oscillations varies as the square root of the self induction and the capacity of the circuit.

Electro-magnetic Induction. This is the phenomenon where any change in the direction or intensity of a magnetic field gives rise to an induced electro-motive force in any conductor

in the field and this causes an induced current if the conductor forms a closed circuit.

Electromotive Force. That which causes or tends to cause a flow of electric current; usually designated by E. M. F.

Electrolysis. The process by which a current of electricty causes a conductor placed in a liquid to undergo chemical dissociation into charged ions which act as positive and negative carriers of electricity through the solution.

Electrolyte. A conductor which undergoes chemical dissociation on electrolysis. Dissociation is the breaking down of the molecules of a compound substance into the charged ions which compose it, one group positive, the other negative.

Electro-motive Force of Polarization. The back electromotive force produced by the accumulation of hydrogen bubbles on the metallic plate.

Electron. The ultimate unit of negative electricity. It has been shown by Sir J. J. Thompson of England and Professor R. A. Millikan of America to possess a definite quantity of electricity equal to 1.591×10^{-19} coulombs.

Electric Line of Force. This is such that its direction at every point is the same as the direction of the electric force, which would act on a small unit positive charge placed at that point. It is defined as starting from a positive charge and ending on a negative charge.

Farad. The practical unit of capacity and represents the capacity of a condenser that has a charge of 1 coulomb when charged with a difference of potential of 1 volt. It stands for 10^9 units on the centimeter-gram-second system. The microfarad is one-millionth of a farad. Named after Michael Faraday (1791-1867).

High Frequency Oscillations. These are electrical vibrations of great rapidity and high frequency, usually, several millions per second produced in circuits having *inductance* and *capacitance.*

Induced Electromotive Force. The Electromotive Force between the ends of a conductor set up when a change is made in any way in the number or direction of the magnetic lines of force in the immediate neighborhood of the conductor.

Induced Electric Current. Current flowing around a closed circuit as a result of an induced electromotive force.

Induction. Power which an electrified body has of calling forth electrical or magnetic properties from other bodies with which it is not in direct contact. It is upon this strange principle that the soft iron magnet is constructed.

Kilowatt Hour. Amount of energy necessary to perform 1,000 watts in one hour.

Mutual Induction. Phenomenon where a change of current in a conductor is accompanied by a change of its magnetic field which induces an electromotive force in a neighboring circuit.

Ohm. Practical unit of electrical resistance (R) of a column of mercury 1 square millimeter cross-sectional area and 106-3 centimeters long. It is 10^9 absolute units of resistance on the centimeter-gram-second system. The British Association ohm. is 0.987 of a true ohm. Named after Dr. G. S. Ohm. See International Ohm also.

Polarity. The possession of magnetic poles; the property acquired by a magnetizable body when brought into a magnetic field.

Polarization. Reduction of the strength of a current derived from a simple cell due to the collection of gas bubbles on the metallic plate reducing the potential difference and the effective area.

Resistance. That property of a conductor which causes the passage of a current of electricity through it to be attended by a dissipation of energy, as the change of electricity into heat, is called the resistance of the conductor. The less the resistance in proportion to the electromotive force, the stronger the current, in obedience to OHM's law, $C = \frac{E}{R}$.

Self Induction. When a current passes through a conductor a magnetic field is built up about it. The intensity of this field is proportional to the current in the conductor. Consequently any change in the current intensity will cause a corresponding change in the field about the conductor. This change in the electromagnetic field by the principle of electromagnetic induction sets up another electromotive force and current which opposes the change in the original current. The result is comparable to inertia.

Simple Voltaic Cell. A cell composed of two metallic plates such as zinc and copper, immersed in an electrolytic solution such as sulphuric acid. A difference of potential is set up between the two metals.

Storage Battery. A combination of accumulators, which when once charged gives back a continuous and regular current when the poles are connected. It consists primarily of two specially formed sheets of lead coated with red oxide of lead. The chief forms are the Planté, the improved Faure forms and the Edison types.

Superconductivity. The name given to the phenomenon observed when the electrical resistance of very pure metal decreases towards zero when the temperature is reduced to the neighborhood of absolute zero.

Volt. The practical unit of electromotive force (E) required when one ampere passes through a conductor whose resistance is one ohm. It is a little less (.936) than the electromotive force of a Daniell cell; and is 10^8 absolute units of electromotive force on the centimeter-gram-second system. Named after Volta. See International Volt also.

Volta's Series. A series of metals such that any metal in the series acquires a positive charge when touched by any other metal lower in the series and a negative charge when touched by any metal preceding it. They are: Zn, Pb, Sn, Bi, Sb, Fe, Cu, Ag and C.

Voltaic Pile. In 1800, Volta placed discs of copper and zinc in alternate formation and separated by layers of cloth saturated with an acid solution.

Watt. The practical unit of electrical power which equals the power of a current of 1 ampere when the resistance is 1 ohm. It is equal to 10^7 units on the centimeter-gram-second system and to 0.0013405 of a horse power. Named after James Watt (1736-1819).

PHYSICAL LAWS.

Mechanics.

Newton's Laws of Motion.

1. Every body continues in its state of rest or of uniform motion in a straight line except in so far as it may be compelled by an external force to change that state.

2. The acceleration is proportional to the impressed force and takes place in the direction of that force.

3. To every action there is an equal and opposite reaction.

Parallelogram Law of Forces: If two forces be represented in magnitude and direction by two sides of a parallelogram and lines be drawn at their extremities so as to complete this parallelogram, the diagonal drawn so as to intersect the angle between the forces represents the resultant force in both magnitude and direction.

Hooke's Law states that within the elastic limit of any body the ratio of the stress acting to the strain produced in the body is constant.

Archimedes' Principle. A body immersed in a fluid loses weight due to an upward buoyant force and this equals the weight of the fluid displaced.

Pascal's Law. The pressure exerted upon any area of a surface of confined liquid is transmitted undiminished in all directions to every part of the containing vessel.

Sound.

Laws of Transverse Vibrations of a Stretched String.

1. *Length.* The number of vibrations per second of a stretched string is inversely proportional to its length.

2. *Diameter.* The number of vibrations per second is inversely proportional to the diameter of the string.

3. *Density.* The number of vibrations per second is inversely proportional to the square root of the density.

4. *Tension.* The number of vibrations per second is proportional to the square root of the stretching weight.

Heat.

The Laws of Boiling.

1. The boiling point increases with the pressure.

2. The boiling point for a given liquid is constant for a given pressure but differs with different liquids.

3. The temperature of a boiling liquid remains constant until every portion has been vaporized.

Boyle's Law, states that for a given constant temperature the volume of a gas varies inversely as the pressure.

Charles' Law, states that the volume of a gas kept under constant pressure varies directly as the absolute temperature.

Light.

Law of Intensity. The intensity of illumination varies inversely as the square of the distance from the source.

Laws of Reflection.

1. The *angle of reflection* is equal to the angle of incidence.

2. The *incident ray,* the reflected ray and the normal to the surface are all in the same plane.

Laws of Refraction.

1. The sine of the angle of incidence divided by the sine of the angle of refraction is a constant quantity, called the index of refraction.

2. The *refracted ray,* the *incident ray* and the normal to the surface are all in the same plane.

Magnetism and Electricity.

Laws of Attraction and Repulsion.

1. Like magnetic poles repel while unlike poles attract.

2. Like electrical charges repel while unlike charges attract.

Faraday's Laws of Electrolysis.

1. The *quantity* of a substance deposited at an electrode by electrolysis is proportional to the current and to the time.

2. The *masses* of different elements deposited by the same current are proportional to their chemical equivalents.

Joule. The unit of electrical work and expresses the work done by electrical power of 1 watt for 1 second. Named after J. P. Joule (born 1818) of Manchester, England.

Lenz's Law. The direction of the induced current is always such that it produces a magnetic field which tends to oppose the change that causes the induced current.

Ohm's Law. The current flowing in a circuit is directly proportional to the electromotive force applied and inversely proportional to the resistance.

Physical Units of Measurement.

Calorie. The amount of heat required to raise the temperature of one gram of water one degree centigrade.

Coulomb. The amount of electricity passing a point in a circuit in one second when the strength of the current is one ampere.

Dyne. That force which acting on one gram mass will impart to it an acceleration of one centimeter per sec.

Foot-pound. The work done in raising one pound one foot.

Gram of force. The attractive force of the earth on one gram mass at its surface.

International Ampere. The unvarying electric current which, when passed through a solution of silver nitrate in water, deposits silver at the rate of 0.001118 gram per second.

International Ohm. The resistance offered to an unvarying current by a column of mercury at the temperature of melting ice, 14.4521 grams in mass, of a constant cross-sectional area, and of a length of 106.3 cm.

International Volt. The electrical pressure which, when steadily applied to a conductor whose resistance is one International Ohm, will produce a current of one International Ampere.

Horse-Power. (H. P.). The rate of doing 550 foot-pounds of work in one second.

Pound of Force. The attractive force of the earth on one pound mass at its surface.

DENSITY OR SPECIFIC GRAVITY.

The table gives the density or the weight in grams of one cubic centimeter of the substance. The number may also be regarded as specific gravity:

Air at 0° C. and 76 cms. press..	0.00129
Alcohol (ethyl) 90% 20°C.....	0.818
Aluminum	2.670
Brass (cast)	8.400
Charcoal	1.6
Coal, anthracite	1.26 to 1.80
Coal, bituminous	1.27 to 1.423
Copper (cast)	8.83
Cork	0.14 to 0.24
Diamond	3.530
Ether	0.736
Glass (plate)	2.760
Gold	19.360
Human body	0.890
Hydrogen at 0° & 76 cm. press....	0.0000896
Ice	0.917
Iron, cast	7.655
Lead, cast	11.360
Mercury at 0° C.	13.596
Milk	1.032
Paraffin	0.824 to 0.940
Sugar (cane)	1.593
Sea water	1.027
Water at 0° C.	0.999
Water at 4°	1.000

Physical Constants.

Charge on Electron, elementary electrical charge, $e = 1.591 \times 10^{-19}$ coulombs.

Electrochemical equivalent of silver, 0.001118 gm. per sec. per ampere.

Number of gas molecules per c.c. at 760 mm. and 0° C., $N = 2.70 \times 10^{19}$.

Radius of an atom = about 10^{-8} cms.

Velocity of light in a vacuum = 2.9989×10^{10} cm. per sec. = 984×10^{6} ft. per sec.

Mean wave length of yellow sodium light, 00005893 cm. or 5893 angstrom units.

Velocity of sound in dry air at 0° C. = 33,136 cm. per sec. = 1089 feet per sec.

Density of water, a maximum at 3.98° C. = 0.999973 gm. per c.c.

Density of mercury at 0° C. = 13.5955 g. per c.c.

Density of dry air at 0° C. and 760 mm. = .001293 gm. per c. c.

Coefficient of expansion of gases, .003665.

Specific heat of air, at constant pressure, 0.238.

Latent heat of fusion of water 79.24 cal. per gram.

Latent heat of vaporization of water, 535.9 cal. per gram.

Mean density of the earth, 5.52 grms. per cu. cm.

Acceleration due to gravity at sea level, lat. 45° = 980.60 cm. per sec. per sec. = 32.172 feet per sec. per sec.

Length of seconds pendulum at sea level, lat. 45° = 99.356 cm. = 39.116 in.

Mechanical Instruments.

Roman steel-yard is an old apparatus for weighing objects, using the principle of the lever. The graduated steel-yard or bar with scale pan or hanger is balanced at a point near one end by making it very massive at that end. The scale pan or hanger is fixed in position. The object to be weighed is then balanced by the small sliding weight which is moved to some division indicating the weight.

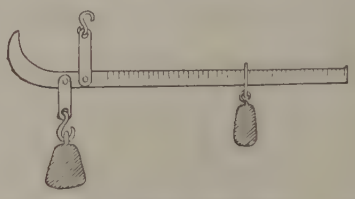


Fig. 1. Roman Steel-yard.

Jack screw, a machine based on the principle of the inclined plane. A force of a few pounds applied at the end of a long lever arm will enable one to raise hundreds of pounds. However what is gained in force is lost in distance since the applied force must move through a much greater distance in comparison.

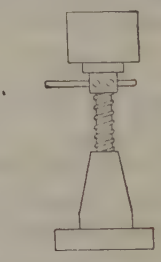


Fig. 2. Jack Screw.

Micrometer caliper, enables one to measure the thickness of small substances such as steel balls, hair or paper very accurately to one-tenthousandth of an inch. They are graduated usually in thousandths of an inch or of a centimeter.

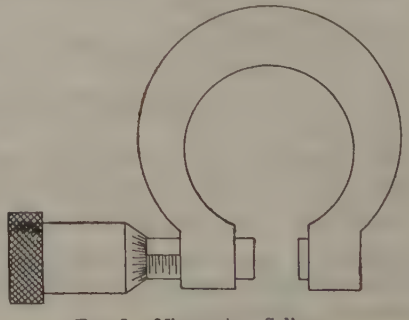


Fig. 3. Micrometer Caliper.

Vernier caliper is used to measure the inside and outside diameters of tubes and rods to about one-hundredth of an inch or better. It can be used very accurately owing to the use of an attached vernier scale.

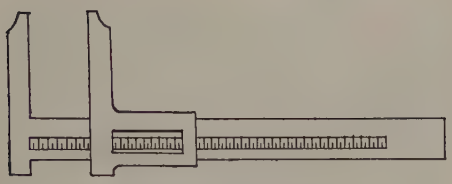


FIG. 4. Vernier Caliper.

Plumb line is a very simple but important instrument used to test the position of lines and surfaces required to be vertical. It consists of a flexible cord with a very symmetrical weight called the plumb bob suspended centrally from one end. It is much used in building and surveying.

The **airship** and the **submarine** are both illustrations of Archimedes principle. In each case there is a buoyant force due to the displacement of a large quantity of air or water and equal to it in weight. In the airships the effective amount of air displaced is regulated by small balloonets inside the large gas bag which are filled or emptied by pumps. This regulates the lifting power to a certain extent. This is similar to the method used for controlling the level of the submarine. Both use a system of horizontal and vertical vanes as well. The driving force is supplied by a series of propellers. When floating horizontally the lifting force due to the displacement is exactly equal and opposite to the total weight of the airship or submarine with all its contents.

Plumb Rule is used to determine the perpendicular direction at any point, an important matter for masons and bricklayers. It consists of a narrow truly rectangular board cut out down the center with an egg-shaped hole at the lower end for a plumb line and bob to swing in when vertical.

Fixed Pulley is a simple machine and enables one to change the direction of a force to be applied into a more convenient direction. Its value is unchanged if the friction is negligible no matter what the angle.

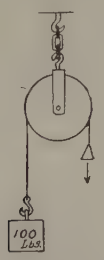


FIG. 5. Fixed Pulley

Single movable pulley gives a mechanical advantage of two so that the force exerted is only one-half the weight lifted. The other cord carries the other half of the weight. The distance through which the force is moved is double the distance the weight is raised. By combining it with a fixed pulley the applied force can also be changed in direction.

Combinations of pulleys are formed by threading a rope from pulley to pulley in a fixed block of pulleys and a movable block. In a similar combination there are two blocks each of which holds three pulleys of equal size mounted freely on the same axle. One block is secured to a rigid beam and the other attached to the weight to be moved. The rope that threads the pulleys alternately from block to block is tied at one end to the fixed block and the other end is free for applying the force. There are thus six separate strands carrying the load so that the applied force is only one-sixth in magnitude but must however move through six times the distance.

Water Pumps. There are several types such as the common farm or lift pump, the force pump for raising water to a height greater than about 26 feet and the centrifugal pump, which drives a steady stream of water by means of a number of rotating curved blades mounted on an axle. The actual depth from which well water may be pumped by the lift pump is about twenty-six to thirty feet because the atmospheric pressure is only equal to about fifteen pounds per square inch and cannot force the water up to a height greater than about 30 feet when the partial vacuum is made in the pipe and barrel. For wells of greater depth than this, it is customary to use the force pump. In this case the piston is solid and the barrel is placed nearer the lower water level with an outlet pipe and valve in its side. Each downward movement of the piston forces water out of the barrel through the valve in the side and up the outlet pipe from it. A check valve in the inlet pipe from the water prevents its return to the well. Many modern pressure pumps driven by power are based on the principle of the force pump.

Air Brake. Has been an important factor in the development of locomotive and railway transportation. In the Westinghouse air brake, compressed air under a pressure of about 75 lbs. per square inch acts on a piston in a cylinder and sets the brake shoes tightly against the wheels of the train. A spring in the cylinder pushes the piston back and releases the brake as soon as the air pressure is reduced.

The **phonograph reproducer** consists of a thin flexible diaphragm which is rigidly held all around the rim in front of a tube leading to the horn. The center is attached to one end of a bar which carries the needle at the other end. The needle is made to vibrate by allowing it to follow the wavy groove in the record and vibrations are imparted to the diaphragm similar to those which formed the groove so that spoken words, orchestral and vocal music are reproduced by it with surprising exactness.

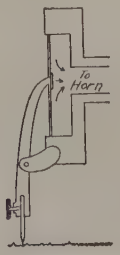


FIG. 6. Phonograph Reproducer.

The airplane is the result of man's attempt to fly through the air. After many historical attempts the "heavier than the air" type was perfected by Orville and Wilbur Wright in the United States in 1903. The "lighter than air" type has been successfully developed since 1783 when J. E. & J. M. Montgolfier of France left the ground in their balloon. The airplane is forced against the air by a powerful gas engine which drives a strong wooden propeller at high speed. It is the reaction of the air against the long propeller blades which drives the airplane against the air. The air streams past the wings which are slightly inclined with the horizontal so that the forward horizontal resisting force of the air is divided into two components one along the surface of the wings and the other perpendicular to their surface and directed upwards. The former component has little effect, while the latter acts as a lifting force which keeps the airplane from falling. A very important feature is the design of the chamber or hollowed out formation of the wings which was developed long ago mathematically by an English engineer. The proper design lessens the air resistance and increases the lifting power.

Vacuum pumps are used for exhausting the air from sealed or confined vessels and bulbs such as radio and audion tubes. On nearly all the types mercury has been used for securing the last stages of exhaustion. The water aspirator will give only a poor vacuum while the rotary oil pump has been developed with a good deal of success during recent years. The first pump was the Guericke air-pump and by using two in series with layers of oil as seals for the valves it became very successful. There is the efficient Gaede rotary mercury pump which traps portions of the air in small sections of a hollow rotating drum and delivers them to the outside, thus reducing the pressure by successive stages. This will give a final pressure of about one millionth of an atmosphere. However, the most recent and by far the most efficient is the mercury vapor diffusion pump such as the Langmuir type which uses a stream or jet of mercury vapor to drive out the molecules of air or gas from the vessel to be exhausted into another one from which a less efficient pump can remove them. The principal is that of the aspirator. Its simplicity and thoroughness in giving a vacuum of about 0.000001 cm. of mercury marks a great advance in methods of obtaining high vacua so desirable for modern research. Usually charcoal cooled with liquid air has been used to get a good vacuum. In radio tubes special films of chemicals called "getters" are used to improve the vacuum by absorbing the remaining gases in the air-exhausted tube.

Water analysis. Water is a chemical compound of two parts of hydrogen to one part of oxygen by volume or one part of hydrogen to eight parts of oxygen by weight. Natural waters are seldom pure, because springs, wells and rivers are often contaminated by drainage from nearby lands and by sewerage from human habitation. Such waters contain some organic matter and the products of its decomposition. Besides these, there may also be inorganic and harmful bacteriological impurities so that drinking water should be carefully examined for all three. A chemical analysis is not sufficient. Rain water is the purest of the ordinary waters found in nature but it contains on the average from two to three parts of dissolved solids in 100,000, in addition to the gases it has absorbed and washed down out of the atmosphere. Water that holds no mineral water in solution is *"soft"* water and when soap is added will readily form a lather. Magnesia and lime in the water make it *"hard"* and cause a curd to form when soap is added. Temporary hardness is that which is removed by boiling while permanent hardness needs the addition of chemicals to render it soft.

Rail elevation on curves is necessary to permit trains to travel around curves at even a moderate speed. The amount of elevation of the outside rail above the horizontal is calculated by railway engineers so as to provide a component of force to oppose the centrifugal action that arises when bodies move in a circular path.

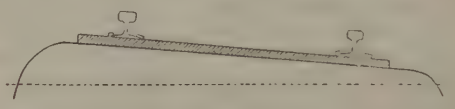


Fig. 7. Elevation of Outside Rail on Curves.

Gyroscope is a mechanical device invented about 1800. The improved types consist of a very heavy wheel with the mass concentrated in the rim, which is so mounted as to be free to rotate about three axes mutually at right angles. When the heavy wheel is made to rotate at a fairly high rate of speed, it is readily discovered that the gyroscope resists any direct attempt to change the direction of the axis of spin. It also will refuse to fall while spinning even if it is placed obliquely on one side of a single support, but slowly precesses about a vertical axis. Examples and applications of gyroscopic action are the earth itself, the *Brennan mono-rail* car, the gyroscope toys, *anti-rolling gyroscopes* on ships, *controlling gyroscopes* for torpedoes, *stabilizing gyroscopes* for bombing and photographic airplane apparatus and the *gyro-compass* for indicating the true north.

Pendulum. *The number of vibrations made by pendulums of different lengths varies inversely as the square root of their length.* If one is 4, 9, or 16 times as long as another, the square roots are 2, 3, and 4 times as great, respectively, but the number of vibrations of the longer one will be only ½, ⅓, or ¼ as many as the shorter. The time in which the vibration will be made varies directly as the square root of length, that of the longer taking 2, 3, or 4 times as long as of the shorter. A pendulum to make a single half vibration in 1 second at the latitude of New York is 39.1013 inches in length.

Barometer. An instrument for measuring the weight or pressure of the atmosphere; invented by Torricelli (1643). Consists of a glass tube more than 30 inches long sealed at one end and filled with mercury. The weight of the atmosphere balances a column of mercury equal to its own weight—30 inches of mercury in a tube one inch in cross-area weighs about 15 pounds. In a wheel barometer a float rests upon the mercury at the open end and by a thread and pulley attachment with the index hand records the

weight as the mercury rises or falls. The *aneroid barometer* consists of a vacuum box whose sides or diaphragms are connected by a system of springs, levers and chain which record the pressure of the air upon the sensitive diaphragms. The barometer acts as a weather indicator only so far as to show sudden and marked changes in the pressure of the air—a sign of atmospheric disturbance. The pressure of the air decreases as one passes from the surface of the earth, therefore when the rate of decrease is known from tables, the height of mountains or of balloon ascensions may be accurately determined. Roughly speaking, the barometer falls $\frac{1}{10}$ inch for every 90 feet of ascent above the sea level up to 1,000 feet, at one mile high it falls $\frac{1}{10}$ inch for about every 106 feet rise.

THERMAL INSTRUMENTS.

The **Davy safety lamp** used by miners was invented by Sir Humphrey Davy about 1800 A. D. It depends on the fact that wire gauze surrounding the illuminating flame of the lamp conducts heat away very rapidly in case explosive gases are present. The flame may ignite them inside, but the gases outside are not ignited.

The **hot air heating system** is one of the most common methods of heating human habitations. It is very rapid and not very expensive to instal. Each furnace is designed to heat a definite number of cubic feet of space and should be large enough in capacity to keep the house at about 70° F. during a cold blizzard on a winter night. The furnace itself consists of a cast-iron fire-box with considerable heating surface in the passages, through which the flames and smoke pass on their way to the chimney. The air to be heated

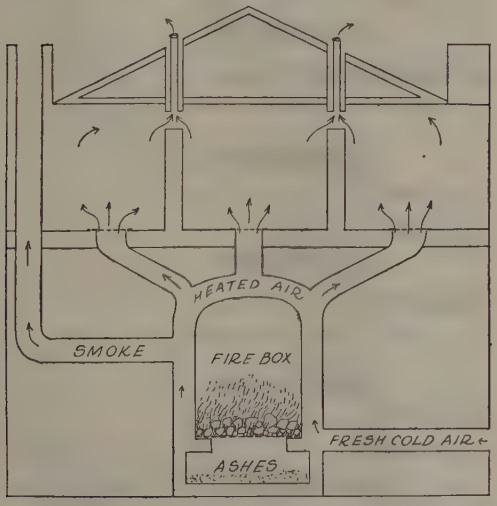


FIG. 8. Hot Air Heating System.

enters from below around the fire-box and is heated by coming in contact with the hot walls of the fire-box and passages in the drum above it. There is usually 35 times as much heating surface as there is grate area. The air is passed over a filled water tank to supply moisture to it. A furnace should not be leaky as this may be a source of real danger to the persons in the house. Large pipes lead the heated air from the furnace to the registers near the floor of each room. Heated air tends to rise of its own accord since it is lighter than cold air and so all ducts and flues should have an upward slant. Those flues going to the upper floors are built in between the lower walls. All conducting pipes should be well covered with asbestos paper which prevents the loss of heat before the air reaches the room it is intended to heat. No provision is sometimes made for the returning of the cold air to the furnace except perhaps through large return pipes from one or two large open grids placed in the floors of the lower rooms. However, in order to secure a supply of fresh air an extra inlet is sometimes provided leading from out of doors to the enclosed space around the fire-box. When the house is warm some windows can be opened at the top.

The **steam turbine** consists of a set of fixed blades or vanes, called *Guide Blades*, which direct the motion of the high pressure steam so that it impinges upon another set of vanes carried by a shaft free to rotate. The whole mechanism is enclosed. Modern turbines are generally the parallel flow type in which the motion of the steam is along the axis or shaft. In the Parsons turbine the steam is kept alternately bounding from fixed to movable blades many times before its energy is expended. The rows of fixed blades are attached to the metal casing and they serve merely as guides to redirect the steam at the most favorable angle against the next row of movable blades. In the Curtis turbine the steam is directed against the first set of movable blades through inclined nozzles of a special design. Turbines are very efficient, economical of space and attain very high speeds. They are used chiefly for driving dynamos, and for propelling large ocean liners and destroyers. The first to be invented was the ancient model by Hero of Alexandria in the second century B. C. Branca designed one in 1629 and this was followed by the work of Kempeln (1784), Watt (1784), Sadler (1791), Trevethick (1815), Ericsson (1830) and Perkins (1836) but the most practical application and development was done by the Hon. C. A. Parsons, F. R. S., in 1884, who designed one of 10 H. P. which was in actual operation for some time.

The **Ammonia refrigerating** process is based on the fact that when evaporation takes place from a liquid it is cooled and must secure heat energy from its surroundings in order to keep on vaporizing. A compressor exhausts ammonia gas from above the surface of liquid ammonia through pipes which are cooled by running water and the heat of vaporization and of compression is taken away, turning it into a liquid again. This is returned to the evaporating chamber where it again cools the circulating brine for the refrigerating system as it evaporates into the partial vacuum above its surface and goes to the compressor. The first work of this kind dates from the experiments of Michael Faraday in 1823 on the liquifaction of gases.

Fractional distillation is the process of collecting evaporated portions in fractions as the boiling point of a mixture rises. By repeating the

operation with the fractions, fairly pure portions of each constituent can be secured. This separation depends on the principle that different liquids have different boiling points and can be collected in regular order as they are vaporized. These fractions are then redistilled. In the important refining of oil, crude petroleum from the oil wells is heated in a still and first the dissolved gaseous hydrocarbons are driven off, then the lighter oils, naphtha, gasoline and benzine, later on follow the denser kerosenes or burning oils, then the fuel oils and the waxes.

The **thermos bottle** is a very practical application of all the principles of transmission of heat. It consists of a double walled glass bottle with the air exhausted from the space between the walls which are also smooth and silvered on the inside of this vacuous space. Since convection currents cannot be set up in the vacuum, passage of heat is prevented across between the walls. Conduction of heat from the inside to the outside or the reverse is reduced to a minimum by having very few contacts and only the narrow neck as the main support of the inner container. The silvering reduces gain or loss of heat by transmission in the form of thermal radiation, because bright and smooth reflectors are poor absorbers and poor radiators. Hence a cold substance in the bottle tends to remain cold and a hot substance hot. Professor Dewar of England invented the thermos bottle for conserving liquid air. The British government during the war devised metal containers in place of glass for airplane and military use.

A **thermostat** is an instrument which makes use of the unequal expansion of two flat metal strips such as iron and brass riveted together to control the temperature. One end of the bimetal strip is firmly clamped while the other end makes or breaks an electrical circuit when any change in the temperature causes the strip to become curved. The electrical circuit controls a clockwork motor which operates the drafts of the furnace. The thermostat in this way keeps the rooms at a uniform temperature. Thermostats have been found very useful in modern chemical research.

Thermometer. An instrument for measuring temperature depending upon the almost universal principle of the expansion of bodies under heat. *Mercury thermometers* are used to measure above —39° F. and below 660 degrees F. *Alcohol thermometers* measure below —39 degrees F. The *Fahrenheit thermometer* marks the freezing point at 32 degrees and the boiling point at 212 degrees. The zero of his system was the lowest temperature mark recorded by him in the winter of 1709. The *Reaumur* scale calls the freezing point zero and the boiling point 80 degrees; so that 80 degrees Reaumur = 180 degrees F. The *air or gas thermometer* registers by the change of volume or pressure of a quantity of dry air or gas contained in a reservoir. The *metallic thermometer* registers by the expansion or contraction of a bar of platinum, silver or gold.

A **clinical thermometer** is a sensitive temperature recording instrument of short range used for medical purposes to determine the temperature of the human body. A constriction holds the mercury up at the highest point reached after expansion and a sudden jerk is needed to send it down ready for a new reading. The proper normal temperature for the blood is 98.6° Fahrenheit.

Gasoline engine derives its energy from the heat evolved in the chemical combustion of a mixture of gasoline vapor, and air. The diagram represents a single acting engine where there is only one explosion for two revolutions of the flywheel or four to and fro strokes of the piston. The first (an outward) stroke allows the air and gasoline vapor to be drawn in. The second (a return) stroke compresses and so heats it up. The explosive mixture is now ignited by a spark and drives the piston out on its third (an outward) stroke. The fourth (a return) stroke cleans the cylinder by driving out the spent gases ready for another series of four strokes. The flywheel stores up the energy supplied during the third stroke.

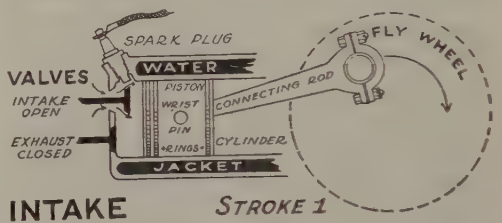


Fig. 9. Suction Stroke.

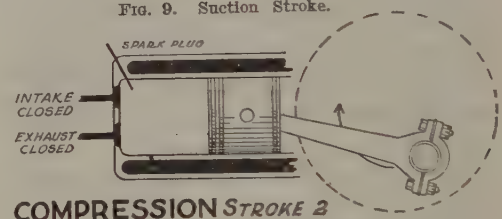


Fig. 10. Compression Stroke.

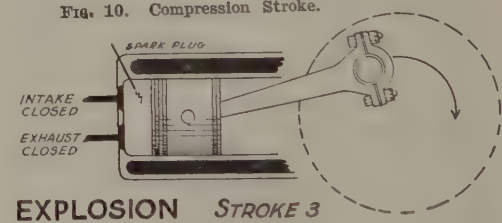


Fig. 11. Expansion Stroke

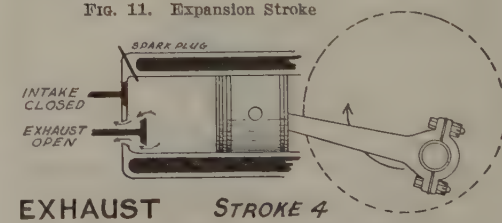


Fig. 12. Exhaust Stroke.

The **steam engine** was developed to the greatest extent by James Watt (1736–1819). The diagram shows the slide valve type. Steam enters by the inlet pipe and is admitted by the slide valve to one side only of the piston which it drives forward up to the other end of the

cylinder. At this point, cams and gears connected with the flywheel cause the slide valve to move over and open the opposite side to the live steam which makes the piston head return. At the same time the slide valve leaves the exhaust open for the spent steam to escape easily away up the smoke stack.

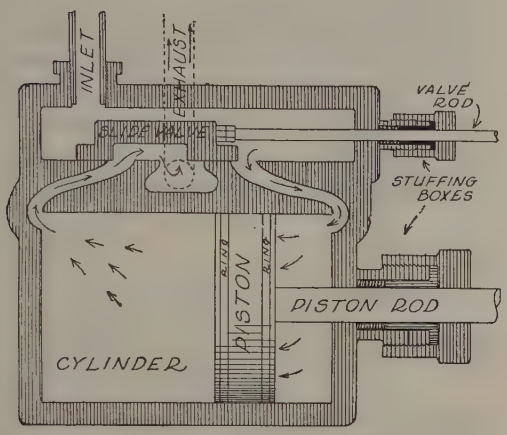


FIG. 13. Steam Engine.

The **Locomotive.** The principle of the modern locomotive is based mainly on the Laws of Transformation of Energy. When the coal is burned in the fire-box and the flames from the fiery furnace change the state of the water in the boiler to steam, we have an example of the conversion of the chemical energy of the coal into the form of thermal or heat energy of the steam. The greater the quantity of coal burned and the hotter the furnace, the greater the pressure of the steam and the higher its temperature. This high pressure steam is led through pipes and valves to the steam cylinders where it is allowed to expand and push back the pistons in them. Thus the thermal energy of the steam is converted into mechanical energy of the pistons. By means of the crosshead and the crankpin the mechanical kinetic energy of translation of the pistons is changed to mechanical kinetic energy of rotation of the driving wheels which causes the locomotive to move and haul its load of passengers and freight. This illustrates the transformation of energy from one form into another. Also the fact that there is a definite limiting relation existing between the amounts in these various forms, so that the total quantity of energy involved is always a constant one.

The **fireless cooker** is a tightly closed metal container surrounded on all sides by material that conducts heat very poorly. After the food has been heated thoroughly to the boiling point it is then closed up inside the fireless cooker. Since the loss of heat by conduction is very small, the food keeps on cooking slowly. In some types, heated soapstone discs placed with the food in the container are used to cook the food.

Optical Instruments.

Lenses are classified as follows:

A. Converging Lenses	1.	Plano-convex,—one surface plane, the other convex.
	2.	Double-convex,—both faces convex.
	3.	Concave-convex,—one face concave, the other convex.
B. Diverging Lenses	1.	Plano-concave,—one face plane, the other concave.
	2.	Double-concave,—both faces concave.
	3.	Convex-concave,—one face convex, the other concave.

Spherical mirrors are either convex or concave.

An **achromatic lens** is built up of a convergent lens of crown glass and a divergent lens of flint to produce a convergent achromatic lens; or by reversing the combination we get a divergent achromatic lens. These lenses give a sharply defined image instead of one whose edges are tinged with color and therefore indistinct. J. Dolland of London solved this difficult problem in 1758. They are a necessity in good microscopes and telescopes.

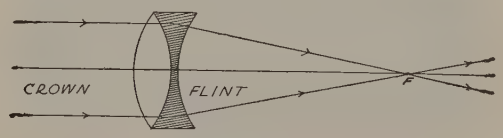


FIG. 14. Achromatic Lens Combination.

Rainbow. The beautiful spectrum found in nature due to the refraction and reflection of light in the water drops at the edge of a rain cloud. The sun which is the true source is located behind the observers.

Photometer. An instrument used for comparing the intensity of illumination given out by various sources. There are many types.

Spectroscope. An instrument used for the analysis of complex radiations. A beam of light is dispersed by means of refraction through a prism or by means of a ruled diffraction grating. The apparatus consists essentially of a *slit*, a *convergent lens*, a *prism or grating*, and a *telescope or camera*. By the study of the spectrum so formed the chemical nature of substances burned or vaporized in the flame emitting the light may be studied. By the aid of the spectroscope it has been learned that 36 of the known chemical elements are contained in the sun's atmosphere. Many new elements have been discovered by spectrum analysis.

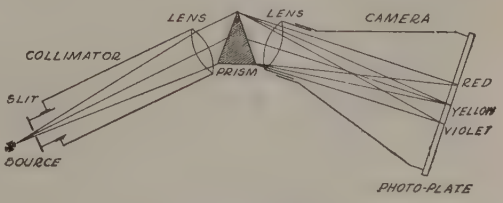


FIG. 15. Spectroscope.

Simple Microscope. A convergent lens of short focal length used so that the object is situated near the focal point on the side towards the lens.

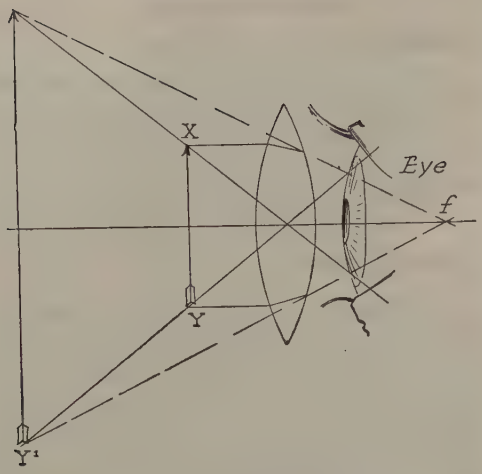


Fig. 16. Simple Microscope.

Compound Microscope. Is used to get greater magnifying power than obtainable with a simple lens. The objective lens or system of lenses held near the object forms an enlarged real image which is further enlarged to a virtual image observed through the eye-piece lens.

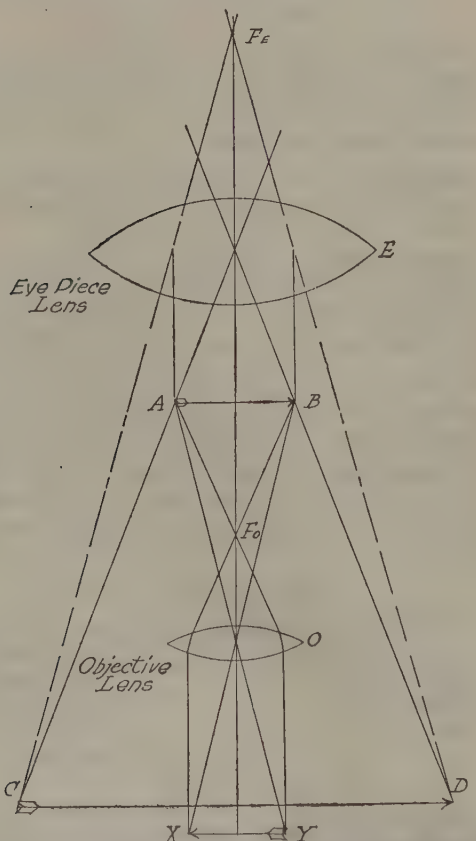


Fig. 17. Compound Microscope.

The eye is a closed chamber into which light can enter only by a lens. The crystalline lens throws a picture on the sensitive nerve endings covering the *retina*. The amount of light is regulated by a curtain called the *iris* which opens wide in the dark to collect the maximum of light rays and contracts in the presence of a bright illumination. By means of muscles the lens may be contracted or relaxed to change its curvature so that either far or near objects are formed with equal clearness on the retina. This power to focus images of the outside world on the retina is called accommodation. The eye is very similar to a camera in principle. The blind spot is the region of the retina where the optic nerve enters the interior of the eye ball. Since there are no microscopic rods and cones in this depression it is insensitive to light.

Fig. 18. The Human Eye.

Defects of Vision. Normal eyes focus the image of ordinary objects nearly on the retina, far-sighted eyes towards a point behind the retina, near-sighted eyes in front. Diverging lenses correct nearsightedness and convergent lenses farsightedness. The proper distance for reading matter is about 10 inches from the eye.

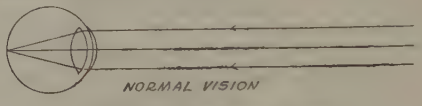


Fig. 20. The Normal Eye.

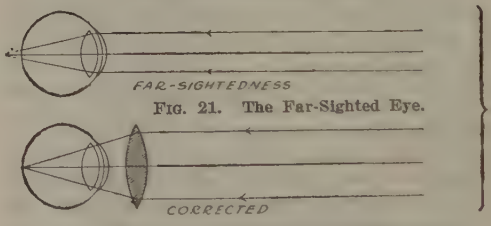


Fig. 21. The Far-Sighted Eye.

Fig. 22. The Corrected Far-Sighted Eye.

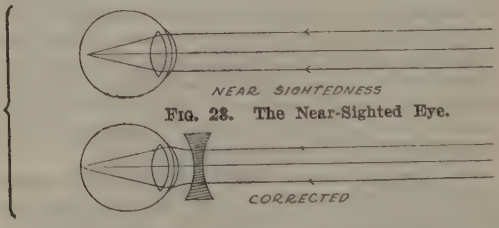


Fig. 23. The Near-Sighted Eye.

Fig. 24. The Corrected Near-Sighted Eye.

Solar Eclipse. Is caused by the moon coming into line between the sun and the earth. Behind the moon there is a deep shadow called an *umbra* extending into space for a distance, while all around and much further off into space is a less intense shadow called the *pen-*

umbra. When the earth in its orbital motion sweeps into the penumbra, there is seen a partial solar eclipse, while persons in those parts of the earth lying in the umbra see a total solar eclipse since no direct rays from the sun come into this region of the moon's shadow. Owing to the earth's rotation, different parts of the earth's surface travel rapidly through the region of total darkness. Hence the reason for the brief duration of these interesting solar eclipses, which enable the astronomers to learn so much of our solar system.

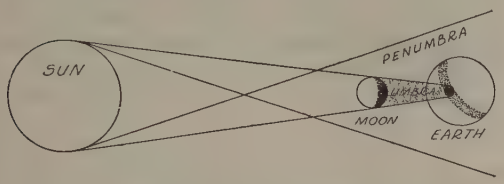


FIG. 19. A Solar Eclipse.

Camera. A device which enables one to secure a permanent impression by photo-chemical action of the bright image formed by a convergent lens placed at a small circular opening in a darkened box. Since single lenses produce some distortion, improved types used two lenses with a small perforated diaphragm placed at the optical center of the combination.

Color.

White light is a mixture of all the colors that form the continuous spectrum from violet to red. Isaac Newton was the first to analyze light and prove that it is a mixture. He classified the colors as seven; *violet, indigo, blue, green, yellow, orange, red.*

Complementary colors are two colors which produce white when superposed e.g. red, and bluish green, orange and greenish blue, yellow and blue, violet and greenish yellow, green and crimson.

Pigment colors when mixed give a quite different effect from a corresponding mixture of spectral colors. Blue paint absorbs nearly all incident light except blue, and some green; yellow paint absorbs all except some green and yellow. On mixing, green is the only color left unabsorbed. Hence it appears to be a green paint.

The **color of light** is determined by the wavelength of the electromagnetic disturbance which gives rise to the sensation of color. The wave length increases from .0004 mm. for violet to .0007 mm. for red, while the frequency of vibration decreases.

Fraunhofer lines are breaks in the otherwise continuous solar spectrum observed as fine black lines parallel to the slit. These lines are due to the absorption of different colors or light of definite wave length by heated vapors in the gaseous solar atmosphere.

The **Solar Spectrum** has a known range of 3000 to 53000 Angstrom units. There are thousands of Fraunhofer lines found in the solar spectrum and many of these coincide with the emission lines of known elements showing that these are present in the sun.

Three color printing is based on the fact that all colors can be reproduced by suitably mixing *violet, red and green.* The *complementary pigments* of these are *peacock blue, crimson,* and *light yellow* called *primary pigments.* Three different photographs are made of an object taken through a color filter of one of the spectral colors which cuts out all colors except that one. The half tone block developed from each of these is used with ink of the corresponding complementary color. Impressions from these are superposed on white paper and result in a fair representation of the natural color.

Refraction or bending of light takes place when light passes obliquely across a boundary between two different media. This is illustrated by the very old experiment of the coin at the bottom of a basin. If the eye is so placed below the rim of the empty vessel so as to be just unable to see the coin, it is possible to see the coin again in full view, without moving the eye upward, by simply filling the basin with water. *This illustrates refraction.*

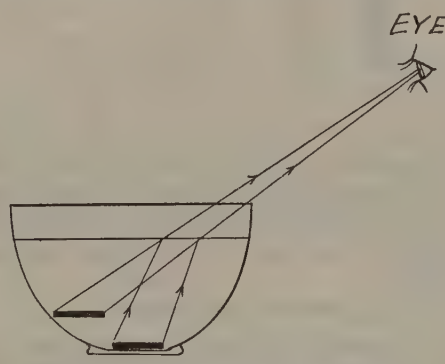


FIG. 25. Refraction of Light Experiment.

The properties of lenses and spherical mirrors:

A *converging lens* is thicker in the central portion than at the edges.

A *diverging lens* is thinner at the central portion than at the edges.

The image formation with these is governed by the following principles.

1. *Concave lenses* and convex mirrors have the same optical properties. They always give reduced and virtual images.

2. *Convex lenses* and concave mirrors have the same optical properties. They always give a real image if the object is further away than the principal focus. The size is reduced if the object is more than twice the distance to the principal focus and it is enlarged if the object is less than twice and more than once this distance. If the object is between the principal focus and the lens or mirror the image is virtual and enlarged.

Full data about an image is specified by stating.

1. *Position.*
2. *Real or virtual.*
3. *Enlarged or diminished.*
4. *Erect or inverted.*

Wireless Waves are electromagnetic waves of radiant energy of a wave length greater than one centimeter up to miles in length.

Thermal Radiation. Infra-red or heat waves are due to waves whose length lies between about eight-tenthousandth of a millimeter and one centimeter.

Visible light consists of radiation whose wave length lies between about four-tenthousandths to eight-tenthousandths of a millimeter.

Soft X-Rays consists of radiation whose wave length lies between one-tenthousandths and one-millionth of a millimeter.

Hard X-Rays from a Coolidge X-Ray tube consists of radiation whose wave length lies between one-millionth and one-tenbillionth of a millimeter.

Gamma Rays come from Radium and other radio-active substances and consists of radiation whose wave length is about one-tenbillionth of a millimeter.

Projection Lantern. An apparatus for securing an enlarged illuminated image of an object or lantern slide on a screen. It consists of a very intense source of illumination such as the carbon arc or incandescent filament, a condensing system of lenses to render the light convergent again, a holder for the slide, or transparent object and an objective system of lenses for projecting on the screen a real inverted and enlarged image of the illuminated object.

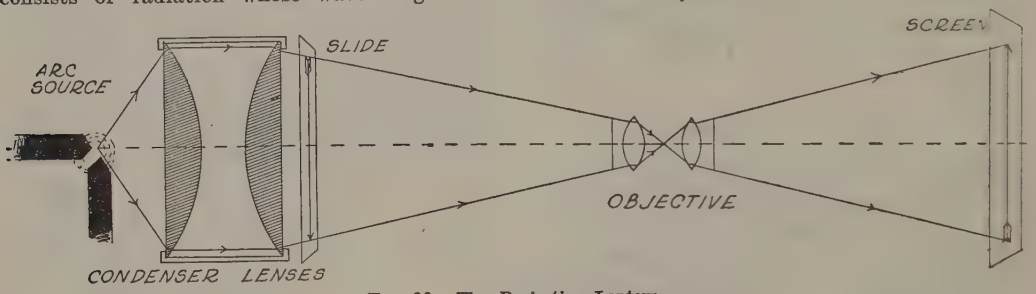


Fig. 26. The Projection Lantern.

Heliograph. An optical signaling device that has been extensively used in military operations. It reflects flashes of sunlight across considerable distances and by regulating their duration and that of the intervals secret signals are exchanged.

Electrical Instruments.

Electromagnet. A powerful magnet made by surrounding soft iron cores with magnetizing coils. It is used in preparing steel magnets, in supporting heavy weights, and in telegraph and signaling appliances.

Helix. A spiral line or a coil of wire used in the form of a solenoid.

Solenoid. An electromagnetic helix used to measure permeabilities of certain metals and to produce a strong and uniform magnetic field.

Toroid (anchoring). A continuous iron or other metallic ring wrapped with two separate sets of layers of turns of wire so that the magnetic properties of the metal may be investigated by using one set of turns as a primary circuit and the other as a secondary.

Magnetic shields are hollow iron spheres or cylinders used to reduce the stray magnetic fields around a suspended-needle galvanometer.

Electric Railways are usually run on 550 volts direct current which is supplied either by a trolley wire, a third rail wire or by a charged conductor, partly enclosed in a conduit between the rails. The rails themselves form the return part of the circuit back to the negative terminal of the generator at the power house. This is usually grounded for safety. In the electric car, the trolley leads the current down to a large variable resistance called the controller which controls the current passing through the motor driving the axles of the wheels.

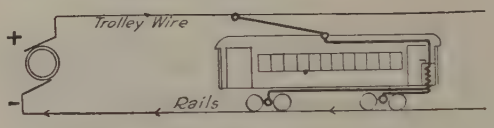


Fig. 27. The Electric Trolley.

Electric Bell. Consists of two small electromagnets which are actuated when the circuit is closed by pressing the door bell button. The iron bar is attracted to the iron cores of the electromagnets and so causes the hammer which is attached to strike the bell. This movement of the iron bar however, breaks the circuit at S—where there is a screw projecting against a spring attached to the bar. Since no current flows now the bar is released and forced back by the supporting spring against the projecting screw. This allows current to flow again which again actuates the electromagnet and rings the bell. This is repeated automatically as long as the bell button is pressed.

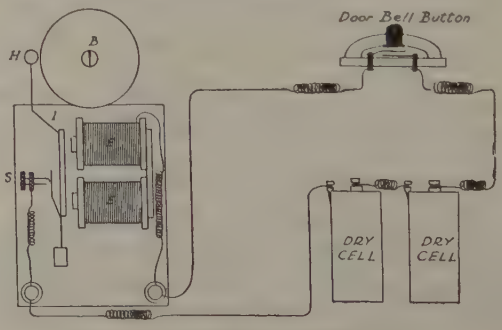


Fig. 28. The Electric Door Bell System.

Magneto. An electrical machine used to generate an alternating current for ringing telephone bells and for the ignition system in gas engines. It really consists of a small dynamo driven by gears from the engine. The potential is generally increased by means of a spark coil. This with a condenser gives hot intense sparks that ignite the explosive mixture in the cylinders.

Terrestrial Magnetism. Dr. Gilbert, physician to Queen Elizabeth, was the first to propose the theory that the earth was a large magnet. Later observation showed two well marked magnetic poles where the dip needle points vertically downwards, one on the northwest shores of Hudson's Bay and the other south of Australia in the Antarctic. The earth's magnetic field is measured by determining the declination, the intensity of the horizontal component of the total magnetic intensity and also the angle of dip or inclination. The compass needle shows the declination or angle between the geographical meridian and the magnetic meridian. The dip needle gives the angle of inclination. The former theory of the earth's magnetism is being questioned now but a complete modern theory has not yet been accepted. The non-magnetic ship, the Carnegie sails the oceans of the world determining and checking the values of the earth's magnetic quantities in all lands and seas. In this way the Carnegie Institute at Washington is now supplementing through its Department of Terrestrial Magnetism the former excellent work of the British Royal Observatory at Greenwich, England.

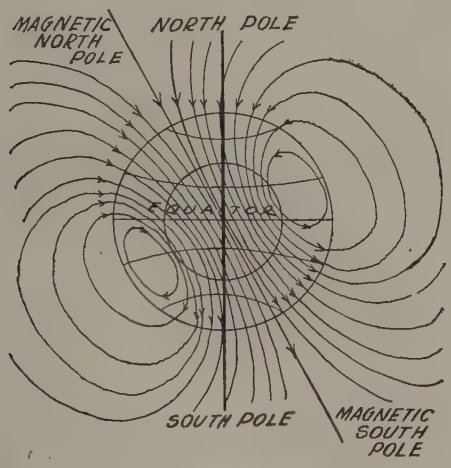


FIG. 29. The Earth's Magnetic Field.

Compass. The instrument used to indicate the magnetic meridian consists of the magnetic needle, the card, and the bowl. The circular card is divided into 32 equal parts by lines drawn from the center to the circumference to form the points of the compass which make angles of 11 degrees 15 minutes between two adjacent points. The enumeration of these points in order is called "boxing the compass." They are: north, north by east, north-northeast, northeast by north, northeast, northeast by east, east-northeast, east by north, east, east by south, east-southeast, southeast by east, southeast, southeast by south, south-southeast, south by east, south, south by west, south-southwest, southwest by south, southwest, southwest by west, west-southwest, west by south, west, west by north, west-northwest, northwest by west, northwest, northwest by north, north-northwest, north by west.

Magnetic Variations. At some places, by means of special self-recording instruments, continuous records are kept of the values of the magnetic elements. In such case it is found that the magnetic elements undergo small daily changes in value, the magnitude of the daily change depending on the location and season of the year. In addition to the *diurnal* range of change the magnetic elements undergo a periodic change of which the period is a year; this is called the *annual* range. Slow changes of which the period, if indeed these changes are at all periodic, must be many centuries, also take place in the value of the elements and these are called *secular* changes. All these changes are due to a combination of causes, the shifting of the earth's field, the minute variations of the dielectric constant of the air and possibly the position of the earth with respect to the other bodies of the solar system.

Magnetic Storms. In addition to these more or less regular changes in the magnetic elements, sudden disturbances often occur which are of considerable magnitude. The cause of such magnetic storms, as they are called, is not clearly known, although there seems to be a definite connection between them and the condition of the sun, for whenever sun spots are pronounced, magnetic disturbances are also unusually large. This is also the case during marked displays of the Aurora Borealis.

Galvanometer. An instrument for detecting the presence, ascertaining the direction, and measuring the strength of an electric current. It depends upon the fact that an electrified wire causes a magnetic needle to stand at right angles to direction of the current.

The **Movable Coil Galvanometer** consists of a coil of many turns suspended freely in the magnetic field of a permanent horseshoe magnet. When the current to be measured passes through the coil, it acts like a magnet and is turned through a definite angle depending on the strength of the current. This angle is determined by observing through a telescope, the motion of an attached pointer or the image in an attached mirror of a fixed scale.

The **Ballistic Galvanometer** is a type of instrument used to measure the quantity of electricity which passes when a current of extremely brief duration traverses the coil of the instrument. It consists of a permanent magnet, a coil of wire and a mirror. The coil is suspended by delicate threads between the poles of the magnet in such a manner that when excited by a current its magnetic poles will react upon the poles of the permanent magnet and cause the coil to swing. The mirror is fastened to the moving coil. The moving element of a ballistic galvanometer is designed for a high moment of inertia in order to lengthen the period, so that it will not move appreciably from its original position before all the current has passed into its coils.

Transformer. A device used for lowering or raising voltage in alternating current circuits. It

consists of an iron core and two separate coils of insulated wire, a primary and a secondary. When an alternating electromotive force is fed into one of these coils, the primary, the core is magnetized. The magnetic flux through it varies just as does the applied electromotive force and produces another, an induced electromotive force in the secondary coil of similar frequency and of a potential directly proportional to the ratio of the turns of wire in the two coils.

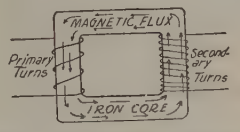


FIG. 30. Principle of Transformer.

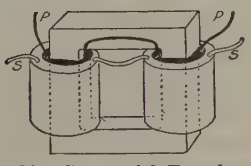


FIG. 31. Commercial Transformer.

Shunts are conductors placed in parallel with a galvanometer or ammeter to carry part of the current thereby varying the sensitiveness of the galvanometer and also preventing too heavy a current being sent through its coils.

Resistance Thermometers are those in which the fact, that an increase in the resistance of a coil of wire is produced by an increase in temperature, is used for the accurate measurement of temperature.

A **potentiometer** is a device used to compare electromotive forces, to measure any sized currents, to measure a high electromotive force, to measure the internal resistance of cells and to calibrate ammeters. It is composed of a long wire of uniform cross-section, joined in series with a battery of constant electromotive force and an adjustable resistance. It requires the use of a sensitive galvanometer. By means of a standard cell, the current through the wire is adjusted to a fixed and definite value. The potential along the wire varies with the length and is balanced against the unknown one to be measured.

Wheatstone's Bridge is a method of measuring resistance based upon the fall of potential along two conductors connected in parallel. The unknown is in series with a known resistance R on one side and two known resistances in series form the other side R_2 and R_3. When the galvanometer shows no current in the position indicated the unknown resistance is determined by the formula $X = \frac{R_2}{R_1} R_3$ (ohms).

The principle of the telephone is based on the phenomenon of induced currents. One of the most typical is an early type which used two similar pieces of apparatus, one at each end. This consisted of a thin flexible soft iron diaphragm which was made to vibrate by the voice in front of the pole of an electromagnet whose surrounding coil was connected electrically to

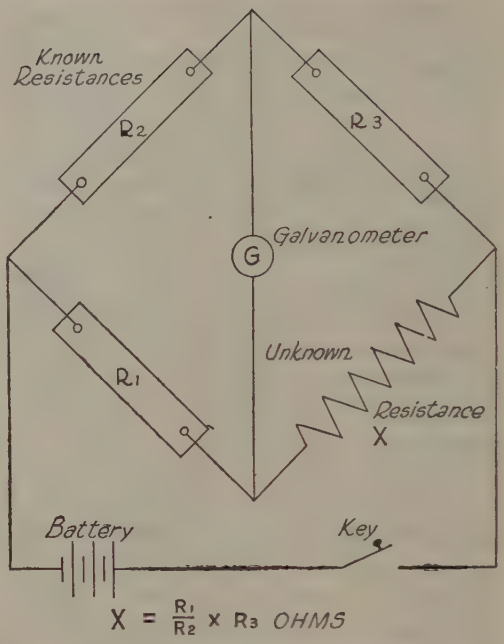


FIG. 32. Wheatstone's Bridge.

the coil of the other more distant apparatus. Motion of the thin disc changed the magnetic field of the electromagnet and gave rise to an induced current which passing through the other electromagnet caused its flexible diaphragm to imitate the movements of the first and so give rise to similar audible sounds. In the modern telephone this apparatus is still used to reproduce sounds at the far end and is called the receiver, but the carbon transmitter based on the principle of the microphone has been found more efficient as a means of impressing the desired fluctuations in the telephonic current at the speaker's end of the telephone line. The modern telephone line has many very ingenious improvements and attachments. For long distance communication, special relays and devices are necessary because the magnitude of the desired fluctuations falls off with the distance.

FIG. 33. Principle of Telephone—Early Type.

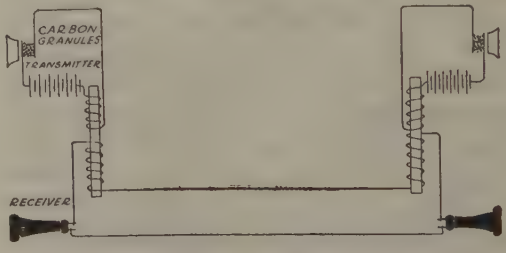


FIG. 34. Modern Telephone Circuit.

The **electric flat-iron** makes use of the heating effect of an electric current when it flows through a high resistance. This resistance wire is nichrome, an alloy of nickel and chromium which does not deteriorate so rapidly when heated like iron wire does. The current for a flat-iron used on a 110-volt circuit is from five to six amperes, meaning that the power to operate it is about half a kilowatt. If the rate is ten cents per kilowatt hour, this means that it costs about five cents to use the flat-iron for one hour. The nichrome wire is wound around and around a horseshoe shaped piece of mica, lying under the steel cover close to the smoothly polished heating plate and is carefully insulated to avoid the danger of short circuiting.

The **bread toaster**, the **coffee percolator**, the **electric oven**, and the **electric heater** are all familiar practical applications, like the electric flat-iron, of the heating effect of an electric current when it is made to flow through a resistance. In most of the above appliances coils of nichrome wire which offers a rather high resistance and withstands oxidation are suitably arranged in spiral form, embedded in a good thermal and electrical insulator. This tends to conserve and concentrate the heat energy.

Electric furnaces are of either the resistance type or the arc type. The electric resistance furnace is formed of coils of platinum, tungsten, nichrome or molybdenum wire wound around spirally on some very refractory material. The resistance offered to the passage of an electric current, through the coil results in the generation of a great amount of heat, which is prevented from escaping readily by means of good heat insulating material packed around the outside of the heating coil. The electric arc furnace depends on the heat generated by a carbon arc. A temperature of 3500° C. can be secured as against about 1800° C. with the resistance type. The arc is produced inside the crucible which holds the substances to be melted and is enclosed with good heat insulating material.

The **electric light bulb** depends on the resistance of a conductor to the passage of an electric current. The heat developed raises the fine filament or wire to incandescence. By enclosing it in a vacuum and by keeping the wire from becoming hot enough to evaporate or volatilize, which is done by using a sufficient length as a resistance to cut down the current, it is possible to keep them good for many hours use. Jobart in 1858 proposed to use a small carbon in a vacuum, but Thomas Edison of the United States, in 1879, and Joseph W. Swan of England, in 1860, made the greatest advances in this problem of electric lighting. The first filaments were made of platinum wire and later of thin carbon wire prepared from parchmentised cellulose. They are now formed of thin tungsten or tantalum wire. The electric current is brought to the lamp from the dynamo at the power plant by means of heavy copper wires carefully insulated which offer little resistance to the passage of the current. This current is led into the bulb by a special relatively thick sealing-in wire through the glass walls. This is connected to a long length of very fine tungsten wire which offers such a high resistance to the current that considerable heat is developed and the filament is made white hot. The current leaves by means of another special sealing-in wire through the glass.

Electric Arc Light. Davy in 1809 obtained light from two pieces of carbon using an electric current from a voltaic battery. Foucault, Duboscq, Deleuil, and others produced electric lights in 1853. Electric light was first used in a light house at South Foreland in 1858. The Jablochkoff candle was invented in 1877. It consisted of two parallel carbons separated by a layer of kaolin and bound together by an asbestos wrapping. Now the pieces of carbon are placed vertically one above the other as in the Weston arc lamp and fed by an automatic mechanism operated by electro-magnets which raise or lower the carbon by an electric current. The names of Brush, Weston, Thomson and Houston are intimately identified with the improvements of the arc light. Henry Lepante's great light exhibited at Chicago in 1893 attracted much attention by its great size. Its 90,000,000 candle power light is visible 146.9 miles.

Incandescent Lamp. The earliest form was devised by William Robert Grove (1840), the inventor of the Grove Battery. It was followed by that of August Kind (1845) and known as the Starr-King lamp. It has a platinum burner and a carbon in a vacuum. Probably the first house to be lighted by electricity was that of Moses G. Farmer of Salem, Mass. In 1859, he arranged a series of lamps by the subdivision of the electric current. The Sawyer-Mann lamp was produced in 1878 and consisted of an incandescent rod of carbon in a globe filled with nitrogen. Edison's lamps appeared in 1880, and introduced the use of the threadlike filament of bamboo sealed in vacuum to prevent its burning away. Its production entailed not only much litigation with Sawyer and Mann, but caused a panic in the London Stock Exchange in 1878 through fear of its causing the displacing of gas.

An **electric spark** is miniature lightning. It is the visible and generally audible phenomenon which accompanies a sudden discharge of electricity across an air gap. It is only recently that any satisfactory explanation has been found. This, in brief, considers the discharge as a rush of electrons to and fro many times across the gap, going with such a high velocity that they ionize the molecules of oxygen and nitrogen of the air against which they collide. Electrons are ejected from these molecules in all directions about the spark gap and on their return to their proper places in the atoms of the gas give forth radiant energy which makes the visible spark. Rotating mirrors and revolving systems of lenses have been used by experimenters to demonstrate the oscillatory nature of the electric discharge.

Electric Machines. Powerful currents are produced by the magneto-electric machine or by the dynamo-electric machine. In the former a permanent magnet is used; in the dynamo-electric machine, an electro-magnet is employed. Both depend upon the induction which takes place between coils of wire and magnets when their respective positions are changed. The strength of a magneto-electric machine is limited to the strength of the inducing field magnets. The use

of electro-magnets was discovered by Soren Hjorth of Copenhagen, who patented his machine in 1855. In it by the mutual action between the electro-magnets and the armatures an acceleration is acquired by means of which the production of electricity is greatly increased, and the power of the machine is greatly intensified. Wilde, (1866) used a small machine equipped with permanent magnets to excite field magnets wound in coils in a larger machine. Siemens (1867) dispensed with the permanent magnets used by Hjorth and took advantage of the residual magnetism stored up in the iron and used what has since been known as the bobbin armature. His discovery was shared by Varley, Wheatstone, and Farmer independently. The continuously wound ring armature was devised by Gramme and D'Ivernois (1871). The modern dynamo stands as the perfected work of such electricians as Weston, Brush, Edison, Thomson, Houston, Westinghouse and others. The armature is the name given to the coils of wire which are made to revolve. The electro-magnets are fixed in position and are known as the field magnets. These are placed on opposite sides of the armature; if two in number the machine is *bi-polar;* if several field magnets are used, the machine is *multi-polar.* Alternating currents dynamos cause the current to flow continuously in one direction. The transformer changes the character or potential of currents.

Electrocution. By a law passed by the legislature of New York (1888) to go into effect in 1889, death by a powerful electric current was substituted for hanging. One wire is strapped to the prisoner's forehead, and the other is applied to his ankle. In this way the current from a dynamo passes through the victim's body.

Sounder. A telegraphic receiver in which audible sounds are produced by the iron armature of an electromagnet. When the signaling current is made and broken at a distant station this armature is made to move to and fro between its stops. The Morse code is represented by the two distinct sounds, which it makes one as the dot and the other as the dash.

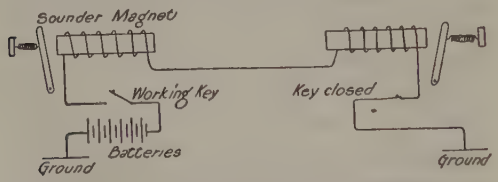


FIG. 35. Telegraphic Circuit with Sounders.

Relay. An electrical device using an electromagnet excited by the original feeble current to actuate a switch or contact maker which controls a more powerful current. This is supplied by a battery strong enough to operate easily the desired apparatus, such as the local telegraphic receiving instruments.

Microphone. A very sensitive electrical instrument for detecting weak sounds such as the ticking of a watch. The original form consisted of a pointed carbon rod resting in loose contact on two other carbon rods. When a battery is connected in series with these rods, and a pair of phones, any very small vibration of the loose rod will cause a variation in the resistance at the point of contact so that the current will vary in a manner corresponding to the sound. The microphone has been applied and much improved in connection with the transmitter of the modern telephone.

Telephone or Carbon Transmitter. Consists of a flexible diaphragm to the back of which is attached a carbon button which presses lightly against a quantity of carbon granules held in a small cavity or chamber. Electrical connections permit a weak current to pass from the diaphragm through the carbon button and granules and out along the telephone lines to the receiver and back. Any small disturbances of the diaphragm produced by the voice cause fluctuations and variations in the electric current which produces a corresponding sound at the receiver. The principle is the same as that of the microphone.

Telephone Receiver. Consists of a small horseshoe electromagnet, with two coils having a great number of turns of insulated fine copper wire on each pole. A thin flexible soft iron diaphragm is held in position quite close to the pole faces of the small electromagnet so that its central portion lies in the electromagnetic field of the latter. Fluctuations in the telephonic current flowing through the horseshoe electromagnet cause corresponding motions of the iron diaphragm which give rise to audible sounds similar to these which gave rise to the fluctuations in the telephonic current originally.

Slide-wire Bridge. A special arrangement of Wheatstone's Bridge, in which two of the three known resistances are replaced or sometimes supplemented by a long uniform wire with a sliding electrical contact.

Electric Arc. Formed when an electric current passes through the vapor between the carbon terminals of a battery connected so that there is a P. D. of at least 30 volts. Sir Humphrey Davy was the first to make an electric arc about 1800 A. D. He used the current from a large number of Voltaic cells.

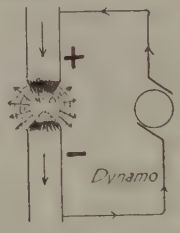


FIG. 36. The Carbon Arc Light.

Voltameters are instruments in which the strength of a current is determined by the weighing of the quantity of a metallic element liberated by the current in a given time. The standard one is the silver voltameter.

Cells:

1. The *Voltaic Cell* consists of plates of zinc and copper immersed in dilute sulfuric acid.

2. The *Daniell Cell*, consists of a zinc rod surrounded by dilute sulfuric acid contained in a porous pot which itself is surrounded by a saturated solution of copper sulfate contained in a copper vessel which serves as a copper plate

electrode, or in a glass jar containing a copper electrode.

3. The *Le Clanche Cell* consists of a carbon plate and a zinc rod immersed in a solution of sal-ammoniac. The carbon plate is surrounded by manganese dioxide, which serves as a depolariser.

4. The *Gravity Cell* is a form of Daniell Cell used extensively in telegraphy. In it the liquids are kept separate by gravity, the $CuSO_4$ resting at the bottom while the $ZnSO_4$ solution floats above it.

5. The *Dry Cell* is a modification of the Le Clanche's Cell composed of a central carbon rod surrounded by a stiff paste of manganese dioxide, plumbago and gum; this is surrounded by a zinc cylinder, the intervening space being filled with a thin paste formed from plaster of Paris and solution of sal-ammoniac.

6. The standard *Clark Cell* consists of electrodes and zinc and mercury immersed in a paste of mixed mercurous and zinc sulphates. Its electromotive force is 1.433 volts at a temperature of 15° C.

7. The *Standard Weston Cell* consists of an amalgam of mercury and cadmium, and cadmium sulphate. The electromotive force is 1.019 volts at 20° C. It is now extensively used for very accurate potentiometer measurements.

8. The *Storage Cells* are secondary battery cells. They are used in electric motor vehicles, and telegraphy. The plates are heavy lead grids full of holes containing the active material, red oxide of lead, PbO_2 and spongy lead, with dilute sulphuric acid as an electrolyte.

Thermocouple. A device composed of wires having different kinds of metals at the two junctions. Temperatures at one junction different from the other give rise to thermal electromotive forces which enable one to measure the temperature accurately. The temperature of the cold junction is kept constant by means of a constant temperature bath or thermos bottle.

Thermo-pile. A form of thermocouple used to detect small differences of temperature but composed of a series of these thermal elements.

Radio-micrometer. An instrument which is used to measure the intensity of radiation.

Fig. 37. Crooke's Radiometer.

Thermogalvanometer. An instrument in which the heating of a wire is used to measure small alternating electromotive forces and the intensity of wireless waves.

Thermo-electric Pyrometer. A form of thermocouple used in measuring high temperatures. They are made of rugged construction when used for industrial purposes being protected by iron or other metal tubes.

Faraday's Disk Dynamo, the first magneto-electric generator, consisted of a copper disk mounted upon a shaft so that it could be rotated. Permanent magnets or electromagnets furnished a strong magnetic field which passed through the disk. When the disk was rotated there was an electric potential generated in it proportional to the rate at which it cut the magnetic lines of force. This was invented by Michael Faraday in England about 1830.

Magnetic Damping. Is used in such instruments as a watt-hour meter. A disk generally of aluminum, is connected by gears to the meter movements so that it rotates slowly when the meter is operating. The disk passes between the poles of one or more electromagnets and being a solid conductor eddy currents are generated in it proportional to the velocity at which it rotates. A sudden momentary impulse from the meter would normally tend to cause it to over register due to the momentum of the movements were it not for the damping effect of the eddy currents within the disk.

Oscillograph. An instrument designed to enable the operator to see the form of an electric wave. The magnetic type consists of a delicate moving element in a permanent field of high intensity. A mirror on the moving element reflects a beam of light over a stationary ground glass or a photographic plate. The Cathode tube oscillograph operates by deflecting a sharp beam of Cathode rays, which strike a fluorescent screen, so as to trace out the wave form visibly.

Loud Speaking Telephones.

Extraordinary interest has been aroused in recent years in the problems of the loud-speaker owing to the popularity of broadcast reception. The present loud-speaker is an instrument that has been practically developed by trial and error rather than by theory and only gives a fair reproduction of the original sounds. This is only part of the problem for the difficulty lies in securing considerable intensity and it is the variety of transformations which makes this serious. First the electrical fluctuations are amplified, then the transformation of these into acoustic variations of air pressure, and lastly the disposal and propagation of these acoustic vibrations. There are many distinct devices adopted for the sound transformation such as *electrostatic, electromagnetic* and *thermal.* The original electrical disturbance is not a simple harmonic one but a highly coupled one which is analyzed scientifically into its various components as far as possible. The familiar physical phenomenon of resonance is one way of securing loudness but this emphasises certain selected components as is true for many telephonic diaphragms. If these frequencies are of audio frequency it is necessary to damp the diaphragm which of course again reduces its sensitivity for other ones also. One method adopted is to use a strip of thin metal foil hanging in the magnetic field between two magnetic pole pieces. The varying telephonic currents traverse the strip and cause it to vibrate across the field in a corresponding manner giving rise to acoustic effects. Horns are really a disadvantage because they resound. The

transmitting and receiving rooms should be lacking in resonant effects to eliminate echoes and distortions. This is secured by draping the walls and windows and covering the floors with carpets.

Dynamo consists of an armature which carries a number of conductors on its surface, and parallel to its axis of rotation. The armature is mounted between the poles of a magnet and when rotated an electric current is obtained from sliding contacts which make connection with its conductors. When a conductor cuts through a magnetic field an electric potential is generated in it.

Electric Motor. (History) Faraday in 1821 caused a floating bar magnet to revolve upon a central supporting wire by means of an electric current. Barlow, of Woolwich in 1826, made an electric wheel. Abbe Dal Negro, of Padua, in 1830, made an electric pendulum which swayed backward and forward by the force of a current of electricity. Henry's electro-magnets (1828) supported thousands of pounds weight; and in 1831 he devised a simple form of motor. This was followed by motors by Sturgeon (1832), Jacobi, (1834), Davenport (1834), Zabriskie (1837), Davenport (1837), Page (1838), Walkley (1838), Stimson (1838), Page (1839), Cook (1840), Elias (1842), Lillie (1850), Neff (1851) and Page (1854). As early as 1835, Davenport made a small circular electric railway at Springfield, Mass. In 1839, Jacobi made an electric motor boat and carried 14 passengers at a speed of 3 miles an hour. Davidson, a Scotchman, propelled a six-ton electric car 4 miles an hour (1839), Page's electric locomotive drew a train of cars from Washington, D. C. to Bladensburg at a speed of 19 miles an hour (1854). So far the propelling force was the voltaic battery. The modern electric dynamo will drive another dynamo in the opposite direction when the two are connected by wires.

Motor. A device for changing electric to mechanical power. When two magnetic fields meet there is a tendency for them to repel or attract each other depending upon their relative polarity. A motor is mechanically the same as a dynamo, the difference being that a current is fed into the armature in the case of the former. The field set up around the conductors reacts with the field of the machine and rotation is obtained.

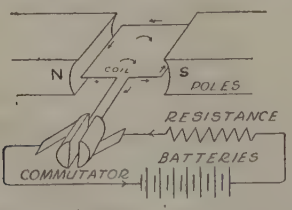


FIG. 38. Principle of Electric Motor.

Standards of Inductance are inductances of known value, rigidly constructed so as to retain their intended values. Such inductances may be fixed or variable. The former consists of a coil of wire wound upon a non-magnetic form and mounted in a suitable casing with accessible terminals. A variable inductance consists of two of such inductances in series one of which may be moved to or away from the other, producing a variation dependent upon the mutual inductance between the two.

Induction coil. A form of the transformer, differing in that its input is direct current and its output a pulsating alternating current. An induction coil consists of an iron core and two coils of wire thoroughly insulated. The primary coil next to the core consists of a few turns of heavy wire which are connected to a direct current source such as a battery. In series with the primary coil is an interrupter, either of the magnetic or mechanical type. The pulsating current in this coil creates a pulsating magnetic flux which cuts through the secondary coil and produces an induced electromotive force greater than that in the primary by an amount proportional to the ratio of the turns in the two coils. The secondary coil sometimes consists of miles of fine wire because the potential to be secured by induction depends on the ratio of the number of the turns in the two coils. A condenser is generally connected across the interrupter to assist in getting sharper breaks of the primary current.

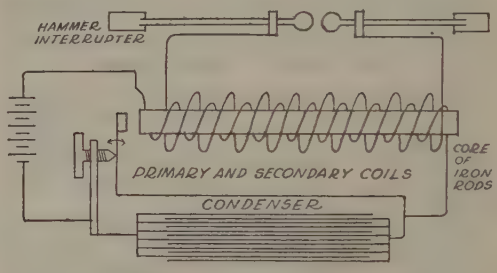


FIG. 39. Induction Coil.

Hammer Interrupter. A magnetic device for rapidly interrupting a direct current circuit. It is used chiefly on induction coils. The current magnetizes the iron core and this attracts the armature of soft iron. As the armature moves toward the face of the core the contacts are opened automatically and the current ceases to flow. The spring returns the armature to its normal position when the contacts again close and the entire cycle is again automatically repeated. The frequency of interruption depends upon the period of the armature and spring and upon the adjustment of the contacts.

The Tesla Induction Coil has a primary of five or six turns, well insulated, which is connected in a tuned high frequency circuit. The secondary is a single layer of insulated wire wound upon an insulating tube. Electrical oscillations of extremely high frequency are produced in this secondary.

Leyden Jar. A glass vessel coated separately upon both sides with tin foil to form a condenser. Its electrical capacity is very small but it is extensively used with most forms of friction electrical machines.

Spark Gaps are of three general types: 1. *Plain*, 2. *Quenched*, 3. *Rotary*. The first type consists of two insulated electrodes between which the current is allowed to jump. The second type

allows the sparking to take place in an enclosed space, filled with gas under pressure. The third type consists of a rotating disk bearing contacts which act like stationary electrodes at certain intervals. The spark can only take place when the electrodes are opposite. Between sparking periods the condenser is allowed to charge up.

Rays emitted by radio-active substances:

Alpha rays are considered to be positively charged particles moving with a velocity about 2×10^9 cm. per sec. which is about one-fifteenth that of light so that they are only slightly deviated by a strong magnetic or electric field. The mass of each particle is 6.2×10^{-24} gm. and they carry an electric charge of 3.182×10^{-19} coulombs and their range of penetration in air at atmospheric pressure is about 7 cm. They are almost the fastest projectiles known in nature. They possess the greatest relative energy for their size.

Beta rays consist of negatively charged particles moving with a very high velocity about 2×10^{10} cm. per sec. which is two-thirds that of light and they are strongly deviated by a magnetic or electric field. The mass is about 1/1850 that of hydrogen atom and they carry a charge of 1.591×10^{-19} coulombs. These are the only natural projectiles faster but lighter than the alpha particles. They are ten times as fast but about one-eight-thousandth the mass in comparison.

Gamma rays are considered to be similar to X-Rays only of shorter wave length and higher frequency having a wave length about 1×10^{-10} cm. being of the nature of wave pulses in the ether. They are more penetrating than the Alpha or Beta rays.

Cathode Rays are beams of electrically charged particles (electrons) of very high velocity produced in intense electric fields. The range of velocities is usually from about twenty thousand to one hundred and twenty thousand miles per second. When stopped suddenly by a metallic target they give rise to X-Rays.

X-Rays are produced by bombarding a solid substance with cathode rays. One explanation is that when an electric charge is suddenly stopped a plane sheet of magnetic force moves forward with the velocity of light. It is definitely known that the rays originate at the point of impact. The velocity of the bombarding electrons constituting the cathode rays is usually about one hundred thousand miles per sec. or about one-half that of light.

AUTOMOBILE.

The motor car or automobile is usually propelled by electric, steam or gasoline power, and is generally so classified.

Automobile, The Gasoline, has from four to twelve cylinders with the pistons acting around on one long common crank shaft. The principle is that of the internal combustion engine and energy is supplied intermittently by two explosions per revolution for a four cylinder, three explosions per revolution for a six cylinder, and four explosions per revolution for an eight cylinder engine.

Engine of a Gasoline Auto. Requires a *cooling*, a *lubricating*, a *carburetor*, and an *ignition system*. Cooling of the cylinder walls is necessary to permit lubrication and prevent the lubricating oil from burning away too rapidly. This is done by air and the use of long thin metal pins projecting from the cylinder walls outside or by water, circulating from the cooling radiator to the water jacket surrounding the cylinder walls.

Lubricating system, is very essential and oil is either splashed or pumped to all bearings around a rapidly rotating part. In some types, the oil is forced through the hollow shafts into the center of the bearings which generally have little curved grooves in them to distribute the oil.

Carburetor. A device for controlling the mixture of the explosive mixture of air and gasoline. The outward suction stroke of the piston draws air and gasoline in about the correct proportions into the manifold or tube leading to the various intake valves for the cylinders. The proportions of gasoline to air must be changed for efficient working when operating under different conditions such as starting or running at low or high speeds.

Ignition system includes a *spark plug*, a *timer*, an *induction coil*, and a *storage battery* or a high *tension magneto*. The timer is a device run by gears from the crank shaft like the magneto and regulates the time of passage of an electric spark between the two insulated metal points in the spark plug at the head of each cylinder so as to ignite the explosive mixture not only when the piston is making its proper stroke but also at the most effective part of that stroke depending on the speed of the engine.

Storage Battery. Consists of a series of insulated and perforated lead plates, whose surfaces have been especially treated, supported in an electrolytic solution of dilute sulphuric acid of density between 1.250 to 1.300. A hydrometer is used to determine if the density falls below 1.200 when the battery needs recharging. Only distilled water sufficient to cover the plates should be supplied to take care of evaporation.

Chassis. The skeleton frame of the car.

Tonneau. The rear seat division of a touring car.

Hood. The car cover which encloses the engine, protecting it from dust and rain.

Running Gear. The term applied to the tires, wheels and axles.

Differential. The mechanical part usually on the rear axle consisting of a carefully arranged assemblage of gears which communicates the motion from the engine main crank shaft passing through the clutch, transmission and drive shaft onto the wheels. It permits one wheel to turn at a different rate of speed from the other so that the car can navigate corners and turns successfully.

Transmission. Particularly applied to that part of the driving mechanism which permits a selection of the suitable speed and driving power by means of a proper combination of gears. For starting or for climbing a low axle

speed is desirable with lots of power which means a high speed of the engine.

Steering Device. Formed by an endless screw working in a worm wheel which enables one to make small changes in direction of the front wheels.

Starter. An electric direct current motor supplied with electrical energy from the storage battery. A special spring and system of gears enables it to drive the main crank shaft so that the pistons are made to move in the cylinders and draw in the explosive mixture which is then automatically ignited.

Clutch. A coupling connecting the main crank shaft with the transmission shaft by means of friction generally. There are various forms such as the cone or the multiple disk.

Brakes consist of two parts, the service brake operated by the foot, and connected to an asbestos lined steel band acting by friction on drums attached to the driving shaft and the emergency brakes of similar mechanism acting on the wheels of the car. Originally the emergency brakes were only applied to the rear wheels of a car but they are now arranged to operate on all four in some models, which is a considerable improvement in many respects.

RADIO.

The remarkable achievements in radio communication during recent years are the result in the main of purely scientific investigations carried on by the pioneers. Clerk Maxwell, Hertz, H. A. Lorentz, Sir J. J. Thomson and O. W. Richardson, who were actuated solely by a desire to learn more about the underlying principles of nature. Lord Kelvin predicted in 1853 from mathematical reasoning that the discharge of a Leyden jar would be oscillatory which was proved experimentally in 1857 by Feddersen. In 1865, Clerk Maxwell developed the electro-magnetic theory and he predicted the existence of wireless waves in space which Professor L. H. Hertz later discovered about 1888. The electron theory was later developed by Lorentz, Thomson and Richardson.

Edison about 1880 discovered that a plate inserted in a carbon filament incandescent lamp was able to cause an electric current to flow between the plate and the filament if the plate was connected to the positive end of the filament but not if the negative end was used. Sir J. J. Thomson showed in 1899 that the current to the plate was carried by electrons. O. W. Richardson in 1901 explained the mechanism of the thermionic emission of electrons from the filament. In 1905, J. A. Fleming proposed the use of the thermionic valve as a rectifier for the detection of electromagnetic waves. In 1907 de Forest inserted a grid calling the device the "Audion" which was of much greater practical use. Its development has been very rapid since because of its ability to perform wonderfully well in a number of very important uses.

Terms Used in Radio.

Antenna. The system of conductors used for radiating or absorbing the energy of electromagnetic waves.

Atmospheric Absorption. Term given to the loss of radiated energy due to atmospheric absorption of the electromagnetic waves.

Audio-Frequencies. Those frequencies of vibration which affect the human ear. They are usually between 20,000 and 50 vibrations per second.

Capacity Coupler. An apparatus which joins portions of two radio frequency circuits by means of electric fields. Electrical energy is thus transferred from one circuit to the other by means of electric forces.

Counterpoise. A system of conductors which form one portion of a radiating circuit and is usually situated below the antenna nearer the ground. The antenna itself forms the other portion. Ordinarily the earth is used.

Coupler. An arrangement which permits a transfer of electrical energy from one circuit to another usually at radio-frequency by transformer action.

Detector. A device usually depending on a crystal or vacuum tube which receives energy at radio frequency and changes it into energy that will operate a telephone receiver. The principle is to rectify the incoming alternating current signals into a pulsating direct current.

Direct Coupler. One which magnetically joins two circuits having a common conductive portion.

Ground or earth, is the use of the earth as one plate of a condenser in radio transmission.

Inductive Coupler. An apparatus which joins portions of two radio frequency circuits by means of magnetic forces. The mutual magnetic field permits a transfer of electrical energy from one circuit to the other.

Radio frequencies are those which are higher than about 20,000 vibrations per second, which is the upper limit for audio frequencies.

Resonance or Tuning. The name given to the varying of the inductance or capacity of a circuit in order to cause the voltage to rise to a maximum.

Wave Meter. A set up including an inductance and capacity, which enables one by resonance to determine the frequency and wave length of a circuit.

Radio Receiving Apparatus.

Crystal detectors have replaced the *coherer* as more sensitive detectors of electromagnetic waves. Polished silicon, galena, and carborundum possess the peculiar property of rectifying an alternating current so that when a train of alternating electric impulses is received from the antenna, these are rectified into a pulsating unidirectional current. There is thus only one single impulse given to the electromagnet of the telephone receiver and a click is heard. An audible sound or tone is heard if the number of trains received is sufficient, about five hundred per second or less than ten thousand per second.

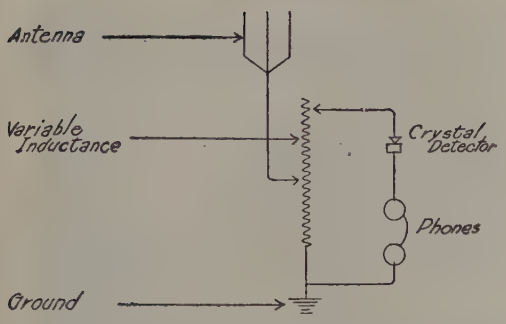


FIG. 40. Simple Crystal Receiving Circuit.

The Audion or Electron Tube is widely used in radio reception. A positively charged plate is mounted in a vacuum tube together with a heated filament and a grid. It has been found by experiment that if the filament is heated to incandescence small negative charges or electrons will be emitted. Some electrons will strike the positively charged plate and current will flow from the plate to the heated filament but not from the filament to the plate. Thus the much needed rectifying action is obtained and on a much larger scale than with the crystal. The filament is supplied from a small battery and controlled by a rheostat. By changing the voltage across the grid the flow of electrons can be greatly affected. The electrons pass through the holes in the grid and strike the plate in the rear of it and there give up their electrical charge. If conditions are properly balanced a small change in potential at the grid will produce a large change in the flow of electrons or the current through the plate which goes to the ear phones. The phones are in series with a high voltage battery which assists in actuating the diaphragms of the ear phones.

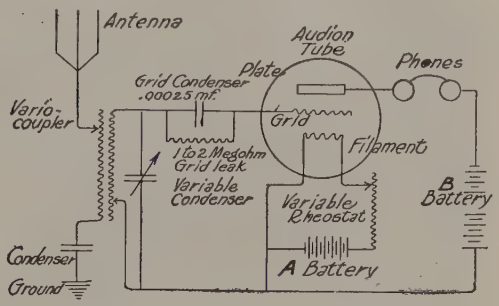


FIG. 41. Single Tube Receiving Circuit.

Audion Detector with one-step amplification. In radio reception one tube is not sufficient to give loud enough signals. It then becomes necessary to increase the intensity of the incoming audible vibrations. This can be accomplished by increasing the amplitude of the vibrations or by passing the audible vibrations from the first detector tube to a second tube through a one to one transformer. From the secondary of the transformer one terminal is connected to the grid and the other to the negative terminal of the A and B battery which is an exact duplication of the detector tube. The one to one transformer is used as this is an inductive coupling and due to its high impedance will damp out any higher harmonics or high frequency oscillations.

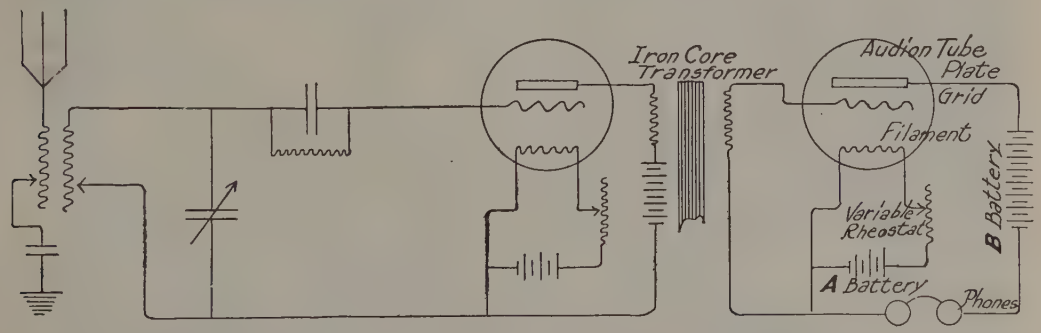


FIG. 42. Two Tube Receiving Circuit. One Detector Tube, One Amplifier.

Tele-Transmission of Pictures.

Tele-transmission of pictures is the transmission of photographs over long distances by means of the telegraph lines of communication. The method is to use certain particular frequencies of alternating current different from the ones regularly in use over the lines which are used for ordinary commercial telegraphy or long distance speech communication. These superposed alternating currents are then sorted out by means of filter circuits at the other end which permit only these special frequencies to pass.

The intensity of current at one frequency acting as a carrier wave is varied by means of a photo-electric cell which receives the impression of the image of a minute portion of the picture to be transmitted. An ordinary photograph is simply built up of light and dark portions. The photo-electric cell is very sensitive to the different intensities of light from these light and dark portions. A lens throws an image of only one very small portion of the photo on the opening to the photo-electric cell at one time. By moving the photo across horizontally in one direction from one side to the other and then raising it vertically step by step after each trip across, the whole photograph is covered. The photo-electric cell in this manner causes the intensity of the telegraphic current to vary in a way

which exactly corresponds to the variations in intensity of the corresponding part of the photograph.

When this fluctuating current is received at the other end of the telegraph wire, suitable apparatus is used which builds up a picture step by step that is an exact duplicate of the original one. In this building up process where the minute impressions are received it is very important that they are put together in their proper succession especially where a new row of impressions is started. The alternating current from a vibrating tuning fork at another frequency is used to govern this and it can easily be made to synchronize the transmitting and receiving apparatus so that they will operate in unison though thousands of miles apart. Unless this is done peculiar distortions of the pictures will result, sometimes giving very ludicrous results.

Tele-transmission of pictures has many important uses such as the detection of criminals by photographs or finger prints, the prevention of forgeries, the expediting of business, where important documents and maps are involved, the selection and direction of moving picture operations at a great distance, and the immediate distribution of the important, the serious and the interesting news of the world by pictures taken on the spot. For military purposes its use is invaluable.

Transmission of pictures may best be considered from four distinct points of view: *tele-autography* which is the transmission of pictures in line; *tele-photography* the transmission of photographs; *tele-vision* the practically instantaneous projection of moving living scenes at a distant point; and *tele-kinematography* where motion pictures are transmitted and then projected for visual observation at a distant point. the prefix "*tele*" comes from a Greek word implying distance. This tele-transmission may be made by wire or by radio. Most of the present methods invented for tele-transmission are only adapted for use on cables and telegraph lines. In tele-transmission one very necessary and important feature is the perfect synchronisur or simultaneous starting and completion of the motion of the respective apparatus at each end so that both work together in unison although possibly thousands of miles apart.

This effect is generally achieved by sending over the line a controlling current, which is made to actuate a relay and so operate the armature of an electro-magnet which controls the speed and action of the recording apparatus in the receiving end. This current does not otherwise affect the messages or signals sent.

Nearly all methods of tele-transmission employ either a photo-electric or a selenium cell both of which are very sensitive to the intensity of incident light. In the first case, an intense beam of light generates a photo-electric current while in the second case, it lowers the resistance offered by the selenium thus permitting a greater current to pass.

The pictures sent may be of varied kinds including thumb or finger prints, architectural drawings or landscapes, photographs, autographs, cheques, moving picture scenes, topographical maps and military plans and even Chinese script. The importance of these various possibilities obviously promises a very wide field of usefulness.

Radio-Transmission of Pictures.

The radio-transmission of pictures is a method of sending and receiving pictures by radio communication through space alone without the use of cables, telegraph or telephone wires. There are several methods which can be adapted readily enough for transmission by radio. The following paragraphs present a very brief outline of one of the most successful yet simplest inventions of this sort. This will indicate the usual methods of overcoming the difficulties involved It is called the Bartlane system after the English inventor, Mr. Bartholemew, director of the *London Daily Mirror*, and Captain McFarlane, a research engineer.

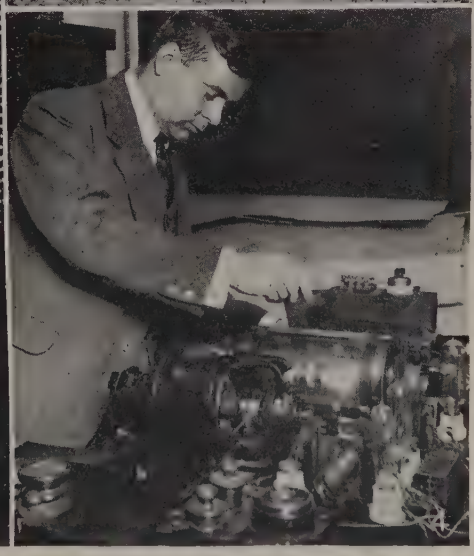
Instead of linking up the stations at each end electrically with the resulting difficulties of synchronism the picture is transformed into a series of holes in a row punched into a long tape.

In transmitting words each letter or number is represented by various permitations and combinations of five punch holes made by a special magnetic typewriter. Another hole in the tape along its center line serves for synchronizing the initial transforming with the final reproducing apparatus.

In transmitting pictures, five shades of photographic density for a minute section of the picture are used ranging from pure white to pure black by fifths. In a positive photograph where it is pure black this is represented by all five punch holes in a row because the photographic negative is pure white at this point and the transmitted light acts on plates which are covered initially with an insulating material and causes this to be chemically removed. Five different timed exposures are made to secure the tone value for each small section of the picture and the corresponding tone plates which are afterwards used as contact plates to control the operation of the punching magnets.

A pure white is represented by no holes being punched. A sixth smaller hole is the synchronising hole. The tape with its code-like message of holes can now be handed over to the cable, telegraph, or radio office and transmitted like an ordinary message. A picture reproducing machine at the other end, then transforms the tape received at the distant point into a duplicate of the original. The principle here is simply that the five punch holes representing the pure black of the original photographic positive will transmit more light than a smaller number. Light from an arc light is sent through them and then the little beams of light are focused by a lens on to a photographic film.

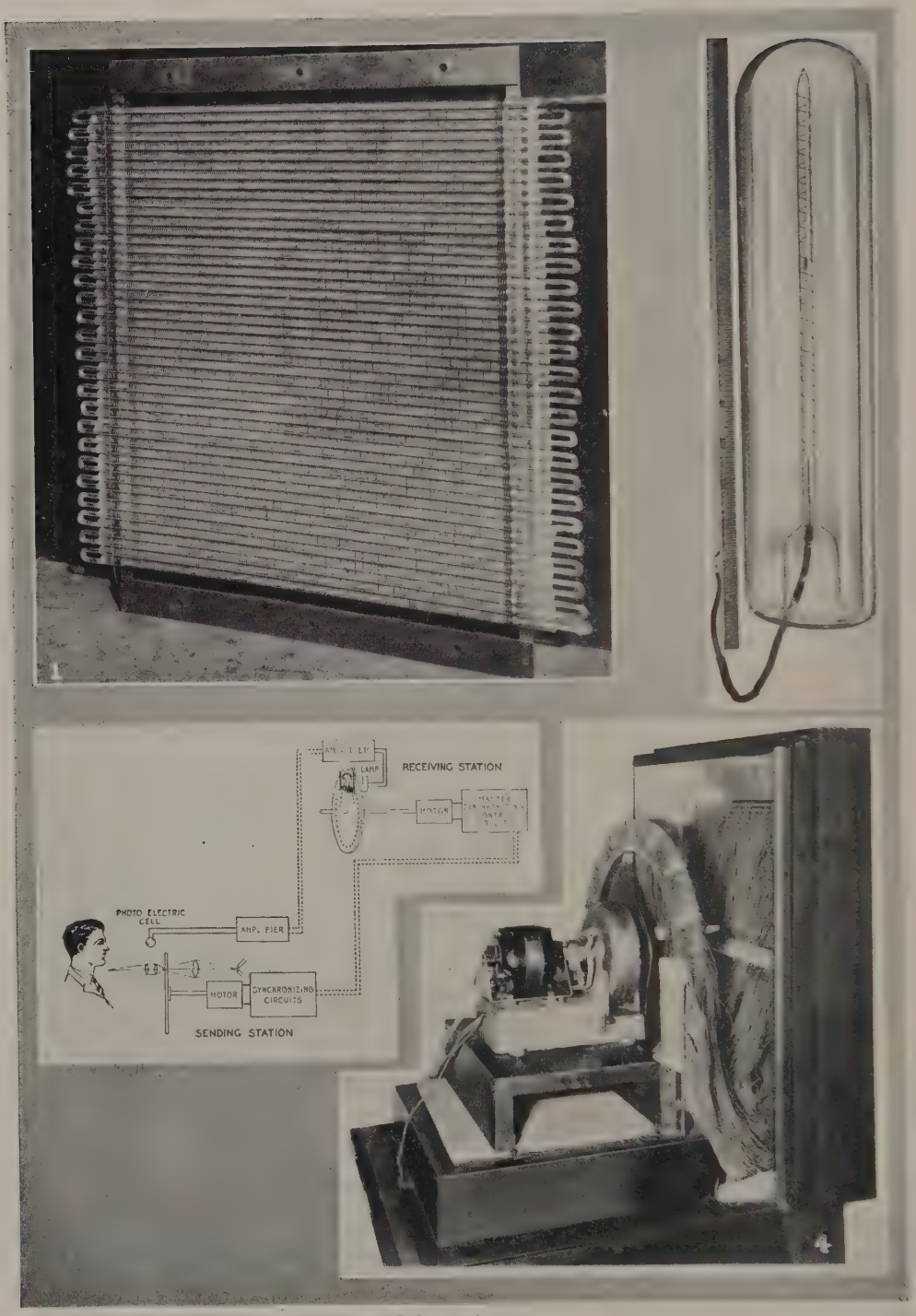
This Bartlane system is quite typical of other inventions that could be used and we can therefore say quite definitely that the transmission of pictures by radio or telegraph or cable has been successfully solved with its resulting benefit for mankind.



All Photos copyright by Keystone View Company.

RADIO

1 Capt. R. H. Ranger, R. E., with Photoradiogram machine sending pictures by radio from New York to London.
2 Picture of H. R. H. The Prince of Wales, sent by radio from London to New York by Radio Corporation of America.
3 The great wireless towers at Arlington, Virginia. 4 The Marconi machine for radio picture transmission.



Photos supplied by Bell Telephone Company Laboratories.

TELEVISION

1 Continuous tube requiring 2500 separate circuits, equal to 2500 neon glow lamps, for large demonstration. 2 Large photoelectric cell used in television transmission. 3 Schematic diagram of transmitter and receiver for wired television. 4 Reverse of large 2500 lamp screen showing mass of wiring.

TELEVISION

The process of television can perhaps best be understood by following it through from the scene to be transmitted to the ultimate reception. It is first necessary to have the scene brightly illuminated. This was one of the obstacles to early television, for before more sensitive apparatus was devised the illumination had to be so intense that television was confined to inanimate objects. At the present time bright sunlight is sufficient. A second method of illumination, now largely used, is to employ a small intense spot of light only. This travels over the scene and is always at the spot at that moment being transmitted, for a picture is televised a bit at a time.

The second essential part of the transmitter is the *scanning disc.* This takes various forms but the one coming most commonly into use is a large disc two or three feet in diameter, sometimes more, which has around its edge a spiral row of holes. These begin near the outer edge and spiral in toward the center, the innermost one being about two inches nearer the center of the disc than the outer one. These holes must be so spaced that as one is just leaving the scene the next is just reaching it, thus if the disc were stopped only one of these holes would be before the scene. As the outermost hole passes across the scene it scans one strip, as the next hole passes it crosses an adjacent strip just below the first. This goes on until every hole passes across. The disc has then made one revolution and the scene has been scanned once. The process is like reading a page a line at a time. This scanning process must be repeated not less than ten times a second and preferably sixteen times if the picture received is to be devoid of flicker or any appearance of unsteadiness. The eye is so constructed that vision persists after the stimulus is removed for a sixteenth to a tenth of a second. Thus if the picture appears again within this time it seems never to have been removed.

The next piece of the apparatus is the *photo-electric cell.* This device is a glass bulb containing a central wire electrode, which has part of its inner surface coated with an oxide or a hydride of one of the alkali earths. When light strikes this surface electrons are emitted and, if proper connections are made electrically, a current will flow through the tube which will have a current value in proportion to the light which strikes it. This forms the tie-up between the scene and the electrical circuit.

If the subject is wholly illuminated, as opposed to the spot system, the cell is placed behind the scanning disc and as each hole passes in front of it successively, it receives a varying amount of light which follows the change of shading of the scene as the hole passes from one side to the other. If the spot method is to be used the source of light is behind the disc and casts its beam through the hole onto the subject. In this case the photo-electric cell, or sometimes several of them, is placed anywhere in front of the subject and reacts to the light reflected from the scene where the spot strikes it. It is interesting to note that it need not be dark except for the spot as a low constant level of intensity causes no fluctuations in the cell, and that, although the spot is of great intensity, it causes no discomfort to a person being televised. It passes over him so quickly that he is even unaware of its presence.

The light variations of the scene having been transformed to electrical variations these are amplified and sent out in the usual way by radio or by land wire. This part of the system is the familiar one either of radio or telephony as desired.

At the receiving end the signals are received in the usual fashion and amplified. If these amplified signals are applied to the usual loudspeaker, the picture will be "heard" as a series of "squeals." The sound has been described as like that of a high speed circular saw slightly off center. Ordinarily the signals are fed directly into a *neon glow-lamp.* This lamp takes various forms. In general it consists of two electrodes in a glass tube in which is neon gas under low pressure. When a current passes through the tube it glows with an amber-red glow, the intensity of which is in proportion to the current flowing. It is capable of following variations of as much as 100,000 per second. In this respect it is admirably suited to this work, but on the other hand its low intensity limits the size of the possible picture to but a few inches.

In front of this there must be placed a scanning disc, although it might better be called a projector disc, which must be exactly similar to the scanning disc used at the transmitter. It must turn with the identical speed of the transmitter disc. As the light from the neon lamp passes through each hole in succession as it sweeps across a translucent screen the image of the original scene is formed.

The necessity of having the disc at the receiving end follow exactly the speed of that at the transmitting end has been a stumbling block to television. It requires that in addition to sending the television signal there must also be sent a synchronizing signal. This must be sent on a separate wave-length and so filter circuits are necessary in the receiver to separate the two wave-lengths and assign them to the proper outlet. Otherwise, two complete transmitters and two complete receivers are necessary. The synchronization is brought about by the use of motors whose speed is dependent upon the frequency of the current supplied to it. Not only must they turn at the same speed but they must be in the same relative position at the start. If not, the received picture will not be centered. The effect will be the same as if a picture were cut through the middle and what was the left half put on the right side. This condition is remedied after it is seen to occur by a manual adjustment. It causes no difficulty.

This simple system has had many variations. In one case a large screen was built which consisted of what was essentially 2,500 neon lamps and instead of a scanning disc a scanning commutator was used. This lighted the lamps, the one after another, the intensity of illumination of each one being in proportion to the light or shade of the spot of the scene corresponding to that particular lamp. This of course required 2,500 electrical circuits which makes it much too complicated for ordinary use.

Color television has been accomplished in a small measure by using various gases and vapors in glow lamps so as to give the effect of the three primary colors and then projecting them through the scanning disc alternately. The colors have not, however, been good enough to be considered satisfactory.

Noctovision is a process of television in which the scanning is done by invisible rays. While the scene appears to be wholly in darkness it is nevertheless transmitted as usual and viewed as usual.

Framing. The process by which the picture received in television is centered in the frame in which it is to appear. If this is not done properly the picture will be divided. This effect is similar to that frequently seen in motion pictures where the top half of an object appears below the bottom half. In the case of a man, for example, one might see the legs from the waist down and below this the head down to the waist.

Ghosts. When the image appears twice on the screen at the same time, one image being correctly and the other incorrectly framed, the fainter one is called a ghost. One is due to directly received radio waves and the other due to radio waves which have followed an indirect path, reaching the receiver by a reflected route.

Glow Lamp or Neon Tube. A small bulb containing neon under low pressure. This lights up when a current flows through it in proportion to the amount of current. It is the heart of the receiving set as this light varying in intensity with the incoming signal is the thing which forms the image. It is capable of following as many as 100,000 intensity changes per second. Since its intensity is but feeble the size of the image which can be formed by it is only a few inches square. More powerful lights are necessary before pictures can be projected on large screens. Nevertheless it is this lamp which has made television possible. This lamp is sometimes called also a neon tube.

Phonovisor. This is a device by means of which the incoming television signals are recorded on a wax record similar to a phonograph record. When the record is "played" the signals are re-created and the television receiver produces the picture. The picture can be "played" in this manner as often as desired.

Photo-electric Cell. This is a glass tube which has one of the oxide or hydrides of the alkali earths coated on its inside surface except for a small hole or window. When one terminal of a battery is connected to this surface and the other to a wire which is placed at the center a current will flow when light falls upon the cell. If a well constructed cell is used the current is proportional to the amount of light which strikes it. This is the heart of the television transmitter for it transforms light signals to electrical impulses. These are used to modulate the carrier waves of a radio transmitter just as the voice is ordinarily used in radio transmission.

Scanning. In television the whole picture is not sent at once but is sent piece by piece. This is analogous to reading this page. You do not read it by merely looking at it. You must proceed from the top, word by word, and line by line. This is exactly the process used in television and it is called scanning. A picture must be scanned not less than ten times per second and preferably sixteen times per second in order that all flicker or evidence of scanning may disappear and the picture appear complete.

Scanning Disc. This disc takes various forms but the one coming most generally into use is simply a large circular disc with a spiral row of holes starting near the outside and running in toward the center. While the disc may be two or three feet across, the holes occupy a region about two inches wide around the outside. Light coming from the scene passes through the outer hole, then just as this leaves one edge of the scene the next hole comes in from the other edge. As it is a bit nearer the center it scans another line across the scene and so on until the entire scene has been scanned, when the process is again repeated.

Selenium Cell. Selenium when properly prepared has the property of changing its electrical resistance when illuminated. Thus if a current is flowing through it the value of this current will change with changes in illumination. This fact was made use of in early experiments on television. The selenium cell has, however, been discarded in favor of the photo-electric cell. This is because the selenium cell does not respond at once but lags behind the light changes. This is referred to as "lag." It also "fatigues" or becomes less sensitive after it has been used for a time.

Synchronization. It is absolutely essential that the scanning disc at the transmitter and the corresponding disc used in the projection system at the receiver should turn at identically the same speed. This problem is very much like trying to run two phonograph records in exact unison thousands of miles apart. This is accomplished by use of synchronous motors. If the two discs are not exactly synchronized the received image will appear askew.

Synchronous Motors. Motors whose speed depends not upon the power put into them but on the frequency of change of the current used. They are necessarily alternating current motors. If the same frequency is supplied to each of them they must of necessity turn at the same speed.

COLORED MOTION PICTURES

In 1861 Clerk Maxwell showed the first colored picture before the Royal Institution of England. He had taken three photographs, each one through a separate color filter, the three of which, taken together, made up the three color components which produce white light. Red, green, and blue in proper proportions will do this. Using the same filters placed before lenses he projected these pictures so that they fell upon each other on a screen. The result was a colored picture on the screen. This method of taking more than one picture behind complementary filters and projecting them through the same filters is the idea back of every colored picture scheme of any note except one.

To avoid using three plates the plan of taking the pictures behind a plate ruled with colored lines 200 or 300 to the inch has been used. This in effect makes the plate into a great number of closely adjacent photographs, so close as to ap-

pear as one to the eye. Another plan has been to sprinkle the plate with finely divided transparent starch grains which have been dyed the three primary colors. In the first case the same ruled plate must be used for viewing and it is difficult to line this up with the photograph. It would be particularly so, if not impossible, in motion pictures. In the latter case the starch grains stay right on the plate and this difficulty is avoided. It is known as the *Lumière process.*

The only exception to this plan is the *Lippman process* which depends upon interference of light waves. In this case the plate is backed with a mirror so that the light is turned back upon itself. The returning light waves meeting those oncoming result in points of minimum and maximum disturbance so that the plate is affected in layers whose distance apart depends upon the color. When viewed at the proper angle in white light the original colors are reproduced by this filter of layers. While theoretically perfect it does not work out well in practice.

In motion pictures it would be possible to produce colors by taking three separate pictures and reproducing them by superimposing the three projected films on the screen. This would be costly and would require close synchronism of the films. Another system which has been used is to employ but two complementary colors and photograph on both sides of the film, the film having an emulsion on each side. Difficulty of developing and the fact that the colors are not particularly good have made this system unsatisfactory.

The system used in the Cinékodak system of the Eastman Kodak Company resembles most nearly that of the ruled plate. In this case, however, the narrow strips of the film exposed to each of the three primary colors is brought about, not by placing a closely ruled filter before the film, but by placing a large filter having each of the primary colors in its make-up and then splitting these up into fine strips on the film by using tiny cylindrical lenses running lengthwise the film. These are on the side toward the lens and the emulsion is on the back. The lenses made of the celluloid of the film itself focus approximately on the emulsion. Under magnification the appearance of the film is corrugated. Each of these tiny lenses focuses an image of the tricolored filter on the emulsion.

In projection the system is simply reversed. Light passes through the film and through the lenses, then through the projection lenses and finally through the filter and onto the screen.

For each of these embossed celluloid lenses on the film there will be three color strips running lengthwise the film. If only red is present on a particular object only this line will develop out and become transparent. This will allow the light to pass through in the process of projection. It should be noted that the film is used just as it is taken and is not printed out. Thus if only one photograph is taken no other prints can be made from it. This is the great disadvantage commercially as a motion picture producer requires many hundreds of copies. Also the filter cuts out so much light that the system is limited to a screen suitable in size for amateur uses only.

Colored pictures having been produced and sound pictures becoming common; Stereoscopic pictures having been shown and pictures having been sent by radio, it is not unreasonable to expect that we may eventually have colored, stereoscopic, talking pictures sent into our homes by television.

Cinékodak. A system of amateur colored motion picture photography for amateur use developed by the Eastman Kodak Company of Rochester, N. Y.

Complementary Colors. Any two or more colors which when added together, as by projection and superposition on a screen, produce white light. Red, Green, and Blue, in proper proportions will do this. It should be noted that this refers to light beams. It would not be true of colored pigments taken from an artist's box.

Filter (light). Any colored glass or other device which will remove light of certain colors and transmit others.

Interference of Light. When light beams of the same color come together under certain conditions they may produce darkness. Based on the wave theory the explanation is that the crests of one beam strike the troughs of another and so the beams nullify each other. In white light some colors may be blocked out and others reinforced in this way.

Lippman Process. A process of color photography which utilizes the phenomena of light interference to produce the color. See general description of colored picture methods.

Lumière Process. A process of color photography using dyed transparent starch grains sprinkled over the plate. See general description of colored picture methods.

Primary Colors. The primary colors are red, green, and blue. These three added together in proper proportions make white light.

SOUND MOVIES

Sound movies can be divided into two classifications; those in which the picture film and the sound record are separate and distinct and those in which the sound record is along the side of the picture film. The first of these is typified by the *Vitaphone,* the second by the *Movietone* and the *Phonofilm.*

In the Vitaphone the picture film is of the usual type used where pictures are unaccompanied by sound. The sound is on a phonograph disc, similar but larger than that used in our homes for years. In making the records the picture and sound record are made at the same time, both records being driven by the same motor or by two motors arranged to be run synchronously. They are reproduced in like manner. While it is necessary that care be taken in starting the two together, the problem is not as difficult as would seem. The film and record are both clearly marked and it is possible to vary considerably from this mark without this slight lack of synchronism between voice and action being at all noticeable to the audience. The sound records are made by a microphone pick-up which is amplified and causes a needle to vibrate making, as a result, the necessary impressions in a soft wax record. The procedure for making duplicates from the master record is the same as that used in the regular phonograph practice.

In the *Movietone* system the sound record is alongside the picture on a strip a tenth of an inch wide. In this case an oscillating current has impressed upon it the modulations due to the sound. The output, connected to a glow tube, such as the Aeo-light, causes it to fluctuate in light intensity. Thus the record is made up of a number of light and dark strips across this tenth-inch space.

The modulated electrical system is similar to that of a broadcast system. Just as the carrier wave in broadcasting is modulated by the voice so the oscillations are modulated in producing the movie sound record. The glow lamp is similar to that used in television projection. It is a low pressure tube containing helium as a rule, although other gases will do. The light intensity produced varies with the current through the tube and it is capable of following very high frequencies.

In another system the sound record is produced without this oscillating system by use of a slit which opens and closes electrically, its width varying with sound intensity. This produces a jagged saw-tooth blackened strip along the edge of the film.

It is interesting to note that the sound energy is changed to electrical energy, this to light and the light effect is stored permanently on the film by a chemical effect.

In reproducing the sound a light is caused to pass through the sound record. Its intensity on the opposite side will depend upon the film density and so changes as the film passes along according to the changes in the light which produced the film. This light falls upon a photo-electric cell which in a suitable electrical circuit, causes the current to vary with the light changes. These variations, amplified and fed into a loud speaker system, reproduce the original sound. The light is changed to electrical energy, this to mechanical and this produces the sound.

In making the record, and in reproducing it, the sound record must run smoothly and not in jumps as does the picture part. At the point on the film where the sound record is originally photographed and where it is finally reproduced the film must be running at constant speed. A few feet of loose film must intervene between this and the jerky picture feed. Thus speech and gesture are not side by side but are a foot or so apart on the film.

Great care must be taken in making the picture to avoid all extraneous noises as these too will be produced. Elaborate sound proof studios have been built as a consequence. Some of these are scientific achievements in themselves.

Aeo-Light. A helium glow discharge tube used in the Movietone system of sound movies. The tube has two electrodes sealed into quartz and a low pressure of helium gas inside. Variations in current from one electrode to the other cause a variation in the brightness of glow of the tube.

Amplify. To increase electrically the current changes produced by the sound. The first slight current changes are magnified by an electrical system corresponding to that used in radio receivers.

Carrier Wave. A broadcast station sends out a carrier wave whenever it is operating even though no sound is coming over it. While waiting for a station announcer, although you hear nothing, your set is receiving a wave of too high a frequency to be heard and too rapid for your loud speaker to follow. If we liken this to a picket fence we may say that the detector tube cuts off the bottom half of this. Whatever we hear corresponds to a pattern of humps and peaks along this fence which might be like those that would be produced by sawing off the fence top along a wavy line. Our set does not see the pickets; it sees only the wavy line. We superimpose this wave on the carrier wave (pickets) by modulating the carrier wave.

Glow Tube. See Aeo-light above.

Microphone. Any device for changing sound waves into electrical variations. There are many types. They correspond to a telephone transmitter in telephony but are usually of much better quality and workmanship. A telephone need only transmit well enough to make conversation understandable. A microphone must be good enough to pick up the finest tone shades from a symphony orchestra.

Modulation. See carrier wave.

Movietone. A system of talking movies in which the sound record and picture record are on the same film. See general description above.

Phonofilm. A system for talking movies in which the sound record is alongside the pictures. See complete description above.

Vitaphone. A system of talking movies in which the sound and picture record are separate and distinct. See complete description above.

CHEMISTRY.

That natural science which treats of the composition of matter, and the changes produced in it when subjected to peculiar conditions, such as heat, pressure, mass, light. Physics is largely a study of the various forms of energy, such as electricity, power, heat, and light, while chemistry deals more particularly with matter. In common with physics, it includes the determination of characteristics which serve to distinguish one substance from another. The physicist is concerned with properties possessed by all substances. The chemist is restricted to those processes in which the molecules undergo some change, for example, the physicist determines the density, elasticity, hardness, conductivity, etc., while the chemist investigates changes in composition, such as may be effected by an electric current, by heat, or when two or more substances are mixed.

The universe from its utmost heights to its deepest depths, is built of matter of some kind. Since chemistry is the science which deals with various kinds of matter, and all industries use the raw material in one form or another, it is clear that chemistry is closely interwoven with the industries of every country. The country that produces the best chemists is apt to be the most powerful and wealthy. The World War was a revelation of the importance of chemistry even though it was used in forms most unwarranted.

Divisions of Chemistry.

In treating the various forms of chemistry, it is found to be divided into two great branches, *organic* and *inorganic*.

Organic Chemistry is the chemistry of carbon compounds. There are more than two hundred thousand organic compounds. It deals with substances obtained largely from animal and vegetable sources.

Carbon and its compounds are extremely important. We learn that they make up our fuel, whether coal, wood, oil, or gas; our lubricants; our foods, our clothing; and they make possible the change from iron to steel.

Hydrocarbons. There are several hundred hydrocarbons. They contain the elements of carbon and hydrogen. Most of these are found in petroleum, natural gas, asphalt, and coal-tar products.

Carbohydrates. A group of organic compounds containing only the elements, carbon, hydrogen and oxygen. These include grape and fruit sugars, cane, malt and milk sugars; the starches and cellulose which make the structural material of the vegetable world; common alcohol, glycerine, acetic, citric and tartaric acids; fats and oils.

Inorganic Chemistry deals with some eighty chemical elements and their compounds, including those of the mineral world. The fundamentals of both branches are the same, and the main reason for division, is the number of carbon compounds.

Biological Chemistry is that division of the science which deals with the vital processes of life, carried on by means of mysterious substances called "enzymes" which as yet have not been obtained in pure state. Nevertheless, they cause chemical changes, without themselves undergoing such changes.

Physical Chemistry explains the processes of chemistry and formulates laws for these processes. It is sub-divided into two main divisions, *electro-chemistry* and *thermo-chemistry*. One division of physical chemistry in which much progress has been made recently is in the study of the properties of gas.

Physiological Chemistry is the study of the chemical nature of substances entering into the constitution of the animal organism and the chemical changes taking place during the life processes of an animal.

Agricultural Chemistry is that branch which treats of the chemical principles underlying the art of agriculture such as the study of soils, manure and vegetable compositions.

Pharmaceutical Chemistry deals with the nature and method of preparation of various drugs and ointments used for medicinal purposes.

DICTIONARY OF CHEMICAL TERMS.

Acetylene. An illuminating gas made by the action of water on calcium carbide. Berthollet, the French chemist, made important discoveries regarding it, while its method of cheap manufacture from calcium carbide was discovered by Wilson, a Canadian chemist.

Acids. A group of chemical compounds which turn blue litmus paper red, have a sour or acid taste, nearly always contain hydrogen, and neutralize alkalis, hydroxids, or bases. They are of great use in the arts and the laboratory, and are among the most energetic of chemical substances.

Acetic acid. Composed of carbon, hydrogen, and oxygen. The chief constituent of vinegar. It is manufactured by oxidizing alcohol by fermentation. It also has a medicinal or surgical use. Impure acetic acid is called pyroligneous acid.

Hydrochloric acid. A gas, as used in every day life. It is dissolved in water, for which it has a great affinity, depending upon the temperature of the water, which will hold from four hundred to five hundred times its volume in HCl. Made mostly in Europe.

Nitric acid. Compound of nitrogen and pure oxygen, forming a colorless, fuming, caustic liquid. It is an oxidizing agent, combines with bases to form nitrates, and is much used in the arts.

Sulphuric acid. Next to human food, the most indispensible article. Manufactured largely in Great Britain. It is the base of all acids. Leading uses are in fertilizer and sodium carbonate manufacture. H_2SO_4 is used in bleaching, electroplating, nitroglycerine, celluloid, and the like.

Alcohol. Ethyl alcohol or spirits of wine is composed of carbon, hydrogen, and oxygen in the

proportion of C_2H_5OH. It is obtained by distillation from starchy substances such as potatoes, grains, rice, etc., after fermentation. The specific gravity of rectified spirit is 0.82 and is equal to 91 per cent of absolute alcohol, which is alcohol deprived of all its water. Boils at 78 degrees C. and freezes at —130 degrees C.

Aldehydes. A group of organic compounds derived from alcohol (C_2H_5OH) by removing part of the hydrogen by the action of an oxidizing agent.

Alkaloids. A group of nitrogenous basic compounds found in plants. Nearly all are very poisonous. Among them are nicotine, cocaine, quinine, strychnine, caffeine, codeine and morphine. They are all of high medicinal value.

Allotrophy. The quality an element possesses when appearing under various forms, with different properties. Carbon is the best illustration, as in a diamond which is pure carbon, graphite, and amorphous, as charcoal, lamp-black, coke, and mineral coal.

Alloys. These are mechanical mixtures and not chemical compounds, since the metals may be incorporated in all proportions regardless of combining weights. The most important are:

Bronze, copper and tin.

Aluminium brass, equal parts of aluminium bronze, copper and zinc.

Aluminium bronze, copper 90 parts, aluminium 10 parts.

Babbitt metal, copper 4 parts, tin 12 parts, antimony 8 parts, and tin 12 parts added after melting.

Bell metal, from 82 to 70 parts copper and 18 to 30 parts tin.

Brass, copper 66 2/3 parts, zinc 33 1/3 parts.

Britannia metal, tin, antimony, copper and brass.

Coin bronze (ancient), copper 96 parts, tin 4 parts, or copper 98 parts, tin 2 parts.

German silver, copper 60 parts, zinc and nickel 20 parts each.

Gold coin, gold 900, copper 75, silver 25 parts.

Gun bronze, 90 parts copper, 10 parts tin, or 89 parts copper, 11 parts tin.

Manganese bronze, copper 88 parts, tin 1½ parts, zinc 8¾ parts, and a little lead, iron and phosphorus.

Pewter, tin and copper, and sometimes lead.

Phosphor bronze, copper, zinc, tin and phosphorus.

Solder, tin and lead for soft solder. Hard solder contains brass.

Speculum metal, 67 parts copper, 33 parts tin.

Statuary bronze, nearly the same as gun bronze.

Stereotype metal, antimony 16 parts, tin 17 parts, lead 67 parts.

Tobin bronze, copper 59 parts, zinc 38 parts, with a little tin, iron, and lead.

Type metal, lead 4 parts, antimony 1 part.

(See also page 610.)

Alum. It is the transparent, glassy, colorless crystals deposited when solutions of aluminium sulphate and potassium sulphate are mixed and concentrated by evaporation; used in dyeing and printing cloth, in tanning and paper making, for hardening plaster, (as in medicine), making wood and cloth fireproof, in purifying water and sewerage. Ammonium and sodium alums are manufactured, the latter is an ingredient of some baking powders.

Amalgam. An alloy of which mercury is always a constituent. Tin amalgam for silvering mirrors is composed of 3 parts of mercury to 1 part tin.

Amids. A large class of organic compounds derived by substituting one or more organic radicals for one or more of the hydrogen atoms in ammonia. (NH_3.)

Amins. A large class of compounds derived by substituting such hydro-carbon radicals as methyl or ethyl for one or more of the atoms of hydrogen in ammonia. (NH_3.)

Ammonia. A gaseous compound of nitrogen and hydrogen, colorless and pungent, formed when ammonium chlorid (sal ammoniac) is heated with lime. The ammonia of commerce is obtained from gas works. When ammonia gas is dissolved in water, liquid ammonia is formed.

Anhydrid. Oxids of non-metals which unite with water and thereby produce acids are called anhydrids. The gas (SO_3) is the anhydrid of sulphurous acid (H_2SO_3).

Anilin. A substance largely used in the manufacture of dyes. It is formed by the addition of hydrogen to nitrobenzene. It was discovered in 1826 by Unverdorben, further demonstrated by Runge (1834), Zinin (1841), Hofmann (1843), and Perkin (1856).

Aspirin is the trade name of Monoaceticacid-ester of Salicylicacid. It is a white powder used in the treatment of headaches, rheumatism, colds, pleurisy and the like. Aspirin passes through the stomach unchanged and liberates salicylic-acid in the intestine.

Atmosphere. A convenient unit for measuring pressures such as the force of steam or pressure of liquids. It is, in English use, the weight of a column of mercury 30 inches high at the freezing point at London; in France, the pressure of 760 millimeters of mercury at the freezing point at Paris; generally estimated at about 15 pounds (14.7) pounds to the square inch. When a pressure of 3 atmospheres is spoken of, about 45 pounds to the square inch is understood.

Atom. The smallest particle of an element which can enter into chemical composition. It is also the indivisible constituent of a molecule.

Atomic Theory. A hypothesis or theory put forward by Dalton in 1805. Designed to explain many states, conditions, and the phenomena in chemistry otherwise incapable of explanation. By this theory it is supposed that all bodies are composed of minute particles of the elements and that these atoms cannot exist in a free or uncombined state, but always in union with atoms of other elements in compounds or with atoms of the same element. Argon and some others are exceptions to this theory.

Atomic Weight. The atomic weight of an element is the weight of an atom of that element compared with an atom of hydrogen, the lightest

of all elements, taken as the standard and called 1 or unity.

Boiling. The rapid production of vapor in the mass of a liquid. Boiling points in degrees Fahr.:

Alcohol, specific gravity 813	173°
Ammonia	140°
Benzine	173°
Chloroform	146°
Coal tar	325°
Ether	100°
Linseed oil	597°
Mercury	648°
Milk	213°
Naphtha	186°
Nitric acid, specific gravity 1.42	248°
Nitric acid, specific gravity 1.5	210°
Oil of Turpentine	315°
Petroleum, rectified	316°
Phosphorus	554°
Sea water, average	213.2°
Sulphur	570°
Sulphuric acid, specific gravity 1.848	590°
Sulphuric acid, specific gravity 1.3	240°
Sulphuric ether	100°
Turpentine	315°
Water	212°
Water in vacuo	98°
Whale oil	630°

Bunsen burner, is an arrangement for burning gas by first mixing it with sufficient amount of air so that a more perfect combustion is secured.

Calomel. An insoluble white substance used medicinally to stimulate the liver and other glands. Calomel decomposes when exposed to light forming poisonous mercuric chloride. For that reason calomel is always kept in dark bottles.

Chemical Affinity. The attraction which one element exerts upon another is called chemical affinity, and in most cases manifests a preference of the atoms of one element for those of another element above all others. Substances like nitrogen which display a low chemical affinity are called inert and do not readily form many compounds.

Chemical Analysis. In chemistry, the breaking up of a compound substance into its constituent elements.

Qualitative Analysis. Deals with the kinds of matter present. It has been found that all substances are made up from about eighty different elements, which are put together in different forms.

Quantitative Analysis. Deals with the proportions by weight or by volume in which they are found in the element. In this analysis we find that carbon and hydrogen are generally estimated by the combustion process, which consists in oxidizing the substance and absorbing the products of combustion in suitable apparatus. The oxidizing agent most commonly used is copper oxide, which must be freshly lighted before use on account of its hydroscopic nature.

Chemical Combination. The intimate union of two or more elements to form a compound with properties different from those of the constituent elements. When no such union exists, a mechanical mixture results, such as the air, in which the constituent gases lie side by side without union.

Chemical Formula. A mode of representing the exact composition of chemical compounds, and stands for one molecule of the compound. The formula of water is H_2O. This means that a molecule of water is composed of two atoms of hydrogen chemically combined with one atom of oxygen; two molecules of water would be represented by the formula $2H_2O$, where the large figure multiplies all that follows. Formulas are empirical, as those given above; rational, as HOH; and graphic, as H—O—H.

Compound. A substance which is made up of elements united in exact proportions, by a force called chemism, or chemical affinity.

Distillation. Heating a liquid or solid in a closed vessel and condensing the vapors is called distillation. A common example is the tea-kettle, when the water boils steam escapes from the spout. If the steam were passed through a cold pipe, it would condense as distilled water.

Element. A chemically indivisible substance, or one from which nothing else can be extracted.

Enzymes. Are secreted by a living organism, thus differing from the inorganic catalysts. It is an interesting fact that a germinating seed (barley, for example) develops enzymes as it sprouts.

Epsom Salts. There are deposits of magnesium sulfate in the western states, which when crystallized from solution at ordinary temperatures Epsom Salts is secured. It is used in dyeing, tanning, soaps and for medicinal purposes.

Ether. Is produced by the action of hot concentrated sulfuric acid in removing the elements of water from alcohol. It is used as an anæsthetic and as a useful solvent for many substances.

Fermentation. A large number of chemical changes are brought about through the direct agency of certain living organisms, such as yeasts and bacteria, or by catalytic agents called enzymes, which these small plants secrete.

Fusion. The change of a body from the solid to liquid state.

Melting Point in Degrees Fahrenheit.

Substances	*Degrees*
Antimony	995
Bismuth	506
Brass	1873
Copper	2000
Gold	2016
Iron, cast	2000–2800
Iron, rolled	3000–3500
Lead	612
Platinum	4593
Steel	2370–2550
Tin	444
Wax	158
Zinc	680–772

Graphite. Commonly but incorrectly called black lead or plumbago. It contains no lead, is an allotropic form of carbon, hence identical in composition with charcoal and diamonds. Occurs as a mineral, is lighter than water. The ore is pulverized, thrown into shallow tanks,

the rock sinking and graphite floating. Large deposits found in Siberia, Germany, France, Austria and United States. Used in manufacturing lead pencils.

Helium. Named "Helium" (from the Greek, "Helios," the sun) by Lockyer and Janssen who first observed it during the solar eclipse of 1868. Discovered on earth by Ramsey in 1895, through treatment of the mineral clevite with acids.

Helium is a light, colorless gas. It is so inactive that it has no compounds. It is given off when various metals are heated and is also found in the waters of certain springs. Most of the commercial helium is secured from the gas wells of Kansas and Texas, the other gases being liquified and the helium collected separately. The U. S. is fortunate in owning the only workable source of helium. Because helium is not inflammable and is less than one-seventh as heavy as air, it is regarded as the most valuable of all known gases for filling balloons and airships. The amount needed for modern dirigibles is enormous. The *Shenandoah* took 2,150,000 cubic feet, the *Los Angeles*, 2,475,000, the *Akron* 6,500,000. See Tables of Chemical Elements.

Hydrogen Peroxide. Prepared commercially by treating barium peroxide with dilute sulphuric acid. It is used for bleaching purposes and as a mild antiseptic.

Iodid. A compound formed by the direct union of iodin with another element; or by replacing the hydrogen or hydroiodic acid (HI).

Iodine. Is obtained from beds of Chili saltpeter and from sea weed. The element is used in medicine as a tincture of iodine for treatment of swellings, and as a germicide.

Ion. An atom or atoms bearing + or — charges of electricity, formed through dissociation of an electrolyte in a solvent as water; + ions = anions; — ions = cations.

Laws of Chemistry.

Avagadro's Rule. Under like conditions of temperature and pressure equal volumes of gases contain equal number of molecules. It was advanced by Avagadro in 1811. It is the basis of the methods of finding the molecular weight of compounds.

Barthollet's Law. When two substances can form a substance insoluble or volatile, under the condition of the reaction, that substance will be formed until one of the factors is exhausted.

Boyles Law. The pressure which a given quantity of air at constant temperature exerts against the walls of the containing vessel is inversely proportional to the volume occupied.

Law of Definite Proportion. In a given compound, the proportion of any element by weight, or, if a gas, by volume is always constant.

Law of Multiple Proportion. Whenever one element combines with another in more than one proportion, it always combines in some multiple, one or more of its least combining weight, or, if a gas, of its least combining volume.

Liquefaction. Reduction to a liquid state. Solids are liquified by heat or solution; gases, by cold and pressure. That temperature below which a gas under pressure may be liquified is the critical temperature; and the pressure necessary to produce liquefaction at the critical temperature is called the critical pressure. All gases which may be cooled to the critical temperature may under requisite pressure be liquefied. The critical temperature of hydrogen is —234 degrees C.; oxygen, —119 degrees C.; nitrogen, —146 degrees C.; air, —140 degrees C.; carbonic dioxid, 32 degrees C.; or 88 degrees F.

Mass. Any portion of substance larger than a molecule. It is an aggregation of molecules.

Methane or marsh gas. Occurs in marshy districts. Formed by a process of fermentation of cellulose or plant fibre by micro organisms.

Coal gas. Contains 30 to 40% methane, 45 to 47% hydrogen, 5 to 12% carbon and small quantities of other substances. Pure methane may be prepared by placing aluminum carbide into warm water. It is not so much the methane which is responsible for the mine explosions, as the fine coal dust, which of itself causes explosion. Nor is it the explosion which creates the greatest loss, miners may in a measure escape this by falling flat on their faces, allowing flames to pass over them, as the blast generally leaves the air on the ground breathable. It is *after damp* which creates greatest havoc. This deals a painless and easy death. Men killed by flames are marked with burns and scorching, when death has occurred by after damp, men lie as if placidly sleeping.

After damp. When methane burns in air, it produces carbon dioxide.

CH_4	+	$2O_2$	=	CO_2	+	$2H_2O$
Methane		Oxygen		Carbon Dioxide		Water

In the mines, there is generally insufficient oxygen for complete combustion, and so another very poisonous oxide of carbon is formed called carbon monoxide. The carbon dioxide is not in itself so poisonous. It is rather the small percentage of carbon monoxide—CO. It is this CO which causes many casualties in sections where natural gas is used as fuel.

Mixture. Is composed of two or more elements or compounds blended together, but not held by any chemical attraction.

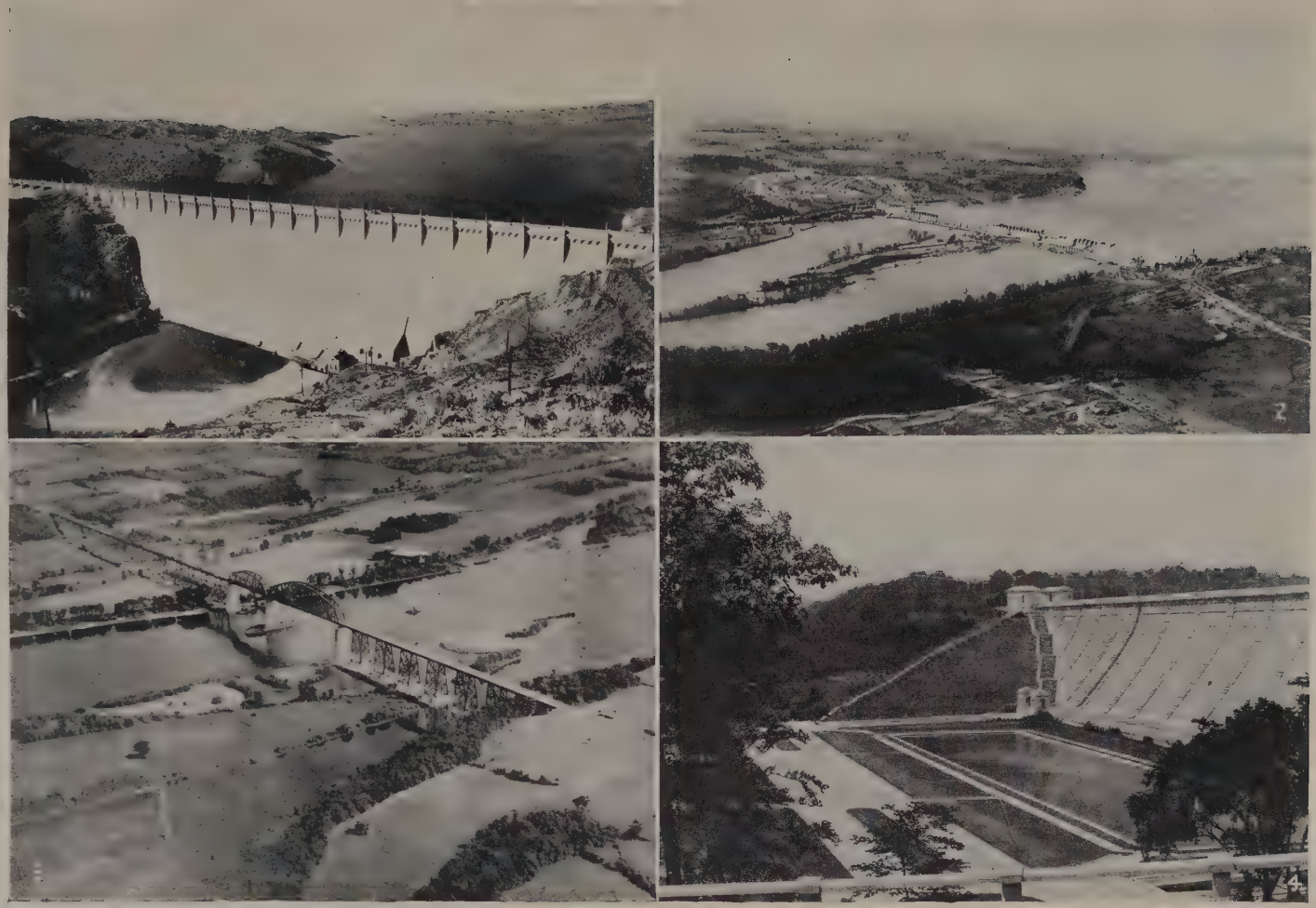
Molecule. Is the smallest particle of a substance that can exist alone.

Molecular Weight. The sum of the atomic weights of the constituent elements. In a molecule of water (H_2O) the molecular weight is the sum of two atoms of hydrogen (with an atomic weight of 1 each) and of 1 atom of oxygen (atomic weight 16), making the molecular weight of water 18.

Oxide. Is a compound of oxygen and another element.

Oxygen. A gas without color, odor or taste. The most abundant of all elements. It is the union of oxygen in the air with carbon and hydrogen in our blood that gives body heat, and supports life. It forms a portion of all animal and vegetable matter. It makes up over one-half of the earth's surface.

Paris Green. Is a poisonous green powder used on growing plants to kill potato bugs and



Photos 1 from Ewing Galloway; 2, 3, 4 from Keystone View Co.

TOPOGRAPHICAL ENGINEERING—I

1 Elephant Butte Dam, Rio Grande, N. M.
2 Muscle Shoals Dam, Ala.
3 Castleton Cut-off Railroad Bridge, near Albany, N. Y.
4 Kensico Dam, Kensico Reservoir, N. Y.

Photos 1, 2, 4 from Ewing Galloway; 3 from Keystone View Co.

TOPOGRAPHICAL ENGINEERING—II

1 Spillways, Muscle Shoals Dam, Ala.
2 Keokuk Dam, lock and power station, Keokuk, Iowa.
3 Lachine Bridge, St. Lawrence River, Montreal, Canada.
4 Roosevelt Dam and Reservoir, Arizona.

other harmful insects. It can be used as a spray when diluted with water or as a powder when mixed with slaked lime.

Quantivalence. The quantivalence of an element is measured by the number of atoms of hydrogen it combines with or replaces, e.g., Na. is univalent, for when added to HCl it replaces one atom of hydrogen; Ca is bivalent, for, as seen in the above reaction, it replaces two atoms of hydrogen. See Valence.

Quinine. Is extracted from the bark of the cinchona tree. Its greatest medicinal use is found in the treatment of malaria fever. It is also used as a preventative.

Radicals. Is an atom or group of atoms which changes places in a reaction; a compound radical is made up of different sorts of radicals as NH_4.

Reaction or chemical equation. Is a method of representing a chemical change.

Salt. Sodium Chloride or common salt is plentiful in most parts of the world. The chief sources of supply are the water of seas and salt lakes, rock salt, and natural brines. Two-thirds of the solid in sea water is common salt or about 2.75 per cent of the total volume. In contrast to this the Great Salt Lake contains about 12 per cent salt. The great salt producing states are New York, Michigan, Ohio, Kansas, Louisiana, Texas, Utah, West Virginia and California.

Specific Gravity. The specific gravity of a body is its weight compared with an equal bulk of another body taken as a standard of comparison. Pure water is the standard for solids and liquids. Either air or hydrogen for gases. To find the specific gravity of a body heavier than water; weigh the body in air; weigh it suspended in water; find the difference, which is what the body loses in weight when supported in water, or is the weight of an equal volume of water; divide the weight in air by the difference. When the body is a solid lighter than water attach a known weight to the body sufficient to sink it, then weigh in water and proceed as given. To find the specific gravity of a liquid weigh some solid in water; weigh the same solid in the given liquid; then divide the loss of weight in water into the loss of weight in the given liquid; the quotient is the specific gravity required.

TABLE OF SPECIFIC GRAVITIES.
Compared with Water.

Substances.	*Average Specific Gravity.*
Air at 60° F.—barometer at 30 inches	
is 1/815 of the weight of water	.00123
Alcohol, pure	.793
commercial	.834
proof spirit	.916
Brass	8.1
Carbonic acid gas	.00187
Chalk	2.5
Clay	1.9
Coal, anthracite	1.5
bituminous (soft)	1.35
Copper	8.95
Cork	.25
Diamond	3.53
Ether	.716
Fat	.93
Feldspar	2.65
Flint	2.6
Glass	2.95
Gold	19.258
Granite	2.72
Gutta percha	.98
Gypsum, plaster of Paris	2.27
Ice	.92
Iron, cast	7.15
wrought	7.77
Ivory	1.82
Lead	11.41
Lime, quick	1.5
Limestone and marble	2.6
Mercury	13.62
Mica	2.93
Naphtha	.848
Oils	.90
Oxygen gas	.00136
Petroleum	.878
Pine, southern	.72
white	.40
Platinum	21.5
Quartz	2.75
Shales	2.6
Silver	10.5
Slate	2.8
Spruce, dry	.40
Steel	7.85
Tar	1.
Tin	7.35
Zinc	7.

Strychnine—Nux Vomica—First used successfully as an analgetic in surgery in 1909 by Dr. W. L. Dudley of Vanderbilt University. An alkaloid discovered in 1818 by Pellitier and Caventon in St. Ignatius beans. In taste exceptionally bitter, has an alkaline base, and is a tertiary monacid base. Applied externally, it is a powerful antiseptic, but its poisonous nature prevents it from being used for this purpose. Internally strychnine particularly affects the nervous system, excites the areas of the spinal column. Small doses cause convulsions with death.

Sulphur. The brimstone of the Bible was sulphur. It is a solid non-metallic element found free in volcanic regions. Sulphur is an essential element in all protein material, hence the effensive smelling of certain decaying matter as eggs. The chief supply is found in Louisiana, Texas, and in Italy. Most of our commercial sulphur is mined by a process patented by Herman Frasch, an American chemist in 1890. Borings through the overlying rock are made into the sulphur beds. Then a series of five pipes one within the other is forced into the sulphur bed. Hot water is then forced into the sulphur which is melted. This melted sulphur in turn is forced to the surface by compressed air which is sent down the smallest pipe. Many wells yield 500 tons daily.

Sulphate. A compound formed with sulphuric acid (H_2SO_4) by replacing the hydrogen with another element or radical.

Sulphid. A chemical compound formed by the direct union of sulphur with another element.

Sulphite. A compound formed by sulphurous acid (H_2SO_3) by replacing the hydrogen with another element or radical.

Surface Tension. The magnitude of opposing forces per unit of length of an imaginary line drawn in the surface of a liquid.

Termination "—IDE" denotes a Binary Compound, that is, a substance composed of only two elements, e.g., Sodium Chloride (NaCl).

Termination "—OUS" is applied to the first of two elements when it exists in a greater proportion than in another combination with the same element, e.g., one atom of phosphorous and three atoms of chlorine form Phosphorous Chloride.

Termination "—IC," when the first exists in a lesser proportion, e.g., one atom of phosphorus with five atoms of chlorine form Phosphoric Chloride.

Prefixes "MONO—," "BI—," "TRI—," etc., indicate the proportion of the latter of two elements, and are sometimes used instead of the above termination. Thus phosphorous chloride may be also called Phosphorous Tri-Chloride; so one atom of carbon with one atom of oxygen is Carbon Monoxide.

Prefix "HYPO—" (under) and **"PER—,"** (over), specify compounds formed by the same two elements containing less (or more) of an element than is in the usual compound.

Valence. The combining power of an atom of an element compared with that of hydrogen taken as a standard. Elements which combine atom for atom with hydrogen are called univalent or are said to have a valence of one; those which require two atoms of hydrogen or other univalent atom to saturate one atom of themselves are called bivalent or 2-valent; and so on with trivalent, or 3-valent; quadrivalent, or 4-valent, etc. Many elements seem to possess a varying valence.

Vapor. The gaseous form, which bodies that are solids or liquids at ordinary temperatures, may be made to assume by the agency of heat.

Vaporization. The passage of liquid into the gaseous state.

Yeast. Is one of the most common of living ferments, wild yeast being a microscopic plant found on the ground, and often in the air. Wine is fermented from grape juice by the wild yeast, found on the skins of the grapes.

CHEMISTRY OF FOOD.

Food is anything which taken into the body builds and repairs the tissue or furnishes heat and energy. Food is needed by the animal body to replace wornout tissues, provide for growth in the young, and supply heat to maintain the body temperature. Food is the source of animal energy. When a muscle contracts carbohydrate in the tissue is oxidized and heat liberated.

Four great classes of foods are necessary to human health.

1. *Proteins*
2. *Carbohydrates*
3. *Fats*
4. *Minerals.*

Classification of food.

(A) Organic foods of animal and vegetable origin, include:

1. Protein, or nitrogenous foods composes most of the muscle, brain and nerve tissue, and is commonly spoken of as *tissue builder.* Eggs, milk, beans, lean meat, peas and cereals are representative protein foods. The protein molecule is very complex and very large. Protein always contains carbon, hydrogen, oxygen, nitrogen and usually sulphur.

a. Albumin, as in the white of an egg.
b. Casein, as in milk curd.
c. Extractives, as in the juices of meats.
d. Fibrin, as in lean meat.
e. Gelatin, as found in sinews and bones.
f. Gluten, as contained in wheat.
g. Legumin, as contained in beans and peas.

2. Carbohydrates are those foods which include a large percentage of starches and sugars. These sugars are found more particularly in cane, beets and sweet fruits. On the other hand starches are found in cereals, rice and potatoes.

a. Cellulose, fruit and vegetable fiber.
b. Starch, as contained in potatoes.
c. Sugar, as cane, beet and fruit sugars.

3. Fats or Glycerides produce more heat and energy per weight than any other food. Fats are found in all animals and most plants, where they serve as a store of energy and heat producing material. Animal fats such as tallow, lard, and butter, and vegetable fats such as olive oil, nuts and cocoa butter are representative fat foods.

a. Animal fats, as butter, lard and fat meat.
b. Vegetable oils, as olive oil, cottonseed oil.

(B) Inorganic foods or those not having animal or vegetable origin.

4. Minerals. Lime and phosphorus, are needed in developing bone, while calcium, iron, iodine, potash are all necessary to our well being. Cereals, eggs, fruits, milk all furnish minerals but in this age of prepared foods, it is the province of chemistry to see that the proper amount of minerals are supplied the human body.

a. Mineral matter is found in the ash of foods.

Water is usually not thought of as a food, it is used in tissue building, but it does not give heat or energy.

CHEMICAL ELEMENTS.

At wt. = Atomic weight; Sp. gr. = Specific Gravity. For Definitions see Index

Name of Element.	Mode of Preparation.	Properties.	Chief Compounds and Uses.	Tests and Characteristics.
ALUMINIUM Symbol Al. At. wt. 26.97. Valence III. Sp. gr. 2.69. Discovered by Wöhler, 1827.	Occurs as silicate in clays, micas, feldspars, etc.; extracted from its ores by electrolysis.	A tin-white tenacious metal; takes brilliant polish; odorless, tasteless; highly malleable at 100° to 150° C. Sonorous, does not tarnish; slowly magnetic. Soluble in hydrochloric acid and solutions of caustic potash and soda.	Oxid and sulphate are its compounds. Oxid is sapphire, ruby, corundrum, and emery used in polishing. As a basic oxid, and as an acidic oxid, forms the somewhat indefinite aluminates. Sulphate is aluminium salt prepared by itself and along with potassium or ammonium sulphate as alum. Uses: boat building, instruments, balloon fittings, bicycles, cooking utensils, chemical works, lithography, paint, cameras, opera glasses, and aluminium bronze.	
ANTIMONY Symbol Sb. (*Scibium.*) At. wt. 121.7. Valence III. and V. Sp. gr. 6.69. Disc. by Valentine, 1450.	Occurs in nature in stibnite, antimony sulphid. Found free to a small extent.	A bluish-white, hard, brittle, highly lustrous, crystalline metal. Expands on solidifying; does not rust.	Alloyed to make type metal, britannia metal, and anti-friction metal. Compounds are sulphids; antimony cinnabar, used for paint; antimony trichlorid (butter of antimony) for browning gun-barrels; and tartar emetic.	Tests similar to that for arsenic, from which it is distinguished by the appearance of metal, and its insolubility in sodium hypochlorite.
ARGON Symbol A. At. wt. 39.94. Sp. gr. 1.59. Disc. by Rayleigh and Ramsay, 1894.	A gaseous element nearly one and a half times heavier than air, present in natural nitrogen.	A colorless, odorless gas, chemically inactive.	The argon molecule contains one atom. Used in "gas filled" incandescent lamps.	Argon will not unite with any other element; more soluble in water than nitrogen; liquefied, boils at −186°C. and solidifies at −190° C.
ARSENIC Symbol As. At. wt. 74.91. Valence III. and V. Sp. gr. 5.72. Disc. by Magnus, 13th cent.	Occurs free in nature, but also combined with many metals as in realgar, and in mispickel or arsenical pyrites.	1. A steel-gray, metallic, very brittle solid, subliming easily. 2. A fine, heavy black powder.	White arsenic or arsenious anhydrid (As_2O_3); arsenic oxid or arsenic anhydrid. Used for hardening shot, in paints, as Scheele's green for printing wall paper, dyeing calico, and in pyrotechny.	Marsh's test: arsenic is placed in the apparatus used for generating H; the H is ignited, and, when cold porcelain is held in flame, metallic arsenic is deposited on the porcelain.
BARIUM Symbol Ba. At. wt. 137.36. Valence II. Sp. gr. 3.6. Discovered by Davy, 1808.	Occurs chiefly as sulphate in barite, as carbonate in witherite, in other minerals, mineral waters, ashes of certain plants, and in sea water.	A silver-white or golden-yellow metal, slightly lustrous, somewhat malleable. Melts at red heat, but cannot be distilled. Recent soil analyses have led botanists to believe that the poisonous properties of the loco weed are due to the presence of barium in the soil.	Barium peroxid, used to make peroxid of hydrogen, a bleaching agent, and to prepare oxygen; sulphate, in making pigments, cheap substitute or adulterant of white lead, manufacture of reagents, in pyrotechny, paper making, and pork packing.	Barium salts, when brought into a non-luminous flame, burn with a yellowish-green color. Compounds impart a green color to a Bunsen flame, if volatile; if in solution they form an insoluble, white precipitate on adding sulphuric acid.
BERYLLIUM Symbol Be. At. wt. 9.02. Valence II. Sp. gr. 1.84. Disc. by Vauquelin, 1797.	Isolated from beryl rocks. Now made by electrolysis at 1280° C. Rare as yet.	Dark metal lighter than aluminium and nearly as light as magnesium. Takes high polish. Alloys well with iron.	Combined with oxygen to form white powder, used in gas mantles and in crucibles.	Beryllium salts are hard to obtain, for they dissolve beryllium hydroxide, a unique property. Several compounds possible.
BISMUTH Symbol Bi. At. wt. 209. Valence III. and V. Sp. gr. 9.8. Discovered by Valentine, 15th cent.	Occurs in nature, free, and in combination as sulphid, oxid, and carbonate.	A grayish-white, crystalline, shining, brittle metal with pinkish tinge. Solidifies with expansion.	Used in anti-friction alloys, in plugs for fuses, in sprinkler systems, in stereotype metal, and in medical compounds.	Bismuth is easily refined in oxid or sulphid forms. It renders alloys brittle and impairs electrical conductivity.
BORON Symbol B. At. wt. 10.82. Valence III. Sp. gr. 1.75. Disc. by Gay-Lessac, Thénard, 1808.	Occurs in oxygen compounds, namely, boric acid and its salts in two forms.	An odorless, tasteless, greenish-brown powder. Non-conductor of electricity; very infusible. Melts at 2300° C., and boils at 763° C.	Boron is of little commercial use. Its compounds are boric acid, boric oxid, and borax.	

Name of Element.	Mode of Preparation.	Properties.	Chief Compounds and Uses.	Tests and Characteristics.
BROMIN Symbol Br. At. wt. 79.916. Valence I., V., or VII. Sp. gr. 3.14. Discovered by Balard, 1826.	Occurs in the upper layers of the natural beds of rock salt. Three modes of preparation.	A heavy, reddish-brown liquid. The only liquid non-metallic element. Unites directly with most metals. Boils at 61.1°C. Has a very irritating odor.	Forms a class of compounds known as bromids. Useful in medicine, in photography, and in the manufacture of dyes from coal tar.	Gives a brownish color to starch paste by using a very large quantity. No oxid is known.
CADMIUM Symbol Cd. At. wt. 112.41. Valence II. Sp. gr. 8.6. Discovered by Stromeyer, 1817.	Occurs in the rare mineral greenockite, and in association with zinc ores, in very small quantities.	A bluish-white, lustrous metal with a fibrous fracture, highly lustrous, malleable, ductile, and flexible. It melts at 320°C., and boils at 778°C.	Cadmium forms a series of salts, of which iodid is used in medicine. Its sulphid is used as a pigment, and is also used for coloring toilet soaps, in pyrotechny, and in calico printing.	Cadmium tarnisnes slightly in air, and burns when heated in it.
CESIUM Symbol Cs. At. wt. 132.91. Sp. gr. 1.87. Disc. by Bunsen, Kirchoff, 1861.	A chemical element found in certain mineral waters, and in minerals, including lepidolite, petalite, and certain feldspars. Isolated by electrolysis.	A silver-white, soft, ductile metal; oxidizes rapidly in air.	The preparation of the metallic cesium involves separation of its compounds from other elements, the transformation of the pure cesium compounds into cyanid and the electrolytic decomposition of the cyanid.	Cesium has a great avidity for oxygen, readily taking fire if exposed to air. No oxid is known.
CALCIUM Symbol Ca. At. wt. 40.08. Sp. gr. 1.55. Valence II. Discovered by Davy, Berzelius, 1808.	Found in nature as limestone, marble, chalk, coral, eggshells, and many other forms. Prepared by the electrolysis of calcium chlorid.	A light, yellowish-white, clear, lustrous hard metal; malleable, ductile, brittle; melts at red heat. Decomposes water like sodium and potassium.	Quicklime (CaO) for making mortar; slaked lime for making lime-water; calcium sulphate or plaster of Paris; calcium phosphate as fertilizer; and chlorid of lime for bleaching.	Calcium precipitates as an oxalate, in connection with analysis of limestone or brick containing it. Calcium salts color a flame brick-red, and the spectral bands are yellow.
CARBON Symbol C. At. wt. 12.00. Valence IV. Sp. gr. 1.86. of diamond 3.5: of graphite 2.25 Prehistoric.	Occurs pure in nature, as diamond and graphite or plumbago (black lead); more or less impure as coal; artificially as charcoal, coke, soot, and lampblack.	Its forms are very varied and quite familiar. Unchanged by acids.	Carbon dioxid (CO_2) found in natural and artificial aerated waters; carbon disulphid (CS_2) for dissolving oils, fats, and vulcanizing rubber; the carbonates; and with hydrogen to form hydrocarbons.	Diamond, noted for its hardness, brilliancy, non-conductor of electricity, and burns under intense heat to CO_2. Graphite, a soft, greasy-looking black solid, crystallizes in six-sided plates. Other forms do not crystallize.
CERIUM Symbol Ce. At. wt. 140.13. Valence III. or IV. Sp. gr. 6.8. Discovered by Mosander, 1839.	Occurs with a few minerals, especially as the silicate in cerite, and samarskite. Prepared by electrolysis.	A steel-gray, very ductile, very lustrous, and malleable metal.	Its oxid is an important ingredient of incandescent gas mantles. Cerous sulphate is used in coloring fabrics.	Burns when heated in air, forming an oxid and producing much heat and light.
CHLORIN Symbol Cl. At. wt. 35.457. Valence I. Sp. gr. 1.55. Discovered by Scheele in 1774.	1. Electrolysis of salt water. $NaCl = Na + Cl$. 2. Hydrochloric acid and black oxid of manganese. $4HCl + MnO_2 = MnCl_2 + 2H_2O + 2Cl$.	Greenish-yellow color, pungent odor, irritates mucous membranes, soluble in water. Forms chlorids by direct union with other substances. Bleaches. Condenses to dark yellow liquid; boils at −33.6°.	Chlorids as common salt (NaCl), chlorinated lime, Condy's Fluid, hydrochloric acid (HCl). Uses. Manufactured for bleaching materials and disinfecting agents.	Heavier than air. Bleaches all inorganic substances. Does not bleach printer's ink. Does not burn in air, but many substances burn in chlorin.
CHROMIUM Symbol Cr. At. wt. 52.01. Valence II. to VI. Sp. gr. 7.1. Discovered by Vauquelin, 1797.	Occurs chiefly in ferrous chromite, as crocoisite, as wolchonskoite, and as a constituent of meteoric iron.	A shiny steel-gray powder, consisting of small, lustrous, very hard, brittle, rhombohedral crystals.	With steel it yields an alloy, chromium steel. With oxygen forms oxids, used principally as pigments; chromates, used in calico printing and dyeing, making matches, bleaching, tanning leather, and photo-gelatin processes.	Burns brightly when heated in oxygen. When used in plating it does not tarnish, is harder than nickel, and adheres better to many other metals.

Name of Element.	Mode of Preparation.	Properties.	Chief Compounds and Uses.	Tests and Characteristics.
COBALT Symbol Co. At. wt. 58.94. Valence II. or III. Sp. gr. 8.8. Discovered by Brand, 1735.	Usually occurs with arsenic or sulphur, and with nickel and other metals.	A hard, steel-gray, very ductile metal, resembling nickel, highly magnetic, and melts at 1480°C; unchanged in air.	It forms alloys, and is used in electroplating. Its principal commercial salts are pigments. Its oxid is used for glazing porcelain.	Slowly dissolved by HCl and sulphuric acids, but quickly by nitric acids.
COLUMBIUM (*Niobium*) Symbol Cb. At. wt. 93.1. Valence III. and V. Sp. gr. 8.4. Discovered by Hatchett, 1801.	Found in columbite, tantalite, and in small quantities in other minerals.	A steel-gray, lustrous powder.	Columbium forms three oxids of which the pentoxid forms salts called columbates or niobates.	When heated in air, columbium burns, but is almost unaffected by acids, except it is soluble in warm concentrated sulphuric acid. It has three or more oxids. Related to vanadium and tantalum.
COPPER Symbol Cu. (*Cuprum*) At. wt. 63.57. Valence I. or II. Sp. gr. 8.93. Prehistoric	Found native and as oxids, carbonates, and sulphids, in various minerals. Obtained by smelting, by electrolysis, and now by froth-flotation—collecting the copper, by oil on top of water, from concentrated ores.	A reddish-yellow metal, bright luster, tenacious, sonorous, elastic, malleable, and ductile. Melts at 1083°C. Excellent conductor of electricity.	Two series of compounds, cuprous and cupric. Uses: for electrical appliances, sheathing of ships, boilers, electrotyping, coinage, in calico printing, dyeing, as an insecticide, and to make brass, bronze, gun metal, and copper sulphate or blue vitriol.	Copper compounds burn in a flame with a characteristically vivid blue or green color.
ERBIUM Symbol Er. At. wt. 167.64. Sp. gr. 4.77. Discovered by Mosander, 1843.	A rare earth element, associated with ytterbium, holmium, and thulium. Found in gadolinite, euxenite, and similar forms.	Erbium is similar to the earthy elements with which it is found.	Erbium forms a series of rose-colored salts that give an acid reaction with litmus.	Solutions of the salts show strong absorption spectrum.
FLUORIN Symbol F. At. wt. 19. Valence I. Sp. gr. .0017. Discovered by Scheele, 1771.	Occurs in fluorite, cryolite, and many other minerals; in water, stems of grass, bones, and other animal substances.	A light, greenish-yellow gas; penetrating and disagreeable odor, irritating the eyes and mucous membrane.	Hydrofluoric acid is used for glass etching. Certain compounds of fluorin form valuable antiseptics, and are also used for preserving food.	Fluorin unites directly with almost all elements; it decomposes water, and almost all compounds, except those with oxygen.
GADOLINIUM Symbol Gd. At. wt. 157.3. Valence III. Discovered by Marignac, 1886.	A rare element occurring in the mineral gadolinite with ytterbium, erbium, and other rare earths.	Best separated from other elements by crystallizing the double magnesium nitrates. Appears as white oxid and colorless salts.	Its chief compound is the oxid.	Least soluble of rare-earth series. Absorption bands are in the ultra violet.
GALLIUM Symbol Ga. At. wt. 69.72. Valence II. or III. Sp. gr. 5.9. Discovered by Boisbaudran, 1875.	Found in minute quantities in zinc ores. Discovered by use of the spectroscope.	A fairly hard, gray metal. Melts at 29.7° C. The only metallic element, besides mercury, which can be liquid at ordinary temperatures.	It combines with oxygen, forming a monoxid and a sesquioxid, and with chlorin to form a dichlorid and a trichlorid.	Dissolves readily in hydrochloric acid or caustic soda solution. Because it boils at 1700° C, gallium has been suggested for thermometers for high temperatures.
GERMANIUM Symbol Ge. At. wt. 72.60. Valence IV. Sp. gr. 5.47. Discovered by Winkler, 1886.	Rare metal, allied to tin and lead, first found in Saxony. Now obtained largely from American zinc ores. Its oxid reduced by aluminium, carbon, or hydrogen.	Grayish-white, crystalline metal, so brittle it cannot be drilled, and melting at 958.5° C.	It combines with oxygen to form a germanic oxid and a germanious oxid, and with other elements to form a series of salts.	Insoluble in HCl; easily soluble in aqua regia.
GOLD Symbol Au. (*Aurum*) At. wt. 197.2. Valence I. or III. Sp. gr. 19.3. Prehistoric.	Occurs native and free in placer mines, and mixed with quartz.	A yellow, very heavy, the most malleable and ductile metal; very soft. Melts at 1064°.	The chlorid of gold used in photography; the metal used for coinage and jewelry.	Easily soluble in aqua regia, formed by mixing nitric and hydrochloric acids. Practical test, nitric acid, which has no effect upon gold.

Name of Element.	Mode of Preparation.	Properties.	Chief Compounds and Uses.	Tests and Characteristics.
HAFNIUM Symbol Hf. At. wt. 178.6. Valence 0. Sp. gr. 13.3. Discovered by Coster, Hevesy, 1923.	Metallic element, No. 72, always associated with zirconium. Separated with difficulty from salts of zirconium. Discovery and name, *celtium*, claimed by G. Urbain.	One of the rare earth elements. Has same crystalline structure as zirconium. Has high melting point and electronic emissivity.	Used in lamp filaments and in some radio tubes.	Arc spectrum seen by G. Urbain in 1911. Moseley analysis by X-ray known before 1915.
HELIUM Symbol He. At. wt. 4.002. Sp. gr. 0.5. Discovered by Ramsay, 1895.	Discovered in sun by Lockyer, 1868. An inert or noble gas, allied to argon group.	Lightest of gases next to hydrogen. Found in air, many minerals, and in natural gas.	Does not combine with other elements, but found with argon, krypton, and others in air.	
HYDROGEN Symbol H. At. wt. 1.0078. Valence I. Sp. gr. 0.087. Discovered by Cavendish in 1766.	1. Electrolysis of water. 2. Decomposition of water by (*a*) Sodium, $Na + H_2O = NaOH + H$. (*b*) Potassium, $K + H_2O = KOH + H$. 3. Action of sulphuric acid on zinc, $H_2SO_4 + Zn = ZnSO_4 + H_2$.	Colorless, odorless, and tasteless; lightest element known; is combustible; combines with oxygen to form water. Boiling point −252.5°; freezes at −257°.	Water (H_2O), hydrogen peroxid (H_2O_2), illuminating gas, and nearly all the organic compounds. Uses: Oxyhydrogen blowpipe, light, and blast flame. A constituent of all acids.	Burns with a pale flame; does not support life or combustion; lighter than all other gases; distinguished by absence of color and odor.
INDIUM Symbol In. At. wt. 114.76. Val. I. and III. Sp. gr. 7.25. Discovered by Reich and Richter, 1863.	Occurs in zinc blende. Best obtained from commercial metallic zinc by use of mild hydrochloric acid.	Metallic indium is ductile, silver-white, and lustrous. Its melting point is at 155° C.	With oxygen indium forms two compounds, a monoxid (InO), and a sesquioxid (In_2O_3). Other oxids are said to exist.	Indium is not acted upon by air or boiling water, but burns to its sesquioxid, when heated in air, with a blue-violet flame.
IODIN Symbol I. At. wt. 126.932. Sp. gr. 4.94. Valence I. or II. Discovered by Courtois, 1811.	Occurs in sea weeds and sea water. From the ashes of sea weeds and from sodium nitrate, commercial iodin is obtained.	A lustrous, grayish-black, soft crystalline solid. Volatilizes into a blue-violet gas, with an irritating odor. Dissolves freely in alcohol, chloroform, and ether.	Forms a class of compounds known as iodids. Used in the arts and in medicine.	Gives a deep blue color to starch paste. Stains the skin yellow.
IRIDIUM Symbol Ir. At. wt. 193.1. Val. II. or IV. Sp. gr. 22.4. Discovered by Tennant, 1804.	Occurs in alluvial deposits, along with platinum, and is separated from it and other similar metals by chemical processes.	A very hard, white, brittle, lustrous metal, extremely infusible.	Iridium alloys with other platinum metals and gold, copper, and lead. Used in making standard weights, balances, tips of pens, and for coating surgical instruments.	Iridium is insoluble in several mineral acids, and also in aqua regia.
IRON Symbol Fe. (*Ferrum*) At. wt. 55.84. Valence II. or III. Sp. gr. 7.86. Prehistoric.	Alloyed with a small percentage of nickel. It occurs in ores known as brown or red hematite and limonite. When endowed with magnetic properties the ore is known as magnetite. Sulphid of iron or iron pyrites (fool's gold) is iron ore containing sulphur.	Silver-white; crystallizes in the isometric system; fuses at from 1400° to 1500° C. Very tenacious, ductile, magnetic, malleable, and can be tempered. Iron is soluble in acids. Dry air or oxygen does not act upon it, but moisture causes rust, which can be prevented by a coating of paint or varnish, or of such metals as zinc, tin, nickel, copper, or lead.	Pig or cast iron, wrought or puddled iron, and steel; produced by blast furnace, puddling, crucible, Bessemer, and open hearth process. Ferric oxid, as a paint and polishing powder; magnetic oxid, to protect iron in the Bower-Barff process. Ferrous sulphid, for preparing hydrogen sulphid gas; ferrous sulphate, in dyeing, tanning, ink; both ferrous and ferric salts in medicine; ferric hydroxid—a useful antidote for poisoning by arsenious oxid; cast iron, as foundation work; wrought iron, used where it has to undergo strain, and for electro-magnetic purposes.	
KRYPTON Symbol Kr. At. wt. 83.7. Monatomic. Sp. gr. 0.0037. Discovered by Ramsay and Travers, 1898.	Rare gas making up one-millionth part of the air. Found first in liquid air.	It boils at −151.7° C. and melts at −169° C. Colorless and odorless.	Belongs between bromine and rubidium in the periodic table. Found with argon, neon, and xenon.	Its spectrum has bright yellow line with greener tint than helium, also a brilliant green line.
LANTHANUM Symbol La. At. wt. 138.92. Valence III. Sp. gr. 6.15. Discovered by Mosander, 1839.	Occurs in such rare minerals as cerite, orthite, monazite, gadolinite.	A white, fairly malleable and ductile metal. Harder than cerium.	Forms one oxid (La_2O_3), and colorless salts, though another is said to exist.	Lanthanum burns brilliantly when heated in air. Easily attacked by cold. Oxidizes rapidly in dry air.

Name of Element.	Mode of Preparation.	Properties.	Chief Compounds and Uses.	Tests and Characteristics.
LEAD Symbol Pb. (*Plumbum*) At. wt. 207.22. Valence II. and IV. Sp. gr. 11.34. Prehistoric.	Found native in small quantities, usually with a little silver or antimony. Extracted from its ores and metallurgical products by roasting and reaction, roasting and reduction, and precipitation. Commercial lead is almost all obtained from galena.	A bluish-gray, lustrous metal, exceedingly malleable and ductile, very soft, and with but little tenacity. It leaves a black streak on white paper, and is an inferior conductor of electricity and heat. Lead is somewhat soluble in water. Pure dry air does not affect it, but air and moisture cause it to become coated with oxid. Resists acids.	Compounds of lead with oxygen are litharge and minium; the former is used in making flint glass, as a glaze for earthenware, in the preparation of lead salts, as a paint, and for drying oils; the latter is used in the arts as a pigment, in the manufacture of flint glass, as a cement for making steam-tight joints, and in making secondary batteries. White lead is used as a pigment, and as a body for colors in making paint. Lead acetate is used in medicine, in the arts, in refining sugar. Lead sulphate is a substitute for white lead. The lead chromates are used in calico printing. Lead is also used in making shot. Lead compounds are all poisonous. There are five different oxids of lead.	
LITHIUM Symbol Li. At. wt. 6.940. Valence I. Sp. gr. 0.534. Discovered by Arfvedson, 1817.	Occures in small quantities in rare minerals, also mineral water, and leaves of certain plants, especially of tobacco and beets.	A soft, white metal, the lightest solid known. Floats upon water.	Oxid, carbonate, citrate, and salicylate are its compounds.	Lithium imparts a red coloration to an otherwise colorless flame.
MAGNESIUM Symbol Mg. At. wt. 24.32. Valence II. Sp. gr. 1.74. Discovered by Liebig and Bussy, 1830.	Widely distributed in nature. Occurs in magnesite, dolomite, epsom salts, and kieserite. Prepared by electrolysis from carnallite.	A very lustrous, light, silver-white, ductile, malleable, moderately hard, rather tough metal.	Magnesia and the several carbonates, citrate of magnesia, magnesium chlorid, asbestos, soapstone, and meerschaum are the chief compounds. Used in flashlight powder, fireworks, and medicines.	Burns with an intense white light.
MANGANESE Symbol Mn. At. wt. 24.93. Valence II, III, VII. Sp. gr. 7.3. Discovered by Gahn, 1774.	Occurs in ores, chief of which is pyrolusite, mineral waters, and in many plants. Prepared by reduction in a blast furnace; by carbon in an electric furnace; or by thermite process, as with chromium.	A very hard, grayish-white, brittle metal with a reddish luster. Takes a high polish and is not malleable. Melts at about 1260° C. Rusts in moist air.	Forms several oxids, used in making chlorin, black enamel for pottery, glass, and in the preparation of oxygen; chlorid used in calico printing; the pure form used in steel and alloys.	Manganates are green and remain stable only under alkaline combinations; permanganates are purple, and remain stable under neutral or under acid conditions.
MERCURY Symbol Hg. (*Hydrargyrum*) At. wt. 200.61. Valence I. or II. Sp. gr. 13.60. 300 B. C. Prehistoric.	Mercury occurs chiefly in cinnabar (mercuric sulfid). Its crystals are dark red. Produced in the United States, Spain, and Austria by roasting in air, when the surfur is driven off, and mercury is condensed to liquid metal.	A heavy, silver-gray or nearly white, very lustrous, cohesive, mobile liquid. Freezes at −40°. Dissolves most metals. An amalgam is an alloy of mercury and some other metal. Sodium amalgam is a reducing agent, notably for gold and silver ores.	Red oxid of mercury, mercuric chlorid or corrosive sublimate, one of the best antiseptics known, and mercurous chlorid or calomel, are the chief compounds. Mercury is used in barometers and thermometers.	Mercury is a cumulative poison in the human system. Mercury salts injure lead plumbing. Mt. Wilson telescope is balanced in mercury receptacle and so turns easily.
MOLYBDENUM Symbol Mo. At. wt. 96.0. Valence IV, VI. Sp. gr. 10.2. Discovered by Hjelm, 1790.	Found chiefly in molybdenite, but for centuries confused with graphite. Reduced by nitric acid to sulfuric acid and white solid, known as molybdic acid.	A very hard, silver-white metal, with a melting point above that of platinum.	Now used instead of tungsten in high-speed steels; in various alloys for hardness and durability, notably with chromium; and for filiments, grids, and screens in radio equipment.	Not much affected by ordinary air or acids, save by nitric, which rapidly reacts with the metal.
NEODYMIUM Symbol Nd. At. wt. 144.27. Valence III. Sp. gr. 7.00. Discovered by Welsbach, 1885	Prepared by fractional crystallization from the double magnesium nitrate. Occurs with cerium, lanthanum, and others, in monazite, cerite, and other minerals.	Light blue powder, often with brown tint. Slowly oxidizes in air; gradually attacked by water. Melts at 840° C.	Oxid is dissolved by HCL and HNO_3, giving amethyst solutions of intense absorption spectra.	Fractionation by Welsbach of didymium gave two earths, praseodymium and neodymium. See rare earths at end of tables.
NEON Symbol Ne. At. wt. 20.183. Sp. gr. —— Discovered by Ramsay and Travers, 1898.	Present in the atmosphere to the extent of one or two parts per 100,000.	With argon, helium, krytpon, and xenon, one of the inert gases.	Used in advertising signs, by passing an electric current through rarified neon. In mercury vapor lamps turns the greenish hue of mercury to white.	Neon glows red-orange in a vacuum tube, and is marked by strong red and green lines in its spectrum.
NICKEL Symbol Ni. At. wt. 58.69. Val. II, IV. Sp. gr. 8.8. Disc. by Cronstedt, 1751.	Occurs free in meteorites and in niccolite and nickel glance. It is manufactured chiefly from garnierite. Extracted from the ores by smelting and electrolysis.	A silver-white, lustrous metal that is magnetic, ductile, hard, tenacious, and capable of taking a fine polish. Its melting point is about 1455° C.	Nickel forms nickelous and nickelic oxids and hydroxids: used in making alloys, currency, nickel-plating. The carbonate is used in electroplating.	Rusts very slowly in moist air.

Name of Element.	Mode of Preparation.	Properties.	Chief Compounds and Uses.	Tests and Characteristics.
NITROGEN Symbol N. At. wt. 14.008. Valence III. and V. Sp. gr. of gas 0.95; liquid 0.80. Discovered by Rutherford in 1772.	Four fifths of the atmosphere. Prepared by burning the oxygen out of the air with phosphorus, which forms phosphorus pentoxid (P_2O_5) and dissolves in water; by passing nitrous oxid over heated copper, $N_2O + Cu = CuO + N_2$; by action of chlorin upon ammonia.	Odorless, colorless, tasteless, not combustible nor a supporter of combustion. Animals in an atmosphere of N die for want of oxygen. One of the most inert of the elements, except in the nascent state. Liquefies by pressure at −146°; boils at −194°.	Carbon dioxid (CO_2). Ammonia gas (NH_3). Ammonia liquor (NH_4OH). Nitric acid (HNO_3), and the nitrates. Important in the manufacture of explosives, antipyrine, and dyes.	Differs from O by not supporting life or combustion; from chlorin by its absence of color or odor; from hydrogen by its weight and its incombustibility; from CO_2 by its weight.
OSMIUM Symbol Os. At. wt. 191. Valence VI, VIII. Sp. gr. 22.48. Discovered by Tennant, 1804.	Obtained chiefly from mineral osmiridium, by treatment with zinc and hydrochloric acid. Occurs with platinum and iridium.	A lustrous, bluish-white, hard, crystalline metal, extremely infusible.	Osmium is used to make the filaments of incandescent electric lamps, as an alloy for machinery bearings, and as tips of gold pens. Osmic acid is used in microscopy.	Its compounds with oxygen form four oxids. When ignited, insoluble in all acids.
OXYGEN Symbol O. At. wt. 16. Valence II. Sp. gr. 1.105. Discovered by Priestley in 1774.	1. Mercuric oxid (HgO) heated in a tube gives metallic mercury and oxygen. HgO + heat = Hg + O. 2. Potassium chlorate ($KClO_3$) heated in the presence of black oxid of manganese, gives oxygen. $2KClO_3 + MnO_2 = 2KCl + MnO_2 + 3O_2$.	Colorless, tasteless, odorless, soluble in water sparingly. Unites with many substances, forming oxids. Supports combustion. Ozone (O_3) is an allotropic form,—a colorless or bluish unstable gas with a strong odor. Boils at −182.7° C.; freezes at −219° C.	Most abundant element in nature. Found in air, water, and all oxids, etc. Uses: Indispensable to human and animal life, and to the support of flame. Used in medicine, for collapse and heart failure.	A glowing splinter or an ignited sulphur-tipped watch spring will burn in it. Differs from other supporters of combustion in the violence with which bodies burn in it. Does not burn itself. Absence of color and odor distinguishes from some other gases.
PALLADIUM Symbol Pd. At. wt. 106.7. Val. I., II., IV. Sp. gr. 11.5. Disc. by Wollaston, 1803.	Found in grains usually containing platinum and iridium, gold and silver, also gold and lead.	A grayish-white, lustrous metal, fairly malleable and very ductile.	Used for making scales and division marks on scientific instruments, for coating and preserving silvered wire; used in dentistry.	Combined with oxygen, forms four oxids. Noted chiefly for its great tendency to absorb hydrogen.
PHOSPHORUS Symbol P. At. wt. 31.02. Val. III. and V. Sp. gr. 1.9–2.7. Discovered by Brand, 1674.	Found in nature in the form of phosphates. Prepared from bones by distillation. Occurs in allotropic forms as red, yellow, or ordinary, and crystalline phosphorus.	Yellow form, a waxy solid; combustible on exposure to the air; kept under water; is cut with ease; faint odor of garlic. Red form, dull, odorless, tasteless powder.	It forms three hydrids and three oxids. Red phosphorus used for friction matches, in phosphates (for fertilizers), in rat poisons, and for phosphor-bronze.	Distinguished from sodium and potassium by odor, color, combustibility, and behavior in water. Odor is distinctive. Red form burns with slight friction.
PLATINUM Symbol Pt. At. wt. 195.23. Valence II. or IV. Sp. gr. 21.4. Discovered by Wood, 1741.	Most abundant of the six metals of palladium-platinum group. Found in river sands, and in Urals, Colombia, United States, and Canada. Purified by aqua regia.	A very heavy, grayish-white, malleable, ductile and tenacious metal, which melts at 1773.5° C. Expands almost equally with glass. Does not rust. Fair electric conductor, but resists some metals.	Metallic platinum is used in dentistry; in contact points of spark coils; in jewelry; as a catalytic agent in chemistry; and in laboratory apparatus.	Has high melting point; resists acids and water solutions of salts and alkalies. For laboratory dishes, a palladium gold alloy is being substituted.
POTASSIUM Symbol K. (*Kalium*) At. wt. 39.096. Valence I. Sp. gr. 0.86. Discovered by Davy, 1807.	Occurs in many silicates in the mines of Strassfurt, Prussian Saxony. 1. Electrolysis of solution of potassium hydroxid (KOH). 2. Leaching hard-wood ashes.	White, brittle, solid, decomposes water as sodium does. Burns with a lilac color when thrown on water. Melts at 62.5°; boils at 712° C.	Has many compounds. Potassium hydroxid (KOH) for washing or as lye, and in soap making. Potassium carbonate and potassium nitrate or saltpeter, potassium chlorite ($KClO_3$), used in medicine.	Burns with a violet or lilac flame in flame test. Potassium salts usually impart violet color to Bunsen flame.
PRASEODYMIUM Symbol Pr. At. wt. 140.92. Valence III. Sp. gr. 6.6. Disc. by Welsbach, 1885.	Found with cerium, lanthanum, and neodymium in monazite, cerite, and allanite. Separated by fractional distillation.	Combined with neodymium, was once called didymium.	Its oxid is nearly black powder, varying in composition, but soluable in acids.	Oxids in acids give green color and strong absorption spectrum.
RADIUM Symbol Ra. At. wt. 226.05. Sp. gr. 5.000. Disc. by M. and Mme. Curie, 1898, 1910. Pure radium disc. by Mme. Curie, 1910.	Heaviest of alkaline-earth metals; in group with barium, strontium, and calcium. Found in pichblende, carnotite, and autuntite. Refined in five steps. Associated with uranium and actinium forms.	A substance three million times as active as uranium. It maintains its own temperature, 1.5° C., above its surroundings, and emits heat radiations in enormous quantities without combustion, chemical change, or decrease in energy.	Usually marketed with salts of barium. In 1935 worth $50,000 a gram. Used effectively in cancer, but uncontrolled makes dangerous burns. Traces of radium salts used in paint for luminosity.	Unique in radioactivity, or throwing off heat emanations and light. Increase in amount increases strength of emanations. Not affected by temperature. Three types of rays. Over 40 types of radioactive matter.

Name of Element.	Mode of Preparation.	Properties.	Chief Compounds and Uses.	Tests and Characteristics.
RHODIUM Symbol Rh. At. wt. 102.91. Valence III. Sp. gr. 12.3. Disc. by Wollaston, 1803.	Found in small amounts in platinum ores, with osmium, iridium, and ruthenium. Platinum is removed by precipitation with ammonium chloride, and others removed by converting the precipitate remaining into potassium rhodium sulfate.	Rhodium is slightly bluish, fuses at about 1940°C., oxidizes if heated in air, and has compounds with ammonia. Found in common table salt in minute quantities.	It combines with oxygen and forms about four oxids. Its salts form red solutions. An alloy with platinum is used in some forms of pyrometers, and its alloy with steel is also valuable.	Insoluble in acids or aqua regia, except by hot sulfuric acid or on fusion with potassium bisulfate, —a peculiar quality of platinum metals.
RUBIDIUM Symbol Rb. At. wt. 85.44. Valence I. Sp. gr. 15.2. Discovered by Bunsen, 1861.	Found with cæsium in lepidolite and petalite, in water from various springs, in ashes of seaweed and tobacco, in tea, and beet-root. Prepared by electrolysis.	A silver-white, soft metal that melts at 38.5° C., and evolves a bluish vapor at a dull, red heat. The most positive element next to cæsium.	With oxygen rubidium forms a monoxid similar to that of potassium. No oxid has been isolated.	Rubidium oxidizes rapidly in air, and decomposes water. Gives red color when heated in a non-luminous flame.
RUTHENIUM Symbol Ru. At. wt. 101.7. Val. VI, VIII. Sp. gr. 12.28. Discovered by Claus, 1845.	Occurs in its metallic state in platinum ores and in osmiridium, also as the sulphid in laurite.	A white, lustrous, hard, heavy, brittle metal that melts at about 2450° C; very infusible.	It forms several chlorids and oxids, which, in turn, form various salts, of no importance commercially.	Dissolves slowly in aqua regia, but insoluble in other acids.
SAMARIUM Symbol Sm. At. wt. 150.43. Valence III. Sp. gr. 7.7. Disc. by Boisbaudran,1879.	In many minerals like monazite, gadolinite, and samarskite. Separated from other minerals of the earth group by fractional crystallization of double magnesium nitrates from 50% of nitric acid.	The metal is prepared by electrolysis of chloride.	Its compounds are oxid, a very faint yellow powder, and chlorid, topaz-colored deliquescent crystals.	Samarium is characterized by its spark spectrum, and by the absorption spectra of its salt solutions.
SCANDIUM Symbol Sc. At. wt. 45.10. Valence III. Sp. gr. 2.5. Disc. by Nilson, Cleve, 1879.	Its oxid is found combined with minerals like thortveitite, wiikite, gadolinite, and tin ores. Relatively abundant in the sun and stars.	The element has not been isolated.	Forms colorless salts, derived from an oxid.	Spectrum (spark) is characteristic and very complex.
SELENIUM Symbol Se. At. wt. 78.96. Val. II. or VI. Sp. gr. 4.6 (c). Disc. by Berzelius, 1817.	Occurs with copper, lead, silver, sulphids, and several rare minerals, as well as in the lavas of Vesuvius.	It is of a dark brown or gray color by reflected light, but red in thin pieces by transmitted light. Selenium is both odorless and tasteless.	The crystalline variety of the element conducts electricity, upon which property the photophone was based. Its compounds are similar to those of sulphur.	Selenium burns with a reddish-blue flame that has an odor resembling horseradish.
SILICON Symbol Si. At. wt. 28.06. Valence IV. Sp. gr. 2.33. Discovered by Berzelius, 1823.	As silica or oxid of silicon, occurs in nature as quartz, rock crystal, amethyst, flint, agate, jasper, opal, sand, and many other earthy forms.	Exists in two forms: 1. Dark brown powder, melting with difficulty, known chiefly through its compounds. 2. Very lustrous, gray, metal-like leaflets.	A compound containing silicon and sodium is known as soluble or water glass. Used as a coating for stone, making artificial stone, glass, soap, fireproofing, and for preserving eggs.	1. Burns when heated in air: insoluble in water. 2. Does not change when heated.
SILVER Symbol Ag. (*Argentum*) At. wt. 107.880. Valence I. Sp. gr. 10.50. Prehistoric.	Occurs as argentite, stephanite, ruby silver ore and silver chlorid, or horn silver. Also mixed with lead or copper ore.	A pure white metal with brilliant luster. Harder than gold. Very malleable and ductile. Best conductor of heat and electricity.	Silver nitrate, used in medicine, photography, electroplating, and silvering mirrors. Alloyed with copper to make it harder. Used for coins and ornaments.	By blowpipe analysis, reduction, and extraction of the metal.
SODIUM Symbol Na. (*Natrium*) At. wt. 22.997. Valence I. Sp. gr. 0.97. Discovered by Davy, 1807.	Electrolysis of solution of moist sodium hydroxid (NaOH); by reducing sodium carbonate with coal and chalk; by reducing sodium hydroxid with an iron carbid,—Castner process. Sodium chlorid forms two thirds of solid matter in sea water and the great salt deposits.	Light, malleable, ductile, silver-gray, lustrous, soft metal; decomposes water by setting free one atom of H, and forming sodium hydroxid (NaOH), with the hydroxyl radical. Melts at 97.5°; boils at 750°.	Sodium hydroxid, washing soda, or soda lye, used in soap making. Sodium chlorid, or common salt (NaCl); sodium carbonate and bicarbonate (baking soda); sodium nitrate (Chile saltpeter); borax, soluble glass, and hyposulphite of soda used in photography.	Burns with yellowish flame in flame test. All sodium salts color Bunsen flame yellow.
STRONTIUM Symbol Sr. At. wt. 87.63. Valence II. Sp. gr. 2.60. Discovered by Davy, 1808.	Found in celestine, strontianite, and other minerals, also in mineral and sea waters and ashes of certain plants.	A yellow metal, which melts at a moderate red heat, malleable and ductile, and is less electropositive than calcium and the alkali metals.	Strontium combines with oxygen to form a monoxid and a dioxid. Used to separate sugar from beet-root molasses and in pyrotechny.	Strontium oxidizes quickly in air, and burns brilliantly when heated. It acts on water, setting hydrogen free. Its salts color Bunsen flame red.

Name of Element.	Mode of Preparation.	Properties.	Chief Compounds and Uses.	Tests and Characteristics.
SULPHUR Symbol S. At. wt. 32.06. Valence II., IV. or VI. Sp. gr. 1.96–2.07 Prehistoric.	Occurs native near volcanoes, and mixed with ores as sulphids. Takes on several forms according to temperature rhombic, prismatic, and amorphous. Sicily yields 500,000 tons of sulphur a year.	Brittle, yellow, lustrous, hard. Unites readily with oxygen, and directly with copper, zinc, and iron to form sulphids. Melts at 114°, boils at 444°.	Sulphur in matches, gunpowder, and vulcanizing. Hydrogen sulphid (H_2S) a gas used in laboratory testing of minerals and metals. Sulphur dioxid (SO_2), disinfectant, bleaching, and making sulphuric acid, which is of wide industrial use.	Burns with bluish, pale, lambent flame; giving off suffocating odor. Its gas does not burn or support combustion.
TANTALUM Symbol Ta. At. wt. 180.88. Valence V. Sp. gr. 16.6. Discovered by Eckeberg, 1802.	Occurs with columbium in columbate, tantalite, Fergusonite, and other minerals. Refined by fusion with potassium fluoride, sodium peroxide, or potassium bisulphate in three processes.	A rare metal resembling platinum, when pure, malleable and very ductile, when impure it is a black powder that assumes an iron-gray metallic luster under a burnisher.	Tantalum wire now replaced by tunsten in electric filiments. Used to replace platinum in weights; for steel in surgical instruments; for rectifiers and chemical containers.	Its salts are called tantalates. When heated in air begins to oxidize turning yellow.
TELLURIUM Symbol Te. At. wt. 127.61. Val. II. or VI. Sp. gr. 6.25. Discovered by Reichenstein, 1782.	Occurs free, and as graphic tellurium, as nagyagite, as silver tellurid, and as bismuth tellurid, also in gold and copper ores.	A white, shining, crystalline, brittle solid, which melts at about 452° C., resembles selenium. It is a black powder when formed by precipitation.	Tellurium combines with oxygen to form three oxids, two of which unite with water to form acids, which in turn yield a series of salts.	Burns to the dioxid with a blue flame, when heated in air.
TERBIUM Symbol Tb. At. wt. 159.2. Valence III. Discovered by Mosander, 1843.	Very rare metal of rare-earth group, separated from the rest by fractional crystallization of the bromates.	Mosander showed that yttria contains ceria, lanthana, didymia, a colorless oxid, still called yttria, a yellow, erbia, and a rose-colored one, terbia, all six elements later isolated.	G. Urbain made first pure compounds in 1905. There are bromates, oxalates, and sulfates of terbium.	Burning terbium oxalate or sulfate gives black peroxid. The absorption band is in the blue of the spectrum.
THALLIUM Symbol Tl. At. wt. 204.39. Val. I. or III. Sp. gr. 11.85. Discovered by Crookes, 1861.	Occurs with copper and silver, in crookesite, in pyrites, in the seleniferous deposits from sulphuric acid, in other minerals, and in mineral waters. Prepared from flue-dust of works in which sulphuric acid is made.	Metallic thallium is bluish white, lacking tenacity and elasticity. It melts at about 302° C., and boils at 1300°. Readily oxidized, soluble in nitric and other acids; does not combine with hydrogen, but directly with the halogens.	It combines with oxygen to form a monoxid and trioxid, which yield a series of salts known as the thallous and thallic compounds. Its compounds are very poisonous, in effect resembling lead poisoning.	Thallium tarnishes rapidly when exposed to the air, becoming coated with oxid, which preserves the rest of the metal. Thallium may be detected by the green line in its flame spectrum.
THORIUM Symbol Th. At. wt. 232.12. Valence IV. Sp. gr. 11.85. Discovered by Berzelius, 1828.	Though found in several rare minerals, thorium is produced commercially only from monazite sand. Thorium is strongly radioactive, forming the parent of at least 10 other substances.	A grayish-white powder which assumes an iron-gray luster when burnished; somewhat brittle, infusible, insoluble in water.	Thorium compounds are used in making crucibles; the nitrates (with 1% of ceria) for incandescent gas mantles; salts of the organic acids in skin diseases; and thorium emanation (thoron) for inhaling for lung diseases.	Thorium takes fire when heated in air, burning with a bright flame.
TIN Symbol Sn. (*Stannum*) At. wt. 118.70. Valence II. or IV. Sp. gr. 7.28. Prehistoric.	Found in nature chiefly as the mineral cassiterite or "tinstone" (SnO_2). Ore is washed, roasted, and smelted. The reduced metallic tin is tapped off and melted from impurities.	A silver-white, malleable, ductile metal, of low tenacity, and highly crystalline. Melts at 232° C., boils at 2270° C. Poor conductor of electricity. Takes a high polish. Tin is little acted on by air. Heated in air, it rapidly oxidizes, forming tin dioxid, used for polishing.	Used to coat other metals to prevent rusting or corroding, as a lining for copper vessels and lead pipes to prevent these poisonous metals from contaminating food and water. Tin dioxid forms stannates with basic oxids, sodium stannate being used in calico printing. Stannous chlorid is used as a mordant. Tin is used in the manufacture of tin plate, tin foil, alloys, bell metal, bronze, gun metal, pewter, type metal, etc. Stannic sulphid, known as "mosaic gold," was formerly used for gilding, imitating bronze, etc.	
TITANIUM Symbol Ti. At. wt. 47.90. Val. IV. Sp. gr. 4.5. Discovered by Gregor, 1789.	Though widely distributed in the earth, this element can be extracted commercially from only a few substances like rutile, ilmenite, magnetite, and perovokite.	A dark gray amorphous powder resembling reduced iron. It is distinguished from almost all other metals for its capacity of uniting with nitrogen at a high temperature.	Titanium gives hardness and toughness to steel and a fine luster to silver, and also increases the brilliancy of arc lamps. Its compounds with oxygen are dioxid, trioxid, and sesquioxid.	Burns with an intense light when heated to redness in the air. Decomposes boiling water, and is soluble in dilute acids.
TUNGSTEN Symbol W. At. wt. 184.0. Val. VI. Sp. gr. 19.1. Disc. by d'Elhujar, 1783.	Occurs in wolfram or tungstate of iron, and in scheelite or calcium tungstate.	A bright, steel-gray, hard, brittle, crystalline substance, difficult of fusibility; high unknown melting point.	Used in filiments for electric lamps, as alloy with steel, X-ray targets, electrical contacts, and crucibles.	Oxidized in air only at red heat; slowly attacked by water containing carbonic acid.

Name of Element.	Mode of Preparation.	Properties.	Chief Compounds and Uses.	Tests and Characteristics.
URANIUM Symbol U. At. wt. 238.14. Valence IV, VI. Sp. gr. 18.7. Discovered by Klaproth, 1789.	From rare minerals, mainly pitchblende (uranitite) and carnotite. In 1841, isolated by Peligot; found radio active by Becquerel, 1896. Parent of other forms.	A hard, silvery-white, somewhat malleable metal which melts near white heat, or a grayish-black powder. It has the highest atomic weight of all the elements.	It produces uranic salts. Uranic oxid also acts as an acid, forming uranates of the alkali metals. The compounds are used in china painting, and as photographic reagents.	Known for changes in valency and for instability. Dissolves in acids yielding green-yellow solutions. The solid salts, when shaken or crushed, emit light.
VANADIUM Symbol V. At. wt. 50.95. Valence III, V. Sp. gr. 5.7. Disc. by Berzelius, 1831.	Found in several minerals, mainly in patronite, carnotite, and rosceolite. Extracted by use of acid and by fusing patronite with sodium carbonate and treating with water.	A light gray, crystalline, lustrous powder, very infusible; not magnetic.	Forms an alloy with platinum, produces five oxids, besides several chlorids. Used to harden steel, in dyeing, and in making ink.	Powder burns in Bunsen flame; does not oxidize in air at ordinary temperature.
XENON Symbol Xe. At. wt. 131.3. Sp. gr. 4.094. Discovered by Ramsay and Travers, 1898.	A gas found in the atmosphere, in quantities of one part in 20,000,000 parts of air. Its boiling point is —109.18 C., and its melting point, —140° C.	The heaviest and rarest of the elementary gases of the argon family. It is colorless.	It has no reactions and is monatomic.	Xenon when sparked in a vacuum tube is marked by a characteristic blue glow, which changes to green on the introduction of a Leyden jar, and shows distinctive spectrum lines.
YTTERBIUM Symbol Yb. At. wt. 173.04. Valence III. Discovered by Marignac, 1878.	G. Urbain, 1907, separated ytterbium from lutecium. It is difficult to distinguish the special characteristics of each.		It forms with oxygen (Yb_2O_3), and a sulphate, ($Yb_2(SO_4)_3 \cdot 8H_2O$).	Ytterbium has a higher magnetic susceptibility then lutecium, and its own spectrum.
YTTRIUM Symbol Yt. At. wt. 88.92. Valence III. Sp. gr. 4.57. Discovered by Wöhler, 1828.	Rare-earth element, associated with cerium, lanthanum, ytterbium, erbium, and terbium. With last three, from town of Ytterby, Sweden, where first located in minerals like gadolinite.	A dark gray powder that assumes the luster and color of metallic iron when burnished.	It forms a sesquioxid, which is a yellowish-white powder. It is said to be used in the Nernst incandescent electric lamp.	The oxid glows strongly when heated. The metal has a characteristic spark spectrum.
ZINC Symbol Zn. At. wt. 65.38. Valence II. Sp. gr. 7.14. Discovered by Paracelsus, 1520.	Occurs in ores; sphalerite, smithsonite or calamine, willemite, zincite, and franklinite. Principally obtained from zinc oxid.	A bluish-white crystalline, brittle, lustrous metal.	In sheets used for roofing, mixed with copper to form brass, for coating or galvanizing; zinc sulphate, or white vitriol, in medicine; zinc chlorid, an antiseptic, a caustic, and an irritant poison.	When strongly heated in air it burns with a bluish-white flame, giving zinc oxide.
ZIRCONIUM Symbol Zr. At. wt. 91.22. Valence IV. Sp. gr. 6.53. Discovered by Berzelius, 1825.	Occurs in combination with silica in the mineral zircon, and also in certain rarer minerals, including eudialyte, fergusonite, and polymignite.	A black amorphous powder which has also been obtained as a lustrous, gray, brittle, crystallized solid. Its melting point is above 1300° C.	Used as a cleansing agent in metallurgy; once in gas mantles, but now superseded by thoria and ceria; and with carbon as zirconium carbide for cutting glass.	Only oxidized at a very high temperature.

Latest discoveries, not yet fully described, are **masurium** and **rhenium**, of the manganese group, by Noddack and Tacke, 1925; **alabamine** and **virginium** by Allison, 1930; and **illinium** by Hopkins, 1925. The table of 93 elements is now complete, but some are yet to be more fully studied.

Rare Earths, 16 in number, fall into three groups, but several appear together in mineral monazite, cerite, and the like. Very similar to those described above are **dysprosium**, found by Boisbaudran, 1907; **europium**, by Demarcay, 1903; **holmium**, by Boisbaudran, 1886; **illinium**, mentioned above; **lutecium**, by Welsbach and Urbain, 1907; and **thulium**, by Cleve, 1879. As yet little use is found for them.

Radio-active elements fall into three series—**uranium-radium** with 16 changes or forms; **thorium** with 12 changes; and **actinium** with 10. Some are established as elements, the certain ones being **polonium** and **radon**. **Radon** or **niton**, found by Mme. Curie in 1900, is the emanation of **radium**, an irert gas, which disintegrates half in 4 days. **Polonium** is more stable; also found by Mme. Curie before she discovered **radium**, but not known well until 1910. Its strength surpasses that of **radium** itself.

GEOLOGY.

Origin of the Earth.—It is to the astronomer that the geologist must look for the proofs of the origin of the earth. Among the exploded hypotheses that held their ground for long periods in old times the more important are the Ptolemaic and the Copernican systems.

The Ptolemaic System. Ptolemy of Alexandria (130-150) was the founder of a theory called the Ptolemaic system, based largely upon the materials gathered by such earlier astronomers as Hipparchus and Eratosthenes, who computed the size of the earth by means even now considered the best—the measurement of an arc of the meridian. The advocates of the Ptolemaic theory assumed that every planet revolves in a circle, and that the earth is the fixed center around which the sun and the heavenly bodies move. They conceived that a bar, or something equivalent, is connected at one end with the earth; that at some part of this bar the sun is attached; while between that and the earth, Venus is fastened, not to the bar directly, but to a sort of crank; and farther on, Mercury is joined on in the same way. They did not fully understand the nature of these bars—whether they were real or only imaginary—but they did comprehend their action, as they thought; and so they supposed the bar revolved, carrying the sun and planets along in a large circle about the earth; while all the short cranks kept flying around, thus sweeping each planet through a smaller circle. The movements of the planets were to the ancients extremely complex. Venus, for instance, was sometimes seen as "evening star" in the west; and then again as "morning star" in the east. Sometimes she seemed to be moving in the same direction as the sun, then, going apparently behind the sun, she appeared to pass on again in a course directly opposite. At one time she would recede from the sun more and more slowly and coyly, until she would appear to be entirely stationary; then she would retrace her steps, and seem to meet the sun. All these facts were attempted to be accounted for by an incongruous system of "cycles and epicycles." The system of Ptolemy passed current for 1400 years, and during this time astrology was ranked as one of the most important branches of knowledge. Star diviners were held in the greatest estimation, and the issue of any important undertaking, or the fortune of an individual, was foretold by means of horoscopes representing the position of the stars and planets. The system of the astrologers was very complicated, and contained regular rules to guide the interpretation, so intricate that years of study were required for their mastery. Venus foretold love; Mars, war; the Pleiades, storms at sea. Not only the ignorant were the dupes of this system, but the learned also accepted it,—Lord Bacon believing in it most firmly.

The Copernican System. This system represented the sun to be at rest in the center of the universe, and the earth and planets to move round it as a center. It got its name from Copernicus (1473-1543), who (although some vague general notion of the system seems to be due to Pythagoras) first distinctly drew the attention of philosophers to it, and devoted his life to its demonstration. For the rest, the glory of development on the lines he broadly laid down belongs to Kepler, Galileo, and others, particularly to Newton, who finally marked out the form of modern theoretical astronomy. The discoveries by Copernicus mark one of the greatest steps ever taken in science.

Modern Hypotheses.—Astronomers agree that the earth was in some way evolved from a nebula in some form.

Nebular Hypothesis. The Nebular Hypothesis assumes that the solar system was once an enormous mass of gaseous substance. Rapid rotation arising in this gaseous mass, it took the form of a disc, and at last inertia (popularly but erroneously called centrifugal force), overcoming cohesion, whole rings and fragments flew off from this disc, and by gravitation contracted into spheroid masses. As, in the original mass, the velocity of the outer circle of each body thrown off is greater than the inner circle, this causes each spheroid to revolve on its own axis. This process goes on, and the central mass continues to cool and shrink until we have at last a central body with a number of smaller spheroidal bodies revolving around it in orbits; the smaller, the nearer they are to the central orb. Certain points are assumed in this hypothesis to explain the distribution of matter in our solar system. It is assumed that in throwing off great masses from the central disc, immense quantities of minute particles were also thrown, which continue to revolve, in the same plane with the large mass around the central body. By slow degrees these minute atoms, by the law of gravitation, were aggregated into the mass nearest to them. These subordinate aggregations would form with most difficulty nearest the large central mass, because of the superior attractive force of the latter, wherefore the interior planets—Mercury, Venus, the Earth, and Mars—are smaller than the two great orbs in the zone beyond them. These two enormous planets, Jupiter and Saturn, occupy the space where conditions are most favorable to subordinate aggregations; but beyond them the gravity of aggregating material becomes reduced, and so the planets found in the outer zone, Uranus and Neptune, are smaller than the planets of the middle zone. This hypothesis was first suggested by Sir William Herschel, and was adopted and developed by Laplace. It has been called the Laplacian or gaseous nebular hypothesis.

Meteoric Hypothesis. This is a modification of the Laplacian hypothesis and was worked out by G. H. Darwin. It supposes that the parent nebular matter was a swarm of meteors which acted as a coarse gas and coalesced under the dynamic laws of gases.

Planetesimal Hypothesis. This supposes the aggregation of infinitesimal planetoids by a process of accretion. The parent nebula was of the common spiral type in a finely divided solid or liquid state. The knots of the nebulæ were the nuclei of planets resulting from the accretion of the nebulous haze. The orbits were elliptical and crossed one another in the shifting of the ever-varying mass. At each crossing the process of accretion went on; the growth was exceedingly slow; and as the mass increased in density,

and size, the internal temperature rose higher and higher. This hypothesis has been greatly advanced and elaborated through the efforts and contributions of Prof. T. C. Chamberlin and Dr. F. R. Moulton. It differs widely from the gaseous, molten-mass theories of the Laplacian and meteoritic hypotheses, overcomes many of the objections to both of these, and is rapidly assuming the form of a tenable, satisfying explanation of the origin of the earth.

GEOLOGIC DIVISIONS:-

Cenozoic,	Present. Pleistocene. Pliocene. Miocene. Oligocene. Eocene.
Mesozoic,	Upper Cretaceous. Lower Cretaceous (Comanche or Shastan). Jurassic. Triassic.
Paleozoic,	Permian. Coal Measures or Pennsylvanian. Subcarboniferous or Mississippian. Devonian. Silurian. Ordovician. Cambrian.
	Great Interval.
Proterozoic,	Keweenawan. Interval. Animikean or Penokean or Upper Huronian. Interval. Huronian.
	Great Interval.
Archeozoic,	ARCHEAN COMPLEX: Great Granitoid Series including Laurentian. Great Schist Series or Mona, Kitchi, Lower Keewatin, Coutchiching, or Lower Huronian.

Archeozoic Era.—The Archeozoic era is the age when the oldest accessible rock formation was made. The name Archeozoic (oldest life) implies that the oldest accessible rocks were made at a period when life in some form existed in the world. There is some reasonable doubt whether there may not be some rocks now accessible whose formation antedated the existence of life. To meet this doubt the term Archean Complex is used to cover the terms Azoic and Eozoic used in the older geological nomenclature. The Archean rocks include those igneous and meta-igneous rocks which antedate the oldest sedimentary formation. Archean rocks are the result of great volcanic activity; and are classed as a great schist series and a great granitoid series. To the former belong the formation of the Lake Superior region; to the latter, the granites and gneisses known as the Laurentian —a name derived from the St. Lawrence River in Canada, where the formation is abundant and where the largest surface area of Archean rocks in America lies. The peninsula of Labrador, thence to the Great Lakes, thence east of the valley of the Mackenzie to the Arctic Ocean is largely occupied by Archean rocks. In the United States they occur in a broken series of tracts from Maine to Alabama, along the western side from New Mexico to Alaska, and tracts in Michigan, Wisconsin, Minnesota, and in the Adirondack region of New York. No fossils have been found in Archean rocks, though there are strong indications that life in some form was present. The only statement that can be made regarding the duration of the Archeozoic era is that it was very long indeed; perhaps it exceeds that of all subsequent time.

Proterozoic Era.—This term corresponds to the term Algonkian used in other systems. The period includes the time which elapsed from the time of the formation of Archean rocks and those of the Paleozoic era when life was very abundant. The fossil remains and evidences of life in the rocks of this era are very meager; yet it is very significant that the oldest well-defined fossil of the era is a crustacean, which occupies a high place in animal development. Characteristic traits of rocks of this era are weathering of rocks and sedimentation,—both marks of long exposure to atmospheric and water agencies and erosion. Proterozoic rocks are classified according to age into three groups: (1) The Huronian, from the region north of Lake Huron, where the formation was first clearly distinguished; (2) the Animikean or Penokean, named from the occurrence of the formation in localities in Minnesota and Wisconsin respectively; and (3) Keweenawan, from the Keweenaw peninsula in northern Michigan on the shore of Lake Superior. Each of these formations is thousands of feet in thickness, and consists of such sedimentary rocks as conglomerates, shales, limestones, sandstones, and quartzites. In addition to the localities mentioned, there are a few scattered areas in the United States in which Proterozoic rocks are found. They are rather more abundant in Canada. It is among the Archean and Proterozoic rocks in the region of Lake Superior that the enormous deposits of iron ore are found,—more than are to be found in any other region of equal area anywhere in the world. The fact that Proterozoic sedimentary rocks are known to be 30,000 feet thick and that these are separated by periods of unconformity make it extremely probable that duration of the Proterozoic era, while this vast deposit of nearly six miles in thickness was being laid down by the waters which carried it, must be reckoned by millions, if not tens of millions, of years.

Paleozoic Era.—This first era of abundant life is divided into periods as follows: (1) The Cambrian, (2) the Ordovician, (3) the Silurian, (4) the Devonian, (5) the Subcarboniferous or Mississippian, (6) the Coal Measures or Pennsylvanian, and (7) the Permian.

1. *The Cambrian Period.*—The Cambrian period is divided into Lower or Georgian (Vt.); Middle or Acadian; and Upper or Potsdam (N. Y.), Saratogan or St. Croix. Lower and Middle Cambrian rocks occur on this continent in two general regions, one in the east and one in the west. The first extends from Labrador, Newfoundland, New Brunswick, Nova Scotia, through New England, the Hudson-Champlain valley, across the Appalachian mountains to Alabama (but not near the Atlantic coast). The western area extends northward from the Great Basin region to the Arctic. The presence of marine fossils within the areas mentioned shows that they were covered by the sea in Cambrian times. The Upper Cambrian, Potsdam, Saratogan, or St. Croix epoch saw the Appalachian and the Cordillera regions still under water and also

a large part of the interior of the continent now submerged. The Upper Cambrian formations are believed to lie over nearly the whole of that part of the United States between the Appalachian and the Rocky Mountains. The fossils found in Cambrian rocks are chiefly species of trilobites among which the genera *Olenellus, Paradoxides, Olenoides,* and *Diplocephalus* are notable examples. Cambrian rocks are shale, as near Quebec (5,000 to 6,000 feet thick); shale on limestone, as between the Adirondacks and the Green Mountains; from 10,000 to 12,000 feet of slate (shale) and sandstone on limestone, as in Washington County, N. Y.; shale or slate and sandstone or quartzite, as in Tennessee and North Carolina; and shale, sandstone, and limestone 10,000 feet thick, as in Georgia and Alabama. Estimates of the duration of the Cambrian period range from 1,000,000 to 3,000,000 years.

The Ordovician or Lower Silurian Period. This period is subdivided into Lower Ordovician or Canadian, Middle Ordovician or Mohawkian, and Upper Ordovician or Cincinnatian. There is such difference in both the thickness of Ordovician sedimentary rocks and in the nature of the rocks themselves that it is difficult to give in general terms any fitting description of the geological movements and transformations which will apply to the continent as a whole. Sections descriptive of the country vary so that many terms of only local application must be used. Limestones, dolomites, shales, and slates predominate; the marbles of the Taconic Mountains; the oil and gas wells of Ohio and eastern Indiana have their sources in this formation; the lead and zinc ores of Wisconsin, Iowa, Illinois, and Missouri are found in its rocks; and the phosphatic Ordovician limestones of Tennessee yield fertilizing phosphates. Life during the period continued in an unbroken series from the Cambrian. With the geographical changes in the contour of the continent there came an addition to the life, most noticeably in the appearance of vertebrates in the form of fish-like fossils found near Cañon City and elsewhere in Colorado. It was during the Ordovician period that the trilobites, so abundant in the Cambrian period, reached the highest point in number of genera—77 genera of Ordovician trilobites being known as against 53 Cambrian and only 31 Silurian. Fossil remains include also the cephalopods, the largest form of Ordovician life; gasteropods; pelecypods or lamellibranchs; brachiopods, the most common fossil of the period; bryozoans; echinoderms; cœlenterates or corals; sponges; annelids, and protozoans.

Silurian or Upper Silurian Period. Among the great continental changes it is supposed that during the last stages of the Ordovician period and the earlier part of the Silurian period large areas of the continent of North America slowly emerged from the great sea which had for so long covered so much of it. Mountains slowly and very gradually emerged, and there was more land surface than there had been at any previous period since the early Cambrian days. The oldest rocks of the Silurian system are the Oneida. These rocks are chiefly sandstone and conglomerate, containing many quartz pebbles. The Oneida also forms the crest of the Kittatinny range in New York, Pennsylvania, and New Jersey. The Medina formation of sandstone and shale lies above the Oneida. The third oldest Silurian formation is the Clinton, which extends farther west to Lake Huron and Indiana, and south into Alabama and Georgia. Clinton rocks are mainly sandstone and shale containing iron ore; in New York, Alabama, and Wisconsin. The earlier periods containing large deposits of iron ore are the Archeozoic, Huronian, and Animikean. The Niagara formation covers a great deal of New York, Ontario, Ohio, the southern peninsula of Michigan, parts of Indiana, Illinois, Wisconsin, and Iowa. The Niagaran rocks are shale, limestone, and some well-defined coral reefs. The Salina group contains deposits of limestone, shale, and rock salt, and, sometimes, gypsum. Beds of rock salt occur in New York, sometimes from 40 to 80 feet thick; four salt beds mixed with shale are known near Cleveland. In the Silurian period echinoderms, including blastoids, crinoids, cystoids, starfishes; brachiopods; cephalopods; bryozoans; corals; few trilobites (only 31 genera, of which 11 were new); sponges; and a few fishes, the only representatives of the vertebrates. The largest animals were the crustaceans, the great *Eurypterus* (one and one half feet long) and the *Pterygotus* (which in the next period, the Devonian, attained a length of six feet). The earliest known scorpions occur in Silurian rocks.

Devonian Period. Lower Devonian includes the Helderbergian and Oriskanian series. Helderbergian rocks are found in Maine, Gaspé, New Brunswick, and Nova Scotia; in the Appalachian belt; and in the lower Mississippi basin. The rocks are largely limestone, and run from 300 to 600 feet thick in New York and Pennsylvania, and in Gaspé there is a bed of limestone 2,000 feet thick, partly Helderbergian. The Oriskany formation is found in the Appalachian district, in the Mississippi basin, and in the St. Lawrence basin. Cumberland, Maryland, is the center of the Oriskany belt. Middle Devonian includes the Onondaga limestones in New York and east of the Mississippi, and the Hamiltonian or Erian series in the same areas and southward consisting largely of shales and limestones. The Upper Devonian consists of the Tully, Genesee, Portage, or Senecan formations of limestones, Genesee shales, and limestones; the Chemung and Catskill formations of the Chautauqua series, conglomerates, red shales, and sandstones. The Devonian rocks yield oil and gas in western Pennsylvania, southwestern New York, West Virginia, and Ontario (Canada); black phosphates of Tennessee. In the Devonian period there was a marked increase in the mollusks, both in number and development; in the Onondaga period true marine fish are found in great beds and masses near Columbus, Ohio, and at North Vernon, Indiana corals were profuse; cephalopods developed notably. Sharks 20 feet in length occur in Hamilton or Erian rocks. Brachiopods reached the period of highest development in the Devonian period,—about 103 genera being known. Plant life is represented by marine plants (algæ); land plants included ferns, tree-ferns, equisetules (horsetails), and calamites, and other gymnosperms. Wings and other fragments of insects, undoubtedly Devonian, have been found at St. John, New Brunswick (Canada), which resemble neuropters, one

having a wing spread of perhaps five inches. From the same locality are reported terrestrial mollusks, myriapods, arachnoids, and a scorpion.

The Subcarboniferous, Lower Carboniferous, or Mississippian Period. In earlier classifications, the entire period from the close of the Devonian to the end of the Paleozoic era was called the Carboniferous period; but it has been thought well to subdivide it more closely. A great continental submergence followed the Devonian period. Beds of Mississippian rocks are thickest in the Appalachian Mountains; in Pennsylvania there is 1,400 feet of Pocono sandstone with 3,000 feet of Mauch Chunk shale upon it; in Maryland the deposit is 1,300 feet thick; in West Virginia, over 2,000 feet thick; in Oklahoma, 1,800 feet; in the Black Hills, about 400 feet; in Colorado, about 500 feet; near the Grand Cañon of the Colorado in Arizona, 1,800 feet. The crinoids reached their highest development in the Mississippian period, 63 genera being known; spirifers, pelecypods, brachiopods, and gasteropods (some air-breathers) were known; cephalopods and trilobites were rare; 400 species of fish are known from America, chiefly sharks. The plants of the Devonian period persisted. The footprints of a supposed land animal or amphibian, the *Paleosauropus primaevus*, found in the Mauch Chunk shale near Pottstown, Pa., show six double imprints with the track of the hind foot partly overlapping that of the fore foot. The stride is 13 inches and the width of the track between outer toes is eight inches. Marks of a trailing tail are also seen. No fossil remains of insects have been found.

Carboniferous, Coal Measures, or Pennsylvanian Period. This system is divided into the Pottsville conglomerate or millstone grit and the coal measures, which consists of beds of shale, sandstone, conglomerate, limestone, coal, and iron ore in a succession of alternating series. The productive areas of coal deposits in North America are (1) the anthracite field of eastern Pennsylvania, 484 square miles; (2) the Appalachian field running from northern Pennsylvania to Alabama, 850 miles long and covering 70,800 square miles; (3) the Northern Interior field in the southern peninsula of Michigan, covering 11,000 square miles; (4) the Eastern Interior field in Indiana, Illinois, and Kentucky, covering 58,000 square miles; (5) the Western Interior and Southwestern fields, from northern Iowa to central Texas, 800 miles in length and covering 94,000 square miles, taking in parts of Iowa, Nebraska, Missouri, Kansas, Arkansas, Oklahoma and Texas; and (6) the New Brunswick-Nova Scotian field on both sides of the Bay of Fundy, covering 18,000 square miles. The Coal Measures present most interesting studies in plant and amphibian life. These are the first marked examples of land life, the forerunners of the land vertebrates. There are more specimens of terrestrial plant and animal life to be found in the Coal Measures than in preceding or succeeding periods, not, perhaps, because more plants and animals lived but by reason of the remarkable preservation of so many fossil remains in the coal beds. The pteridophytes were highest in the scale; gymnosperms ranked second; angiosperms had not yet appeared; and there are some traces of bacteria. Among the pteridophytes were the true ferns, fern-like gymnosperms, calamarians, and other horsetails, giant lycopods, all in great profusion. Land animals included amphibians, insects, spiders, scorpions, and myriapods. Fresh water and salt water life was abundant, and embraced all of the representatives of preceding periods; the crinoids and the trilobites were fast disappearing.

The Permian Period. This is the last of the Paleozoic Era, and is by many regarded only as a continuation of the Carboniferous. During this time large parts of the central and eastern portions of the United States emerged from the epicontinental sea, which now contracted into lakes and inland seas connecting with the ocean in part. It was during this period that the so-called "Upper Barren Coal Measures" of Pennsylvania, West Virginia, Ohio, and Maryland were laid down by the process of sedimentation. The Permian strata are perhaps best seen in Texas, Kansas, and Nebraska, which at this time were under comparatively shallow water. In the first of these localities depths of from 4,000 to 7,000 feet of sedimentary Permian rocks are not uncommon. By the time of the close of the Paleozoic Era, the Appalachian Mountain system had developed; the Ouachita Mountains were defined; and the submerged part of the continent had greatly decreased in area. From these changes in the geographical aspect of the country, it is only consistent to infer corresponding changes in climate, water circulation, and in the distribution of plants and animals. The amphibians were a prominent feature of the Permian period, as they were in the Carboniferous; the primitive reptiles made their appearance, or greatly increased, in the closing ages of the Paleozoic era. The Permian fish, both fresh water and marine, were both abundant and highly developed.

Mesozoic Era. This era is divided into (1) the Triassic period, (2) the Jurassic period, (3) the Comanchean or Lower Cretaceous period, and (4) the Upper Cretaceous period.

The Triassic Period. Triassic strata are known in the Atlantic slope east of the Appalachians, in the western interior, and on the Pacific coast. On the Atlantic slope the Triassic patches extend from Nova Scotia to South Carolina, and are grouped under the name of Newark, from Newark, N. J. Here the Triassic rocks are conglomerates, breccias, sandstones, shales, and some limestones. The Triassic beds vary from 3,000 to 15,000 feet in thickness. In the western interior, Triassic deposits are found in Texas, the Black Hills of South Dakota, and interruptedly from New Mexico to British Columbia along the eastern slope of the Rockies, for the most part unsatisfactorily distinguished from the Permian rocks. The beds run from 100 to 2,500 feet in thickness. On the Pacific slope the Triassic system has its greatest development in America. In the West Humboldt range of Nevada the beds are 17,000 feet thick. In the summits of the Sierras in northern California and up the coast to Queen Charlotte Islands the deposits are notable. This great development of Triassic rocks in the West is due to the fact that the Pacific Ocean borders were far inland over what is now the Pacific coast. The most remarkable feature of plant life in the Triassic

period was the predominance of the gymnosperms, which took the place which the pteridophytes held in the Carbonaceous period. Conifers and cycads were foremost. Among land animals many of the Permian period persisted, but the higher forms of reptiles appeared in the Triassic. The dinosaurs, the chelonians or turtles, the plesiosaurus, the crocodiles, and ichthyosaurs were prominent on land. In sea life the ammonites held first place, followed by the pelecypods and gasteropods among the invertebrates.

Jurassic Period. It is extremely doubtful whether any Jurassic rocks are to be found on the eastern coastal plain. Marine Jurassic beds of limestone were recently discovered in Texas; and some are known in eastern Mexico. But it is along the line of the Rocky Mountains and on the Pacific coast that the large Jurassic deposits are found. The system, however, does not exceed 2,000 feet in depth in California; but in western Nevada it is sometimes from 5,000 to 6,000 feet in depth, made up of slates or limestone. Marine life predominated; the ammonites still lead among invertebrates; sea urchins were rapidly and markedly developed; crabs and modern types of crustaceans appeared; sponges and foraminifera were abundant; and the great sea reptiles, such as the ichthyosaurs, plesiosaurs, and sea crocodiles, reached their highest development in this period, and present a most remarkable and wonderful fauna. Among plants the cycadeae were so distinctive that the Jurassic has been named the "age of cycads"—yews, cypresses, arbor vitæs, pines, and ginkgos. On land the dinosaurs and other carnivorous reptiles attained remarkable size; the herbivorous dinosaurs developed greatly, and soon eclipsed in size the carnivorous species. One herbivorous dinosaur found in Wyoming measured 75 feet in length; while a carnivorous dinosaur from Colorado measured only 17 feet in length. The stegosaurus of Colorado and Wyoming is a remarkable specimen of an armed dinosaur. The pterosaurs were the first development of aërial reptile life which we know about, and included the rhamphorhyncus and pterodactyl. The earliest known bird was the *Archeopteryx macrura*. The insects included cockroaches, crickets, flies, and ants, but no butterflies or moths, as there were as yet no angiospermous plants.

Lower Cretaceous or Comanchean Period. At the beginning of this period the greater part of North America was above sea level. Texas and Mexico were under water as far north as the Ouachita Mountains; the sea then flowed over the great central plain from the Mackenzie River on the north to the Rio Grande on the south; later, this great mediterranean sea disappeared. The Lower Cretaceous along the Atlantic coast is called the Potomac series; along the eastern part of the Gulf coast it is called the Tuscaloosa series. The system passes over Texas into New Mexico, and probably Arizona, into Kansas. In the northern interior, Lower Cretaceous occurs in parts of Wyoming, South Dakota, and Colorado; farther north it is seen in Montana, Alberta, Assiniboia, and the Queen Charlotte Islands. On the Pacific coast it is seen in California, Oregon, Washington, and British Columbia. Each of these parts have local names and subdivisions which serve to complicate a by no means simple period. A most important phase of the Lower Cretaceous period is the introduction of angiosperms, both monocotyledons and dicotyledons, which appear first in the Potomac series, and had so fully developed that in the succeeding period they had overrun the continent. These early angiosperms were plants familiar to us, including the sassafras, laurus, eucalyptus, and myrica. The cycads, conifers, and ferns which dominated preceding periods, now sank to a subordinate place.

Upper Cretaceous Period. Further exposures of the continent occurred in the Upper Cretaceous period. New Jersey, Delaware, Maryland, and Virginia are among the parts which then emerged. Beds of clay, sands, greensand marl, with but little limestone, are characteristic of this area. Along the Gulf coast these beds extend from Georgia, through Alabama and Mississippi to western Tennessee and Kentucky. In the interior they are found in Texas, Kansas, and to the north. On the Pacific coast the rocks of this period are found, somewhat scattered, in California, Oregon, Washington, and British Columbia. The plants of the Upper Cretaceous period had a distinctly modern or present-day appearance, many of our varieties of angiosperms being abundant; monocotyledons, including palms and grasses, were becoming abundant, and the new flora was widely distributed. Among animals the dinosaurs were still predominating, and presented most peculiar forms. The flying reptiles had developed, and some presented a wing-spread of 20 feet and had great powers of flight. Sea animals included a few, but gradually disappearing, ichthyosaurs and plesiosaurs, and many and important types of sea serpents, sea turtles, and sea birds. Rhizopods or foraminifers were more prominent than in any preceding period, and sea urchins were conspicuous.

Cenozoic Era. This embraces all of the remaining periods of the geological history of the earth, and is the era of modern life.

The Eocene Period. Land formations of the Eocene period are (1) marine deposits found on the borders of the continent, especially around the Gulf area, on the southeastern Atlantic coast, in the West Indies, and on the Pacific coast; (2) brackish water deposits in Washington and Oregon; and (3) fresh water deposits from lakes, river, ponds, etc., in scattered regions among the mountains of the West and upon the adjacent plains. Eocene life shows very marked differences from that of the Cretaceous period. Marine life was almost wholly changed; the great saurians disappeared; the reptile forms were markedly transformed; and placental mammals took a commanding position, probably on account of the development of the angiosperms which afforded food for the grass-eating herbivores, that in turn supplied food for the carnivores. While these animals were very different from those with which we are familiar, there may be traced back to them the descent of modern types. They were the ancestors of our types, and the great number of genera which were represented and the suddenness of their development are points of interest in the period.

The Oligocene Period. The Oligocene has not been used in the older systems of geological classifications of North America, but has been prominent in Old World geology. To secure

uniformity and to aid paleontological classification, it is now being recognized as a distinctive period between the Eocene and the Miocene. The rocks which are considered as belonging to the Oligocene period are certain marl beds on the Atlantic coast in North and South Carolina and some in Florida; the Gulf formations of Alabama, Mississippi, Louisiana, and part of Texas; and extensive areas in Colorado, Wyoming, Nebraska, and South Dakota. It is interesting to note that amber, a fossilized resin found on the Baltic shores, occurs in the Lower Oligocene of Europe. Amber is of great paleontological importance as a natural means of preserving insects. They, it is supposed, alighted upon the resin when it was soft and became imbedded in it, so that about 2,000 species of Oligocene insects have been thus preserved, entombed in the amber. The trees of the Oligocene period were both evergreen and deciduous,—yews, pines, sequoias, but very few palms. Among the land animals were such as the *Titanotherium validum* (a skeleton of which is in the Carnegie Museum in Pittsburg), which were midway between the rhinoceros and the elephant, the *elotheres* or giant hogs, and the three-toed horses.

The Miocene Period. Miocene formations are marked by slight coastal additions to the southeastern Atlantic coast, to the Gulf coast, along the Pacific coast, and in the interior in Nevada, Montana, Arizona, Texas, and New Mexico. The Miocene rocks are of nearly all of the sorts common to sedimentary deposits of marine and fresh water. The flora of the Miocene period was little different from that of the Oligocene, excepting in an increase in deciduous trees and grasses. The disappearance of some of the tropical and subtropical plants argues a change in climatic conditions. The horse, the tapir, the lowland rhinoceros, peccaries, camels, squirrels, beavers, gophers, and rabbits persisted from the Oligocene period. To these were added the mastodon or elephant forms, especially the Tetrabelodon, Dibelodon, and the ruminants of the deer and ox family. Little is known of Miocene birds. Turtles, lizards, and crocodiles had taken on their modern forms.

The Pliocene Period. Pliocene formations, so far as known, cover an area similar to those in which Miocene deposits are found. There was an upbuilding of the peninsula of Florida, and the shores around the Gulf, and for a short distance up the Atlantic coast, and along the Pacific coast. These deposits were, of course, marine. The lacustrine and other fresh water deposits are known in the interior east of the Rocky Mountains, on the border of the Great Plain; the auriferous gravels of California began in the Miocene and continued through the Pliocene. Patches of gravel are found in Minnesota, Wisconsin, Iowa, Illinois, Arkansas, Indiana, Kentucky, and Tennessee, which are referable to the Pliocene period. The Lafayette formation, named from Lafayette County, Miss., is composed of gravel, sand, silt, and clay welded together.

The Pleistocene or *Glacial Period.* The great feature of the Pleistocene period was the covering of from six million to eight million square miles of the earth's surface with ice sheets. Just previous to this covering with ice, the districts so covered had enjoyed a mild climate. This fact is so striking that it tends to obscure other important events in the period. Nearly one half of North America was buried under ice. The three centers were (1) Labrador, (2) Keewatin, just west of Hudson Bay in Canada, and (3) the Cordilleran ice sheet in the Rocky Mountains in Canada. The southern well-defined limit in North America ran in an irregular line from New Jersey, west through Pennsylvania, Ohio, Illinois, Missouri, Kansas, and Nebraska, and northwest through Montana, Idaho, and Washington. In the east its southern boundary nearly followed the course of the Ohio River, and the most southerly point of the lowland glaciation reached was about 37° 30′, near what is now the mouth of the Ohio. Mountain peaks and eminences south of this line were affected, but in widely scattered localities. About one half of the glaciation of the entire world was in North America, and about one half of the remainder was in Europe. A strange feature is the fact that Alaska was only slightly affected. The area over which the ice spread is now covered by clay, sand, and bowlders, and this mantle is called the drift. The great bowlders have been in many cases forced into unusual and strange positions by the ice flow. The bowlders and the bed rock are marked with grooves and striæ caused by the pressure of the superincumbent mass. The drift ranges in depth up to 500 feet. The drift is classified into ground moraines, terminal moraines, and lateral moraines. These moraines are great heaps of bowlders, gravel, clay, and sand. The terminal moraines mark the advance and retreat of ice sheets. Migrations of both plants and animals mark the extraordinary changes of temperature which accompanied the Glacial period. There is evidence of five or six backward and forward movements, some of which, it is believed, covered fully 2,000 miles in North America, and exceeded 1,000 miles in Europe. This alternate advance and retreat of the ice sheet resulted in a marked intermingling of floras and faunas. In Great Britain remains of the musk ox, now exclusively arctic, have been reported as found along with those of the hippopotamus, now strictly tropical; and in France the relics of the reindeer are similarly associated with those of the lion. The climate of some interglacial epochs was evidently warmer than at present. In the Toronto beds, remains of the papaw and osage orange and other trees occur, now reaching their average northern limits about 300 miles farther south. South of the ice sheets in North America the mammoth, mastodon, bison, reindeer, and musk ox were abundant and characteristic animals, while the saber-toothed cat, tapir, llama, and horse were nearly extinct. The mammoth was abundant in Mexico and the southern states, and ranged northward. The mastodon occupied a large area in the northern states, extending into Canada, and the south. The musk ox and reindeer occurred as far south as Virginia.

While most European geologists have concluded that man was present in central and southern Europe during the later part of the glacial period, convincing evidence of glacial man in North America has not been discovered. The final retreat of the ice sheets from middle latitudes terminated the Pleistocene and marked the beginning of the Present or Human period.

BIOLOGY.

Biology is the science of life; the study and knowledge of living beings and organized matter as distinguished from inanimate things or inorganic matter. In a broad sense it may be understood to include every form and function of living beings, and under this conception all human knowledge, together with every achievement of human progress, are facts of biological science. However, as generally understood, biology treats of the origin, structure, development, function, reproduction, and distribution of plants and animals.

Evolution.—The theory of evolution, comprehensively considered, attempts to account for the origin of created things, particularly the earth, with its past and present plant and animal life, including the origin and development of the human race. It is concerned with problems of development, ranging from that of the formation of a star from nebular or planetesimal matter to the production of the sugar beet by husbandry, and from those involving the simplest volitional acts in animals to the transcendent powers of the human mind. This theory, which possesses the greatest philosophical and scientific significance, has its foundation in certain unities, universally existent and demonstrable. Among these are the universality of natural laws, unity of structure in plants and animals, and in their mode of reproduction,—all arising from germs or eggs; the universal presence of protoplasm as the material basis of life, and the contractility of protoplasm as the source of all movements of plants and animals. From the philosophical point of view, all this implies an infinite power or creator working in and through the material and immaterial universe by unchanging natural laws.

Inorganic Evolution considers the development of the material universe, particularly that of the solar system and the earth, the latter involving the origin of the minerals composing its mass, and the formation of the air and water. Chemical evolution takes into account the gradual upbuilding of matter from its ultimate, preëlemental particles to the elemental condition, thence through molecular compounds of increasing complexity to the most complex of all—protoplasm, the material basis of life, which marks the limit of physico-chemical development.

Organic Evolution is a theory of descent, of development from simple, general types to complex, specialized forms, and undertakes to account for the origin of species by the operation of natural laws.

Aristotle (384-322 B. C.), the greatest philosophical naturalist of the ancients, is considered the father of the theory of descent. He conceived a series of organisms intergrading from jellyfishes to man, and asserted his belief in heredity. St. Augustine, in the fourth century, explained the origin of things by a series of causal factors. Nine hundred years later Thomas Aquinas supported this teaching. However, beginning in the sixteenth century and continuing until after the middle of the nineteenth, the doctrine of special creation was universally maintained. A few, however, questioned it. Among them was the German philosopher, Leibnitz (1646-1716), who declared his belief in the continuity of nature, and in a universal connection between species, which he maintained could be changed by a change in environment. The French naturalist, Buffon (1708-1788), asserted that all animals may have originated from a single ancestral type, affirming, and as often denying under hostile criticism, his belief in the mutability of species. Erasmus Darwin (1731-1802), grandfather of Charles Darwin, maintained that all animals have developed from a single primordial "filament," and more or less clearly defined sexual selection, protective mimicry, the law of struggle, the effects of climate and of use and disuse as causes of variation.

The great French naturalist, Lamarck (1744-1829), who was the true founder of modern evolution, published his views extensively during the first decade of the nineteenth century. He taught that all organisms develop from germs, that development is always from the simple to the complex; that vestigial structures, such as the internal limb bones of whales or the vermiform appendix in man, are remains of once actively used structures, and that characters acquired during the life of the individual, particularly the effects of use and disuse, may be inherited. These views were vigorously opposed by Cuvier, and were generally discredited until Charles Darwin and Alfred Russell Wallace, acting independently of each other, formulated the great theory of descent which has revolutionized all scientific teaching.

In 1859, after more than 20 years of the most painstaking research, following a notable five years' journey around the world as a naturalist, Darwin published his epoch-making "Origin of Species," containing overwhelming arguments for the doctrine of descent. These views, ably supported by Huxley, Herbert Spencer, Haeckel, Asa Gray, and others, became widely accepted by philosophers and scientists. The chief tenet of the new theory was natural selection. Darwin maintained that among plants and animals there exists an all-prevailing tendency to fortuitous variation; that when variations are favorable to the organism they are preserved; that natural selection, otherwise stated by Herbert Spencer as "the survival of the fittest," is a determining factor in preserving variations. Darwin did not claim that this process of elimination, resulting in the permanency of the best adapted, is the only factor in organic evolution, but emphasized that it is a most important one. Stimulated by the masterly example of Darwin, who was an investigator of the highest order, subsequent research in comparative anatomy, embryology, and paleontology has contributed a vast mass of confirmatory evidence, and established practically universal belief in the theory of descent. Present day scientists, however, are not agreed as to the relative significance of the now recognized factors of evolution, including that of natural selection itself, which is being subjected to rigorous review, and undoubtedly there are unknown, and, possibly, there are undiscoverable, factors in evolution.

Mental Evolution, which lies at the basis of social and religious evolution, is exemplified in the fact that, while man is the only fully self conscious reflective, thinking animal, it is impossible to establish a line of demarcation between the mental acts of animals and of man. The beginnings of reason are manifest in animals,

and, notwithstanding the immense difference between the mental attributes of man and the rudimentary faculties of animals, there is evidence that his exalted intellectual qualities had their origin in the animals which preceded him in development. The difference in the size and shape of the skull between the living and most ancient fossil races of mankind, the evidence found in the vestigial structures inherited from other animals, the culture-record of man,—his gradual mastery of the elements, of fire, tools, soil cultivation, subjugation, and domestication of animals, of the useful arts, sciences, and fine arts; his recognition of ethical principles, of the divine in the universe and in human nature, all indicate a development from the simple to the complex in full harmony with the principles of evolution.

The establishment of the theory of evolution is the greatest intellectual achievement of this age. Not only have important discoveries in biological science arising from stimulated research, such as the germ origin of disease and antitoxin treatment, been of great benefit to mankind, but in the realm of modern economics, sociology, psychology, and ethics the principles of evolution have been profoundly influential. The evolution theory, with its immediate corollaries, has immensely enlarged our conception of Deity, of the universe, of the world, its history and life, and of man's past, present, and future place in it.

BOTANY.

Botany is the science of plant life. Plants may be considered from different points of view, each resulting in a distinct division of the science of botany.

Structural Botany or **Morphology** is the study of the form and structure of plants, more particularly of the shape and relation of their parts or members. It passes into plant anatomy or histology, which deals with the finer, for the most part microscopic, characteristics of vegetable tissues.

Physiological Botany or **Plant Physiology** is the study of the plant in action, its life processes and functions.

Cytology is the study of the cells, the fundamental elements from which all plant structures are developed.

Systematic Botany or **Taxonomy** is the study of the classification of plants, and of their grouping into floras.

Ecology or **Plant Sociology** is the study of the relations of plants to other plants, and to animals, and of their adjustment to their physical surroundings.

Economic Botany is the study of plants in relation to their usefulness to man.

Paleobotany or **Geological Botany** is the study of fossil plants, of extinct plant life,—a subject which derives its chief interest from the important light it throws upon the ancestry, development, and affinities of existing vegetation.

Genetics. Under this name, of rather recent introduction, are grouped the various phenomena of plant and animal heredity.

Morphology. The organic unit of plant life as of animal life is the cell, the essential element of which is protoplasm or life substance. All plant structures or organs, no matter how large or complex, arise from combinations of these cells.

In the simplest plants the plant activities, such as nutrition, reproduction, respiration, and movement, are all carried on in a single cell, but as we ascend in the scale of development, increasingly complex structures for the carrying on these activities appear. In the liverworts there are expansions of simple cellular tissue into leaf-like organs but lacking the distinctive structure of true leaves. In mosses imperfect structures considerably resembling, not only leaves, but stems and roots, appear, and finally, in the fern plants, true plant vessels and woody tissue are developed, and hence highly organized true roots, stems, and leaves occur. Along with this increasing complexity of structures connected with the nutritive functions, there occurs also an equal advance in structures concerned with the other functions, until, in the seed plants, we find almost infinite variation in form, structure, and adaptation of various plant organs, innumerable forms of leaves which have to do with nutrition and respiration, and of floral parts which have to do with reproduction. The study of these structures has been called Structural Botany or Organography, now largely superseded by the term Morphology.

Physiology. The activities or work of the living plant may be presented under: (1) Stability of Form, (2) Nutrition, (3) Respiration, (4) Movement, (5) Reproduction.

STABILITY. In the most delicate plants with thin cell walls, rigidity of form is maintained by internal pressure upon their walls, the protoplasm of active cells manifesting this power to draw liquids within the cell wall and retain them under pressure. This turgid condition of active cells gives rise to tensions in adjoining tissues which also contributes to rigidity and permanence of form.

NUTRITION.

Food. Primarily all plant food is inorganic, and must always contain carbon, oxygen, hydrogen, and nitrogen, together with smaller quantities of sulphur, phosphorus, potassium, magnesium, calcium, and iron, all of which must be introduced into the plant in liquid or gaseous form—hydrogen and oxygen from water, carbon from carbon dioxid in the air, and the other elements in various salts dissolved by water in the soil before entering the plant.

Absorption. In all land plants possessing green parts, carbon dioxid is absorbed immediately from the air through the surfaces of the leaves. The mineral salts dissolved in water in the soil are absorbed by the roots.

Transpiration. More water with its content of dissolved salts is absorbed through the roots than is needed for food. The salts are retained but the surplus water is evaporated through the stomates or breathing pores of the leaves; the amount thus transpired by a large leaf area is very great, some trees being planted to drain marshy ground by transpiration through their leaves.

Photosynthesis. Every green plant possesses the power to manufacture, from the inorganic elements in the air and water, its own food. The process whereby the carbon of the carbon dioxid from the air and the oxygen and hydrogen of water are recombined as starch, sugar,

or cellulose, through the agency of the chloroplasts in the green cells and sunlight, is called photosynthesis. It is primal and fundamental, as organic life, both plant and animal, derives all its food ultimately from green plants, and depends for existence upon this process.

RESPIRATION. Plants need to breathe and do breathe by a process essentially similar to that of animals, oxygen entering the plant through the stomates or breathing pores of the leaves and being absorbed by the living cells, while carbon dioxid is given out by the same cells and finally escapes by diffusion.

MOVEMENT. Many low plants, such as bacteria and diatoms, possess the power of locomotion; the naked protoplasm of slime molds slowly creeps over surfaces; the zoöspores and ciliated sperms of lower plants swim freely. In complex plants locomotion mostly disappears, but certain portions of the plants move, usually slowly, but sometimes with great rapidity. Hygroscopic movements occur in dry tissues. Growth movements, due to internal causes, such as those of tendrils, and to external causes, such as turning or growing of leaves or stems toward the light (heliotropism), or of roots downward, due to gravity (geotropism), are characteristic of higher plants. The leaves of certain plants manifest marked irritability when mechanically disturbed, such as the sensitive plants, as do also the modified leaves of carnivorous plants which entrap insects.

REPRODUCTION. There are two distinct methods: Reproduction by division, which is always asexual, called Vegetative Reproduction, and Reproduction by Spores, which may be either sexually or asexually produced.

Vegetative Reproduction. In the lowest plants the method is cell division, a single-celled plant splitting into two similar single-celled plants, as in Protococcus and other lower algae, and bacteria. In more complex plants vegetative reproduction or propagation is effected by various outgrowths of the body, such as the gemmae of liverworts, and the buds, bulbs, tubers, and modified branches of higher plants.

Reproduction by Spores. Cells specially organized for spore production occur in all but the lowest groups. The first spores produced appear to have arisen from the internal division of a mother cell, and are asexual spores. But even in the higher thallophytes we find spores formed by the union of two specialized cells called gametes, which are sexual spores. Among the lowest plants the pairing gametes are alike, that is, apparently unisexual, but among somewhat higher forms they become distinctly bisexual, as sperms, or male cells, and as eggs, or female cells, and this soon gives rise to an alternation of generations between sexual and asexual spore-producing forms which prevails throughout the whole plant kingdom from the more complex thallophytes to the highest plants.

Classification or Taxonomy. Beginning with the simplest and lowest forms and progressing upward through more and more highly organized intermediate groups to the plants of the greatest development and complexity of structures, four great natural divisions are recognized, as follows:—

I. **Thallophytes,** Thallus plants.
II. **Bryophytes,** Moss plants.
III. **Pteridophytes,** Fern plants.
IV. **Spermatophytes,** Seed plants.

All known plants are readily referable to these divisions, but it does not follow that these are equivalent natural groups. Some maintain that there should be more groups of primary rank, and others hold there should be fewer, but the

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PLANT KINGDOM.

Table of the Principal Groups of Plants.

Thallophytes or Thallus plants	Algae and Algoid forms	Cyanophyceae	blue-green algae.
		Chlorophyceae	green algae.
		Phaeophyceae	brown algae.
		Rhodophyceae	red algae.
	Fungi and Fungoid forms	Schizomycetes	fission fungi, bacteria.
		Myxomycetes	slime molds.
		Phycomycetes	algae fungi, water molds.
		Ascomycetes	sac fungi, lichen fungi.
		Basidiomycetes	basidium fungi, rusts, mushrooms.
Bryophytes or Moss plants	Hepaticae	liverworts.	
	Musci	mosses.	
Pteridophytes or Fern plants	Lycopodiales	Sigillaria and Stigmaria, Lepidodendra	(fossil).
		Lycopodiaceae	club mosses.
	Equisetales	Calamites	(fossil).
		Equisetaceae	horsetails.
	Filicales	Cycadofilices	cycad ferns
		Filices	true ferns.
Spermatophytes or Seed plants	Gymnospermae or Naked-seeded	Cycadales	cycads.
		Gnetales	gnetums.
		Ginkgoales	ginkgo.
		Coniferales	evergreens.
	Angiospermae or Covered-seeded Flowering plants	Monocotyledoneae	(one-leafed seed), cereals, palms, lilies.
		Dicotyledoneae	(two-leaved seed), oak, apple, pea, sunflower.

arrangement as stated is more widely accepted and used than any other classification.

Fundamental distinctions between these primary groups may be stated as follows:—

Thallophytes have thallus bodies, but lack the peculiar reproductive structures of the next higher group called archegonia; Bryophytes possess archegonia but lack fibro-vascular bundles, i. e., true plant ducts and woody tissue, which characterize all plants higher in the scale than Bryophytes; Pteridophytes have fibro-vascular bundles but do not produce seeds; Spermatophytes have seeds.

Thus it will be seen that in each ascending group characteristic structures have been developed not possessed by any of the groups which stand below them.

Thallophytes (*θαλλός*, young shoot, *φυτόν*, plant) are the simplest of plants and represent the initial stages of development in the plant kingdom. Wherever vegetable life exists, thallophytes constitute a part of it, being the last plants to disappear in the polar regions, on high mountains, and in the depths of the sea. In size, form, structure, and mode of life, they present immense variety; many are exceedingly minute, some bacteria requiring lenses of the highest magnifying power for their detection; others, such as diatoms and yeast plants, though microscopic are readily observed; many filamentous algae are so insignificant as to escape ordinary attention; a vast number, however, are objects of familiar notice, such as molds, mildews, mushrooms, lichens, and common seaweeds; while some of the great marine species develop enormous structures exceeding 500 feet in length. They exhibit all of the principal functions of plants though there is no differentiation of any portion of the plant-body or thallus into specialized organs such as the roots and leaves of higher plants. All are composed entirely of cellular tissue and many consist only of a single cell which performs all of the essential activities—being able either to manufacture its own food from inorganic elements, or to assimilate food prepared by other organisms, and to reproduce its kind by cell division. Reproduction is of two sorts: (1) by vegetative multiplication or fission, and (2) by spores, which may be either asexually or sexually produced—the former prevailing exclusively among the lowest forms, and persisting in all, while many multiply not only by fission, but by both kinds of spores as well;—bisexuality, which characterizes all higher plants, being clearly established in the higher algae. Thallophytes have developed in two great groups or parallel series, algae and fungi. Algae possess chlorophyll (green pigment) and sustain themselves independently, like other green plants; fungi never possess chlorophyll and are incapable of independent existence.

Bryophytes (*βρύον*, moss, *φυτόν*, plant). Moss plants. One of the four great divisions or subkingdoms of plants, ranking between the thallus plants, thallophyta, and the fern plants, pteridophyta, in organic development; readily distinguished from the former by characteristic reproductive structures, called archegonia, and by distinct alternation of generations, and from fern plants by the absence of vascular tissue. They consist of the liverworts (*Hepaticae*), which descend nearly to the thallophytes in simplicity of structure and the mosses (*Musci*), which approach the pteridophytes in development. All are green plants, mostly terrestrial, and composed entirely of cellular tissue. Liverworts possess only thalloid structures without stems or roots, and with cellular expansions simulating leaves. In mosses there are structures resembling stems and leaves which are very imperfect compared to the true stems and leaves of higher plants, as there is no vascular tissue, and there are no true roots though their function is performed by corresponding organs.

The conspicuous, independent, green plant is the sexual generation, gametophyte, and gives rise to a dependent, non-vegetative, so-called fruiting form, the asexual generation, or sporophyte, which, in turn, gives rise to a new sexual generation. Therefore, as in pteridophytes, complete alternation uniformly prevails, and, excepting the absence of vascular tissue, the most striking difference between these classes lies in the fact that while in bryophytes the sexual generation, or the gametophyte, is the leafy, visible plant and the asexual generation, the sporophyte, is not prominent, in pteridophytes the asexual generation is the conspicuous, permanent plant and the sexual generation is inconspicuous and temporary.

Pteridophytes (*πτερίς*, fern, *φυτόν*, plant). Fern plants. One of the four primary divisions or subkingdoms of plants, ranking next to the flowering or seed plants, spermatophytes, in the scale of development. The pteridophytes are distinguished at once from the bryophytes and thallophytes below them by the presence of vascular tissue, and by the possession of true roots, stems, and leaves, and on the other hand they strikingly differ from the flowering plants above them by the absence of seeds. Well marked alternation of generations occurs, and in this they differ from bryophytes in that the asexual generation, sporophyte, is the vegetative, conspicuous, nutritively permanent, independent plant, while the sexual form, gametophyte, is minute, transient, and inconspicuous. The leafy plant, sporophyte, produces spores. These fall to the ground and germinate, producing minute, green, thalloid structures, called prothallia, which bear the sex organs—antheridia and archegonia. This sexual plant, gametophyte, is distinct and independent. A fertilized egg cell on the prothallium germinates, producing the large, leafy, but asexual form or sporophyte, which in turn produces spores, thus completing the cycle of alternation. By reason of vascular tissue, and the development of strong woody fibers and conducting systems, fern plants average much larger than bryophytes, ranging in size from minute floating forms to immense palm-like tree ferns of the tropics, 40 feet high with leafy fronds 12 to 15 feet long.

Spermatophytes (*σπέρμα*, seed, *φυτόν*, plant). Seed plants. The highest of the four primary divisions or subkingdoms of plants, differing from all others by the production of seeds, and embracing the conspicuous vegetation of the earth—herbs, shrubs, and trees, and including practically all of the useful plants, cultivated or otherwise employed by man. Over 100,000 species have been described by botanists, divided into two well-marked but very unequal natural groups:—

Gymnosperms, which produce naked seeds, immensely abundant in earlier geologic ages but now represented by only about 400 living species.

Angiosperms, which produce seeds in closed ovaries, now overwhelmingly predominant in the plant kingdom.

While vascular tissue first appears in the fern plants it attains its highest structural adaptation and specialization in this group.

Alternation of generations is not apparent to ordinary observation and can be demonstrated only by laboratory methods and with the microscope, owing to the minuteness of the sexual generation or gametophyte. Contrary to long established popular notion, the whole visible plant is sexless and is a true sporophyte. The true sexual generations arise from spores produced by the sporophyte, but are entirely concealed within certain portions of its structure. The pollen grains discharged from the stamens of flowers, are not the male element, but are only sexless spores, just as the spores shed by ferns are sexless, but the germinating pollen grain gives rise to a microscopic plantlet which is sexual, and produces sperm cells. Likewise the pistil and its contained ovule are not the female generation but simply a spore-producing structure of the asexual plant. However, within the ovule a sexless spore (megaspore) germinates and gives rise to a few-celled plantlet which is sexual and produces the egg cell. A germinating pollen tube, containing the sperm cell, penetrates the ovule, and fertilization is effected by fusion of the sperm and egg cells. The fertilized egg cell in the female plantlet develops into the embryo and the outer walls of the ovule develop into a tough or horny coat, and this with the contained embryo and the remains of the female plantlet, endosperm, make up the seed. Three generations are thus represented in the seed: (1) the old, sexless generation, sporophyte, by the seed coat; (2) the female generation, gametophyte, by the nutrient portion or endosperm; and (3) the new, asexual generation, sporophyte, by the embryo. This group is still popularly called flowering plants, but not all produce flowers. These plants were long called Phanerogams, meaning evident sexual reproduction, but it is in fact least evident in this group. The name Siphonogama, referring to the fertilization by the pollen tube, has been proposed, but not widely used. As all produce seed, and no other plants do, the name seed plants (spermatophytes) promises to be permanent.

CULTIVATED PLANTS.

Origin.—The cultivation of plants for food and other useful purposes antedates the historical period of the human race.

It began in those remote epochs when the progenitors of the present dominant peoples, having emerged from primitive savagery, were struggling upward through barbarism by successive conquests of nature and natural forces. In common with the acquisition of weapons and tools, the use of fire and the domestication of animals, the cultivation of plants must be reckoned as one of the great factors in the progress of the race.

History.—The earliest records show that a large proportion of the plants which are still of supreme importance to mankind were well established in cultivation at the dawn of history. It is impossible to state with any degree of exactness how long the most ancient of these have been in cultivation. For example: it is known that wheat and rice have been planted by man for at least 5,000 years, but we possess no data enabling us to estimate how many centuries, or, as seems more probable in the light of modern research, how many thousands of years, these plants had been grown previous to their first mention in available records.

In China at an annual ceremony, established 2700 B. C., wheat, rice, millet, sorghum, and the soy bean were directed to be planted by royal edict.

In Egypt, wheat, barley, and millet have been found in the earliest monuments; mummies were wrapped in linen cloth, indicating the ancient culture of flax; a drawing delineating the fig occurs in the pyramid at Gizeh; the watermelon is represented in ancient paintings; and the olive, date palm, grape, lentil, bean, and lupine were among the plants cultivated in the valley of the Nile at least 4,000 years ago.

In Switzerland the lake dwellers of the Stone Age possessed wheat, the lentil, and the apple, and later, when these communities had acquired the use of bronze, their agriculture included oats, millet, the broad bean, pea, poppy, and the pear.

In Peru, Indian corn was discovered in the catacombs of the Incas, and the lima bean and peanut have been found in the tombs at Ancon, indicating an ancient cultivation and use at the period of Spanish discovery.

In Mexico, tobacco pipes in great numbers and variety of design have been found in the ancient tombs of the Aztecs, and are also found among the remains of the mound builders of North America.

Method of Diffusion.—Agriculture, in so far as the cultivation of the principal plants is concerned, was developed in three great regions of the world, viz.: (1) China, (2) southwest Asia including Egypt, *i. e.*, from the Ganges to the Nile, and (3) intertropical America from Mexico to Peru.

China had cultivated many important plants for at least 3,000 years before intercourse with India and western Asia began, about 150 B. C. At that time the broad bean, cucumber, alfalfa, sesame, saffron, pear, spinach, and watermelon were among the useful plants introduced into China from the West, which likewise began to receive cultivated plants from the far East.

In ancient times the peoples in the region between India and Egypt, including the Mediterranean basin, exchanged cultivated plants easily. The Aryan invasion of Europe, the struggles between Assyria and Egypt, various migrations and conquests, notably the expedition of Alexander the Great to India, diffused the then cultivated plants throughout the entire region so that, after the establishment of intercourse with China, this region possessed nearly all of the useful plants of the Old World. At the period of the Crusades comparatively few cultivated plants remained for exchange, although sugar cane and some minor fruits were then brought to Europe.

The discovery and settlement of the Americas was the next great event in the diffusion of cultivated plants. The potato, maize, tobacco, prickly pear, tomato, peanut, and other valuable plants were then transported to Europe and Asia, and Old World plants in great numbers introduced into the new. The slave trade with Africa and the discovery of the Pacific Islands and Australia, together with the vast extension of modern commerce, completed the world-wide dispersion of cultivated plants existing at the present day.

Order of Introduction.—The most anciently cultivated plants were those producing seeds, roots, or fruits affording substantial food for man. Among some fifty plants known to have been in cultivation upwards of 4,000 years, all but a few are food plants, none are fodder plants for animals, and only two are green vegetables. To this most ancient group belong the cereals: wheat, barley, millet, rice; the legumes: bean, lentil, chick pea, lupine; the fruits: apple, peach, apricot, olive, fig, date palm; the vegetables: cabbage, onion, turnip, purslane; and it also includes the fiber plants: flax and hemp; the dye plants: saffron and carthamine; and the beverage plant, tea.

Among the plants which have been cultivated since the beginning of the Christian era, but not definitely known to have been in cultivation for as long a period as 4,000 years, although it is highly probable that a number of them exceed it, are the cereals: oats, rye, and probably maize; the vegetables: beet, carrot, lettuce, celery, pea, asparagus, and probably the potato and sweet potato; the fruits: orange, lemon, grape-fruit, cherry, and plum; the aromatic plants: pepper and nutmeg; the dye plants: madder and indigo; the narcotic plants: poppy, betel-pepper, and probably tobacco; and the fiber plant, cotton.

During the last 2,000 years the plants brought into cultivation have been of much less general economic importance, being, chiefly, fodder plants for domestic animals, vegetables, medicinal plants, and minor fruits. No cereal grain of the first order has been established,—the buckwheat developed in Asia during the middle ages being of little consequence in comparison with the standard grains.

Among the plants developed in agriculture and horticulture during the past 2,000 years, the following are the most important: buckwheat, commonly, though incorrectly, classed as

a cereal; the vegetables: horseradish, parsnip, parsley, chicory, endive, artichoke, pumpkin, squash, tomato, lima bean, okra, New Zealand spinach (*Tetragonia*), and mushrooms; the fruits: currant, gooseberry, raspberry, blackberry, strawberry, cranberry, muskmelon, persimmon, and pineapple; the fodder plants: red, alsike, purple, and Egyptian clover, guinea grass and timothy grass; the fiber plants: jute, sea island cotton, and sisal; the aromatic plants: red pepper, cinnamon, clove, and hop; the medicinal plants: cinchona and coca; the pistachio nut and peanut, and the beverage plants: coffee, maté, and cacao (cocoa).

With the exception of those plants established or brought into extensive use subsequent to the discovery of America, the great majority of this group dates from the middle ages. In the five centuries from 1200 to 1700, little increase was made in the number of plants in cultivation. Coffee and some of the clovers appear to have become established during this period. While great diffusion and increase in the area of distribution occurred during the period following American discovery, few plants new to cultivation were developed. During the eighteenth century, the American strawberry and persimmon in the United States, sea kale in Europe, and the tetragonia from New Zealand were contributed. Of these the strawberry ranks first, having become the leading small fruit in the United States.

The adoption of scientific methods in agriculture and the invention of labor-saving machinery in the nineteenth century produced an expansion in the area of cultivation unparalleled in history. While valuable new races and varieties of previously established plants have been added, the only new plants which have assumed intercontinental importance during the past century are the blue gum (*eucalyptus*), grown for quick timber and eucalyptus oil, and the cinchona tree, the source of quinine, both dating from about 1850. In the United States during this period the list of small fruits has been increased by the development of the blackberry, the raspberry, and the cranberry, which have now attained considerable local importance.

Botanical Rank.—Cultivated plants which have risen to economic importance belong to those groups which are highest in the scale of organic development.

With the exception of the mushroom, which is a fungus, all are spermatophytes, that is, flowering or seed-bearing plants. Each of the great divisions of the spermatophytes, the endogens and the exogens, has noteworthy representatives in cultivation. To the endogens belong the cereals, the fodder grasses, palms, and a number of vegetables and fruits, while the exogens embrace the legumes and most vegetables, fruits, and fiber plants.

The plants now in cultivation are distributed among more than fifty natural families. Among the most important of these families are the following, with examples under each:—

Grass Family (*Gramineae*), including wheat, rice, barley, oats, rye, maize, millet, sorghum, sugar cane, timothy grass.

Palm Family (*Palmaceae*), containing the date palm, oil palm, cocoanut, areca nut.

Lily Family (*Liliaceae*), represented by the onion, leek, garlic, asparagus.

Mustard Family (*Cruciferae*), which includes the radish, horseradish, cabbage, turnip, watercress, mustard.

Pea Family (*Leguminosae*), containing the bean, pea, lentil, lupine, clover, alfalfa, peanut, indigo.

Rose Family (*Rosaceae*), includes the apple, peach, pear, almond, apricot, plum, cherry, quince, raspberry, blackberry, strawberry.

Parsley Family (*Umbelliferae*), represented by the carrot, parsnip, celery, parsley.

Gourd Family (*Cucurbitaceae*), includes the gourd, cucumber, watermelon, muskmelon, pumpkin, squash.

Sumac Family (*Anacardiaceae*), mango, pistachio nut, cashew, sumac.

Myrtle Family (*Myrtaceae*), blue gum, guava, pomegranate, clove.

Madder Family (*Rubiaceae*), cinchona, coffee, madder.

Nettle Family (*Urticaceae*), breadfruit, fig, mulberry, hemp, hop, china grass.

Orange Family (*Aurantiaceae*), to which belong the orange, lemon, lime, grape-fruit.

Potato Family (*Solanaceae*), containing the potato, tomato, tobacco, red pepper, egg plant.

Sunflower Family (*Compositae*), represented by lettuce, chicory, endive, salsify, artichoke, carthamine.

It is worthy of notice that the great family of *Compositae*, embracing about one tenth of all flowering plants and ranking highest of all plants in specialization and development, should furnish such a meager list of economic plants, while the contribution of the grasses and palms, much inferior in number of species and far below in the scale of development, is of incalculable value to mankind, furnishing the major portion of food for the human family and sustenance to the most important domestic animals.

Number of Species.—Compared to the total number of wild plants the list of those attaining stable economic rank in cultivation is surprisingly small.

In the group of flowering plants (*spermatophytes*) there exist in nature upwards of 150,000 species. Yet from this vast array agriculture and horticulture have wrested only about 300 plants which have become of permanent usefulness. This does not include plants grown purely for ornamental purposes, for flowers, or foliage, but only those whose practical utility is of more than local or temporary importance, such as food, fodder, textile, tinctorial, and beverage plants.

Geographical Distribution.—The Old World has contributed about four fifths and the New World about one fifth of cultivated plants. Asia has been the chief contributor in the Old World, with Europe second. The regions furnishing the great majority of species of Old World origin are: China, India, with the East India Islands, southwestern Asia, the Mediterranean basin, including the Nile region. The region furnishing the most important New World plants is intertropical America, Mexico to Peru, and particularly the Andean plateaus.

Comparatively few useful plants have been developed outside of these focal areas, and none of the first order. The Arctic and Antarctic

zones have contributed none, neither has South Africa, Patagonia, or Argentina. Australia and New Zealand have produced so far only the blue gum (*Eucalyptus*) and the so-called New Zealand spinach (*Tetragonia*), both relatively unimportant.

It is remarkable also that the United States, a region of high average fertility, possessing a rich and varied flora of upwards of 12,000 flowering plants, should have added relatively such a small list to the economic plants of the world. The pumpkin and Jerusalem artichoke among vegetables and the American grape, strawberry, plum, blackberry, raspberry, and cranberry among fruits constitute its chief contribution. Of these the strawberry and grape are the most valuable. As yet none of these are extensively cultivated in other regions of the world. However, by grafting the European vine upon the root of the American grape, the great vineyards of France and south Europe have been saved from destruction by the insect pest, Phylloxera, making the New World grape perhaps our most valuable economic addition to Old World plants.

Changes under Cultivation.—Great modifications in the various plant parts, the root, stem, leaves, and flowers, are brought about by cultivation, most of which disappear in a short time if the plant is allowed to relapse into the wild state. However, there are a few cultivated plants which have never been discovered in a wild state, and which will not propagate themselves if abandoned. Among these are wheat and Indian corn. Like the dog among domestic animals these plants seem to have been so greatly modified through ages of cultivation that it is impossible for them to exist without the agency of man. The changes by which plants have been adapted more and more perfectly to the needs of man have been effected chiefly by selection. The choice, generation after generation, of the best developed individuals is a process of cumulative improvement capable of well nigh inconceivable results. Thus the saccharine content in the juice of the sugar beet has by careful selection been increased more than a hundred per cent. Robustness and stature can often be greatly augmented by cultivation in enriched soil. Many plants have been greatly improved by being hybridized with related stock. The earlier conception of cultivated plants as species specially created for the benefit of man instead of having been brought to their present state of usefulness through his age-long husbandry, led to artificial distinctions between cultivated and wild forms of the same plant. The writings of the earlier botanists, including those of the great Linnæus himself, are widely in error with reference to these relationships, and the connection of most cultivated plants with their parent wild species remained unrecognized or unknown until after the beginning of the nineteenth century. In 1807 Humboldt wrote: "The origin, the first home, of the plants most useful to man and which have accompanied him from the remotest epochs is a secret as impenetrable as the dwelling of all our domestic animals." Since Humboldt's time the researches of botanists throughout the world have revealed the wild form and region of origin of nearly all cultivated plants.

In case of plants of recent introduction, such as the strawberry, American grape, raspberry, and blackberry, the connection between the wild and cultivated forms is now a matter of common knowledge, and the relationships of those established during the last two thousand years are almost equally well known to science. It has also been found that about two thirds of the most anciently cultivated plants still grow wild in a form corresponding to some variety in cultivation. However, in the case of a small number of the most ancient group, the wild forms apparently have ceased to exist. Just as the wild progenitors of the camel appear to have perished prehistorically, just as the aurochs, ancestor of the domestic ox, disappeared from European forests during the middle ages, and as the buffalo has vanished from American plains during the last half century, likewise the parent wild species of tobacco, wheat, maize, broad bean, lentil, ervilla, chick pea, and probably the sweet potato and carthamine, have become extinct.

Consequently the very existence of these depends upon their cultivation. However, a plant once in cultivation is rarely, if ever, completely abandoned, even in case of species of minor importance. When replaced by more useful plants, or when largely discontinued for any economic reason, limited cultivation persists, as in case of dyer's woad when supplanted by indigo. The mallow grown as a vegetable by the Romans, and fennel and cummin once widely used in medicine, are doubtless still locally planted. Indigo and madder have been largely replaced commercially by chemical products from coal tar, yet both will be long continued in cultivation in some regions of the world. An interesting example of introduction, long use, and final abandonment is furnished by the history of alexanders, a plant closely related to spinach and celery, and, at one time, the most widely grown umbelliferous vegetable in Europe. Theophrastus (about 372-287 B. C.) refers to it only as a medicinal plant. About 500 years later Dioscorides (about 150) describes it as edible, indicating its cultivation, and in 600 years more we find Charlemagne (742-814) ordering it to be planted on his farms. Great use of it was made particularly in Italy for a long period, but in 1800 its cultivation was hardly remembered in England and France, and it is not mentioned in their gardeners' books since. Thus we see how a plant, economically important for 1,500 years and still abundant in a wild state, was entirely supplanted in cultivation by other plants better fitted to the needs of man.

Extensive cultivation in any region does not necessarily indicate ancient use there; neither does recent introduction denote a plant new to husbandry. The Chinese, who have grown tea for ages, formerly supplied the outside world, yet India, where cultivation began about 1870, now exports more tea than China. The increasingly popular grape fruit, or pomelo, an ancient Asian citrus fruit, has become established in Florida and California during the last 25 years.

HISTORY OF PLANT CLASSIFICATION

The science which treats on plants dates back to Solomon, who, "spake of trees, from the cedar of Lebanon to the hyssop on the wall." The ancient Chaldaeans, Egyptians and Greeks, were cultivators of the science. Theophrastus wrote a History of Plants, three hundred years before Christ, and described about five hundred species. Pliny, the Elder, described about five hundred species used in the treatment of diseases.

It was not however until the sixteenth century that a genuine interest was taken in the science of botany, when Otto Brunfels, a physician of Bern, Switzerland, gave his attention to the science. He may in fact be looked upon as the restorer of the science of botany. In his Herbal, which was printed at Strassburg, he described a large number of plants, chiefly of central Europe, and illustrated them by beautiful wood-cuts.

William Turner, termed "The Father of English Botany," wrote the first part of his New Herbal in 1551. In these early works the descriptions were mainly for medicinal purposes. Plants which appeared similar were placed together, but little attempt was made at systematic classification. Crude attempts at systematizing plants were gradually evolved, based upon external appearance alone, as is illustrated in the Herbal issued in 1597 by John Gerard (1545–1612), a barber surgeon and keen student of British plants.

Probably the earliest attempt at a methodical arrangement of plants was made by Andreas Caesalpinus of Florence, Italy (1519–1603). In his work De Plantis, he divided the 1520 plants then known into fifteen classes, the distinguishing character being taken from the fruit. John Ray (1627–1705) did much to advance the science of botany. He separated flowering from flowerless plants, dividing them into Dicotyledons and Monocotyledons. His classification of plants was founded on the correct idea of affinities of plants.

The University of Oxford established its first professor of botany under Dr. Robert Morrison, who published a systematic arrangement of plants, following largely on the lines suggested by Caesalpinus. He divided plants into eighteen classes, the distinguishing feature being determined as to whether the plants were woody or herbaceous, also taking into consideration, the nature of the flowers and fruit.

J. P. de Tournefort, who was long at the head of the French School of Botany, published a systematic arrangement in 1694–1700. He described about 8000 species of plants and arranged them into twenty-two classes. His classification was largely determined by the corolla, also distinguishing herbs and under-shrubs from trees and shrubs. His system was used for a long period in Europe, but finally displaced by Carl von Linne, or Linnaeus.

The Linnean system was founded on characteristics of the stamens and pistils, which are the sexual organs of the flower, and hence it is often termed the sexual system. This system takes into account only a few characters of the plant, and in no manner arranges them by their natural affinities. It is not a scientific or natural arrangement and Linneaus himself claimed it was only a stepping stone to plant classification.

Plant fertilization was a subject which early attracted attention. The idea of separate sexes in plants was entertained in very early times, even before separate male and female organs had been demonstrated. The production of dates in Egypt, by bringing two kinds of flowers into contact proves that some ideas were prevalant on that subject. The female date-palms only were cultivated, and wild ones were brought from the desert to fertilize them. Herodotus tells us that the Babylonians knew of old that there were male and female date-trees. This fact was also known to the Phoenicians and other nations of Asia and Africa.

A great step forward in plant classification came as the result of the work of Antoine Laurent de Jussieu (1748–1836). His Uncle, Bernard de Jussieu, was a follower of the Linnean system. Early in life Antoine became botanical demonstrator in the Jardin des Plantes and thus gave his time to the science of Botany. The necessity of proper plant arrangement led him to consider the best possible methods, and, following the lines already suggested by his uncle, adapted a system founded in part on that of Ray, in which instance he embraced all the discoveries in organography, also adopted the simplicity of the Linnean definitions, and displayed the natural affinities of plants. His Genera Plantarum, begun in 1778, and published in 1780, was an important advance and formed the basis of all natural classifications. In arranging plants according to a natural method, it is necessary to have a thorough knowledge of structural and morphological botany, therefore we find that the advances made in these departments have materially aided the efforts of systematic botanists.

One of the most ardent followers of this natural method was Augustin Pyramus de Condolle (1778–1841) who in 1813, published a work in which he showed that the affinities of plants are to be sought by the comparative study of the form and development of organs (morphology), and not by plant functions, or the physiology of the plant. His Prodromus Systematis Naturalis Regni Vegetabilis covered an arrangement and description of all known plants. De Canddolle's own herbarium was extremely rich. He had visited and carefully examined many of the most extensive collections, especially those of Paris. Many collections, as well as separate families, were frequently submitted to him by individuals for his examination. His library, too was stored with almost every important publication required for his work. With such ample materials, and aided by untiring interest in his work, he pursued his study until his death.

The work was continued after his death by his son, Alphonse de Candolle, with the aid of other eminent botanists. The following table gives historical and economic data concerning some of the most important cultivated plants based largely upon the researches of the great Swiss Botanist Alphonse de Candolle:—

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Agave (Amer. Aloe, Century Plant)	*Agave americana*	Amaryllis Family *Amaryllidaceae*	Perennial	Mexico
Alfalfa (Lucerne)	*Medicago sativa*	Pea Family *Leguminosae*	Perennial	Central Western Asia
Almond	*Amygdalus communis*	Rose Family *Rosaceae*	Small tree	Mediterranean basin, Western Asia
Apple	*Pyrus Malus*	Rose Family *Rosaceae*	Small tree	Europe, Asia Minor
Apricot	*Prunus armeniaca*	Rose Family *Rosaceae*	Small tree	China
Areca Nut Palm (Betelnut)	*Areca Catechu*	Palm Family *Palmaceae*	Small tree	Malay Archipelago
Arnotto or Anatto	*Bixa Orellana*	Bixa Family *Bixaceae*	Small tree	Tropical America
Arrowroot	*Maranta arundinacea*	Arrowroot Family *Marantaceae*	Perennial	Tropical America
Artichoke (European)	*Cynara Cardunculus*	Sunflower Family *Compositae*	Perennial	Southern Europe, Northern Africa
Artichoke (Jerusalem)	*Helianthus tuberosus*	Sunflower Family *Compositae*	Perennial	Ohio and Mississippi valleys
Asparagus	*Asparagus officinalis*	Lily Family *Liliaceae*	Perennial	Europe, Western Asia
Avocado or Alligator Pear	*Persea gratissima*	Laurel Family *Lauraceae*	Tree	Mexico
Banana	*Musa sapientum*	Banana Family *Musaceae*	Perennial	India

Years of Known Cultivation.	Historical Notes.	Economic Importance.
1000	Cultivation in Mexico far antedates Spanish discovery. Introduced into Europe 1561 from South America.	Extensively cultivated in the plateau of Mexico. Pulque, the national beverage of the Mexicans, is made from the fermented sap, and by distillation mescal is obtained. From very closely related, possibly identical, species are derived the valuable fibers maguey or Pita flax and sisal hemp, used for cordage, binding twine, etc.
2500	Introduced into Greece 470 B. C. from Persia. Mentioned in Vergil. Brought to Mexico and S. America by Spanish. Introduced into California in 1854 from Chile.	A most valuable fodder plant of great importance throughout the world. Grown extensively in Europe, Asia, Africa, North and South America. Especially adapted to dry regions, producing enormous crops under irrigation. Extensively grown in Kansas and Oklahoma without irrigation, and is chief forage crop in Colorado, Utah, California, and other western states under irrigation.
4000	Cultivation prehistoric in western Asia. Mentioned by Theophrastus, Pliny, and Dioscorides.	Sweet almonds commercially important in S. Europe, W. Asia, N. Africa, and California, but the United States import about $1,000,000 worth of nuts annually in addition to present production. Bitter almonds limited in cultivation; used in making flavoring extracts and prussic acid.
4000	Cultivation prehistoric. Abundantly used by Lake Dwellers of the Stone Age in Italy and Switzerland.	Most important fruit of the temperate zone, area of production, consumption, and variety of product being considered, ranking with the grape, olive, orange, lemon, and banana, among the six leading fruits of the world. North America is preëminently the leading apple growing region. Cultivation dates back to the earliest settlements, the records showing production of 500 barrels of cider by one man in New York in 1639. In the United States, New York, Pennsylvania, and Ohio produce about one third of the total crop.
4000	Cultivation in China antedates 2000 B. C. Introduced into S. E. Europe at the time of Alexander the Great, about 325 B. C.	Extensively grown in N. India, Persia, S. Europe, and Egypt. Although marketable quantities are grown in New York, crop commercially important in the United States only in California and Oregon, whence large quantities of the fresh and dried fruit are shipped to the eastern states and abroad.
2000	Anciently cultivated by Malaysian peoples. Introduced into China 111 B. C.	Great quantities of the nut are grown in India, Cochin China, Ceylon, and the Malaysian Islands; a considerable article of trade in the East, where betel chewing is practised. The areca nut mixed with lime and chewed with betel leaves acts as a stimulant and blackens the teeth. The nut also yields a kind of catechu.
1000	Cultivation prehistoric in tropical America. Now naturalized in India.	Also called anotto, arnatto, and annotta. Source of most widely used dye for coloring dairy products, being the standard butter and cheese color in the United States, England, and Holland. Has limited use as a dye in calico printing. Anciently used by natives of Brazil, Central America, and West Indies to stain their bodies red, and by Mexicans in painting.
300	Cultivation widely diffused in tropical America and West Indies since Spanish discovery. Also introduced on the coast of Guinea in Africa.	Widely cultivated in the East and West Indies and in Africa for food. Large imports of prepared arrowroot made to Europe and the United States. A starch food highly esteemed for invalids and children.
2000	Cultivated by the Romans. Introduced into England 1548. Naturalized as a weed in the pampas of Buenos Aires, spreading over vast areas in the nineteenth century.	Much grown and highly valued table vegetable in Europe. Sparingly used in the United States. In wild state called cardoon.
300	Tubers used by the Indians. Introduced into England 1616. Now cultivated in Europe.	As yet grown only to a limited extent in the United States, chiefly as food for pigs. Very little used as table vegetable. Yields enormous crops, 200 to 500 bushels per acre. Alcohol is made from the tubers in Europe.
2000	Much changed by cultivation, the succulent young stems used for food attaining many times their normal size in the wild state.	Increasingly popular table vegetable. Cultivation becoming important market garden industry near the large cities of Europe and the United States.
400	Common names absurd. Not a pear. Avocado is a corruption of the Mexican name.	Fruit highly prized and much grown in tropical countries; is both wild and cultivated in Mexico, West Indies, and Brazil. Cultivation now established in S. Florida and S. California.
4000	Cultivation antedates historical records in India. Pliny mentions that the Greeks under Alexander the Great saw it in India.	The most important tropical fruit widely used in temperate regions, extensively cultivated in tropical countries throughout the world. Produced in enormous quantities in the West Indies and Brazil, and shipped in constantly increasing volume to the United States and Europe. Beginning with a few hundred bunches in 1870, consumption in the United States has increased to upwards of $5,000,000 worth annually. Banana flour is becoming a staple article of food.

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Barley	*Hordeum vulgare*	Grass Family *Gramineae*	Annual	Asia
Bean, Broad	*Vicia Faba*	Pea Family *Leguminosae*	Annual	Southwest Asia
Bean, Lima	*Phaseolus lunatus*	Pea Family *Leguminosae*	Annual	Brazil
Bean, Navy or **Kidney**	*Phaseolus vulgaris*	Pea Family *Leguminosae*	Annual	South America
Bean, Soy	*Dolichos soja*	Pea Family *Leguminosae*	Annual	China, Japan, Java
Beet	*Beta vulgaris*	Goosefoot Family *Chenopodiaceae*	Biennial or Perennial	Mediterranean region
Betel Pepper	*Piper Betle*	Pepper Family *Piperaceae*	Shrub	Malay Archipelago
Blue Gum	*Eucalyptus globulus*	Myrtle Family *Myrtaceae*	Tree	Australia
Breadfruit	*Artocarpus incisa*	Nettle Family *Urticaceae*	Tree	Sunda Islands
Broom Corn	*Sorghum saccharatum var.*	Grass Family *Gramineae*	Annual	Tropical Africa
Buckwheat	*Polygonum Fagopyrum*	Buckwheat Family *Polygonaceae*	Annual	Manchuria, Siberia
Cabbage	*Brassica oleracea*	Mustard Family *Cruciferae*	Annual, Biennial, Perennial	Europe
Cacao	*Theobroma Cacao*	Byttneria Family *Byttneriaceae*	Small tree	Amazon and Orinoco valleys
Carrot	*Daucus Carota*	Parsley Family *Umbelliferae*	Biennial	Europe

Years of Known Cultivation.	Historical Notes.	Economic Importance.
4000	Cultivation extremely ancient. Found in oldest Egyptian monuments and in remains of Lake Dwellers of Stone Age in Switzerland. Mentioned by Theophrastus.	Important grain, ranking sixth among cereals, being preceded by wheat, rice, maize, oats, and rye. Greater part of crop in Europe and the United States used in the manufacture of beer. The finest malting barley is grown in Bohemia. Produces crop in great extremes of climate, being grown in Norway, Alaska, and Iceland, also in Algeria, Egypt, and India, as well as in temperate regions. California leads production in the United States.
4000	Cultivation dates back to the Bronze Age by Lake Dwellers of Switzerland and Italy. Known to the Hebrews 1000 B. C.	Important article of food in Europe and W. Asia; also valuable forage plant; grown in gardens and as a field crop. All species of the bean have a very high food value; are relatively cheap in price, but much less easily digested than cereals.
400	Found in old Peruvian tombs. Introduced into Africa during period of the slave trade.	Widely cultivated in tropical Africa, sparingly in temperate regions. Production in the United States most extensive in California.
400	Introduced into Europe subsequent to discovery of America.	Extensively grown in the United States, over 150 varieties in cultivation, as a garden vegetable, "string beans," as a fodder crop, and for food. The closely related "frijole" is universally grown in Mexico and Spanish American countries, where it ranks next to maize as a staple food.
4700	Very ancient in China; records show cultivation dating to 2700 B. C.	The common bean of China and Japan, grown in immense quantities. Various preparations form a part of the daily food, to a considerable extent taking the place of meat in supplying the proteid elements. Now grown in Europe and southern and southwestern United States as forage and soiling crop.
2200	Anciently cultivated for leaves and roots used as vegetable. Sugar beet culture modern, being established in Germany and France about 1810.	The chief source of sugar, furnishing about three fifths of the total product; sugar cane, which for 2,000 years had contributed practically all of the world's supply, being reduced to second place during the last half century by the enormous sugar beet crops of Europe—Germany, France, and Russia leading in production. The sugar beet industry is increasing very rapidly in the United States, notably in Michigan, Nebraska, Colorado, California, and Utah. The development of a profitable amount of sugar in the beet is one of the most remarkable agricultural achievements of the nineteenth century, elevating an ancient but minor garden vegetable to front rank among the economic plants of the world.
2300	Leaves chewed with areca nut since 400 B. C. by Malays of the East Indies.	Cultivation extensive in the East Indies, where the consumption of leaves by chewing with the areca nut is enormous. Narcotic stimulant.
75	Introduced into Europe, Asia, Africa, and America about 1850. First planted in California in 1856.	Said to be the most rapidly growing tree in the world; wood hard, difficult to work, used for wheel spokes, mining timber, carpentry, not attacked by borers. Leaves yield eucalyptus oil, important medicinally.
400	In cultivation in tropical East Indies when first visited by Europeans.	Fruit one of the chief food products of the Indian Archipelago and the Pacific Islands. Bark furnishes fiber for clothing. The milky juice and wood are also of value.
4000	The species of *Sorghum*, of which this is one of many varieties, has been in cultivation since very ancient times. Grown in the United States before 1800.	This variety of the *Sorghum* is grown for broom making only in Italy, France, Germany, and the United States. Illinois, Kansas, Missouri, and Oklahoma, ranking in the order named, produce seven eighths of the crop, Illinois growing about one half of the total crop of the United States. (See *Sorghum cane.*)
2000	Introduced into Europe from northwestern Asia during the Middle Ages.	A food plant of minor importance compared to the standard cereals, but extensively grown in European and Asiatic Russia, where buckwheat porridge is a common article of diet, and to a smaller extent in other European countries and in the United States. In the United States buckwheat flour is used chiefly for pancakes or griddlecakes, infrequently for bread. Production declining, the crop of 1900 being one third less than that of 1860. Japanese varieties of value as honey plants.
4000	Ancient Greeks cultivated three varieties. Pliny mentions six. In modern cultivation varieties very numerous.	Widely cultivated in the Old World, particularly in Europe, and grown on a greater number of farms in the United States than any other vegetable. Over 150 varieties are enumerated. Ages of cultivation have developed the widely modified forms, kale, kohlrabi, cauliflower, Brussels sprouts, also the tree- or cow-cabbage grown for cattle in France, often attaining a height of 10 feet and sometimes 12 or 15 feet.
1000	Anciently cultivated in tropical America.	Source of cocoa, chocolate, and the soft solid oil called cocoa butter, which constitutes over 50 per cent of the seeds. The fruit is eaten and also used in making a fermented liquor.
2000	Introduced into England from Holland about 1500. In wild state becomes troublesome weed.	In general but limited cultivation as stock food and garden vegetable in Europe and the United States.

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Carthamine	*Carthamus tinctorius*	Sunflower Family *Compositae*	Annual	W. Asia, Arabia
Cashew	*Anacardium occidentale*	Sumac Family *Anacardiaceae*	Tree	Tropical America
Cassava	*Manihot utilissima*	Spurge Family *Euphorbiaceae*	Small shrub	Tropical America, Brazil
Castor Oil Plant	*Ricinus communis*	Spurge Family *Euphorbiaceae*	Annual, Small shrub	Tropical Africa, Abyssinia
Celery	*Apium graveolens*	Parsley Family *Umbelliferae*	Biennial	Europe, No. Africa, Western Asia
Century Plant (see Agave)				
Cherry	*Prunus Cerasus*	Rose Family *Rosaceae*	Small tree	W. Asia, E. Europe
Chickling Vetch	*Lathyrus sativus*	Pea Family *Leguminosae*	Annual	West Asia south of the Caucasus
Chick Pea	*Cicer arietinum*	Pea Family *Leguminosae*	Annual	Persia
Chicory	*Cichorium Intybus*	Sunflower Family *Compositae*	Perennial	Europe, Northern Africa, W. Asia
China Grass or Ramie	*Boehmeria nivea*	Nettle Family *Urticaceae*	Perennial, Shrub	China, Japan
Cinchona	*Cinchona Calisaya*	Madder Family *Rubiaceae*	Small tree	Peru, Bolivia
Cinnamon	*Cinnamomum zeylanicum*	Laurel Family *Lauraceae*	Small tree	Ceylon, India
Clove	*Caryophyllus aromaticus*	Myrtle Family *Myrtaceae*	Small tree	Molucca Islands
Clover (Alsike)	*Trifolium hybridum*	Pea Family *Leguminosae*	Perennial	Temperate Europe
Clover (Egyptian)	*Trifolium alexandrinum*	Pea Family *Leguminosae*	Annual	L. Syria, Asia Minor
Clover (Italian)	*Trifolium incarnatum*	Pea Family *Leguminosae*	Annual	Southern Europe
Clover (Red)	*Trifolium pratense*	Pea Family *Leguminosae*	Perennial	Europe, Algeria, Western Asia

Years of Known Cultivation.	Historical Notes.	Economic Importance.
4000	Grave clothes of mummies are dyed with carthamine and fragments of the plant are found in ancient Egyptian tombs. Introduced into China about 150 B. C.	Used since remote antiquity as a red dye for cotton and silk; now largely supplanted by coal tar colors except in India and China, where it is still an article of local commerce. Cultivated in France, Spain, Italy, India, and China. The extract mixed with talcum forms the cosmetic known as rouge.
400	Widely diffused in tropical countries since Spanish discovery, particularly in India and Guinea. Introduced into East Indies by Portuguese.	Much cultivated in the tropics for fruit and nuts used for food. Fruit also furnishes a vinous liquor, and the tree yields a gum similar to gum arabic.
1000	Long cultivated in Brazil, and after Spanish discovery extended to Africa and Asia.	Chief source of tapioca. Important food plant in tropical countries. Cultivation now established in Florida.
4000	Prehistorically cultivated. Seeds found in ancient Egyptian tombs. Mentioned by Theophrastus and Dioscorides.	Cultivated in Italy, France, Spain, Algeria, India, West Indies, South America, and the United States for oil expressed from seeds. Cultivation in the United States limited mainly to Oklahoma, Kansas, Illinois, and Missouri and of little importance. Oil largely used in medicine and the arts, and in India as lamp oil.
3000	Anciently grown in Mediterranean region. Mentioned in Homer's *Odyssey*.	Widely cultivated in Europe and rapidly increasing in the United States, in 1900 rising to tenth rank in acreage devoted to garden vegetables.
2000	Grown before Christian era in W. Asia and S. Europe. Mentioned in Vergil's *Georgics*.	Cultivated in temperate regions of Europe, Asia, and the United States. Is included among the 15 leading fruits of the world. Ranks about eighth among fruits of the United States. Pennsylvania and California lead in production.
2000	Cultivation in S. Europe dates back to Greeks and Latins. Now cultivated in N. India and W. Asia.	Minor food plant cultivated in India, Germany, France, and some other countries for its seeds.
4000	Cultivation ancient in India. Referred to in Homer's *Iliad* and by Theophrastus.	Grown extensively in Asia for the table and for stock food. Seeds sometimes substituted for coffee.
2000	Cultivated by the Greeks and Romans.	Chief use as an adulterant for coffee, the practice originating in France. Chiefly grown in France, Holland, Germany, and Scandinavia, but recently becoming of commercial consequence in limited areas in the United States, Michigan producing about nine tenths of the crop.
	Not a grass, but a nettle, closely related to the hemp and the hop. Cultivation begun in S. France about 1850 and sparingly in S. United States about the same time.	Valuable fiber plant, mostly grown in China and India. Excellent fiber, stronger than hemp, and nearly as pliable as silk. Used in making China grass cloth and bank note paper.
250	Bark introduced into Europe in 1639 by the Countess of Cinchon, whence the name. Now extensively cultivated in India, Japan, Ceylon, and Jamaica.	Source of quinine, the most important drug in tropical medicine, and widely used throughout the world. Cultivation becoming more and more extensive.
150	Cultivation begun in Ceylon about 1765. Bark of wild trees used from remote antiquity.	Cultivated for bark in Brazil, West Indies, Egypt, and Java, but cultivation now declining in favor of coffee.
300	Brought to Europe by Portuguese after the establishment of East Indian trade.	Valued spice tree; the dried flower buds are the cloves of commerce. Cultivated on many tropical islands and coasts, chiefly in the Moluccas, Sumatra, Java, Mauritius, Zanzibar, Jamaica, and French Guiana. The oil of cloves widely used in flavoring and perfumery and also in medicine.
500	Introduced into Great Britain from Sweden in 1834.	Named for Alsike, Sweden, where it has been long cultivated. One of the best clovers, but as yet only sparingly cultivated in the United States. Excellent honey plant.
500	Cultivation universal though not ancient in Egypt. Now being introduced in S. United States.	Especially adapted to warm climates; principal food of cattle in Egypt. In the United States sparingly cultivated in the Southern States.
500	Cultivation long only local in S. France. Introduced into Italy and England during the last 100 years. Now extending to the United States.	Valuable fodder plant in S. France and Italy. In the United States cultivation is increasing though not extensive.
500	Introduced into England from the Netherlands in 1663.	A most valuable forage and soiling plant, the leading leguminous fodder of the North Central and Eastern United States, where it is relatively as important as alfalfa in the West or the cow pea in the South. In common with other clovers and most leguminous fodders it is of great value in crop rotation, enriching the soil through the agency of bacteria living in the roots, which transfer nitrogen from the air to the soil, a remarkable natural process of fertilization.

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Coca	*Erythroxylon Coca*	Erythroxylon Family *Erythroxylaceae*	Small shrub	Peru and Bolivia
Cocoa (see Cacao)				
Cocoanut Palm	*Cocos nucifera*	Palm Family *Palmaceae*	Tree	Malay Archipelago
Coffee	*Coffea Arabica*	Madder Family *Rubiaceae*	Small tree	Abyssinia, Arabia
Coracan	*Eleusine coracana*	Grass Family *Gramineae*	Annual	India
Corn, Indian, Pop-corn, Sweet Corn (see Maize)				
Corn Spurry	*Spergula arvensis*	Pink Family *Caryophyllaceae*	Annual	Europe
Cotton (Common)	*Gossypium herbaceum*	Mallow Family *Malvaceae*	Annual, Small shrub	India
Cotton (Sea Island)	*Gossypium barbadense*	Mallow Family *Malvaceae*	Annual, Small shrub	West Indies, Tropical America
Cow Pea	*Vigna Catjang*	Pea Family *Leguminosae*	Annual	Southeastern Asia, Malay Archipelago
Cranberry	*Vaccinium macrocarpon*	Heath Family *Ericaceae*	Small shrub	Northeastern United States and Canada
Cucumber	*Cucumis sativus*	Gourd Family *Cucurbitaceae*	Annual	India
Currant (Black)	*Ribes nigrum*	Gooseberry Family *Grossulariaceae*	Small shrub	Europe, Siberia, Manchuria
Currant (Red)	*Ribes rubrum*	Gooseberry Family *Grossulariaceae*	Small shrub	N. Europe, Siberia, N. U. S. and Canada
Date Palm	*Phoenix dactylifera*	Palm Family *Palmaceae*	Tree	S. W. Asia, N. Africa
Egg Plant	*Solanum Melongena*	Potato Family *Solanaceae*	Annual	India

Years of Known Cultivation.	Historical Notes.	Economic Importance.
1000	Cultivation and use ancient in Peru and Bolivia. Supplies of leaves found buried with mummies in Peruvian tombs.	Source of cocaine. Extensively cultivated in South America, Ceylon, India, and Java. Yearly production of leaves used in South American trade estimated at 50,000,000 pounds. Coca chewing is almost universal among peoples of the Andean region.
3000	Ancient cultivation in East Indies. Now extended to tropical coasts throughout the world.	A most useful tropical tree, extensively cultivated on the coasts of India, the East and West India Islands, and Brazil. Leading food plant of the Pacific Islands. Besides the cocoanut, and its dried kernel, the copra of commerce, as chief products, palm wine, arrack, and sugar are made from the juice; fiber for cordage is obtained from the stems and coir from the husk of the nut. Cultivation has been established in Florida.
500	Beginning of cultivation uncertain, but not ancient. Introduced for cultivation in South America by the Dutch in 1718.	Coffee and tea are preëminently the leading beverage plants, cacao, maté, and the various substitutes being relatively insignificant. Commercially of great importance. Largely grown in Brazil, Mexico, Central America, West Indies, Arabia, Java, Sumatra, Ceylon, India, and Hawaii, Brazil leading with a production of over one half of the world's crop. In the United States the consumption greatly exceeds that of tea; in England tea is preëminently first.
2000	Cultivation ancient in India. More recently extended into Japan, Egypt, and Abyssinia.	Seeds similar to millet; used for food. Cultivated in India, Malay Archipelago, Japan, Egypt, and Abyssinia.
1500	Cultivation dates to the late Romans. Now widely diffused in N. Africa, W. Asia, to Hindustan and Java. Sparingly naturalized in the United States.	Cultivated for fodder in southern Europe.
2200	Known to ancient Greeks. Introduced into China about 900. Cultivation begun in Virginia in 1721. First export in 1784.	The most valuable textile fiber plant. Crop commercially important in the United States, British India, Egypt, Russia, China, Brazil, Mexico, Peru, and Turkey, which usually rank in the order named, the United States producing two thirds and upwards of the world crop annually, with British India and Egypt next in importance, these three countries usually producing over nine tenths of the export crop. Grown on upwards of a million farms in America, the leading agricultural crop of the Southern States, Texas leading in production. Total crop second in value only to corn in the United States, of which about nine tenths is for fiber and about one tenth for cotton seed product, oil, stock food, etc.
500	Cultivation well established in West Indies, Mexico, Peru, and Brazil at time of earliest Spanish discovery.	Very valuable for its long fiber. Grown in the West Indies, tropical America, and the southern United States, particularly in Georgia, South Carolina, and Florida. Production limited in amount, constituting about one per cent. of the total cotton crop in the United States.
500	Cultivation widely diffused in tropical regions since establishment of European trade with the East following Spanish discovery. Introduced in S. United States about 1725.	Grown for food and forage in most tropical and subtropical countries. The most important fodder and soiling crop of the southern United States, corresponding in value to red clover in the Northeastern region and to alfalfa in the West.
100	Cultivation begun in Massachusetts about 1800. Now sparingly cultivated in England.	Cultivation important in certain limited areas in the United States. Massachusetts grows three fifths, New Jersey one fourth, and Wisconsin one tenth of the total crop of about 1,000,000 bushels.
4000	Cultivation prehistoric. Known to Greeks and Romans. Introduced into China about 150 B. C.	Widely grown throughout the world. Stands sixth in acreage devoted to garden vegetables in the United States.
1500	Cultivation begun in Europe during early Middle Ages.	Extensively grown in Continental Europe, Scotland, and Canada; sparingly in the United States. In France the *liqueur de cassis* is made from the fruit.
1200	Unknown to Greeks and Romans. Cultivation dates from the Middle Ages. Rare in England until after 1600.	Very widely grown in Europe and the United States, chiefly for jellies. New York and Michigan lead in production.
4000	Very ancient cultivation in Egypt and Babylonia. Mentioned by Herodotus. Is the palm of the Bible.	Furnishes the date of commerce, also oil, fiber, and wood. Much cultivated in southwestern Asia and northern Africa, and to some extent in China, France, and Italy. Chief source of wealth in Arabia.
4000	Anciently cultivated in India. Now extensively grown in East Indies; sparingly in temperate United States.	Important vegetable in the East Indies. Culture and use in the United States limited but increasing.

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Endive	*Cichorium Endivia*	Sunflower Family *Compositae*	Annual	Mediterranean basin to Turkestan
Ervilla	*Ervum ervilia*	Pea Family *Leguminosae*	Annual	Mediterranean basin
Fenugreek	*Trigonella foenum-graecum*	Pea Family *Leguminosae*	Annual	W. Asia, N. E. India
Fig	*Ficus Carica*	Mulberry Family *Moraceae*	Small tree	Mediterranean basin to Afghanistan
Flax	*Linum usitatissimum*	Flax Family *Linaceae*	Annual	Western Asia
Garlic	*Allium sativum*	Lily Family *Liliaceae*	Perennial	Desert of the Kirghiz, W. Asia
Gooseberry	*Ribes Grossularia*	Gooseberry Family *Grossulariaceae*	Small shrub	Eur., N. Afr., W. Asia
Grape (American)	*Vitis Labrusca*	Grape Family *Vitaceae*	Shrub	N. E. United States
Grape (European) (The Vine)	*Vitis vinifera*	Grape Family *Vitaceae*	Shrub	W. Asia, Mediterranean basin
Grape Fruit	*Citrus decumana*	Orange Family *Aurantiaceae*	Tree	Pacific Isl., E. of Java
Guava	*Psidium Guayava*	Myrtle Family *Myrtaceae*	Small tree	Tropical America
Hemp	*Cannabis sativa*	Nettle Family *Urticaceae*	Annual	Siberia

Years of Known Cultivation.	Historical Notes.	Economic Importance.
2000	Probably cultivated by Greeks and Romans, but proof not fully clear.	Widely grown salad plant in Europe; sparingly in the United States.
3000	Cultivated by ancient Greeks and Romans. Seeds excavated on the site of Troy. Still grown by modern Greeks and also in Italy.	Useful fodder plant; seeds also of some value, but the formerly extensive cultivation in Europe now confined to forage growing in Greece and Italy.
2000	Cultivation common in ancient Greece and Italy. Now abandoned in Europe, but maintained in India, W. Asia, and the Nile valley since remote antiquity.	Spring fodder plant; seeds used in medicine.
4000	Cultivation prehistoric. Pictured in a pyramid in Egypt. Mentioned by Archilochus 700 B. C., also by Herodotus, Theophrastus, and Plato.	Valuable fruit; extensively cultivated in subtropical countries, particularly in Spain, Italy, and S. France, in Europe, and in southwestern Asia. Grown in the Gulf States and in California. Chiefly important as dried fruit. All dried figs in the United States are produced in California; commercial figs largely from Asiatic Turkey, though Smyrna figs are now established in California.
5000	Remotely ancient in cultivation. Egyptian mummy cloths are woven from flax fiber.	Second only to cotton as a fiber plant, and linseed oil production important. Chief fiber production is in Russia, Sweden, Germany, Austria, and Ireland, Russia leading. In the United States fiber production, once important, is practically abandoned. Chief seed production is in Russia, British India, United States, and Argentina, in average years ranking in order named, the United States producing about one fifth of the world crop, chiefly grown in North and South Dakota, Minnesota, Iowa, and Kansas.
2000	Moderately ancient cultivation in China. Herodotus affirms that the ancient Egyptians grew it, but no records remain.	Generally used as a condiment in southern Europe; not popular and only sparingly used in the United States. Oil of garlic used medicinally.
400	Cultivation may date to the Middle Ages. Became common in Germany and Holland about 1500 and was introduced into England during the sixteenth century.	Highly prized in northwestern Europe; not cultivated in southern Europe; reaches highest perfection in England. In the United States, while widely grown, is of minor importance, ranking sixth among small fruits, being preceded by the strawberry, raspberry, blackberry, cranberry, and currant.
300	First vineyard planted by Lord Delaware in 1610, but not extensively grown until after the introduction of the Concord grape during the last century. While the Concord, Catawba, Isabella, Hartford, and most of the cultivated varieties originated from the wild northern fox or plum grape, *Vitis Labrusca*, the Clinton grape was derived from the wild species, *Vitis riparia*, and most of the American wine grapes from the native summer grape, *Vitis aestivalis*.	Since 1860 culture has made remarkable progress, the last census showing crop exceeding $8,000,000 in value. New York produces one third of the American grape crop and is followed by Ohio, Pennsylvania, Michigan, Illinois, Indiana, Missouri, and Kansas, in order named. Notwithstanding the extensive culture of the European grape in the Pacific States, the American grape constitutes three fifths in value of all grape products of the United States. Millions of young vines have been shipped to Europe to be top grafted with the European vine. This procedure has protected the great vineyards of France, Italy, and Spain from the ravages of the *Phylloxera*, the American grape root successfully resisting the pest.
5000	Remotely ancient in Egypt. Used by Lake Dwellers of the Bronze Age in Italy. Cultivated by the Phoenicians, Hebrews, Greeks, and Romans. Introduced into China 120 B. C.	Shares leading rank with the apple among world fruits. Cultivation important in every continent. Chief products, raisins, currants, and wine of great commercial importance. Raisin production largest in Spain, but important in southwestern Asia, Australia, and California. Currants are small seedless raisins, mostly grown in Greece (name derived from Corinth). Wine is made throughout the world, total production estimated at 4,000,000,000 gallons, France, Italy, and Spain contributing about three fourths of this enormous amount. The European grape products of California,— wine, raisins, and table grapes,— amount in value to two fifths of all grape products of the United States.
2000	Long cultivated in India and Malay Archipelago. Cultivation established in Florida and California during last 25 years.	Anciently cultivated and much prized fruit in India, China, East Indies, and Pacific Islands. Also called shaddock from name of the captain who first introduced it into the West Indies. Now successfully established in Florida and California, and rapidly becoming popular table fruit in the United States.
400	Commonly grown from Mexico to Peru at date of Spanish discovery. Since widely diffused in East and West India Islands, India, and China. Recently established in Florida and California.	Valuable fruit, strictly tropical, chiefly grown in the East and West Indies, but now well established in Florida and to some extent in S. California.
4000	Anciently cultivated in China, central Asia, and Russia. Probably brought into Europe by Scythians about 1500 B. C. Mentioned by Theophrastus and in the Talmud.	Important fiber plant, ranking next to cotton and flax. Extensive cultivation in Europe, notably in S. Russia, for fiber, and in India for seed and narcotic products. Fiber production in the United States practically limited to Kentucky; was most important about 1860; now declined to less than one tenth of former yield, due to introduction of jute, manila, and sisal hemp for cordage.

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Henna	*Lawsonia alba*	Loosestrife Family *Lythraceae*	Shrub	W. Tropical Asia
Hop	*Humulus Lupulus*	Nettle Family *Urticaceae*	Perennial	Europe, W. Asia, N. America
Horseradish	*Radicula Armoracia*	Mustard Family *Cruciferae*	Perennial	Eastern Europe
Indigo	*Indigofera tinctoria*	Pea Family *Leguminosae*	Shrub	India
Jujube	*Zizyphus vulgaris*	Buckthorn Family *Rhamnaceae*	Small tree	N. China
Jute	*Corchorus capsularis*	Linden Family *Tiliaceae*	Annual	India
Kafir Corn	*Sorghum saccharatum var.*	Grass Family *Gramineae*	Annual	Tropical Africa
Leek	*Allium ampeloprasum var. porrum*	Lily Family *Liliaceae*	Perennial	Mediterranean basin
Lemon	*Citrus medica*	Orange Family *Aurantiaceae*	Small tree	India
Lentil	*Ervum Lens*	Pea Family *Leguminosae*	Annual	W. Asia, Greece, Italy
Lettuce	*Lactuca Scariola*	Sunflower Family *Compositae*	Annual, Biennial	S. Europe, N. Africa, W. Asia
Lime	*Citrus medica var. acida*	Orange Family *Aurantiaceae*	Small tree	India
Lucerne (see Alfalfa)				
Lupine	*Lupinus albus*	Pea Family *Leguminosae*	Annual	Sicily, Macedonia
Lupine (Egyptian)	*Lupinus termis*	Pea Family *Leguminosae*	Annual	From Corsica to Syria
Madder	*Rubia tinctorum*	Madder Family *Rubiaceae*	Perennial	W. Asia, S. E. Europe
Maize (Indian Corn)	*Zea Mays*	Grass Family *Gramineae*	Annual	Plateaus of Tropical America

Years of Known Cultivation.	Historical Notes.	Economic Importance.
4000	Antiquity of use by women as dye for staining finger nails red shown by ancient Egyptian paintings and mummies. This custom persists in the East at the present day.	Commercially cultivated in India and Arabia for the dye. Flowers used in perfumery and embalming.
1200	Cultivation first mentioned by Pepin 768. Began in England about 1525. Introduced into the United States 1629.	Came into general use in brewing in the Middle Ages; now most extensively cultivated in Germany, England, and the United States, which rank in production in the order named. New York produces one third of the American crop, maintaining first rank since 1840, Oregon, California, and Washington growing practically all of the remainder.
1000	Extensively naturalized as a weed in the United States. Non-seed bearing.	Root widely used as a condiment in Europe and the United States, but cultivation unimportant in extent.
2000	Anciently cultivated in India. The dye was known to the Romans, who called it *indicum*, thus denoting its source in their commerce. Another species (*I. Anil*) is cultivated in Mexico.	Important dye plant, yielding valuable blue dye stuff; most extensively grown in India, but production also commercially important in Java and the Philippines. Large European imports from India since 1600, but culture now seriously threatened by increasing use of aniline dyes.
2500	According to Pliny was brought from Syria to Rome in the reign of Augustus.	Dried fruit an article of commerce in S. Europe, Syria, India, and China.
2000	Long cultivated in India; much more recently in Ceylon, Sunda Islands, Philippine Islands, and southern China; introduced into portions of tropical Africa; experimentally grown in Florida.	Exceedingly valuable coarse fiber plant. Commercial production practically limited to India, where it is of great importance, the development of the jute industry and export having been enormous during the last century, export of fiber exceeding 1,500,000,000 pounds and jute cloth (gunny) 300,000,000 yards in 1898. Is replacing hemp, flax, and other fibers.
4000	Non-saccharine *Sorghums* are of ancient cultivation in Asia and Africa. Introduced into the United States about 1885 by the United States Department of Agriculture. (See *Broom Corn, Sorghum.*)	Successfully grown as substitute crop for Indian corn in dry regions. Has become important crop in sections of Kansas, Oklahoma, Texas, and California. (See *Sorghum cane.*)
2000	Extensively cultivated in central and southern Europe, northern Africa, and Asia. Not now found in wild state.	Extensively grown in Europe for culinary purposes; not popular, and very sparingly cultivated, in the United States.
2500	Cultivation ancient in India, whence it spread very early into Mesopotamia and Media; became known to the Greeks through the Medes, giving rise to the specific name *medica*. Mentioned by Theophrastus and Dioscorides.	Important fruit; in world-wide use; much grown in subtropical and tropical countries; the most extensively used variety of the species; the other important varieties of *Citrus medica* being the citron, bergamot, lime, and sweet lime. Cultivation in the United States limited mostly to S. California.
5000	Prehistoric. Used by Lake Dwellers. Probably the "red pottage" of Esau mentioned in Genesis.	Valuable food plant, but less popular than peas or beans in Europe. Commercial crop grown in Egypt, but extensively cultivated in Europe and Asia, and to a small extent in New Mexico and Arizona.
2200	Cultivated by the Greeks and Romans.	Widely popular and much used salad plant. Cultivated wherever climate permits throughout the world.
2000	Ancient cultivation in India, from whence it has been widely diffused in tropical countries.	Much prized acid fruit in the tropics; widely imported in temperate regions, but sparingly used, being much less popular than the lemon. Now successfully grown in Florida, which produces a small crop.
2200	Anciently cultivated in Italy. Known to Theophrastus and Pliny.	Widespread cultivation for seeds and for green manuring in Europe. Rarely cultivated in the United States.
4000	Found in ancient Egyptian tombs. Still widely cultivated in Egypt.	Cultivated for seeds used for food in Egypt and Crete since ancient times.
2000	Culture becoming non-important on account of substitution by the artificial dye, alizarin.	Once furnished the most important red dye and was extensively cultivated in Europe, East Indies, and China, but practically abandoned in Europe and rapidly diminishing in the East, being replaced by the aniline dyes.
2000	Anciently cultivated in Peru even before the Incas, and by the Toltecs and Aztecs in Mexico. Found in the catacombs of Peru and in the remains of North American Mound Builders. Darwin found ears of Indian corn buried in soil that was formerly part of the shore in Peru, but now over eighty feet above sea level. Like wheat, maize is unknown in the wild state, and evidently has been so greatly modified by cultivation as to be incapable of maintaining itself from year to year independent of human agency.	A cereal of the first rank, the chief contribution of the American continent to the food plants of the world. Cultivated extensively in North and South America, southern Europe, and Asia, total production equaling in volume that of wheat, oats, or rye; the largest and most valuable grain crop of the United States, which produces fully three fourths of the world crop. Yield greatest in the Mississippi valley, where six states, Iowa, Illinois, Missouri, Kansas, Indiana, and Nebraska, grow one half of the crop. Staple food in Mexico and Central America, and increasingly used for food in S. Europe and Asia. Sweet corn is a garden variety which has assumed great importance since the development of the canning industry, ranking in acreage with the tomato and garden pea as a vegetable and canning crop. Pop corn has become a valuable local crop in certain sections, particularly in northwestern Iowa.

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Mango	*Mangifera indica*	Sumac Family *Anacardiaceae*	Small tree	India, Malay Peninsula
Manila Hemp	*Musa textilis*	Banana Family *Musaceae*	Small tree	Philippine Islands
Maté	*Ilex paraguensis*	Holly Family *Aquifoliaceae*	Small tree	Paraguay, W. Brazil
Millet (Common)	*Setaria miliacea*	Grass Family *Gramineae*	Annual	Egypt, Arabia
Millet (Italian)	*Setaria italica*	Grass Family *Gramineae*	Annual	China, Japan, Indian Archipelago
Mulberry (Black)	*Morus nigra*	Nettle Family *Urticaceae*	Small tree	Armenia, N. Persia
Mulberry (White)	*Morus alba*	Nettle Family *Urticaceae*	Small tree	India, Mongolia
Mushroom (Common)	*Agaricus campestris*	Mushroom Family *Agaricaceae*	Perennial	Northern Hemisphere
Muskmelon	*Cucumis Melo*	Gourd Family *Cucurbitaceae*	Annual	India, Guinea
Mustard (Black)	*Brassica nigra*	Mustard Family *Cruciferae*	Annual	Eur., N. Afr., W. Asia
Mustard (White)	*Brassica alba*	Mustard Family *Cruciferae*	Annual	Eur., N. Afr., W. Asia
New Zealand Spinach	*Tetragonia expansa*	Carpetweed Family *Aizoaceae*	Annual	New Zealand
Nutmeg	*Myristica fragrans*	Nutmeg Family *Myristicaceae*	Small tree	Molucca Islands
Oats	*Avena sativa*	Grass Family *Gramineae*	Annual	E. Temperate Europe
Ochrus	*Lathyrus ochrus*	Pea Family *Leguminosae*	Annual	Italy, Spain
Oil Palm	*Elaeis guineensis*	Palm Family *Palmaceae*	Tree	Guinea
Okra (Gumbo)	*Hibiscus esculentus*	Mallow Family *Malvaceae*	Annual	Tropical Africa
Olive	*Olea europea*	Olive Family *Oleaceae*	Small tree	Syria, S. Asia Minor
Onion	*Allium Cepa*	Lily Family *Liliaceae*	Biennial	Persia, Afghanistan

Years of Known Cultivation.	Historical Notes.	Economic Importance.
4000	Ancient in India. Introduced into South America (Brazil) about 1750.	Valuable fruit; cultivated in many tropical and subtropical countries, over 150 varieties being grown in India.
500	Cultivation limited to the Philippine Islands, chiefly to Luzon, where it has been long cultivated.	Yields the standard fiber for rope making and cordage. Worn-out rope makes excellent manila paper. Native clothes in Philippines woven from manila fiber. Extensively cultivated and forms one of the chief exports of the Philippines.
1000	Use ancient in Brazil and Paraguay. Cultivation increasing.	Beverage plant. Collection and preparation of leaves important industry in Paraguay and Brazil.
5000	Cultivation prehistoric in S. Europe, Egypt, and Asia. Greatly used by Swiss Lake Dwellers of the Stone Age. Mentioned by Theophrastus and Cato.	Valuable forage plant; much used in Europe, W. Asia, and the United States. Grown in every state and territory; total crop about one half that of red clover or alfalfa, Kansas leading in production.
5000	Cultivation prehistoric in Asia. In China it is sown at a royal ceremony, dating back to 2700 B. C.	In wide cultivation in Europe and Asia as forage and food plant. Important food crop in China and Japan, the latter annually using 35,000,000 bushels for human food. Seeds formerly used for food in Europe, but now chiefly fed to birds.
2000	Mentioned by Greek and Latin authors. Naturalized in Greece, Italy, and Spain. Still much cultivated in Greece.	Much grown fruit in Europe for wine making and preserving; sparingly in the United States.
4000	Ancient cultivation in China in silk culture. Planted in S. Europe since 1540; in the United States since 1830.	Wide cultivation in India, China, and Japan. Bark used in paper making. Leaves form chief food for silkworms.
1000	In cultivation since Middle Ages. The only cryptogamous plant in extensive cultivation.	Extensively grown for market near large cities in Europe and the United States.
2000	Represented in a painting found in Herculaneum. Introduced into China 800. Fruit greatly improved during last 400 years.	Much prized in cultivation in the Old World. Widely cultivated in the United States, ranking fifth in acreage among vegetables. New Jersey leads in production, growing about one seventh of entire crop. Cultivation under irrigation much developed in Colorado. Often called cantaloupe in the markets.
2000	Cultivation ancient in the Mediterranean basin. Naturalized as a weed in the United States.	Cultivated in Europe for mustard oil.
2000	See Black Mustard above.	Cultivated in Europe and sparingly in the United States for salads, for seeds used as a condiment, and for oil.
130	Brought to England by Captain Cook in 1771 and put in cultivation by Sir Joseph Banks. Now sparingly diffused in gardens in Europe and the United States.	Use similar to that of spinach. Valuable in dry countries, but not yet widely known or cultivated.
2000	Ancient cultivation in East Indies. Recently introduced into West Indies and Brazil.	Valued spice plant; in cultivation in the East and West Indies and Brazil. Annual imports to United States exceed $500,000.
3800	Prehistoric in central Europe. Found in lake dwellings of the Bronze Age. Pliny states that the Germans lived on oatmeal Not cultivated by ancient Egyptians or Hebrews. First Chinese record later than 600. Still almost unknown in India.	A cereal of the first order, extensively grown in northern Europe, United States, and Canada. Russia and the United States lead in production. Third in importance among cereals in the United States, ranking next to corn and wheat, exceeding wheat in volume but not in value. Illinois and Iowa leading oat growing states, producing about one third of total crop.
2300	Mentioned by Theophrastus, but cultivation local in S. Europe in both ancient and modern times.	A fodder plant limited in cultivation to S. Europe and Asia Minor; chiefly grown in Spain and Greece.
400	In cultivation by negroes when Guinea was first visited by travelers early in the sixteenth century. Introduced into Brazil and West Indies by slave traders, where it has now become naturalized.	Source of palm oil used for food on west African coasts and exported in large quantities to Europe for candle and soap making. It is particularly valuable in the process of making tin plate.
1500	Anciently grown in tropical Africa. Was in cultivation in Egypt in 1216. Now diffused in tropical countries and in the S. United States.	A generally used food plant most commonly employed in soups in the East and West Indies and also in the southern United States.
4000	Cultivated by ancient Egyptians. Mentioned in Homer's *Iliad* and *Odyssey*, and in the earliest Hebrew books. According to Pliny cultivation began at Rome about 600 B. C.	Important in dry countries. In extensive cultivation in Mediterranean Europe, Syria, south Africa, Australia, and California. Chief products: olive oil, which takes the place of butter in Mediterranean countries, and the dried and pickled fruit, all of which are important commercially. Olive culture in the United States is confined to California.
4000	Cultivated by the ancient Egyptians; also by the Greeks and Romans.	Extensively cultivated throughout the world. Grown in every state in the United States, New York and Ohio leading in production. Bermuda and Spanish varieties now grown in California.

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Orange	*Citrus Aurantium*	Orange Family *Aurantiaceae*	Small tree	China, Cochin China
Papaw	*Papaya vulgaris*	Papaya Family *Papayaceae*	Small tree	W. Indies, Cent. Am.
Parsley	*Petroselinum sativum*	Parsley Family *Umbelliferae*	Biennial	S. Europe, Algeria
Parsnip	*Pastinaca sativa*	Parsley Family *Umbelliferae*	Biennial	N. Asia, Central and Southern Europe
Pea (Field)	*Pisum arvense*	Pea Family *Leguminosae*	Annual	Italy
Pea (Flat-podded)	*Lathyrus Cicera*	Pea Family *Leguminosae*	Annual	S. Europe, Algeria
Pea (Garden)	*Pisum sativum*	Pea Family *Leguminosae*	Annual	W. Temperate Asia
Peach	***Amygdalus persica***	Rose Family *Rosaceae*	Small tree	China
Peanut	*Arachis hypogaea*	Pea Family *Leguminosae*	Annual	Brazil
Pear	*Pyrus communis*	Rose Family *Rosaceae*	Tree	Europe, Asia Minor
Pepper (Black)	*Piper nigrum*	Pepper Family *Piperaceae*	Shrub	India
Pepper (Red)	*Capsicum annuum*	Potato Family *Solanaceae*	Annual	Brazil
Peppermint	*Mentha piperita*	Mint Family *Labiatae*	Perennial	Europe
Pineapple	*Ananas sativa*	Bromelia Family *Bromeliaceae*	Perennial	Mex., Cent. America, Colombia
Pistachio Nut	*Pistacia vera*	Sumac Family *Anacardiaceae*	Shrub	Persia, Syria
Plum (Prune)	*Prunus domestica*	Rose Family *Rosaceae*	Small tree	Asia Minor, Persia
Pomegranate	*Punica Granatum*	Myrtle Family *Myrtaceae*	Tree	Persia, Afghanistan

Years of Known Cultivation.	Historical Notes.	Economic Importance.
1500	Cultivation developed in Middle Ages. Unknown to Greeks and Romans. First planted in the United States by Spanish at St. Augustine, Florida, in 1562.	The most important subtropical fruit. Cultivated in India, Japan, East India Islands, Mediterranean countries, Brazil, and Jamaica. In the United States commercial production limited to California and Florida, California leading in production.
1000	Long cultivated in West Indies. Now diffused in all tropical regions.	Valuable fruit. Extensively cultivated in tropical countries: not exported to any extent. The wild papaw, *Asimina triloba* of the southern United States, is an entirely different plant.
1200	Cultivated by Charlemagne. Introduced into England in 1548.	Widely grown in Europe and the United States as a flavoring plant and for garnishings, but relatively an unimportant vegetable.
2000	Cultivation developed in central and southern Europe during Middle Ages.	Limited cultivation as a winter vegetable in the United States and in Europe, but little used in comparison with the leading vegetables.
2000	Cultivation appears to have begun with the Romans and Greeks. Now widely grown in Europe, North America, and Asia as far east as India.	Valuable for food and forage. Grown on a large scale in Europe for the seeds used for food and to a limited extent for fodder; also much grown in Canada, but cultivation less important in the United States, where it is not as popular for food as the bean.
2000	Long cultivated in southern Europe and diffused by modern cultivation in western Asia.	Esteemed fodder plant, but if seeds are used for food in quantities, becomes dangerous to health. Cultivation mostly in Italy and Spain.
3800	Cultivated by Lake Dwellers of Bronze Age and by ancient Greeks. Mentioned by Theophrastus.	Highly prized garden vegetable. Cultivated in Europe, Asia, and the United States. Chiefly used as green vegetable, but also for fodder. Ranks seventh in acreage among minor vegetables in the United States. Canning green peas has now become an important industry.
4000	Cultivation prehistoric in China. Introduced among Greeks and Romans about 100.	Extensively cultivated in Europe and Asia and second only to the apple as an orchard fruit in the United States. California, Michigan, Georgia, and Texas lead in production.
1000	Ancient cultivation in South America. Found in ancient Peruvian tombs. Introduced into Africa about 1500. Important in the United States since 1866.	Now grown in all warm regions, and in the last 40 years has become important crop in the United States. Yield, about 12,000,000 bushels, of which Virginia, North Carolina, Georgia, and Alabama produce three fourths, ranking in order named. In this country crop is largely eaten as roasted peanuts, but in Europe quantities of peanut oil are produced.
4000	Prehistorically cultivated by Lake Dwellers of Bronze Age. Mentioned by Homer, Theophrastus, and Pliny.	Wide cultivation in temperate regions, but chiefly in France and the United States. Ranks fourth among American orchard fruits, being preceded by the apple, peach, and plum. Chiefly grown in California, New York, and Michigan.
2300	Long cultivated. Used as a medicine by Hippocrates 400 B. C. In Middle Ages was one of the most prized and costly spices.	The most commonly and widely used spice. Extensively cultivated in East and West Indies, Siam, and Malay Peninsula, whence millions of pounds are exported.
500	Early cultivation in the West Indies. Introduced into Europe in sixteenth century.	Also known as cayenne pepper or chili. Much grown in tropical Africa and America, but less generally used than black pepper.
150	Commercial cultivation for oil began in Surrey, England, about 1750. Now extended to the United States. Also cultivated in Japan.	Essential oil very widely used in flavoring, in making menthol, and in medicine. Grown in England and Japan, but chiefly in the United States, about one half of the commercial crop being produced in Michigan, mostly in St. Joseph county. Japan's crop is next in importance and is largely used in making menthol.
500	In cultivation at time of Spanish discovery in tropical America. Introduced in sixteenth century into India and Guinea; recently into Florida, California, and Hawaii.	Highly prized and increasingly popular subtropical fruit until recently important in greenhouse cultivation in Europe, but culture under glass now relatively unimportant, the markets being supplied from increasing outdoor plantations in the Azores, northern Africa, Queensland, Bahamas, West Indies, and Florida, the latter cultivating upwards of 14,000,000 plants. Sparingly grown in California and Hawaii.
1900	Long cultivated in western Asia. Introduced into Italy about 30.	Nut highly prized for flavoring and for oil. Cultivated in S. Europe and N. Africa.
2000	Extensively cultivated by the Romans. Mentioned by Pliny. The prune is a variety that produces fruit containing a high percentage of sugar, which can be dried without removing the skins or stones.	Extensive cultivation throughout temperate regions. Third most important orchard fruit in the United States, exceeding 8,000,000 bushels, California growing two thirds. All prunes produced in the United States grown in the Pacific States; first prune orchard planted at San José, California, in 1870. Many eastern plums are cultivated varieties of the native species, *Prunus americana*.
4000	Cultivated throughout historic time. Represented in ancient Assyrian and Egyptian sculptures. Introduced into China 150 B. C. Cultivated in the United States in Florida and California.	Widely cultivated and highly prized fruit in S. Europe, N. Africa, and India; sparingly grown in Florida and California.

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Poppy	*Papaver somniferum*	Poppy Family *Papaveraceae*	Annual	Mediterranean basin
Potato	*Solanum tuberosum*	Potato Family *Solanaceae*	Perennial	Mountains of Tropical America, Chile to Mexico
Prickly Pear	*Opuntia Ficus-indica*	Cactus Family *Cactaceae*	Small tree	Mexico
Pumpkin	*Cucurbita Pepo*	Gourd Family *Cucurbitaceae*	Annual	Temp. N. America
Purslane	*Portulaca oleracea*	Purslane Family *Portulacaceae*	Annual	Central and W. Asia, Greece
Quince	*Cydonia vulgaris*	Rose Family *Rosaceae*	Small tree	Persia, Asia Minor
Quinoa	*Chenopodium Quinoa*	Goosefoot Family *Chenopodiaceae*	Annual	Colombia, Peru
Radish	*Raphanus sativus*	Mustard Family *Cruciferae*	Annual	Temperate Asia
Rape	*Brassica Napus*	Mustard Family *Cruciferae*	Biennial	Europe
Raspberry (Black)	*Rubus occidentalis*	Rose Family *Rosaceae*	Small shrub	Eastern U. S., Canada
Raspberry (Red)	*Rubus idaeus*	Rose Family *Rosaceae*	Shrub	Temp. Europe, Asia
Rhubarb	*Rheum Rhaponticum*	Buckwheat Family *Polygonaceae*	Perennial	China
Rice	*Oryza sativa*	Grass Family *Gramineae*	Annual	India
Rye	*Secale cereale*	Grass Family *Gramineae*	Annual	Eastern Temperate Europe, north of the Danube
Safflower (see Carthamine)				

Years of Known Cultivation.	Historical Notes.	Economic Importance.
3000	Known to the Lake Dwellers. Used by Greeks and Romans. Mentioned by Homer.	Source of opium, which is the most important drug in commerce, and of poppy oil. Much cultivated, the Ganges region of India leading in production, but largely grown in China, Asiatic Turkey, and Egypt. Opium consumption greatest in China and Burma. Used in the United States and Europe chiefly in manufacture of morphine and codeine.
2000	Cultivation ancient in Peru. Widely diffused from Chile to Colombia at time of Spanish discovery but no evidences of culture in Mexico or by North American Indians. Introduced into what is now North Carolina and Virginia late in the sixteenth century. Brought to Europe first by the Spaniards early in the sixteenth century and to England by Sir Walter Raleigh in 1585.	Stands second only to corn as the most important contribution of America to the food plants of the world. Preëminently the most important vegetable grown in Europe and America. World crop enormous, exceeding 5,000,000,000 bushels; in bulk surpassing by about one half the world crop of wheat, corn, or oats. Germany, Russia, Austria-Hungary, France, the United States, and Great Britain chief producers in order named. Germany grows one third of the world crop, Russia one fifth. In the United States grown in every state and territory, also in Hawaii and Alaska.
500	Cultivated in Mexico before the Spanish conquest. One of first American plants taken to Old World. Introduced into S. Europe, Asia, and Africa. Now widely naturalized.	Grown for fruit in Mediterranean countries and Southwest Asia. Also used as hedge plant and as food plant for cochineal insect. The tuña, a closely related, perhaps identical, species, is highly valued for fruit in Mexico.
500	Cultivated by Indians at time of earliest discoveries in the United States.	Formerly much grown for table use in the United States, but now largely supplanted by improved varieties of squash. Still extensively planted, most frequently in corn fields, for stock feeding.
4000	Diffused in cultivation throughout the world since earliest times. Now extensively naturalized in the United States.	Cultivated as a pot herb in Europe. Is a common garden weed in the United States. Rarely used as a vegetable, though frequently fed to animals, particularly to pigs.
4000	Cultivation very ancient in W. Asia and in Greece. Mentioned by Plutarch and Pliny.	A minor orchard fruit not extensively grown though frequently used for flavoring, preserving, and jellies in Europe and the United States. Largest American orchards are in western New York.
1000	Extensive ancient cultivation in the Andean plateau, Colombia to Chile. Was staple food for natives of this region at date of Spanish conquest.	Meal made from seeds chief food of people inhabiting the high plateaus of Colombia, Peru, and Chile.
3000	Cultivated in gardens from China to Europe since ancient times. Mentioned in Chinese records 1100 B. C.	Cultivated in all temperate regions. Very common in gardens and universally used as table vegetable in the United States.
4000	Prehistoric cultivation in Europe.	Widely grown in Europe for oil from the seeds, for green manuring, and as green fodder for sheep. Sparingly grown in the United States for stock food.
75	Cultivation began in the United States in 1832. Now general in Eastern States.	Cultivated only in North America. The leading bush fruit of the United States and second only to the strawberry among small fruits. New York, Michigan, Ohio, and Pennsylvania, ranking in the order named, grow over one half of the total crop, which exceeds 75,000,000 quarts.
1000	Long and widely cultivated in northern Europe; sparingly in the United States.	Extensively cultivated in Europe. Both this species and a cultivated variety of the wild red raspberry (*Rubus idaeus* var. *aculeatissimus*) are widely grown in the United States, but production is small compared to that of the black raspberry.
2000	In Europe long grown as vegetable, foliage plant, and for medicinal properties of the root.	Generally grown in the United States as an early green vegetable. Cultivation, relatively, of minor importance.
5000	Mentioned in Chinese records dating back to 2800 B. C. Cultivation in S. United States began before 1700.	Grown in immense quantities in China, Japan, and India where it is the chief food, sustaining about one third of the human race; also grown in considerable quantities in S. Europe, Egypt, and the United States. Cultivation in the United States began in Georgia and the Carolinas in 1700. Louisiana now grows three fifths of the crop, South Carolina, Hawaii, and Georgia following in the order named.
2000	Least ancient of Old World cereals. Unknown to the ancient Greeks, but mentioned by Pliny. Cultivation probably did not antedate the Christian Era in Roman countries, but may have been more ancient in Russia and Thrace.	Fifth in importance among the great cereals; outranked only by wheat, corn, rice, and oats. Russia produces about one half of the world crop, Germany second, Austria third, altogether some seven eighths of the world crop. A leading food stuff in northern Europe; is made into "black bread." Unimportant crop in the United States, comprising in value only one per cent. of our cereals.

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Saffron	*Crocus sativus*	Iris Family *Iridaceae*	Perennial	Asia Minor, Greece, Italy
Sainfoin	*Onobrychis sativa*	Pea Family *Leguminosae*	Perennial	Temp. Eur., W. Asia south of Caspian Sea
Sapodilla	*Achras Sapota*	Sapodilla Family *Sapotaceae*	Tree	Cent. Am., W. Indies
Sea Kale	*Crambe maritima*	Mustard Family *Cruciferae*	Perennial	Western Europe
Sesame	*Sesamum indicum*	Bignonia Family *Bignoniaceae*	Annual	Sunda Islands
Sisal Hemp	*Agave sisalina*	Amaryllis Family *Amaryllidaceae*	Small tree	Mexico, Central Am.
Sorghum Cane	*Sorghum saccharatum*	Grass Family *Gramineae*	Annual	Tropical Africa
Spinach	*Spinacia oleracea*	Goosefoot Family *Chenopodiaceae*	Annual	Persia
Strawberry (American)	*Fragraria virginiana*	Rose Family *Rosaceae*	Perennial	N. E. U. S., Canada
Strawberry (Chilean)	*Fragraria chilensis*	Rose Family *Rosaceae*	Perennial	Chile, California
Strawberry (European)	*Fragraria vesca.*	Rose Family *Rosaceae*	Perennial	Temp. Eur., W. Asia, E. North America
Sugar Cane	*Saccharum officinarum*	Grass Family *Gramineae*	Annual	East Indies
Sumac	*Rhus Coriaria*	Sumac Family *Anacardiaceae*	Small tree	Mediterranean basin, Southwest Asia
Sunflower	*Helianthus annuus*	Sunflower Family *Compositae*	Annual	West Central U. S.
Sweet Potato	*Ipomaea Batatas*	Convolvulus Family *Convolvulaceae*	Perennial	Trop. Am. E. Ind. (?)

Years of Known Cultivation.	Historical Notes.	Economic Importance.
4000	Cultivation remotely ancient in W. Asia.	The dried flower parts furnish a dye widely used in coloring and flavoring confectionery. Now most extensively cultivated in Spain.
500	Cultivation appears to have begun in France about 1400.	Much cultivated in Europe for pasturage and hay. Almost unknown in the United States.
500	Cultivation antedates Spanish discovery in tropical America. Since much diffused in tropical regions of India and East India Islands.	Sub-acid fruit much used for desserts in West Indies and other tropical countries where it is cultivated.
200	Cultivation developed in Europe in the eighteenth century.	Blanched sprouts, similar to asparagus, highly prized in England, where it is a widely grown vegetable. Cultivation limited elsewhere.
4000	Cultivation very ancient in Sunda Islands. Introduced into India about 1000 B. C.; Egypt, about 500 B. C.; in Brazil before 1650.	Seeds used for food and yield oil used similarly to olive oil as a food and cosmetic. Much cultivated in tropical and subtropical countries of the Old World, particularly in India, China, Japan, Egypt, and Central Africa.
500	Long cultivated to limited extent in Mexico and Central America. Greatly increased in Yucatan during last 25 years.	Valuable coarse fiber plant. Cultivation an important industry in Mexico, particularly in Yucatan, and in Central America; greatly increased in recent years by extensive use of fiber in making binding twine for American harvesting machines.
4700	Anciently cultivated in Egypt, India, and China. Many varieties now grown throughout the world.	Extensively grown throughout the world, especially in China, India, Egypt, and central Africa, for seeds, syrup, and fodder. Long cultivation has developed several important varieties. These are the non-saccharine, embracing Kafir corn, dourra, rice corn, Jerusalem corn, and broom corn, grown for the seeds and fodder; and the saccharine, embracing the well-known sorghum canes, grown for syrup and fodder. Sorghum cane, broom corn, and Kafir corn are extensively grown in the United States. Syrup production reached maximum about 1880; has rapidly declined owing to introduction of glucose syrups made from corn. Tennessee, Kentucky, Missouri, and Arkansas lead in syrup production. Fodder production increasing notably in Kansas, Oklahoma, and semi-arid districts. (See *Broom Corn and Kafir Corn.*)
2000	Cultivation ancient in W. Asia. Brought into China by Chang-kien about 150 B. C. Introduced into Europe in fifteenth century.	Cultivated in Europe and America for young leaves used as greens. In wide use as a minor vegetable.
300	Introduced into England in 1629. The principal strawberry grown in the United States, where culture became important with introduction of Hovey's strawberry in 1834.	Most important small fruit of the United States; grown in every state and territory; annual yield upwards of 250,000,000 quarts, Maryland, Michigan, Ohio, New York, Tennessee, New Jersey, Illinois, and Missouri leading in production.
300	Introduced into France from Chile in 1715. Now much crossed with the American and the European strawberry in cultivation.	Pure species not much cultivated, but valuable crosses with the other cultivated species are in extensive cultivation in Europe and America. Grows wild west of the Cordilleras in Chile, also in California.
500	Cultivation began in fifteenth century. Now much crossed with preceding, forming new varieties.	Widely grown in gardens in England and N. Europe.
2000	Brought to Europe by Crusaders. Introduced into Brazil, Mexico, and West Indies, 1500-1550.	Until within 50 years the chief source of sugar, but now second to the sugar beet. In cultivation throughout tropical regions. Grown extensively in East and West Indies, Hawaii, Brazil, Argentina, Peru, Mexico, and Louisiana. Cuba, Java, Hawaii, and Louisiana lead in production, growing over one half of the world crop of cane sugar.
500	Cultivated in Spain, Italy, and Sicily for the leaves, which are used in tanning.	Leaves valuable in tanning, subserving the same use as tan bark. Cultivation increasing in southern Europe, particularly in Sicily. The leaves of wild American sumacs have been gathered for export in considerable quantities, particularly in Virginia.
500	In cultivation by the Indians, who used seeds for food and hair oil, at period of early discoveries. Introduced into Europe about 1550. Mentioned by Champlain in his travels, 1610.	Grown in Egypt, India, and particularly in southern Russia for seeds, yielding a valuable oil. Seeds fed to poultry, the seed cake to stock. Sparingly cultivated in the United States, except for ornament, although Illinois, Iowa, Indiana, and Arizona report small crops of seeds.
2000	Widely cultivated in tropical countries. Ancient in China and antedating Spanish discovery in West Indies.	Most important vegetable in tropical and subtropical countries, where it is extensively cultivated. Second only to the potato in the United States; widely grown in the South, Georgia, North Carolina, Alabama, South Carolina, and Tennessee producing over half of the total crop, which in acreage and value is about one fifth that of the potato

Common Name.	Scientific Name.	Plant Family.	Character.	Origin.
Taro	*Colocasia antiquorum*	Arum Family *Araceae*	Perennial	India, Polynesia
Tea	*Thea sinensis*	Camellia Family *Ternstroemiaceae*	Shrub	China, Assam, Manchuria
Timothy Grass	*Phleum pratense*	Grass Family *Gramineae*	Perennial	Europe
Tobacco	*Nicotiana Tabacum*	Potato Family *Solanaceae*	Annual	Ecuador, Peru, Colombia
Tomato	*Lycopersicum esculentum*	Potato Family *Solanaceae*	Annual	Peru
Turnip	*Brassica Rapa*	Mustard Family *Cruciferae*	Biennial	Europe
Vetch	*Vicia sativa*	Pea Family *Leguminosae*	Annual	Europe, Algeria
Watermelon	*Citrullus vulgaris*	Gourd Family *Cucurbitaceae*	Annual	Tropical Africa
Wheat	*Triticum vulgare*	Grass Family *Gramineae*	Annual	Euphrates region, Asia
Yam	*Dioscorea alata*	Yam Family *Dioscoreaceae*	Perennial	Tropical Africa, Pacific Islands

Introduced Plants. A well populated region, where agriculture is extensive, contains in addition to the surviving native plants, a large number which have been introduced in various ways from other parts of the world. The ships of modern commerce have taken the rat and the cockroach to every seaport, and likewise have transported many plants which have become established in the vegetation of new regions. An introduced plant which maintains itself permanently is said to be naturalized; if it survives only temporarily and locally it is called adventitious. Colonization and trade have diffused hundreds of the plants of Europe in other continents. In turn, Europe has received many foreign plants, and there is a continuous interchange between various regions of the world. Nearly all these widely distributed plants are herbs,—a large number being the field, garden, and wayside weeds that accompany agriculture everywhere. The number of introduced shrubs and trees which have become thoroughly naturalized is small. Some plants, like the English sparrow and European rabbit among animals, have become pestiferous after gaining a foothold in a new region, such as the Canada thistle, Russian thistle, and other troublesome weeds.

In that portion of the United States and Canada lying east of the northwest corner of Minnesota and extending south to Kansas and Tennessee, containing three fifths of the population and the most extensive agriculture of North America, about 4,000 species of flowering plants are found. Of these, 666, or almost exactly one sixth, are naturalized plants, mostly introduced from Europe, although many other regions have contributed. Consequently, the flora of this area has been enriched by the addition of one foreign to each five native species. No other region in North America contains so large a

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ORANGES AND CITRUS FRUITS

Orange Grove
Navel Oranges and Blossoms

Navel Orange Tree

Lemon Grove
Grape Fruit and Blossoms

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FRUITS AND NUTS

Apple
Cocoanut
Peach
Persimmon
Fig
Apricot
Pear
Banana

Years of Known Cultivation.	Historical Notes.	Economic Importance.
2000	Cultivation ancient in Polynesia. Reached China before 100 B. C. and long cultivated in India and Egypt. Mentioned by Pliny.	A leading food plant in the Pacific Islands, where it is widely cultivated. The starchy root is made into bread or poi.
4600	Mentioned in Chinese records dating 2700 B. C. Extensively grown in India since 1870. Experimentally grown in the southern United States.	Tea and coffee stand first among the world's beverage plants. Dried leaves produced in immense quantities for ages by cultivation in China and Japan. Cultivation becoming very extensive in India and Ceylon. Exports from India now exceed, and those from Ceylon almost equal, the export of China. Great Britain, Russia, and the United States chief consuming nations, England using about seven times as much tea as the United States, while the proportions are reversed in the consumption of coffee.
190 In U. S.	Named for Timothy Hanson, who introduced the seed in the Carolinas about 1720.	Most valuable cultivated grass in the United States; constitutes a large part of the hay crop in the North Central and North-eastern States.
2000	Almost universally used by Indians of North and South America since ancient times. Tobacco pipes abundant in Aztec tombs, also found among remains of the Mound Builders. Introduced into Europe by Oviedo about 1520. Cultivated by first colonists in Virginia.	Cultivation greatly diffused since Spanish discovery. The United States is the leading grower, production about equaling the total crop of Europe, which is mostly grown in Austria, Russia, Germany, and France. Cultivation, which began at first settlement of Jamestown, became great factor in growth of Virginia and Maryland. Kentucky, North Carolina, Virginia, Ohio, Tennessee, Wisconsin, Pennsylvania, and Connecticut lead in production. Cigars first made at South Windsor, Conn., in 1801; became commercially important after 1850. Use of tobacco now widespread among Oriental nations.
500	Cultivated in Peru at time of Spanish discovery. Formerly called "Love Apple" and considered poisonous, but during last century cultivation has become extensive in all temperate climates.	Highly prized and increasingly popular vegetable. Cultivation greatly enlarged in recent years by growth of the canning industry and locally is of much importance. Exceeded in acreage only by the watermelon and sweet corn among the minor vegetables. Crop exceeds 30,000,000 bushels, nearly half of which is grown in Maryland and New Jersey.
4000	Prehistoric in Europe, but not known to ancient Egyptians, Hebrews, or Chinese.	Much grown in England, northern Europe, and Canada for stock food. Widely, but sparingly, cultivated in the United States. Used extensively as table vegetable.
2000	In cultivation by the Romans at the time of Cato.	Valuable for seed and forage. Much cultivated in Europe, but rarely and not very successfully in the United States.
4000	Very anciently cultivated by Egyptians. Most extensive cultivation in the United States is in the Southern States; in Europe, in southern Russia.	The most popular melon in cultivation. Extensively grown in warm climates throughout the world, but most abundantly in S. Russia and the S. United States. Leads all minor vegetables in acreage, being surpassed only by the major vegetables potato and sweet potato. Texas, Georgia, North Carolina, and Missouri chief growers in the order named.
5000	Cultivation prehistoric in Asia. Grown by the Lake Dwellers, ancient Egyptians, and by the Chinese as early as 2700 B. C. Like maize, wheat is unknown in a wild state. Origin not established with certainty, but weight of evidence indicates the Euphrates region.	The most highly prized cereal in cultivation; the bread plant *par excellence* of western civilization. The world crop surpasses in value and commercial importance all other cereals, though the total yield in bushels is nearly the same as that of corn, oats, and rye. The leading wheat growing countries are the United States and Canada, Russia, France, India, Austria, Italy, Germany, and Argentina.
2000	Long cultivation in East Indies and Pacific islands. Now spread to many tropical countries.	The farinaceous roots, resembling but inferior to the sweet potato, are an important article of food in tropical Asia, Africa, and America, where it is much cultivated.

proportion of introduced plants. Of the naturalized plants, 89 are Compositae, including such common plants as the burdock, mayweed, ox-eye daisy, several thistles, and the dandelion; 66 are grasses, including foxtail grass, canary grass, beard grass, goose grass, darnel, cheat, and crab grass; 46 belong to the mustard family, containing peppergrass, shepherd's purse, mustards, and various cresses; 42 belong to the mint family, including hoarhound, motherwort, ground ivy, catnip, thyme, and various mints; 37 belong to the pulse or pea family, containing several clovers, sweet clovers, vetches, and vetchlings. A number of poisonous plants are included, among them celandine, foxglove, hellebore, henbane, jimson weed, and poison hemlock.

About four fifths of these introduced plants belong to twenty leading plant families, and this same group of families contains about two thirds of the native plants.

Native and Introduced Flowering Plants.

Northeastern United States and Canada.

Plant Family.	Native.	Introduced.	Total.
Borage Family	23	16	39
Buckwheat Family	43	14	57
Composite Family	430	89	519
Crowfoot Family	78	15	93
Ev'g Primrose Family	48	2	50
Figwort Family	86	29	115
Goosefoot Family	23	13	36
Grass Family	312	66	378
Heath Family	78	1	79
Lily Family	80	7	87
Mint Family	77	42	119
Mustard Family	56	46	102
Nightshade Family	19	14	33
Orchis Family	68	..	68
Parsley Family	57	20	77
Pea Family	145	37	182
Pink Family	37	33	70
Rose Family	183	33	216
Sedge Family	322	11	333
Violet Family	43	3	46
126 other families	1,090	175	1,265
Total	3,298	666	3,964

ANIMAL KINGDOM.

Table of the Principal Groups of Animals.

Protozoa The simplest animals		Rhizopoda { Foraminifera. Radiolaria.
		Flagellata.
		Infusoria.
		Gregarina.
Coelenterata Sponges, corals, and jellyfishes	Porifera	Spongiæ { Calcareous sponges. Siliceous sponges.
	Cnidaria	Anthozoa, coral polyps.
		Hydrozoa, hydroids and medusæ.
Echinodermata Crinoids, starfishes, and sea urchins	Pelmatozoa	Cystoidea, cystids.
		Crinoidea, stone lilies.
		Blastoidea, blastids.
	Asterozoa	Ophiuroidea, brittle-stars.
		Asterioidea, starfishes.
	Echinozoa	Echinoidea, sea urchins.
		Holothuroidea, sea cucumbers.
Vermes Worms		Platyhelminthes.
		Rotifera.
		Nemathelminthes.
		Gephyrea.
		Annelida, sea worms.
Molluscoidea Mollusk-like forms		Bryozoa, sea mosses.
		Brachiopoda, lamp shells.
Mollusca Mollusks		Pelecypoda, lamellibranchs, bivalves.
		Scaphopoda, tusk-shells.
		Amphineura, chiton.
		Gastropoda, univalves, snails.
		Cephalopoda, nautilus, cuttlefish.
Arthropoda Articulates	Branchiata	Crustacea
		Trilobita, trilobites.
		Gigantostraca, horseshoe crabs.
		Entomostraca, ostracoids, barnacles.
		Malacostraca, lobsters, crabs.
	Tracheata	Myriopoda, centipeds.
		Arachnoidea, spiders, scorpions.
		Insecta, insects.
Vertebrata		Cyclostomata, lampreys.
		Pisces, Fishes { Selachii, sharks. Holocephali, spook fishes. Dipnoi, lungfishes. Teleostomi, ganoids and teleosts, the common fishes.
		Amphibia, amphibians, batrachians.
		Reptilia, reptiles.
		Aves, birds.
		Mammalia or Mammals { Prototheria, monotremes. Metatheria, marsupials. Eutheria, placentals.

ZOOLOGY.

Zoölogy is the science of animal life. The study and knowledge of animals from different points of view give rise to special divisions of zoölogy. The study of their gross structure is Anatomy; of the form and origin of organs, Morphology; of the functions of organs, Physiology; of minute structure, Histology; of cell structure and development, Cytology; of classification, Taxonomy or Systematic Zoölogy; of extinct animals, Paleontology; of animals in relation to man, Economic Zoölogy. The study of certain groups of animals has been given special names: of mammals, Mammalogy; of birds, Ornithology; of reptiles, Herpetology; of fishes, Ichthyology; of insects, Entomology, etc.

Systematic Zoology or **Taxonomy** treats of the classification or orderly arrangement of animals according to their natural relationships. The animal kingdom is divided into great primary divisions called Branches or Phyla.

Branches are divided into Classes.
Classes are divided into Orders.
Orders are divided into Families.
Families are divided into Genera.
Genera are divided into Species.
Species are divided into Individuals.

Nomenclature is the naming of animals and the groups to which they belong so as to make the character of the animal and its place in nature clearly understood. Scientific nomenclature is concerned with the technical names uniformly used by scientists of all nations. The scientific name of an animal consists of two Latinized words. The first, the name of the genus, or the generic name, always begins with a capital letter; the second, the word denoting the species, or the specific name, is usually in the form of a Latin adjective, and begins with a small letter. For example: the scientific name of the puma, also called cougar, panther, and mountain lion, is *Felis concolor*—*Felis* being the Latin name of the cat, and *concolor*, a Latin adjective signifying uniform color. While this animal has many popular names in several languages, its name in scientific language is the same throughout the world. The further classification of the puma is as follows:—

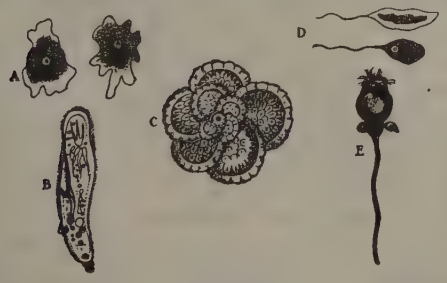
Branch: *Vertebrata*, Backboned animals.
Class: *Mammalia*, Mammals.
Order: *Carnivora*, Flesh-eaters.
Family: *Felidae*, Cat tribe.
Genus: *Felis*, True cats.
Species: *concolor*, uniformly colored.

A genus may contain many species or only one. There are numerous living species of

Felis, among which are the lion, *F. leo;* the tiger, *F. tigris;* the leopard, *F. pardalis;* and the jaguar, *F. onca*, but only one living species of giraffe, *Giraffa camelopardalis.* Likewise a family may consist of one or many genera, an order of one or many families, a class of one or several orders, and a branch of one or several classes.

Just as the buffalo is now disappearing, and as many species, such as the great auk, dodo, and quagga, have become extinct very recently, likewise not only an immense array of species, but whole genera, families, and orders of animals have perished in geologic times. A complete classification would include all of these. To approximate it is the vast task of paleontologists, who have already determined the relationships of thousands of fossil species. In general, the following outlines and descriptions take into account only living animals, and the classifications given are those usually followed by students of existent groups:—

Protozoa.—The lowest forms of animal life. They are all one-celled animals, and are usually of microscopic size. They move with a gliding motion, are constantly changing form, and have no organs or true tissues. Food is absorbed at all points of the surface, and is digested in all parts of the interior. The animals reproduce by self-division, one animal breaking up into two or more; or they multiply by spores or germs. The Rhizopoda (*ῥίζα, rhiza*, root, and *πούς pous*, foot), are the lowest class of Protozoa. They all have projections from the protoplasm, called pseudopodia. These projections are used both for locomotion and for taking food. The lower rhizopods have no shell or no constant shape. The only internal resemblance to organs are vacuoles. The rhizopods are grouped in two orders: the Foraminifera and the Radiolaria. The Foraminifera (*foramen*, a hole, and *ferre*, to bear) are distinguished by the form of their pseudopodia, which are long, and connected with one another in a beautiful network of proto-



PROTOZOA.

A. Amœba. *B.* Paramœcium. *C.* Globigerina. *D.* Euglena. *E.* Vorticella. All much magnified.

plasm. They have also a shell or "test" of calcium carbonate or silica, or made up of particles of sand, mud, sponge spicules, or other foreign matter glued together. The shells may be perforate or imperforate. The perforations, when present permit the pseudopodia to pass through. There are also one or more general openings in the shell to permit the body to come in contact with the surrounding water, from which food is drawn. They vary in size from microscopic up to one inch in diameter (the Nummulites). Though the shells are minute they have contributed to the building up of great deposits on the bed of the ocean, and have been important limestone builders in the past. There are four important families of Foraminifera: Gromidæ, Miliolidæ, Globiginidæ, and Nummulinidæ. Radiolaria, the second and higher group of rhizopodous Protozoa, are divided into 85 known families, comprising many thousands of species. They are distinguished from other Protozoa by complex and beautiful shells of silicon, and a peculiar membranous inner capsule. They supply food to countless minute crustaceans, which in turn feed fishes.

Coelenterata. This branch of the animal kingdom consists of the simplest groups of the many-celled animals or Metozoa, as distinguished from the one-celled animals or Protozoa. It

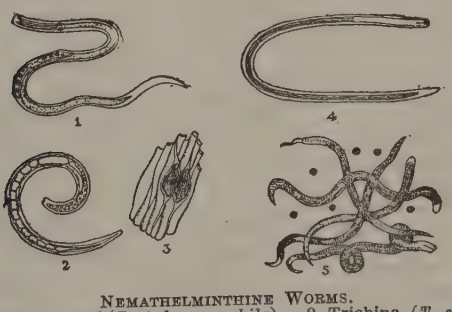
Red Coral. COELENTERATES. Sea Anemones.

includes two main groups, the Porifera, pore-bearing animals or sponges, and the Cnidaria, animals armed with stinging cells, corals, sea anemones, and hydroids. Some zoölogists consider the Porifera a distinct branch ranking between the Protozoa and the Cnidaria, which alone are regarded as the true Coelenterates. Sponges are usually attached like plants to rocks or similar substances and increase in size by a regular process of growth. The Cnidaria comprise the Anthozoa, or coral-polyps, and the Hydrozoa, or hydroids and medusae. The Anthozoa contain the sea anemones and all of the corals except the millepores. The name, Anthozoa, means flower animals in allusion to the arrangement of the rayed tentacles about the mouth in a form which suggests a composite flower. These tentacles vary in number from two to several hundred and are armed with batteries **of stinging** cells (*cnidae*). Sea anemones and most Cnidaria are gorgeously colored. The Hydrozoa (*ὕδωρ, hudor*, water, and *ζῷον, zoon*, animal) comprise the hydroids and medusae. The hydroids are noted for their delicacy and beauty. They live in communities or colonies; one group feeds the colony, another protects it, and a third is devoted to reproduction.

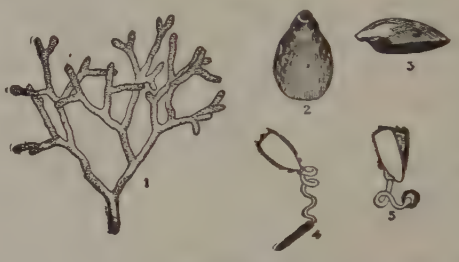
Echinodermata (*ἐχῖνος, echinos*, a hedgehog, and *δέρμα, derma*, the skin) are the highest group of radiate animals. They have a tough external covering, ranging from a leathery skin to a well-defined calcareous test. The radiating parts are usually five in number. Echinodermata are provided with a mouth, alimentary canal, and a digestive system. They move about by means of the tube-like feet with a sucking disc at the end by which they cling to rocks and draw themselves about. They are divided into three classes: the Pelmatozoa, the Asterozoa, and the Echinozoa. Pelmatozoa are with few exceptions

fixed to their dwelling places by stalks. They include the Cystoidea or cystids, the Crinoidea or stone-lilies, and the Blastoidea or blastids. The Cystoidea or cystids, and the Blastoidea or blastids, now extinct, were abundant in Paleozoic times. The Crinoidea or crinoids are flower-like in form. About 300 living species called sea lilies, and over 2,000 fossil species, called stone lilies, are known. The Asterozoa include the Ophiuroidea and the Asteroidea. The Ophiuroidea comprise the class of brittle stars or sand stars. They have a small, flat, roundish disc from which issue suddenly five slender, cylindrical arms. About 600 species are known. The Asteroidea are starfish. The body is five-sided and covered with short, small spines. The Echinozoa include the Echinoidea and the Holothuroidea. The Echinoidea include the sea urchins, cake urchins, sand dollars, and the heart urchins. The sea urchin has a spherical, heart-shaped or disc-shaped body covered with movable spines. The sand dollars have flat round bodies. The Holothuroidea are known as sea cucumbers, sea squirts, and sea slugs. The body is soft, worm-like in shape, and the mouth is surrounded by a circle of tentacles.

Vermes or Worms.—The animals in this group present so many differences of structure and habit that it is difficult to give in general terms a group of characteristics which will apply to all of this class. They have elongated bodies, no internal skeleton; both sides of a line drawn through the animal lengthwise are alike, and there are distinct dorsal and lateral sections. Nearly all have bodies composed of segments which are nearly alike. Almost all have powers of locomotion; they crawl; have not jointed or articulate legs, but fleshy, unjointed legs, or spines, or suckers, or bristles. Some are aquatic, some terrestrial, and some live as parasites in or on other animals. They are grouped as Platyhelminthes, Rotifera, Nemathelminthes, Gephyrea, and Annelida. The Platyhelminthes (*πλατύς, platys*, broad, and *ἕλμις, helmins*, worm), or flatworms, have no body cavity or blood system. The body is flat and often thin and leaf-like or ribbon-like. The fluke worm or fluke infesting the livers of ruminants, causing the destructive disease known as rot in sheep, and the tapeworms parasitic in the human body and in other animals, are well-known examples. The Rotifera (*rota*, a wheel, and *ferre*, to bear) or "wheel animalcules," are minute, often microscopic, and include the smallest of the many-celled animals. The Nemathelminthes (*νῆμα, nema*, a thread, and *ἕλμις, helmins*, a worm) are worms which do not occur in segmented form, have long, cylindrical bodies, and are known as "round worms." The skin is strong and often wrinkled. They are not known to possess any organs of special sense, except that of touch. All are parasitic except the marine forms and the paste and vinegar eels. The ascaris or roundworm and the pinworm (*Oxyurus vermiculatus*) infest the human intestines, and trichinæ, minute worms living in the muscles of the pig, when introduced into the human system cause the disease known as trichiniasis or trichinosis. The Gephyrea include many marine worms, once classed with the echinoderms as Apoda and Apedicellata. The Annelida or Annulata (*annulus*, a little ring) are composed of many segments or rings, have a head, and are covered with bristles or hairs which assist locomotion; the blood is generally red, but often green or yellow; they breathe by gills which, in some cases, open into the alimentary canal.



NEMATHELMINTHINE WORMS.
1. Vinegar Eel (*Leptodera oxophila*). 2. Trichina (*T. spiralis*). 3. Trichina encysted in muscle fibers. 4. Wheat worm or Smut worm (*Anguillula tritici*). 5. Human-blood Filaria (*F. sanguis-hominis*). All much magnified.



MOLLUSCOIDEA.
1. The Bryozoan Myriozoum. 2, 3. The Brachiopod Terebratulina, or Lamp-shell. 4, 5. The Brachiopod Lingula.

Molluscoidea. These are mollusk-like forms and include the Bryozoa or sea mosses and the Brachiopoda or lamp shells. The Bryozoa are minute marine animals growing in moss-like or coral-like colonies and secreting a calcareous zoarium. Each individual or zooid of the colony occupies a cell-like zoœcium. The mouth of each zooid is surrounded by a ring of tentacles known as the lophophore. There is no heart or circulating system; multiplication is by budding. English authorities call the group Polyzoa, but American authorities use the older term, Bryozoa. The Brachiopoda (*βραχίων, brachion*, arm, and *πούς, pous*, foot) have unequivalvate and equilateral bivalve shells. They have no organs of special sense; food, consisting of a number of floating organisms, is brought to the mouth by currents of water induced by the vibrations of cilia upon the two long spiral arms at the sides of the mouth, which also assist in respiration. Brachiopods adhere to solid bodies by a pedicel or by one of the valves of the shell. More than 4,000 species are known, of which 95 per cent. are extinct and known only in the fossil state.

Mollusca. The mollusks include the fresh-water mussels, clams, oysters, snails, slugs, cuttlefishes, squids, octopi, and all of the shellfish which have a one-valved shell. Instead of an internal bony skeleton, mollusks have a shell which both supports the soft tissues and pro-

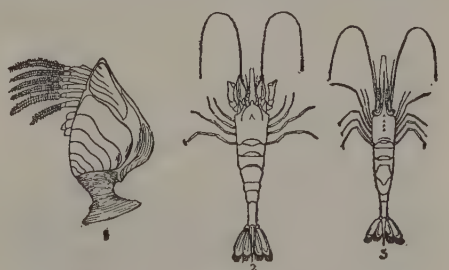
tects the delicate parts. The parts of a mollusk are the head, the trunk, a foot or muscular organ by which the animal moves about and burrows, and a mantle or tunic which enfolds the body and out of which the growth of the shell is produced. Shells are of two pieces, the bearers of which are called bivalves; or of one piece, univalves. Both land and water forms are known, but the latter are by far the more numerous. They feed on vegetable and animal matter. The order is divided into Pelecypoda (lamellibranchs and bivalves), Scaphopoda

Quahog Clam. Venus mercenaria. MOLLUSKS. Common Mussel. Mytilus edulis.

(tusk shells), Amphineura (chiton), Gastropoda (univalves, snails, etc.), and Cephalopoda (nautilus, cuttlefish). Pelecypoda (*πέλεκυς, pelekys*, ax, and *πούς pous*, foot) or Lamellibranchiata or Bivalves or Acephala or Conchifera: the shells of this group are of two pieces hinged together, such as those of oysters, clams, etc. The animals vary in size from that of the little fresh-water mollusk to that of the giant East Indian clam of three feet in length. Pelecypods have the senses of touch, smell, and hearing, while some have eyes. The ears are in the foot, and the eyes are either on the edges of the mantle or at the end of the siphon. The siphon is a double tube formed by the extension of the mantle posteriorly. One opening draws in water laden with minute animalcules, thus supplying food and at the same time oxygen-laden water for respiration by the gills; the other opening furnishes a passage through which the water depleted of its oxygen and food particles passes to the outside again.

The Scaphopoda (*σκάφη, scaphe*, a boat or bowl, and *πούς, pous*, foot) includes the tooth-shells or tusk-shells. They are common in deep water on muddy bottoms. They are shaped something like an elephant's tusk, and are open at each end. There are no head, eyes, or heart. The digging foot is small. The shells were used by the Indians on the Northwest coast as necklaces and other ornaments, and as "shell money," which they call *hi-qua*. The pieces of shell were ground down to a definite shape and carefully made. The Amphineura (*ἀμφί, amphi*, around, and *νεῦρον, neuron*, a nerve) are characterized by an arrangement of the nervous system, in which two lateral and two ventral nerve trunks are bound together and are furnished with ganglia throughout the entire length. The shell is either in eight pieces or absent. They are of small size and are found in the warmer seas. The chitons have an eight-piece shell, and can roll themselves up in balls for protection. They cling to rocks and adhere despite the heaviest surf. Over 200 species are known. The Gastropoda (*γαστήρ, gaster*, the stomach, and *πούς pous*, foot) include snails, slugs, limpets, periwinkles, whelks, and many other one-shelled or one-valved shell mollusks. They are by far the largest division of the Mollusca. They all move about by the pulling or pushing force of a single foot. Breathing is carried on in some by a single gill; in others, by a pair of gills; and in still others, by lungs. The head bears tentacles, on the tips of which are the eyes. In some cases the eyes are upon a pair of stalks which can be thrust or drawn in at will. The shells are in many cases beautifully marked and colored. The mode of breathing is made the basis of further classification. The Cephalopoda (*κεφαλή, kephale*, head, and *πούς, pous*, foot) are the highest group of mollusks. They have a circle of fleshy arms around the mouth in front of the head. These arms are tentacles or "feet." By these they catch and hold their prey and also creep about. Cephalopods can swim rapidly forward or backward, which they accomplish by ejecting spurts of water, and thus propel themselves. Only the nautilus has an external shell. The octopods or octopi have eight tentacles or arms around the mouth. They are often called "devilfish."

Arthropoda.—The Arthropoda (*ἄρθον, arthron*, a joint, and *πούς, pous*, a foot) include all of the invertebrates having jointed appendages. There are more species in this than in any other branch of the animal kingdom. The bodies consist of segments or rings covered with an outer body wall or hardened cuticle, called the exoskeleton. The eyes of all arthropods are compound, made up of a number of small eyes. The divisions are: **Crustacea** (trilobites, horseshoe crabs, ostracodes, barnacles, lobsters, and crabs), **Myriapoda** (centipeds), **Arachnoidea** (spiders and scorpions), and **Insecta** (insects). The **Crustacea** (*crusta*, a shell) include lobsters, crabs, crawfish, shrimps, prawns, barnacles, etc. All live in water, though a few are met with in damp places, such as the wood



CRUSTACEANS.
1. Barnacle. 2. Shrimp. 3. Prawn.

lice and water bugs. The crustaceans have gills and two pairs of antennæ or feelers. Sea spiders are a form of Crustacea having a long slender body with eight very long legs. They live at great depths of the sea. Lobsters, crabs, and shrimps have five pairs of legs, the first usually developed as pincers. The **Myriapoda** (*μυρίος, myrios*, numberless, and *πούς, pous*, foot) include centipeds, and millipeds or thousand-legged worms. These are land animals and breathe like insects through minute openings on each side of the body along its entire length. The **Arachnoidea** or **Arachnida** (*ἀράχνη, arachne*, a spider) include the mites, scorpions, and spiders. The head and thorax

are more or less united into one part, the cephalothorax; there are four pairs of legs borne by the thorax, no antennæ, their place being taken by the jaws. The eyes are simple and vary from two to twelve. In the case of spiders, the spinnerets are borne on the abdomen. The scorpions have poison-glands and a sting in the abdomen. The mites are the lowest of the articulated animals. They are usually parasites, living upon the bodies, under the skin, of higher animals. Spiders have a round abdomen attached by a slight stem to the cephalothorax. Their mandibles or jaws are powerful hooked fangs connected with a poison gland in the head, from which a poison exudes that is strong enough to kill flies and other insects, but is not, except in the case of one species (*Latroductus*) fatal to man.

Insecta (*insectum*, cut in two) are the most numerous of all groups of land animals. The most conservative estimate of the number of species of insects places this number at 5,000,000, while Riley, the famous entomologist, placed the number of species at 10,000,000. An insect is a member of the six-legged arthropods. The term is loosely applied in popular use to everything that is of the nature of a small crawling creature. But the term does not include even spiders, centipeds, or "thousand-leggers."

One very generally accepted classification divides insects into nineteen groups or orders:—

Thysanura, springtails and bristletails.
Ephemerida, May flies.
Odonata, dragon flies.
Plecoptera, stone flies.
Isoptera, white ants.
Corrodentia, psocids and book lice.
Mallophaga, bird lice.
Euplexoptera, earwigs.
Orthoptera, grasshoppers, crickets, etc.
Physopoda, thrips.
Hemiptera, true bugs, plant lice, scale insects.
Neuroptera, aphis lions, ant lions, etc.
Mecoptera, scorpion flies.
Tricoptera, caddice flies.
Lepidoptera, butterflies and moths.
Diptera, true flies.
Siphonaptera, fleas.
Coleoptera, beetles.
Hymenoptera, bees, wasps, ants, etc.

Another mode of classification of insects is that given by Dr. Sharp in the Cambridge Natural History Series (1901) in nine orders:—

1. *Aptera*, wingless insects.
2. *Orthoptera*, locusts, grasshoppers, crickets.
3. *Neuroptera*, dragon flies, June flies, caddice flies.
4. *Hymenoptera*, ants, bees, wasps, sawflies.
5. *Coleoptera*, beetles.
6. *Lepidoptera*, butterflies, moths.
7. *Diptera*, true flies.
8. *Thysanoptera*, thrips.
9. *Hemiptera*, bugs, cicadas, aphids.

FISHES or PISCES.

The class Fishes comprises the lowest grand division of the vertebrates and certain primitive and degenerate forms standing below the true vertebrates, the whole grouped in six subclasses according to the following table based on Jordan's classification:—

Subclass.	
PROTOCHORDATA.	
Enteropneusta	Balanoglossus.
Tunicata	Larvacea. Ascidiacea. Thaliacea.
VERTEBRATA.	
Leptocardii	Branchiostomidae: Lancelets.
Cyclostomi	Hyperotreti: Borers: hagfishes. Hyperoartii: Lampreys.
Elasmobranchi	Selachii: Sharks, rays, sawfishes. Holocephali: Chimæras.
Teleostomi	Crossopterygii: Bechirs. Dipneusti: Sirenoidea, barramundas. Actinopterygii: Ganoidei (Ganoids): Sturgeons, garpikes. Teleostei (Bony fishes): Salmon, perch, codfish.

Enteropneusta and **Tunicata** are unimportant groups of the fishes. The Enteropneusta strongly resemble worms and have no familiar names. "Sea squirts," "sea pears," and "sea peaches" describe some of the Tunicata.

Leptocardii or **Lancelets** have the simplest of vertebrate characters: a notochord, but no skull, no limbs, and no vertebræ; the heart only a long tube with the power of contracting and expanding; blood colorless, no brain; and respiration carried on by gill slits. They are from one half an inch to four inches long and lie buried in sand and mud at the bottom of shallow waters. They are very important to the scientist for the study of the development of the vertebrates from lower forms.

Cyclostomi or **Lampreys** have a brain, skull, heart, and other organs, which mark a long step in the development of vertebrate animals. Both the hagfishes and the lampreys are parasitic upon other fishes.

Elasmobranchii or **Shark-like Fishes** have pairs of fins, a lower jaw, teeth, separate vertebræ, gill arches and a covering of scales—all structures which are not found in any of the lower fishes. The skeleton is not bony but cartilaginous so that the whole body is very flexible. There are two groups, the Selachii, sharks and skates, and the Holocephali, chimæras. Sharks are the earliest fishes found among fossils. There are about 150 known species of sharks and this group includes also the rays and skates. The chimæras are a small group of ugly looking fishes sometimes called sea cats.

Teleostomi or **True Fishes** have a more or less complete bony skeleton, and include all of the higher forms of the three great primary divisions. The Crossopterygians, fringe-finned fishes, and the Dipneusti, lungfishes, are nearly all extinct and are of paleontological interest. The Actinopterygii include all fishes with fin jaws and fish fins, and comprise the Ganoidei, ganoids, and the Teleostei, bony fishes.

Ganoidei, Ganoids. In most ganoids the skeleton is cartilaginous, and in some it is very primitive in development. The body is covered with horny, enameled plates, and angular, shining scales. The number of living ganoids is small and their relationships puzzling.

Teleostei or **Bony Fishes** comprise all of the most highly developed fishes, embracing some 10,000 species. The skeleton is almost entirely bony, and there are many specializations

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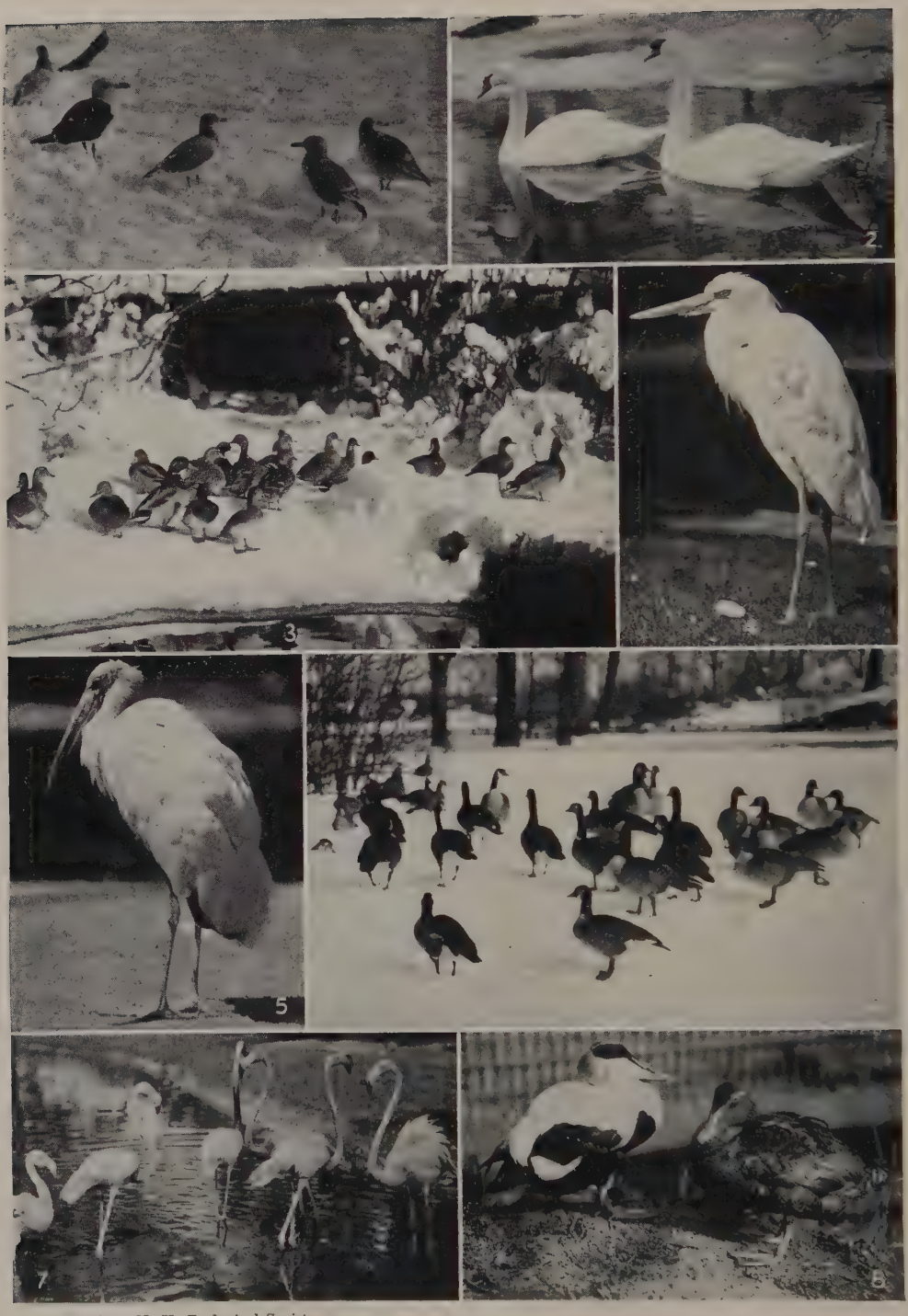
PLANT LIFE

1 Tobacco drying, Cuba. 2 Tobacco field. 3 Lilies (lilium candideum). 4 Tobacco. 5 Hedge (picea-excelsa). 6 Pineapple field. 7 Hydrangea (olaksa). 8 Fern (aspidium-felix-mas).



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WATER FOWL

1 Common Sea Gulls
2 Mute Swans
3 Mallard Ducks
4 Great White Heron
5 American Wood Ibis
6 Canada Geese
7 American Flamingoes
8 Eider Ducks

structure not found in the lower groups. The infinite variety of detail in structure divides this vast assemblage into many orders of very unequal size and value. Their relationships are extremely diverse and cannot be correctly indicated in a linear series.

AMPHIBIANS or AMPHIBIA.

This class is an interesting link between Fishes and Reptiles. It was formerly called Batrachians, but the name Amphibia has now come into more general use. But all amphibian animals are not Amphibia; for the seal and walrus, though equally at home on land or sea, are of a much higher class.

All Amphibians, like Fishes and Reptiles, are cold-blooded—that is, they adapt the temperature of the body to that of their surroundings. On this account they are able to endure extremes of heat and cold in a remarkable degree. They can withstand the solid freezing of the water of a marsh or pond, but do not so well bear the higher temperatures.

There are wonderful combinations of gills, lungs, and fins and legs in this class, affording interesting study in evolution, but this great diversity makes classification difficult.

Amphibians thrive in warm regions, being most numerous in tropical America and India; none occur in polar regions. There are about 1,000 existing species, of which about 100 are Tailed Amphibians (*Urodela*); some 60 of these are American, 40 are Coecilians (*Apoda*) mostly of tropical America, and the remainder are Tailless Amphibians (*Salientia*), Frogs, and Toads widely distributed throughout the world.

REPTILES or REPTILIA.

Reptiles are air-breathing vertebrates, with limbs generally ending in claws, and bodies usually protected by plates or horny scales. They are cold-blooded, breathe by lungs; some live on land and some in water; the latter come to the surface to breathe. The class includes turtles, snakes, lizards, crocodiles, etc. The three orders of living Reptiles are:—

Chelonia. Turtles, Tortoises, and Terrapins.
Crocodilia. Crocodiles, Alligators, Gavials.
Squamata. Lizards and Snakes.

Of the numerous species found in North America, there are 44 Turtles and Tortoises, 2 Crocodilians, 97 Lizards, and 111 Snakes.

Chelonia. Tortoises are strictly land animals; Terrapins are the edible, hard-shelled, fresh-water species, and Turtles is a name applied loosely to the entire order.

Crocodilia or Crocodilians. The two species of this order found in North America are the American Crocodile and the Alligator. There are about 23 species of crocodilians in the world, the largest of which are found in the Eastern Hemisphere.

Squamata or Lizards and Snakes. This is much the largest of the three living orders of reptiles grouped in two suborders, Lacertilia, Lizards, and Ophidia, Snakes, each embracing about 1,000 species, the North American representatives of which are classified in 11 families of lizards and 4 families of snakes.

BIRDS or AVES.

Birds were evolved from reptiles. The strongest evidence of this fact was the discovery among the lithographic slate of Solenhofen in Bavaria of the fossil remains of a reptile-like bird, the *Archaeopteryx lithographica*, which is the earliest known progenitor of the great class of Aves.

The birds of North America are classified into seventeen orders:—

Order I (*Pygopodes*)—Grebes, loons, and auks. Of the 30 species of grebes known, 6 are found in North America, 5 of the 5 species of loons, and 30 of the 30 known species of auks, murres, and puffins.

Order II (*Longipennes*)—Jaegers, skuas, gulls, and terns. Of the 6 known species of jaegers and skuas, all are found in North America, 40 of the 100 species of gulls and terns, and 1 of the 3 species of skimmers.

Order III (*Tubinares*)—Albatrosses, petrels, and fulmars. Four of the 10 species of albatrosses, and 30 of the 70 petrels and shearwaters are found in North America.

Order IV (*Steganopodes*)—Gannets, tropic birds, cormorants, and pelicans. Eight of the 8 gannets, 1 of the 4 darters, 10 of the 30 cormorants, 3 of the 12 pelicans, and 1 of the 2 frigate or man-o'-war birds are found in North America.

Order V (*Anseres*)—Ducks, geese, and swans. Sixty-five of the 200 known species are found in North America.

Order VI (*Odontoglossae*)—Flamingoes. Five of the 7 known species are North American.

Order VII (*Herodiones*)—Herons, storks, ibises, etc. One of the 6 spoonbills, 4 of the 30 ibises, 2 of the 25 storks, and 15 of the 75 herons and bitterns are found in North America.

Order VIII (*Paludicolae*)—Cranes, rails, etc. Three of the 18 cranes, 1 of the 2 courlans, and 15 of the 180 species of rails, gallinules, and coots are found in North America.

Order IX (*Limicolae*)—Phalaropes, snipes, plovers. All of the 3 phalaropes, 2 of the 11 avocets and stilts, 45 of the 100 snipes, sandpipers, 8 of the 100 plovers, and 3 of the 10 oyster catchers are found in North America.

Order X (*Gallinae*)—Turkeys, grouse, bobwhites, etc. Eighty-five of the 200 grouse and bobwhites, and 4 of the 90 pheasants are found in North America.

Order XI (*Columbae*)—Pigeons and doves. Of the 300 species, 12 are North American.

Order XII (*Raptores*)—Vultures, hawks, and owls. Three of the 8 vultures, 35 of the 350 falcons, hawks, and eagles, 1 of the 10 barn owls, and 20 of the 200 horned owls, hoot owls, etc., are found in North America.

Order XIII (*Psittaci*)—Parrots and paroquets. Only 1 of the 500 species of parrots, paroquets, and macaws is North American.

Order XIV (*Coccyges*)—Cuckoos and kingfishers. Thirty-five of the 175 cuckoos, and 8 of the 180 kingfishers are North American.

Order XV (*Pici*)—Woodpeckers. Twenty-five of the 350 woodpeckers are found in North America.

Order XVI (*Macrochires*)—Goatsuckers, swifts, and humming birds. Seven of the 85 nighthawks, 4 of the 75 swifts, 17 of the 500 humming birds are found in North America.

Order XVII (*Passeres*)—Perching birds, flycatchers, blackbirds, jays, orioles, sparrows, finches, swallows, vireos, warblers, wrens, thrushes, etc. Thirty-five of the 350 flycatchers, 2 of the 100 larks, 25 of the 200 crows and jays, 1 of the 200 starlings, 15 of the 150 blackbirds and orioles, 80 of the 550 finches and sparrows, 5 of the 350 tanagers, 10 of the 80 swallows, 2 of the 2 waxwings, 2 of the 200 shrikes, 15 of the 50 vireos, 70 of the 100 wood warblers, 3 of the 65 wagtails and pipits, 12 of the 200 thrashers and wrens, 79 of the 95 nuthatches and tits, 5 of the 122 warblers, kinglets, and gnatcatchers, and 12 of the 300 thrushes and bluebirds are found in North America.

From the foregoing number of species, given upon the authority of Frank M. Chapman of the Museum of Natural History in New York City, it would appear that the total number of species of birds found in North America is about 1,086. The total number of species in the world of those birds which are represented in North America is about 7,225. It is a fair estimate of the total number of species of birds in the world to place the figures at about 10,000.

MAMMALS or MAMMALIA.

While feathers are the distinctive badge of the great class of Birds, hair is characteristic of the Mammals. Even the young whales and some of the adults possess it. No other animals are provided with this covering. Mammals embrace about 3,300 species, and may be classified into 12 orders:—

1. **Primates** or **First Order**, including man, apes, and monkeys. About 260 species.
2. **Ferae, Carnivora** or **Flesh Eaters**, including cats, dogs, bears, weasels, sea lions, seals, walrus. About 300 species.
3. **Insectivora** or **Insect Eaters**, including moles and shrews. About 230 species.
4. **Cheiroptera** or **Wing-Handed Mammals**, including bats and flying foxes. Over 500 species.
5. **Glires, Rodentia** or **Gnawers**, including rats, squirrels, gophers, hares. About 1,400 species.
6. **Ungulata** or **Hoofed Mammals**, including cattle, deer, sheep, swine, tapirs. Over 300 species.
7. **Cetacea** or **Whales**, including whales, porpoises, dolphins. About 90 species.
8. **Sirenia or Sea Cows**, including only the manati and dugong; 2 species.
9. **Edentata** or **Toothless Mammals**, including armadillos, sloths, and ant-eaters, about 25 species.
10. **Effodientia or Diggers**, including only the pangolins and aardvarks, about 10 species.
11. **Marsupialia or Pouched Mammals**, including opossum, kangaroo. About 175 species.
12. **Monotremata or Egg Laying Mammals**, including the duckbill and echidna; 5 species.

DOMESTIC ANIMALS.

Origin.—The domestication of animals to provide food and for many of their most important uses was accomplished long before recorded history begins.

The subjugation and employment of wild creatures superior to himself in strength and speed was one of the supreme achievements of primitive man,—an acquisition of incalculable value in promoting his advance from savagery to civilization, ranking with the utilization of fire, the invention of tools, and the cultivation of plants among the great determining elements of human progress.

History.—Practically all domestic animals of primary importance appear to have been in age-long use at the dawn of history. This prehistoric period is indeterminable, but extends to a most remote antiquity. Parent wild species of the camel, sheep, and humped cattle seem to have perished from the earth before written history began, and the ancestry of the horse and dog is not positively referable to living forms.

In Egypt the most ancient monuments contain mummies of the cat, and delineations of the dog, goat, ox, goose, and pigeon occur in various sculptured records. The camel was also known, and less ancient monuments depict the horse.

In India monumental inscriptions and other records indicate a remotely ancient use of the horse, elephant, humped cattle, water buffalo, and a somewhat later introduction of the peacock, chicken, and cheetah.

In China the earliest records indicate the possession of domestic animals, among which were the pig, silkworm, duck, and cormorant.

In Switzerland remains of the dog, cat, horse, pig, goat, sheep, and ox have been found in the middens of the Lake Dwellers.

In Greece and **Rome** mention of the ox, sheep, horse, mule, pig, goat, dog, and goose occurs in Homer or in other early authors, while the pigeon, guinea fowl, peacock, and rabbit are recorded before the beginning of the Christian era.

In Peru mummies of the guinea pig and blankets woven of alpaca wool are found in the ancient tombs at Ancon.

Method of Distribution.—As Asia unquestionably was the cradle of the human race, the domestication of animals doubtless took place there. This achievement led to other conquests of nature, and in time to migrations of the primitive peoples from their focal areas of development. Such movements as the Aryan invasion of Europe undoubtedly brought with it the majority, if not all, of the animals then in use. The remains of the Lake Dwellers in Switzerland show that they possessed many of the most important. The wars between Assyria and Egypt, between Greece and Persia, Rome and Carthage, and the extension of Roman authority to northwest Europe, were important factors. The establishment of commercial relations with the western world by caravan through Bactriana by the Chinese, about 150 B. C., and continued for centuries, also greatly contributed. Mediæval land commerce between the Orient and Europe, and particularly the Crusades, completed the diffusion and exchange of useful animals, so that, at the beginning of the fifteenth century, the then civilized world, with a few minor exceptions, was in possession of the same economic animals as to-day, and distributed over the same area.

The establishment of the sea trade between western Europe and the Orient by way of the

Cape of Good Hope and the discovery, conquest, and settlement of the New World greatly extended the distribution of useful animals. During the past 400 years all of the most important domestic animals have been established in North and South America, in South Africa and Australia, a movement unparalleled in geographical range and economic significance in the history of the human race.

Order of Introduction. — Notwithstanding their comparatively small number, it is impossible to arrange domestic animals in the chronological order of their subjugation. As in case of cultivated plants, practically all economic species of the first rank have been in use upwards of 4,000 or 5,000 years. Age-long domestication of the dog, ox, humped cattle, sheep, goat, ass, horse, camel, elephant, cat, pigeon, goose, and honeybee is incontrovertible, but no evidence exists to determine beyond question which was first used.

It seems most probable that nearly all of these animals were first held in captivity by primitive peoples for surplus food supply, and that their other uses developed later. Among those which have come into use in the western world shortly before and since the beginning of the Christian era, but not belonging to the most ancient group, are: the chicken, which reached Greece and Rome from the East about 500 B. C.; the rabbit, brought from Spain to Rome during the period of the republic; the guinea fowl, brought to Rome from Africa about the same time; the swan, dating to the early Roman emperors; the carp, which had reached the Danube in the sixth century; and the water buffalo, which reached Italy at the same period. The Portuguese brought the canary to Europe about 1500; the turkey and guinea pig, from the New World, reached Europe in the sixteenth century, and the goldfish, which had been transferred by stages in ships trading with the Orient, reached England in 1691. From the foregoing it will be seen that no new domestic animals of great economic value have been developed during the last 2,000 years.

Zoological Rank.—The domestic animals of greatest value to man all belong to the highest groups, and are also, for the most part, if not invariably, the highest of their respective groups. Of the 41 more or less completely domesticated forms herein enumerated—37 vertebrates and 3 invertebrates—24 of the vertebrates belong to the highest class, mammals, and 12 to the next highest class, birds; 2 belong to the lowest class, fishes, while reptiles and amphibians are not represented.

Number of Species.—In comparison with the vast array of living wild species, the list of domestic animals bred for economic purposes is almost incredibly small. There are about 3,300 living mammals but only 23 are in domestication, or about 1 in each 150. There are upwards of 10,000 species of birds, of which only 12 are economically important, or about 1 in each 1,000 wild species. Of the great host of fishes, two only approach economic value, and of the hundreds of thousands of insects, only 3 attain economic significance, while the other groups of the animal kingdom are without representation. The total number which have become permanently valuable is about 40; over half of these are relatively unimportant, and only about 10 are of high economic value and world-wide use. This, of course, does not include merely captive animals, or those which have been temporarily or intermittently tamed, but embraces only those which are permanently established and economically important.

Geographical Distribution.—Not only were seven eighths of all domestic animals originally wild species of the Old World and first domesticated there, but this preponderant majority also includes every domestic species of preëminent rank and universal distribution.

Asia is by far the chief contributor, and, if physical instead of artificial boundaries be observed, then the list contributed by the natural continent of Asia and Europe, i. e., Eurasia, will be found to embrace three fourths of all, including practically every domestic species of the first order.

The preëminence of Asia is revealed by a mere catalogue of the native animals which have been domesticated within its confines. Six of the seven more or less completely domesticated species of cattle (*Bos*) viz.: the banteng, humped cattle, gaur, gayal, water buffalo, and yak, are distinctly Asiatic, while the seventh species, the ox, most important of all, originated from now extinct ancestors formerly wild in Europe and western Asia, and was doubtless first tamed by ancient Asiatic peoples. While the origin of the Arabian camel may be north African as well as west Asian, the Bactrian camel is clearly Asiatic, as is the horse, goat, domesticated elephant, cheetah, chicken, peacock, cormorant, honeybee, silkworm, carp, and goldfish.

Parent wild species of the pig, reindeer, goose, duck, and pigeon are of Eurasian distribution, and it is highly probable that the most ancient domestication of at least the pig, reindeer, and duck took place in Asia, and perhaps this is true of the goose and pigeon. While the parent species of the sheep is undetermined, its earliest domestic use was doubtless established in western Asia.

The vast continent of Africa with adjacent islands, possessing a rich and varied fauna, has contributed only a minor fraction,—the ass and cat alone being of high economic rank, while the guinea fowl, canary, parrot, and ostrich are relatively unimportant.

The contribution of the New World does not include a domestic animal of the first rank,—North America adding only the turkey and the cochineal insect, and South America the alpaca, llama, and guinea pig. The fauna of Australia has no representative in domestication.

Effects of Domestication.—Some animals have been profoundly modified in form, size, and habits, by domestication, such as the dog, sheep, pig, donkey, pigeon, and chicken, so that very numerous breeds, strains, or varieties have been developed. Many kinds of dogs are incapable of existence apart from human agency. The donkey does not run wild, and chickens are never found at a great distance from human habitations. Others have varied much in form and size, but are still capable of independent existence, such as the horse, goat, ox, cat, and goose, while a group like the cheetah, water buffalo, and swan are only partially domesticated, and but little altered by association with man.

Common and Scientific Name.	Order and Family.	Parent Wild Species and Region of Origin.	Years of Known Domestication.
Alpaca (*Lama pacos*)	*Ungulata* (Hoofed Mammals) *Camelidae* (Camels)	The Guanaco (*Lama guanacus*) Andean region, Peru to Patagonia	1000
Ass Donkey Burro (*Equus asinus*)	*Ungulata* (Hoofed Mammals) *Equidae* (Horses)	Wild Ass (*Equus asinus*) Northern Africa, Abyssinia	5000
Banteng (Javan Ox) (*Bos sondaicus*)	*Ungulata* (Hoofed Mammals) *Bovidae* (Ox, Sheep, Goat)	Wild Banteng (*Bos sondaicus*) Burma, Malay Peninsula, Java, Borneo, Bali	Data uncertain
Bee, Honey (*Apis mellifica*)	*Hymenoptera* (Ants, Bees, Wasps) *Apidae* (Bees)	Unknown. Probably western Asia	5000
Camel (Arabian) (One humped) (*Camelus dromedarius*)	*Ungulata* (Hoofed Mammals) *Camelidae* (Camels)	No existing wild species, and none known to history Probably Arabia	5000
Camel (Bactrian) (Two humped) (*Camelus bactrianus*)	*Ungulata* (Hoofed Mammals) *Camelidae* (Camels)	None living or remembered Probably deserts of central Asia	5000
Canary (*Carduelis canaria*)	*Passeres* (Perching Birds) *Fringillidae* (Finches)	Wild Finch (*Carduelis canaria*) Canary Islands	400
Carp (*Cyprinus carpio*)	*Eventognathi* (Carp Tribe) *Cyprinidae* (Carp, Minnows)	Wild Carp (*Cyprinus carpio*) China	2000
Cat (*Felis domestica*)	*Carnivora* (Flesh-Eating Mammals) *Felidae* (Cats)	Present domestic form now believed to be a permanently established mixed strain derived from the Egyptian wild cat (*Felis caffra*) and the common wild cat (*Felis catus*), of central Europe and England. The ancient Egyptian cat was probably *F. caffra*	5000

Historical Notes.	Economic Importance.
Domestication by Peruvian Indians far antedates Spanish discovery. Blankets woven from alpaca wool have been found in ancient tombs dating back to the Incas. Alpaca wool was first exported to Europe in 1836.	Important in domestication in the Peruvian Andes, where it is raised in flocks for wool, which possesses a fiber of peculiar excellence, well adapted to many finer grades of cloth, so that it has become an important article of export. The alpaca does not acclimatize in other regions of the world, and all attempts to introduce and establish it as a wool-bearing animal in Europe and the United States have failed.
Probably first domesticated in the valley of the Nile. Long preceded the horse in ancient Egypt. Came into Greece by way of Asia Minor and Syria. Not common in early Greece. Mentioned only once in Homer's *Iliad*; not at all in the *Odyssey* nor in Hesiod, though Homer frequently mentions mules. The ass accompanied the spread of vine and olive culture through Italy and Spain to France. Known in England in reign of Ethelred; reintroduced during reign of Elizabeth. Brought to Mexico and South America by the Spaniards.	A most valuable beast of burden, particularly in subtropical, dry, and mountainous regions. It is invaluable for mountain transportation in Spain, Italy, southern France, Mexico, South America, and in arid mining regions of the western United States. It does not thrive in cold or damp regions, and is not suited to the climate of the eastern United States. Varies greatly in size, from dwarf forms only 20 to 30 inches high in the West Indies to fine Spanish and American breeds 16 hands high. The burro, used almost exclusively as a pack animal by miners and prospectors in the mountain regions of the Western States, is a small form.
Long tamed and esteemed by native peoples of Java and Bali, but historical references meager and period of domestication imperfectly known.	Large herds, forming considerable wealth, are kept by the Malays of Java and of Bali. In domestication the banteng freely intermixes with humped cattle, so that there are numerous intermediate strains.
Domestication dates back to the dawn of history in the Mediterranean region, Syria, Greece, and Egypt. Spread through Europe by Romans. Introduced into America by early colonists.	Honey and beeswax have long been common articles of commerce in many countries, but were relatively much more important in ancient times before the introduction of sugar. In the United States over 700,000 farms, or one in every eight, keep a total of 4,000,000 swarms, valued at $10,000,000.
Subjugation and domestication prehistoric: probably by primitive man in Arabian and Saharan deserts. Well known in Egypt in 1300 B. C., though not recorded on their monuments. Mentioned by Diodorus, Strabo, and many ancient authors, and frequently in the Bible. Introduced into Italy in 1622, and into Texas, New Mexico, and Arizona by the United States government in 1856 and used by Confederates during the Civil War for carrying mails. The experiment, however, did not prove successful, though remnants of the herds persisted for some time in Arizona and California, and possibly a few may still survive in remote portions of the desert. Introduced into Australia in 1860.	For ages the most useful animal in domestication in the arid regions from northern India and lower Afghanistan, south through Arabia to the Red Sea and Somaliland, and westward throughout the Sudan deserts; invaluable as a beast of burden and as a means of travel, especially adapted to deserts. Its flesh is good food, the milk is excellent, and the hair is made into cloth and cordage. The more slender forms, called dromedaries, bred especially for speed, will traverse 100 miles or more of desert in a single day. Introduction in other countries unsuccessful, except in very dry regions. In southern Europe attempts were unsatisfactory on the whole, although the camel thrives in Spain. In Australia it has become valuable for interior expeditions, and since 1880 camel corps have been formed by European troops in the Sudan, and are a permanent branch of the Egyptian army.
Domestication in central Asia remotely ancient, but historical references are meager when compared to the wealth of allusion concerning the Arabian camel and the prominence given to it by the historians of antiquity. While the railway is replacing both species of camels wherever it penetrates the desert, these stolid beasts of burden have been factors of incalculable influence in founding commerce and promoting civilization in regions isolated by otherwise insuperable barriers of mountain and desert.	Equally valuable throughout central Asian deserts, from northern Turkestan to Mongolia, as the Arabian camel is in more southern climates, being especially adapted to rocky and cooler regions. It endures the fierce summer heat and the severe winter cold of the Tibetan plateau while bringing tea from Peking to Lake Baikal, and it hauls wagons over the lofty passes of the Hindu Kush across Afghanistan to Persia at all seasons. The ability of this animal to withstand terrible extremes of heat and cold, and to travel long distances without water, conditions absolutely unendurable by horses or cattle, made possible the establishment of the commerce which has existed for centuries between China and western Asia.
When the Portuguese conquered the Canary Islands in 1478, these finches, now called canaries, were taken to Spain in great numbers, and thence distributed throughout Europe. In size and color they have been greatly modified by domestication.	The use of canaries as cage song birds and household pets is much more extensive in Europe than in the United States. They are now found throughout the world wherever European colonization has been established. The rearing of canaries for the market has become an industry of considerable local importance in Germany, Belgium, Scotland, and northern England.
Long domesticated in China; reached eastern Europe early in Christian era: grown in France and Germany since the thirteenth century; established in the United States about 1870.	The only fish widely domesticated for food; now acclimatized throughout the world; very hardy and prolific but coarse fleshed and inferiorly flavored; very popular in Germany but sparingly in favor in the United States
Like the dog, was a member of the domestic circle when history began. Apparently first domesticated by the Egyptians, being depicted upon their first monuments. Held sacred and highly esteemed, mummies of cats being found coeval with the earliest human remains. Mentioned in Sanskrit manuscripts 2000 B. C., but not known to Chinese until about 500. Known to Europeans of the Bronze Age, but not generally known to the ancient Assyrians, Hebrews, or Greeks.	Reared and prized throughout the world as a household pet, and of true economic importance as an exterminator of rats, mice, and other small animal pests. Second only to the dog as a hearth animal, but far inferior to it in range of usefulness. It possesses intelligence of a high order, but has never developed or manifested so great an amount of attachment, affection, and devotion to man as the dog, although it becomes attached to places to a remarkable degree. It has been less modified by human agency than the dog, the varieties being rather few and the variations in size comparatively insignificant, and it readily returns to a wild or semi-wild state.

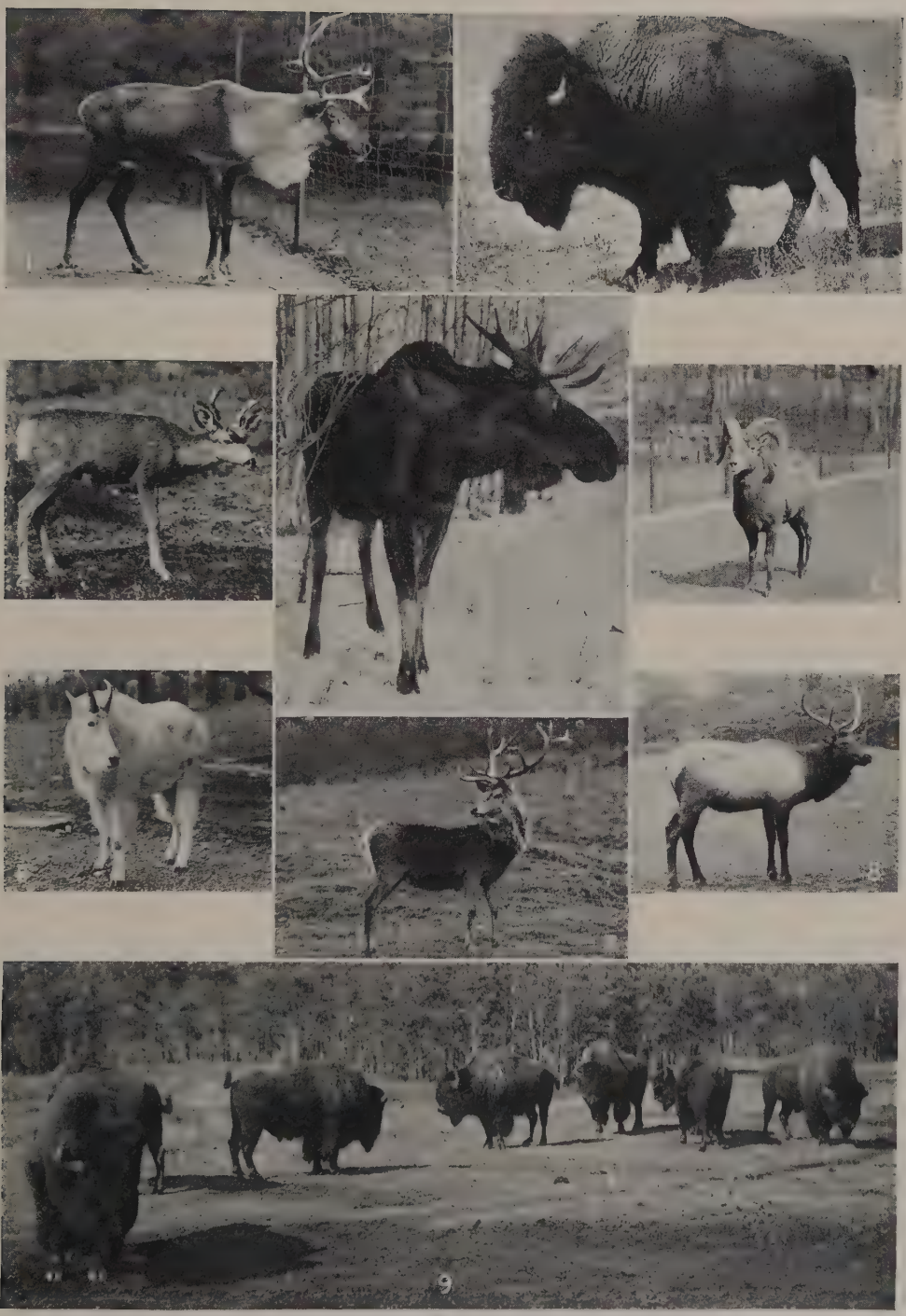
Common and Scientific Name.	Order and Family.	Parent Wild Species and Region of Origin.	Years of Known Domestication
Cheetah Hunting Leopard (*Cynaelurus jubatus*)	*Carnivora* (Flesh-Eating Mammals) *Felidae* (The Cat Tribe)	Hunting Leopard (*Cynaelurus jubatus*) India, Africa	4000
Cochineal (*Coccus cacti*)	*Hemiptera* (Bugs) *Coccidae* (Scale Bugs)	Scale Bugs (*Coccus cacti*) Mexico, Central America	400
Cormorant (*Phalacrocorax carbo*)	*Steganopodes* (Totipalmate Fishing Bird) *Phalacrocoracidae* (Cormorants)	Black cormorant (*Phalacrocorax carbo*) Europe, Asia, Africa	2000
Dog (*Canis familiaris*)	*Carnivora* (Flesh-Eating Mammals) *Canidae* (The Dog Tribe)	Unknown, probably indeterminable, but either from wolves or jackals, or from both together	5000
Duck (*Anas boschas*)	*Anseres* (Duck Tribe) *Anatidae* (Ducks)	Wild Mallard (*Anas boschas*) Europe, Asia, and North America	Data uncertain
Elephant (*Elephas indica*)	*Ungulata* (Hoofed Mammals) Suborder: *Proboscidea* Family: *Elephantidae*	Wild Elephant (*Elephas indica*) India and East India Islands	5000
Fowl, Domestic Cock, Hen Chicken (*Gallus domestica*)	*Gallinae* (Gallinaceous or Game Birds) *Phasianidae* (Pheasants)	Wild Jungle Fowl (*Gallus bankiva*) India, Cochin China, and Malay Islands	4000

Historical Notes.	Economic Importance.
Depicted on ancient Assyrian and Egyptian monuments. Anciently trained for hunting in India and established as a part of the royal state, the custom being maintained by many native princes at the present day. Brought to Europe by returning Crusaders, and flourished in France and Italy for about two hundred years.	This large cat-like animal, although about equal to the true leopard and the jaguar in size, does not share their tiger-like ferocity, but in disposition is more like a dog, and is readily tamed. While it occurs wild over large areas in Asia and Africa, its domestication, which is only partial, is now restricted to India, where its chief use is to hunt the black-buck, a species of antelope. Upon approaching within about 200 yards, the cheetah is unloosed, and, by a burst of its superior speed, which, for short distances, greatly exceeds that of a race horse or greyhound, and is probably greater than that of any other mammal, it overtakes and throttles the strongest buck within a few hundred yards.
Long grown in Mexico. In use as a dye when the Spanish under Cortes entered in 1519, and immediately introduced into Europe. Successfully naturalized in Mediterranean countries and in the Canary Islands. It feeds upon a species of prickly pear, *Opuntia coccinellifera*. The brilliant dye carmine, derived from the dried insect, was discovered by a Franciscan monk of Pisa and manufacture began in 1650.	Source of cochineal and carmine dyes; at one time exceedingly valuable, and stimulated culture of the insect in many dry, semi-tropical regions. Grown in Mexico, Central America, Java, Algeria, and the Canary Islands. Exported in considerable quantity from Honduras. The discovery of aniline dyes and the great extension of their use in the last quarter century have rendered the culture of cochineal unimportant except locally.
Trained to fish since ancient times by Chinese and Japanese. In Europe fishing with native cormorants began about 1625 in Holland, where it still prevails to some extent, whence it spread to England, where it was much used for a time and then abandoned. Now being revived to some extent as a sport in England.	While fishing with cormorants has been practically limited to the field of sport in Europe, the use of these birds, which are trained in great numbers, to catch fish for food in China and Japan, has long been of economic importance. A ring is placed about the neck of the bird so that the fish when caught is not swallowed, but simply pouched, and when removed the bird proceeds to catch another in the same way.
Domestication dates to primitive man, and far precedes the dawn of history; many important varieties being portrayed in the earliest sculptures. Ancient forms of the greyhound are pictured on Egyptian monuments dating to 3400 B. C., while the mastiffs, hounds, lapdogs, and turnspits carved in stone 4,000 years ago closely resemble the breeds of to-day. Remains found in the kitchen middens of Denmark, and in the lake dwellings of both the Stone Age and Bronze Age in Switzerland. Depicted on the oldest monuments in the valleys of the Euphrates and Indus, and worshiped as Anubis, the genius of the Nile, by ancient Egyptians. Mentioned in the Bible. Highly prized by the Greeks and Romans.	The most intelligent, affectionate, and devoted of domestic animals; in use by all peoples, and accompanying man throughout a wider range than any other animal, greatly exceeding the cat, donkey, or horse in this respect; varying in adaptation to climate from the hairless forms of the tropics to the heavily fur-coated Eskimo breeds, and in size from tiny lapdogs no larger than kittens to great Danes standing three feet high at the shoulder, thus presenting forms which are at once larger and smaller than any wild member of the dog tribe, there being some 200 varieties which have resulted from the intercrossing of about six leading types, namely: wolf-like dogs, greyhounds, spaniels, hounds, mastiffs, and terriers. Exceedingly susceptible to human influence; bred and trained for an infinite variety of purposes, from merely curious and pampered household pets to powerful hunters and even beasts of burden, providing food for some peoples and sharing with the reindeer the labor of transportation in Arctic regions. Most varieties have become so modified by domestication that they are unable to sustain themselves independently of man.
Domestication ancient, but evidence scanty and indefinite. The white or Pekin duck was introduced into the United States from China in 1870.	Duck raising extensive in Europe both for flesh and eggs, which are more generally used than in the United States. In eastern Asia, notably in China, ducks are grown in enormous numbers. Duck raising has become a profitable industry in the United States, particularly since the introduction of the Pekin duck.
Very anciently tamed in India, there being over 100 different names for the elephant in Sanskrit. Earliest use was in war, and they were first made known in Europe through employment in military operations. Alexander the Great captured 15 at the battle of Arbela. Pyrrhus led elephants against the Romans. In the Punic wars the Carthaginians used the African elephant, 37 of them crossing the Alps with Hannibal's army. The ancient Egyptians knew both species, though the African elephant is the only one depicted on Egyptian and Assyrian monuments. At the battle of Raphia, 217 B. C., 73 African elephants fought disastrously against 104 Asiatic. Domestication for draught and baggage animals now limited to India and the East India islands.	The largest and, when properly trained, the most docile of domestic animals, exhibiting a high degree of intelligence, which is often overestimated on account of a remarkable willingness to obey instructions; endowed with unusual powers of memory and becoming greatly attached to its keepers. However, it lacks initiative and reasoning powers, being far inferior to the dog in this regard. It will not voluntarily go to the assistance of a human friend in trouble, or to the rescue of its own master even when attacked at its feet, though it will act instantly when directed. It is also helpless in the face of a new danger or unexpected emergency. A most valuable draught and baggage animal, employed in hauling and handling timbers and in transporting heavy loads over rough ground in the absence of roads in India and the East India Islands. The largest specimens, particularly those with long tusks, are considered of high caste, and are kept for state pageants.
Ancient domestication in India, but not figured on Egyptian monuments or mentioned in the Old Testament. Apparently reached Europe in a domesticated state about 500 B. C. Caesar found it in Britain upon his arrival. It is now diffused throughout the world, except in polar regions, accompanying man throughout a wider range than any other bird, and ranking with the dog, cat, donkey, horse, ox, sheep, and pig among the most universal companions of man.	The most thoroughly domesticated, widely distributed, and generally useful of birds, being readily adaptive to a wide range of climatic and food conditions and consequently more easily reared than any other fowl. Greatly modified by ages of breeding in many lands into numerous races which exhibit wide variations in size, form, and color, from diminutive Bantams to giant Brahmas nearly as large as a turkey, and from pure white to pure black breeds, with numberless intergrades, together with red, brown, and vari-colored races. On account of immense numbers their aggregate value for food and eggs reaches a vast total, ranking high among the animal productions of the world.

Common and Scientific Name.	Order and Family.	Parent Wild Species and Region of Origin.	Years of Known Domestication
Gaur (*Bos gaurus*)	*Ungulata* (Hoofed Mammals) *Bovidae* (Ox, Sheep, Goat)	Wild Gaur (*Bos gaurus*) India	Data uncertain
Gayal Mithian (*Bos frontalis*)	*Ungulata* (Hoofed Mammals) *Bovidae* (Ox, Sheep, Goats)	Wild Gayal (*Bos frontalis*) Northeastern India	Data uncertain
Goat (*Capra hircus*)	*Ungulata* (Hoofed Mammals) *Bovidae* (Oxen, Sheep, Goats)	Benzoar goat or Persian pasang (*Capra aegagrus*) As main stock Greece to Persia, Afghanistan, and western India	5000
Goldfish Golden Carp (*Carassius auratus*)	*Eventognathi* (Carp Tribe) *Cyprinidae* (Carp Minnow)	Wild Carp (*Carassius auratus*) Fresh water China, Azores, Madeira, St. Helena, Java, and the Philippines	1400
Guinea Fowl (*Numida meleagris*)	*Gallinae* (Gallinaceous or Game Birds) *Phasianidae* (Pheasants)	Wild Fowl of Guinea (*Numida meleagris*) Western Africa	2500
Guinea Pig (*Cavia cutleri*)	*Rodentia* (Rodents) *Caviidae* (Cavies)	Wild Cavia (*Cavia cutleri*) Peru	1000
Goose (*Anser domesticus*)	*Anseres* (Duck Tribe) *Anatidae* (Ducks, Geese)	Wild Goose (*Anser ferus*) Central Europe Asia and north Africa	5000
Humped Cattle Indian Ox Zebu (*Bos indicus*)	*Ungulata* (Hoofed Mammals) *Bovidae* (Ox, Sheep, Goats)	No known wild form Probably southeastern Asia	5000

Historical Notes.	Economic Importance.
Tamed by the hill tribes of northeastern India, but historical data as to when this domestication began are wanting.	The domestication of this magnificent wild ox, the handsomest representative of the genus Bos, is only partial and is confined to native tribes inhabiting a limited area in northeastern India, who keep it in herds for its flesh.
In semi-domestication by native tribes of northeastern India evidently for a considerable period of time, but definite historical data are unavailable.	Kept in large herds for food by the peoples of the hill regions of northeastern India; not employed as a beast of burden and probably no attempt is made to use its milk.
Domesticated by the ancient Egyptians and by prehistoric Lake Dwellers in Switzerland. Figured on ancient monuments in Egypt; mentioned in the Bible. Ages of domestic breeding have developed numerous varieties, the chief of which are the Angora, Kashmir, Syrian, Egyptian, and Sudan goats. Domestic goats have run wild in many regions, sometimes mixing with other species. According to Garcilasso, goats were brought to Peru from Spain in 1544.	Valuable for flesh, milk, wool, and skins, particularly in warm, dry regions, the greater part of the world's goats being grown in southern Europe, northern Africa, and Syria. The fleece of the Angora goat is called mohair and is much used in fabrics. The fine underwool combed in summer from Kashmir goats is woven into the well-known Kashmir shawls. Goat's leather is employed for innumerable uses, some of the chief of which are glove making, shoemaking, and bookbinding. In the United States goats have never attained importance as farm animals. The Angora goat introduced in 1849 by gift of the sultan of Turkey was little bred or noticed for fifty years. Since 1900 numerous flocks have been established in the Pacific States, notably in Oregon, and considerable numbers have been raised in Iowa and Missouri.
First domesticated in China, Basilewsky placing the date of their development in Chinese springs about 450. After the establishment of maritime trade with western Europe goldfish were transported first to Batavia, thence to Mauritius and St. Helena, and were brought from St. Helena to England in 1691. Now domesticated and naturalized in many parts of the world. The golden color is the result of artificial selection. Those which have become naturalized in the Potomac river have assumed an olive-green color similar to that of the parent wild species.	The most widely distributed ornamental fish, being more highly prized and more extensively used for aquariums than any other species. No fish available for like purposes equals it in beauty and the ease with which it may be reared and maintained. Like other merely ornamental animals it does not attain economic importance, although the rearing and handling of goldfish is a matter of considerable consequence in the trade of aquarium furnishers, and dealers in small animals.
Domesticated by Greeks and Romans. Disappeared with the fall of Roman civilization and was reintroduced from Africa by the Portuguese in the sixteenth century. It was first taken to the Cape Verde Islands and West Indies and thence slowly spread to Europe and around the world.	Valuable for food and eggs, but not popular in Europe or America on account of their constant noisy cries, and the difficulty experienced in rearing them. Originating from a wild species accustomed to very dry regions, the domesticated forms cannot endure wet situations or moist climate, rendering unusual precautions necessary for the protection of the young chicks.
Domestication in Peru long antedates the period of Spanish conquest. Mummies of the guinea pig have been found in the ancient tombs at Ancon. Since the Spanish occupation of South American countries it has become widely distributed in other parts of the world, being introduced into Europe by the Dutch during the sixteenth century. The name guinea pig is a double misnomer. It is not a pig but a rabbit-like rodent related to the rats; neither does it come from Guinea, but is exclusively South American. However, Guinea is probably a corruption of Guiana, and the peculiar grunting sound emitted by it undoubtedly gave rise to the name pig.	According to Nehring the ancient Peruvians used this animal not only for food but for sacrifices. It is now eaten for food from Ecuador to Chile, especially in Peru, and it is sometimes made use of for food in Europe. This animal has been apparently but little modified by domestication. Its intelligence is limited, being stupid and manifesting no affection. However, it never bites, and on that account has long been kept as a safe pet for children, both in Europe and in the United States. It is immensely prolific and easy to rear. Now extensively employed in biological laboratories for experimental purposes, particularly in the study of germ diseases.
Domestication very ancient in Egypt and Asia. Figured on oldest Egyptian monuments. Known to Greeks of Homer's time, and the geese kept in the Capitol are said to have saved Rome. Great herds of geese were driven from central Europe to the ancient Roman markets. The goose has been but slightly changed from the parent wild stock by domestication.	Valuable for eggs, quills, feathers, and for food. In southern Europe culture was formerly much more important, but it is still a great industry in Holland and Germany. Livers from geese artificially fattened, in districts near Strassburg, are made into the celebrated delicacy known as paté-de-fois-gras. In the United States, goose raising is of minor importance, there being forty times as many chickens as geese, the total number of geese being about 5,600,000, somewhat exceeding the ducks, but falling below turkeys—chickens, turkeys, geese, and ducks ranking in the order named. Most extensively grown in the southern states: Kentucky, Missouri, Texas, Tennessee, and Arkansas leading in the order named.
Domestication prehistoric, being exceedingly ancient in Egypt and India. Forms considered as the ancestors of the present Indian breeds, depicted on ancient Egyptian monuments. White bulls long held sacred by the Hindus. Recently introduced into Jamaica for use on plantations.	Very valuable as a draught animal and beast of burden throughout its range in India, China, the Asiatic Islands, Madagascar, and the eastern coast of Africa. It can travel twenty to thirty miles per day, and is very docile. Age-long breeding has resulted in greater variations in size than in the case of any other domestic cattle, some forms exceeding the largest ox in height, while the smallest breeds are no taller than a large dog.

Common and Scientific Name.	Order and Family.	Parent Wild Species and Region of Origin.	Years of Known Domestication
Horse (*Equus caballus*)	*Ungulata* (Hoofed Mammals) *Equidae* (Horses)	The Wild Mongolian Horse (*Equus przevalskii*) Of central Asia More closely resembles the domestic horse than any other living species, and the domestic form was undoubtedly derived from it or a closely related species now extinct	5000
Llama (*Lama glama*)	*Ungulata* (Hoofed Mammals) *Camelidae* (Camels)	The Guanaco (*Lama guanacus*) Andes, Peru to Patagonia	1000
Mule Hinny (*Mulus, Hinnus*)	*Ungulata* (Hoofed Mammals) *Equidae* (Horses)	These hybrids between the domestic horse and the domestic ass do not occur in a wild state, but have been developed by domestic breeding	3000
Ostrich (*Struthio camelus*)	*Struthiones* (Flightless Birds) Suborder: *Ratitae* (Struthious Birds) *Struthionidae* (Ostriches)	Wild Ostrich (*Struthio camelus*) Africa	50
Ox, Cow, Steer, Cattle (*Bos taurus*)	*Ungulata* (Hoofed Mammals) *Bovidae* (Ox, Sheep, Goats)	The Aurochs (*Bos primigenius*) Of Europe and western Asia Abundant at the time of Julius Caesar but supposed to have become extinct about the twelfth century, though some regard the wild Chillingham cattle of England as unmixed descendants of the aurochs	5000



Photos 1, 2, 5, 6, 8 from N. Y. Zoological Society; 3 from Ewing Galloway; 4, 7, 9 from Brown Brothers.

HOOFED ANIMALS

1 Woodland Caribou
2 American Bison (Buffalo)
3 North American Moose
4 Black-Tail Deer
5 Rocky Mountain (Big-Horn) Sheep
6 Rocky Mountain Goat
7 English Deer
8 American Elk (Wapiti Deer)
9 Buffalo Herd

Photos 1, 2, 5, 6, 7, 8, 9, 10 from N. Y. Zoological Society; 3 copyright Keystone View Co.; 4 copyright Ewing Galloway.

MISCELLANEOUS ANIMALS

1 Skunk
2 Woodchuck
3 Badger
4 Silver Fox
5 Racoon
6 Mountain Lion
7 Timber Wolf
8 Polar Bear
9 Porcupine
10 Black Bear

Historical Notes.	Economic Importance.
Probably first domesticated in central Asia, anciently used in India in war and sacrifices. Appears in ancient sculptures at Persepolis in Persia. Horse heads adorn columns of ancient Assyrian palaces. Came into use much later than the ass in Egypt, the monuments indicating introduction during period of the Shepherd Kings about 2000 B. C., attached to the war chariots of Pharaoh. Frequently mentioned in the Bible. Highly treasured by Greeks and prominent in their mythology; drew the sun chariot of Apollo and the sea chariot of Poseidon; appears as the sea horse Hippocampus, and as the winged horse Pegasus, and as the centaur. Used by Lake Dwellers of the Bronze Age. The gods of German mythology are horsemen. Introduced into the Americas by the Spanish. The horsemen accompanying Pizarro in Peru and Cortes in Mexico struck terror through the native armies and made possible seemingly miraculous victories over immensely superior numbers.	Economically the most valuable as well as historically the most important animal domesticated by man. While doubtless kept by the most primitive peoples chiefly for food, its strength and speed soon gave it a higher value to barbaric races for purposes of war and the chase, and its adaptability to innumerable conditions and uses has rendered it indispensable to the most highly civilized nations. The horse has accompanied man in his conquest of every continent throughout a climatic range exceeded only by the dog and is of inestimable importance in carrying on the work of the world. Although inferior in intelligence and mental power to the elephant and the dog, the horse is the most spirited, trustworthy, and affectionate of the large working animals, and has become such an intimate companion of man that sentiment practically forbids the use of its excellent flesh for food among civilized peoples. Prolonged domestication, while producing many varieties ranging in size from the small Shetland pony to the Norman draft horse, has modified it less profoundly than the donkey or the dog, and it readily maintains itself apart from human agency, as witness the vast herds of so called wild horses in Texas and South America which were derived from small groups introduced by early Spanish explorers. Counting young as well as mature horses there are upwards of 21,000,000 in the United States valued at nearly $2,000,000,000, being nearly one half the total value of all domestic animals; employed on over 4,500,000 farms, or four out of each five.
Domesticated by ancient Peruvians, who had long used both the llama and the alpaca at the time of the Spanish conquests. Attempts to introduce the llama into other regions of the world have been unsuccessful.	Very valuable for food and as a beast of burden before the Spanish occupation of the Andean region, particularly in Peru and Chile. Used in immense numbers for transporting silver and other products during the early period of the conquest, but since the introduction of horses and mules the llama has been gradually displaced as a beast of burden. Previous to the acquirement of European domestic animals the llama and alpaca were as serviceable to the Peruvians as the reindeer is to the Laplanders, providing wool and flesh, and carrying on the work of the country.
The breeding of mules began in remotely ancient times, probably in Asia Minor, whence they were brought to Greece at a very early period, being frequently mentioned by Homer, also by Theognis, Hesiod, and other early Greek writers, and held in high esteem for their superior strength. Nausiccaa's car was drawn to the seashore and back by mules. From Greece they were introduced into ancient Italy, where they became popular, hauling carts on the highways in Varro's time much as they do in that region to-day. From Rome they became widely diffused in Europe, and the Latin names *mulus* and *hinnus* were adopted into the languages of most peoples who made use of these hybrids, persisting in the English names mule and hinny at the present day. Mentioned in the Bible, though the Israelites were forbidden by law to rear them.	The only hybrid among domestic animals which has risen to true economic importance and world-wide use. While of sullen disposition and much less affectionate than the horse, it possesses a high degree of intelligence. In adaptability to severe or unfavorable conditions it is superior in some respects to both the horse and the donkey, being able to withstand rough usage, inferior food, and extremes of heat better than the horse, and far exceeding the donkey in strength, particularly for draught, and in suitability to moist climates, while it is far inferior to the horse in speed, gracefulness, and spirit, and to the donkey in docility, The finest mules are reared in Spain and the United States, large breeds attaining a height of 16 hands. Mules are especially well adapted to conditions of general and farm labor in the southern states, where the great majority are bred and used. In the United States the ratio of mules to horses is about one fifth both in number and value.
Partially domesticated for centuries by native tribes in central Africa. Since 1860 complete domestication on a large scale has been undertaken in south Africa, particularly in Cape Colony, whence it has spread to Algiers and the southern United States. Unless completely established in domestication the ostrich will soon become extinct.	Chiefly valuable for certain of its large feathers called plumes, which are an important article of trade in Cape Colony, where upwards of 250,000 ostriches are reared for plume production. Ostriches are grown in limited numbers for the same purpose in Florida, California, and Arizona.
Domestication prehistoric, apparently first accomplished by Aryan peoples in western Asia. As a beast of burden and draught animal considerably antedates the horse, which, among the more ancient peoples, was used chiefly in war. Appears on ancient Egyptian monuments; early mentioned in the Bible; frequently named by ancient classical writers, such as Herodotus and Hippocrates among the Greeks, and Tacitus, Varro, Strabo, and Pliny among the Romans. Butter seems to have been unknown to Greeks and Romans in their most flourishing period; but was extensively used by more northern peoples. Brought to the West Indies by Columbus, 1493: to Mexico by Spanish about 1525; from England to Virginia 1610, and to Massachusetts 1624; from Holland to New York 1627; and from Denmark to New Hampshire in 1631.	The chief source of wealth in many regions. Just as the horse is preëminent as a labor animal, the ox stands first as the food producing animal, par excellence, in modern civilization. The aggregate value of cattle products—beef, milk, butter, cheese, hides, etc.—far exceeds that of any other animal. While still employed as a draught animal, it is so inferior to the horse for general purposes, that its use among the most advanced peoples is comparatively limited. In intelligence it ranks far below animals relatively of little value to man, and ages of domestication have not resulted in such extremes of variation as are met with in the donkey, dog, horse, or its near relative, the humped ox of India. Yet many well marked varieties have been developed, particularly during the last century in England, when valuable breeds for special purposes, such as the Shorthorn, Hereford, Alderney, and Jersey, became established. In the United States there are upwards of 71,000,000 cattle, of which 21,000,000 are milch cows, with a total value of $1,500,000,000.

Common and Scientific Name.	Order and Family.	Parent Wild Species and Region of Origin.	Years of Known Domestication
Parrot (*Psittacus erithacus*)	*Psittaci* (Scansorial Birds) *Psittidae* (Parrots)	Wild Parrot (*Psittacus erithacus*) Central Africa	2500
Peacock (*Gallipavo cristatus*)	*Gallinae* (Gallinaceous or Game Birds) *Phasianidae* (Pheasants)	Wild Peacock (*Gallipavo cristatus*) India, Siam	4000
Pig (*Sus scrofa domestica*)	*Ungulata* (Hoofed Mammals) *Suidae* (Swine)	European stock from Wild Boar of Europe (*Sus scrofa*) Asiatic stock from Wild Boar of India (*Sus cristatus*) Some authorities consider these two wild forms specifically identical	5000
Pigeon (*Columba livia*)	*Columbae* (Pigeon Tribe) *Columbidae* (Pigeons)	Wild Blue Pigeon or Rock Dove (*Columba livia*) Europe and Asia	5000
Rabbit Belgian Hare (*Lepus cuniculus*)	*Rodentia* (Rodents, Gnawing Mammals) *Leporidae* (Hares, Rabbits)	Wild Rabbit (*Lepus cuniculus*) Europe, Africa	3000
Reindeer (*Rangifer tarandus*)	*Ungulata* (Hoofed Mammals) *Cervidae* (Deer)	Wild Reindeer (*Rangifer tarandus*) Northern Europe and Asia	Data uncertain

Historical Notes.	Economic Importance.
The first record of the parrot is in an account of a feast in Alexandria, Egypt, 284 B. C. Prized as a food by the ancients, being esteemed a delicacy. Long tamed by native peoples of central Africa, and taken to Europe in considerable numbers soon after the establishment of the slave trade, being first seen in England in 1504, and thence carried to many parts of the world.	Highly regarded by natives of central Africa as a household pet; also used for food and its feathers for ornaments. The best talking birds are all of this species, though they lack the brilliancy of plumage possessed by many other parrots. Its chief use among civilized peoples is as an ornamental bird and household pet, developing under training the most remarkable powers of imitating human speech displayed by any animal.
The domestication of the peacock dates to remote antiquity in India. It is first mentioned in western literature in the plays of Aristophanes and became well known to the Greeks after the expedition of Alexander the Great to India. It became very common among both the Greeks and Romans, who reared it in great numbers for the table.	Valuable for food, the flesh and eggs being of good quality though inferior to the domestic fowl, and reared still extensively in southeastern Asia for food. While the range of the peacock in domestication has been greatly extended in modern times, it has been entirely replaced by domestic fowls for food and eggs, and its use in most regions of the world is now restricted to ornamental purposes,—the splendor of its plumage being unequaled by any other large bird.
The domestication of the pig is remotely ancient, having been established among the Chinese for some thousands of years. Mentioned in the Bible, though held unclean by Mosiac law. Remains are found in the ancient lake dwellings of Switzerland. Used for food by the Greeks and Romans. Brought to America by the early colonists. However, it is only during the last 200 years that the pig has reached its present highly modified state of domestication, and only during the last century has selective breeding been carried on to secure rapid growth and much fat. The Chester White breed was evolved in Chester county, Pennsylvania, between 1818 and 1830; the Berkshire was introduced from England about 1830; and the Poland China originated in southwestern Ohio, 1839-1840.	Remarkable as the only domestic mammal reared primarily and exclusively for food, the use of its bristles for brushes and its hide for leather being insignificant and not considered by the breeder. Its rapidity of growth and propagation gives it a peculiar value in the food supply of the world. While the flesh of the pig is inferior to that of the ox, the quickness and certainty with which it can be produced, and the ease with which it can be cured and marketed, render it the cheapest and most widely available of meats. The distribution of the pig is world-wide, being found on every continent, throughout a range of latitude about equaling that of the horse, but not in high altitudes though it ascends to 9,000 feet in Spain. Long domestication, and particularly modern selective breeding, have greatly altered some of the prominent characteristics of the wild pig. The domestic pig is omnivorous, not herbivorous only, and has largely lost its tusks and the inclination to use them. The wild pig is a notably alert and sagacious animal and while the conditions surrounding its domesticated descendants all tend to degrade rather than to improve intelligence, animal trainers have found it to possess surprising powers and to receive instruction with a readiness equaled by few if any animals lower than the apes.
Very anciently tamed and prized in Egypt and Assyria. According to Lepsius, the earliest mention is during the third dynasty in Egypt about 3000 B. C. The pigeon entered Greece by way of Syria and became common about 400 B. C.; thence was transported to Rome and spread to Europe. Frequent in the mythology of various peoples. Mentioned in the Mosaic law concerning sacrifices and frequently throughout the Bible; adopted as a symbol of the Holy Spirit by the early Christians; also held in high regard by the Mohammedans. Homing pigeons very ancient in the Orient, where they were first seen by Europeans during the Crusades; became conspicuous again in the Franco-Prussian War and now maintained by the leading armies.	Valuable particularly for its flesh and easy to rear in many regions of the world. While more ancient than the domestic fowl, it is not so generally useful, and at present is of small economic importance compared to the leading domestic birds, consequently pigeons are now kept as pets and ornamental birds rather than for food. Ages of domestication have produced some 250 varieties, such as pouters, tumblers, fantails, rough-footed, black nun, and homing pigeons. In the United States during recent years considerable attention has been given to rearing young pigeons for the table, especially near large cities, where squabs now have an established place in the poultry markets.
According to Hehn the rabbit was anciently domesticated by Iberian peoples in Spain, who may have brought it from northern Africa. Established among the Romans about the time of the Republic. Varro, Strabo, and Pliny describe it. Thence it spread throughout Europe. Now reared in the United States and in many other regions of the world. In Australia its introduction proved a most unfortunate experiment as it multiplied in such numbers as to become a destructive pest.	Much prized for its flesh in many European countries, particularly in France and Belgium, where it is reared in great numbers. Recently it has become popular in England, and, on account of cheapness, occupies a place very similar to the chicken in American markets. While grown to a limited extent in the United States it has not become popular, and its use is insignificant even when compared to such minor fowls as the duck or goose. Much modified by long domestication, particularly in size, adaptation to climate, and character of fur.
Long domesticated in Lapland, Scandinavia, and Russia. Introduced into Iceland in 1870, and into Alaska in 1892. While many authorities consider both the barren ground caribou and the woodland caribou of North America merely varieties of the European reindeer, it does not appear that either of these American forms has ever been domesticated by the Indians of Canada or Alaska.	Invaluable to the Laplanders as a beast of burden, as a means of travel and for food, clothing, and other useful purposes. It is maintained in considerable numbers in Siberia, northern Scandinavia, and in several Permian districts in Russia. The Lapland draught animal is smaller than the wild form, but in Siberia a large domestic reindeer is kept for riding. Shares with the dog the labor of transportation in far northern regions.

Common and Scientific Name.	Order and Family.	Parent Wild Species and Region of Origin.	Years of Known Domestication
Silkworm Moth Silkworm (*Bombyx mori*)	*Lepidoptera* (Butterflies and Moths) *Bombycidae* (Silkworm Moths)	Silkworm Moth (*Bombyx mori*) Northern China, Bengal	4500
Swan (*Cygnus olor*)	*Anseres* (Duck Tribe) *Anatidae* (Ducks, Geese, Swans)	Wild Swan (*Cygnus olor*) Europe	2000
Sheep (*Ovis aries*)	*Ungulata* (Hoofed Mammals) *Bovidae* (Ox, Sheep, Goats)	Unknown and probably indeterminable, but is most closely allied to the wild mouflon, *Ovis musimon*, of Sardinia and Corsica, the Armenian Wild Sheep, *Ovis gmelini*, of Persia and Anatolia, and the Asiatic Wild Sheep or Oorial, *Ovis vignei*, of Central Asia, and may be a mixed strain derived from some or all of them or from similar wild species now extinct	5000
Turkey (*Meleagris gallipavo*)	*Gallinae* (Gallinaceous or Game Birds) *Phasianidae* (Pheasants)	Wild Turkey (*Meleagris gallipavo*) United States, Mexico, West Indies	850
Water Buffalo Indian Buffalo Arna (*Bos bubalus*)	*Ungulata* (Hoofed Mammals) *Bovidae* (Ox, Sheep, Goats)	Indian Buffalo (*Bos bubalus*) India	2000
Yak (*Bos grunniens*)	*Ungulata* (Hoofed Mammals) *Bovidae* (Ox, Sheep, Goats)	Wild Yak (*Bos grunniens*) Of the Tibetan plateaus	2000

HISTORICAL NOTES.

According to Chinese authorities, silk culture was begun by Si-Ling, wife of the emperor Hoang-ti, 2600 B. C. Silk cloth first mentioned among the Greeks by Aristotle. Silkworms brought to Constantinople from China by Greek missionaries 530, and introduced into Italy in the twelfth century. Cultivation has become important in Italy, Turkey, and Greece, and established to some extent in France, Spain, and Portugal. Begun in Georgia in 1732, later in the same century in Connecticut and Pennsylvania, and in 1821 extensively undertaken under encouragement of the United States government, but finally resulted disastrously and abandoned in 1846. Numerous subsequent attempts have been made, but as yet silk culture is not upon a commercial footing in the United States.

Semi-domestication dates to the period of the Roman emperors, when it was eaten for food, as it was also to some extent in mediaeval times. However, during the Middle Ages, swans became part of the regalia of European courts, only royalty being permitted to keep them. By English law they were declared birds royal and the position of king's swanherd was once an important office.

Domestication prehistoric, probably first effected in western Asia, and well established when the earliest records begin. A form was used by the Lake Dwellers of Switzerland. Early and frequently mentioned in the Bible. Possessed by the Greeks and Romans and alluded to in their early literature. Jason and the Argonauts sailed in search of the Golden Fleece. Used for its flesh, wool, and milk since time immemorial in large areas in Asia and Europe, and now diffused throughout the world. Introduced into Florida by the Spanish in 1565; into Virginia in 1609; into Massachusetts in 1624; into New York in 1625; into New Jersey and Delaware by the Swedes in 1634; into Pennsylvania in 1684; and into California by the Spanish missions from Mexico in 1773. The fine wool breeds are derived from the Spanish merino, which antedates the Christian era. The long wooled breeds, Cotswolds, Leicesters, and Lincolns, as well as the medium wooled Southdowns, Shropshire, Hampshire, and Oxfordshire Downs, have been developed in England.

The turkey was taken from the West Indies to Europe by the Spanish early in the sixteenth century, where it became established in domestication and thence was returned to America. It is the only domestic animal contributed by the New World in wide and valuable use, the llama and alpaca being confined to a narrow region in the Andes, and the guinea pig being insignificant in comparison. Its name is a contraction of the curious misnomer turkey cock given to it by the English, just as the French wrongly called Indian corn turkey wheat, though both the bird and the grain were American.

Long domesticated in India, Burma, and the Malaysian region. It spread westward during the Middle Ages, appearing in Italy about 600, where it became permanently established, and somewhat later was introduced into Gascony in France, into portions of Hungary, and other regions. In a truly wild state it is now found only in India though domesticated water buffaloes have frequently become wild again in various regions.

Domesticated since immemorial times by the inhabitants of the Tibetan plateaus. Yak tails are suspended as streamers from poles placed in front of Tibetan monasteries, and in China yak tails dyed red are mounted as pendants from the roofs of houses.

ECONOMIC IMPORTANCE.

The source of the finest and most valuable textile fiber known, no other animal or vegetable substance capable of extensive production equaling its peculiar qualities, which have been held in high esteem since remote antiquity. Silkworm culture and the preparation of raw silk have been of age-long importance in China, Japan, and India, and since the Middle Ages of much consequence in western Asia and southern Europe.

The raw silk production of the world is approximately 40,000,000 pounds annually, of which the far East contributes two thirds, China exporting 17,000,000, Japan 8,000,000, and India 1,000,000 pounds respectively; western Europe over one fifth, of which Italy produces 7,000,000 pounds and France, Austria-Hungary, and Spain the remainder in the order named; while the remaining one tenth is produced in the Levant and western Asia, mainly by Syria, Anatolia, the Caucasus, Turkey, and Greece.

Now reared almost exclusively as an ornamental bird, adorning ponds, lakes, and rivers in many regions of the world. Although noted for its beauty and gracefulness, the swan is inferior to most tamed birds in intelligence and adaptability, and its domestication, which at most is only partial, has resulted in but slight changes of form and habits. So, while it is one of the most conspicuous and striking of birds, it is relatively of very little value to mankind.

The leading fiber producing animal of the world; very valuable also for flesh, milk, and leather. The production of sheep's wool immensely exceeds that of the goat, alpaca, and camel combined, and ranks far above silk culture in general economic importance. Sheep's milk is unimportant in countries supplied with milch cattle, but its flesh is highly esteemed and very widely used.

The sheep is the least intelligent member of the bovine family in full domestication, and it is the only one widely kept which does practically no labor for man.

Sheep are now reared throughout the world but are especially adapted to arid, desert, and mountainous regions, being notably abundant in Australia, Argentina, the western United States, Russia, South Africa, and Spain, and they also thrive in the cool, moist climates of England and France.

Domestication and selective breeding have greatly modified the sheep as to bodily size, length and quality of wool, presence and character of horns, and in the case of the so-called fat-tailed sheep, the tail has become enormously developed.

In the United States there are about 60,000,000 sheep, reported from over 750,000 farms, or from one out of each eight, with a total value of upwards of $200,000,000.

The largest domestic fowl, valuable and much prized for food, though neither its eggs nor feathers are used to an important extent. Notwithstanding it is a stupid bird, ranking low in intelligence, it is easily domesticated and the tame birds readily intermingle with the wild ones. While it needs considerable range and is inclined to wander, and therefore is not suited to small farms, it is comparatively easy to rear and stands second to the chicken in the United States, ranking above geese and ducks both in number and value, there being upwards of 6,500,000 turkeys, Texas reporting the largest number, and followed in order by Missouri, Illinois, Iowa, and Ohio.

Valuable for its flesh, milk, and as a beast of burden, being peculiarly suited to warm, moist countries, delighting in water and marshy situations. For centuries it has been employed for plowing and hauling wagons in the malarial plains of Italy. Now domesticated throughout India, Burma, the Malay Peninsula, and East India Islands, particularly Java, also in Asia Minor and Egypt. The buffalo ox is as well adapted for labor as the common ox; the buffalo cow gives more milk, but the flesh is considered inferior. The water buffalo has been but little modified in form, size, or habits by domestication, retaining its fondness for water, and during hot days it will lie almost completely immersed.

The chief wealth of the native peoples of high Tibet. As a beast of burden the yak is indispensable to commerce in that region, being strong, sure-footed, and able to withstand the rigorous climate. Its flesh is excellent in quality, the milk rich, and the curd is much used both fresh and when dried and made into a kind of meal. The butter is good, and in the cold climate is kept in bladders, forming an article of trade. The coarse hair of the yak is twisted into ropes and the fine hair is made into cloth.

BOTANICAL TERMS

AKENE: a one-seeded fruit which ripens dry and seed-like.

ALTERNATION OF GENERATIONS: the alternation of gametophyte and sporophyte in a life history.

ANEMOPHILOUS: applied to flowers or plants which use the wind as agent of pollination.

ANTHER: the sporangium-bearing part of a stamen.

APETALOUS: applied to a flower with no petals.

ARCHESPORIUM: the first cell or group of cells in the spore-producing series.

ASEXUAL SPORE: one produced usually by cell-division at least not by cell-union.

CALYX: the outer set of floral leaves.

CAPSULE: in Bryophytes the spore-vessel; in Angiosperms a dry fruit which opens to discharge its seeds.

CARPEL: the Megasporophyll of Spermatophytes.

CELL: the elementary structure which is the foundation of all vegetable tissue.

CHLOROPHYLL: the green coloring matter of plants.

CHOLOROPLAST: the protoplasmic body within the cell which is stained green by chlorophyll.

CONJUGATION: the union of similar gametes.

COROLLA: the inner set of floral leaves.

COTYLEDON: the first leaf developed by an embryo sporophyte.

CYCLIC: applied to an arrangement of leaves or floral parts in which two or more appear upon the axis at the same level, forming a cycle, or whorl, or verticil.

DICHOTOMOUS: applied to a style of branching in which the tip of the axis forks.

DIOECIOUS: applied to plants in which the two sex-organs are upon different individuals.

EGG: the female gamete.

EMBRYO: a plant in the earliest stages of its development from the spore.

EMBRYO-SAC: the megaspore of Spermatophytes, which later contains the embryo.

ENDOSPERM: the nourishing tissue developed within the embryo-sac, and thought to represent the female gametophyte.

EPIDERMIS: the outside or protective covering of the plant. It is to the plant what the skin is to the human body.

FAMILY: a group of related plants, usually comprising several genera.

FERTILIZATION: the union of sperm and egg.

FILAMENT: the stalk-like part of a stamen.

FISSION: cell-division which includes the wall of the old cell.

GAMETANGIUM: the organ within which gametes are produced.

GAMETE: a sexual cell, which by union with another produces a sexual spore.

GAMETOPHORE: a special branch which bears sex organs.

GENERATIVE CELL: in Spermatophytes the cell of the male gametophyte, within the pollen grain, which gives rise to the male cells.

GENUS: a group of very closely related plants, usually comprising several species.

HETEROGAMOUS: applied to those higher plants whose sporophyte produces two forms of asexual spores.

HOMOSPOROUS: applied to those plants whose sporophyte produces similar asexual spore.

HOST: a plant or animal attacked by a parasite.

HYPHA: an individual filament of a mycelium.

HYPOCOTYL: the axis of the embryo sporophyte between the root-tip and the cotyledons.

HYPOGYNOUS: applied to a flower whose outer parts arise from beneath the ovary.

MEGASPORANGIUM: a sporangium which produces only megaspores.

MEGASPORE: in heterosporous plants the large spore which produces a female gametophyte.

MICROSPORE: in hetereosporous plants the small spore which produces a male gametophyte.

MICROPYLE: the passageway to the nucellus left by the integument.

MONOPODIAL: applied to a style of branching in which the branches arise from the side of the axis.

MOTHER CELL: usually a cell which produces new cells by internal division.

NUTRITION: the support and care of the plant body. These functions are carried on by the root, stem and leaves.

OOGONIUM: the female, egg-producing organ of Thallophytes.

OOSPHERE: the female gamete, or egg.

OOSPORE: the sexual spore resulting from fertilization.

OVARY: in Anglosperms the bulbous part of the pistil, which contains the ovules.

PENTACYCLIC: applied to a flower whose four floral organs are in five cycles, the stamens being in two cycles.

PETAL: one of the floral leaves which make up the corolla.

PISTIL: the central organ of the flower, composed of one or more carpels.

PISTILLATE: applied to flowers with carpels but no stamens.

POLLEN: the microspores of Spermatophytes.

POLLEN-TUBE: the tube developed from the wall of the pollen grain which penetrates to the egg and conducts the male cells.

POLLINATION: the transfer of pollen from anther to ovule (in Gymnosperms) or stigma (in Angiosperms).

PROTOPLASM: the essential living portion of the cell. Lines the interior of the cell-wall.

RADIAL: applied to a body with uniform exposure of surface, and producing similar organs about a common center.

RECEPTACLE: in Angiosperms that part of the stem which is more or less modified to support the parts of the flower.

SAPROPHYTE: a plant which obtains food from the dead bodies or body products of plants or animals.

SCALE: a leaf without chlorophyll, and usually reduced in size.

SEPAL: one of the floral leaves which make up the calyx.

SEXUAL SPORE: one produced by the union of gametes.

SPECIES: plants so nearly alike that they all might have come from a single parent.

SPERM: the male gamete.

SPIRAL: applied to an arrangement of leaves or floral parts in which no two appear upon the axis at the same level; often called alternate.

SPORE: a cell set apart for reproduction.

SPOROPHORE: a special branch bearing asexual spores.

SPOROPHYLL: a leaf set apart to produce sporangia.

SPOROPHYTE: in alternation of generations, the generation which produces the asexual spores.

STAMEN: the microscoporophyll of Spermatophytes.

STAMINATE: applied to a flower with stamens but no carpels.

STIGMA: in Angiosperms that portion of the carpel, usually of the style, prepared to receive pollen.

STOMATA: (mouths) organs of the epidermis whose functions are to communicate between the green matter and the air.

STYLE: the stalk-like prolongation from the ovary which bears the stigma.

SYMBIOSIS: usually applied to the condition in which two organisms live together in intimate and mutually helpful relations.

TESTS: the hard coat of the seed.

TETRAD: a group of four spores produced by a mother-cell.

ZOOSPORE: a motile asexual spore.

DICTIONARY OF NATURAL HISTORY.

DIVISION OF PLANTS.

Abutilon (*Flowering Maple*). A genus of mostly shrubby tropical or semi-tropical plants containing about 90 species. A number are cultivated as pot and border plants. Leaves maple-like or vine-like; flowers one to two inches or more long, red, yellow, white, or variegated. *Abutilon Theophrasti*, known as velvet-leaf, introduced from India, is a troublesome weed, widely diffused in the United States.

Acacia. A large genus of plants of the Pea family (*Leguminosae*) containing about 450 species. Three hundred are native to Australia and Polynesia, the remainder are distributed in warm regions of the other continents except Europe, 17 occurring in the southern United States. All are shrubs or trees with finely divided leaves, and small flowers

ACACIA.

arranged usually in globular clusters. Many are of great value, yielding gums, timber, tan bark, and food products. Several species in Asia and Africa produce gum arabic. Gum senegal is the product of *Acacia verek* and the drug catechu of *Acacia catechu*. The tan bark known as the Black Wattle, four times as strong as oak bark, is obtained from the Australian *Acacia decurrens*. The most valuable timber acacia is the Australian blackwood (*A. melanoxylon*). Several acacias thrive in cultivation.

Acanthus Family (*Acanthaceae*). A large family of flowering plants containing about 175 genera and 1,800 species, mostly tropical herbs and shrubs, with but few representatives in the United States and Europe. Certain species of justicia and ruellia are fine hothouse plants. The wild, spiny acanthus (*A. spinosus*) and the cultivated acanthus (*A. mollis*) were known to the Greeks and Romans, who conventionalized the leaves extensively in architectural decoration of columns, friezes, and cornices.

Ailanthus (*Tree of Heaven*). A tall spreading tree (*Ailanthus glandulosus*) of the Quassia family (*Simarubaceae*), native of China, but now extensively planted for shade and ornament in Europe and the United States. The tree resembles the ash in foliage; thrives on light soils and is quite hardy, but the disgusting odor of the staminate flowers has caused it to be prohibited on public grounds of the United States government and to be regarded with increasing disfavor.

Alder. A genus (*Alnus*) of 18 or 20 trees and shrubs of the Birch family (*Betulaceae*), nine of which are North American, growing in cold and temperate climates. The best known species are: **Green** or **Mountain Alder** (*A. crispa* and *A. mollis*), shrubs 2 to 10 feet high, growing from Newfoundland to Virginia and northwest to Alaska. **Speckled** or **Hoary Alder** (*A. incana*), a shrub or a small tree, 8 to 25 feet high, in wet soil, eastern United States and Canada, also Europe and Asia. **Smooth Alder** (*A. rugosa*), 5 to 25 feet high, streams and swamps, eastern and southern United States. **Seaside Alder**, small tree sometimes 30 feet high, coast of Delaware and Maryland, and in Oklahoma. **Red Alder** (*A. oregona*), tree 30 to 80 feet high, California to Alaska. **White Alder** (*A. rhombifolia*), small tree 20 to 35 feet high, Pacific States. **Black Alder** (*A. glutinosa*) of Europe, tree 30 to 60 feet high, often planted and locally naturalized in the United States. Wood, light, inferior for fuel, but valuable in use under water for piles, pumps, and sluices.

Algae. The lowest and most primitive forms of plant life, the fungi being regarded as having been derived from various groups of algæ; bacteria, for example, probably originated in the lowly blue-green algae, and molds from a higher algae group. The algae and fungi are thus closely interrelated and the distinction between them founded upon the presence or absence of chlorophyll is largely one of convenience.

Fucus. SEAWEEDS. Sargassum.

Four classes of algae are readily distinguished: *Cyanophyceae*, blue-green algae; *Chlorophyceae*, green algae; *Phaeophyceae*, brown algae; *Rhodophyceae*, red algae.

Cyanophyceae, Blue-green Algae, characterized by extreme simplicity of cell structure, and reproducing only by fission, are most abundant in warm shallow waters and moist places. Highly colored growths occur in the warm springs of the Yellowstone region, and the tint which gives the name to the Red Sea is due to the immense abundance of floating filaments of Trichodesmium.

Chlorophyceae, Green Algae. In this class the clear green of the chlorophyll is not masked by various colored pigments as in the other classes. There are one-celled groups such as protococcus and the beautiful desmids and diatoms and a wide range of the more complex forms, including the confervae and pondscums, terminating in conspicuous types, such as the sea-lettuce (*Ulva*) and stoneworts (*Chara*). Sexual reproduction and alternation of generations are exhibited in the higher types of this class.

Phaeophyceae, Brown Algae, so called because a brown pigment masks the green chlorophyll, are almost exclusively marine and embrace a vast array of the larger seaweeds, mostly of cold waters. Great kelps (*Macrocystis*) in the Pacific are said to grow 900 feet long. The Gulf weeds (*Sargassum*) and the rock weeds (*Fucus*) are immensely abundant, some of the latter being the most highly complex of the algae.

Rhodophyceae, Red Algae, so named by reason of a reddish pigment which obscures their chlorophyll, comprise the red seaweeds, the most beautiful of all algae, varying in form from delicate filaments to broad, membranous, or cartilaginous structures, the most striking being the corallines, which resemble corals on account of incrusted lime deposits.

Alkanet (*Anchusa*). A genus of the Borage family (*Boraginaceae*), some species of which yield valuable dyes. The most important, *Anchusa tinctoria*, the true alkanet, is a native of southern Europe and the Levant, and yields the beautiful red coloring matter known as alkanet.

Aloe. A large genus of plants of the Lily family (*Liliaceae*), native to warm regions, particularly South Africa and the island of Socotra, where vast hilly tracts are entirely covered by various species. All have permanent, fleshy leaves, often strongly resembling those of the agave or century plant, which is sometimes wrongly called American Aloe, and range from a few inches to over twenty-five feet in height. Some species yield fiber and dyestuffs but their greatest value lies in medicinal properties, the important drug, aloes, being the dried juice of the leaves of a number of large tree-like kinds, notably *Aloe socotrina* and *Aloe Perryi*, yielding socotrine aloes; several South African species yielding Cape aloes; and *Aloe vera* of the East and West Indies, also grown in Europe, yielding Hepatic or Barbados aloes. The juice was anciently used in embalming.

Alpine Plants. The flora of mountains which approach the line of perpetual snow, or of high latitudes where similar conditions prevail. These conditions produce dwarfed or stunted plants characterized by large, bright-colored flowers strongly attractive to the restricted insect life of the region, and by a habit of growth in close tufts, forming mats or carpets. Saxifrages, arenarias, heath forms, particularly azaleas and rhododendrons, primroses, gentians, and small ferns, are prominent in alpine vegetation, which is essentially Arctic vegetation, as it results from practically identical conditions.

Alternation of Generations. The alternate occurrence in the life history of a plant of two or more forms differently produced. In ferns, for example, there are two distinct generations. One is asexual, that is, producing not male or female elements but spores. This is the ordinary form of these plants with which we are familiar. The other is a minute flattened leaf-like organism which grows from the fallen spore on damp soil, stones, and wood. But this inconspicuous form is sexual, developing organs which produce egg cells and spermatozoids which fertilize and by their growth again give rise to the asexual generation, which we recognize anew as the fern. Neither the sexual nor the asexual form of these plants can reproduce itself directly. It must first pass through the other form, i. e., there must be an alternation of generations. Botanists now recognize a like alternation in the higher or flowering plants, although the sexual generation is microscopic and lies concealed within the asexual or spore-bearing plants, so that the law of alternation of generations has been demonstrated to prevail throughout the plant world.

Alyssum. A genus of the Mustard family (*Cruciferae*), consisting of about 100 species, natives of the Old World, mostly small perennials, many of which are called madwort. A number of European species and varieties have been developed in cultivation as ornamental plants. The well known sweet alyssum (*Lobularia maritima*) is annual; widely grown as a border plant.

Amaranth (*Amaranthus*). The principal genus of the Amaranth family, embracing some 300 species, mostly tropical herbs. About 30 species grow in the United States, chiefly coarse weeds such as pigweed and tumbleweed. *Amaranthus blitum* and *Amaranthus oleraceus* are used as pot herbs in Europe. The seeds of *Amaranthus frumaceus*, called kiery, are used as food in India. The flowering heads of several species assume monstrous forms in cultivation, such as love-lies-bleeding (*Amaranthus gangeticus*) and prince's feather (*Amaranthus caudatus*).

Amaryllis. The typical genus of the Amaryllis family, containing many species, natives of warm regions, which possess flowers of great beauty. The South American species, *Amaryllis formosissima*, was brought to Europe about 1700 and has become commonly cultivated in gardens.

Amaryllis Family (*Amaryllidaceae*). A natural order of monocotyledonous plants, embracing nearly 1,000 species, mostly tropical, and adapted to dry regions, usually bulbous, leafing and flowering only in the wet season. The most important type economically considered is the strictly American genus Agave, including 140 species, among which are the century plant, or maguey, and sisal hemp. Narcissus, amaryllis, and galanthus are extensively cultivated ornamental plants. Only a few are native to the eastern United States; the most common is the small yellow-flowered stargrass (*Hypoxis hirsuta*).

Andropogon. A genus of grasses (*Gramineae*) of 150 species of world-wide distribution, a number of which are of great value. Johnson grass (*Andropogon halepense*), cultivated in southern United States since 1830, is highly prized for hay. The blue-stem grasses (*Andropogon nutans, A. provincialis*, and *A. scoparius*) are valued for hay in the prairie regions of the Mississippi valley and the great plains. An Indian species (*A. squarrosus*) yields the perfume vetiver, from its roots, and the tropical species (*A. schoenanthus* and *A. nardus*) yield lemon oil and citronella used in perfumery.

Anemone (*Windflower*). A genus of the Crowfoot family (*Ranunculaceae*). There are about 90 species, mostly natives of cold and temperate northern regions, generally with beautiful flowers, blossoming in early spring. The **Wood Anemone** of Europe (*Anemone nemorosa*) and a very similar species of North America (*A. quinquefolia*) are delicately beautiful woodland plants flowering in April and May. The **Pasque Flower** (*Anemone pulsatilla* or *Pulsatilla vulgaris*) blossoms on English chalk hills about the same time. The **American Pasque Flower** (*Anemone patens var. Nuttalliana*, or *Pulsatilla hirsutissima*) during March and April adorns the prairies from Illinois to Saskatchewan and south to Nebraska and Texas. The **Garden Anemone**, with very numerous varieties long in cultivation, probably developed from two wild species of the Levant, *Anemone coronaria* and *Anemone stellata*, is a great favorite with florists. About 18 species grow wild in North America.

Angiosperms. A name, signifying "seeds in vessels," given to the greater group of the Spermatophytes, or seed plants, in contradistinction to the smaller group called gymnosperms, having "naked seeds." There are over 150,000 known living species of angiosperms, while the gymnosperms, though immensely more abundant in earlier geologic ages, number only about 400 living species, so that the far greater part of the conspicuous vegetation of the earth belongs to the angiosperms, which are called the true flowering plants, for no others bear conspicuous flowers. There are two great natural divisions of the angiosperms, monocotyledons and dicotyledons, the former having one seed leaf or cotyledon and the latter two seed leaves or cotyledons.

Anise (*Pimpinella anisum*). An annual plant of the Parsley family (*Umbelliferae*), native of Egypt and other Mediterranean countries, much cultivated in southern Europe and particularly in Germany, for the seeds and oil; used as a condiment and in making liqueurs.

Annuals. Plants which flower during the first year of growth, and completely die after ripening seeds, are called annuals. The first plants brought into cultivation by the human race were almost exclusively of this group, and to-day it includes the most important economic plants, embracing all of the cereals, wheat, maize, rice, rye, barley, oats; the sorghums and millets, and many other valuable grasses; all fiber plants of the first order: cotton, flax, hemp, jute; the most valuable legumes, such as peas, beans, lupine, lentil, peanut, and many clovers and fodder plants; all of the common cucurbitaceous plants: watermelon, muskmelon, pumpkin, squash, and gourds; and many important vegetables: tomato, radish, mustard, lettuce, endive, okra, eggplant, and spinach; also carthamine, quinoa, sesame, and tobacco.

Aquatic Plants, or Hydrophytes, grow partly or wholly submerged in water. They do not, however, embrace the marsh plants. Among the lower forms, seaweeds and fresh water algae are noteworthy aquatics. Among flowering plants, the water buttercup (*Ranunculus*), the water lilies (*Castalia* and *Nymphaea*), and the pondweeds (*Potamogeton*) are widely distributed and conspicuous examples. Most aquatics are perennial, growing from roots fixed in the soil beneath the water, but some, like the duckweed (*Lemna*), float on the surface. Only rarely do aquatic plants produce flowers beneath the surface, as in the sea wrack (*Zostera*). In nearly all cases the flowers are developed above the water, and are fertilized by the wind and by insects like most flowering plants.

Aralia Family (*Araliaceae*). A natural order of plants closely related to the Parsley family (*Umbelliferae*), containing about 450 species, consisting of trees, shrubs, and herbs, growing in all climates, generally aromatic and possessing stimulant properties. The most important are the Aralias, Ginseng (*Panax*), and the English Ivy (*Hedera*).

Arbutus (*Madroña*). A genus of the Heath family (*Ericaceae*), comprising about 20 species of shrubs and small trees, mostly natives of Europe and North America. The branches are usually smooth and red, and the leaves evergreen and shining. The **Strawberry Tree** (*Arbutus unedo*), a native of southern Europe, is grown in California, but is not hardy in colder parts of the United States. The edible fruit resembles a strawberry, and is often made into sugar. The native **California Madroña** (*Arbutus Menziesii*) is often 80 to 100 feet in height. The Arizona Madroña (*Arbutus arizonica*), a tree 40 to 50 feet high, grows in high altitudes in California, southern Arizona, and Mexico. The **Texas Madroña** (*Madroña xalapensia*) is rarely more than 18 to 20 feet in height.

Arbutus, Trailing (*Epigaea repens*). A trailing plant of the Heath family, with branches 6 to 15 feet long and evergreen leaves, called Mayflower in New England and Ground Laurel in the Southern States. It grows in sandy or rocky soils, especially in the shade of evergreen trees, from Canada to Texas. Prized for its early blooming, delicate flowers, now gathered in considerable quantities for city flower markets.

Arctic Plants. On land within the Arctic zone, mosses and lichens are noteworthy for their great abundance and value as food for the reindeer and musk ox. The bog moss (*Sphagnum*) covers great areas, while species of *Hypnum* and *Polytrichum* are immensely abundant. There are many flowering plants, but the number of species is small compared to those existing in equal areas in warmer regions. Prominent examples are various rushes, sedges, saxifrages, heath forms, and rosaceous plants. Exactly speaking, trees do not occur, the Arctic species of the birch and willow being low-growing forms which are more nearly herbs than shrubs. A large proportion are xerophytic in character, with erect leaves which catch and make use of light from every direction. However, growth is actually retarded and stunted by the very continuity of light during the summer season, so that most Arctic plants are dwarfed and tufted in habit. Insects are abundant but limited in variety, being mostly short-tongued flies. Consequently, while Arctic flowers develop brilliant colors to attract insects, most of them are short tubed and of simple structure from the standpoint of fertilization. The plant life of the Arctic seas is inconspicuous but important as food for lower marine animals.

Artemisia. A genus of the Sunflower family (*Compositae*). There are about 200 species, natives of the northern hemisphere and southern South America. The flower heads are small and numerous and the leaves are generally much divided. The **Wormwood** (*Artemisia Absinthium*), and a number of other species, are used in the manufacture of absinthe. The dried flowers of *Artemisia santonica* and several other species are valued as a vermicide, known as wormseed. The young leaves of **Mugwort** (*Artemisia vulgaris*) are used in Germany for seasoning and for cleansing and healing wounds. **Southernwood** (*Artemisia Abrotanum*), a shrubby plant, native of southern Europe and Asia, is used in the manufacture of beer and to drive away moths. Many shrubby species, known as sage brush, grow in the western parts of the United States.

Arum Family (*Araceae*). A natural order of monocotyledonous plants, consisting of about 100 genera and 1,000 species, mostly natives of the tropics, usually stemless perennials with tuberous roots. Representations are few in number in temperate regions, there being only 10 species in temperate North America, of which the Jack-in-the-pulpit (*Arisaema triphyllum*), skunk cabbage (*Symplocarpus foetidus*), and the sweet flag (*Acorus Calamus*) are well known. The taro (*Colocasia antiquorum*), widely cultivated in the tropics, is the most valuable economic plant of the family. Many are greenhouse foliage plants, and the calla (*Richardia aethiopica*) is a very common house plant.

Ash (*Fraxinus*). A genus of the Olive family (*Oleaceae*) of about 40 species, mostly natives of Europe and eastern Asia, and about 12 are natives of North America. The best known species are: **Common Ash** (*F. excelsior*), a large tree 100 to 150 feet high, growing wild in southern Europe and northern Asia. The wood is tough, hard, and much used in carriage building, manufacture of agricultural implements, turnery, cabinet making, and for fuel. **White Ash** (*F. americana*), a large tree 45 to 90 feet high; Nova Scotia to Florida, westward to Minnesota and Texas. Used much the same as Common Ash. **Green Ash** (*F. lanceolata*), 40 to 50 feet high, Vermont to Florida, intermittently to Utah and Arizona. Used for same purposes as White Ash but less valuable. **Red Ash** (*F. pennsylvanica*), a small tree, rarely more than 40 feet high, growing in moist soil from New Brunswick to South Dakota, Florida, Alabama, and Missouri. Used the same as White Ash. **Blue Ash** (*F. quadrangulata*), 50 to 75 feet high, Ontario, Minnesota, and Michigan to Alabama, west to Iowa and Arkansas. Used in carriage building, for flooring and tool handles. **Black** or **Hoop Ash** (*F. nigra*), a large tree, 70 to 80 feet high, Newfoundland to Manitoba, south to Virginia and Arkansas.

Aspen. A name applied to two species of the genus *Populus* of the Willow family (*Salicaceae*), one a native of the United States, the other growing in Europe and Siberia. The **American Aspen** (*Populus tremuloides*), called **Quaking Aspen** or **Quaking Asp**, is one of the most widely distributed trees of North America, growing from Alaska and Newfoundland to lower California. A slender tree with light green bark, maximum height 100 feet. Wood soft, light, and largely used for manufacture of wood pulp. The **European Aspen** (*Populus tremula*) is a quick growing tree, 50 to 80 feet high. The wood is soft and porous, and is used in turnery and in interior finish for houses. The bark contains considerable salicin.

Asphodel (*Narthecium ossifragum*). A small plant of the Lily family (*Liliaceae*) with orange colored flowers blossoming abundantly in summer in European peat bogs. The specific name, *ossifragum*, signifying "bone-breaking," arose from the mythical belief that if eaten by sheep their bones would become brittle. In the United States the name bog asphodel is given to plants of the genus *Abama*.

Aster. A genus of the Sunflower family (*Compositae*) containing not less than 250 species, most abundant in North America. A number of perennial species are in cultivation as garden flowers. They bloom from July to November and are among the most valuable plants for border and roadside planting. The **New England Aster** (*Aster novae angliae*) is one of the most showy native American asters. The **China Aster** (*Aster chinensis*), a summer annual having more than 250 varieties, is the best known and most valued. It is a native of China and has been greatly improved by cultivation. It has a great variation in form and color.

Astragalus. A genus of the Pea family (*Leguminosae*) containing about 1,000 species, some 200 of which grow in the United States. They are shrubby or herbaceous plants commonly found in dry soils. *Astragalus gummifer*, which grows in western Asia, and a number of other species yield gum tragacanth. *Astragalus mollissimus* and several species called loco weeds, found on the western plains, have poisonous properties. Cattle and horses which eat them are said to lose all appetite for anything else, become deranged, and finally die.

Azalea. A genus of the Heath family (*Ericaceae*). There are about 40 species natives of North America and Asia. Mostly tall, branching shrubs with flowers of various colors. The *Azalea pontica*, a native of countries around the Black Sea and covering many mountain slopes, is a common garden flower in Great Britain. It varies with orange, red, and almost white flowers. The **Wild Honeysuckle** (*Azalea nudiflora*) grows in sandy or rocky woods from Canada to the southern part of the United States, and has long been cultivated in Great Britain. The flowers are pink to nearly white. The **Swamp Pink** or **Honeysuckle** (*Azalea viscosa*) abounds in swamps from Maine to Ohio, south to Florida and Texas, and is also cultivated in Great Britain. The flowers are large, white, and very fragrant. There are many hybrids of the Azalea.

Bacteria. Exceedingly minute, one-celled plants, the smallest known organisms, constituting one of the great groups of fungi known as *Schizomycetes* or fission-fungi. Bacteria are almost omnipresent, being found in the air, water, soil, nearly all foods and drink; are constantly present in the mouth, stomach, intestines, and in the external layers of the skin. The air of cities contains vast numbers, but they also exist in great numbers in country and even in mountain air. Water ordinarily called pure contains bacteria in abundance, spring water, artesian well water, and even sulphur spring water being abundantly

BACTERIA.

1. Hay Bacillus. 2. Spirillum. 3. Typhoid-fever Bacillus. 4. Butyric-acid Bacillus. 5. Planococcus. 6. Anthrax Bacillus among blood corpuscles.

supplied. There are two groups: Those which live upon dead animal or vegetable matter, **Saprophytes**; and those which subsist upon living animals or plants, **Parasites**. Saprophytic bacteria are beneficent in their action, being the cause of decomposition and decay, thus returning dead matter to its inorganic elements, so that it may again become food for plants. Parasitic bacteria include all of the harmful forms. Those which produce disease are called pathogenic, and are known to be the cause of many infectious diseases, such as diphtheria, influenza, tuberculosis, and probably all infectious diseases are due to their agency.

Ballast Plants. Plants growing on ballast, or distributed by ballast, the seeds being contained in it when loaded or falling upon it in transit. The study of the transportation of plants from one region to another in this manner has become of much interest to botanists.

Bamboo (*Bambusa*). A genus of about 25 arborescent grasses natives of southern and eastern Asia, one of which, the common bamboo (*B. vulgaris*), is not known growing wild although it is widely cultivated in the Old World, West Indies, and South America. The species range in height from 20 to 100 or even 120 feet, and sometimes attain a diameter of four to eight inches. The stem and leaves, particularly the wood, are put to innumerable uses in the East Indies and eastern Asia; nearly all articles of ordinary use, from houses and furniture to fences, carts, water pipes, cordage, matting, paper, boxes, and baskets, being wholly or largely made from bamboo products.

Banyan (*Ficus bengalensis*). A tree of the genus Fig (*Ficus*) of the Nettle family (*Urticaceae*), native of India and remarkable for its vast rooting branches. It grows 70 to 100 feet high and spreads over a great surface. The branches send shoots downward, which take root and become stems. The tree is extensively planted but grows wild only in the lower Himalayas and the Dekkan hills. The wood is light and of no value, but the white glutinous juice is used as an ointment, and bird lime is made from it. Gum lac is also a product of the Banyan.

Baobab (*Adansonia digitata*). An African tree of the Mallow family now naturalized in the East and West Indies. It is one of the largest trees known, often 30 feet in diameter, though only 40 to 70 feet high. It produces leaves resembling those of the horse-chestnut, white flowers about five inches broad, and a gourd-like fruit a foot in length, which is eaten by monkeys and called monkey-bread. The juice of the fruit is made into a beverage; the powdered bark is used like pepper, and the bark fiber is made into ropes and cloth. The only other species are the Australian cream-of-tartar tree (*A. Gregorii*) and the Madagascar baobob (*A. madagascariensis*).

Barberry (*Berberis*). A genus of 75 low shrubs, natives of temperate regions, the type of the Barberry family (*Berberidaceae*). They are chiefly used as ornamentals, but a few species produce an edible, currant-like fruit. The bark is used in dyeing and sometimes in tanning, and malic acid is extensively made from the berries in France. Of the 13 native species, the best known are the **American Barberry** (*Berberis canadensis*) of the Alleghany and Ozark mountains, and the so-called **Oregon Grape** (*Berberis Aquifolium*) of the Rocky Mountains and westward. The **Common Barberry** (*Berberis vulgaris*), introduced from Europe for border shrubbery, now grows wild in eastern New England.

Beech (*Fagus*). A genus of the Beech family (*Fagaceae*), containing about 16 species, four in the northern hemisphere and 12 in the southern. The **American Beech** (*Fagus americana*) is the only North American species. It is a beautiful tree 70 to 80 and sometimes 100 feet high, and is one of the most widely distributed trees of eastern North America. The wood is tough, close grained, and is largely used in the manufacture of tool handles, chairs, and for fuel. The small sweet nuts are sold in the markets of Canada and in some of the Western and Middle States. The **Common Beech** (*Fagus sylvatica*), forming pure forests in many parts of Europe, is a large tree 100 to 120 feet high. The wood is dark colored, solid, and very durable under water and is much used in cabinet making, for weirs, and for fuel. The bark is sometimes used in tanning. The nuts are used for the manufacture of beech oil and for feeding swine. The beech is often planted for hedges.

BAMBOO. Bambusa.

Begonia. A genus of plants of the Begonia family (*Begoniaceae*). There are about 350 species found in the tropics of both hemispheres, especially in Mexico and Central and South America. The cultivation of begonias was begun in 1777 and there are now hundreds of varieties of recognized merit. Some of the species are very popular house plants, known as Begonia, Elephant-Ears, Beefsteak Geranium, etc., grown for their handsome flowers and beautiful foliage.

Belladonna or Deadly Nightshade (*Atropa Belladonna*). A tall, bushy herb of the Potato family (*Solanaceae*), native of central and southern Europe, extending into Asia. The entire plant is poisonous, containing the alkaloid atropin. The leaves and roots are largely used in medicine.

Bergamot (*Citrus medica*). A variety of lemon, from the fruit of which oil of bergamot is extracted, much prized in perfumery.

Biennials are plants which require two seasons of growth to produce flowers and ripen seeds or fruit, usually growing the first year to store up surplus food in enlarged portions of the root, stem, or leaves for use the next year in maturing seeds and

fruit, after which the plant dies. While they are relatively few in number when compared to annuals or perennials among both cultivated and wild plants, several important vegetables are biennials such as the beet, cabbage, carrot, celery, parsley, parsnip, rape, turnip, and onion, although some forms of the cabbage are annual and some perennial and some forms of the beet and other biennials are sometimes perennial.

Big Trees. A term applied in America to the genus *Sequoia* of the Pine family (*Coniferae*), containing two species, both natives of California. The **Big Tree** (*Sequoia gigantea*) is the largest American tree, having an average height of 275 feet with a trunk 20 feet in diameter at the base. It sometimes attains a height of 320 feet with a trunk measuring 30 to 35 feet in diameter. The bark is often two feet thick. The Big Tree grows on the west side of the Sierra Nevadas at an elevation between 5,000 and 7,000 feet, from Placer to Tulare county, California. The **Redwood** (*Sequoia sempervirens*) is a tree 200 to 340 feet high and 10 to 15 feet in diameter, growing from the south border of Oregon to Monterey county, California. Rarely found more than 30 miles from the coast or over 3,000 feet above sea level. It is often cultivated as an ornamental tree in Europe. The wood is soft, light, and much used in building.

Birch (*Betula*). A genus of the Birch family (*Betulaceae*). There are about 28 species, natives of north temperate zones; 13 are North Americans. **Common Birch** (*Betula alba*), abounding in northern Europe, is a beautiful tree 60 to 70 feet

BIRCH. Betula. Flowering Branches.

high. The bark is used in medicine and dyeing, and it yields the birch tar employed in the preparation of Russia leather. **Red** or **River Birch** (*Betula nigra*) grows in the United States from Massachusetts to Iowa and Kansas, south to Florida and Texas. It is a slender tree, 70 to 90 feet high, which produces a hard, valuable timber. **Cherry, Black,** or **Sweet Birch** (*Betula lenta*) is a large tree, sometimes 80 feet high. Wood fine grained and valuable for making furniture, etc. The bark yields an oil identical with the oil of wintergreen. It grows from Newfoundland to western Ontario, Florida, and Tennessee. **Yellow Birch** (*Betula lutea*), a large tree, maximum height 100 feet. The timber is used in shipbuilding. From Newfoundland to Manitoba, south to Carolina and Tennessee. **Paper** or **Canoe Birch** (*Betula papyrifera*), a large tree, maximum height 80 feet. The bark on the young trees is of a beautiful white color, and is capable of division into thin sheets, used for making canoes, baskets, and ornaments. Newfoundland to Alaska, northern Pennsylvania, Michigan, and Washington.

Bittersweet or **Woody Nightshade** (*Solanum Dulcamara*). A plant with a long, climbing, shrubby stem, found in most parts of Europe and in Asia and introduced into the United States. A fluid extracted from the twigs is used in medicine. The woody vine (*Celastrus scandens*) is called bittersweet in the United States. The opening orange-colored pods, displaying the scarlet covering of the seeds, are very ornamental in autumn.

Bladdernut. A genus of the Bladdernut family (*Staphyleaceae*), natives of the north temperate zone, mostly small trees. The seeds contain a fixed oil which is slightly purgative. The wood is well suited for the purpose of the turner. The American Bladdernut (*Staphylea trifolia*) is a branching shrub 6 to 15 feet high.

Bloodroot (*Sanguinaria canadensis*). The only species of the genus *Sanguinaria* of the Poppy family (*Papaveraceae*). It has large handsome white flowers which bloom in April and May in rich woods in eastern North America; one of the earliest and most conspicuous spring flowers. The stem and root contain a red juice, and are poisonous when eaten.

Boneset (*Eupatorium perfoliatum*). A perennial herb of the Sunflower family, native of the United States, growing in moist soil. The leaves and flowering tops are much used in household medicine as a tonic.

Borage Family (*Boraginaceae*). A large order of dicotyledonous plants, containing some 85 genera and 1,500 species, mostly natives of northern temperate regions. They are usually herbs and shrubs. Some tropical species are timber trees, and some species are dye plants, but most are of slight economic importance, although the forget-me-not (*Myosotis*) and heliotrope (*Heliotropium*) are widely grown and highly prized for their flowers.

Box Elder or **Ash-leaved Maple** (*Acer Negundo*). A species of the Maple family (*Aceraceae*). One of the hardiest and most widely distributed trees of the United States, growing from Vermont to Florida, and westward to the Rocky Mountains. It grows rapidly and often reaches a height of 60 feet. The wood is soft, light, and is used for wooden ware and wood pulp. The sap is sometimes made into sugar.

Box Tree (*Buxus*). A genus of evergreen shrubs and small trees of the Box family (*Buxaceae*), sometimes treated as a part of the Spurge family (*Euphorbiaceae*). The Common Box, a native of Europe and Asia, sometimes attains a height of 20 feet. Numerous cultivated varieties bear trimming remarkably well and are much used for borders of walks and gardens. The hard, fine grained wood is exceedingly valuable, being much used in engraving and in the manufacture of mathematical instruments.

Brake. A name given to several species of ferns of the genus *Pteris*. The Common Brake or Bracken (*Pteris aquilina*) is very abundant in most parts of Europe and America and in parts of Asia and Africa. The leaves and stems are employed in dressing kid, and the root is used as a substitute for hops. It is sometimes fed to cattle.

Brazil Wood. A dyewood, the product of different species of *Caesalpinia* of the Pea family (*Leguminosae*), and forming a considerable export from Brazil. Much of the Brazil Wood of commerce is obtained from *Caesalpinia braziliensis*, a small tree about 30 feet high, native of the West Indies. The heart wood alone is valuable and is generally sent to the market in the form of sawdust. It yields a red coloring matter called brazilin, which is used by the dyer and calico printer and in the manufacture of red ink.

Bromelia Family (*Bromeliaceae*). A natural order of monocotyledonous plants, allied to the Amaryllis family, embracing some 35 genera and about 900 species, all tropical or subtropical, many of them epiphytic, and usually with spiny or scurfy leaves. The pineapple (*Ananas sativa*) and the Spanish moss (*Tillandsia*), which hangs in festoons on trees in the Southern States, are important representatives. Many species are in hothouse cultivation for their curious manner of growth and showy flowers.

Broom. A name given to a number of species of shrubs of the closely allied genera *Cytisus*, *Genista*, and *Spartium* of the Pea family (*Leguminosae*). Common Broom (*Cytisus scoparius*), a native of Europe, has been introduced into the United States. It grows in dry soils, ornamenting hedges and bushy places with its large yellow

flowers. The branches are very tough and much used for making besoms, and the young tops and seeds are used in medicine. The leaves are used in tanning and dyeing, and cloth is sometimes made from the fiber.

Buckthorn (*Rhamnus*). A genus of the Buckthorn family (*Rhamnaceae*), containing about 75 species, natives of warm and temperate regions. Five are natives of the United States. The fruit and bark yield yellow and green dyes. The **Common Buckthorn** (*Rhamnus catharticus*), a shrub or small tree 6 to 20 feet high, is a native of Europe and northern Asia and introduced into the United States. The bark affords a beautiful yellow dye, and the berries yield the sap green used in painting. The **Alder Buckthorn** (*Rhamnus Frangula*) is a native of Great Britain, and introduced into the United States. It is a shrub rarely more than 8 feet high. The bark, leaves, and berries are much used for dyeing. *Rhamnus Purshianus*, known as Cascara Sagrada, is a native of the Pacific States. It is a tree 15 to 20 feet high, and the bark is extensively used in medicine.

BUCKTHORN. Rhamnus.

Buckwheat Family (*Polygonaceae*). A well marked, natural family of dicotyledonous plants, embracing about 30 genera and 800 species, universally diffused in temperate climates. The foliage of these plants often contains an acid juice as in rhubarb (*Rheum*) and sorrel (*Rumex*) and sometimes acid blistering properties as in smartweed or water pepper (*Polygonum Hydropiper*). Leading genera are *Rumex*, containing the docks, sorrels, and canaigre; *Polygonum*, comprising the smartweeds, bindweeds, and bistort; *Fagopyrum*, buckwheat; and *Eriogonum*, embracing a large number of desert plants of the western United States known as wool-joints.

Buffalo Berry (*Shepherdia argentea*). A shrub of the Oleaster family (*Eleagnaceae*), a native of northwestern North America, which has recently begun to take rank as a fruit plant, the currant-like berries being used for jellies in the Rocky mountain regions.

Buffalo Grass (*Bulbilis dactyloides*). A common grass of the high western plains of the United States, ranging from Manitoba to Texas, where it is one of the best pasture grasses, but rapidly disappearing in many sections, due to overfeeding on the ranges.

Burdock (*Arctium*). A genus of plants of the Thistle family (*Compositae*), containing about six species, natives of Europe. Common Burdock (*Arctium Lappa*) is a native of Europe naturalized in the United States, where it has become a troublesome weed. The root is sometimes used in medicine.

Burgrass or **Sandbur** (*Cenchrus*). A genus of about 12 species of grasses growing in sandy soils in temperate and tropical regions. They bear sharp pointed burs which frequently cause trouble with sheep, their wool becoming matted with them.

Cactus Family (*Cactaceae*). A very distinct natural order of plants numbering about 1,000 species grouped in about twenty genera. With a few exceptions, practically all are natives of America, the great majority growing in Mexico and

CACTUS GROVE. California.
Opuntia.

adjoining regions. They are fleshy, juicy plants, usually completely beset with sharp spines, with flat or cylindrical stem joints which resemble leaves, while the true leaves are small and scale-like. The flowers, which are produced upon the angles of the stems, are large and vividly colored; and in some of the night-blooming forms, such as the cereus, are remarkable for their fragrance. By reason of their peculiar structure they are especially adapted to arid regions, where a number are of economic importance. The tuña or prickly pear (*Opuntia*) is not only in wide use in Mexico and among the Indians of the southwestern United States, but is also a prized fruit in Mediterranean countries, where it has become thoroughly naturalized. When stripped of thorns, *Opuntias* make excellent fodder, and a thornless form developed by Burbank promises to be of value as a vegetable. Many forms of *Cereus*, *Mamillaria*, and *Echinopsis* are easily cultivated.

Calabar Bean. The seed of a twining, half shrubby plant (*Physostigma venenosum*) of the Pea family (*Leguminosae*), native of western Africa. It is highly poisonous and is used to produce contraction of the pupils of the eye, and for other purposes in medicine.

Calla. A genus of plants of the Arum family (*Araceae*). The only species, *Calla palustris*, is found in swamps in Europe, Siberia, and North America. The rootstock is sometimes made into bread.

Camellia. A genus of evergreen shrubs and small trees of the Camellia family (*Ternstroemiaceae*), natives of China, Japan, and northern India and extensively cultivated in greenhouses in Europe and the United States. The Japanese Camellia (*Camellia Japonica*), the best known species, has large rose-like flowers of various colors.

Camphor Tree (*Cinnamomum camphora*). A large evergreen tree of the Laurel family, from which camphor is made. It is probably a native of China but is cultivated in nearly all warm climates, being highly prized for timber as well as for the production of gum camphor.

Canaigre (*Rumex hymenosepalus*). A tannin producing plant of the Buckwheat family (*Polygonaceae*) resembling the sour dock. Its roots contain a larger percentage of tannin than any other plant. The rapid decrease in the supply of wild Canaigre has caused its cultivation to be undertaken and extensive plantations have recently been established in the southwestern United States.

Canna. A genus of reed-like plants of the Arrowroot family (*Marantaceae*) natives of tropical regions, noted for their showy flowers and ornamental foliage. Many forms are in cultivation, among them the common garden Indian Shot (*C. indica*) and the West Indian *Canna edulis*, which yields a starch or arrowroot called *tous-les-mois*.

Caper (*Capparis*). The true caper bush (*C. spinosa*), whose pickled flower buds are the capers of commerce, grows in Mediterranean countries, and is now cultivated in the Southern States. There are about 150 species of capparis, natives of warm countries, several of which are used like the true caper.

Capsicum. A genus of the Potato family (*Solanaceae*), containing about 90 species, natives of tropical America. They are in very general cultivation for their fruit, which is extremely pungent. Common Capsicum, often called Chile or Red Pepper (*Capsicum annuum*), is the most common species in cultivation. *Capsicum fructum* has great pungency and is the true Cayenne pepper.

Caraway. A plant of the Parsley family (*Umbelliferae*) growing wild in Europe and parts of Asia. It is cultivated for its aromatic seeds, which are used as medicine and as a condiment.

Carnation. A double flowering variety of the clove pink (*Dianthus Caryophyllus*), and one of the most popular flowers in cultivation. It is a native of southern Europe, where it has been in cultivation for 2,000 years. There are many varieties with various forms and colors, but the red, white, pink, and yellow varieties predominate.

Catalpa. A genus of trees of the Trumpet Creeper family (*Bignoniaceae*), containing about seven species, natives of eastern Asia, the West Indies, and two of the eastern United States. The Catalpa or Indian Bean (*Catalpa bignonioides*) has thin silvery gray bark, and reaches a maximum height of 60 feet. It is a native of the Southern States and is cultivated as an ornamental shade tree. The wood is light and of a fine texture, useful in cabinet work. The Western Catalpa or Catawba Tree (*Catalpa speciosa*) has thick rough bark and reaches a maximum height of 120 feet, growing wild from Indiana to Tennessee, and west through Arkansas and Missouri. It grows rapidly and is often planted as a timber tree as well as an ornamental tree in parks. The wood is soft and light, largely used for fence posts, railway ties, and occasionally for furniture.

Catmint or **Catnip** (*Nepeta Cataria*). A plant of the Mint family (*Labiatae*), native of Europe and Asia, and naturalized in the United States. So named because cats are fond of it. Occasionally used in medicine.

Cattail. A name given to two North American species of *Typha*, which grow in swamps and have their flowers in a close cylindrical spike at the top of the stem. The roots are sometimes eaten and the leaves are used in cooperage, being placed between the staves.

Cedar. A common name applied to a number of coniferous evergreen trees, properly, however, to species of *Cedrus*, the **Cedar of Lebanon** (*C. Libani*), the **Deodar** of India (*C. deodara*), and a north African species (*C. Atlantea*). Certain true pines are called cedar, also certain cypress trees. The **White Cedar** of the United States is more nearly a cypress (*Chamaecyparis thyoides*) and the so-called **Red Cedar** is a juniper (*Juniperus virginiana*).

Celandine (*Chelidonium majus*). A plant of the Poppy family (*Papaveraceae*) frequent in Great Britain and Europe, and introduced into the United States. All parts of the plant contain a yellow juice which is very acrid and burning to the skin. It is used to some extent in medicine, being a drastic purgative and in large doses an active poison.

Cereals. Those grasses which produce starchy, mealy seeds used for food, the name being derived from cerealia, or offerings to Ceres, the goddess of agriculture. The principal cereals are wheat, corn, rice, rye, oats, and barley, which, since time immemorial, have been grown more extensively than all other crops, constituting the chief source of food for man and domestic animals. The millets and sorghums, also coracan and Job's tears, are classed as cereals, and sometimes, though incorrectly, buckwheat is also included.

Cereus. A genus of the Cactus family and including some of its largest members, native to the arid regions of the southwestern United States and Mexico. A number are cultivated for their flowers. Those of the night-blooming species (*C. grandiflorus*) sometimes attain a diameter of eight inches, and are noted for their beauty and fragrance. The Great Cereus (*C. giganteus*) is frequent on the arid plains of Arizona and Sonora, where it grows 60 feet high, the fruit forming a staple food for the Indians.

Cherry, Wild (*Prunus*). Several North American trees and shrubs of the Rose family (*Rosaceae*). The **Wild Red Cherry** (*P. pennsylvanica*), a small tree 20 to 30 feet high, is common in rocky woods, in the Northern States. The fruit is small, with a thin pulp, and is often used domestically and in the preparation of cough mixtures. The **Wild Black** or **Rum Cherry** (*P. serotina*) is a large tree, often 80 feet high, very common east of the Rocky Mountains. The dark colored wood is valuable for cabinet making and the bark is used in medicine. The **Choke Cherry** (*P. virginiana*) is a shrub 8 to 15 feet high, rarely a small tree, growing from Newfoundland to British Columbia, south to Georgia and Texas. The **Western Wild Cherry** (*P. demissa*) is a shrub or small tree reaching a maximum height of 30 feet, found from Dakota to New Mexico, west to British Columbia and California.

Chrysanthemum. A genus of plants of the Sunflower family (*Compositae*) containing about 150 species, natives of northern Europe, the Canary Islands, East Africa, and Asia. The Chinese and Japanese chrysanthemums (*C. indicum* and *C. sinense*) are the parents of many forms now in cultivation in the United States. The flowers are of nearly all colors and shades. The **Oxeye Daisy** (*C. Leucanthemum*) is a common weed in pastures in the Atlantic States. The French chrysanthemum or **Marguerite** (*C. frutescens*) is extensively cultivated in France for ornamental purposes.

Clover or **Trefoil** (*Trifolium*). A large genus of plants of the Pea family (*Leguminosae*) containing about 250 species, most abundant in Europe, though about 60 are natives of the United States, being most numerous in California. A number are very valuable, being widely cultivated for fodder, pasturage, and as means of enriching the soil.

Club Mosses (*Lycopodiaceae*). A group of pteridophytes closely allied to the ferns, giant forms of which were immensely abundant in the Carboniferous Age, but sparingly represented among living plants, chiefly by species of *Psilotum* and *Lycopodium*, most abundant in the tropics. In temperate regions the club mosses have the aspect of large trailing true mosses and some have arbor-vitae-like leaves. A few species are used in medicine, and the dust-like spores of a true club moss form the well-known lycopodium powder.

Colocynth Gourd or **Bitter Apple** (*Citrullus vulgaris*). A plant of the Gourd family, growing chiefly in the Mediterranean region. The drug colocynth, extensively used in medicine, is obtained from the dried pulp of the fruit. While the fleshy portions are exceedingly bitter and drastic, the seeds are bland and much prized for food in North Africa.

Compositae (Composite, Sunflower, or Thistle family). The largest natural family of flowering plants containing some 800 genera and over 12,000 known species and estimated to embrace more than one tenth of all flowering plants. It is represented in all parts of the world, and in some regions constitutes a remarkably high percentage of the flora, in central Europe over one eighth, in California and Mexico over one sixth, in Chile over one fifth, and in southern Argentina one fourth, while in exceptional localities the proportion reaches one third as in the Andes of Chile. This family is now considered the most highly developed and specialized of all plants and is of recent geologic appearance, the earliest fossil composites being found in the upper Miocene.

There are three well-marked divisions: the tubular flowered composites (*Tubuliflorae*) of which the aster, golden-rod, and sunflower are familiar types; the ligulate flowered composites (*Liguliflorae* or *Cichoraceae*) rep-

resented by the dandelion, chicory, and lettuce; and the labiate flowered composites (*Labiatiflorae*) confined to the tropics and southern hemisphere. Important representatives are the true and Jerusalem artichokes, carthamine, endive, salsify, scorzonera, wormwood, southernwood, camomile, tansy, arnica, coltsfoot, pyrethrum, elecampane, and a large number of ornamental plants in cultivation such as the dahlia, chrysanthemum, China aster, immortelle, marigold, cornflower, coreopsis, cineraria. The economic value of this vast order is comparatively slight, not a single plant of prime importance having yet been developed in cultivation.

CYCAD. Cycas revoluta.

Conifers (*Coniferae*). The largest group of living gymnosperms; all trees and shrubs of temperate regions, rare in the tropics; mostly with evergreen, resinous, needle-shaped or scale-like leaves and producing a cone-like strobile containing the seeds, whence the name, conifer. There are some 32 genera and 300 species whose combined timber and resin products exceed in value that of every other order of plants, grouped in two families: the **Pines** (*Pinaceae*) and the **Yews** (*Taxaceae*). To the former belong the pines, spruces, hemlocks, firs, larches, cypresses, cedars, redwoods, and araucarias, and to the latter the yews, and the numerous species of *Podocarpus* of the southern hemisphere. The whole group was much more numerous in earlier geologic times.

Cork Oak or Cork Tree (*Quercus suber*). A species of oak, native of southern Europe and northern Africa, the spongy bark of which is the common cork of commerce. It ranges from 20 to 40 feet in height, attains a diameter of 5 feet, and sometimes lives 300 to 400 years, producing crops of bark for 150 years.

Cornflower or Bluebottle (*Centaurea Cyanus*). A popular garden flower in Europe and the United States, there being many varieties with flowers ranging from a beautiful deep blue to white. Native of Mediterranean countries and a common weed in European grain fields.

Cress. A name given to many plants the foliage of which has a pungent mustard-like taste and is used as a salad. The name is commonly confined to species of *Lepidium* of the Mustard family (*Cruciferae*).

Crowfoot Family (*Ranunculaceae*). A natural family of dicotyledonous herbs and climbing shrubs, consisting of about 40 genera and 600 species, natives of temperate and cool regions, often acrid and drastic and some are virulent poisons. Many **Buttercups** or **Crowfoots** (*Ranunculus*) are acrid when fresh, particularly the **Cursed Crowfoot** (*R. sceleratus*). The most poisonous are the **Aconites** (*Aconitum*), **Hellebores** (*Helleborus*), the **Larkspurs** (*Delphinium*), and the **Baneberry** (*Actaea*), while the **Yellow Root** (*Hydrastis canadensis*) and **Goldthread** (*Coptis trifolia*) contain powerful medicinal properties. The remaining plants of this family are mostly harmless, and embrace some of the most prized garden flowers, such as the **Virgin's Bower** (*Clematis*), **Anemone**, **Peony** (*Paeonia*), and **Columbine** (*Aquilegia*).

Custard Apple. A name commonly given to the fruits of certain trees of the genus **Anona** of the Custard Apple family (*Anonaceae*). Some of the fruits are among the most delicious produced in tropical countries.

Cycads (*Cycadaceae*). A family of gymnosperms, consisting of about 10 genera and 80 species of dwarf, palm-like trees, of limited distribution, chiefly in the tropics; economically valuable as the source of a kind of sago obtained from the interior of the trunk and from the mealy portion of the seeds. **Cycas revoluta** and **C. circinalis**, frequently met with in conservatories, are sago plants in Japan and in the Moluccs Islands. The seeds of the **Mexican Cycad** (*Dioon edule*) yield a starch food. The cycads first appeared in the Carboniferous Age and became immensely abundant in Cretaceous time. The present species are merely remnants of a dying race, the scattered survivors of a great ancient group of plants.

Cyclamen. A small genus of plants of the Primrose family (*Primulaceae*), several species of which are cultivated in flower gardens on account of the beauty and fragrance of their flowers.

Cypress (*Cupressus*). Evergreen trees and shrubs of the Pine family, with small, imbricated leaves and globular cones, comprising about 12 species, in northern regions of the world. The **Common Cypress** (*C. sempervirens*) of Europe, now introduced, is famous for its durable wood, believed to be the cedar or gopher wood of the Bible. The **Monterey Cypress** (*C. macrocarpa*), a beautiful tree sometimes 150 feet high and 8 or ten feet in diameter, grows near the sea in California and three others occur on the Pacific Coast. The so-called **Cypress** or **White Cedar** (*Chamaecyparis thyoides*) of the Eastern States, and the **Bald Cypress** (*Taxodium distichum*) of southern swamps, well known and valued for timber, are strictly not true cypresses.

Cytisus. A genus of the Pea family (*Leguminosae*), natives of the Old World. There are about 35 species, all small trees or shrubs with yellow, white, or purple flowers, many of which are very beautiful. They are common in shrubberies and greenhouses and several species are cultivated as forage plants. Some are called broom, others laburnum, but most are known as cytisus.

MONTEREY CYPRESS.

Dahlia. A genus of the Sunflower family (*Compositae*), natives of Mexico. *Dahlia variabilis* and *Dahlia Juarezii* are the parents of most of the varieties in cultivation, of which there are now nearly 3,000, possessing a wide range of sizes and colors.

Dandelion (*Taraxacum officinale*). A perennial plant of the Sunflower family (*Compositae*), native of the old world, and possibly indigenous in western North America; now practically cosmopolitan by naturalization, being immensely abundant in pastures, meadows, and roadsides, throughout large areas of the United States. Formerly it was often employed in medicine, is still an ingredient in bitters and domestic remedies, and is used to some extent as

a pot herb. **The Fall Dandelion** (*Leontodon*), a related plant, readily distinguished by its more slender solid stipe, is also of European origin but widely naturalized in northeastern temperate North America.

Desert Plants are climatic groups especially adapted by many peculiarities of structure to withstand the excessive transpiration that would otherwise occur in an intensely dry atmosphere. Some, like the cactus, have succulent, fleshy leaves and stems, others are densely clothed with hairs, small scales or wax or having special structures guarding the pores; still others are bulbous, dying down after a brief period of rapid growth. The majority are shrubby and very woody throughout. A considerable number are either thorny or contain acrid and poisonous juices protecting them against the attacks of herbivorous animals.

Desmids. A large group of fresh water algæ, closely related to the diatoms; usually one-celled, bright green, and beautifully symmetrical in form, growing on plants and mud in ponds.

Diatoms (*Diatomaceae*). A family of one-celled, microscopic algae, existing in immense numbers at the bottom of the sea, lakes, ponds, upon submerged plants, and in damp places, numbering over 1,500 known species, characterized by great variety in form and markings of the silicious cell walls, being exceedingly beautiful objects and used to test the highest powers of microscopes, the fine lines of some species exceeding 100,000 to the inch. Fossil deposits occur in Bohemia, Virginia, Nevada, and California, known as diatomaceous earths, which are used as polishing powder.

Dicotyledons. The larger of the two natural groups of *Angiosperms*. They differ from the other group, Monocotyledons, most conspicuously as follows: The growing seed develops two seed leaves or cotyledons, whence the name; the stems increase in thickness by new growths of tissue on the outside of the woody portion between it and the bark; the leaves have open venation, i. e., are net-veined or reticulated; and the flower parts are usually in fours or fives. There are two groups of dicotyledons:—

Archichlamydeae, in which the corolla, if present, is composed of separate petals. The group includes the simpler and more primitive dicotyledons (often destitute of corolla and sometimes of the calyx also), numbering over 40,000 species, prominent families being: the tree groups, oak, walnut, elm, and willow, and allied families; the buttercups and their numerous allies, the poppies, mustards, water lilies, magnolias, the rose and saxifrage families, with their useful fruits, the pea family, largest of the group, numbering with its allies 10,000 species, and the parsley family, which is the highest of the archichlamydeae. **Metachlamydeae**, a group evidently developed from the preceding; distinguished by having petals united—i. e., sympetalous; the group contains the most highly organized plants, also numbering over 40,000 species. The leading alliances are the heath, convolvulus, gentian, polemonium, mint, nightshade, vervain, plantain, and related families, together with the Compositae, the largest family of angiosperms containing probably over 12,000 species and standing at the head of the whole plant kingdom in organic development.

Digitalis. A genus of plants of the Figwort family (*Scrophulariaceae*), natives chiefly of Europe and Asia. Purple Foxglove (*D. purpurea*), a native of Great Britain and naturalized in the United States, is much valued in medicine. Purple, white, and yellow flowered varieties are cultivated. The whole plant is poisonous.

Dogwood (*Cornus*). A genus chiefly of shrubs and small trees, the wood of which is exceedingly hard and is used for many purposes. The astringent bark and sometimes the leaves are used in medicine. There are about 25 species, some 18 of which occur in the United States. The **Flowering Dogwood** (*C. florida*) is a small tree, native of the Eastern States and frequent in cultivation. It has showy white petal-like bracts surrounding its clusters of small flowers.

Dutchman's Pipe (*Aristolochia macrophylla*). A twining vine of the Birthwort family (*Aristolochiaceae*) growing in rich woods from Pennsylvania to Georgia, west to Minnesota and Kansas, and often planted to form shady bowers.

Ebony. The hard, dark colored heartwood of a number of species of trees. Tropical species of the genus *Diospyros* of the Ebony family (*Ebenaceae*) are the source of most of the ebony of commerce. *D. ebenum*, a large tree of India, Ceylon, and other tropical countries, furnishes the best quality.

Edelweiss (*Leontopodium alpinum*). A small perennial of the Sunflower family (*Compositae*) growing at high elevations in the Alps and often cultivated in gardens in the United States and Europe. It is famous because of its scarcity in the mountains and the supposed difficulty of obtaining it.

Eglantine. A name given to two species of rose: *Rosa rubiginosa* or *Sweet Brier*, a native of Europe and naturalized in the United States, which has sweet-scented pink flowers, and *Rosa eglanteria*, a West Asian species with yellow flowers which have an offensive odor.

Elder (*Sambucus*). A genus of the Honeysuckle family (*Caprifoliaceae*) containing about 20 species of shrubs or trees. The **American Elder** or **Elderberry** (*S. canadensis*) is a shrub 4 to 10 feet high, growing along fences and roadsides. The purplish black berries are sometimes used for making wine and other preparations. The **Mexican Elder** (*S. mexicana*), native of the southwestern part of the United States and Mexico, is a tree 25 to 30 feet high. The flowers are used in medicine. The **Western Elder** (*S. glauca*), a tree 30 to 50 feet high, very abundant in the Pacific coast region, is occasionally planted as an ornamental tree. The **European Elder** (*S. nigra*) is a large shrub or small tree with hard, tough wood, used as a substitute for boxwood. The berries are largely manufactured into wine.

Elecampane. A genus of the Sunflower family (*Compositae*).—The Common Elecampane (*Inula Helenium*), a native of Europe and naturalized in the United States, is the only important species. It was formerly extensively cultivated for its root, which is used in medicine.

Elm (*Ulmus*). A genus of the Nettle family (*Urticaceae*). There are about 16 species, 6 of which are natives of the United States. The **English Elm** (*U. campestris*), a tree 60 to 80 feet high, is one of the most important species. It is found in Europe, western Asia, northern Africa, and is naturalized in the United States. The wood is compact and very durable under water, much used in shipbuilding and wagon making. The **American White Elm** (*U. americana*) is a large tree 90 to 100 feet high, growing from Newfoundland to Florida and Texas. The wood is tough, strong, and largely used for wheel hubs, in cooperage, and for shipbuilding. It is a fine street and park tree. The **Cork Elm** (*U. racemosa*) is a tree 70 to 90 feet high, growing from Quebec and Vermont westward to Nebraska and Tennessee. The wood is considered the best of American elms, and is much used for agricultural implements and bridge timbers. The **Slippery** or **Red Elm** (*U. fulva*) is a tree 60 to 70 feet high, growing from Ontario to Florida, westward to Nebraska and Texas. The wood is durable in contact with the soil and is much used for fence posts and railway ties. The mucilaginous inner bark is used in medicine.

Epiphytes. Plants which grow upon the stems or other portions of larger plants for mechanical support, but do not to any important extent derive their food therefrom. They possess chlorophyll and are capable of creating their own food from inorganic elements. Illustrative examples are the **Long Moss** (*Tillandsia*) and various tropical orchids.

Everlasting. A name given to various plants whose flowers may be dried without losing their form or color, particularly to certain species of amaranth and *Helichrysum*. In the United States the name **Pearly Everlasting** is given to *Anaphalis margaritacea*, which grows in dry woodlands from Maine to Washington and Oregon and northward.

Ferns (*Filices*). The most important group of pteridophytes, comprising about 200 genera and over 4,000 species, widely diffused in moist regions, though most abundant in the tropics; ranging

in size from minute moss-like forms to the giant tree ferns of hot climates. Ferns are the most highly organized of non-seed-bearing or flowerless plants, possessing root, stem, and leaf structures with vascular tissues very similar to those of higher plants. The most striking difference is in their mode of reproduction. There is complete alternation of generations, the leafy plant being non-sexual and producing dust-like spores from modified portions of the leaf-like fronds. The spores germinate, and grow into minute flattened structures called prothallia, which are sexual, producing egg

TREE FERN.

cells and antherozoids; these by fertilization develop a new organism, which becomes the asexual, leafy fern. Although embracing some of the most striking and beautiful plants, ferns are of small economic importance. There are six families of true ferns (*Filices*):—

Osmundaceae, embracing the large royal ferns, often called flowering ferns, represented in the United States by three species of Osmunda. **Gleicheniaceae**, all tropical ferns. **Schizaeaceae**, climbing ferns, about 100 species, mostly tropical. The beautiful climbing fern or **Hartford Fern** (*Lygodium*) and the rare and curious **Curly Grass** (*Schizaea*) of the Eastern States are examples. **Hymenophyllaceae**, filmy ferns, 200 species, exceedingly abundant in the tropics, a few occurring in the Southern States. **Cyatheaceae**, a tropical group which includes the great tree ferns. **Polypodiaceae**, the largest and most highly developed family, numbering over 3,000 species, and including nearly all the true ferns of temperate regions.

Feverbush or Spicebush (*Benzoin aestivale*). A graceful shrub of the Laurel family (*Lauraceae*) with beautiful leaves and scarlet berries, common in the eastern United States. The bark is sometimes used in treating fevers, and the seeds are occasionally substituted for allspice.

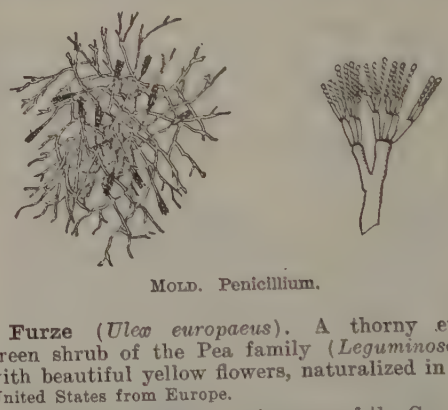
Fir (*Abies*). A genus of the Pine family (*Coniferae*) containing about 25 species, natives of the cooler portions of the north temperate zone. The **Silver Fir** (*A. picea*), a common tree in central Europe, attaining a height of 150 to 200 feet, is the source of the Strassburg turpentine. The **Balsam Fir** (*A. balsamea*) is a tree 50 to 80 feet high, growing from Virginia northward. Canada balsam is made from the sap. The **White Fir** or **Great Silver Fir** (*A. grandis*) is a large tree, often 300 feet high and 10 feet in diameter, growing from British Columbia to lower California. The wood is soft and extensively used for cooperage and boxes. The **Red Fir** (*A. nobilis*) is a large tree 150 to 200 feet high, found in the same regions as the white fir. It is often planted in Europe as an ornamental tree. The **Mexican Fir** (*A. religiosa*) is a magnificent silver-leaved tree 150 feet high.

Forget-me-not (*Myosotis*). A genus of the Borage family (*Boraginaceae*) with small, usually blue flowers. A number of species are common in America. The flower is esteemed for its delicate beauty, and is widely regarded as an emblem of friendship.

Foxtail Grass. A name applied to certain species of two very dissimilar genera of grasses, *Alopecurus* and *Setaria*. There are about 20 species, natives of both hemispheres. **Meadow Foxtail** (*A. pratensis*) is one of the best meadow and pasture grasses of Europe and has become established in the United States. **Jointed Foxtail** or **Water Foxtail** (*A. geniculatus*) is very common in moist places in many parts of the United States and cattle are very fond of it. The common **Yellow Foxtail** (*S. glauca*) and the **Green Foxtail** (*S. viridis*) are exceedingly abundant weeds growing everywhere in cultivated ground. The true millets, which are also species of *Setaria*, are sometimes called foxtail grass.

Fuchsia. A genus of the Evening Primrose family (*Onagraceae*), named in honor of Leonard Fuchs, containing about 70 species, mostly natives of tropical America. Some are climbers, some small trees, but the majority are shrubs. Several species are largely cultivated in greenhouses because of the beauty and fragrance of their flowers. A great many varieties have been developed, mostly from *Fuchsia macrostemma*, which first became popular about 1790.

Fungi. A great group of thallophytes, of which there are upwards of 35,000 known species, some 8,000 being North American, ranging in size from the minutest organisms known to thread-like masses several feet long, some of which develop reproductive bodies a foot in diameter (puff balls) and in color from white to yellow, blue, red, and black. All derive their sustenance either directly from living plants and animals (parasitic) or from dead or decomposing organisms (saprophytic). There are six classes: **Schizomycetes**, Bacteria; **Myxomycetes**, Slime molds; **Phycomycetes**, algae-like fungi, molds; **Ascomycetes**, sac fungi, lichen fungi; **Basidiomycetes**, Basidium fungi, Mushrooms; **Saccharomycetes**, Yeasts.



MOLD. Penicillium.

Furze (*Ulex europaeus*). A thorny evergreen shrub of the Pea family (*Leguminosae*), with beautiful yellow flowers, naturalized in the United States from Europe.

Gentian (*Gentiana*). A genus of the Gentian family (*Gentianaceae*) containing about 300 species, mostly natives of the North Temperate and Arctic zones and the Andes of South America. The **Common** or **Yellow Gentian** (*G. lutea*) which is abundant in meadows of the Alps and Pyrenees, is valued for its seed which is used in medicine. The **Soapwort Gentian** (*G. Saponaria*) is extensively used in the United States as a substitute for Common Gentian. It grows in wet soil from Ontario to Minnesota, Florida, and Texas. **Fringed Gentian** (*G. crinita*) celebrated for the beauty of its flowers, which are large, blue, and fringed on the margins, occurs from Quebec and Minnesota south to Georgia and Iowa. The **Downy Gentian** (*G. puberula*), with blue funnel-shaped flowers is a common garden plant.

Geranium. A genus of the Geranium family (*Geraniaceae*), containing about 150 widely distributed species, 10 of which are natives of the United States. The **Herb Robert** (*G. Robertianum*) is a low-spreading herb with small red-purple flowers,

found in eastern North America, Europe, Asia, and northern Africa. It has astringent properties and is used in medicine. The **Alumroot** or **Wild Cranesbill** (*G. maculatum*), which has beautiful rose-purple flowers, is the most valuable, medicinally, of all the species. It grows from Manitoba south to Georgia, Alabama, and Missouri. The name cranesbill is given to a number of species. The plants commonly cultivated in gardens and greenhouses under the name of Geraniums are species of *Pelargonium*. There are about 125 species mostly natives of the Cape of Good Hope, prized on account of the brilliant colors of the flowers and the shape and markings of the leaves.

Gillyflower. A name applied to a number of plants of the Mustard family (*Cruciferae*), prized for the beauty and fragrance of their flowers. The name is used mostly to denote species of *Chieranthus* and *Matthiola*.

Ginger (*Zingiber*). A genus of the Ginger family (*Zingiberaceae*). The species, of which there are about 20, are perennial herbs, natives of the East Indies. The root stock of most species is used in medicine and as a condiment. The most valuable is the Common or Narrow-leaved Ginger (*Z. officinale*), which is cultivated in most tropical countries. Zerumbet, or Broad-leaved Ginger (*Z. zerumbet*), cultivated in Java, has a rootstock less pungent than that of Common Ginger. Mioga (*Z. mioga*) is much used in Japan. *Asarum canadensis* of North America, called Wild or Indian Ginger, is sometimes used as a substitute for true ginger.

Ginkgo or **Maidenhair Tree** (*Ginkgo biloba*). The only living representative of a geologically important group of gymnosperms, long cultivated for ornament and only recently discovered in the wild state in western China. It is a beautiful tree sometimes 100 feet high, with thickish, veiny deciduous leaves, in contour strongly resembling those of the maidenhair fern.

Ginseng. A name given to two species of Panax of the Ginseng family (*Araliaceae*), the roots of which are highly esteemed as a medicine by the Chinese. The Chinese Ginseng (*Panax ginseng*) is a perennial herb one to two feet high, cultivated in China and Korea. The American Ginseng (*P. quinquefolium*) grows from the Mississippi river eastward. On account of the great demand for the root in China, where it commands a high price, numerous attempts have been made to establish it profitably in cultivation in the United States, but so far without marked success.

Gladiolus. A genus of the Iris family (*Iridaceae*), and largely native of South Africa. Most of the species have flowers of great beauty, some of them being among the finest ornaments for borders and greenhouses.

Golden-rod (*Solidago*). A large genus of the Composite family, closely related to the aster, and containing upwards of 75 species, most of which are North American, some 50 different gelden-rods occurring in the eastern United States. On account of its abundance, wide distribution, and richness of color the golden-rod has been called the national flower.

Grasses (*Gramineae*). An immense well-defined family of monocotyledonous plants, consisting of some 3,500 species, universally diffused and abundant, forming a very considerable portion of the vegetation of most regions and including the most valuable plants used by man. Grasses are mostly herbaceous though a few, like the bamboo, are woody; usually with round or slightly flattened stems, solid at the joints; possessing alternate leaves, with tubular sheaths having free overlapping edges, and a ligule on the side opposite to the sheath; and the grain (commonly called the seed but in reality the fruit) grooved on one side, with the embryo on the outside of the starchy perisperm; being thus distinguished from their nearest very numerous, but comparatively valueless relatives, the sedges, which have solid, often angular, stems, and leaves with tubular, closed sheaths, lacking ligules and with the embryo within the perisperm.

In cool temperate and cold regions the true stems of perennial grasses usually grow in an interlacing protective network below the surface of the soil, forming a more or less dense turf or sod from which are sent up annual growths or culms, commonly but inaccurately called stems. In the tropics perennial grasses grow individually erect, similarly to annual species; consequently there is no true turf in hot countries and only partial turf in warm temperate regions—it being difficult to establish it even by artificial means in the southern United States—and such regions are largely dependent upon annual grasses for pasturage and hay. Grasses are of inestimable value: first, by reason of their starchy, mealy seeds—all of the cereal grains being grasses—and, second, on account of their stems and leaves, which constitute the chief pasturage, fodder, and forage for domestic animals, thus directly and indirectly providing man with the greater part of his food both vegetable and animal.

Greasewood (*Sarcobatus vermiculatus*). A somewhat shrubby and spiny plant, 2 to 10 feet high, of the Goosefoot family, very abundant in alkali soils of the interior plateau region from Montana to Mexico and west to the Sierra Nevada.

Ground Cherry (*Physalis*). A genus of herbs of the Potato family (*Solanaceae*) having an inflated calyx which incloses a small, many-seeded berry. There are nearly 50 species, about 35 occurring in the United States, some of which are sparingly cultivated for the sweetish fruit used in preserving, and one species, the **Chinese Lantern Plant** (*P. Francheti*), for ornament, owing to its showy scarlet or crimson bladder-like calyx.

GINKGO.

Gymnosperms. The smaller of the two groups of seed plants, *Spermatophytes*, distinguished by bearing naked seeds, while the other group, the Angiosperms, bears seeds, which are covered, that is, inclosed in an ovary. Gymnosperms constituted a large part of the forest vegetation of the Coal Measures, but the living representatives of that vast ancient array are few in number. Two groups are extinct, and the existing species, of which there are about 400 (as compared to upwards of 100,000 Angiosperms), belong to four groups: (1) **Coniferae**, the largest and most important of the living forms, containing the valuable timber trees, pine, fir, spruce, cedar, hemlock, redwood, cypress, and yew. (2) **Cycads**, fern-like tropical forms, very limited in distribution, containing some 80 species. (3) **Gnetums**, very remarkable in form, peculiar to arid regions and certain portions of the tropics comprising only about 30 species of Ephedra, Tumboa, and Gnetum. (4) The **Ginkgo**, which is the only living representative of a formerly important group.

Halophytes. Plants which grow naturally in salty or alkaline soils or waters. The greater portion grow in the ocean and along its shores, but there are large areas of halophytic plants in dry regions where salt lakes formerly existed.

Hazelnut (*Corylus*). A genus of shrubs or small trees of the Birch family (*Betulaceae*), of about 7 species, natives of the Northern Hemisphere. The **American Hazelnut** (*C. americana*) is a shrub 3 to 8 feet high, growing in thickets from

New England to Ontario and Dakota and southward. The **Beaked Hazelnut** (*C. rostrata*), a shrub similar to the preceding, is found in the Pacific Coast region and also in the Eastern and Middle States. The **Common Hazel** or **Filbert** (*C. Avellana*), an Old World species with numerous varieties, is extensively cultivated in Europe.

Heath Family (*Ericaceae*). A large, well-marked natural family of dicotyledonous plants, consisting of about 55 genera and 1,050 species, mostly small shrubs, natives of heathy and boggy tracts, especially in subalpine and alpine localities throughout the world. The foliage is usually astringent and in many species of **Rhododendron, Azalea, Andromeda,** and **Kalmia** it is dangerously poisonous. The fruits of **Gaultheria** are edible and also yield the oil of wintergreen. Many species are highly prized in cultivation for their flowers. To this family belong **Blueberries, Huckleberries,** and **Cranberries.**

Heliotrope (*Heliotropium*). A genus of the Borage family (*Boragineae*) containing about 115 species, many of which have fragrant flowers used by perfumers. The **Peruvian Heliotrope** (*H. peruvianum*), a small shrub seldom more than two feet high, with lilac-blue flowers, is in almost universal cultivation for its fragrance, which resembles that of vanilla. The **European Heliotrope** (*H. europaeum*), a native of Europe and naturalized in the United States, has small white or rarely pale red flowers. The **Seaside Heliotrope** (*H. curassavicum*), a white-flowered species, is found in the southern, central, and western part of the United States. Many hybrid heliotropes, which exhibit great variety in size and color of the flowers, are cultivated in flower gardens and greenhouses.

Hemlock Tree (*Tsuga*). A genus of the Pine family (*Coniferae*), containing about seven species, four of which are natives of North America. The **Common Hemlock** (*Tsuga canadensis*) is a large tree sometimes attaining a height of 110 feet, and growing from Nova Scotia to Alabama and west to Wisconsin and Minnesota. The wood is light and soft and is extensively used in building. The bark is largely used in tanning and hemlock oil is distilled from the branches and leaves. There are many cultivated varieties which are very ornamental. The **Carolina Hemlock** (*T. caroliniana*) is a tree attaining a maximum height of 80 feet, and growing in Virginia, North Carolina, and Georgia.

Hickory (*Carya*). A genus of the Walnut family (*Juglandaceae*), containing 10 species, natives, exclusively of North America. Their timber is very heavy, strong, and tough, and is much used in the manufacture of agricultural implements, carriages, and hoops for casks. The fruit is a hard-shelled nut, which in some species has an excellent flavor. The **Pecan** (*C. illinoensis*) is a large, slender tree reaching a maximum height of 170 feet and a diameter of 6 feet. It grows in moist soil, especially along streams, from Indiana to Iowa and Missouri, south to Kentucky and Texas. It is cultivated in the Southern States for its sweet, edible nut, which forms an important article of commerce. The **Shagbark** or **Shellbark Hickory** (*C. ovata*) is a large tree, sometimes 120 feet high, growing in rich soils from Ontario and Minnesota south to Florida, Kansas, and Texas. The nuts form an important article of commerce, though less used than the pecan. The **Whiteheart Hickory** or **Mockernut** (*C. alba*) is a large tree 75 to 100 feet high, growing from Ontario to Florida, occasionally to Missouri and Texas. It has a thick-shelled, edible nut. The **Pignut Hickory** (*C. glabra*), a tree 75 to 100 and sometimes 120 feet high, ranges from Ontario to Florida, westward to Nebraska and Texas. The nuts are bitter and not edible.

Holly (*Ilex*). A genus of trees and shrubs of the Holly family (*Aquifoliaceae*). There are about 160 species, mostly natives of America and about 12 are natives of the United States. The **American Holly** (*I. opaca*), a slow-growing tree, sometimes 50 feet high, is found from Maine to Florida, west to Missouri and Texas; occasionally cultivated as an ornament in parks. The wood is white, hard, and much used in cabinet making, interior finish for houses, and in turnery. The branches are used in large quantities for Christmas decorations. The **Dahoon Holly** (*I. Cassine*) is a small tree about 25 feet high, growing in low woods from southern Virginia to Florida, west to Louisiana. The leaves are sometimes used for tea. The **Common Holly** (*I. Aquifolium*), the only European species, is grown in parks and shrubberies in Great Britain and is occasionally planted in the southern and middle portions of the United States. It sometimes attains a height of 50 feet.

Hollyhock. A plant of the Mallow family (*Malvaceae*), common in gardens throughout the world. It has a tall stem with large flowers which vary exceedingly in color, and double and semi-double varieties are common.

Holy Grass (*Hierochloe borealis*). A sweet smelling grass about a foot high, found in the northern United States, Canada, and northern Europe. It is of little value as forage, but in Iceland it is used for scenting apartments and clothes. Its use in scenting churches gave rise to the name holy grass.

Honey Locust (*Gleditsia triacanthos*). A beautiful thorny tree, 70 to 80 feet in height, belonging to the Pea family (*Leguminosae*), and native of rich valleys from Ontario through the basin of the Mississippi. Sometimes the trunk is almost completely covered with bunches of branching thorns. It derives its name from the sweet, jelly-like pulp that surrounds the seeds, which are borne in conspicuous bean-like pods.

Honeysuckle (*Lonicera*). A genus of the Honeysuckle family (*Caprifoliaceae*), containing about 100 species; erect or twining shrubs, about half of which are in cultivation. The **Trumpet** or **Coral Honeysuckle** (*L. sempervirens*) is a twining green shrub, native of the United States, and often planted on account of its beautiful scented flowers, red on the outside and yellowish within. The **Common Honeysuckle** or **Woodbine** (*L. periclymenum*), an English species with fragrant cream-colored flowers, is frequently planted in shrubberies. The **Italian** or **Perfoliate Honeysuckle** (*L. Caprifolium*), a native of Europe and naturalized in the United States, is very similar to the English honeysuckle. The **Japanese Honeysuckle** (*L. japonica*) is common in the eastern United States, having escaped from cultivation.

Horehound (*Marrubium*). A genus of the Mint family (*Labiatae*). The **White Horehound** (*M. vulgare*) is much used in medicine. The name **Black** or **Fetid Horehound** is applied to *Ballota nigra*, another plant of the Mint family, closely resembling the white horehound and having similar medicinal properties. Both are natives of Europe and now widely naturalized in the United States, especially the white horehound.

Hornbeam (*Carpinus*). A genus of the Birch family (*Betulaceae*), containing about 12 species. The **Common Hornbeam** (*C. Betulus*) is a beautiful tree 60 to 100 feet high, very frequent in many parts of Europe. The wood is white, hard, and strong, and is much used by carpenters and wheelwrights. The **American Hornbeam, Blue Beech,** or **Water Beech** (*C. caroliniana*) is a small tree 35 to 40 feet high which grows from Quebec to Florida and west to Minnesota and Texas. The wood is very hard and heavy and is one of the toughest woods of the northern states. The **Hop Hornbeam** (*Ostrya virginiana*) has much the same habit, range, and properties.

Horse-Chestnut (*Aesculus*). A genus of the Buckeye family (*Hippocastanaceae*), containing about 11 species, natives of North America and Asia. The seeds are large and somewhat resemble chestnuts. The **Common Horse-chestnut** (*A. Hippocastanum*) is a large tree, sometimes 100 feet high, native of Asia and escaped from cultivation in the eastern United States. It is largely planted as an ornamental tree in all countries with temperate climates. The **Ohio** or **Fetid Buckeye** (*A. glabra*) is a tree reaching a height of about 50 feet, growing from Pennsylvania to Alabama, west to Michigan and Oklahoma. The wood is used for making artificial limbs and wooden ware. The **Sweet** or **Big Buckeye** (*A. octandra*) is a large tree 80 to 90 feet high, growing from Pennsylvania to Georgia, west to Iowa and Texas, and often planted as an ornamental tree. The **California Buckeye** (*A. californica*) is a small tree 30 to 40 feet high, native of California, sparingly planted for ornament.

Horsetails (called also Scouring Rushes). An order and family of pteridophytes, ranking next to the ferns, now consisting of the single genus Equisetum, containing about 25 species of world-wide distribution in wet places, several occurring in the United States. They range in height from a few inches to 12 or 15 feet, and outwardly resemble certain gymnosperms, but are entirely different from them in structure as well as from all other pteridophytes. Some contain so much silex that a polishing powder is made from the ashes of the stems. The fossil **Calamites** appears to have been a giant horsetail form of the Carboniferous Age.

COMMON HORSETAIL.
Equisetum arvense.

Huckleberry. A name properly applied to the genus *Gaylussacia*, but (especially westward) indiscriminately given to several species of *Vaccinium*, growing in the northern regions of Europe and America. The species range in height from a few inches to ten feet, and the berries vary greatly in form and color from one eighth to five eighths of an inch in diameter, and from black to blue, and white, and one species is red. Some are called **Blueberries** and others have various local names. None has yet been successfully cultivated, though large quantities of fruit from wild plants are marketed.

Hydrangea. A genus of about 25 species of ornamental shrubs of the Saxifrage family (*Saxifragaceae*), natives of North and South America, China, and Japan. The flowers are small and white, pink, or bluish in color. *Hydrangea Hortensia*, a dwarf variety, is extensively grown in greenhouses.

Hyssop (*Hyssopus officinalis*). An evergreen plant of the Mint family (*Labiatae*), with beautiful blue flowers. It is cultivated for its aromatic leaves, young shoots, and roots, which are used in medicine and for seasoning.

Ice Plant (*Mesembryanthemum crystallinum*). A tender greenhouse herb, native of Africa and southern Europe, remarkable for the glistening bladder-shaped hairs with which its surface is covered, and which sparkle in the sun like granules of ice.

Immortelle. A name applied to various species of *Helichrysum*, especially *H. arenarium*, grown extensively in France, which retain their form and to a considerable extent their color for a long time after gathering. Widely used in Europe and America for funeral decorations. (See EVERLASTING.)

Ipecacuanha (*Cephaelis ipecacuanha*). The name applied to a shrubby plant of the Madder family (*Rubiaceae*) growing in Brazilian forests, the roots of which are much used in medicine.

Ipomoea. A genus of the Morning Glory family (*Convolvulaceae*) containing about 400 species, mostly twining or trailing herbs. Many are cultivated for their beautiful flowers, as the morning glory and moonflowers; others for their thick fleshy roots, as the well-known sweet potato (*I. batatas*) and jalap (*I. purga*), much used in medicine. The **Cypress Vine** (*I. Quamoclit*), native of tropical America but now very common in the southern United States, has beautiful flowers and foliage. The **Common Morning Glory** (*I. purpurea*) is a native of Mexico but has escaped from gardens, becoming a weed in many parts of the United States. The **Moonflowers** are derived from *I. Bona-nox* and *I. grandiflora*. The flowers are pure white, striped with green and very fragrant. The **Wild Potato** (*I. pandurata*) is a troublesome weed, difficult to exterminate on account of its huge roots. *I. fastigiata* and *I. leptophylla*, both growing in the western United States, are noted for their immense roots, specimens of the latter often weighing 100 pounds.

Iris (*Flower-de-Luce, Fleur-de-Lis*). A genus of the Iris family, comprising about 100 species, most numerous in North America and Europe, with conspicuous, beautiful flowers, many of which are in wide cultivation. Others are prized for their roots, **Orris Root** being produced by three European species. The rootstocks in some species are edible. The **Blue Flag** (*I. versicolor*) is common in wet places throughout the Eastern States.

Ivy. A name given to a number of climbing, creeping, and twining plants. The true **English Ivy** (*Hedera Helix*), held in high esteem by the Greeks and Romans, grows throughout a large part of Europe and is cultivated as an ornamental vine for walls and rocks in the United States. It belongs to the Ginseng family, while the **Virginia Creeper** (*Psedera quinquefolia*), often called ivy, belongs to the Grape family, as does the **Japanese** or **Boston Ivy** (*Psedera tricuspidata*); the **Ground Ivy** (*Nepeta Glechoma*) is a mint, and the **Poison Ivy** (*Rhus*) belongs to the Sumach family.

Jack-in-the-Pulpit or **Indian Turnip** (*Arisaema triphyllum*). A common American herb of swampy woodlands belonging to the Arum family (*Araceae*), noted for its acrid bulbs, sometimes used in domestic medicine, and for the peculiar shape of the flower parts, giving rise to the name.

Jasmine (*Jasminium*). A genus of the Olive family (*Oleaceae*) containing about 100 species of shrubs or climbers, natives of the warmer parts of Asia. The **Common Jasmine** (*J. officinale*) is much cultivated in gardens for its fragrant white flowers, which are used in preparing oil of jasmine, a delicate perfume. It blooms from June to October. The **Spanish Jasmine** (*J. grandiflorum*), which has flowers still more fragrant than the common jasmine, is also used in preparing oil of jasmine. The **Italian Yellow Flowered Jasmine** (*J. humile*), a very common greenhouse variety, is hardy in open air as far north as Maryland.

Jessamine or Jasmine, Yellow or Carolina (*Gelsemium sempervirens*). A beautiful climbing vine of the Logania family (*Loganiaceae*), which grows in woods and thickets from Virginia southward. Its yellow funnel-shaped flowers have a fragrance similar to that of true jasmine. The plant is extremely poisonous like many others of the family, which includes the deadly *Strychnos Nux-vomica*, and furnishes a powerful drug used in medicine.

Job's Tears (*Coix Lachryma-Jobi*). A cereal of the East Indies closely related to maize, deriving its name from the hard, shining, tear-like seeds, sometimes used similarly to beads in necklaces and rosaries. While cultivated for food in India, and sometimes made into flour in Spain, where it is now naturalized, it is grown only as a curiosity in the United States.

Judas Tree (*Cercis*). A genus of trees of the Pea family (*Leguminosae*). There are about five species, natives of North America, Europe, and temperate Asia. The **American Judas Tree** or **Red Bud** (*C. canadensis*) is a hardy tree, sometimes reaching a height of 40 to 50 feet. It has beautiful rose colored flowers and is frequently planted as an ornamental tree. The **European Judas Tree** (*C. siliquastrum*) is very similar to the American species.

Juniper (*Juniperus*). A genus of some 30 trees and shrubs of the Pine family, mostly natives of northern cool regions, about 10 occurring in North America. The **Common Juniper** (*J. communis*), in its typical form a small tree 6 to 14 feet high, is more common in its dwarf sprawling forms, 1 to 3 feet in height. The so-called **White Cedar** of the Eastern States and the **Bermuda Cedar**, much prized for timber, are junipers. Many varieties are in cultivation.

Kalmia. A genus of the Heath family (*Ericaceae*). There are about six species, five North American and one Cuban. **The Mountain Laurel** (*K. latifolia*) is a shrub or occasionally a small tree reaching a height of 30 or 40 feet, growing from New Brunswick to Florida and Louisiana. It is narcotic and dangerous, the leaves being poisonous to many animals. The wood is hard and is used in turnery. **The Sheep Laurel** (*K. angustifolia*) is a small shrub growing from Newfoundland to Georgia. It has the same properties as the mountain laurel.

Kelp. A name given to any dark brown or blackish seaweed (*alga*), particularly to those species of *Fucus* and *Laminaria* which are extensively burned on the shores of northern Europe for their ashes, also known as kelp, once the chief and still an important source of iodin.

Knotweed (*Polygonum*). A large, widely diffused genus of herbs of the Buckwheat family, so named on account of the swollen joints of many forms, consisting of some 200 species, about 60 North American, and including many well-known plants, such as the **Knotgrass** or **Doorweed** (*P. aviculare*), the **Smartweed** (*P. hydropiper*), the **Bindweed** (*P. Convolvulus*) and various others. The **Prince's Feather** (*P. orientale*) of gardens was introduced from India.

Lady's Slipper (*Cypripedium*). A genus of the Orchid family (*Orchidaceae*), containing about 40 species and numerous hybrids, some of which have flowers of great beauty, and are easily and extensively cultivated. The **Showy Lady's Slipper** (*C. reginae*) is a plant two feet high, growing from Nova Scotia to Minnesota, southwest to Georgia; it is the most conspicuous North American species. Much more common is the **Large Yellow Lady's Slipper** (*C. pubescens*) frequent in swampy thickets and damp prairies in the eastern United States. The earliest bloomer is the pink **Stemless Lady's Slipper** or **Moccasin Flower** (*C. acaule*) of dry woods, while the **White Lady's Slipper** abounds in bogs.

Larch (*Larix*). A genus of trees of the Pine family (*Coniferae*), containing about nine species. The **American Larch** or **Tamarack** (*L. laricina*) is a slender tree 50 to 60 feet high, growing from Virginia to Hudson Bay. It is often planted as an ornamental tree and the wood is highly valued for shipbuilding and for telegraph poles.

Larkspur (*Delphinium*). A genus of the Crowfoot family (*Ranunculaceae*), containing about 60 species, beautiful plants with large, showy, irregular flowers, many of which are in cultivation. The **Field Larkspur** (*D. consolida*), a popular garden flower, grows in waste places, being naturalized from Europe in southern New Jersey and Pennsylvania and southward. The **Dwarf Larkspur** (*D. tricorne*) with blue or white flowers, grows native from Pennsylvania to Georgia, west to Minnesota and Arkansas. Many beautiful wild larkspurs, several of which are poisonous, particularly to sheep and cattle, grow in the Rocky Mountain region and westward. *D. Staphisagria*, a species cultivated in Europe, is used in medicine.

Laurel (*Laurus*). A genus of the Laurel family (*Lauraceae*). There are but a few species, the principal ones being **the Noble Laurel** or **Victor's Laurel** (*L. nobilis*) **and Sweet Bay** (*L. canariensis*), natives of Asia Minor, but widely diffused in the Mediterranean region. They are often only shrubs 15 feet or less, but sometimes trees 30 to 60 feet high. The leaves and fruit, which are bitter, astringent, and aromatic, were formerly used in medicine. The leaves are sometimes used in seasoning and they yield the volatile oil of sweet bay.

Lavender (*Lavandula*). A genus of plants of the Mint family (*Labiatae*). A few European species are used in medicine and the flowers are used in perfumery.

Leguminosae (Pulse, or Pea family). The second largest natural family of flowering plants, ranking next to the Compositae in number of species, and far above it in economic importance, embracing upwards of 7,000 species, widely distributed but most abundant in the tropics, containing many very useful plants, such as peas, beans, **clovers**, alfalfa, peanut, numerous dye plants: indigo, logwood, Brazil Wood: gum plants: gum Arabic, gum Acacia, and gum Senegal; numerous timber trees and many powerful poisons and drugs: laburnum, Calabar bean (*Physostigma*), cassia, copal, balsam of Copaiba, and balsam of Tolu.

Lichens. A large group of thallophytes, exceedingly interesting in their structure and manner of life and growth. Every lichen is composed of two plants living together in a special nutritive relation known as symbiosis. One is a colorless, thread-like structure, which is a fungus. The other consists of green or blue-green cells, which are algae; the latter possessing chlorophyll create, by photosynthesis, the food used by both plants, while the fruit of lichens is that of a fungus. In this relation the fungus is truly parasitic, as it does nothing in return for its food, and the algae may be considered as plants held in slavery for its benefit. Lichens are usually flat, membranous, or crustaceous, though some are branching

Reindeer Moss.

Old Man's Beard.

LICHENS.

in habit. Nearly all grow on exposed trees, rocks, or barren grounds, and derive their sustenance entirely from the air and water. They are exceedingly abundant in northern regions, continuing to the extreme limit of vegetation. The **Reindeer Moss** (*Cladonia rangiferina*) covers vast tracts in northern Europe and is the chief food of the reindeer. The **Iceland Moss** (*Cetraria islandica*) is a northern lichen used for human food. Numerous species occur in moist temperate regions and some are found in the tropics.

Licorice (*Glycyrrhiza*). A genus of perennial herbs of the Pea family (*Leguminosae*), the roots of which are used in medicine. The **Common Licorice** (*G. glabra*) is cultivated in Europe and to a limited extent in Louisiana and California. The roots are extensively employed by porter brewers, and the concentrated extract from them is the common stick licorice of confectionery stores.

Lilac (*Syringa*). A genus of trees of the Olive family (*Oleaceae*). The **Common Lilac** (*S. vulgaris*), a shrub 6 to 15 feet high, is one of the most widely diffused ornamental shrubs cultivated in North America and Europe. There are many fine single and double flowered varieties. The lilac was introduced into Europe by the Turks, who brought it from west central Asia.

Lily (*Lilium*). A genus of plants of the Lily family (*Liliaceae*), containing about 45 species, natives of the North Temperate zone, many of which are prized for the size and beauty of the flowers. The **White Lily** (*L. candidum*), a native of the Levant, with large white flowers, has long been in cultivation in gardens. The **European Orange Lily** (*L. bulbiferum*), with large, orange-colored flowers, is a well-known and very showy ornament in flower gardens. The **Tiger Lily** (*L. tigrinum*) has a stout stem two to five feet high with beautiful orange-colored

flowers, spotted with purple. It is a native of China but has escaped from cultivation in many parts of the United States.

Lily-of-the-Valley (*Convallaria majalis*), the only representative of the genus, is a highly prized ornamental plant of the Lily family (*Liliaceae*). It grows wild in bushy places and woods in Europe, Asia, and the southern Alleghany region of North America, and is very extensively cultivated. The flowers, which are small, bell-shaped, and sweet scented, are used in France in the manufacture of eau d'or, an esteemed French perfume. All parts, leaves, stem, and flowers, are exceedingly poisonous if eaten, but the acrid, burning taste greatly lessens the danger of poisoning from this plant.

Linden or **Basswood** (*Tilia*). A genus of the Linden family (*Tiliaceae*), containing about 12 species, natives of North America, Europe, and Asia. The lindens produce a soft, straight grained wood which is much used for the interior finish of buildings, cabinet making, sounding boards for pianos, and in the manufacture of paper. The tough inner bark is largely made into mats, cords, and fishing nets, and the flowers of the European species are used in perfumery. Many are planted for shade and ornamental trees. The **American Linden** or **Basswood** (*T. americana*) is a large tree 70 to 125 feet high, growing from New Brunswick to Georgia, west to Nebraska and Texas. The wood is extensively used for making cheap furniture and paper pulp. The **Southern Basswood** or **Whitewood** (*T. pubescens*) is a small tree 40 to 50 feet high, growing from Long Island to Florida, west to Texas. The **White Basswood** or **Bee Tree** (*T. heterophylla*) is a forest tree 45 to 70 feet high, Pennsylvania to Florida, west to Illinois and Tennessee. The **European Linden** or **Lime Tree** (*T. europaea*) is planted as an ornamental tree in parks and streets.

LINDEN OR BASSWOOD.

Live-forever or **Houseleek** (*Sempervivum*). A genus of the Orpine family (*Crassulaceae*), perennial, fleshy herbs, natives of the Old World. The **Common Houseleek** (*S. tectorum*), a native of the Alps but escaped from cultivation in the United States, is frequently planted in gardens. The leaves afford immediate relief for burns and insect bites. Broken portions of the stem and leaves are remarkably tenacious of life, rooting and growing after long exposure, whence the popular name.

Liverworts (*Hepaticae*). The lower of the two groups of bryophytes, the other including the mosses; all are moisture-loving, growing on trees, damp soils, and rocks, or floating on the water, and consist of a green thallus body, attached to its support by holdfasts and root-like absorbing structures. There are three groups: the **Marchantiales**, in which the thallus is a flat green disc, often reproducing by gemmae—the true sex organs being produced on different plants; **Jungermanniales**, the most numerous, the prostrate thallus bearing on either side a row of foliage leaves, so that they strongly resemble mosses, and are called the leafy liverworts. The **Anthocerotales** have a single, undivided thallus but the spore case is elongated, green, grows continuously, and splits into two valve-like portions.

Locust Tree. A name applied to various trees of the Pea family (*Leguminosae*). The **American Locust Tree** or the **False Acacia** (*Robinia pseudacacia*) is a large tree 70 to 80 feet high, growing from Pennsylvania to Georgia and now widely naturalized in most states east to the Rocky Mountains. The wood is compact and hard and is extensively used for shipbuilding and all purposes where great strength and toughness are required.

Lotus. A name applied to several different plants. The lotus tree and fruit of the Libyan lotus eaters encountered by the wandering Ulysses, was the **Jujube** (*Zizyphus*). The **Lotus of the Nile** is a water lily (*Nelumbo*). The name is also applied to a large genus of the Pea family, allied to the clovers.

LIVERWORT. Marchantia.

Lupine (*Lupinus*). A genus of the Pea family (*Leguminosae*), containing about 100 species of herbs and half shrubs, about 70 of which occur in the United States, principally in the Rocky Mountain and Pacific coast regions. Lupines were known to the ancient Greeks, who cultivated them for their seeds and for green manuring. The most important cultivated species are the **White Lupine** (*L. albus*), the **Yellow Lupine** (*L. luteus*), and the **Blue Lupine** (*L. angustifolius*). The **Wild Lupine** (*L. perennis*), a perennial one to two feet in height with purple-blue flowers, grows in sandy soils from Maine and Ontario to Minnesota, Florida, Missouri, and Louisiana. The **Low Lupine** (*L. pusillus*), four to eight inches high, grows on dry plains in Dakota and Kansas and westward.

Madder Family (*Rubiaceae*). One of the largest families of flowering plants, embracing an array of upwards of 350 genera and 5,500 species distributed widely from cool regions north to mountain regions south of the equator, and very abundant in the tropics. Coffee, madder, ipecacuanha, and cinchona or calisaya bark, the source of quinine, are contributed by this family, which also abounds in fragrant, showy flowers, many of which, such as the Gardenias, are favorites in cultivation.

Magnolia. A genus of the Magnolia family (*Magnoliaceae*), containing about 15 species of large-leaved, beautiful trees, natives of eastern North America and Asia. The **Great Leaved Magnolia** or **Large Leaved Cucumber Tree** (*M. macrophylla*) is 30 to 50 feet high, rendered conspicuous by its large white flowers, sometimes a foot in diameter. It grows from Kentucky to Florida, west to Arkansas and Louisiana. The **Umbrella Tree** (*M. tripetala*) is 20 to 40 feet high with large white flowers. Found from Pennsylvania to Alabama, west to Arkansas and Mississippi. The **Cucumber Tree** or **Mountain Magnolia** (*M. acuminata*) is 60 to 90 feet high with greenish yellow flowers, which are less admired than those of other species; grows from New York to Illinois and south to Kentucky and Alabama, west to Arkansas. Often planted as an ornamental tree. The **Laurel Magnolia** or **Sweet Bay** (*M. virginiana*) is a slender tree 50 to 70 feet high with beautiful fragrant flowers; Pennsylvania to Florida, west to Arkansas and Texas.

Mahogany. A name applied to the timber of a number of trees, the most highly esteemed being that of *Swietenia Mahogani*, a large tree, native of the West Indies and tropical South America.

Maidenhair (*Adiantum*). A delicate, graceful fern, with black, shining leaf stalks. Two species occur in the Eastern States, the **Common Maidenhair** (*A. pedatum*) very abundantly, and the **Venus' Hair** (*A. Capillus-Veneris*) more sparingly. There are about 80 species in all, several of which are much prized in cultivation.

Mandrake (*Mandragora*). A genus of plants of the Potato family (*Solanaceae*), natives of Europe, since ancient times superstitiously reputed to possess many evil powers. In the United States the name is applied to the May apple (*Podophyllum*), the rootstock of which is used in medicine.

Mangosteen. A highly prized fruit, said to be the most delicious grown in the tropics, produced by the evergreen tree, *Garcinia mangostana*, of the natural order *Guttiferae*, native of the Molucca Islands but now cultivated in Java and other tropical countries.

Mangrove (*Rhizophora*). A genus of the Mangrove family (*Mangrophoraceae*), containing three species of trees and shrubs, all tropical and natives of coasts, particularly about the mouths of rivers, where they grow in the mud. The seeds grow while still attached to the parent tree, and the young trees are provided with roots and branches when they drop off into the water or mud. The coast and keys of southern Florida abound in mangroves. The fruit of the **Common Mangrove** (*R. Mangle*) is sweet and edible and its juice yields a light wine.

Manna. A sweet substance which exudes from incisions in the stems of the flowering ash (*Fraxinus ornus*) and the round leaved ash (*Fraxinus rotundifolia*), natives of Sicily, used extensively in medicine. See *Tamarisk*.

Maple (*Acer*). A genus of trees of the Maple family (*Aceraceae*), containing nearly 100 species, natives of north temperate regions, especially North America and eastern Asia. The **Sugar Maple** (*A. saccharum*) is a large tree 90 to 120 feet high, growing from Newfoundland to Georgia, west to eastern Nebraska and Kansas. The wood is extensively used in cabinet work and finishing houses. Large quantities of sugar and syrup are made from the sap. The **Silver** or **Soft Maple** (*A. saccharinum*) is a rapid growing tree 100 to 120 feet high, found from New Brunswick to Florida, west to Ontario, Nebraska, and Oklahoma. It is often planted as a shade tree. The **Scarlet** or **Red Maple** (*A. rubrum*) is a large tree reaching a maximum height of 120 feet, and growing in swamps and low ground from New Brunswick to Manitoba, south to Florida and Texas. The close-grained wood is largely used for furniture, and in turnery. The **Oregon Maple** (*A. macrophyllum*) is a beautiful tree 80 to 100 feet high, growing from Alaska to California. It is often planted as an ornamental tree.

Marigold. A name given to several very different flowering plants. The old marigold (*Calendula officinalis*) of the English poets, is a hardy annual with leaves and bright flowers that last nearly throughout the year. The French and African marigolds belong to the genus *Tagetes*, and have yellow to brown flowers of a rank odor. The foregoing belong to the Sunflower family, while the wild marsh marigold, common in wet meadows in Europe and America, belongs to the Crowfoot family.

Marsh Mallow. A name applied to *Althaea officinalis*, a plant of the Mallow family (*Malvaceae*), native of Great Britain and naturalized in the United States. The mucilaginous roots are used in confectionery and in medicine.

Marsh Marigold (*Caltha palustris*). A marsh plant of the Crowfoot family, with striking bright yellow flowers and shining, kidney-shaped leaves, common in America and Europe, often called **Cowslips** in the United States, and sometimes used as a potherb.

May Apple (*Podophyllum peltatum*). A well known perennial woodland plant of the Barberry family (*Berberidaceae*), common throughout the eastern United States except in New England, where rare. The large, fleshy berry is edible though insipid; the roots contain a purgative resin much used in medicine. Sometimes incorrectly called mandrake.

Medlar (*Mespilus*). A genus of trees or shrubs of the Rose family (*Rosaceae*). The **Common Medlar** (*M. germanica*), a small tree, bearing an astringent edible fruit, is a native of and largely cultivated in southern Europe and temperate parts of Asia; seldom seen in America.

Melilot (*Melilotus*). A genus of plants of the Pea family (*Leguminosae*), many species of which are in cultivation for pasturage, hay, and green manuring. The flowers of the **Common Melilot** or **Yellow Sweet Clover** (*M. officinalis*), which is cultivated in the United States, are used in the manufacture of perfumery.

Mesophytes. Plants which grow naturally in medium conditions of soil moisture, being intermediate between xerophytes and hydrophytes, embracing the plants of forests, prairies, meadows, and of most cultivated areas.

MAY APPLE.

Mesquite (*Prosopis*). A genus of trees or shrubs of the Pea family (*Leguminosae*), containing about 16 species, natives of America, Asia, and Africa, three of which grow in the United States. The **Mesquite** (*P. juliflora*) varies from a straggling shrub to a widely-branched tree 50 feet high. It occurs from central Texas to eastern California, and southward to Chile and Argentina. The very heavy wood is used for fuel and fence posts, while the pods and leaves are much eaten by stock. The **Screwpod Mesquite** (*P. pubescens*) is a tree 25 to 30 feet high with similar range and uses, both species being valuable in arid regions.

Mint Family (*Labiatae*). A large, distinctly marked family of dicotyledonous plants, chiefly herbs with square stems and opposite, aromatic leaves, numbering 150 genera and 3,000 species, principally natives of temperate climates. The striking qualities of the mints depend upon the presence of aromatic or fragrant essential oils, making them valuable as stimulants, flavoring herbs, and in perfumery. Of the aromatics peppermint, spearmint, and pennyroyal are best known; lavender and spike also furnish well-known oils, while thyme, marjoram, basil, savory and sage are frequently used. Lavender, patchouli, and rosemary are employed in the manufacture of perfumery. Horehound, ground ivy, balm, and dittany are used as household remedies.

Mistletoe (*Viscum*). A genus of small, mostly tropical and parasitic shrubs of the Mistletoe family (*Loranthaceae*) containing upwards of 400 species. The **Common Mistletoe** (*V. album*), a native of the greater part of Europe, grows on many kinds of trees, particularly the apple and hawthorn. It was intimately connected with many of the superstitions of the ancient Germans and Britons. The **American Mistletoe** (*Phoradendron flavescens*) closely related and very similar, grows upon tupelo, maple, and many other trees from New Jersey to Minnesota southward to Florida and Texas.

Monocotyledons. The smaller of the two primary groups of Angiosperms, distinguished by having only one seed leaf, while the dicotyledons have two seed-leaves. The flower parts are in threes, never in fours or fives, the leaves are usually parallel-veined, and the woody fibers are scattered throughout the stem, never forming a cylinder between the bark and pith as in dicotyledons. The group embraces about 20,000 species, containing the cereals and many other useful plants, prominent families being the grasses, sedges, palms, arums, pond-weeds, irises, lilies, and orchids.

Mountain Ash (*Sorbus*). A genus of small trees of the Rose family (*Rosaceae*), containing about 7 species, natives of the north temperate zone. The **American Mountain Ash** (*S. americana*) is a small tree, sometimes 30 feet high, growing from Newfoundland to Manitoba south to North Carolina and Michigan, and often planted for ornament. The fruit is a small astringent red berry, frequently used in home remedies.

Mosses (*Musci*). The higher of the two groups of bryophytes, the other including the liverworts; all small green plants with structures resembling and corresponding to the true roots, stems and leaves of higher plants, adapted to a great variety of situations from semi-aquatic to semi-arid, most abundant in cool temperate and arctic regions. There are two main groups: the **Sphagnum** forms, the peat or bog mosses, and the **Bryum** forms, or true mosses. While the peat is formed from accumulations of bog mosses, the group on the whole is of little value to man. (See BRYOPHYTES, LIVERWORTS.)

Mushrooms. Edible fungi, particularly agarics and morels. The **Common Mushroom** (*Agaricus campestris*), one of more than 1,000 species of *Agaricus*, grows in fields and pastures, and is extensively cultivated. The **Morel** (*Morchella esculenta*) common in America and Europe is highly prized. There are many other edible fungi, among them the ink cap, parasol, and fairy ring fungus, the chanterelle, and several puff balls. Umbrella-shaped fungi are popularly called **Toadstools**, but the prevalent idea that all such are poisonous is wrong. There are, however, several extremely poisonous fungi, some of which rather closely resemble edible species, so that the inexperienced should never eat them indiscriminately.

Morel.

Common Mushroom.

MUSHROOMS.

Mustard Family (*Cruciferae*). A well defined, natural group of dicotyledonous plants, comprising 185 genera and 1,500 species, natives of cool and temperate regions, occurring only on mountains in the tropics; all herbs with a pungent, watery juice and cruciform flowers, many of which have risen to economic rank in cultivation, such as the turnip, cabbage, rape, sea kale, radish, horseradish, garden cress, water cress, mustards, scurvy grass, and wood. The **Stock** or **Gillyflower**, **Wall Flower**, **Candytuft**, and **Sweet Alyssum** are cultivated for their flowers.

Narcissus. A genus of the Amaryllis family (*Amaryllidaceae*), with narrow leaves and usually white or yellow flowers. The species are native of Europe, Asia, and Africa, and many are cultivated in gardens for their beautiful and often highly-scented flowers. The **Poet's Narcissus** (*N. poeticus*) with white fragrant flowers is one of the most popular. The **Jonquil** (*N. Jonquilla*) bears fragrant golden yellow flowers which are employed in the manufacture of perfumes.

Nettle Family (*Urticaceae*). A group of dicotyledonous plants of wide distribution, but most numerous in the tropics, chiefly herbs or shrubs, a number of which have important economic uses. Here belong the **Hop**, **Hemp**, and **China Grass**, which are highly valuable, while related species furnish fiber and cordage and also the narcotic resin called Indian hemp. The true nettles (*Urtica*) are armed with stinging hairs containing a very irritant juice. Interpreted in a broad sense the family includes the **Elm**, **Hackberry**, **Osage Orange**, and **Mulberry**.

Oak (*Quercus*). A genus of about 200 trees and shrubs, most numerous in temperate climates, though some are tropical; fully 50 species occurring in the United States, with many intermediate forms or hybrids. The **European Oak** (*Q. robur*), the most important Old World timber oak, is sparingly planted in the United States. The **White Oak** (*Q. alba*), the most valuable American timber oak, occurs from Texas to Minnesota and eastward. With similar range, but less valuable for timber, are **Bur Oak** or **Mossy Cup Oak** (*Q. macrocarpa*), the **Scarlet Oak** (*Q. coccinea*), and the **Red Oak** (*Q. rubra*). The **Cow Oak** or **Basket Oak** (*Q. Michauxii*) and the **Yellow** or **Chestnut Oak** (*Q. acuminata*) produce edible acorns. The bark of the **Quercitron** (*Q. velutina*) is made use of in tanning, as a yellow dye, quercitron, and in medicine. The **Live Oak** (*Q. virens*) once famous for shipbuilding, is a sturdy species with entire evergreen leaves occurring in the Southern States and Cuba, and there are live oaks in the Pacific states.

Orchids (*Orchidaceae*). An immense family of monocotyledonous plants, numbering about 400 genera and 5,000 species, all herbs, occurring throughout the world except in very cold or dry regions, and reaching their greatest development and profusion in the tropics. It is a well-marked group, usually with showy flowers of strikingly irregular form and peculiar structure. In temperate climates orchids are terrestrial, but in the tropics many species are epiphytic. While a vast number are highly prized in hothouse cultivation, few have any known value, the **Vanilla** (*Vanilla planifolia*) used for flavoring being the most important.

Osage Orange or Bow Wood (*Maclura pomifera*). A tree of the Nettle family (*Urticaceae*), native of the southwestern United States, attaining a height of 20 to 60 feet, extensively planted for hedges, while the wood, of orange color and of great hardness, is valuable for fence posts, mallet heads, and to some extent in cabinet work.

Livingstonia. PALMS. Phoenix.

Palm Family (*Palmaceae*). A very distinct natural family of monocotyledonous trees and shrubs, chiefly tropical and subtropical, embracing about 1,000 species which are second in economic importance only to the cereal grasses. Palms are usually unbranched trees, with large terminal clusters of long stalked leaves. The flowers are often exceedingly numerous, a date palm bearing 12,000 in a cluster, while in a species of Alphonsia over 200,000 flowers have been counted in a single spadix, or 600,000 in one plant! Sugar, starch, oil, wax, resins, and spirituous liquors are obtained from their juices; many

yield esteemed fruits, others produce fiber for clothing, cordage, and also valuable timber. Among the most important are the date palm, cocoanut palm, arecanut palm, oil palm, cabbage palm, vegetable ivory, and coquilla nut palms.

Pampas Grass (*Gynerium argenteum*). A very tall grass with a silvery white silky panicle, common in Brazil and Argentina, now introduced into the United States and other countries as an ornamental plant.

Parasitic Plants. True plant parasites live partly or wholly within other plants or animals and derive their sustenance wholly therefrom, in contradistinction to epiphytes or perching plants, which are attached to other plants merely for mechanical support. A vast number of fungi are parasitic upon other plants, such as rusts smuts, mildews, blights, and leaf curl. Certain fungi (*Trichophyton*) grow in the human skin, producing ringworm, barber's itch, and similar diseases, while bacteria are constantly present in the skin and digestive tract of many animals. The Dodder and Rafflesia are examples of seed plants which are true parasites. Many other seed plants are so-called half parasites, retaining their green color but deriving at least a part of their food from other living plants. Half parasites commonly blacken in drying.

Parsley Family (*Umbelliferae*). Also called Carrot family. A large, distinct group of herbs, comprising 170 genera and 1,600 species, nearly all natives of north temperate regions, usually with fistulous stems, flowers in umbels, acro-narcotic juices, and aromatic seeds. The vegetables, celery, parsley, parsnip, carrot; and the flavoring plants, caraway, dill, coriander, anise, and cummin belong here. The medicinal gum-resins, asafoetida, ammoniacum, opoponax, and galbanum, are derived from species of this family, which also contains a number of virulently poisonous plants, such as the hemlock (*Conium*) and water hemlock (*Cicuta*).

PASSION FLOWER.

Passion Flower (*Passiflora*). A genus of climbing vines of the Passion Flower family (*Passifloraceae*), containing about 250 species natives mostly of tropical America. Twelve are natives of the United States. Many species are cultivated in greenhouses for their large, beautiful flowers. The Passio. Flower or Passion Vine (*P. incarnata*), with showy, white flowers and an edible fruit, grows from Virginia to Missouri, south to Florida and Oklahoma. The Yellow Passion Flower (*P. lutea*), with greenish yellow flowers, is found in thickets from Pennsylvania and Missouri southward. *Passiflora caerulea*, a native of Peru and Brazil, is extensively grown for its white, pale blue, or rose-colored flowers.

Perennials. Plants whose duration of life is more than two years, contrasted with annuals and biennials.

Petunia. A genus of plants of the Potato family (*Solanaceae*). There are about 12 species, natives of South America and introduced into other countries for their beautiful flowers. The Violet Petunia (*P. violacea*) is a trailing plant with purple-violet flowers, a native of Brazil and escaped from cultivation in southern New York and Pennsylvania. There are many varieties, including single and double flowered forms with innumerable variations in color. The common garden petunias are mostly hybrids of *P. violacea* and the White Petunia (*P. axillaris*).

Phlox. A genus of the Polemonium family, containing 40 species, well distributed in North America, many of which are prized in cultivation for their showy flowers, hardiness, and ease of growth.

Pine (*Pinus*). A genus of trees of the Pine family (*Coniferae*), containing about 80 species, nearly two thirds of which occur in the northern part of the western hemisphere. The White Pine (*P. Strobus*), a tree 75 to 100 feet high, is one of the most important timber trees of North America. It extends from Newfoundland to Minnesota, south to Georgia. The wood is soft, straight grained, and is much used for building and cabinet work. The Yellow Pine or Long-leaved Pine (*P. palustris*) is a large tree, sometimes attaining a height of 100 feet and growing in sandy soil from Virginia to Florida and Texas. The wood is heavier and stronger than that of any other pine, and is used in all kinds of building. The tree is the chief source of turpentine, tar, resin, etc. The Western Yellow Pine or Bull Pine (*P. ponderosa*) is a large tree, sometimes 150 to 250 feet high and 5 to 8 feet in diameter. It is found from the Rocky Mountains to the Pacific coast and is one of the most important lumber trees of the West. The Sugar Pine (*P. Lambertiana*), which grows in Oregon and California, is one of the largest trees of the genus, attaining a height of 150 to 300 feet and a diameter of more than 10 feet. The timber is strong, straight grained, and is much used for a finishing lumber and cabinet work.

Pink (*Dianthus*). A genus of plants of the Pink family (*Caryophyllaceae*), including the Carnation, Sweet William, etc., chiefly natives of Europe and Asia. Some of the species have long been in cultivation on account of their beautiful and often fragrant flowers. There are many varieties, including single and double forms of many different colors.

Pitcher Plants (*Sarracenia*). Curious insectivorous bog plants, not rare in the Atlantic states. The leaves, which are urn-shaped or tubular, secrete a liquid in which insects are caught and decomposed. The most widely distributed species (*S. purpurea*) is the Sidesaddle Flower or Huntsman's Cup. The pitcher plants of greenhouse cultivation (*Nepenthes*) are herbs or half shrubby plants, natives of China, India, and Malaysia. Some of the species have their leaves prolonged into a kind of tendril, which ends in a cup or pitcher-like organ. Many species are commonly grown in hothouses.

PITCHER PLANT.
Sarracenia purpurea.

Plane Tree (*Platanus*). The only genus of the Plane Tree family (*Platanaceae*), containing 6 or 7 species, natives of the north temperate zone. The Sycamore, Plane Tree, or Buttonwood (*P.*

occidentalis) is a large tree, reaching a maximum height of 130 feet with a trunk diameter of 14 feet. It is found from Quebec to Georgia, west to Manitoba and Kansas. The wood is a favorite material for tobacco boxes and butcher blocks and is largely used for furniture. There are two other species in the United States; the **California Sycamore** (*R. racemosa*) and the **Arizona Sycamore** (*P. Wrightii*), both large trees.

Plum, Wild. Small trees or shrubs belonging to the genus *Prunus*. The **Wild Yellow** or **Red Plum** (*Prunus americana*) is a small tree reaching a maximum height of 35 feet, found from New York to Montana, Florida, and Colorado. It is often cultivated in the Eastern States as an ornamental or fruit tree. The **Chickasaw Plum** (*P. angustifolia*) is a small tree 15 to 20 feet high high, growing in dry soil from New York to Florida, west to the Rocky Mountains. The fruit is often sold in the markets. A number of varieties are cultivated as fruit trees. The **Wild Goose Plum** (*P. hortulana*) is a tree 20 to 30 feet high, growing on low banks of streams from Maryland and Virginia to southeastern Kansas and Texas. The **Canada Plum** (*P. nigra*), a tree reaching a height of 20 to 30 feet, grows near streams from Newfoundland to Manitoba, Massachusetts, and Wisconsin. Often cultivated in the Northern States and Canada as a fruit tree or for the beauty of its flowers.

Poplar (*Populus*). A genus of about 20 trees of the Willow family (*Salicaceae*), natives of temperate and cold regions, persisting to the limit of trees on mountains and in high latitudes. Half of the species occur in the United States, all of soft wood and rapid growth. The **American Aspen** or **Quaking Asp** (*P. tremuloides*), usually a small tree, occurring almost throughout the continent, has the widest range of any North American tree. The **Cottonwood** (*P. deltoides*), common along streams from the Rocky Mountains eastward, sometimes attaining 150 feet in height and a diameter of 7 feet, is much planted for ornament. The **Balsam Poplar** (*P. balsamifera*), sometimes 100 feet high, occurs northward and in Siberia. The **European White Poplar** (*P. alba*) and **Black Poplar** (*P. nigra*), much-planted ornamentals, have become naturalized in the Eastern States. The **Lombardy Poplar** (*P. nigra, var. italica*) is very widely grown in Asia, Europe, and America.

Poppy Family (*Papaveraceae*). A small group of dicotyledonous plants, containing about 25 genera and 200 species, of world-wide distribution, but most numerous in Europe, consisting of herbs with a milky or colored juice, which is generally powerfully-narcotic, and sometimes acrid. The widely-cultivated opium poppy is the most important. In the United States the **Bloodroot** (*Sanguinaria*) is common in the eastern portion. **Argemone** is a characteristic genus of the Rocky Mountain regions; the **California Poppy** (*Eschscholtzia*) is a striking representative on the Pacific coast, while the poisonous **Celandine** (*Chelidonium majus*) of Europe has been naturalized in many localities.

Potato Family (*Solanaceae*). Also called Nightshade family. An important dicotyledonous family, mostly herbs, numbering about 70 genera and 1,600 species, most abundant in the tropics, many of which are powerful poisons while others are of the highest usefulness. Among the poisonous species are the **Deadly Nightshade** (*Atropa Belladonna*), **Black Nightshade** (*Solanum nigrum*), the **Bittersweet** or **Woody Nightshade** (*Solanum Dulcamara*), the **Jimson Weed** or **Thorn Apple** (*Datura*), **Henbane** (*Hyoscyamus*), the **Mandrake** (*Mandragora*), **Tobacco** (*Nicotiana*), and even the leaves and stems of the **Potato**. The most valuable economic plants are the potato, tomato, eggplant, and red pepper.

Primrose (*Primula*). A genus of plants of the Primrose family (*Primulaceae*), natives of Europe and Asia. Some of the species are extensively cultivated on account of their fine color and delicate beauty. The **Common Primrose** (*P. vulgaris*), a native of Europe, is the parent of many cultivated varieties.

Quaking Grass (*Briza*). A small genus of European grasses with slender stalks and large spikelets, which quake in the slightest wind. Several species, naturalized in the United States, are considered valuable pasture grasses for dry situations.

Quassia. A genus of trees and shrubs of the Quassia family (*Simarubaceae*). *Quassia amara*, the wood and root of which are extremely bitter, was formerly much used in medicine.

Quercitron. A species of oak and also the dye obtained from it. See OAK.

Rafflesia. A small genus of extraordinary parasitic plants of the Rafflesia family (*Rafflesiaceae*). They attack grapevines, and the only visible part consists of a flower. *Rafflesia Arnoldi*, a native of Sumatra, has a flower three feet in diameter. The flower bud is about as large as a cabbage and bursts directly from the woody stem of the host plant. The flower, which is of livid color and mottled in the manner of decaying flesh, has a strong and fetid odor which attracts carrion insects by which pollen is carried from flower to flower.

Resin Weed or **Compass Plant** (*Silphium laciniatum*). A large plant, native of the United States, with a very resinous stem. It grows on prairies and has nearly vertical root leaves, the edges of a majority of which when growing in places equally exposed to the sunlight on all sides, point nearly north and south, whence the name compass plant. This property of the leaves is mentioned in Longfellow's Hiawatha.

RESURRECTION PLANT.
Anastatica hierochuntica.

Resurrection Plant (*Anastatica hierochuntica*). A small Arabian herb, the branches of which roll up when dry so that the plant becomes almost globular, but which expand again when moist. The name is also applied to several species of Selaginella; small flowerless plants which when dry close up so as to resemble a bird's nest, but revive again in wet weather. While in their contracted, globular state these plants are often blown about the sterile plains where they grow, thus widely scattering their seeds or spores.

Rose (*Rosa*). A genus of usually more or less climbing or trailing, shrubby plants of the Rose family, containing many of the most beautiful and highly prized flowers. There are numerous wild species, exceedingly variable and difficult to distinguish, some botanists recognizing only 30 or 40, others nearly 200, all natives of north temperate regions. Centuries of cultivation of various species in Asia, Europe, and America have produced innumerable varieties.

Rose Family (*Rosaceae*). An important family of dicotyledons, comprising some 90 genera and 1,500 species of herbs, shrubs, and trees, widely diffused throughout the world, and embracing a number of the most highly-prized fruits in cultivation as well as many beautiful flowering plants and ornamental shrubs and trees. Among the fruits of the group are the almond, peach, nectarine, apricot, plum, pear, apple, quince, raspberry, blackberry, and

strawberry. Among the ornamentals are the mountain ash, hawthorns, medlar, cherry laurel, spiraea, flowering almond, and numerous roses.

Russian Thistle (*Salsola kali, var. tenuifolia*). An annual herb of the Goosefoot family (*Chenopodiaceae*), naturalized from northern Europe, which has become a very troublesome weed in the United States and Canada, particularly in the wheat-growing regions of the northwest. It is not a true thistle, but the mature leaves are tipped with short, sharp spines.

Sage Brush. Certain shrubby species of *Artemisia* of the Composite family, with silvery or hoary leaves containing a bitter juice. The characteristic **Sage Brush** or **Sage Wood** (*A. tridentata*) of the plains from Montana to Colorado and westward, immensely abundant over vast areas at 4,000 to 6,000 feet altitude, usually grows from two to six feet high, though it sometimes exceeds 12 feet.

Salad Plants. Vegetables whose green parts are served uncooked for human food, as celery, lettuce, chicory, endive, and water cress.

Sandalwood (*Santalum album*). A small tree, native of India and the Indian archipelago; producing a compact, fine-grained wood which is used for making small ornamental articles and possesses a remarkable fragrance which persists long after it has become thoroughly seasoned.

Sassafras. A genus of trees of the Laurel family (*Lauraceae*), containing but two known species, one in North America and the other in China. The **Sassafras** or **Ague Tree** (*Sassafras variifolium*) is a large tree 80 to 90 feet high, found from Canada to Florida west to Kansas and Texas. Oil of sassafras, used for flavoring confectionery, is distilled from the roots, and the bark is frequently employed in household medicine.

Screw Pine (*Pandanus*). A genus of the Screw Pine family of southern Asia and the South Sea Islands, resembling huge pineapple plants, having long sharp-pointed, spiny-edged leaves arranged in a three-ranked spiral, whence the name, and many have remarkable prop roots. Several species are of great utility, yielding fiber, fodder, perfumes, and food products.

SCREW PINE.

Sedge Family (*Cyperaceae*). A large, distinct, natural group of monocotyledons, numbering some 65 genera and 3,000 species of grass-like or rush-like herbs with solid, often three-angled stems, and fibrous roots, universally diffused in marshes and along streams throughout the world. Sedges are devoid of active principles, are far less nutritious than grasses, yield no seeds or grains, and are consequently of comparatively little value. The tuberous rootstocks of two species of Cyperus are used for food, and another yields an aromatic oil. The stems of some species are woven into mats and hats. The cotton grass is used to stuff cushions, while species of Carex furnish a substitute for sarsaparilla. The **Papyrus** (*Papyrus antiquorum*) is celebrated for having furnished a sort of paper made by the ancient Egyptians from its pith.

Sensitive Plant. The common name given to certain species of Mimosa of the Pea family, whose finely divided leaves display remarkable irritability. When touched the leaflets close in pairs; upon more vigorous handling near-by leaflets also close and finally the leafstalk drops and the whole leaf appears withered. After a brief interval the leafstalk rises and the leaflets unfold again. The **Sensitive Brier** (*Schrankia*) of the Southern States also possesses this peculiar property.

Service Berry. The common name of several distinctly different trees of the Rose family (*Rosaceae*). The American **Service Berry** or **Shad Bush** (*Amelanchier canadensis*) is a small tree which bears a sweet red or purple berry. The **European Service Berry** (*Pyrus Sorbus*), a tree sometimes 50 feet high, is cultivated for its small pear-shaped fruit.

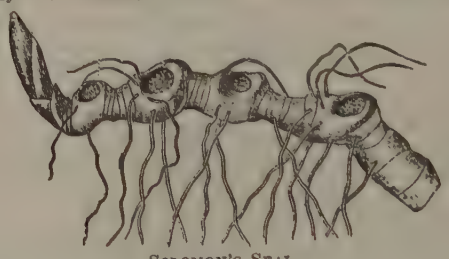
Shamrock. The **Hop Clover** (*Trifolium*) is usually considered the true shamrock or national badge of Ireland, though the **White** or **Small-Leaved Clover** (*T. repens*), the **Bird's Foot Clover** (*Lotus corniculatus*), and the **Wood Sorrel** (*Oxalis*) are also associated with the national emblem.

Shepherd's Purse (*Capsella Bursa-pastoris*). An annual plant of the Mustard family (*Cruciferae*), native of the Old World, but now cosmopolitan by naturalization, bearing small white flowers and a pouch-like pod; often a troublesome weed.

Skunk Cabbage (*Symplocarpos foetidus*). A North American plant of the Arum family (*Araceae*) which emits a fetid odor, especially when bruised. Common in wooded marshes in the eastern United States, where it is one of the earliest flowers to appear in spring.

Smilax. A genus of the Lily family (*Liliaceae*), containing about 200 species, usually climbing vines, most abundant in tropical America and Asia. About 17 species are natives of the United States. The **Carrion-flower** (*S. herbacea*) is found in woods and thickets from the Atlantic to Minnesota and Texas. The **Long-stalked Greenbrier** (*S. pseudo-china*), growing from Maryland to Nebraska, south to Florida and Texas, has tuberous rootstocks sometimes used in medicine. The roots of a number of species, particularly *Smilax medica* and *S. papyracea* of Central and South America, yield sarsaparilla. The delicate twiner called **Smilax** by florists is a South African plant (*Myrsiphyllum*).

Snapdragon (*Antirrhinum*). A genus of plants of the Figwort family (*Scrophulariaceae*). The flowers have a peculiar corolla, the lower lip of which, if parted, shuts with a spring or snap. The **Great Snapdragon** (*A. majus*), a favorite plant with many fine varieties, is the most frequently cultivated.



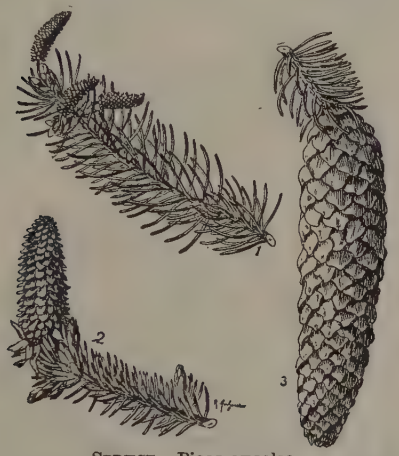
SOLOMON'S SEAL.

Solomon's Seal (*Polygonatum*). Perennial herbs of the Lily family, so-called because the scar left on the creeping rootstock after the death of each annual growth was thought to resemble the imprint of a seal.

Sorrel. A name given to several species of *Rumex* of the Buckwheat family, which have sour leaves, sparingly cultivated, chiefly in Europe for use in soups and sauces. The **Sheep Sor-**

rel (*R. Acetosella*) widely naturalized in America is frequently a very troublesome weed in meadows and pastures in the Eastern States. The **Wood Sorrel** (*Oxalis*) is often called **Sheep Sorrel.**

Spruce (*Picea*). A genus of trees of the Pine family (*Pinaceae*), containing about 18 species, native of the Northern Hemisphere. The **White Spruce** (*P. canadensis*) is a slender tree 50 to 150 feet high, found from New York to British Columbia, north to Newfoundland, Hudson Bay, and Alaska. The wood is light and soft and is largely used for construction and for paper pulp. It also yields some of the spruce gum of commerce. The **Black Spruce** (*P. mariana*) is a tree 20 to 30 and very rarely 100 feet high; growing from Newfoundland and Hudson Bay and Alberta south to North Carolina, Michigan, and Minnesota. It is largely used for wood pulp and paper. The **Red Spruce** (*P. rubra*), a tree 70 to 80 feet high growing from Nova Scotia to Virginia, is largely manufactured into lumber. The **Tideland** or **Sitka Spruce** (*P. sitchensis*) is a large tree usually 100 feet, sometimes 200 feet high, occurring abundantly from northern California to Alaska. Its valuable timber is used for all kinds of building purposes. The **Norway Spruce** (*P. Abies*) is largely planted in the Eastern States as an ornamental tree.



SPRUCE. Picea excelsa.
1. Male flowers. 2. Female flowers. 3. Fruiting cone.

Spurge Family (*Euphorbiaceae*). One of the largest families of dicotyledonous flowering plants, embracing over 200 genera and 4,000 species; herbs, shrubs, and trees, very widely diffused throughout the world, but notably numerous in tropical America. Nearly all possess a milky juice which contains more or less caoutchouc, while the watery sap is generally acrid, purgative, emetic, or poisonous. The most important economic plants of the family are cassava, the source of tapioca, the castor-oil plant, the tallow tree of China, the African teak tree, and the Brazilian caoutchouc tree, and noteworthy medicinal contributions are croton, cascarilla, and mercurialis.

Sumach (*Rhus*). A genus of about 100 species of trees and shrubs, widely distributed except in cold regions. About 15 occur in the United States, among them **Staghorn Sumach** (*R. typhina*) sometimes 30 feet high, and the much smaller **Smooth Sumach** (*R. glabra*) and **Dwarf Sumach** (*R. Copallina*) of the Eastern States; also the dangerous species: **Poison Sumach** or **Dogwood** (*R. Vernix*), **Poison Ivy** (*R. Toxicodendron*), and **Poison Oak** (*R. quercifolia*) of the East and South, and the **Western Poison Oak** (*R. diversiloba*) of the Pacific coast. Foreign species yield valuable dyestuffs, such as fustic, tanning materials, and varnish. Here also belongs the **Smoke Tree** (*R. Cotinus*), frequent in cultivation.

Sumach Family (*Anacardiaceae*). An important group of trees and shrubs, mostly tropical, numbering 50 genera and 400 species, characterized by a resinous or milky-acrid juice and dotless, alternate leaves. Here belong the **Cashew Nut** (*Anacardium*), the **Pistachio Nut** (*Pistachia vera*), **Mango** (*Mangifera*), **Hog Plum** (*Spondias*), and other valued fruits, as well as the **Poison Sumachs** and the astringent **Sumachs** used in tanning. Mastic and Chian Turpentine are obtained from species of *Pistachia*. A number are ornamental plants, such as the beautiful **Pepper Tree** (*Schinus*) now much planted in California.

Sundew (*Drosera*). A genus of inconspicuous but beautiful plants of the Sundew family (*Droseraceae*). Several species are natives of American bogs. The leaves are clothed with glandular hairs which secrete a viscid and digestive fluid that entraps and dissolves insects.

Sunflower (*Helianthus*). A genus of the *Compositae* containing about 60 species, all American, and nearly all occurring in the United States; large, erect, mostly perennial herbs, bearing showy flowers with brown or purple discs and conspicuous yellow rays. The **Common Sunflower** (*H. annuus*), native of the great plains, has become much larger in cultivation, sometimes growing 20 feet high with huge, flowering heads one to two feet in diameter.

Sweet Pea (*Lathyrus odoratus*). An ancient garden flower of the Pea family, which has been greatly developed in form, color, and fragrance during the last half century, there now being upwards of 100 varieties in cultivation.

Sycamore. Certain trees of the genus *Ficus* of the Mulberry tribe of the Nettle family (*Urticaceae*), mostly natives of Asia and Africa, are properly called sycamores. The **Egyptian Sycamore** (*F. sycamorus*), supposed to be the sycamore of the Bible, is a large spreading tree often planted for shade in Egypt and western Asia. In northern Europe this name is also given to a species of maple (*Acer pseudo-platanus*) and in the United States the **American Plane Tree** (*Platanus occidentalis*) is most commonly called sycamore.

Tallow Tree. A name given to various trees which produce a thick oil or resinous-like substance which may be used for making candles. The most important are the **Tallow Tree** of Malabar (*Vateria indica*) and the **Chinese Tallow Tree** (*Sapium sebiferum*).

Tamarind (*Tamarindus indica*). A beautiful spreading tree of the Pea family (*Leguminosae*); a native of India and often cultivated in warm climates for shade and for its fruit, which consists of a pod filled with an acidulous pulp.

Tamarisk (*Tamarix*). A genus of shrubs or trees of the Tamarisk family (*Tamaricaceae*). The Common Tamarisk (*T. gallica*), a native of the Mediterranean region, is often planted in the United States and Europe for ornament. Some authorities consider that the manna of the Bible was derived from Tamarisk (*T. mannifera*).

Teasel (*Dipsacus*). A genus of herbs of the Teasel family (*Dipsacaceae*), natives of the Old World. The Fuller's Teasel (*D. fullonum*), the only important species, has long been cultivated for its spiny heads which are used for raising the nap of cloth. The closely related *D. sylvestris* has become naturalized as a weed in many parts of the United States.

Thistle. A name applied to various Compositae, especially to species of *Cnicus, Cirsium, Carduus, Onopordon, Centaurea,* and *Sonchus,* which are widely distributed, mostly as weeds. The **Canada Thistle** (*Cirsium arvensis*), a slender perennial 1 to 3 feet high with rather small rose-colored flowers, is one of the most troublesome weeds, being extremely difficult to eradicate. The **Scotch Thistle** (*Onopordon Acanthium*), recognized by its cottony or woody leaves, is common in the Atlantic states. It is said to be the emblem of Scotland. The **American Star Thistle** (*Centaurea americana*) is common on dry plains from Missouri to Louisiana and Arizona.

Thyme (*Thymus*). A genus of half shrubby plants of the Mint family (*Labiatae*). The Garden Thyme (*T. vulgaris*), a native of southern Europe, is cultivated in gardens on account of its fragrance and as a culinary herb.

Trillium. A small genus of the Lily family (*Liliaceae*), growing in moist soil from Maine to Georgia, and Minnesota. They have three beautiful, netted veined leaves which arise from the same point near the summit of the stem and are surmounted by a large solitary flower.

Truffle (*Tuber*). A genus of globose, subterranean sac-fungi, comprising some of the most prized of edible fungi. The Common Truffle (*T. cibarum*) and several other species are much sought in southern Europe, where dogs and pigs are trained to locate them by scent. Edible truffles are scarcely found in the United States.

Tuberose (*Polianthes tuberosa*). A plant of the Amaryllis family (*Amaryllidaceae*), native of Mexico, is extensively cultivated for its beautiful and fragrant white flowers.

Tulip (*Tulipa*). A genus of the Lily family (*Liliaceae*), containing about 45 species, native mostly of the warmer parts of southern Europe. The tulip has been a popular ornamental plant for several centuries. *T. Gesneriana*, a native of Asia Minor, is the species from which most of the cultivated varieties, which exceed 1,800 in number, have been produced.

Upas (*Antiaris toxicaria*). A tree of the Mulberry tribe of the Nettle family (*Urticaceae*), found in the Philippine Islands. The fiber of the bark is sometimes made into cloth and the juice of the roots is used by the Malays for poisoning their arrows. The stories concerning the poisonous exhalations of the leaves, "the deadly upas-shade," are purely mythical.

Vanilla. A genus of orchids, natives of tropical America and Asia. The vanilla of commerce is chiefly the fruit of *V. planifolia*, a native of eastern Mexico, but largely cultivated in several tropical countries. This plant has a long fleshy stem and attaches itself to trees by means of aerial rootlets.

VANILLA.

Varnish Tree. A name given to several trees of the Sumach family (*Anacardiaceae*), the juice of which is used for making varnishes. The **Black Varnish Tree** (*Melanorrhoea usitata*), of Burma, and the **Japan Varnish Tree** (*Rhus vernicifera*) are among the more important.

Venus Fly Trap (*Dionaea muscipula*). An insectivorous plant, growing in North Carolina, whose trap-like leaves close suddenly upon insects that alight on them.

Verbena. A genus of the Vervain family (*Verbenaceae*), comprising about 80 species, mostly natives of America, some of which, usually called vervains, are common weeds in the Eastern States. The cultivated verbenas have been mostly derived from *V. canadensis* of the eastern United States and from *V. teucrioides* and *V. venosa* of Brazil.

Virginia Creeper or **American Ivy** (*Psedera quinquefolia*). A common North American woody vine of the Grape family (*Vitaceae*), climbing extensively by means of tendrils. It is distinguished from the **Poison Ivy** by having five leaflets at the end of a single leaf stalk, while the latter has but three. The foliage turns a brilliant crimson in autumn. Of the same genus is the attractive **Japanese** or **Boston Ivy** (*G. tricuspidata*) extensively cultivated in the Eastern States.

Violet (*Viola*). A genus of about 175 species of small, often stemless, mostly perennial, herbs of the Violet family, widely diffused in temperate regions, over 40 wild species occurring in the eastern United States. Wild violets frequently hybridize and many forms are cultivated, the most common being the **Pansy** (*V. tricolor*) and the **Sweet Violet** (*V. odorata*) from European species. Handsome garden varieties have been developed from our native **Bird's Foot Violet** (*V. pedata*) and strains from the **Canada Violet** (*V. canadensis*) are frequently cultivated.

Walnut (*Juglans*). A genus of beautiful trees of the Walnut family (*Juglandaceae*), containing about 10 species, mostly natives of North America and Asia. The **Black Walnut** (*J. nigra*) is a large tree sometimes 100 to 125 feet high, growing from Ontario to Florida, west to Nebraska and Texas. The dark brown wood is largely used for cabinet making and gunstocks. The **White Walnut** or **Butternut** (*J. cinerea*) resembles the black walnut, but is seldom over 100 feet high. The wood is largely used in the interior finish of houses and for furniture. New Brunswick to Georgia and westward to Dakota and Arkansas. The **California Walnut** (*J. californica*), a tree sometimes 65 feet high, is often cultivated in California for shade and as a stock on which to graft the English walnut. The **English Walnut** (*J. regia*) is a tree 60 to 90 feet high, native of Persia and has long been cultivated for its edible nuts, which are an important article of commerce.

WATER LILY. Castalia.

Water Lily (*Castalia*). A striking genus of plants of the Water Lily family (*Nymphaeaceae*), mostly tropical but widely diffused throughout the world, with tuberous roots embedded in the bottom of streams or ponds, large floating leaves, and showy flowers of various colors from white to red, yellow, and blue. A number are favorite water garden plants by reason of their beauty and fragrance. The starchy seeds and rootstocks are used for food in some countries.

Willow (*Salix*). A genus of the Willow family, containing over 150 species, mostly of cool, northern regions, fully one half occurring within the United States. Many hybridize freely, making determination of true species extremely difficult. Most willows are shrubs, some are trees, while Arctic and Alpine forms are dwarf, and herb-like. *S. herbacea* of northern Europe and America is seldom two inches high. *S. arctica* and *S. polaris* are the northernmost woody plants. The largest is the widely cultivated **White Willow** (*S. alba*) introduced from Europe, which

exceeds 80 feet in height. The **Weeping Willow** (*S. babylonica*), also from Europe, is much planted for ornament. The **European Osier** (*S. viminalis*) is cultivated for its twigs. Of the native species, the shrubby **Shining Willow** (*S. lucida*), the **Black Willow** (*S. viara*) sometimes 40 feet high, and the **Heart-leaved Willow** (*S. cordata*) are among the best known.

Wintergreen (*Gaultheria*). A genus of low or trailing shrubs of the Heath family (*Ericacae*). Several species contain the oil of wintergreen, widely used in flavoring and in medicine.

Wistaria. A genus of climbing shrubs of the Pea family (*Leguminosae*) of China and the southeastern United States. Some of the species are often grown on walls of houses and over arbors on account of their beautiful racemes of bluish flowers.

Witch Hazel (*Hamamelis virginiana*). A North American shrub or sometimes a small tree, reaching a maximum height of 25 feet, with clusters of showy yellow flowers. An extract made from the leaves is much used in medicine.

Witch Hazel.

Wood Sorrel (*Oxalis*). A genus of the Wood Sorrel family (*Oxalidaceae*), containing about 250 species, mostly tropical, all herbs, with a sour juice, often bulbous. Some 20 species are North American; among the most common are: the **Common Wood Sorrel** (*O. Acetosella*), white flowered with rosy veins; the **Violet Wood Sorrel** (*O. violacea*) with violet flowers, and the **Yellow Wood Sorrel** (*O. stricta*), with pale yellow flowers and the **Lady's Sorrel** (*O. corniculata*), yellow flowered. All our species have clover-like, trifoliate leaves.

Xerophytes. Plants adapted by modifications of structure to withstand the excessive transpiration of arid regions. Usually there is great reduction in the leaf surface, as in cacti and desert shrubs, or the leaf surface is specially protected by hairs, scales, or waxy deposits.

Yarrow (*Achillea Millefolium*). A perennial herb of the Sunflower family (*Compositae*), with finely divided leaves, strong odor, and a bitter taste, occurring almost throughout northern Europe and America, used to some extent in medicine.

Yeasts (*Saccharomycetes*). One-celled fungi, with a peculiar method of reproduction called budding. There are numerous species, which live chiefly in plant juices or solutions containing sugar, in which they secrete an enzyme, which induces alcoholic fermentation. Yeasts have been cultivated for centuries in the production of beer and other fermented liquors, and in making bread.

Yew (*Taxus*). A genus of some six trees and shrubs of the Yew family (*Taxaceae*), widely distributed in the Northern Hemisphere, three species occurring in the United States. The **American Yew** (*T. canadensis*) is a low, straggling shrub seldom over 5 feet high growing in woods from Newfoundland to Manitoba and south to Virginia and Iowa. The **Florida Yew** (*T. floridana*) is a bushy tree rarely 25 feet high. The **California Yew** (*T. brevifolia*) is a tree 40 to 50 feet high occurring from British Columbia to California, sometimes cultivated in gardens in Europe. The hard wood is used for fence posts. The **European Yew** (*T. baccata*) is a native of Europe and Siberia reaching a height of 40 feet, many varieties of which are cultivated in the United States. The leaves of yews are more or less poisonous.

Yucca. A well-marked genus of the Lily family, containing about 15 species, mostly of the southwestern United States and Mexico, usually with a short, unbranched stem, crowned with a tuft of sword-shaped leaves, tipped with a sharp spine. **Adam's Needle** (*Y. filamentosa*) a showy species, with a huge panicle of flowers, 6 or 8 feet high, occurs near the coast from Maryland to Florida. The much smaller **Bear Grass** (*Y. glauca*) grows on the plains from South Dakota to Texas. The **Spanish Bayonet**, usually almost stemless, with reflexed leaves and purple, edible fruit, ranges from Texas to California and Mexico. The **Joshua Tree** (*Y. arborescens*) is a huge, weirdly branching, woody species, characteristic of the Mohave Desert. Other species form a conspicuous part of the vegetation in the arid regions from Texas to Arizona and Mexico.

Yuccas or Joshua Trees. On the Mojave Desert.

Zamia. A genus of cycads, containing about 30 species, all tropical American, several of which yield sago-like food products.

Zanthoxylum. A genus of over 100 trees and shrubs of the Rue family (*Rutaceae*), four occurring in the United States, the best known being the **Prickly Ash** or **Toothache Tree** (*Z. Americanum*) and the **Southern Prickly Ash** or **Pepper Tree** (*Z. Clava-Herculis*), both small trees with prickly twigs, the bark of which is much used in medicine.

Prickly Ash.

Zauschneria (*Zauschneria californica*), Balsamea. A beautiful low perennial with bright scarlet fuchsia-like flowers, native of the coast ranges of California. First collected at Monterey in 1792 by Haenke, the first botanist to visit the region.

Zinnia. A genus of plants of the Sunflower family (*Compositae*), natives of Mexico and the southwestern United States. Several species are commonly cultivated in gardens for their showy flowers.

DICTIONARY OF NATURAL HISTORY.

DIVISION OF ANIMALS.

Comprising Descriptions of Wild Animals. For Domestic Animals, see Index.

Abalone. The Spanish name, generally used in California, for several species of ear shells, marine gastropods of the family *Haliotidae*, which are abundant on rocks near the shore, where they feed upon seaweed. Vast quantities of the animals are dried for food by the Chinese, while the richly colored mother-of-pearl lining the shell makes it highly prized for inlaid work, buttons, and ornaments.

Adder. A common name of the viper or of any venomous snake of the viper family. In the United States, the name is popularly given to both the copperhead and moccasin and also to the harmless hognose snake which is called spreading or blowing "adder." In English literature the term signifies the common viper, which is the only venomous snake of the British Isles.

Agouti. The name given to several small South American rodent mammals of the genus *Dasyprocta*. The common agouti of Brazil is about the size of a rabbit, with long hind legs and short tail, which, together with the rump and thighs, is covered with coarse, bristly hair. It was formerly immensely abundant but, owing to its destructiveness to crops, has been largely exterminated.

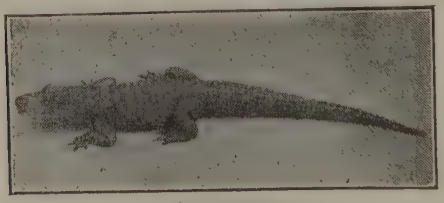
Albatross. The popular name for the large sea birds of the genus *Diomedea*, closely related to the petrels, and the most exclusively oceanic birds known, rarely visiting land except during the nesting season. They gather their food, which consists largely of fishes and mollusks, from the surface of the ocean, never diving beneath it, and will follow a ship for days without resting in order to pick up refuse thrown overboard.

The **Wandering Albatross** (*Diomedea exulans*), of the southern oceans, one of the largest of birds, having a length of 4 or 5 feet and an extent of wing of 10 to 12 feet or more, is justly noted for its powerful and graceful flight.

The superstitious affection and regard in which the albatross is held by sailors was strikingly introduced into literature in Coleridge's "Rime of the Ancient Mariner."

Alewife (*Pomolobus pseudoharengus*). A small fish, 8 to 10 inches long, closely related to the herring and shad, abundant on the east coast of the United States, entering the bays and rivers in vast numbers to spawn. While inferior in quality to the shad, immense quantities are caught for food, upwards of 60,000,000 pounds being reported in a single year.

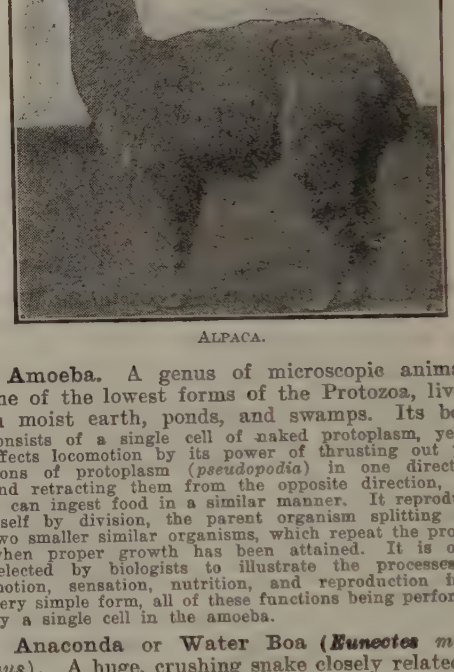
Alligator. A genus of reptiles of the crocodile family (*Crocodilidae*). The American alligator (*A. mississippiensis*), formerly very abundant in the rivers and swamps of the Southern States is now rarely seen north of Florida and Louisiana, where it is being rapidly exterminated for its hide,



ALLIGATOR.

ivory teeth, and eggs. It is estimated that 3,000,000 alligators were killed in Florida alone, from 1880 to 1900. Like the crocodile, the alligator is active at night, emits bellowing sounds, uses its tail as a weapon, carries its prey to the bottom before eating, but spends more time on land, lying in the sun on swampy shores. During colder months it hibernates in swamp mud. The female alligator deposits from 100 to 200 eggs in a mound of mud and vegetable matter, where they hatch by the heat of the sun aided by the decomposition of the vegetable matter. The young grow slowly and many years are required for maturity. While the alligator is reputed dangerous in the water, it is practically harmless on land, and Hornaday maintains that there is no well authenticated instance of loss of life by alligators.

Alpaca (*Lama pacos*). A domesticated form of the guanaco, raised in herds in Peru and Bolivia for its fine wool and excellent flesh. It feeds upon the scant vegetation of the higher Andes, and is brought down to the native villages at shearing time. (See DOMESTIC ANIMALS.)



ALPACA.

Amoeba. A genus of microscopic animals, one of the lowest forms of the Protozoa, living in moist earth, ponds, and swamps. Its body consists of a single cell of naked protoplasm, yet it effects locomotion by its power of thrusting out portions of protoplasm (*pseudopodia*) in one direction, and retracting them from the opposite direction, and it can ingest food in a similar manner. It reproduces itself by division, the parent organism splitting into two smaller similar organisms, which repeat the process when proper growth has been attained. It is often selected by biologists to illustrate the processes of motion, sensation, nutrition, and reproduction in a very simple form, all of these functions being performed by a single cell in the amoeba.

Anaconda or Water Boa (*Eunectes murinus*). A huge, crushing snake closely related to the boa constrictor, native of the Amazon and Orinoco valleys, sometimes attaining a length of 30 feet. Its nostrils, which open vertically, are provided with valves which can be closed when under water, and its eyes are elevated so that it can see not only ahead, but downward into the water. Although, like other boas, it hangs from trees or coils on banks to catch animals unawares, the anaconda frequently conceals its body in water near shore and grips drinking animals by the neck or nose. While it is strong enough to crush a deer its food consists chiefly of small rodents, peccaries, birds and their eggs, fish, and reptiles, including even its own kind.

Anchovy (*Engraulis encrasicholus*). A small fish about 3 inches long, closely related to the herring, abundant in Mediterranean waters, also in Holland. Large quantities are salted for export, particularly at Leghorn. Anchovies have been used for sauces since ancient times. Some of the American species also are valuable for food preparations.

Ant-Eater (*Myrmecophaga*). A large, edentate mammal, so named because its food consists entirely of ants. The **Great Ant-Eater** (*M. ju-*

bata), native of the tropics of Central and South America, is an animal of remarkable appearance. It has a narrow head, with the jaws and nose prolonged into a sort of a tube, and a small, round mouth without teeth, through which it thrusts its long tongue covered with a glutinous secretion to gather its insect food. It is 4 feet in length exclusive of a bushy tail 2½ feet long. It lives wholly upon the ground, sleeping in its lair during the day and going forth at night in search of ant-hills, devouring the insects and their larvae with great rapidity. Though possessing much strength, the ant-eater is timid and harmless and easily falls a prey to the jaguar and other enemies. The **Two-Toed Ant-Eater** (*Cyclothurus didactylus*) of northern Brazil, so named because only two toes possess claws, is about the size of a squirrel, with a long prehensile tail, lives in trees, and is nocturnal in its habits.

Antelope, American, or Pronghorn (*Antilocapra americana*). A graceful animal, peculiar to western North America, ranking between the antelopes and the deer, and the only member of its family (*Antilocapridae*). It differs from true antelopes in having a branch to its horns and in shedding them periodically like the deer, but, unlike the deer, its horns are hollow and do not break off at the base, only the

AMERICAN ANTELOPE (*Antilocapra americana*).

outside horny portion being shed. It is a timid animal about three feet high, grazing in open plains and relying upon its sharp eyesight and speed for safety. For short distances it is the fleetest of American animals. The pronghorn was formerly immensely abundant from the Mississippi westward to the Pacific, ranging from Mexico to Canada, but now only a meager fraction remains, chiefly in or near the Rocky Mountains.

Antelopes (*Antilopinae*). A subfamily of hollow-horned ruminant mammals, standing between the ox and the goat among the *Bovidae*, and containing some of the most beautiful, graceful, and fleet-footed animals known. They are mostly slender, and deer-like, with short hair, and more or less spirally twisted horns, numbering about 150 species, of which 135 occur in Africa and the remainder in Europe and Asia, no true antelope being found in America or Australia, the so-called American antelope or pronghorn belonging to a different family. They range in size from delicate gazelles, less than two feet high, to ox-like species such as the nilghau and the eland, the latter sometimes weighing 1,500 pounds. Among the more prominent African antelopes are the addax, bushbuck, eland, gnu, gazelle, hartbeest, klip springer, kudu, oryx, rietbok, steinbok, and waterbuck; Asian antelopes include the Siberian saiga, a gazelle, the nilghau, and the Indian antelope, sasin, or blackbuck. Various species were formerly immensely abundant in Africa, but as nearly all are extensively hunted for food, their numbers are rapidly diminishing.

Ant Lion. The larva of a neuropterous insect of the genus *Myrmeleon* noted for its peculiar habit of making funnel-shaped pitfalls in fine sand, at the bottom of which it lies concealed, waiting to seize and devour the insects, usually ants, which fall into its ingeniously constructed trap.

Ants (Order *Hymenoptera*, family *Formicidae*). Well known, common insects, closely related to the bees, abundant in temperate and tropical regions, numbering over 2,000 species, most of which live in communities and construct more or less

Male. Worker. Female.

ANTS.

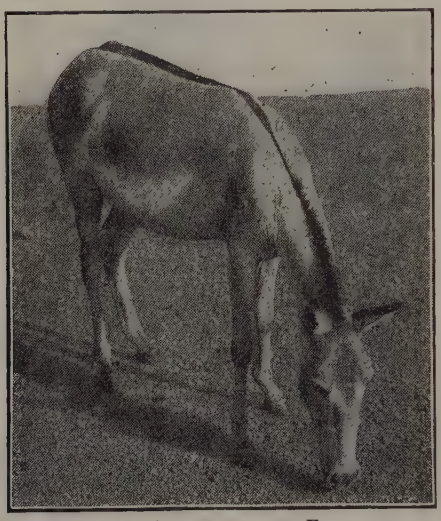
elaborate dwellings in the ground, in wood, or out of clay, fiber, or leaves. A society of ants consists of three classes, males, females, and neuters or workers. The males and females have wings; the workers are wingless. The females are the largest, the males intermediate, and the workers smallest and most numerous. In the warm sunshine of midsummer swarms of males and females may be seen in their wedding flights. The males soon die; the females descend, tear off their own wings, and enter their dwellings or ant-hills to lay eggs. The eggs are placed in special chambers by the workers, where, in about two weeks, they develop into larvae. The nursing workers care for and feed them until they surround themselves with a silky cocoon and become pupae. The pupae lie motionless until ready to appear as ants, when the attendant workers remove their fibrous coverings and feed them until they are able to take care of themselves. In time the winged males and females among them rise in a wedding flight, and a new colony is produced as before. Ants live upon both animal and vegetable food; a favorite with many being the honey secreted by various scale insects and plant lice (*Aphis*) which are kept and fed in the dwellings of some ants for their sweet secretions, so that the Aphis has been called the ant's "cow." Ants display remarkable social instincts in providing for and defending their own colonies but are warlike and wage vicious battles with their neighbors, and many enslave smaller species and live by their enforced labor.

Armadillo. An edentate mammal, closely related to the sloth and ant-eater, which takes its name from the shields of defensive armor with which its skin is provided. The Texas species, called also **Peeba** (*Tatusia peeba*) ranging from Texas to Argentina, is 16 inches long with a tail slightly longer, has claws for burrowing, pointed snout, long tongue, small eyes, and erect pointed ears, and is mostly nocturnal in habit, feeding upon fruits, roots, worms, ants, and carrion.

Asp. A name given to a number of poisonous serpents. The venomous *Naia haie*, which was the sacred serpent often represented in the art of ancient Egypt, and still abundant in the Nile region, is commonly called an asp. It attains a length of 4 to 5 feet and has a dilatable neck resembling that of its near relative, the dreaded Indian cobra. The common viper or adder of Europe is also frequently called an asp. The asp associated with the story of Cleopatra's suicide was in all probability the horned viper (*Cerastes*), a small but very venomous Egyptian snake about two feet long.

Ass, Wild (*Equus*). An equine mammal differing from the horse by longer ears, more shaggy coat, tail only partly covered with long hair, and by absence of callosities on the fore legs. Wild asses occur in dry regions of central and western Asia and in northeastern Africa, usually in small herds of from 5 to 20. In Asia they have been hunted since ancient times for their flesh, which is as highly esteemed as venison. The **Kiang** (*E. hemionus*) of the high plains of Tibet is the largest species, and is extremely

wild and swift. It is light yellowish brown in color with dark mane and tail and a brownish black stripe along the spine. The **Onager** (*E. onager*) of west Asian deserts is smaller, much lighter in color, with a white stripe down the withers and another with a brown stripe in the center along the backbone. The **African Wild Ass** (*E. asinus*), parent of the domestic ass, has longer ears, shorter mane, and more scanty tail. It is creamy gray or blue gray in color with a dark stripe down the back and across the shoulders. It is easy and graceful of movement, very swift, and difficult to approach, and, like the Asiatic species, is hunted for its flesh.



PERSIAN WILD ASS OR ONAGER. Equus onager.

Auk (*Alca torda*). A diving bird having small, short wings and tail, and webbed, three-toed feet, frequently called the razor-billed auk. The name was formerly applied to the great auk (*Alca impennis*), which became extinct about 1844,—a peculiar bird, which was unable to fly owing to the disproportionate smallness of its otherwise perfectly formed wings.

Avocet (*Recurvirostra*). A wading bird of the family *Recurvirostridae* with a very slender upwardly curved bill, exceedingly long legs, and, unlike other waders, webbed toes. There are a number of species. The **American Avocet** (*R. americana*) differs from the European avocet (*R. avocetta*) in the chestnut brown colors of the head, the predominant colors being black and white with blue legs.

Axolotl (*Amblystoma*). A tailed amphibian frequenting ponds and lakes in Mexico just as other species of *Amblystoma*, popularly known as mud puppies or water dogs, do in similar situations in the United States. It is of peculiar interest on account of the fact that it does not usually undergo metamorphosis, but remains in the larval or tadpole stage, keeping its gills throughout life. The axolotl has the aspect of a giant tadpole, 6 to 9 inches long, about to turn into a frog, and is abundant in many localities, sometimes being marketed for food.

Babirussa (*Babirusa alfurus*). An East Indian wild hog inhabiting Celebes, Buru, and other adjacent islands of the Malay archipelago. It is nearly naked, slender legged, and feeds upon fallen fruits instead of rooting in the ground. The male has two pairs of remarkable tusks, both growing upward and curving backward. The upper tusks, instead of protruding from the side of the mouth, grow out of long sockets through the skin on each side of the mouth, and in old animals often reach 8 or 10 inches in length.

Baboon (*Cynocephalus*). An Old World monkey, ranking below the apes, with arms and legs nearly equal, a short tail, and a long, dog-like nose. There are about 16 species, practically all confined to rocky districts in Africa, where they roam in bands, living chiefly upon fruits, roots, insects, and eggs. They are among the strongest and fiercest of monkeys, with ugly dispositions and disgusting habits. (See MANDRILL and MONKEYS.)

Barnacle. A popular name for crustaceans of the order *Cirripedia*, which fasten themselves in great numbers on rocks, wharf piles, and bottoms of ships. They are usually inclosed in a shell composed of several parts, with an opening through which several pairs of long, many jointed, hairy feet are thrust out.

Bass. A name applied to many fishes, chiefly to the perciform families, *Serranidae* and *Centrarchidae*. The former family includes the Salt-water Bass, represented by the **Striped Bass** or **Rock Fish** (*Monroe lineata*), one of the most important of American food fishes, which inhabits the entire eastern coast of the United States, where it is very abundant. It enters fresh water streams to spawn. It is a gamy fish, reaching a length of 3 to 5 feet, and is very popular with anglers. The **Fresh-water Bass** belong to the Sunfish family (*Centrarchidae*) and are represented by the two black basses of sportsmen—the small mouthed (*Micropterus dolomieu*), and the large mouthed (*M. salmoides*).

Bats (*Cheiroptera*). A numerous order of small mammals distinguished by possessing true powers of flight, usually spending the day in caves or dark places, hanging head downward, and flying forth at night in search of food. There are about 500 species, divided into six families, found everywhere except in the frigid zones. They comprise two main groups: the small, numerous, mostly insect-eating bats of temperate and warm regions (*Microcheiroptera*), and the large fruit-eating, or fox, bats of the Old World tropics (*Megacheiroptera*). To the former belong the leaf-nosed bats, the false vampires of Africa and India, the true vampires of South America, the smooth-nosed bats, and the common bats of Europe and America. Our common bats are from 3 to 5 inches long with a wing spread of 9 to 14 inches. The great fruit bats or flying foxes of the East Indies are sometimes 15 inches long with a wing spread approaching 5 feet, and are hunted by natives for their flesh.

Bears (*Ursidae*). A group of carnivorous mammals, most abundant in cool northern regions, only two species occurring south of the equator. Bears are largest and strongest in cold climates, and smallest and weakest in warm regions, being exactly opposite to the cat tribe in this regard. They are large and clumsy but usually good climbers and swimmers and, although flesh eaters, feed largely upon roots, fruits, nuts, honey, and other non-animal food. The **Polar Bear** (*Thalarctos maritimus*), the largest and strongest, and, excepting the grizzly, the most savage of all, occurs throughout the Arctic regions. The **Grizzly Bear** (*Ursus horribilis*), next to the polar in size and strength and the most ferocious and dangerous member of the bear tribe, is found throughout the Rocky Mountains region from Mexico to Alaska. The **Brown Bear** (*Ursus americanus*), the best known species, and formerly abundant in forests throughout the continent, is now limited to remote regions. The **Cinnamon Bear** is a brown phase of the black bear, found in the Rocky Mountains, where it is about as numerous as the true black species.

Beaver (*Castor*). A large aquatic rodent found in North America and parts of Europe and Asia. The beaver, when full grown, measures about 2 feet from tip of nose to root of tail and weighs 30 to 60 pounds, has a palmated hind foot and a broad, flat tail. It is remarkable for its ingenuity in constructing lodges and dams across streams and is highly valued for its fur.

Bee. A name given to a large number of insects of the order *Hymenoptera*. The true bees (*Apoidea*) are divided into 14 families: comprising the social bees, such as the honeybee and bumblebee; and the solitary bees, such as the cuckoo bee, carpenter bee, mason bee, and leaf-cutting bee. Honeybees live in large communities, which consist of a queen, a few hundred drones or males, and between 10,000 and 40,000 workers, or infertile females. The queen is the mother of the whole society, the drones do no work and, after the eggs are fertilized, die or are killed and thrown out; while the workers make the wax, construct the comb, gather the honey, care for the eggs, and nurse the young to maturity. Although the work

Photos 1, 2, 3, 4, 5 from Ewing Galloway; 6 from Keystone View Co.

AMERICAN SCIENTISTS

Robert Fulton
Luther Burbank
Samuel F. B. Morse
Eli Whitney
Dr. C. P. Steinmetz
Peter Cooper

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ANIMAL LIFE—BEAVER

1 Beaver house with Beaver at work. 2 Specimen of Beaver cutting. 3 Beaver dam and house, Estes, Colorado. 4 Beaver at work. 5 Beaver.

of a society goes on continuously, the life of a worker bee is limited to a few months. A queen, however, may live several years and produce hundreds of thousands of eggs each season.

Drone. Worker. Queen.
BEES.

Beetles (*Coleoptera*). One of the largest and best known orders of insects, estimated to contain 200,000 species, of which over 11,000, grouped in 80 families, occur in North America north of Mexico, or about equal in number to the species of flowering plants in the same region. Beetles are distinguished by a pair of horny wing covers meeting in a straight median line down the back; have mouth parts adapted to biting; no tail appendages; and all undergo complete metamorphosis. A few are directly valuable, such as the blister beetle; and others, like the ladybug, destroy harmful insects; but many are injurious to crops, fruit, grain, hides, leather, and fabrics. Important families are Blister Beetles (*Meloidae*), Carrion Beetles (*Silphidae*), Dermestids (*Dermestidae*); Fireflies (*Lampyridae*), Ladybug (*Coccinellidae*), Scarabids (*Scarabidae*), Tiger Beetles (*Cicindelidae*), and Water Beetles (*Gyrinidae, Hydrophilidae*).

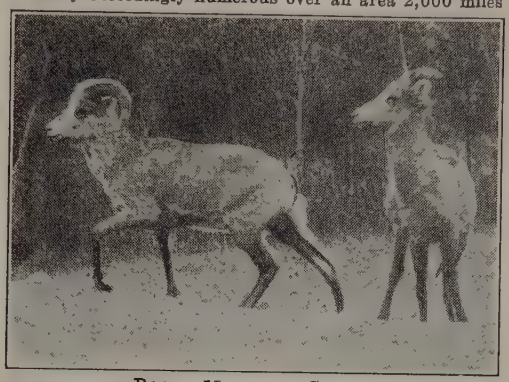
TIGER BEETLE.

Bighorn, or Rocky Mountain Sheep (*Ovis canadensis*). A large, horned mountain sheep, inhabiting the most inaccessible parts of the Rocky Mountains and the country west of them. Adult rams attain a length of 6 feet and a height of 40 inches, and the enormous horns, measured along the curvature, sometimes reach a length of 28 inches. The bighorn was once abundant but now exists only in small bands in widely separated localities.

Bird-Catching Spider. A name applied to species of large spiders of the family *Theraphosidae*. Their food consists chiefly of beetles and other insects, but they will attack and eat humming birds and other small creatures. The bird spider (*Mygale avicularia*) of South America has a body about 3 inches long and its legs extend over a space of 8 or 10 inches.

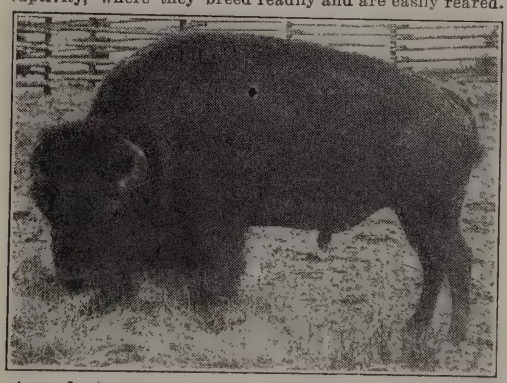
Bird of Paradise. A name applied to a number of cone-billed birds (*Paradisea, Cincinnurus*), natives of the Malay archipelago, which are remarkable for their unusual development of plumage, and the strikingly brilliant colors of the males. Their feathers are highly prized ornaments for headdresses in eastern countries.

Bison, American, or Buffalo (*Bos americanus*). The largest, most imposing, and most widely celebrated of North American animals; formerly exceedingly numerous over an area 2,000 miles



ROCKY MOUNTAIN SHEEP.

wide from the Appalachian forests across the interior plains and the Rocky Mountains to Utah, and 3,000 miles long from Mexico to northern Canada, being immensely abundant east of the Rocky Mountains, occurring in vast herds sometimes miles in extent, and numbering hundreds of thousands. Large specimens stood 5½ feet high, were 10 feet long, and weighed about 2,000 pounds. From 1870 to 1885 the buffalo was systematically slaughtered, being almost exterminated; and unless special efforts are made for their preservation, these remarkable animals, the only wild cattle in the New World, will become extinct. There are now estimated to be less than 350 wild buffaloes in the United States and Canada, and there are only about 1,700 in captivity, where they breed readily and are easily reared.



A good portrait of a buffalo bull in Yellowstone Park.

Bittern (*Botaurus*). A large bird allied to the heron with long bill and toes, found in parts of North America, Europe, Asia, and Africa. It inhabits sloughs and marshes of tall, rank grass, in which it hides by standing erect and pointing its beak upward. The bittern is sometimes called Stake Driver on account of its peculiar call.

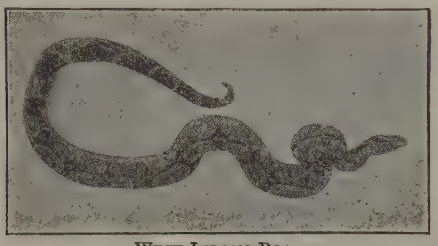
Blackbird. In the United States, the name is given to members of the family *Icteridae*, near relatives of the European starlings. The best known are the **Red-Winged Blackbird** (*Agelaius phoeniceus*), frequenting marshes and cattail swamps throughout most of temperate North America, and the **Yellow-Headed Blackbird** (*Xanthocephalus*), ranging in similar situations from Indiana to the Pacific coast. The **European Blackbird** is a species of thrush (*Turdus merula*), called merle in France, and formerly called ouzel in England.

Blackfish. The name given to a number of dark-colored fishes. In the United States the name is applied mostly to the tautog (*Tautoga onitis*), a common food fish found from Maine to South Carolina.

Blacksnake, or Blueracer (*Bascanium constrictor*). A common colubrine serpent found throughout the United States. It has a slender body of 50 to 80 inches long, and is usually pitch black above and pale green below, but in some states it is bright olive green above. The black snake is active in movement, an excellent climber, and a swift and powerful swimmer. It is useful to the farmer in destroying great number of moles and mice, and it will attack and kill rattlesnakes and copperheads.

Bluefish (*Pomatomus saltatrix*). A well known food and game fish with an average weight of 3 to 5 pounds, of wide distribution, common along the eastern coast of the United States. It feeds upon other fish, swimming in large schools and destroying everything before it.

Boa. A large non-poisonous snake of tropical America of the family *Boidae*, closely related to the python. It feeds upon living animals, which it kills by constriction and swallows whole. The Boa Constrictor of Guiana and Brazil, one of the smaller of the boas, about 12 feet long, is an exceedingly handsome serpent, brownish with a series of complicated, connected blotches.



West Indian Boa.

Boar, Wild (*Sus scrofa*). The wild boar of Europe, Asia, and Africa, parent species of the domestic pig, formerly widely diffused and abundant, is now confined mainly to mountain forests and remote, uncultivated districts. A full grown wild boar stands 3 feet high, weighs over 300 pounds, and has sharp tusks 3 to 4 inches long, capable of inflicting terrible wounds.

Bobolink, Reed Bird, or Rice Bird (*Dolichonyx oryzivorus*). An American song and game bird nesting in New England and Canada, when its song is prominent, and wintering in Central America and the West Indies, becoming fat en route in Southern grain fields, where vast numbers are shot for the city markets.

Bovidae. The largest family of the order *Ungulata* or hoofed mammals, comprising about 200 species, with paired, hollow horns, chiefly of the Old World, the Asian forms being the most important, and the African the most numerous. It includes the well known bovine animals, ox, sheep, goat, and antelope.

Buffalo. True buffaloes are bovine ruminants of the Old World, with flattened, angular horns, and lack the hump and mane characteristic of the American bison commonly but incorrectly called buffalo. The **Cape Buffalo** (*Bos caffer*) is a large, fierce, untamable African species living in herds from Abyssinia to Cape Colony. The **Indian Buffalo** (*Bos bubalus*) occurs wild in India, Ceylon, and the Philippines, attaining a height of 5½ feet. It loves water and lives in swampy jungles and marsh lands. It has long been tamed and is a widely used beast of burden.

Bullhead, Bullpout, or Horned Pout (*Amiurus nebulosus*). The best known of the smaller catfishes, abundant in muddy streams and ponds from Maine to North Dakota and south to Florida and Texas, and now introduced into California. It is yellowish brown in color, clouded with darker, and attains a length of 12 to 18 inches.

Bumblebee, or Humblebee (*Bombus*). A large, hairy-bodied, burly bee, similar in habits to the honeybee but much less highly developed socially, building nests on the ground, often in clumps of grass. About 50 species occur in North America.

Butterflies, together with moths, constitute the well-marked natural order of *Lepidoptera* or scale-winged insects. Butterflies are readily distinguished from moths by having slender antennae knobbed at the ends, by holding their wing erect over the back when at rest, and by their diurnal habits. They occur throughout the world but are most numerous and beautiful in the tropics, some species having a wing spread of 6 inches. Over 7,000 species have been described, of which about 1,000 are North American.

Buzzard (*Buteo*). A large bird of prey closely related to the eagle and hawk, occurring throughout the world except Australia. In the United States there are several species which are commonly called hawks, such as the **Red-Tailed Buzzard** (*B. borealis*) and the **Red-Shouldered Buzzard** (*B. lineatus*). In the Southern States the name is generally given to the turkey vulture, or turkey buzzard (*Cathartes*).

Camelidae. A family of ungulate mammals having teeth of peculiar formation and feet with broad, cushion-like pads. There are six living representatives: the Arabian and Bactrian camels, the guanaco, vicuña, alpaca, and llama, the last two being domesticated varieties of the guanaco.

Bactrian Camel.

Canidae. The Dog family; a group of carnivorous mammals, with digitigrade feet, usually having five toes on the fore feet and four toes on the hind feet, with claws that are not retractile. It includes dogs, wolves, jackals, and foxes.

Canvasback (*Aythya vallisneria*). The most highly esteemed American food duck, ranging throughout North America. When fattened upon its favorite food, the water celery, its flesh is of peculiar excellence and the demand of the game markets has led almost to the extermination of the species in the Eastern States.

Capybara (*Hydrochaerus capybara*). A large American aquatic mammal of the family *Caviidae*, the largest known rodent, reaching a length of about 4 feet and weighing 100 pounds. It resembles a gigantic guinea pig with a long flat head, small ears and eyes, and bristly brown hair.

Cardinal Bird (*Cardinalis cardinalis*). A beautiful bird of the Finch family, the male of which is deep red in color, with the forehead and upper throat black, and with dusky wings. It occurs from the Bermudas north to Massachusetts and west to Wisconsin, and is a brilliant songster and favorite cage bird.

Caribou (*Rangifer*). The North American reindeer, considered by some only a variety of the European reindeer. Two distinct series of forms occur, the woodland caribou and the barren ground caribou. The **Woodland Caribou** is the larger, is darker in color, and has heavier antlers with more numerous points. It frequents woodlands from Newfoundland and Labrador to the Rocky Mountains and

never occurs north of latitude 60 degrees. The **Barren-ground Caribou** occurs in vast numbers on the great arctic plains north of latitude 60 degrees, lives upon lichens, moss, and swamp grass, and is exceedingly useful to the Eskimo for food, leather, and other purposes.

WOODLAND CARIBOU.

Cassowary (*Casuarius*). A large, ostrich-like bird found in Australia and the Papuan Islands. It is more than 5 feet high, has a heavy massive body, and the legs are shorter and stouter than those of the ostrich. The plumage is loose, coarse, and hair-like, and black in color. Both head and neck are bare and the head is surmounted by a horny helmet.

BARREN-GROUND CARIBOU.

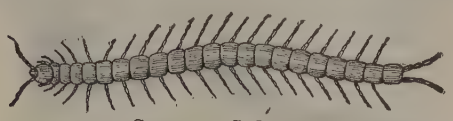
Catbird (*Galeoscoptes carolinensis*). A common song bird closely related to the mocking bird, found in most parts of North America. It is about 9 inches long, slate gray with crown and tail black. Its call resembles the mewing of a cat but in the spring its song is varied and brilliant.

Catfish. A name given both salt and fresh water fishes of the family *Siluridae*, inhabiting chiefly the rivers, ponds, and stagnant waters of warm regions. They have no scales and are provided with beard-like appendages resembling the whiskers of a cat.

Caviidae. A family of South American rodents containing about 14 species, the best known of which is the domesticated guinea pig.

Centiped (*Scolopendra*). A worm-like arthropod with a many-segmented body, having a pair of jointed legs on each segment. The first pair are developed as poison claws, the wounds of which are fatal to insects and small animals, and sometimes dangerous to man. Small species are only an inch long, but large forms reach a foot in length.

Cervidae. An important family of ungulate mammals, the males of which shed their solid horns or antlers annually. There are over 60 species including the deer, moose, elk, reindeer, and musk deer.



CENTIPED *Scolopendra*.

Chameleon. An African arboreal lizard of the family *Chamaeleontidae*, with a worm-like extensile tongue and peculiar globular eyes, capable of moving independently of one another. It is able to change its color rapidly and thus simulate to a certain extent the colors of the surrounding objects. The name is sometimes incorrectly applied to certain American lizards.

Chamois (*Rupicapra tragus*). A goat-like antelope of southern Europe, about the size of a large goat. It is dark brown in color, with horns 6 to 7 inches in length recurving at the tips. Chamois associate in flocks, are skillful climbers, and can jump ravines 20 feet wide. The skin is made into leather much prized for its softness.

Chewink (*Pipilo erythrophthalmus*). A North American finch, a little smaller than the robin, common in the eastern United States. The male is black above, with a white breast, chestnut sides, and wings marked with white. The female is brown where the male is black.

Chigoe (*Sarcopsylla penetrans*). A small flea found in the West Indies and the tropical parts of South America. It buries itself under the skin, usually of the feet, often causing a painful and dangerous ulceration. In the southern and central United States the name chigoe, chigger, or jigger is applied to minute scarlet mites which penetrate the skin and cause intense itching.

Chimpanzee (*Anthropopithecus troglodytes*). An anthropoid ape of central and western Africa, attaining a height of 5 feet at most. The chimpanzee has arms reaching just below the knees, long hands and feet; a pale face with distinct eyebrows, eyelashes, and whiskers, which together with its tractability make it seem the most man-like of apes.

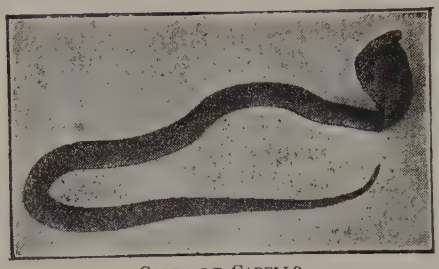
Chinch Bug (*Blissus leucopterus*). A well-known injurious bug, occurring in immense numbers in the Mississippi valley, where it inflicts great damage, particularly to crops of wheat and corn. The female lays about 500 eggs, which mature in about 15 days, and there are two broods during the season.

Chipmunk (*Tamias*). A genus of squirrel-like rodents; also called ground squirrel. It differs from true squirrels in having internal cheek pouches and by stripes along its back and sides. There are about 30 species, widely distributed in North America, Europe, and Asia.

Civet. A carnivorous mammal of the genus *Viverra*, allied to the cat, but having a longer body and shorter legs. It is found chiefly in Africa, southern Asia, and the East Indies. Both sexes have under the tail a double pouch, which secretes an odoriferous, fatty substance much used in perfumery. The name civet cat is sometimes incorrectly applied to the cacomistle (*Bassaris*) of the southwest.

Clam (*Mya arenaria*). A bivalve mollusk found on the Atlantic coast from Florida northward, occurring abundantly in soft bottoms, near low water mark, extensively used for food. The fleshy, edible body of the **Giant Clam** (*Tridacna gigas*) of the East Indies sometimes weighs 20 pounds, while the combined weight of the two valves of the shell may exceed 500 pounds.

Climbing Fish (*Anabas scandens*). A small East Indian fish possessing the ability to live for some time out of water, and to make journeys on moist earth from pond to pond. It is reputed to be able to climb trees.



COBRA DE CAPELLO.

Cobra (*Naia*). The common name of six or seven species of very venomous Old World snakes which possess the power of widening and flattening the neck just behind the head when alarmed or about to strike. The **Cobra de Capello** (*N. tripudians*), very abundant in India and Ceylon, is a slender, active, vicious snake about 4 feet long. Its bite, usually inflicted without warning, is almost always fatal, and causes the death of about 20,000 people annually in India. The **King Cobra** (*N. bungarus*) of the Malay Peninsula, the largest of venomous serpents, attaining a length of 10 feet, is powerfully muscled, and can erect its head 3 feet perpendicularly, and strike an equal distance. It lives exclusively upon other snakes and lizards.

Cockroach (*Blatta orientalis*). A common orthopterous insect, living in houses and ships; originally from the East, now widely distributed, especially in seaport towns. While it is a pest, destroying much food, and even cotton, wool, and leather, it is also of service in ridding ships and houses of bedbugs. The **Croton Bug** or **German Cockroach** (*Blatella germanica*), now abundant in houses in New York, Chicago, and other cities, was quite recently introduced from Europe. Native cockroaches live in the woods under sticks and stones, and sometimes venture into houses.

CONDOR.

Condor (*Sarcorhamphus gryphus*). A large vulture found in the Andes of South America, usually from 9,000 to 16,000 feet above sea level. It is probably the largest living bird of prey, reaching a length of about 48 inches with a wing expanse of 9 to 10½ feet. The condor feeds mostly on carrion but, when hungry, will attack young goats and lambs.

Coot or **Mud Hen** (*Fulica americana*). A wading bird of the rail family, 14 inches long, sooty-colored with a white bill, frequenting swamps from Alaska and Greenland south to Central America, used for food by the poorer classes in southern cities.

Copperhead (*Ancistrodon contortrix*). A vicious, venomous, woodland snake, which strikes without warning, closely related to the rattlesnake, occurring sparingly from New England to Kansas and more abundantly southward. It is about 3 feet long, hazelnut brown or old copper color, with the top of the head coppery red.

Coral. Coral polyps are coelenterate animals, which usually live together in enormous colonies, though a few are solitary. They take in carbonate of lime with sea water or with food, and deposit the coral substance which both supports and protects the body. The forms of corals are numerous and include the star coral, brain coral, organ-pipe coral, feather coral, stag-horn coral, sea-pens, sea-feathers, and sea fans. The coral polyps are of brilliant colors, and many of the skeletons are highly colored. Red coral used in jewelry comes from the Mediterranean and Red seas; pink coral from Italy; yellow from Sardinia; and black from the Red Sea. The madrepore is a large, branching coral found on the reefs of Florida growing in masses nearly 2 feet high, and 3 to 4 feet in diameter. There is no such thing as a "coral insect," and coral is not built cell by cell as the bee builds honeycomb. Some 2,000 species are known.

Coral Snake or **Harlequin Snake** (*Elaps fulvius*). A small, beautifully colored venomous snake, about 2½ feet long, frequenting woods from South Carolina to western Texas and ranging northward to southern Indiana. It feeds chiefly upon other snakes, lizards, and insects.

Cowbird (*Molothrus ater*). A North American bird, related to the bobolink, breeding from Texas to Manitoba and eastward, feeding around cattle and, like the cuckoo of Europe, laying its eggs to be hatched in the nests of other birds.

Crab. A group of short-tailed crustaceans, containing over 1,000 species, mostly living in shallow sea water. The **Blue Crab** (*Callinectes hastatus*) of the Atlantic coast is a highly-prized edible species both in hard shell and soft shell stage. The **Fiddler Crab** (*Gelasimus vocans*), so named from the manner in which it carries its largest claw, ranges from Cape Cod southward. The **Hermit Crab** (*Pagurus*) thrusts its soft body into a cast-off snail shell and carries it around for protection.

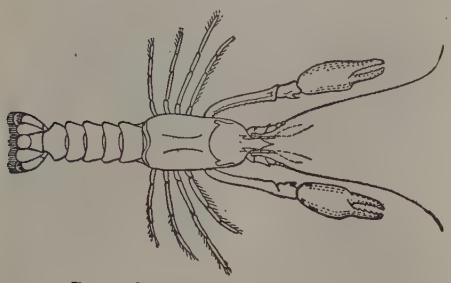
HERMIT CRAB.

MUD CRAB.

Crane (*Grus*). A large wading bird, frequenting marshes, living upon fish, small animals, roots, and seeds, breeding northward but migrating southward in winter, most numerous in the Old World. The **Whooping Crane** (*G. americana*), pure white and black, 50 inches long, and the slate colored **Sand-hill Crane** (*F. mexicana*) occur in the United States.

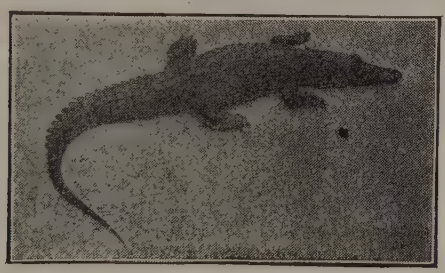
Crawfish, Crayfish (*Cambarus*). A fresh water crustacean resembling a small lobster, living in lakes, ponds, and streams, feeding upon worms, insects, small animals, and plants. While rarely eaten in America, crawfish are esteemed a great delicacy in Europe, particularly in France.

Cricket (*Gryllidae*). An orthopterous insect closely related to the grasshopper and locust. The **House Cricket** (*Gryllus domesticus*) of Europe, the "cricket on the hearth," has been introduced in the eastern United States. American crickets are nocturnal and solitary and rarely enter houses.



BLIND CRAWFISH. Mammoth Cave. Cambarus pellucidus.

Crocodile (*Crocodilus*). A large amphibious flesh-eating reptile distinguished from the alligator usually by a narrower, more pointed snout, and differences in the teeth. There are a number of species, all natives of warm regions, two or three of which are dangerous to man. The great **Estuarine Crocodile** (*C. porosus*), sometimes 16 feet long, is a fierce man-eating species of southern Asia and the East India Islands. The **Egyptian Crocodile** (*C. vulgaris*) immensely abundant in the upper Nile, and widely distributed in African rivers, is bold and dangerous. The **American Crocodile** (*C. americanus*) found in tropical America, the West Indies and sparingly in Florida, exceeding 14 feet in length, like the alligator is practically harmless.



AMERICAN CROCODILE.

Crow (*Corvus*). A passerine bird allied to the raven and jay. The **American Crow** (*C. americanus*), occurring throughout North America and assembling in enormous flocks, is one of the most intelligent of birds. The very similar, slightly smaller **Fish Crow** (*C. ossifragus*) of the lower Atlantic and Gulf coasts is readily distinguished by its different call. The **Carrion Crow** (*C. corone*) of Europe, living solitary in pairs instead of flocks, is readily tamed and taught to imitate the human voice.

Cuckoo (*Coccyzus*). A genus of 200 species of strictly insect-eating birds occurring throughout the world. The celebrated **European Cuckoo** (*C. canorus*) is a summer visitor from Africa, which lays its eggs in the nests of other birds. The **Yellow Billed Cuckoo** (*C. americanus*) and the **Black Billed Cuckoo** (*C. erythrophthalmus*) of the eastern United States, build nests, and hatch their own eggs.

Cuttlefish (*Sepia*). A cephalopod mollusk, rarely over 18 inches long, with an oval body and a large head, surrounded by 10 arm-like feet. There are about 60 species living near shore in the open sea, discharging, when pursued, an ink-like fluid, used for writing by the ancients and the source of sepia ink. The shell or bone is fed to canary birds and the whole animal is used for food in India, China, and Japan.

Daddy Longlegs or Harvestman (*Phalangium*). A long-legged, small-bodied, wingless insect, resembling and related to the spiders. There are about 15 North American species, all of which feed largely upon plant lice (*Aphis*) and are beneficial to man. In England the name daddy longlegs is applied to two-winged flies of the family *Tipulidae* (Crane flies).

DADDY LONGLEGS OR HARVESTMAN.

Deer (*Cervus*). A group of ruminant mammals, the males of which usually possess solid bony outgrowths of the skull called antlers, shed and grown anew each year, found in all continents except Australia, valued for their flesh, hides, and horns. The **Red Deer** or **Stag** (*C. elaphus*) of Europe, now rare except in game preserves, is 4 feet high, and weighs 300 to 400 pounds. The small **Fallow Deer** (*C. dama*) of Mediterranean countries, only 3 feet high, is kept in parks for ornament and highly prized for venison. The **Wapiti** or **American Elk** (*C. canadensis*), usually, though improperly, called elk, now mostly confined to the Rocky Mountains, sometimes measures 5½ feet high and weighs 800 pounds. This large deer thrives wherever protected and is easily reared in captivity. The **White Tailed** or **Virginia Deer** (*Dama virginiana*), a most graceful and elegant species, once abundant nearly throughout the continent, is now rare except locally in the United States. The **Mule Deer** (*Dama hemionus*), so named on account of its long ears, is a somewhat larger Rocky Mountain species. The **Black Tailed Deer** (*Dama columbiana*), with a distinctly black tail, smaller and more graceful than the mule deer, occurs from California to Alaska.

Dingo (*Canis dingo*). The wild dog of Australia. It is smaller than the wolf, usually about 2 feet high, and varies in color from brown to black. Dingos are abundant in the woods of Australia, where they hunt in large droves.

Dodo (*Didus ineptus*). A large extinct bird, related to the pigeon, formerly inhabiting the island of Mauritius. It was larger than the swan, with a clumsy body, short legs, and a large bill and was unable to fly. It became extinct about the end of the seventeenth century.

Dolphin (*Delphinus*). A fish-shaped aquatic mammal related to the whales, usually less than 10 feet in length, with a horizontal tail. The **Common Dolphin** (*D. delphis*), occurring in all except polar seas, 6 to 8 feet long, feeding largely upon squids, was formerly valued for food. It was sacred to Apollo, and the Delphic oracle was named for it.

Dove, Mourning or Turtle (*Zenaidura macroura*). A common and very widely distributed bird in the United States, about 1 foot long, with a characteristic mournful note. It is usually seen in pairs, lives on seeds and fruits, and is prized for its excellent flesh.

Dragon Fly. Several families of insects (order *Odonata*) with long, cylindrical bodies, large head and eyes, and four membranous wings, very voracious feeders upon other insects, but harmless to man. Also called **Spindle, Snake Feeder,** and **Devil's Darning-needle.**

Duck. The common name for birds of two divisions of the duck family, the River and Pond ducks (*Anatinae*), including the **Mallard, Teal, Shoveler, Widgeon,** the **Baldpate, Pintail,** and **Wood ducks,** and the **Sea** and **Bay ducks** (*Fuligulinae*), which include the **Red-head, Canvasback, Golden-eye, Scoter, Eider,** and **Harlequin ducks.** The **Mergansers** (*Merginae*) are sometimes called fish ducks.

Duckbill (*Ornithorhyncus anatinus*). An aquatic egg-laying mammal of the order *Monotremata,* found in Australia, Papua, and Tasmania. It is about 18 inches long, with a duck-like bill, webbed feet, and a short, flat tail. It inhabits rivers, burrowing in the banks and feeding largely upon mollusks and aquatic insects.

Eagle. A large diurnal bird of prey of the Falcon family (*Falconidae*). The **Golden Eagle** (*Aquila chrysaetus*), occurring throughout Europe, northern Asia, and northern Africa, also in North America, though rare east of the Mississippi, is a dark brown bird, 3 feet long with a wing spread of 7½ feet, usually nesting in cliffs or trees, and feeding upon small animals. The **Bald Eagle** (*Haliaetus leucocephalus*), the emblem of the United States, ranging throughout North America, is a dark brown sea eagle, with white head, neck, and tail, about equal to the golden eagle in size, living near water, and subsisting mainly upon fish and small land animals.

Earthworm, Angleworm (*Lumbricus*). A burrowing worm, common throughout the world except in deserts, living upon vegetable matter in the soil, which is greatly improved by its workings. In South America, Africa, and Australia giant species occur, sometimes 6 feet long and an inch in diameter.

Eel (*Anguilla chrysypa*). A long-bodied, fresh-water food fish which goes to the sea to spawn; common in most regions except Pacific America; usually 20 to 30 inches long, very voracious, eating refuse and dead fish, and destroying great numbers of fish caught in fishermen's nets; very prolific, the young returning from the sea to fresh waters in vast numbers.

ELAND.

Eland (*Oreas canna*). A large ox-like antelope, formerly found all over South Africa, but now inhabiting only the interior region. It is about 5½ feet high, and has a body somewhat like that of an ox and a head like a deer, with twisted horns and a small mane. Elands generally go in herds of 50 to 100 and look so much like cattle that they are often mistaken for them.

Elephant (*Elephas*). The largest living land animal, with a huge body supported by pillar-like legs, an immense head provided with tusks, and a long proboscis or trunk. There are two living species: The **Asian Elephant** (*E. indicus*), native of southern Asia, Ceylon, and Sumatra, usually from 7 to 10 feet high, is extensively domesticated and is the species usually seen in menageries. The **African Elephant** (*E. africanus*) of central Africa, standing 10 to 12 feet high, is wilder and fiercer, with much larger ears, darker skin, and usually has one nail less on each foot, infrequent in captivity, though Jumbo was an African elephant.

AFRICAN ELEPHANT.

Elk. In America the name commonly given to a large, handsome deer (*Cervus canadensis*), also known as **Wapiti.** In Europe the moose (*Alces*) is called elk. (See DEER, MOOSE.)

Emu (*Dromaeus*). A large ostrich-like bird of Australia, allied to the cassowary but larger, and next in size to the ostrich. It differs from the cassowary in having the neck and head feathered, in the absence of a helmet, and in having more slender legs. Emus live in open plains, where they feed upon berries, herbs, etc. They thrive in captivity and are valued for their eggs and flesh.

Equidae. A family of hoofed mammals (*Ungulata*), which have but one toe incased in a solid hoof, and 42 teeth—including the horse, ass, zebra, and quagga.

Ermine (*Mustela erminea*). A kind of weasel found in North America, Europe, and Asia, which turns white in winter, and is valued for its fur. It is about 10 inches long and in summer is reddish brown above and whitish below, with tip of tail black. The habits of the ermine are much like those of the common weasel, but it preys upon larger animals, such as hares and rabbits. In Europe it has been domesticated and used like the ferret.

Falcon (*Falco*). A long-winged bird of prey with a hooked beak and strong, sharp claws, striking down its quarry in flight, found nearly throughout the world. The **Peregrine Falcon** (*F. peregrinus*), found in every continent except Australia, 16 inches long, is the "noble peregrine" of falconry, a veritable tiger of the air, fierce, strong, and swift, quickly overtaking and overpowering the swiftest birds. The **Sparrow Hawk** (*F. sparverius*), very common in the United States, only 11 inches long, a beautiful and graceful species, is one of the boldest and most active falcons.

Fer-de-Lance (*Bothrops lanceolatus*). A much dreaded, venomous snake of the West Indies, 4 to 6 feet long, with very long poison fangs.

Flamingo (*Phoenicopterus*). A small-bodied bird with very long neck and legs, downwardly turned bill, and scarlet or rose-colored plumage with black wings. The **American Flamingo** (*P. ruber*), now rare in Florida and Louisiana, stands nearly 4 feet high. It is easily tamed and often kept in zoological gardens.

Flea (*Pulex*). A small, reddish-brown insect, with a beaked mouth for biting, and long, strong legs, most abundant in the tropics and in warm, dry regions, as in southern Europe, where they are intolerable pests. There are many species, those infesting animals being different from the human flea (*P. irritans*).

Flies (*Muscidae*). A large family of dipterous insects of which the house fly is typical. In its most restricted sense the family numbers about 150 North American species. The larvae, known as maggots, live in decaying animal and vegetable matter, and reach maturity very quickly. The house fly requires only from 10 to 14 days. Most adult Muscidae are of repulsive habits, often carrying germs of disease from their filthy surroundings and depositing them on food. The typhoid fever, when epidemic in military camps, is usually due to these flies. Among better known kinds are: The **House Fly** (*Musca domestica*), which usually breeds in horse dung, might easily be greatly reduced in numbers. Two kinds of **Blow Flies** (*Calliphora vomitoria and C. erythrocephala*) live as larvae in decaying flesh. The **Screw-worm Fly** (*Chrysomyia macellaria*), which occurs from the United States to Argentine Republic, attacks raw sores of domestic animals. The **Biting House Fly** or **Stable Fly** (*Stomoxys calcitrans*) closely resembles the house fly, from which it can be distinguished by its sharper proboscis; it annoys horses and cattle, and bites human beings. The **Horn Fly** (*Haematobia serrata*), smaller than the house fly, attacks cattle, often swarming about the base of their horns. The African **Tsetse Flies** of various species (*Glossina*), insects resembling the common stable fly, transmit by their bites small protozoa (*trypanosomes*) into the blood of horses, cattle, and dogs, resulting fatally; one species (*G. palpalis*) is in this way the cause of the fatal "sleeping sickness" in man, the trypanosomes being transmitted from the crocodile, it is believed.

Flounder or **Flatfish** (Family *Pleuronectidae*). A flat fish frequenting sandy sea bottoms, in which both eyes, by a gradual twisting of the head, appear on one side, which is always uppermost. There are about 50 genera and upwards of 400 species including many valuable food fish such as the halibut, plaice, and turbot.

LIVER FLUKE.
1. Larval stage. Cercaria. 2. Mature fluke.
3. Cyst. 4. Redia stage.

Fluke (*Distomum*). A small, flat, platyhelminthine worm, infesting a great variety of animals, several species attacking man. The common **Liver Fluke** (*D. hepaticum*), parasitic in man and many ruminant animals, causes the destructive disease called rot in sheep. The adult worm in the liver produces hundreds of thousands of eggs, which are discharged through the bile duct. Eventually some of these are washed into ponds where they hatch in the water. The newly-hatched larvae immediately attack and enter the bodies of certain amphibious snails, where they undergo a remarkable series of changes, finally escaping as active cercariae, which encyst upon blades of grass, and are eaten by sheep and other animals. The cyst dissolves in the stomach and the liberated worm penetrates the liver, where it matures and again lays eggs.

Flying Fish (*Exocoetus*). An open-sea fish, possessing large pectoral fins, which leaps from the surface and glides long distances through the air. There are over 40 species, mostly of tropical oceans.

Flying Squirrel (*Sciuropterus*). A squirrel provided with a distensible membrane connecting the fore and hind legs, by means of which it glides from tree to tree. The **Assapan** (*S. volans*), occurring from Canada to Kansas and southward, about 10 inches long including the tail, is the most common American species.

Fox (*Vulpes*). A carnivorous mammal closely related to the wolf and dog, but smaller, with a narrow, pointed nose and a bushy tail, dwelling in burrows, hunting singly at night, living upon small animals and fruit and noted for sagacity and cunning. The **American Red Fox** (*C. fulvus*), reddish yellow, throat and tip of tail white and ears black, ranges eastward from the Missouri river in the Northern States and Canada. The **Prairie Fox** (*V. macrourus*), lighter colored with a larger tail, inhabits the central plains. The **Kit** or **Swift Fox** (*V. velox*), of arid western regions, is smaller, handsomer, and remarkably fleet. The **Arctic Fox** (*V. lagopus*), with thick fur, covering even the soles of the feet, pure white in winter and dull rusty and yellowish in summer, occurs throughout Arctic regions. The **Gray Fox** (*Urocyon virginianus*), more dog-like, gray mixed with black, lives in hollow trees or caves, from Pennsylvania south and west to Texas. Many species occur in Europe, Asia, and Africa.

Fringillidae (Finch family). The largest family of birds, containing 100 genera and more than 500 species, occurring in all continents save Australia, one seventh of all being North American, mostly seed-eating song birds of plain plumage, though some are brilliantly colored, including sparrows, grosbeaks, cross bills, linnets, the snowbird, and the canary.

Frog (*Rana*). A four-footed, tailless amphibian, with the hind legs strongly developed for leaping, smooth skin and webbed feet, living chiefly on insects and small mollusks. There are about 270 species, widely distributed except in arid or frigid regions. The **Bull Frog** (*R. catesbiana*), 5 to 8 inches long, occurring in sluggish waters from Kansas eastward, is noted for its deep bellowing note. The **Common** or **Leopard Frog** (*R. pipiens*), 2½ inches long, usually green above, marked with black patches edged with whitish, is abundant throughout North America, west to the Sierra Nevadas. The **Green Frog** (*R. clamitans*), 3 inches long, confined to the eastern United States, is found also in Europe, Asia, and North Africa.

Garter Snake (*Thamnophis*). The most abundant North American snake, occurring everywhere in grassy places. The most common species is *T. sirtalis*, found throughout the United States, east of the Sierra Nevadas. There are many other species, all absolutely harmless, and on the whole beneficial to man.

FLYING FISH.

Gavial (*Gavialis gangeticus*). A carnivorous reptile of the crocodile family, occurring in the Ganges and other Indian rivers, differing from the crocodile in having a long, slender, knobbed snout, one fifth as long as the body, which sometimes exceeds 18 feet. It feeds upon small animals and is harmless to man.

Gila Monster (*Heloderma suspectum*). A venomous lizard of the arid regions of Arizona, New Mexico, and Sonora, about 18 inches long, whose bite is fatal to some small animals but probably not to man.

Giraffe or **Camelopard** (*Giraffa camelopardalis*). An African hoofed mammal, the tallest living animal, attaining a height of 18 feet, a large part of which is represented by the abnormally long neck. The body, legs, and neck are strikingly colored and spotted; the head is finely formed, with erect

ears, full lustrous eyes, and two bony, hornlike outgrowths from the skull, covered with hair. The tongue is very long, slender, and rough, and is used for plucking trees, the leaves of which constitute most of its food. The giraffe is found only in central and southern Africa.

Glass Snake (*Ophisaurus ventralis*). A smooth, legless, snake-like lizard about 2 feet long, found from North Carolina to Wisconsin and southwestward to Mexico. It is immediately distinguished from true snakes by having eyelids and external ear openings. In common with many lizards it can part with its tail in an emergency and grow a new but much shorter one thereafter, giving rise to many erroneous popular notions as to brittleness and ability to reunite its separated parts.

Gnu (*Connochaetes*). A large ungainly South African antelope, somewhat resembling both the ox and the horse in appearance. The **White-Tailed Gnu** (*C. gnu*), 6½ feet long, standing 4 feet high, lives in herds in open plains where it is hunted for its flesh, hide, and horns.

Golden-eye or **Whistler** (*Glaucionetta clangula americana*). A North American duck, breeding from Maine to Manitoba and northward, wintering southward in Cuba. It is a vigorous diver and swimmer, and the sound of its rapidly driven wings gives rise to the name whistler.

Goose. The common name for a member of a division of the duck family (*Anatidae*), larger than ducks but smaller than swans, found nearly throughout the world. About 10 wild species visit or breed in the eastern United States, among them the **Snow Goose** (*Chen hyperborea*), the **Black Goose** (*C. caerulescens*), the **White Fronted Goose** (*Anser albifrons, var.*), the **Canada Goose** (*Branta canadensis*), and the **Brant** (*Branta bernicla*).

Gopher (*Spermaphilus*). The common name of various ground squirrels possessing cheek pouches. The most abundant is the **Striped Gopher** (*S. tridecemlineatus*) of the prairies from Michigan to Texas and northward, about 10 inches long including the tail; marked with 13 stripes. The true **Pocket Gopher** (*Geomys bursarius*) of the northern Mississippi valley is slightly larger and has cheek pouches lined with hair, opening outside the mouth. The name gopher in the Southern States is applied to a burrowing tortoise.

Gorilla. This largest, most muscular and powerful of the anthropoid apes, a native of the forests of Gabun, black in color, with naked face, small ears, and wide nostrils, a vegetable feeder, living in families, is savage and untamable, not hesitating when cornered to attack man. A full grown male stands more than 5 feet high when erect, and sometimes weighs 400 pounds.

Grasshopper. An orthopterous insect closely related to the locusts, but provided with long antennæ and never migrating in swarms, usually green, resembling the vegetation it lives upon. The so-called grasshoppers once so destructive on western plains are true locusts.

Grouse. Large game birds of northern regions belonging to the family *Tetraonidae*, some of which, as the **Capercaille** of Europe, are nearly 3 feet long, weighing 15 pounds. The **Ruffed Grouse** (*Bonasa umbellus*), wrongly called Partridge in the north, and Pheasant in the south, 18 inches long, makes a peculiar drumming sound by quick strokes of its wings. The **Pinnated Grouse** (*Tympanuchus americanus*), commoniy called Prairie Hen or Prairie Chicken, 17 inches long, was formerly abundant from Indiana westward. The **Sharp Tailed Grouse** (*Pediaecetes phasianellus*) of the Arctic plains extend southward to Illinois. The **Sage Cock** or **Sage Chicken** (*Centrocercus urophasianus*) of western desert plains is the largest American grouse, sometimes 30 inches long. It feeds upon various kinds of sage brush, which impart a bitter flavor to its otherwise excellent flesh.

Guanaco (*Lama guanacus*). A South American mammal of the camel family, found in high altitudes in Peru and Chile, and on the plains of Patagonia; much smaller than the camel, humpless, and with two-toed feet. Both the llama and alpaca probably are domesticated forms of the guanaco.

Hare (*Lepus*). A small rodent, with long hinder legs, short, bushy tail, large eyes, long ears, and almost woolly fur, most numerous in northern regions, usually feeding upon tender plants. The **Cotton Tail** (*L. sylvaticus*), 18 inches long, ranging from Hudson's Bay to Florida and eastward, is our most common species. The **Prairie Hare** or **Jack Rabbit** (*L. campestris*) 23 inches long, ranging from Dakota to Kansas and west to Oregon, turns white in winter.

Hawk (*Accipiter*). In the United States the name is applied to the buzzard, falcon, harrier, and kite, or to almost any bird of prey not an eagle, vulture, or owl. Among the true hawks (*Accipiter*) are the **Sharp-shinned Hawk** (*A. velox*), also called **Pigeon Hawk**, 12 inches long, occurring throughout the United States; the **Chicken Hawk** (*A. cooperi*), also called **Cooper's Hawk**, a bold bird, 18 inches long, feeding upon grouse, pigeons, and hares. The larger **Goshawk** (*A. atricapillus*), 24 inches long, ranging far northward, is a daring robber of poultry.

Heron (*Ardea*). A genus of birds with long necks, wings, and legs, most numerous in warm and tropical regions, frequenting marshy places. The **Great Blue Heron** (*A. herodias*), 40 to 50 inches

Great White Heron.

long, is common throughout North America; the **Great White Heron** (*A. occidentalis*) is slightly larger and entirely white, one of the most striking of the herons. The **Little Blue Heron** (*A. coerulea*), 24 inches long, ranges from Illinois eastward, and the **Little Green Heron** (*A. virescens*), 18 inches long, occurs throughout the continent.

Herring (*Clupea harengus*). A very important food fish, abundant on both shores of the Atlantic, particularly in northwestern Europe. It attains a length of 12 inches and an average weight of one pound. Herring are cured in vast quantities, and young herring are put up as sardines.

Hippopotamus. A thick-skinned, amphibious, hoofed mammal, most nearly related to the common pig, two species of which exist in Africa. The **Common Hippopotamus** (*H. amphibius*), ranging from equatorial Africa southward, exceeded only by the elephant and rhinoceros in bulk, attains a length of 14 feet and a height of 4 to 5½ feet. It is the most aquatic of all hoofed animals, graceful in the water, but very awkward on land, which it visits chiefly at night to feed on herbage. The **Liberian Hippopotamus**

(*H. liberiensis*), scarcely larger than a full grown hog, which it resembles in habits, occurs only in Guinea.

Horned Toad (*Phrynosoma cornutum*). A small, grotesque, harmless lizard about 5 inches long, with a somewhat toad-shaped body, bearing spines on its head and back, common on arid plains of the western United States.

Horse, Wild. The wild horses mentioned by Strabo and Pliny among the Romans and in writings of the Middle Ages were probably all descendants of tame horses which had returned to a wild life. The wild horses which became so numerous in Texas and other western states as well as those of the plains of South America originated from European horses left behind by early Spanish explorers. Some consider the tarpan of central Asian steppes the progenitor of the domestic horse, but most regard it a very wild descendant of tame horses. However, a truly wild horse was discovered in the deserts of Mongolia about 1885 by a Russian naturalist, and named for him **Przevalski's Horse** (*Equus przevalskii*). It is about the size of the zebra and more closely resembles the domestic horse than any other known wild species. Its coat, which is of a dun color, much darker on the front of the legs, becomes very shaggy in winter. The mane is short and there is no forelock. In summer a narrow dark line is visible in the middle of the spine extending from the mane to the tail. The bristles of the upper part of the tail are shorter than in the horse, but longer than in the donkey, and the head and limbs are larger in proportion to the body than in the domestic form.

PRZEVALSKI'S HORSE. Summer coat.

House or English Sparrow (*Passer domesticus*). A small bird, 6 inches long, ranging from India westward throughout the most of Europe, and introduced into America, Australia, and New Zealand; first brought into the United States at Brooklyn, N. Y., in 1851, to destroy insects; now widely diffused and abundant east of the Rocky Mountains.

Humming Birds (*Trochilidae*). A family of some 75 genera and 400 species, peculiar to America, containing the smallest and most brilliantly colored of birds, mostly tropical, but a few occur in temperate regions. The largest species is 8½ inches long, the smallest about 2½ inches; 17 visit various portions of the United States in summer, one ranging as far as Alaska. The **Ruby-Throated Humming Bird** (*Trochilus colubris*), breeding from Florida to Labrador, is the only representative in eastern North America.

Hyena (*Hyaena*). A carnivorous mammal, most numerous in warm regions of Asia and Africa, of repulsive appearance and habits, living on carrion and attacking sick or wounded animals. There are several species, which, like the vultures among birds, are valuable as scavengers.

Ibis. A genus of birds allied to the herons. The **Sacred Ibis** (*I. aethiopica*) of the ancient Egyptians, native of the Nile valley and southward but now rare in Egypt, is a beautiful bird, with pure white plumage, contrasted with black head, neck, and wing feathers, and a bronze blue-black plume. The **Scarlet Ibis** (*Guara rubra*) of tropical America is pure scarlet in color excepting the black tips of wing feathers. The **White Ibis** (*Guara alba*) of the southern United States is pure white with black tipped wing feathers.

Iguana. A genus of large arboreal lizards, mostly of tropical America, with a crest of spines extending from the neck to the end of the tail, and a wide fold of skin under the throat. The **Common Iguana** (*I. tuberculata*) 3 ot 4 feet long, feeding upon leaves, fruits, and insects, is much prized for food in South America. The **Ring-tailed Iguana** (*Cyclura carinata*) of the West Indies, 4 feet long, mostly grass eating, is strong fleshed and inedible. The **Black Iguana** (*Ctenosaur acanthus*) of California is valued for its flesh.

PRZEVALSKI'S HORSE. Winter coat.

Jackal (*Canis aureus*). A carnivorous mammal very closely related to the dog, found in the Mediterranean region and southern Asia, about 2 feet long, possessing an offensive odor like the fox, grayish yellow in color, with many varieties; nocturnal in habits, attacking domestic animals, robbing hen roosts, fond of fruit, but also eating carrion. The jackal is readily domesticated.

Jackdaw (*Corvus monedula*). A European bird, 10 inches long, the smallest member of the crow family (*Corvidae*); glossy black with back of head ashy gray; an omnivorous feeder, robbing other birds of their eggs; nesting on hollow trees, church towers, and corners of buildings, possessing the power of imitating sounds, for which it is sometimes kept as a pet.

IGUANA.

Jay. The jays belong to a subdivision (*Garrulinae*) of the crow family (*Corvidae*), one of their near relatives being the magpie; distinguished from crows by longer tail and more brilliant colors. There are about 30 North American species, many more or less bluish in color, the majority occur-

ring in the southwestern United States and Mexico. The **Blue Jay** (*Cyanocitta cristata*) of eastern North America is a noisy, rather bold bird, nesting in trees, often about houses; about a foot long, with crest and back light blue, wing and tail feathers deep blue with white tips and black bars, and a black collar on the breast.

Jellyfish or **Medusae.** Free swimming marine coelenterate animals with disc-shaped or umbrella-shaped bodies of jelly-like consistency, composed chiefly of water, only about one per cent. being solid matter. Small forms are less than an inch in diameter, while larger forms measure 6 to 7 feet across the disc, with tentacles 100 feet long. Many are beautifully colored and nearly all are phosphorescent, some giving forth a strong light when disturbed. The stinging tentacles of some are poisonous to bathers. The common **Yellow Jellyfish** (*Aurelia flavidula*) of the New England coast, 8 to 10 inches in diameter, is not poisonous.

June Bug. A heavy bodied beetle of the family *Scarabaeidae*, appearing in great numbers about lights in May and June. In Europe most June bugs are species of *Rhizotrogus*; in eastern North America there are over 100 species of *Lachnosterna*, supplying most of the June bugs. The beetles do but little damage, but the larvae—white fleshy grubs—injure turf and cut off roots of strawberry plants. The **Common June Bug** (*L. fusca*) abundant in the northeastern United States is almost an inch long and dark brown in color.

Kangaroo (*Macropodidae*). A marsupial mammal peculiar to the Australian region, distinguished by disproportionately large hind limbs, mostly ranging in size from that of a sheep to a rabbit; all strictly vegetarian, living on grass and roots. Some are nocturnal in habit and all are timid creatures, protecting themselves only when forced to do so. When at rest kangaroos stand upright, locomotion being accomplished by a series of immense bounding jumps. The marsupium or pouch in which the young are placed as soon as born contains four nipples. The young of the Great Kangaroo are only about an inch long at birth. There are two groups, the true kangaroos, 30 species, and the rat kangaroos, 10 species—none larger than rabbits. The **Great Kangaroo** (*Macropus giganteus*) 4 to 5 feet high with a tail 4 feet long, of eastern Australia and Tasmania was discovered by Captain Cook in 1770.

Katydid. The katydids are large, green, long-horned grasshoppers, with well developed wings, and feed amongst foliage. The **Common Katydid** (*Cyrtophyllus concavus*), of the northwestern United States, the sharp chirp of which gave rise to the name ka-ty-did, is arboreal in habits but rather local in occurrence. Its evening song, heard in late summer and fall, often in the tops of tall elms, is produced by rubbing the wing-covers and wings together.

Kingbird (*Tyrannus*). Kingbirds are flycatchers, of powerful and skillful flight, 8 to 10 inches long, black or gray above with an erectile crest marked with a yellowish-red patch; usually white or gray below. During nesting season the male attacks all birds that come near his nest, teasing and driving away eagles, hawks, and crows, by darting down upon their backs. The **Common Kingbird** (*T. tyrannus*) of eastern North America is very useful as an insect destroyer, though it sometimes eats bees.

King Crab or **Horseshoe Crab** (*Limulus polyphemus*). The king crab, believed by some naturalists to belong to the crustacea, and by others to be nearly related to the arachnida, has a body—cephalothorax—shaped like the foot of a horse, behind which is a wedge-shaped abdomen, and a long narrow inflexible tail. It burrows in sandy or muddy shores of the Atlantic coast, living on small animals, chiefly worms. Two other species occur in Asia.

Kingfish. The kingfish (*Menticurrus nebulosus*) of American fishermen, a game fish of excellent flavor, closely allied to the mullets, occurs along the Atlantic coast from Massachusetts to Florida, and is also locally known as tomcod, barb, black mullet, and whiting. The name is given to many other fishes. The brightly colored deep-water fish (*Lampris luna*) called kingfish in England, attaining a length of 4 feet, and very highly esteemed for its rich flesh, intermediate between that of the salmon and tunny in color, seems best entitled to the name.

Kite. A diurnal bird of prey, of the same family as hawks and eagles (*Falconidae*), but with a deeply forked tail. The **European Kite** (*Milvus ictinus*), once abundant in Great Britain, now nearly extinct, slightly exceeds 2 feet in length, of which the tail is nearly one half. Rags usually form a part of its tree-built nest of mixed materials, explaining the meaning of Autolycus's advice to laundresses (Winter's Tale, Act IV, scene 3), "When the kite builds look to lesser linen." The flight of the kite is very elegant and strong, and few modern Londoners "who see the paper toys hovering over the parks in fine days of summer, have any idea that the bird from which they derive their name used to float all day in hot weather high over the heads of their ancestors." Other species occur in the Old World, and of the five North American Kites the best known is the **Swallow-tailed Kite** (*Elanoides forficatus*), 25 inches long, bronze purplish with white head and tail, which ranges from South America to Minnesota and Pennsylvania.

Koodoo or **Kudu** (*Strepsiceros kudu*). This African antelope, now becoming rare from excessive hunting, found from Abyssinia southward to the Cape, stands over 4 feet high at the withers, and the spiral horns, present only in the male, are sometimes 4 feet long. It is reddish brown with vertical white stripes. The **Lesser Koodoo** (*S. imberbis*) of Somaliland, is much smaller.

Ladybird or **Ladybug.** Ladybirds (*Coccinellidae*) are short-legged, approximately hemispherical beetles, of medium or small size, often red marked with black spots, or black with red spots. There are hundreds of kinds, some of which are found in all temperate and tropical regions, more than 150 species having been described from North America north of Mexico. The larvae, like the beetles themselves, eat plant lice, scale insects, mites, and eggs of other insects. So useful are the ladybugs and their larvae that economic entomologists are naturalizing foreign kinds to aid in the control of especially noxious scale insects. Ladybugs are especially active in bright sunlight, their acrid blood protecting them from destruction by birds.

Lark. Larks are migratory, insectivorous passerine birds belonging to the family *Alaudidae*, but when the word lark is used alone the European lark is meant. Other birds which resemble the *Alaudidae* are often called by the name of lark with a prefix, as the meadow lark and tit lark. The **Lark** or **Skylark** (*Alauda arvensis*), 7 inches long, with an erectile crest, is one of the most abundant birds of western Europe. At the time of their autumn migration southward larks are taken in great numbers for the markets. The **Horned Lark** (*Otocoris alpestris*), closely related to the skylark, is found, in about 7 well-marked varieties, in various parts of North America. It is about the same size as the European lark, and each side of the head bears a narrow horn-like tuft of black feathers.

Leech. Leeches are blood-sucking parasitic worms, and most of them live in fresh water. They have tough, leathery, elongate, flattened bodies, with a sucker at each end. The mouth is provided with three saw-like jaws, by means of which the leech makes a wound like a three-pointed star, from which it sucks the blood. Leeches can be kept several years in a jar of pure water, without food. They were much employed by physicians in the past to bleed patients as a remedy for certain diseases, but now the employment of the leech is uncommon. The use of leeches as remedial agents dates back to the times of the Romans. The **Medicinal Leech** (*Hirudo medicinalis*), a native of middle Europe, is over 6 inches in length when fully extended.

Lemur. The lemurs form the lowest suborder of primates, and are old-world monkeys. Thirty-six species are found in Madagascar; about 14 others are distributed from Africa eastward as far as the Philippine Islands. The typical lemurs (*Lemur*) are omnivorous, gregarious, active, noisy, diurnal animals, about as large as a cat, with fox-like face, thick fur, and long bushy tail. The **Ring-tailed Lemur** (*L. catta*), from Madagascar, is one of the most striking species. Its body is gray, but the long tail has alter-

nate rings of black and white. The **Ruffed Lemur** (*L. varius*), also from Madagascar, is the largest species. In this species there is much individual variation in the color of the sex, scarcely any two being alike. The name Lemur comes from the Latin lemures (ghost) and is the name applied by Linnaeus to these peculiar Malagasy representatives of the order **Primates** which do not actually come under the designation of either monkeys or apes.

RUFFED LEMUR in the Bronx Zoo.

Leopard (*Felis pardus*). A large cat-like carnivore found in southern Asia and in Africa. It is of a tawny ground color, nearly pure white beneath, and spotted with a few solid spots and numerous rosettes of black. In southern Asia a black variety is occasionally found, and the leopards of northern China have longer fur than those of more tropical regions. The leopard attains a length of more than 7 feet, tail included; is very ferocious and climbs like a cat, which it also resembles in the stealthy capture of prey. It captures and devours many small animals, especially dogs, and sometimes attacks man.

Lion (*Felis leo*). The lion is readily distinguished from all related cat-like animals (*Felidae*) by the adult male having a mane. Lions are found in Africa and in parts of southern and western Asia. They all belong to one species, although variable in the amount of mane, and in color, which ranges from yellowish brown to chestnut brown or to deep red, and sometimes to almost silver gray. A male lion measures about 10 feet in length, including 3 feet of tail; the female is about a foot shorter. Lions cannot climb; they live in sandy and rocky places, often in thickets of undergrowth near streams and springs, where they lie in wait for their prey. Their greatest activity is at night, although they are often seen during the day. Opinions differ widely as to the courage of the lion, as well as to the loudness of its roar; there has been much exaggeration in regard to both subjects, but a hungry or provoked lion, especially at night, is a very dangerous and aggressive animal. The lion often overcomes animals larger than himself by means of his stealthy cat-like habit of springing upon them unawares. He preys upon buffaloes, zebras, and even young elephants. Lions, although monogamous, sometimes go in troops, being sociable rather than gregarious. The male aids in care and feeding of the young, which number from two to four, usually three, at a birth. The pupil of the lion's eye is circular when contracted, not a narrow slit as in the cat. The papillae of its tongue are so large that it can rapidly rasp the flesh from bones by licking them.

Lobster. The three species of *Homarus*, marine ten-footed crustaceans, are called lobsters,—one is European, one North American, and one South African. The forward pair of legs is enormously enlarged, one bearing immense blunt pincers for holding food, and the other sharp-toothed pincers for tearing. They are fond of decaying animal matter, and are caught in lobster pots, made of lath and netting baited with fish offal, and lowered to the bottom by a cord attached to a float to mark the location. The **American Lobster** (*H. americanus*), found from Labrador to New Jersey, has been caught so much that notwithstanding stringent laws regulating time of catching and size of lobsters caught, they average smaller from year to year, and it seems almost incredible that lobsters were formerly taken weighing nearly 40 pounds.

Locust. The grasshoppers with long horns (antennæ), of which the katydid is an example, are scientifically *Locustidae;* but the grasshoppers with short antennae, known scientifically as *Acrididae*, are the locusts mentioned in the Bible, and in the numerous works on destructive locusts. The seventeen-year cicada is also often wrongly called a locust. True locusts (*Acrididae*) form the largest family of orthopterous insects. These herbivorous insects mainly rest upon the ground, and their stridulation is usually due to rubbing the hind thighs against the outer edges of the wing-covers. The **Rocky Mountain Locust** (*Caloptenus spretus*), 1¼ inches long, ravaged the United States between the Rocky Mountains and the Mississippi River particularly during the early history of that region, and the U. S. Entomological Commission was organized, in 1877, to study these insects. These muscular, gregarious locusts, strong in flight, migrate in clouds and destroy every green leaf before them. The very similar **Red-legged Locust** (*Caloptenus femur-rubrum*) is distributed throughout the eastern United States. Tropical locusts are often very large, some having a wing spread of nine inches.

Loon. A name correctly applied only to divers of the genus *Urinator*, all of the northern hemisphere. They walk with difficulty, but swim very rapidly; are black or slaty above, speckled with white in summer, and white beneath; have a hind toe, webbed feet, and very short tail feathers, and usually lay two brown spotted eggs in a roughly formed nest near the water. The **Common Loon** or **Great Northern Diver** (*Urinator imber*), 36 inches long, breeds from latitude 42 degrees northward, going south as far as the Gulf of Mexico in winter. It is such a quick diver that it sometimes escapes the shot by diving beneath the surface of the water at the flash of a gun.

CANADA LYNX.

Lynx. The popular and scientific name of cat-like animals, rather larger than the domestic cat, having a short tail and tufted ears. Lynxes are more or less mottled brownish or gray, lighter beneath the body. They are all savage in disposition and prey upon smaller animals, doing much damage to sheep, lambs, and poultry. They climb trees readily and frequent rocky places in forests. The **European Lynx** (*Lynx lynx*), found in central and northern Europe and in northern Asia, is over two feet in body length and has sharp-pointed ears and a longer tail than most lynxes. The **Canada Lynx** (*Lynx canadensis*), once distributed in forests from Maine to Alaska, but now rare in eastern Canada and the United States, is over a yard long, including the tail. The somewhat smaller **Bay Lynx** or **Wildcat** (*Lynx rufus*) is found from northern Georgia to Maine, and is not rare in many thinly settled districts.

Lyre Bird. Two of the three species of the genus *Menura*, of the family *Menuridae*, Australian passerine birds, are known, from the lyre-like form of their tails, as lyre birds. The bodies of these birds are about the size of that of a small hen, but the long tail gives them a total length of nearly a yard. The tail has two outer feathers that are very heavily webbed, and curved in the form of the horns of a lyre. The rest of the tail feathers, representing the strings of the lyre, are very abnormal, and are thinly furnished with hair-like barbs.

Mackerel. A name applied especially to certain teleost (*acanthopterygid*) fishes of the family *Scombridae*. The common mackerel (*Scomber scombrus*), an important food fish of both sides of the north Atlantic, rarely attaining a length of 18 inches, makes extensive migrations along the coast, at or near the surface, in immense schools that sometimes contain thousands of barrels of fish. Some years mackerel are abundant, other years rare. The greater part of their food consists of small crustacea, but they eat spawn of lobsters and of fishes, young fishes, even of their own species, and the middle of large jellyfishes. They are taken with young fish for bait, but will bite at almost any shining object. Besides the common mackerel the better known North American kinds are: the chub-mackerel, big-eyed mackerel, bull mackerel or thimble-eye (*Scomber colias*) of the Atlantic coast; the frigate mackerel (*Auxis thazard*) of warm seas which rarely appears off the New England coast; the horse mackerel, or tunny (*Thunnus thynnus*), of the northern hemisphere.

Magpie. A collective name for all birds of the genus *Pica*. They are related to the crows, which they resemble in their omnivorous habits, audacity, and cunning. The **European Magpie**, or **Pie** (*Pica pica*), of which the somewhat larger magpie of western North America, formerly supposed to be a separate species (*Pica hudsonica*), but now regarded as a variety, is a bird of about 20 inches total length, of which over one half is of the long tail. Its color is lustrous black, with belly, shoulders, and edges of the wings white. Once common in Great Britain, its thievish habits have led to its being nearly exterminated. The **Yellow-billed Magpie** (*Pica nuttalli*) of central California resembles the common magpie except that the bill and bare skin around the eyes are yellow.

Mallard. The mallard (*Anas boschas*), the wild form from which domestic ducks were derived, is found throughout the northern hemisphere, reaching in winter as far south as the Isthmus of Panama, Egypt, and India, but in summer ranging the Arctic regions, or oftentimes, in America, breeding in the valleys of the Rocky Mountains. The mallard duck is 20 to 25 inches long; the male with brilliant metallic green neck, rich chestnut chest, a collar of pure white and a rhomboidal violet spot on each wing; the female has the wing-spot like the male, but is otherwise with yellowish or buff variations. The mother duck lines her rather rude nest with down from her breast, and her clutch is of from 9 to 11 eggs, which hatch in 28 days, the young being cared for by the mother until full grown and feathered. The word mallard is still sometimes used in its original sense for the male or drake; duck for the female.

Manati, or Sea-cow (*Manatus*). An aquatic, gregarious mammal, of the order Sirenia, nearly related to the dugong, and found in fresh water and along the Atlantic coasts of Africa (1 species) and of tropical America (2 or 3 species). It is shaped somewhat like a whale, has paddle-formed fore limbs, no hind limbs, a horizontally flattened tail, very small eyes, and reaches a length of eight feet. Beneath its wrinkled, black skin is a layer of blubber, which contains no free oil, as does that of the whale. It has a large number of molar or grinding teeth, which are replaced from before backwards during life, being worn away by its food, which consists of water plants mixed with sand. The two lobe-like halves of its upper lip, beset with stout bristles, move independently and aided by the fore limbs, draw the food into its mouth.

Mandrill (*Cynocephalus mormon*). The mandrill is one of the West African baboons, the lowest family of the catarrhine anthropoid apes. The bridge of its nose is red, and it has blue ridges on the muzzle. Mandrills are omnivorous, gregarious, ferocious apes, with large face, prominent brow-ridges, and very short tail. The naked ischial callosities of the rump of adult males are bright red, more intense when the animal is excited, and the mandrill, which is often seen in zoölogical gardens, is repulsive in looks and habits.

Marmoset. Marmosets are platyrrhine monkeys of the family *Hapalidae*, which is made up of the genera *Hapale* (7 species) and *Midas* (14 species), all from tropical America. They are the smallest of monkeys, about as large as squirrels, soft-furred and usually have a mane. The long tail is hairy, ringed, and not prehensile, although their habits are arboreal.

Marten. Martens are carnivorous mammals of the genus *Mustela*, nearly related to the weasels. The **American Marten** or **Sable** (*Mustela americana*), an important fur-bearing animal, was once abundant in the Atlantic states from Maine to Virginia, but has become rare except in the wilder parts of British America. It is about 18 inches long, exclusive of its bushy tail, and is trapped in simply constructed deadfalls baited with any kind of meat, a piece of fish, or a bird's head. The **Siberian Sable** (*Mustela zibellina*), with black fur, and the British **Pine Marten** (*Mustela martes*), dark brown with a brownish-yellow throat, are the European representatives.

Martin. A name applied to swallows (*Hirundinidae*), but especially with a modifying prefix, to certain well-known kinds. All are valuable insectivorous birds, with long wings and of rapid flight. The **Purple Martin** (*Progne subis*) often nests, several pairs together, in the same box provided for it; the **Sand Martin**, or bank swallow (*Riparia riparia*), a smaller sort found in North America, Europe, and Asia, digs deep holes in sand banks in which to build its nest; the **European House Martin** (*Chelidon urbica*) attaches its nests to the eaves of houses. Shakespeare wrote (Macbeth, act 1, sc. 6) of the last species:—

> "No jutty, frieze,
> Buttress, nor coign of vantage, but this bird
> Hath made his pendent bed and procreant cradle."

Meadow Lark. Meadow Larks are American birds of the genus *Sturnella*, belonging to the troupials (*Icteridae*), near relatives of orioles, red-winged blackbirds, and bobolinks, the name lark being here a misnomer. The **Common Meadow Lark** (*Sturnella magna*) of eastern North America is about 10 inches long, including about 3½ inches length of tail, is brownish streaked with black above and chiefly yellow below, but with a black irregular crescent on the breast. The **Western Meadow Lark** (*Sturnella neglecta*), from Illinois westward to the Pacific, is similar to its eastern congener, but has a much sweeter song.

Milk Snake. The milk snake, or house snake, of the northern United States is a color variety of the Southern States corn snake, or red snake (*Ophibolus doliatus*), a very variable non-poisonous species, 3 feet long, marked with brown blotches bordered with black. The milk snake, generally known in New England as spotted adder, has an arrow-shaped brown spot on the top of the head; the head of the corn snake is red.

Mink (*Putorius vison*) A black or dark brown amphibious mammal, 15 to 18 inches long exclusive of its bushy tail, and related to the weasels. Its food is mainly frogs and mollusks, but it will eat flesh of birds and quadrupeds. It nests in burrows in banks of streams, producing five or six young each April. Minks are caught in deadfalls and steel traps, fresh fish being used as bait. They have been bred in captivity for their valuable fur, which consists of a dense, soft under-fur mixed with long, lustrous hairs.

Minnow. A term loosely applied in the United States to almost any small fresh-water fish, and sometimes to those found in salt water. The genus Notropis, of the so-called minnow family *Cyprinidae*, numbers upwards of 100 species, all confined to North America east of the Rocky Mountains, which have been termed American minnows or shiners. They are of no importance as food fishes for man, but are useful as food for the larger predatory fishes, and as bait in fishing.

Mite (*Acarina*). Mites are near relatives of the spiders, but have the thorax and abdomen fused together to form a more or less rounded body, and are usually small. Some mites are scavengers, others infest plants, and many are parasites of other animals. The **Ticks** (*Ixodidae*), parasitic on larger animals, are conveyors of disease. The **Cattle Ticks** (*Margaropus*) in warmer regions infect cattle with a protozoan blood-parasite, causing Texas fever. The **Itch Mite** (*Sarcoptes scabiei*), a microscopic species that burrows in the human skin, giving rise to the itch. The **Red Spider** (*Tetranychus telarius*), a minute species that spins webs, attacks indoor cultivated plants. **Chicken Mites** (*Dermanyssus gallinae*) often swarm under the perches of ill-kept henhouses, and attack the poultry at night. **Harvest Mites** (*Leptus irritans*) known as jiggers or chigoes in the southern and western United States, burrow in the human skin, causing severe itching. The minute, white **Sugar Mite** (*Tyroglyphus sacchari*) infests raw or unrefined sugar in immense numbers, sometimes estimated to exceed 100,000 to a pound of sugar, and causes grocer's itch.

Moccasin Snake (*Ancistrodon piscivorus*). A dangerous venomous snake of the south Atlantic and Gulf states and the lower Mississippi valley, closely related to the copperhead, also known as the **Water Moccasin** from its aquatic habits, and as the **Cotton-mouth** from the whiteness of its mouth. It is about 4 feet long; dark chestnut brown, with the head purplish black.

Mole. General name for the small insectivorous mammals of the family *Talpidae*, of which there are seven genera and numerous species, all found in the northern hemisphere. They have short fore limbs and burrow in the ground; their fur is dense and velvety; they have no external ear, and their eyes are rudimentary. The **Common Mole** of the northern United States (*Scalops aquaticus*) is dark lead-colored above, paler beneath; about 4 inches long, exclusive of the tail, which is shorter than the head; burrows galleries just beneath the ground, often to the injury of lawns, in its search for insects and earthworms. The **Star-Nosed Mole** (*Condylura cristata*) of the northern United States is blackish, with slender head, the nose tipped with a circle of fleshy projections, and the tail longer than the head.

Monkey. A general name given to many long-tailed anthropoid primates; certain monkeys with long bushy tails are called marmosets, and others with dog-like faces are termed baboons. Large monkeys are often spoken of as apes, though this name is best restricted to the short-tailed man-like kinds. The apes and monkeys together number about 212 species. They are divided into two great groups: the catarrhines and platyrrhines. The catarrhine monkeys are confined to the old world; their nostrils are close together and point downward, and they have 32 teeth. Those catarrhines that have long tails do not use them as prehensile organs. The platyrrhine monkeys are found only in the new world; their nostrils are wide apart and directed outwards, and, with the exception of the marmosets, they have 36 teeth. The tail is generally long; often prehensile.

Moose or Elk (*Alces machlis*). This largest of deer, clumsy, heavy, short-necked, with long head and broad ears, small eyes, big upper lip hanging over the lower one, and far from a deer-like aspect, is the largest game animal of North America and Europe. It reaches a height of eight feet at the withers, and is clothed with long, coarse, brownish hair. Its nearest relative is the reindeer, but, unlike the latter, the male moose has palmate horns, which, in old males, have 14 snags each, weigh as much as 60 pounds, and are formidable weapons. The hoofs are also used as weapons. The moose, or true elk, which should not be confounded with the "American elk" (*Cervus canadensis*), an entirely different animal and preferably called wapiti, has a circumpolar distribution, usually living in forests. Its American range is from Maine to Oregon and northward. (See DEER.)

Mosquito (*Culicidae*). Mosquitoes are small, blood-sucking diptera, occurring in nearly all parts of the world. Most species are crepuscular or nocturnal, a few diurnal; many kinds attack birds and reptiles as well as mammals, yet probably the normal food of adult mosquitoes is vegetable. The eggs of certain kinds are deposited in boat-shaped masses that float on the water, but other kinds lay their eggs singly. The larvae live in fresh or brackish water, some preferring foul, others clear water. They breathe air, coming often to the surface of the water to take it in through a tube at the posterior end of the body. The proboscis, or biting organ, of the female is a penetrating lance made up of six sharp filaments. The male mosquito does not bite. Malarial fever is caused by a blood-parasite introduced into the human system by the bite of species of **Malarial Mosquito** (*Anopheles*). Yellow fever is transmitted by the **Yellow-fever Mosquito** (*Stegomyia fasciata*), which inhabits the warmer portions of the globe, and is common in southern parts of the United States, as far north as Virginia and Arkansas. Elephantiasis, a tropical disease, is also conveyed by the bite of mosquitoes (*Culex*). Remedies against the multiplication of mosquitoes consist in draining their breeding pools; in treatment of these pools with kerosene, and in the introduction of small fishes, their natural enemies.

AMERICAN ELK, or WAPITI. Cervus canadensis.

Moth. Moths and butterflies together constitute the order *Lepidoptera*, or scale-winged insects, the butterflies being diurnal in habits and having knob-tipped antennae; the moths crepuscular or nocturnal in habits, and with antennae of various forms. The North American moths number about 6,600 species. Moths mostly pass the pupal state in cocoons, often of silk, or pupate beneath the ground. The larvae are commonly injurious to vegetation. **Hawk Moths** or **Humming-bird Moths** (*Sphingidae*) are heavy bodied moths with rather narrow wings, the caterpillars of which generally have a spine above the posterior end of the body; the so-called **Tomato Worms** and **Tobacco Worms** are larvae of large kinds of hawk moths (*Phlegethontius*). The **Bombycine Moths** (*Bombycina*) include some of the largest moths, and a great number of small species, among them the **Silkworm Moth** (*Bombyx mori*); the **Gypsy Moth** (*Porthetria dispar*) and the **Brown-tail Moth** (*Euroctis chrysorrhoea*), both bombycine moths introduced into New England from Europe, are very destructive to fruit and forest trees. To the **Owlet Moths** (*Noctuidae*) belong some of the most injurious garden insects, their larvae including the various species of cutworms. The **Measure-worm Moths** (*Geometridae*) are so termed because their caterpillars progress by a kind of looping and seem to be measuring the surface beneath them. The smallest moths (*Tineina*) include those species of Tinea which attack clothing, carpets, furs, and food.

Mouflon. Closely related to the domestic sheep (*Ovis aries*), the origin of which is unknown, are about 12 kinds of wild sheep, of which three species are called mouflons. Mouflons are gregarious ruminants, in general appearance and in the form of their horns recalling sheep, but they are hair-clad rather than woolly. The **Common Mouflon** (*Ovis musimon*) inhabits Corsica and Sardinia, and is thought to have been formerly found in Spain. The **Cyprus Mouflon** (*Ovis ophion*) is found in small

numbers on the island of Cyprus, and the other species occurs in the mountains of central Asia.

MOUFLON. Ovis musimon.

Mouse. The smaller species of the rodent mammalian family *Muridae* are known as mice, the larger species as rats. Mice are omnivorous, sometimes cannibals, and are nocturnal in habits. The name was originally applied to the house mouse (*Mus musculus*), a native of Asia, which has become established in all parts of the world, and needs no description. Though commonest in buildings and cultivated fields it sometimes occurs in woods. White (*albino*), piebald, and abnormally colored varieties of the common mouse have been bred, and have at times commanded fanciful prices.

Mullet. A name applied to several kinds of teleost (*percesocine*) fishes of the family *Mugilidae*. The **Common Mullet** (*Mugil capito*), a nearly cylindrical food fish about a foot long, is taken in fresh and salt water from Scandinavia to the Cape of Good Hope. It feeds on organic matter found in mud. In the United States the name mullet is rather loosely applied to a number of catastomid and cyprinid fishes (*teleosts*), but more especially to *Mugil cephalus*, not only found in Europe, but along the Atlantic coast of America from Cape Cod to Brazil and on the Pacific coast from Monterey to Chile. It is from one to two feet long, dark bluish above and pale yellowish below, with silvery sides and dark stripes along each row of scales. **Red Mullets** are small marine and brackish water food fishes of tropical regions, extending, however, to northern Europe. There are about 50 species; they belong to the teleost (*acanthopterygid*) family *Mullidae*, and feed on minute animals and decomposing matter.

Musk Ox (*Ovibos moschatus*). This gregarious ruminant mammal has habits and structure somewhat like the sheep, but is of the size of small cattle; it forms a subfamily (*Ovibovinae*) of its own. It is called also musk-sheep and musk-buffalo. It once ranged through northern Europe as far south as the plains of Germany and France, and in North America to Virginia, but is now confined to the North American continent north of 60 degrees latitude.

Muskrat or Musquash (*Fiber zibethicus*). A rodent belonging to the *Muridae*, is found from the northern barrens of British America to the boundaries of Mexico, and from the Atlantic to the Pacific. Its length, exclusive of its laterally flattened, nearly naked, scaly tail, is about a foot; it is dark brown, almost black above, and gray beneath. Both sexes have large inguinal glands of which the secretion has a musky odor, whence the name muskrat.

Mussel. Salt water mussels are bivalve mollusks of the family *Mytilidae*. The **Edible Mussel** (*Mytilus edulis*) 2 to 3 inches long, a native of the temperate shores of Europe, is an immigrant in North America north of Cape Hatteras and on the Pacific coast. Its shell is black on the outside, bluish on the inside. **Fresh-water Mussels**, also called clams, are bivalve mollusks of the famiy *Unionidae*. The thicker kinds of their pearly shells are used to make buttons, and pearls of considerable value are found in river clams.

Nautilus. Cephalopod mollusks with a flat, spirally coiled, many-chambered shell, immensely abundant in earlier geologic periods,—over 2,000 fossil species of the family being known; now represented by about six living forms, natives of eastern oceans, commonly called **Pearly Nautilus**, from the inner lining of the shell.

Night Hawk (*Chordeiles virginianus*). A bird of the goatsucker family (*Caprimulgidae*), related to the whip-poor-will, occurring throughout North America; about 9 inches long, mottled black, gray and buffy with a white spot on the throat; flying in flocks at evening, catching insects with widely open mouth. It builds no nest, laying two eggs on the ground or in stumps.

Nightingale (*Daulias luscinia*). A small Old World warbler, about 7 inches long, famous since ancient times for its exquisite song. It is a shy, inconspicuous, woodland bird, wintering in Africa, visiting Europe and western Asia in summer.

Noddy (*Anous stolidus*). A sea bird related to the tern, common on tropical coasts, so named because it exhibits so little fear of man as to appear stupid.

Ocelot (*Felis pardalis*). An American mammal of the cat family found from Texas to Paraguay, also called **Tiger Cat**, and sometimes leopard. It is a woodland animal, 3 feet long, hunting small animals and birds at night. Other species called ocelots occur in South America.

Octopus, Devil Fish. A cephalopod mollusk with a nearly spherical, sac-shaped body, two conspicuous eyes, and a large mouth surrounded by 8 long arms provided with suckers, with which it seizes fish and other sea animals upon which it feeds. There are nearly 100 species, found in all oceans—some Pacific coast species having an arm spread of 15 feet.

Okapi (*Ocapia johnstoni*). An African ruminant mammal very closely related to the giraffe, but with much shorter neck and fore legs, discovered in the Congo Free State in 1900 by Sir Harry Johnston. It resembles a large deer in size and form and is strikingly colored, the forehead being bright red, the cheeks yellowish white, the body reddish with the haunches and upper portions of the legs marked with zebra-like whitish stripes, and the lower parts of the legs white.

YOUNG MUSK OX.

Opossum (*Didelphis virginiana*). A North American marsupial mammal, occurring from New York to California and southward, about the size of a cat, with a long, scaly, prehensile tail, and

a pointed nose; dwelling in trees, hunting at night; living upon insects, small animals, and birds. The opossum is remarkable for its habit of feigning death when caught, and with one exception is the only genus of pouched mammals outside of the Australian region—the young being carried by their mother in a pouch for 2 months after birth. Some 20 more species of opossums occur in South America.

Orang-Utan (*Simia satyrus*). A large manlike ape, 4½ feet high when erect, native of Borneo and Sumatra, ranking below the chimpanzee and gorilla, living in trees, and subsisting upon fruits, nuts, and tender plants. It is a prime favorite in menageries, displaying remarkable powers of imitation and almost human actions such as dressing in clothes, sitting at table, and eating food with fork and spoon.

Oriole (*Icterus*). Some 40 species of beautiful singing birds of the New World, related to the blackbirds, building suspended, pouch-like nests of closely woven fibers. The **Baltimore Oriole** (*I. galbula*), so named because its colors corresponded with the orange and black of Lord Baltimore's livery, is common in the eastern United States. The **Orchard Oriole** (*I. spurius*), a fine songster, but slightly smaller and less conspicuously colored, has a similar range.

Otter. A fish-eating mammal of the weasel family, living along lakes and streams, highly prized for its fur. The **North American Otter** (*Lutra canadensis*) about 3 feet long, tail 18 inches, is most abundant in British America. The **Sea Otter** (*Latax lutris*), a most valuable fur animal, more stoutly built, with a woolly undercoat, formerly abundant, is now nearly extinct in Alaska.

Ounce (*Felis uncia*). A large, thick-furred cat, adapted to life in the cold mountain regions of Asia, about equal to the leopard in size, living upon smaller animals, never attacking man.

Owl (*Bubonidae, Strigidae*). A well-marked group of nocturnal birds of prey, containing about 200 species, found nearly throughout the world, usually solitary, preying chiefly upon mice, moles, and other small injurious animals, and hence generally beneficial to man. The **Great Horned Owl** (*Bubo virginianus*), the largest and boldest common species, 22 inches long, is abundant throughout the continent. The slightly larger **Snowy Owl** (*Nyctea nyctea*), 25 inches long, breeding from Labrador northward, visits the northern United States in winter. The **Long-eared Owl** (*Asio wilsonianus*), 15 inches long, common from Manitoba southward and eastward, nesting in holes in trees or in old crows' nests, is very destructive to mice. The **Short-eared Owl** (*Asio accipitrinus*), 15 inches long, almost cosmopolitan, lives and nests in marshes. The **Barred** or **Hoot Owl** (*Syrnium nebulosum*), common from Manitoba southward and eastward, is familiar by reason of its hooting call. The solemn visaged **Barn Owl** (*Strix pratincola*), 17 inches long, ranges from New York southeastward to Mexico. The **Screech Owl** (*Megascops asio*), only 10 inches long, is known everywhere from Minnesota eastward and southward on account of its weird cry. The **Burrowing Owl** (*Speotyta cunicularia*), 10 inches long, of Rocky Mountain plains, lives in the burrows of prairie dogs and squirrels, but the story that these owls, prairie dogs, and rattlesnakes live together is a myth.

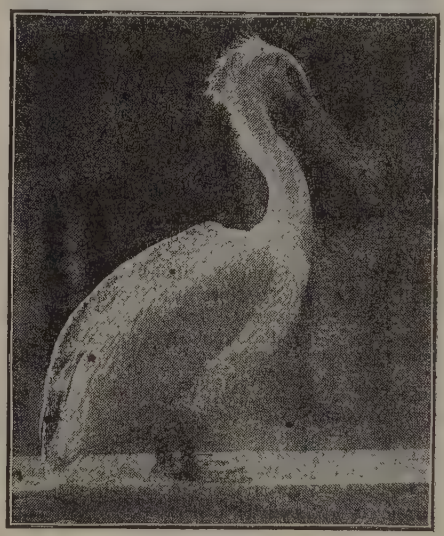
Oyster (*Ostrea*). A marine bivalve mollusk, growing near shore, in 12 to 35 feet of water in nearly all oceans,—there being upwards of 50 species, the most common of which are *O. virginiana* of the east coast of the United States, and *O. edulis* of Europe, both of which are extensively cultivated in specially prepared beds for the markets. Oyster culture was probably first practised by the Romans.

Parrot (*Psittacidae*). A family of 350 species of birds, chiefly tropical, none occurring in Europe, China, or the Philippines, of striking form and plumage, some of which possess remarkable powers of imitating the human voice. Only one species, the **Carolina Parrot** or **Parakeet** (*Conurus carolinensis*), occurs in the United States and is now confined to southern Florida.

Partridge. A name popularly given to many hen-like game birds (*Tetraonidae*). The true partridge (*Perdix cinerea*) is the common game bird of Great Britain. In New England the ruffed grouse (*Bonasa umbellus*) is called partridge, while farther south the bob white or quail (*Colinus*) receives the name, and the ruffed grouse is called pheasant. There are several species of true partridges and quails in the southeastern United States and Mexico. (See GROUSE, QUAIL.)

Peccary (*Dicotyles*). A small forest-dwelling, hoofed mammal, allied to the swine, but with more slender legs, no visible tail, and only three toes on the hind feet. The **Collared Peccary** (*D. torquatus*), 14 inches high, 38 inches long, living in pairs or small parties, ranges from Arkansas and Texas to Patagonia. The larger **White-lipped Peccary** (*D. labiatus*) occurs in vast herds from Central America to Paraguay.

Pelican (*Pelecanus*). A large fish-eating bird with an immense bill provided with a pouch used as a scoop net for catching fish. The **White Pelican** (*P. onocrotalus*), abundant in the Mediterranean region, 5 to 6 feet long, wing spread 9 to 10 feet, was well known to the ancients. The **American White**



PELICAN.

Pelican (*P. erithrorhyncus*) of the Western and Southern states is very similar. The smaller, more active **Brown Pelican** (*P. fuscus*) is common on warm coasts of North and South America.

Perch (*Percidae*). A large family of northern fresh water fishes. The **Yellow Perch** (*Perca flavescens*), 10 to 15 inches long, of the Eastern States, is an excellent pan fish. The **Pike Perch** or **Wall-eyed Pike** (*Stizostedion vitreum*) of Lake Champlain to Lake Michigan and northward, a valuable food fish, 1 to 3 feet long, is distributed in millions by the U. S. Fish Commission.

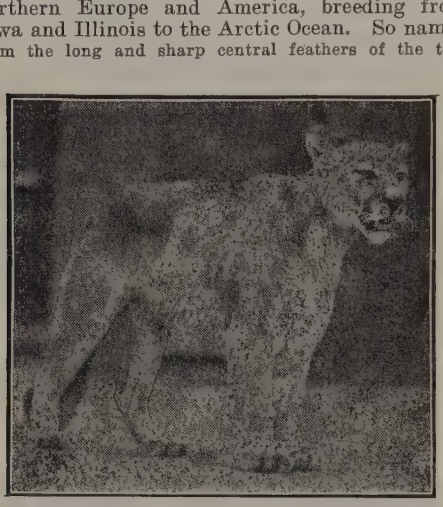
Petrel. A wandering, tube-nosed, oceanic bird, most abundant in southern seas, some apparently visiting land only at nesting season. The **Stormy Petrel** or **Mother Carey's Chicken** (*Procellaria pelagica*), about 6 inches long, the smallest of web-footed birds, breeds on Norwegian and British coasts.

Pheasant (*Phasianus colchicus*). A game bird, related to the peacock and turkey, native of Asia, now naturalized in Europe, particularly in England, where it is reared in great numbers. The **Golden Pheasant** (*Thaumalea picta*) and the **Silver Pheasant** (*Euplocomus nycthemerus*), both brilliant Chinese species, are reared in aviaries. The **Argus Pheasant** (*Argusianus giganteus*) is a beautiful south Asian species.

Pike (*Esox*). A slender, long-snouted, very voracious, fresh-water, game, and food fish. The **Common Pike** (*E. lucius*), ranging from New

York westward and northward, is 2½ to 4 feet long and sometimes weighs 40 pounds. The splendid **Muskallunge** (*E. masquinongy*), largest of all, attains 6 feet ni length and 75 pounds weight. The well-known, gamy **Eastern Pickerel** (*E. reticulatus*), 30 inches long, is common in ponds east of the Alleghanies from Maine to Alabama.

Pintail (*Dafila acuta*). A duck common to northern Europe and America, breeding from Iowa and Illinois to the Arctic Ocean. So named from the long and sharp central feathers of the tail.



PUMA.

Plover. A group of about 75 species of wading birds, widely distributed over the world. The **Golden Plover** (*Charadrius dominicus*), 10 inches long, found throughout North America, also in South America, Europe, and Asia, is a well-known game bird.

Porcupine. True Old World porcupines are burrowing rodents; those found in America live in trees or in clefts of rocks. The **Canada Porcupine** (*Erethizon dorsatus*) of eastern North America, 3 feet long, is effectively protected by an array of barbed spines, loosely attached to its skin.

Porpoise (*Phocaena communis*). An aquatic mammal related to the whale, 4 to 6 feet long, abundant in northern oceans, going in schools, feeding upon fish, once used for food but now taken mostly for oil and leather.

Portuguese Man-of-War (*Physalia arethusa*). A colonial jellyfish whose beautifully colored sac-like float, about 6 inches long and filled with air, is surmounted by a sort of comb, while underneath are long streamers of many shapes, often 20 feet in length, some of which are armed with batteries of stinging cells of such power as to overcome large fish, which are devoured for food. The various grape-like or thread-like appendages are members of the colony. While common in the tropical waters some drift northward with the Gulf Stream and are seen off the New England coast.

Potato Beetle (*Leptinotarsa decemlineata*). A leaf beetle with a round yellow body with black stripes, very destructive to potato plants; native of Colorado, but migrating eastward in 1859, reaching the Atlantic coast in 1874; now common throughout the eastern United States and also introduced in other countries.

Prairie Dog (*Cynomys ludovicianus*). A small, burrowing rodent about a foot long, related to the gophers, living in large colonies called dog towns or villages, in the high plains in Wyoming and east of the Rocky Mountains. They are very timid, never venturing far from their burrows, and live upon grass and roots.

Ptarmigan (*Lagopus*). An arctic bird of the grouse family, brown and white in summer, turning pure white in winter, usually with feathered legs and feet. The **White or Willow Ptarmigan** (*L. lagopus*) visits the northern United States in winter.

Puma (*Felis concolor*). Called also cougar, panther, catamount, and mountain lion. A large cat, 7 feet long, weighing 200 pounds, tawny or reddish above, grading to nearly white below, ranging from British America to Patagonia, now rare east of the Mississippi, still abundant in the Rocky Mountains; very destructive to cattle, colts, and sheep, but rarely, if ever, attacking man.

Python. A huge, crushing, non-venomous Old World snake of the boa family, second only to the anaconda in size, dwelling in forests, living upon small mammals and birds. The **Regal Python** (*P. reticulatus*) of the East Indian region attains a length of 25 feet, and the **Rock Python** (*P. sebae*) of Africa exceeds 20 feet.

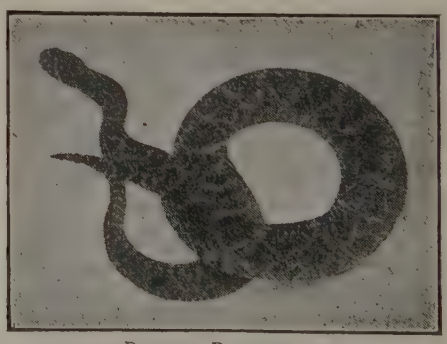
Quagga (*Equus quagga*). An African zebra-like mammal more nearly resembling the horse than the ass, formerly only of limited range, and now thought to be extinct.

Quail. The **American Quail** or **Bobwhite** (*Colinus virginianus*). A highly esteemed game bird, 9 inches long, occurs from the Great Plains eastward. It is usually called partridge in the Middle and Southern States. The true quail (*Coturnix*), slightly smaller, breeding abundantly in Europe and returning to Africa for the winter, is caught in immense numbers for the markets. (See PARTRIDGE.)

Quetzal (*Pharomacrus mocinno*). A Central American trogon, one of the most beautiful of birds, with the wings, chest, and throat metallic green, the under portions brilliant scarlet, and long white tail feathers with a black base, sometimes over 3 feet long, so much prized in millinery that the species is becoming rare.

Rabbit. A name applied in the United States to all the wild species of hares, but properly belonging to the European species (*Lepus cuniculus*). The European rabbit is smaller than the hare, with shorter limbs, and differs from it especially in the fact that the young are born blind. It is very prolific and the flesh is considered excellent food. Rabbits were introduced into Australia in 1850 and soon became so abundant as to be a plague. There are about 10 varieties of domesticated rabbits, among which is the Belgian hare.

Raccoon (*Procyon lotor*). A North American carnivorous mammal closely related to the bears. It is about 12 inches high and has long, yellowish gray fur with black rings around the tail. Raccoons are especially abundant in the southern United States, where they frequent wooded swamps and forests bordering streams.



DIAMOND RATTLESNAKE.

Rattlesnake (*Crotalus horridus*). A venomous American snake once common from the Rocky Mountains eastward, but now largely exterminated, sometimes 4 feet in length, distinguished by the rattle composed usually of 6 to 9 horny rings, terminating the tail, with which it almost invariably gives

warning before it strikes. The **Diamond Rattlesnake** (*C. adamanteus*) of Florida is larger, sometimes being 8 feet in length, and more dangerous. The small **Prairie Rattlesnake** or **Massasauga** (*Sistrurus catenatus*), 30 inches long, of the interior plains, is now becoming rare. There are 11 true rattlesnakes and 2 massasaugas in North America.

Rhea. The generic and English name of a family of ostrich-like birds of South America. The head and neck of the rhea are fully feathered, the wings, which are longer than those of the ostrich, are covered with long slender plumes, and the feet are three-toed.

Rhinoceros. A large, thick-skinned, hoofed mammal of tropical Asia and Africa, with a horned snout, second only to the elephant in bulk, though perhaps equaled by the hippopotamus. The **Indian Rhinoceros** (*R. unicornis*), the largest of all, exceeding 10 feet in body length, and standing fully 5 feet at the shoulder, has but 1 horn. Its exceedingly thick skin is arranged in shield-like folds. Two smaller one-horned species are found in southern Asia and adjacent islands. The **African Rhinoceros** (*R. bicornis*) of central and southern Africa, is somewhat smaller than the Indian rhinoceros. It possesses two horns and the skin is free from folds.

Robin. The **American Robin** (*Merula migratoria*), of the thrush family, found everywhere from the Rocky Mountains and Alaska eastward. It nests from Virginia and Kansas northward to Alaska and the Arctic coast and winters chiefly in the southern states though occasionally a few winter as far north as southern Canada. It is one of the best known and most affectionately regarded of American birds. The robin is about 10 inches long, olive gray above with blackish head and tail and chestnut red below. Nests usually in fruit or shade trees, laying 3 to 5 greenish-blue eggs. The food consists chiefly of worms, small fruits, berries and insects.

THE ROCKY MOUNTAIN GOAT is probably the most freakish looking animal native to North America. It is a great climber, being able to scale almost perpendicular mountain walls.

Rocky Mountain Goat (*Oreamnos montanus*). A North American goat-like antelope, ranging from middle California northward to Alaska, living at high elevations near the upper limit of trees, and feeding upon mosses, lichens, and shrubs. It is seldom taken by sportsmen, and is rare in zoölogical gardens, though it endures captivity better than the mountain sheep or bighorn. In form, though not in color, it resembles somewhat a small American bison, having high shoulders with low hind quarters, strong legs, stout body and a shaggy coat, generally carrying the head low. A full grown male will stand about 3 feet high at the shoulders, is about 6½ feet long and in weight is nearly equal to the Virginia deer. In 1900 a new species called Kennedy's Mountain Goat was discovered in the mountains near the Copper River in Alaska.

Salamander. A name given to tailed amphibians of the order *Urodela* and family *Salamandridae*. They have a robust body, well developed limbs, 4 and 5 toes, and no external gills in the adult form. Salamanders are most abundant in the northern hemisphere, especially North America.

Sandpiper. A name applied to a large number of shore birds of the family *Scolopacidae*, closely related to the snipes. They are mostly birds which breed in the Arctic region and go to southern climates to pass the winter.

Sardine. A small fish of the genus *Clupanodon*, allied to the herring. The **European Sardine** (*C. pilchardus*), which is very common in the Mediterranean and adjoining ocean, is commonly put up in oil and canned.

Scallop. A common bivalve mollusk of the genus *Pecten*, with a fan-shaped shell. The **Common Scallop** (*Pecten irradians*), found along the Atlantic coast, is about 2½ inches in diameter and has a horn-colored shell. The adductor muscle of this species is in great demand as a delicacy.

Scorpion. A small, mostly tropical, animal of the family *Scorpionidae*, usually 2 to 8 inches long, and somewhat resembling a small lobster in shape. Scorpions have 4 pairs of legs, a pair of pincers much like those of a lobster, and a jointed, flexible tail ending in a sharp venomous sting. Although very painful, the sting is rarely if ever fatal to man. About 30 species are North American, mostly small in size and confined to warm regions.

Sea Anemone. A marine coelenterate animal similar to the coral polyp, so named for its resemblance to a flower,—the brilliantly colored tentacles expanding like petals. They are practically stationary, but possess some slight power of motion over the rocks to which they cling. They catch their prey, shrimps or small fish, by paralyzing it with the peculiar lasso cells in the tentacles.

Sea Cucumber (*Holothuroidea*). A group of marine animals (*Echinoderms*), with a soft, worm-like body having a tough, leathery covering, often cylindrical in shape and warty like a cucumber. The mouth is surrounded by a circle of food-grasping tentacles. Locomotion is effected by alternate elongation and contraction of the body. About 600 species are known. The larger forms supply the Chinese with "trepang" or bêche-de-mer, considered a great delicacy.

Sea Horse (*Hippocampus*). A small fish of the family *Syngnathidae*, having a head and neck somewhat resembling that of a horse, and a finless, prehensile tail. The body is covered with a bony shell arranged in rings. The male has a pouch on the breast, in which it carries the eggs until they are hatched.

Seal. True or hair seals are fin-footed, aquatic mammals of the family *Phocidae*, numbering about 15 species, mostly of cold seas, of which five or six occur in North American waters; among them the common harbor seal, ring seal, hooded seal, and the harp or Greenland seal, highly valued for oil and leather. The "fur" seal is a sea lion.

Sea Lion. An aquatic, pinniped mammal (family *Otariidae*), closely related to the seals, numbering 9 species, mostly Antarctic, of which 3 occur in the North Pacific. The **California Sea Lion** (*Zalophus californianus*), 7 feet long, weighing 450 pounds, is often kept in captivity. **Steller's Sea Lion** (*Eumetopias stelleri*) of the North Pacific, largest of all, is 10 feet long and stands 6 feet high. The so-called **Fur Seal** (*Callotaria ursina*), yielding beautiful fur, is found on islands in Bering Sea.

Sea Turtles (*Chelonidae*). Four species occur in North American waters: the **Loggerhead Turtle**, weighing 300 pounds, of tropical seas; **Kemp's Loggerhead Turtle** of the Gulf of Mexco; the **Green Turtle** (*Chelonia myas*), highly esteemed for food, rarely weighing 600 pounds; and the much smaller **Hawk's-bill Turtle** (*C. imbricata*), which yields the "tortoise shell" of commerce.

Sea Urchin (*Echinoidea*). A marine echinoderm related to the starfish, with spherical, heart-shaped, or disc-shaped body, provided with movable spines. The body is inclosed in a case of 10 double rows of calcareous plates, the 5 alternate rows being perforated to allow the exit of the feet or tentacles. Besides these are hundreds of small tubular feet by which the animal moves along with a rocking motion and with which it secures its food, usually seaweed and dead fish. Over 300 species are known.

Secretary Bird (*Serpentarius secretarius*). A large South African bird having long legs, a long tail, and a crest of feathers protruding from the back of the head. It feeds upon reptiles of all kinds and is much prized on account of its habit of killing snakes.

Shrew. A small, insectivorous mammal of the family *Soricidae*, having much the general appearance of a mouse, with a long pointed muzzle and soft fur. Shrews are very widely distributed, being found in most parts of the northern hemisphere.

Shrike (*Laniidae*). A family of passerine birds with habits like birds of prey, numbering 200 species, mostly of the Old World; only two are American. The **Great Northern Shrike** or **Butcher Bird** (*Lanius borealis*) breeds far north, but migrates southward in winter to Kansas and Virginia. The **Loggerhead Shrike** (*Lanius ludovicianus*) common in the Eastern and Southern States breeds northward to the Great Lakes and eastward to Maine.

Shrimp (*Crangon vulgaris*). A small, slender crustacean with a long tail, abundant on the coasts of Europe, and much prized for food in England and France. In the United States the so-called shrimps of the markets are usually prawns.

Skink. A lizard of the family *Scincidae*, widely distributed throughout the world, especially in warm regions. There are about 60 genera and 200 species. They have short limbs and most of them are terrestrial and burrowing. Several species are found in the United States.

Skunk. A carnivorous fur-bearing mammal of the family *Mustelidae*, found only in America. Skunks have a slender body, a bushy tail, and long hair with black and white markings. They protect themselves by means of a very offensive fluid which is ejected from glands under the tail. The **Common Skunk** (*Mephitis*), of which there are about 9 species, is widely distributed throughout the United States and Mexico. The fur is very extensively used, the white portion being colored black.

Sloth (*Bradypodidae*). A sluggish, wholly arboreal, edentate mammal, occurring in Central and South American forests, particularly in the Amazon region. The **Three-toed Sloth** (*Bradypus tridactylis*), about 20 inches long, has 3 toes on each foot, and 9 cervical vertebrae, while the slightly larger **Two-toed Sloth** (*Choloepus didactylus*) has 2 toes on the fore feet and only 6 cervical vertebrae.

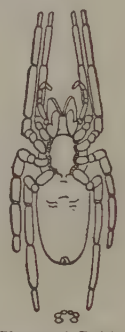
Smelt (*Osmerus*). A small, finely-flavored, much-prized food fish, related to the salmon. The **American Smelt** (*O. mordax*) of the Atlantic coast and many New England lakes, greenish above with silvery sides, and attaining a length of 10 inches, is marketed in great quantities. The **European Smelt** (*O. eperlanus*) is very similar.

Snails (*Helicidae*). A very numerous group of gastropod mollusks, provided with a protective spiral shell containing the whole animal, embracing several thousand species, varying from the northern limits of trees to Patagonia, and from tropical plains to mountain elevations of 10,000 feet. The Romans reared the **Vineyard Snail** (*Helix pomatia*) for food which, together with other edible species, is still largely eaten in Europe, particularly during Lent.

Snipe (*Gallinago*). The common name of several game birds related to the woodcock and sandpipers, living on oozy shores of streams and ponds, where they search the mud with their long, straight bills for worms and insects. **Wilson's Snipe** (*G. delicata*), breeding from New England to Labrador and westward to Illinois, is highly prized by sportsmen, not only for its excellent flesh, but also on account of the skill in marksmanship required to secure it.

Sole (*Solea vulgaris*). A European flat fish, 10 to 20 inches long, much esteemed for its delicate flavor, very abundant on sandy British shores, where it is taken in nets. The somewhat smaller **American Sole** (*Achirus fasciatus*) occurs from Massachusetts to Texas, while the larger and excellent **California Sole** (*Eopsetta jordani*) ranges from Monterey to Puget Sound.

Sparrow (*Passer*). The common name given to many small birds of the finch family, chiefly field or plain inhabiting, with brown or streaked, protectively colored plumage; seed-eating and much less migratory than insect-eating birds. Among the better known common species in the United States are the house, or English sparrow, the tree, field, chipping, and song sparrows.



Six-eyed Spider.

Jumping Spider.

SPIDERS.

Spiders (*Araneida*). An order of *Arachnida*, distinguished by a round abdomen, provided with web-secreting spinnerets, 4 pairs of seven-jointed legs, biting mandibles connected with poison glands and usually 8 eyes. There are upwards of 30 families, embracing an immense number of species, ranging from minute forms to huge bird spiders 3 inches long with a leg spread of 10 inches. With reference to habit they may be considered in two classes: web-weaving spiders which entrap their prey in more or less elaborate webs, and wandering spiders, which capture by hunting. While their bite is poisonous only a few are dangerous—the dreaded tarantula being comparatively harmless, though the bite of the New Zealand **Katipo** (*Latrodectus*) sometimes causes death.

Sponges (*Porifera*). A large group of fixed, plant-like animals, ranking next to the protozoa in simplicity of structure. Sponges consist of a framework—sometimes of a fibrous or horn-like sub-

Ventriculites.

Dactylocalyx.

Sycandra.

SPONGES.

stance, and sometimes of an aggregation of hard, siliceous spicules—which supports in its meshes the soft, jelly-like animal parts. The fibrous framework or

skeleton of certain species freed from animal matter and dried is the sponge of commerce. Of several thousand species of sponges only about 6 are commercially valuable. The best dried sponges come from the Mediterranean, those from the Red Sea are next, while those from the West Indies are coarser and less durable. The **Wool Sponge** (*Spongia gossypina*) of Florida attains a weight of one tenth of a pound in 6 months' growth and is marketable in a year. **Venus's Flower-basket** is a peculiar siliceous sponge, as is also the curious **Glass-rope Sponge.**

Squid. A cephalopod mollusk, with a long body, wide lateral fins, a head encircled by 8 sucker-bearing arms and 2 longer, slender tentacular arms or feelers, also sucker-bearing. The **Common Squid** (*Loligo vulgaris*) of European waters, 12 inches long, is a much prized bait for cod, as is the very abundant **Flying Squid** (*Ommastrephes illecebrosus*), 6 to 12 inches long, of the New England coast, so named from its habit of leaping from the water. The **Giant Squid** (*Architeuthis princeps*) attains enormous size, a specimen washed ashore in Newfoundland measuring 44 feet in length.

Squirrel (*Sciurus*). A small rodent with soft fur, long bushy tail, large eyes, and long whiskers, diurnal and mostly arboreal in habit, numbering over 100 species, distributed nearly throughout the world, except Australia, the largest and most beautiful occurring in southern Asia. The **Red Squirrel** (*S. hudsonicus*), 14 inches long, tail 6 inches, ranging from Labrador to the Rocky Mountains and Alaska, is the hardiest American species, never hibernating in winter. The **Gray Squirrel** (*S. carolinensis*), 20 inches long, tail 9 inches, inhabiting forests from Maine to Minnesota southward, partially hibernating in winter, is abundant in parks and easily tamed. The southern **Fox Squirrel** (*S. niger*), 26 inches long, tail 12 inches, occurring in the south Atlantic and Gulf states, is the largest American species.

Starfish (*Asteroidea*). A class of marine echinoderms with a five-sided, usually five-rayed, star-shaped body covered with short small spines. There are 2 or 4 rows of feet or tentacles on the mouth side of the body which enable them to crawl. At the end of each ray is a rudimentary eye. Starfish are very destructive to snails, worms, clams, and small shellfish, particularly oysters, doing great damage to oyster beds. The starfish grasps the oyster with its tentacles, exerts a steady strain, finally compelling it to open. The starfish then protrudes its stomach and digests the soft parts of the oyster.

Starling (*Sturnus vulgaris*). An Old World bird of striking brown, black and buff plumage, resembling small crows in habits, often mimicking other birds and familiar sounds; well known to the ancients and still frequently kept as a cage bird.

Stork (*Ciconia alba*). A large, well-known heron-like European bird, standing fully 3 feet high and exceeding 3½ feet in length. In central Europe, where they are protected as scavengers, they build their nests on roofs and chimneys in immense numbers. Storks display remarkable fidelity to their young and have entered largely into folk lore, proverbs, and fable.

Sturgeon (*Acipenser*). A large, long-snouted, sea and river fish, occurring in northern regions. The **Common Sturgeon** (*Acipenser sturio*) of Europe and America, a shark-like fish, sometimes reaching a length of 12 feet, is much prized for food, caviare being made from its roe. The **Giant Sturgeon** (*A. huso*) of the Caspian and Black seas attaining 24 feet in length and weighing upwards of 1,200 pounds, is coarse-fleshed and inferior.

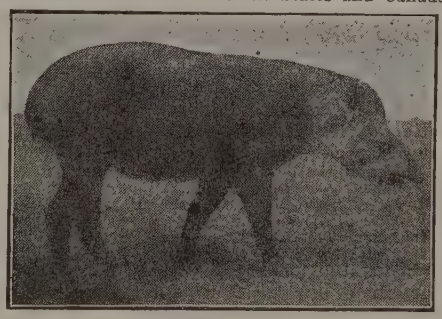
Sucker (*Catastomus*). A North American fresh-water fish distinguished by a toothless, sucker-like mouth, without barbels. There are upwards of 50 species, some of which are prized for food, though the flesh is rather inferior and somewhat tasteless.

Sunfish (*Lepomis*). A small perch-like, North American fish inhabiting still, clear streams and ponds, living on crustacea, worms, and other fishes. They are easily caught and are of fair quality as food fish.

Swallow (*Hirundinidae*). A passerine bird with a forked tail, long pointed wings, and a short, widely opening bill, found in nearly all regions. The **Barn Swallow** (*Petrochelidon erythrogaster*) nesting in colonies in barns, 7 inches long, steel-blue above, buff below, is exceedingly abundant from the Atlantic to the Pacific. The **Cliff Swallow** (*Petrochelidon lunifrons*), also called **Eave Swallow,** 5 inches long, steel-blue above, whitish below, usually builds under eaves. The **Tree Swallow** (*Tachycineta bicolor*), 6 inches long, steel-blue above, pure white below, ranging from Labrador to Alaska, usually nests in trees. The **Bank Swallow** (*Riparia riparia*), 5 inches long, grayish brown above, white below, nests in burrows in sand or gravel banks.

Swordfish (*Xiphias gladius*). A large, widely distributed fish, frequenting the open seas, reaching a length of 15 feet and weighing upwards of 400 pounds. The bones of the upper jaw are prolonged into a stiff, flattened sword, which it uses to kill other fish for food. Its oily flesh is highly regarded, resembling that of the halibut.

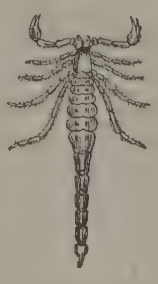
Tanager (*Tanagridae*). A family of small, usually brilliantly colored birds, related to the finches, numbering upwards of 300 species, mostly of tropical America. The **Scarlet Tanager** (*Piranga erythromelas*) of eastern North America from Manitoba southward, a fairly good song bird with brilliant scarlet body and black wings, is conspicuous in woodlands in summer. The **Summer Tanager** or **Redbird** (*P. rubra*) of the Eastern States, is similar in size, but deep rich red throughout. The **Louisiana Tanager** (*P. ludoviciana*), yellow and black with only the head red, occurs in the Western States and Canada.



American Tapir.

Tapir (*Tapirus*). A large, thick-skinned, hoofed mammal with a short, movable proboscis, small eyes, pig-like ears, distinguished from their nearest allies the rhinoceroses by having 4 toes on the fore feet, and 3 toes on the hind feet. In habit tapirs are solitary, shy, and harmless, living in the dense undergrowth of forests. The **American Tapir** (*T. americanus*) of South American forests east of the Andes, 6 feet long and 3½ feet high, is hunted for its flesh and sometimes domesticated. The **Malay Tapir** (*T. indicus*) of southern Asia, Sumatra, and Borneo, is the largest species, reaching 8 feet in length.

Tarantula.



Scorpion.

Tarantula (*Lycosa*). A large, savage, preying spider, formerly reputed extremely poisonous, but found to be comparatively harmless. The

tarantula of southern Europe (*L. tarantula*) is sometimes 2 inches long, and the American species (*L. fatifera*) of New England and (*L. carolinensis*) of the Southern States are nearly equal to it in size.

Tarpon (*Tarpon atlanticus*). An immense American game fish, with enormous silver scales, sometimes 3 inches in diameter, ranging from Long Island to Brazil, most abundant in Florida and Porto Rico, reaching a length of 6 feet and 300 pounds weight, second in size only to the tuna or tunny among game fishes.

Teal (*Anas*). A small duck of the northern hemisphere, inhabiting lakes and swamps, usually easily insnared or shot, and highly esteemed for food. The **Blue-winged Teal** (*A. discors*), abundant east of the Rocky Mountains, about 16 inches long, is readily known by its sky-blue wing coverts. The slightly smaller **Green-winged Teal** (*A. carolinensis*), distinguished by a shining green patch behind the eye, ranges throughout North America. The **Cinnamon Teal** (*A. cyanoptera*) of the western United States, 17 inches long, has a cinnamon-colored head and neck and blue wing coverts.

Termites or **White Ants** (*Termes*). Isopterous insects somewhat resembling true ants in form and habits, though in no wise related to them. There are about 200 species, mostly of tropical regions, where they dwell in large colonies, sometimes constructing huge nests 10 feet high. They live chiefly upon dead wood and are very destructive to timber, wooden dwellings, and furniture.

Tern (*Sterna*). A sea bird related to the gulls, but swifter and more graceful in flight, often called the sea swallow. The **Common Tern** (*S. hirundo*), a beautiful bird about 15 inches long, grayish-blue and pearl gray in color, of the Atlantic coast, was once much more abundant, but has been nearly exterminated for millinery purposes.

Terrapin. Small carnivorous turtles, mostly aquatic, a few being terrestrial. There are about 80 species, 25 of which are North American. Some of the best known are the **Diamond Back** (*Malaclemmys centrata*) of the Atlantic coast, highly prized as a table delicacy; the **Painted Terrapin** (*Chrysemys picta*), common in ponds and shores, and the **Box Tortoise** (*Terrapene carolina*) of dry woods from New York to Missouri, which can shut itself in its shell like a box.

Thrush (*Turdidae*). The name for a large family of birds containing about 300 species, including many of the finest song birds. The **Wood Thrush** (*Turdus mustelinus*), frequenting woodlands of the eastern United States, is noted for its exquisite song, while the smaller **Hermit Thrush** (*T. aonalaskae*), occurring throughout North America, resembles the nightingale in appearance, and nearly equals it in song. The large **Missel Thrush** (*T. viscivorous*), the **Fieldfare** (*T. pilaris*), and the **Song Thrush, Throstle,** or **Mavis** (*T. musicus*) are common in Europe, the latter being one of the finest songsters.

Tiger (*Felis tigris*). A carnivorous mammal found exclusively in Asia, chiefly in India; a large, powerful, and active cat, second only to the lion in size, measuring when full grown, 6½ feet, besides the tail, about 3 feet in length, and weighing 350 to upwards of 500 pounds. The tiger is usually solitary in habit, lying hidden during the day, fond of water, and a strong swimmer. Game-hunting tigers live upon deer, antelope, wild pigs, and other small animals that destroy crops, and are rather beneficial than otherwise. Cattle-killing tigers, however, infest jungles near villages and wreak destruction upon cattle, horses, sheep, and goats, doing immense damage, and some of these, losing their fear of human beings, become man-eating tigers, which were a terrible scourge in India before European occupation. If taken very early, tiger cubs may be trained and remain good tempered when young, but are never trustworthy when full grown. Captive tigers were exhibited in ancient Rome and are now taken to most parts of the world, frequently living to an age of 25 years in captivity.

Toad (*Bufo*). A four-footed amphibian, related to the frog but lacking teeth, and more sluggish in habit, found chiefly on land, feeding on worms and insects, harmless except for slightly irritating secretions from its skin. The **American Toad,** (*B. lentiginosus*) of the Eastern States is 3½ inches long, very warty when adult, brownish olive above and yellowish below, with several varieties.

Tortoise (*Testudinidae*). The name given to land turtles, which walk rather than swim, are herbivorous rather than carnivorous, and, though somewhat aquatic, none are marine. There

GIANT TORTOISE.

are about 20 species, the largest being found in the Galapagos Islands west of Ecuador, several kinds measuring 4 to 5 feet in length, and weighing several hundred pounds. Many are esteemed for their flesh, particularly some of the smaller species.

Tree Frog or **Tree Toad** (*Hyla*). A four-footed batrachian related to the frogs, with the toes provided with sticky discs for clinging to leaves and branches. The common **Tree Frog** (*H. versicolor*), 2 inches long, lives in trees from Kansas eastward. The **Cricket Frog** (*Acris gryllus*) somewhat smaller, with a sharp voice like that of a cricket, is found in swamps but rarely in trees.

Trichina (*T. spiralis*). A minute thread worm, infesting the intestines of the pig and some other mammals. When introduced into the human system encysted in raw or imperfectly cooked pork, trichinae develop in immense numbers, and in migrating to the muscles, produce the extremely painful and often fatal disease, trichinosis.

Trout (*Salvelinus*). A genus of fishes very closely related to the salmon, but smaller, more beautiful, and usually living in colder waters. The **Brook Trout** (*S. fontinalis*), the finest and most prized of inland game fishes occurring in cold streams, from New England to Minnesota northward, and introduced westward, is usually 6 to 10 inches long and seldom exceeds 2 pounds weight. The **Great Lake Trout** (*S. namaycush*), the largest species, very valuable for food, sometimes weighing 100 pounds, and averaging 15 to 20 pounds, occurs in large lakes from Maine to Vancouver and northward.

Tunny or **Tuna** (*Thunnus thynnus*). The largest of game fishes, in rare instances 10 to 15 feet long and weighing 1,500 pounds, but 50 to 250 pounds is a common size in California. Tunny fishing antedates the Christian era in the Mediterranean and is now the favorite sea sport of the California coast.

Turtle. The general name for any reptile of the order *Chelonia*, especially applied to marine forms, although in America land forms or tortoises as well as fresh-water species are called turtles. (See CHELONIA, SEA TURTLE, TERRAPIN, TORTOISE.)

Umbrella Bird (*Cephaloterus ornatus*). A South American bird similar to the crow in size, so named from a peculiar umbrella-like crest of feathers.

Ungulata, Ungulates. An order of mammals containing all hoofed animals, and including nearly all domestic animals, ox, horse, ass, sheep, goat, pig, reindeer, camel, llama, as well as the deer,

antelope, giraffe, elephant, zebra, tapir, rhinoceros, and hippopotamus.

Vampires. Certain South American leaf-nosed bats, mostly living upon insects and fruits, are called vampires. Popular superstition has invested the **Great Vampire** (*Vampyrus spectrum*), which has a hideous countenance beset with long canine teeth and a wing spread exceeding 2 feet with most horrible blood-sucking propensities, but it lives exclusively upon insects and fruits, and is entirely harmless. However, two small **Blood-sucking Vampires**, *Desmodus rufus*, only 3 inches long, and *Diphylla ecaudata*, still smaller, attack men, cattle, horses, and other animals and are believed to subsist entirely upon blood.

VICUNA.

Vicuna (*Lama vicuña*). A mammal of the camel family, found in the high Andes from Ecuador to Bolivia, smaller than the guanaco, standing only about 2½ feet high at the shoulder, light brown or yellowish above and lighter below, still hunted by the native peoples for its flesh and wool.

Vinegar Eel (*Anguillula antiglutinis*). A small, slender worm living on the small fungi that grow in fermenting fruit juices, often seen in incompletely fermented or unfiltered vinegar.

Viper. Old World venomous snakes of the family *Viperidae*. The **Common Viper** (*Pelias berus*), the only poisonous snake of Great Britain, occurs throughout Europe and northern Asia. The **Chain Viper** (*Vipera russelli*), next to the cobra is the most deadly serpent in India. The large **Puff Adder** (*V. arietans*), sometimes 6 feet long, is equally feared nearly throughout Africa. The small **Horned Viper** (*Cerastes cornutus*) of North Africa, only 2 feet long, is exceedingly dangerous.

Vulture. A carrion eating, diurnal bird of prey. Those of the New World (family *Cathartidae*) are large, long-winged birds of powerful and graceful flight, but voiceless, with naked head and neck, and clumsy and repulsive when on the ground. The **Black Vulture** (*Catharista urubu*), common in the Southern States and South America, and the **Turkey Buzzard** (*Cathartes aura*) with a wide range in the United States, and very abundant in the South and Southwest, are valuable scavengers in southern cities. The **California Vulture** (*Pseudogryphus californianus*), second only to the condor among birds of flight, sometimes attains a wing spread exceeding 10 feet. The **King Vulture** (*Gypagus papa*) of Mexico, is only slightly smaller, while the **Condor**, a South American vulture, is probably the largest bird of flight.

Walrus (*Odobenus*). A marine, carnivorous mammal, closely related to the seals; distinguished by the development of the upper incisor teeth into long, pointed tusks, an immense girth of body about the fore limbs, and the absence of external ears. The **Pacific Walrus** (*O. obesus*), sometimes 12 feet long, weighing 2,000 pounds, with tusks 2 feet in length, once ranged in large herds along the coasts of Alaska, but since 1860 has been nearly exterminated for its hide, ivory, and oil. The **Atlantic Walrus** (*O. rosmarus*), somewhat smaller, though occasionally exceeding 10 feet in length and 1,500 pounds weight, with tusks 18 inches long, was formerly abundant from Newfoundland northward, though it is now restricted to high latitudes by reason of its destruction for walrus oil, tusks, and leather.

Warblers. The name given to a large family (*Mniotiltidae*) of small American birds from their resemblance to the Old World warblers; usually brilliantly and variously colored; of about 100 species, a few are remarkable songsters, but most possess only feeble vocal powers. All are insect-eaters, and highly migratory; some species range from the tropics to beyond the Arctic circle and return during the year.

Wart Hog (*Phacochaerus*). Two closely related East African wild hogs are so named from large, wart-like protuberances on the sides of the face. Their heads are of enormous size, with long snouts and huge tusks. Except for the bristly mane surmounting the back their bodies are scantily covered with hair. The wart hogs are the ugliest in appearance of all swine, strong and fearless, and live chiefly on roots which they unearth with their tusks.

Wasp. A predatory, stinging insect, related to the bees, but differing in having strong jaws for biting, and lacking structures for gathering honey. Social Wasps, like honeybees, live in communities made up of males, workers, and females. The young are fed upon insects killed and prepared by the workers, while the grown wasps live upon meats, insects, fruit, and honey captured from honeybees in flight. Among the best known social wasps are the **Common Hornet** (*Vespa crabro*), and the **Yellow Jacket** (*Vespa arenaria*). Solitary Wasps do not form communities—each female making her own nest and rearing her young. These include the mud, sand, wood, and digger wasps. The **Common Mud Wasp** or **Mud Dauber** (*Eumenes fraterna*) plasters cells of clay on walls of houses, lays an egg in each and then fills them with insects paralyzed, but not killed, by stinging, which become food for the larvae when hatched.

Waxwing (*Ampelis*). A small passerine bird, so named from the small, red, horny, wax-like tips to the shafts of certain wing feathers. The **Bohemian Waxwing** (*A. garrulus*) is a graceful, beautifully crested bird about 8 inches long, ranging from the Great Lakes to Alaska, and also in Europe. The **Cedar Waxwing** or **Cedar Bird** (*A. cedrorum*), a somewhat smaller species, breeding from Virginia to Labrador, and wintering from the northern United States to Central America, is one of the most beautiful and attractive American birds.

Weasel (*Putorius*). A small carnivorous mammal of the marten family (*Mustelidae*), with a very slender body, short legs, and a long neck; very muscular, alert, and courageous; as savage and relentless as a tiger, preying upon mice, rats, birds, and other small animals, sometimes attacking poultry, but in the main beneficial to the farmer. Most weasels are reddish brown above, yellowish or white beneath, with a blackish tip on the tail, and in northern regions turn snow-white in the winter, when their fur is known as ermine.

Whale (Order *Cetacea*). A marine mammal, the largest of living animals, and, so far as known, the largest that ever existed. While fish-like in form, whales are air-breathing, warm-blooded, and suckle their young like land mammals. Some 25 species are known, distributed in all oceans, but most abundant in cold zones, grouped in two families: the **Baleen Whales** (*Balaenidae*), without teeth, but provided instead with baleen, which is the whalebone of commerce, and the **Sperm Whales** (*Physeteridae*) furnished with formidable teeth and containing in their enormous heads the peculiar oil called spermaceti. The baleen whales are largest, the giant **Sulphur-bottom Whale** (*Balaenoptera sulfureus*) of the California coast, largest of all, attaining nearly 100 feet in length; the **Atlantic Blue Whale** (*B. musculus*), next in size, reaching 85 feet, the **Rorqual** (*B. physalus*), 70 feet, and the **Arctic Bowhead** (*Balaena mysticetus*), the most valuable for whalebone and oil, sometimes exceeding 60 feet. The sperm whales range in size from the **Pygmy Sperm Whale** (*Kogia*), 15 feet long, to the **Great Sperm Whale** (*Physeter macrocephalus*), over 80 feet in length.

Whip-poor-will (*Antrostomus vociferus*). A peculiar bird of the goat-sucker family (*Caprimulgidae*), about 10 inches long, nocturnal in habits, ranging throughout the eastern United States and Canada, so named for its peculiar cry uttered for some time after sunset and before sunrise.

Whitefish (*Coregonus*). The common name, given on account of their silvery color, by which some forty species of excellent food fishes are known; found chiefly in the lake region of North America. The **Common Whitefish** (*C. clupeiformis*) of the Great Lakes, most valuable of all, and ranking very high among food fishes, is marketed in large quantities.

Wildcat. An indefinite name by which several of the smaller members of the cat family are popularly called. In the United States it is most commonly applied to the lynxes.

PRAIRIE WOLF, or COYOTE.

Wolf (*Canis*). A wild, carnivorous mammal of the dog family (*Canidae*). All are natives of the northern hemisphere, except one Antarctic species. Wolves in general are despicable cowards, and are readily frightened, usually obtaining their food by stealth, but when emboldened by hunger will attack cattle, horses, and even man. According to Hornaday, they are the only animals which make a regular practice of killing and devouring their wounded companions and eating their own dead. The **Gray** or **Timber Wolf** (*C. occidentalis*) ranges from northern Mexico almost throughout the continent to far beyond the Arctic circle. It attains a length of 4 feet, and is usually mixed black and white in color, but varies from black to white and reddish brown. In lairs in caves, burrows, or deep thickets, litters of 6 to 10 young are reared. It lives mostly upon small animals, particularly the sick and wounded, but when hunting in packs, will overpower the largest game. It has been largely exterminated in the Eastern States owing to its destructiveness to sheep and poultry. The **Coyote** or **Prairie Wolf** (*C. latrans*), similar, but smaller, being only about 3 feet long, common in the plains and mountains from central Mexico to Alberta, is very wary, cowardly, and is never dangerous to man, though it continually steals poultry, lambs, sheep, and pigs from ranches.

Wolverene or **Carcajou** (*Gulo luscus*). A small carnivore of the marten family (*Mustelidae*), about 30 inches long, with coarse, black outer fur, resembling a bear in form, but a marten in structure; noted for its cunning and voracity; becoming rare in America, now most abundant in the northern Rocky Mountains and Alaska.

Woodchuck or **Ground Hog** (*Arctomys monax*). A small, burrowing rodent, the best known of several North American marmots, about 18 inches long, clumsy, with short legs and a bushy tail, living on roots and herbs, hibernating early in winter, ranging from Hudson Bay to New England, Virginia, and Nebraska.

Woodcock (*Philohela minor*). A game bird of the snipe family, occurring from Manitoba to Labrador and southward, 11 inches long, with a long, straight bill, and large eyes set far back in the head, much prized for the table and, consequently, rapidly becoming scarce.

Wood Duck (*Aix sponsa*). The most beautiful of all ducks, noted for its resplendent plumage; occurs throughout North America, living in lowland woods, usually nesting in hollow stumps or trees, frequenting most portions of the United States during the summer, wintering southward and in Mexico and the West Indies.

Woodpecker (*Picidae*). The common name for a large group of arboreal, insect-eating birds, with a straight, strong bill, adapted for drilling in wood, a sharp-pointed, barbed tongue for spearing insects, and feet fitted for creeping and climbing, often brilliantly colored, but usually with harsh, unmelodious voices, numbering about 350 species, ranging throughout the world except in Australia and Madagascar, some 20 occurring in the United States.

Wren (*Troglodytes*). The name given to a group of small, passerine song birds, all plainly colored, very active, insect-eating, and mostly migratory, very widely distributed but most abundant in tropical America, there being over 150 species, of which the most familiar example is the **House Wren** (*T. aedon*) of the eastern United States.

Yellow Bird (*Spinus tristis*). A small bird of the finch family, about 5 inches long, bright yellow with black wings, occurring throughout eastern North America, also called **American Goldfinch** or **Thistle Bird.**

Yellow Hammer, Flicker, Golden-winged Woodpecker (*Colaptes auratus*). The largest as well as the most common and conspicuous woodpecker of eastern North America, ranging from Alaska southward east of the Rocky Mountains.

Yellow-legs (*Totanus*). A wading game bird of the snipe family, so called from the color of its long legs. Two species, the **Greater Yellow-legs** (*T. melanoleucus*) and the **Lesser Yellow-legs** (*T. flavipes*) are found in the eastern and central United States.

ZEBRA.

Zebra (*Equus*). An African ass-like animal, marked with conspicuous stripes, differing from the horse by having an erect mane, larger head, and larger ears. The **Mountain Zebra** (*E. zebra*) of Cape Colony is 4 feet high, white, striped with black on the head, body, and legs, resembling the ass more than the horse. **Burchell's Zebra** (*E. burchellii*), larger and more horse-like, 4½ feet high, sorrel above, white below with dark brown or black stripes only on the body and head, lives in herds on south African plains, where it is hunted for its hide and flesh.

GOVERNMENT

HISTORY OF GOVERNMENT
COLONIAL GOVERNMENT
CONSTITUTION OF UNITED STATES
STATE AND TERRITORIAL STATISTICS
PROPORTIONAL REPRESENTATION
SUFFRAGE LAWS
PRESIDENTIAL TABLE
HISTORIC PRESIDENTIAL STATEMENTS
MINOR POLITICAL PARTIES
MAJOR POLITICAL PARTIES
PRESIDENTIAL ELECTIONS
CABINET OFFICERS
BRITISH EMPIRE
PARLIAMENTARY LAW

Harris & Ewing (Latest available photograph, May 25, 1939).

AMERICAN GOVERNMENTAL SESSIONS—I

President Franklin D. Roosevelt and Cabinet Officers

Franklin D. Roosevelt
Claude A. Swanson
Daniel C. Roper
Cordell Hull
William H. Woodin
Henry A. Wallace
Harold L. Ickes
Homer S. Cummings
Frances Perkins
James A. Farley
George H. Dern

Supreme Court of The United States

Felix Frankfurter
Harlan Fiske Stone
Hugo L. Black
James Clark McReynolds
Stanley F. Reed
Charles Evans Hughes
Owen J. Roberts
William O. Douglas
Pierce Butler

BOOK XI.

GOVERNMENT.

GOVERNMENT.
Mural Painting in the Congressional Library, Washington.
BY ELIHU VEDDER.

HISTORY OF THE DEVELOPMENTS OF GOVERNMENTS: FAMILY, PATRIARCHAL, TRIBES, CLANS, VILLAGE, COMMUNITIES. FEUDALISM, DEMOCRACY, CONSTITUTIONAL MONARCHY, REPUBLIC. UNITED STATES GOVERNMENT AND DEPARTMENTS, FEDERAL, STATE, LOCAL AND MUNICIPAL GOVERNMENT. TERRITORIAL GOVERNMENT. SUFFRAGE. HISTORIC PRESIDENTIAL UTTERANCES. POLITICAL PARTIES: MAJOR AND MINOR. INDIAN AFFAIRS. BRITISH GOVERNMENT. PARLIAMENTARY LAW.

HISTORY OF GOVERNMENT.

Family and Patriarchal Forms.—The earliest known form of government which has come down from prehistoric times is the family or social unit. The Semitic family is patriarchal and polygamous; the Aryan family is monogamic.

Aryan Family.—In the Aryan family, such as was to be found in India, the family lived separately and possessed rights. The great idea was reverence of ancestors. Every home had a sacred fire, fed by certain kinds of wood, and never allowed to go out. This burned to the ancestors represented by Agni, just as in later days it burned to Vesta in Rome. The ancestral dead were buried near the home and reverenced as they are to-day in China. A woman, on marriage, left her home, her gods, and her ancestors, and assumed the gods, the ancestors, and the home of her husband. The daughter was not equal to the son, for upon him devolved the sacred duties of continuing the line and of keeping up the ever-burning fire.

Semitic Family.—Very early the Semites evolved the idea of obedience to one head, the patriarch. Members of the family knew very little personal liberty. The wives and children were practically slaves. Service and obedience were all they knew. Love was strongly marked, but it ranked second to the great idea of obedience. Discipline was severe and unbending. Land and possessions were chiefly held by families and not by individuals.

Greek Family.—From Homeric times family life in Greece was marked by the tenderest feelings, highest ideals, and most marked dignity. The love of Penelope for Ulysses, the tender and affectionate parting of Hector and Andromache, the heroism of Alcestis, the filial piety of Antigone, the majesty and grandeur of Polyxena, the sweet, modest love of Nausicaa, are, as Lecky says, "pictures of perennial beauty, which Rome and Christendom, chivalry and modern civilization, have neither eclipsed nor surpassed." Still, women were servants and performed the household duties, brought water, and ground flour. Even in the bright days in Athens, woman did not share the intellectual life of her husband.

Tribal Government.—Very early, as the family grew, the bounds of kinship were extended to embrace all distantly related members

for certain purposes, chiefly for protection. The chief was the eldest and governing member of the largest or most powerful family. Gradually other unrelated members were associated and a sort of social organization based upon real or assumed consanguinity grew up with military functions. The chief difference between a clan and a tribe appears to have been based upon the legal or juristic duties of the clan, and the military functions of the tribe. The clan settled its internal disputes; while the tribe, an aggregation of clans, settled differences with the outside world.

Village Communities.—The tribal system gradually changed into the village community, which was a settled agricultural form in place of the nomadic, pastoral form of tribal life. Village community government marks the change from pastoral or tribal to agricultural life and occupation. The tribe was divided into small groups of tillers of the arable land, spread over a moderately sized area, and governed by an overlord to whom they paid tribute.

Feudalism.—This form of government really gave shape to society during the greater part of the Middle Ages. After the Romans lost the world-power and the Germans invaded the neighboring countries, feudal government gradually appeared and endured until modern times in some form or other. The growth and the decline of feudal institutions were each gradual processes, and they did not appear instantly nor disappear suddenly. Very early in the feudal development it became customary for men of low rank and slight power to associate themselves with powerful men. The association was called *commendation*, and was performed by an oath of fealty and service. The subordinate was then a *vassal* or *man;* the superior was a *suzerain* or *lord;* and the ceremony was known as *homage and fealty*. This subordination became general, and often involved every one in a community, even kings becoming vassals of more powerful kings and suzerains.

The *fief, fee,* or *feud* was the foundation of the whole system. A *fief* was a piece of land held by a tenant from his lord without rent, but in exchange for certain feudal services. A ceremony called investiture attended the granting and acceptance of the land, when the tenant acknowledged his dependency and the lord gave his protection. The chief service tendered to lords by tenants was that of military service of himself and men for a certain period; and so general was this mode that the feudal system is often called military tenure.

Court service was a certain attendance at courts which the lord might exact. The lord claimed a guardianship or *wardship* over minor heirs of a deceased tenant, who were to be provided for and educated. The lord was also empowered to control the marriage of heirs, heiresses, and widows of deceased tenants. All of these services might be evaded by the payment of a fee. Cases in which fees were due to the lord were: a *relief* payable to the lord by an heir upon receipt of his property; an *aid* to defray the expenses of knighting the eldest son of the lord; of the marriage of the lord's daughter; and for his ransom in case of captivity. When there was no heir the land might revert to the king by an *escheat*, or, in cases of failure to render feudal service, by *forfeiture*.

In feudal society were to be found the nobles, who did the fighting, the clergy, and those who did the work. Among the nobles the titles of duke, marquis, and count were enjoyed by leaders who placed large forces in the field. Knights and barons ranked below these, and were, in turn, attended by squires. The peasants who worked upon the *manor*, as the lord's estate was called, were classed as *freemen* and *serfs*. The manor consisted of the *demesne* upon which the house was built, and the *outland*, held by the tenants, who dwelt in the village and who were nearly all *villeins*. The tenure of this land by the tenants was by *socage*, which involved the duty of performing a fixed number of days' work upon the farm, or of contributing food to the lord's table. When military service was rendered it was known as *knight service*. The divisions of the manors were *farms*. Free tenants were known as *franklins*, and ranked higher than the villeins or serfs, while the lower classes of serfs were the property of the master.

Democracy.—By the growth of democracy is meant the admission of the people to a larger share in administering the affairs of the country. It does not specify any particular form of government, for there may be a larger share of voice in public affairs allowed to the subjects in a constitutional monarchy than in a republic; and even under absolute monarchy and despotism there are occasions when the popular voice is unmistakably heard.

The democratic form of government was seen in Athens, where it reached a high stage of development in the way of free institutions and individual growth. Solon's reforms from 594 B. C. onward were the beginnings of democracy, which were furthered by Pisistratus, Cleisthenes, Themistocles, Ephialtes, and Pericles.

The struggles in Rome during its early period between the patricians or aristocrats, and the plebeians or democrats, mark the steady advance of democratic ideas and the recognition of the people in affairs of state. The expulsion of the kings in 509 B. C. and the adoption of the consular form of government, the agrarian laws and reforms, the establishment of the *comitia tributa*, the more general use of the word *populus* in affairs, the drawing up of the Twelve Tables (452 B. C.), and the overthrow of the decemviri (449 B. C.) mark the earliest advances of democracy in Rome. The grand attacks by plebeians upon the aristocratic forces during the following hundred years brought about the complete emancipation of the plebeians from all social and political disabilities. The Lex Canuleia (445 B. C.), which rendered valid the marriage of a plebeian and patrician; the opening of the office of military tribune to the plebs (445 B. C.); of the quæstorship (421 B. C.); of the dictatorship (356 B. C.); of the censorship (351 B. C.); of the prætorship (337 B. C.); and of the pontifical and augurial colleges (300 B. C.), are the chief events in this great struggle. While it may with great truth be said that this extension of privilege increased the power of the rich plebeians, and left the masses in little better condition socially, yet the growth of the democratic principle and the humbling of the aristocratic forces were most

evident through these reforms. Inadequate as remedies for the dissensions between classes as were the several agrarian laws and Licinian rogations, nevertheless the condition of the plebian farmers and middle classes was greatly improved thereby. The extension of Roman power by the defeat of Pyrrhus and the subjugation of all Italy brought about the threefold division of Roman subjects into: (1) *Cives Romani*, or Roman citizens with the fullest privileges; (2) *Nomen Latinum*, without the Roman franchise; and (3) *Socii* or allies, with privileges greatly varying in different localities. But with this military aggrandizement passed the powers of the lower classes, and there came in the growing power of a military oligarchy which subjected the lower classes to a condition of suffering and despotism which was not improved by the temporary successes of the Gracchi. Nor were these conditions improved by the wild confusion in Rome during the struggles between Marius and Sulla, when the aristocratic forces under Sulla triumphed in the name of order, and sought to rebuild from the rottenness of Roman society a political and social structure that might endure. But with the Cataline conspiracy, the triumvirate of Crassus, Pompey, and Cæsar (60 B. C.), the lawless and bloody tribunates of Claudius and Milo (58–57 B. C.), followed by the second triumvirate composed of Antonius, Lepidus, and Octavianus, the way was paved for the establishment of the Roman Empire under Augustus (29 B. C.), when the political life of the Republic was ended.

In the Dark and Middle Ages, the dominant feudal system admitted of no development or growth of democratic power in Europe. In the succeeding years there were in all countries spasmodic protests by rebellion of the people against injustice and tyranny; and these mark the desires of the people which led to the later organized efforts that brought about the needed reforms.

The most important of these was the wresting from King John at Runnymede, in 1215, those concessions and recognitions which have been called Magna Charta, the corner stone of English liberty. The establishment of parliament by Edward III. (1295), and the gradual extension of privileges by a number of acts, small in themselves but important in the aggregate, mark the track of the evolution of the principle, subject at times to checks and interruptions. The erection of the Commonwealth in England under Oliver Cromwell attacked the principle under which monarchs and despots held their power—the control of the standing army. So long as rulers were surrounded by armed guards who, from incentives of loyalty, or, more frequently, from mercenary motives, were ready to do the sovereign's bidding, there was every means at their disposal for suppression of the people. Cromwell's demand that Charles I. give up the command of the army, and the king's reply, "No, not for an hour," marked the power of the army as a safeguard of the tyrant and as a menace to liberty. Yet it may be said that the army was the force which Cromwell used to awe the royalists into obedience to his laws. With the restoration of the monarchy in the person of Charles II. came an apparent return to freedom from the austere morality of the Commonwealth and the undoing of the reforms of that time. But the true spirit of the people is seen in the adoption of the principle of cabinet government in England after the accession of William and Mary (1689). The king's ministers were now responsible to the people for royal acts, and, though the carrying out of the principle during a few years after its inception was crude and inefficient, the period is marked by events which led to a beneficent extension of popular control. Not the least of these was the establishment of the freedom of the press (1694), the extension of the franchise, and the adoption of measures of responsible government.

The great protest in France against the tyranny of the aristocrats, the French Revolution, appalled the world with the severity of its measures and the intensity of its power. In it the popular voice was heard, not alone demanding redress of its wrongs, but the right to redress its own wrongs. Following as it did the determination of the American colonists to adapt their government to meet the conditions of the New World, it intensified the object lesson in social economy which subsequent events were unable to obliterate. These, with the rebellion in Poland, magnificent in ideals and in effort but lamentable in results; the erection of the German Empire; the founding of the French Republic, the unification of Italy in 1866, and formation of republics after 1917 mark the path of democratic influences.

Monarchy.—This form of government covers nearly the whole of Europe, Asia, Africa, and half of North America. It may be divided into two kinds: that in which the power has been transferred wholly or in part to the body of the people, which form is called a limited monarchy; and that in which the sovereign control is vested in the hands of the monarch, which is called absolute or despotic monarchy. Sometimes the government is in the hands of a few, forming an oligarchy, while the ruler or the sovereign is a mere figurehead. This class is to be found in those countries in which caste or a class holds the ruling power, and may be either hereditary, as in Japan, tribal, as it was in China, or bureaucratic, as once in Russia, where the head of a department or bureau controls the department absolutely, and makes recommendations to the monarch for his approval.

Every European government places in the hands of the people a very large share of power. Turkey was until 1908 an example of that form of monarchy which existed in feudal times.

Monarchies are called *limited* or *constitutional* because the powers of the sovereigns are limited by the constitution or by the will of the people. In fact, the purpose for which a constitution is provided is to specify clearly how far and in what direction governmental powers shall extend. Some governments are extremely complex because of the federation or union of states and provinces of different types under one rule. The British Empire, for instance, comprises under one monarch a variety of forms of government. There is the centralized government of England, Scotland, and Wales, which are all subject to Parliament. There are the self-governing colonies of Canada and Australia, in each of which separate states

or provinces with independent powers are federated under a general government of their own. There is India, a crown colony under direct control of Parliament; while Egypt is a dependency of Great Britain under still different forms of control. Germany was also a federated empire containing variously organized states and possessions. The United States is an example of the federated republic including under one rule many self-governing commonwealths.

The chief monarchies of the world are: Belgium, British Empire, Bulgaria, Denmark, Italy, Japan, Nepál, Netherlands, Norway, Persia, Roumania, Jugo-Slavia, Spain, and Sweden.

Few other despotisms remain, the nearest examples being possibly Afghanistan, Morocco, Thibet, and Siam. Some desert African, and island tribes are modified despotisms.

Republics.—A republic is a form of administration in which the members of the governing body are chosen by electors to whom they are theoretically responsible. In some of the earlier forms of republics the electors comprised the whole adult male population of the state; in others a small group of persons exercised the power of election by constitutional right or by inheritance. The extent of the popular voice in the election of representatives in a republic varies according to the spirit of democracy which prevails at the time. Accordingly in the republics of later times, and especially in the western world, the franchise or right to vote has been enjoyed by a larger body of the members of a community than was customary in the earlier days of a more restricted democratic influence. In analyzing a form of government it must be observed that the name does not always convey the idea of the essential form of government. There are republics in fact which are not so in name; and there are republics in name that are really monarchies or empires. It may be conceived that a monarchy in which democratic principles are most pronounced and in which the monarch exercises no power or authority would really be a republic. Such a condition as existed in Rome under the Cæsars, though nominally republican, was none the less monarchical. Corresponding with these two types in modern days we find the English government as a monarchy rapidly approaching a republic in form; on the other hand, the despotic governments of South America, though republican in name, are in many cases truly monarchical. Europe witnessed, in 1848, a remarkable wave of democratic influence which threatened the thrones of the continent, and while the monarchical forms in Europe nearly all survived it, except in the cases of France and Switzerland, the reaction that has followed it has tended to change existing conditions rather than to abolish them and substitute others. Modern views upon the republican form of government hold that the essentials to its highest development are character, education on the part of the mass of the people, and a willingness to promote industrial progress rather than military power. Under such conditions it may be expected that the popular republican form of government will confer upon a nation stability, good order, and unequaled progress.

The chief republics of the world are: Andorra, Argentina (federal), Austria, Bolivia, Brazil (federal), Czecho-Slovakia, Chile, China, Colombia, Costa Rica, Cuba, Dominican, Ecuador, France, Germany, Guatemala, Haiti, Hungary, Honduras, Liberia, Mexico (federal), Nicaragua, Panama, Paraguay, Peru, Portugal, Russia, Salvador, San Marino, Switzerland (federal), United States of America (federal), Uruguay, Venezuela (federal).

The republican form of government offers almost limitless opportunities for experiment, and to this fact may be attributed the failure of many of them. The U. S., the world's first successful republic, drew upon colonial experience in writing her constitution, with the result that the government set up was in many ways already familiar to the people of the country. But when the people of France, Central and South America, and China attempted to model their governments after that of the U. S. the invariable result was unqualified failure. The lesson is plain: the form of government adopted by each nation should be the one that harmonizes with the political background of the people, and grants self-government only to the degree that the people are intellectually ready for it. China and Mexico prove that a republic may be only another name for anarchy, and that even a despotism may be better.

TYPICAL REPUBLICS.

France.—France is a strongly centralized republic, local governments having only the powers conferred on them by the Parliament. The President is elected for a term of seven years by Parliament. He possesses no independent political power, every act having to be countersigned by the responsible officer. Thus, officially, he can do neither right nor wrong. Parliament is composed of a Senate and a Chamber of Deputies. The Senate is composed of representatives chosen from the Departments by an electoral body composed of the Deputies from that Department and various other local officials. The term is nine years, one third retiring every third year. The Senate was originally intended to be equal in power to the Deputies, but experience has shown that the legislative branch to which the Cabinet is responsible will gain power at the expense of the other house. Thus the Senate has declined in importance. The Deputies are elected from the Departments under proportional representation for a term of four years, all retiring at the same time. The Cabinet is invariably drawn from Parliament, the President selecting a Premier to form a Cabinet. As there are so many political groups in France every Cabinet is a coalition, and seldom lasts longer than a few months. But it must be noted that the fall of a ministry does not disturb Parliament, as it does in England where a dissolution of the Commons is likely to result. France is becoming more republican each year.

Switzerland.—Switzerland is a federation of 22 cantons, a very great degree of local self-government being allowed. The central government is made up of a Federal Assembly which is composed of a State Council of 44 members, two for each canton; and a National Council composed of elected representatives from the cantons, one deputy for every 20,000 people. The executive power is placed in a Federal Council of 7, elected for three years by the Federal

Assembly. Each year the Council chooses a President, who is called the President of Switzerland, but who has no more power than the other members of the Council. Each member is the head of a department. The initiative and the referendum are used rather extensively.

The United States.

Government Functions.—The eight essential functions of Government are best outlined by Ex-President Wilson in his work, "The State."

(1). To keep order and provide for the protection of persons and property from violence and robbery.

(2). To fix the legal relations between man and wife, between parents and children.

(3). To regulate the holding, transmission and interchange of property, and the determination of its liabilities for debt or for crime.

(4). To fix contractual rights between individuals.

(5). To regulate means for the administration of justice in civil cases.

(6). To define crime and provide for punishment of criminals.

(7). To make clear, the political duties, privileges and relations of citizens to each other.

(8). To regulate the dealings of states with foreign powers; to preserve it from external danger and advance international interest.

First Steps Toward Union.—The Colonies being widely separated, from different countries, with different vocations and racial beliefs, had nothing in common from political or economic points of view to weld them together. In fact, the motive for the first colonial meetings of any consequence whatever, was largely for protection from the Indians.

(1). As for example during the period intervening between 1643 and 1684, Massachusetts Bay, New Plymouth, Connecticut and New Haven Colonies formed the New England Confederacy with the sole purpose of protection against the Indians, Dutch and French.

(2). The second coming together of the Colonies in convention was 1754, meeting at Albany, with a purpose of arranging a treaty between the Iroquois Indians and to consider other questions of common interest.

(3). In 1765 because of the passage of the *Stamp Act* by Great Britain, nine of the Colonies at the request of the Massachusetts Colony, sent representatives to New York, at which conference we find the first real outbreak of sentiment against the parental English Government.

(4). The next step was brought about through the *Townshend Act*, which led to the formation of committees of correspondence among the colonists. This did much toward fostering sentiment against England, and showed the need of laying aside intercolonial jealousies. This leads up to the *First Continental Congress*, called by Massachusetts in 1774, when the coercion acts were passed by the mother country against the colony of Massachusetts. All the Colonies sent delegates to Philadelphia, excepting Georgia. Here was first drafted the Declaration of Rights, Articles of Association were adopted which provided for further calling together of the colonists in May 1775, if necessary.

(5). In the meantime England had passed additional acts of coercion against the colonies; feeling was running high in New England and the battle of Lexington had been fought. It, therefore, became necessary for the meeting of the *Second Continental Congress* to provide for further means of resistance.

Confederation.—After the colonies declared their independence of Great Britain, they appointed a congressional committee composed of a delegate from each state to draw up a form of union. The articles thus drawn up were called the Articles of Confederation, were discussed in Congress for more than a year, and adopted by Congress in 1777, yet were not ratified by all until 1781. The inherent weakness in the confederation was its lack of central power. The individual states retained their sovereignty, freedom and independence, leaving the confederation largely an advisory body. This Congress consisted of from two to seven delegates from each state, each state having a right to cast but one vote.

Under the Articles of Confederation, Congress had no power for making a treaty, for carrying on war, or creating an army or navy, had no power to regulate any treaties with the Indians or even to settle disputes among the states themselves.

Under the Articles of Confederation, Congress was unable to set up a lasting government, inasmuch as:

(a). No important law could be passed without the consent of nine states.

(b). Congress had no means enabling it to raise revenue.

(c). It had no power to regulate interstate or foreign commerce.

(d). No power to enforce laws.

(e). No power to tax.

(f). Without the unanimous approval of the States, it had no right to amend the Articles of Confederation, and hence overcome its inherent difficulties.

During 1785 at a meeting of commissioners between Maryland and Virginia concerning commercial matters, the State of Virginia suggested a meeting of delegates of all the States at Annapolis in 1786. Only five states sent representatives. Among them were such men as Alexander Hamilton, who seeing the lack of central power in Congress, suggested the calling of a convention to amend the Articles of Confederation.

This Convention met at Philadelphia, May 25th, 1787. All States were represented excepting Rhode Island. Finally, September 17th, 1787 after much argument and many compromises being made, the Constitution was adopted, submitted to Congress, and sent to the States for ratification. New Hampshire ratified it, June 21st, 1788, making the necessary number of nine States for adoption. Rhode Island was the last state to ratify, May 29th, 1790. However, Congress in 1789 provided an act by which the Constitution went into operation.

Amendments.—In contrast to the Articles of Confederation, the power of Amendment was here created, and the first ten amendments were ratified by the State Legislatures soon after the adoption of the Constitution. Additional amendments have been passed from time to time. The entire list of Amendments of the Constitution are treated immediately after the Article on Constitution in this book.

UNITED STATES OF AMERICA.

The Second Continental Congress, representing the thirteen original colonies, assembled at Philadelphia, declared their independence of Great Britain, July 4, 1776, and thereafter each colony was known as a State.

Text of the Declaration of Independence.

In Congress, July 4, 1776. The unanimous Declaration of the Thirteen United States of America.

When, in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the laws of nature and of nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

We hold these truths to be self-evident: That all men are created equal; that they are endowed, by their Creator, with certain unalienable rights; that among these are life, liberty, and the pursuit of happiness. That, to secure these rights, governments are instituted among men, deriving their just powers from the consent of the governed; that, whenever any form of government becomes destructive of these ends, it is the right of the people to alter or to abolish it, and to institute new government, laying its foundation on such principles, and organizing its powers in such form, as to them shall seem most likely to effect their safety and happiness. Prudence, indeed, will dictate that governments long established should not be changed for light and transient causes; and accordingly all experience hath shown that mankind are more disposed to suffer while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed. But when a long train of abuses and usurpations, pursuing invariably the same object, evinces a design to reduce them under absolute despotism, it is their right, it is their duty, to throw off such government, and to provide new guards for their future security. Such has been the patient sufferance of these colonies; and such is now the necessity which constrains them to alter their former systems of government. The history of the present King of Great Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute tyranny over these States. To prove this, let facts be submitted to a candid world.

He has refused his assent to laws the most wholesome and necessary for the public good.

He has forbidden his governors to pass laws of immediate and pressing importance, unless suspended in their operation till his assent should be obtained; and when so suspended, he has utterly neglected to attend to them.

He has refused to pass other laws for the accommodation of large districts of people, unless those people would relinquish the right of representation in the legislature—a right inestimable to them, and formidable to tyrants only.

He has called together legislative bodies at places unusual, uncomfortable, and distant from the depository of their public records, for the sole purpose of fatiguing them into compliance with his measures.

He has dissolved representative houses repeatedly, for opposing with manly firmness his invasions on the rights of the people.

He has refused, for a long time after such dissolutions, to cause others to be elected; whereby the legislative powers, incapable of annihilation, have returned to the people at large for their exercise, the State remaining, in the meantime, exposed to all the dangers of invasion from without, and convulsions within.

He has endeavored to prevent the population of these States; for that purpose obstructing the laws for naturalization of foreigners; refusing to pass others to encourage their migration hither, and raising the conditions of new appropriations of lands.

He has obstructed the administration of justice, by refusing his assent to laws for establishing judiciary powers.

He has made judges dependent on his will alone, for the tenure of their offices, and the amount and payment of their salaries.

He has erected a multitude of new offices, and sent hither swarms of officers to harass our people, and eat out their substance.

He has kept among us, in times of peace, standing armies, without the consent of our legislature.

He has affected to render the military independent of and superior to the civil power.

He has combined with others to subject us to a jurisdiction foreign to our constitution, and unacknowledged by our laws; giving his assent to their acts of pretended legislation:

For quartering large bodies of armed troops among us;

For protecting them, by a mock trial, from punishment for any murders which they should commit on the inhabitants of these States;

For cutting off our trade with all parts of the world;

For imposing taxes on us without our consent;

For depriving us, in many cases, of the benefits of trial by jury;

For transporting us beyond seas to be tried for pretended offenses;

For abolishing the free system of English laws in a neighboring province, establishing therein an arbitrary government, and enlarging its boundaries so as to render it at once an example and fit instrument for introducing the same absolute rule into these colonies;

For taking away our charters, abolishing our most valuable laws, and altering fundamentally the forms of our governments;

For suspending our own legislatures and declaring themselves invested with power to legislate for us in all cases whatsoever.

He has abdicated government here, by declaring us out of his protection and waging war against us.

He has plundered our seas, ravaged our coasts, burnt our towns, and destroyed the lives of our people.

He is at this time transporting large armies of foreign mercenaries to complete the works of death, desolation, and tyranny, already begun with circumstances of cruelty and perfidy scarcely paralleled in the most barbarous ages, and totally unworthy the head of a civilized nation.

He has constrained our fellow-citizens, taken captive on the high seas, to bear arms against their country, to become the executioners of their friends and brethren, or to fall themselves by their hands.

He has excited domestic insurrections among us, and has endeavored to bring on the inhabitants of our frontiers the merciless Indian savages, whose known rule of warfare is an undistinguished destruction of all ages, sexes, and conditions.

In every stage of these oppressions we have petitioned for redress in the most humble terms; our repeated petitions have been answered only by repeated injury. A prince whose character is thus marked by every act which may define a tyrant is unfit to be the ruler of a free people.

Nor have we been wanting in attention to our British brethren. We have warned them from time to time of attempts by their legislature to extend an unwarrantable jurisdiction over us. We have reminded them of the circumstances of our emigration and settlement here. We have appealed to their native justice and magnanimity; and we have conjured them by the ties of our common kindred to disavow these usurpations, which would inevitably interrupt our connections and correspondence. They, too, have been deaf to the voice of justice and of consanguinity. We must, therefore, acquiesce in the necessity which denounces our separation, and hold them, as we hold the rest of mankind, enemies in war, in peace friends.

We, therefore, the Representatives of the United States of America, in General Congress assembled, appealing to the Supreme Judge of the world for the rectitude of our intentions, do, in the name and by authority of the good people of these Colonies, solemnly publish and declare, That these United Colonies are, and of right ought to be, free and independent States; that they are absolved from all allegiance to the British crown, and that all political connection between them and the State of Great Britain is, and ought to be, totally dissolved; and that, as free and independent States, they have full power to levy war, conclude peace, contract alliances, establish commerce, and to do all other acts and things which independent States may of right do. And, for the support of this declaration, with a firm reliance on the protection of Divine Providence, we mutually pledge to each other our lives, our fortunes, and our sacred honor.

JOHN HANCOCK.

NEW HAMPSHIRE.
Josiah Bartlett,
William Whipple,
Matthew Thornton.

MASSACHUSETTS BAY.
Samuel Adams,
John Adams,
Robert Treat Paine,
Elbridge Gerry.

RHODE ISLAND.
Stephen Hopkins,
William Ellery.

CONNECTICUT.
Roger Sherman,
Samuel Huntington,
William Williams,
Oliver Wolcott.

NEW YORK.
William Floyd,
Philip Livingston,
Francis Lewis,
Lewis Morris.

NEW JERSEY.
Richard Stockton,
John Witherspoon,
Francis Hopkinson,
John Hart,
Abraham Clark.

PENNSYLVANIA.
Robert Morris,
Benjamin Rush,
Benjamin Franklin,
John Morton,
George Clymer,
James Smith,
George Taylor,
James Wilson,
George Ross.

DELAWARE.
Caesar Rodney,
George Read,
Thomas M'Kean.

MARYLAND.
Samuel Chase,
William Paca,
Thomas Stone,
Charles Carroll, of Carrollton.

VIRGINIA.
George Wythe,
Richard Henry Lee,
Thomas Jefferson,
Benjamin Harrison,
Thomas Nelson, Jr.,
Francis Lightfoot Lee,
Carter Braxton.

NORTH CAROLINA.
William Hooper,
Joseph Hewes,
John Penn.

SOUTH CAROLINA.
Edward Rutledge,
Thomas Heyward, Jr.,
Thomas Lynch, Jr.,
Arthur Middleton.

GEORGIA.
Button Gwinnett,
Lyman Hall,
George Walton.

IN CONGRESS, JANUARY 18, 1777.

Ordered:
That an authenticated copy of the Declaration of Independence, with the names of the members of Congress subscribing the same, be sent to each of the United States, and that they be desired to have the same put on record.
By order of Congress.
JOHN HANCOCK, *President.*
Attest, CHAS. THOMSON, *Secy.*
A true copy.
JOHN HANCOCK, *Pres'dt.*

Signers of the Declaration of Independence.

NAME.	Order.*	Colony.	Occupation.	Born.	Birthplace.	Died.	Age.†
Adams, John	6	Massachusetts Bay	Lawyer	Oct. 19, 1735	Braintree, Mass.	July 4, 1826	92
Adams, Samuel	2	Massachusetts Bay	Merchant	Sept. 22, 1722	Boston, Mass.	Oct. 3, 1803	81
Bartlett, Josiah	9	New Hampshire	Physician	Nov., 1729	Amesbury, Mass.	May 19, 1795	67
Braxton, Carter	51	Virginia	Planter	Sept. 10, 1736	Newington, Va.	Oct. 10, 1797	62
Carroll, Charles	31	Maryland	Lawyer	Sept. 20, 1737	Annapolis, Md.	Nov. 14, 1832	96
Chase, Samuel	44	Maryland	Lawyer	Apr. 17, 1741	Somerset Co., Md.	June 19, 1811	71
Clark, Abraham	14	New Jersey	Lawyer	Feb. 15, 1726	Elizabethtown, N. J.	Sept., 1794	69
Clymer, George	38	Pennsylvania	Merchant	Jan. 24, 1739	Philadelphia, Pa.	Jan. 23, 1813	75
Ellery, William	22	R. I. and Prov. Plan.	Lawyer	Dec. 22, 1727	Newport, R. I.	Feb. 15, 1820	93
Floyd, William	5	New York	Farmer	Dec. 17, 1734	Setauket, N. Y.	Aug. 1, 1821	87
Franklin, Benjamin	46	Pennsylvania	Printer	Jan. 17, 1706	Boston, Mass.	Apr. 17, 1790	85
Gerry, Elbridge	8	Massachusetts Bay	Merchant	July 17, 1744	Marblehead, Mass.	Nov. 23, 1814	71
Gwinnett, Button	40	Georgia	Merchant	1732	England	May 27, 1777	45
Hancock, John	1	Massachusetts Bay	Merchant	Jan. 12, 1737	Braintree, Mass.	Oct. 8, 1793	57
Hall, Lyman	47	Georgia	Physician	1731	Conn.	1784	53
Harrison, Benj.	54	Virginia	Farmer	1740	Berkeley, Va.	April, 1791	51
Hart, John	13	New Jersey	Farmer	1715	Hopewell, N. J.	1780	65
Hewes, Joseph	35	North Carolina	Lawyer	1730	Kingston, N. J.	Nov. 10, 1779	49
Heyward, Jr., Thos.	56	South Carolina	Lawyer	1746	St. Luke's, S. C.	March, 1809	63
Hooper, Wm.	23	North Carolina	Lawyer	June 17, 1742	Boston, Mass.	Oct., 1790	49
Hopkins, Steph.	12	R. I. and Prov. Plan.	Farmer	Mar. 7, 1707	Scituate, Mass.	July 13, 1785	79
Hopkinson, Francis	29	New Jersey	Lawyer	1737	Philadelphia, Pa.	May 9, 1791	54
Huntington, Sam'l	11	Connecticut	Lawyer	July 3, 1732	Windham, Conn.	Jan. 5, 1796	64
Jefferson, Thos.	32	Virginia	Lawyer	Apr. 13, 1743	Shadwell, Va.	July 4, 1826	83
Lee, Richard Henry	48	Virginia	Soldier	Jan. 20, 1732	Stratford, Va.	June 19, 1794	63
Lee, Francis Lightfoot	55	Virginia	Farmer	Oct. 14, 1734	Stratford, Va.	April, 1797	63
Lewis, Francis	7	New York	Merchant	March, 1713	Llandaff, Wales.	Dec. 30, 1803	91
Livingston, Philip	3	New York	Merchant	Jan. 15, 1716	Albany, N. Y.	June 12, 1778	63
Lynch, Jr., Thos.	43	South Carolina	Lawyer	Aug. 5, 1749	Pr. George's Co., S. C.	1779	30
M'Kean, Thos.	39	Delaware	Lawyer	Mar. 19, 1734	New London, Pa.	June 24, 1817	84
Middleton, Arthur	50	South Carolina	Lawyer	1743	Middleton Pl., S. C.	Jan. 1, 1788	44
Morris, Lewis	15	New York	Farmer	1726	Morrisania, N. Y.	Jan. 22, 1798	72
Morris, Robert	24	Pennsylvania	Merchant	Jan. 20, 1734	Lancashire, Eng.	May 8, 1806	73
Morton, John	16	Pennsylvania	Surveyor	1724	Ridley, Pa.	April, 1777	53
Nelson, Jr., Thos.	49	Virginia	Statesman	Dec. 26, 1738	York, Va.	Jan. 4, 1789	51
Paca, William	28	Maryland	Lawyer	Oct. 31, 1740	Wye Hall, Md.	1799	59
Paine, Robert Treat	4	Massachusetts Bay	Lawyer	1731	Boston, Mass.	May 11, 1814	84
Penn, John	18	North Carolina	Lawyer	May 17, 1741	Caroline Co., Va.	Sept., 1788	48
Read, George	41	Delaware	Lawyer	1734	Cecil Co., Md.	1798	64
Rodney, Cæsar	52	Delaware	General	1730	Dover, Del.	1783	53
Ross, George	37	Pennsylvania	Lawyer	1730	Newcastle, Del.	July, 1779	49
Rush, Benjamin	46	Pennsylvania	Physician	Dec. 24, 1745	Berberry, Pa.	Apr. 19, 1813	68
Rutledge, Edward	34	South Carolina	Lawyer	Nov., 1749	Charleston, S. C.	Jan. 23, 1800	51
Sherman, Roger	19	Connecticut	Shoemaker	Apr. 19, 1721	Newton, Mass.	July 23, 1793	73
Smith, James	36	Pennsylvania	Lawyer	1710	Ireland.	July 11, 1806	96
Stockton, Richard	10	New Jersey	Lawyer	Oct. 1, 1730	Princeton, N. J.	Feb. 28, 1781	51
Stone, Thomas	30	Maryland	Lawyer	1742	Pointoin Manor, Md.	Oct. 5, 1787	45
Taylor, Geo.	33	Pennsylvania	Physician	1716	Ireland.	Feb. 23, 1781	65
Thornton, Matthew	17	New Hampshire	Physician	1714	Ireland.	June 24, 1803	89
Walton, George	53	Georgia	Lawyer	1740	Frederick Co., Va.	Feb. 2, 1804	64
Whipple, William	20	New Hampshire	Sailor	1730	Kittery, Me.	Nov. 28, 1785	55
Williams, William	26	Connecticut	Statesman	Apr. 8, 1731	Lebanon, Conn.	Aug. 2, 1811	81
Wilson, James	42	Pennsylvania	Lawyer	1742	St. Andrews, Scot.	Aug. 28, 1798	56
Witherspoon, John	21	New Jersey	Minister	Feb. 5, 1722	Yester, Scot.	Nov. 15, 1794	73
Wolcott, Oliver	25	Connecticut	Physician	Nov. 26, 1726	Windsor, Conn.	Dec. 1, 1797	72
Wythe, George	45	Virginia	Lawyer	1726	Elizabeth Co., Va.	June 8, 1806	80

*Order in which they signed. †Age at death.

As a result of the war with Great Britain, the latter acknowledged the independence of the United States November 30, 1782, and September 3, 1783, a definitive treaty of peace was concluded at Paris. The government of the United States continued under the Congress provided by the Articles of Confederation until March 4, 1789, when a constitution, which had been adopted by representatives of the different States September 17, 1787, went into effect. March 4, 1789, then, is the date of the inception of the present constitutional government of the American Union. The original, without amendments, contains only 4,000 words.

Constitution of the United States of America.

(Went into operation first Wednesday in March, 1789.)

PREAMBLE.—We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquillity, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America.

ARTICLE I.

SECTION I. All legislative powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives.

SECTION II. The House of Representatives shall be composed of members chosen every second year by the people of the several States; and the electors in each State shall have the qualifications requisite for electors of the most numerous branch of the State Legislature.

No person shall be a Representative who shall not have attained to the age of twenty-five years, and been seven years a citizen of the United States, and who shall not, when elected, be an inhabitant of that State in which he shall be chosen.

Representatives and direct taxes shall be apportioned among the several States which may be included within this Union, according to their respective numbers, which shall be determined by adding to the whole number of free persons, including those bound to service for a term of years, and excluding Indians not taxed, three fifths of all other persons. The actual enumeration shall be made within three years after the first meeting of the Congress of the United States, and within every subsequent term of ten years, in such manner as they shall by law direct. The number of Representatives shall not exceed one for every thirty thousand, but each State shall have at least one Representative; and until such enumeration shall be made, the State of New Hampshire shall be entitled to choose three; Massachusetts, eight; Rhode Island and Providence Plantations, one; Connecticut, five; New York, six; New Jersey, four; Pennsylvania, eight; Delaware, one; Maryland, six; Virginia, ten; North Carolina, five; South Carolina, five, and Georgia, three.

When vacancies happen in the representation from any State, the executive authority thereof shall issue writs of election to fill such vacancies.

The House of Representatives shall choose their speaker and other officers; and shall have the sole power of impeachment.

SECTION III. The Senate of the United States shall be composed of two Senators from each State, chosen by the Legislature thereof for six years; and each Senator shall have one vote.

Immediately after they shall be assembled in consequence of the first election, they shall be divided as equally as may be into three classes. The seats of the Senators of the first class shall be vacated at the expiration of the second year, of the second class at the expiration of the fourth year, and of the third class at the expiration of the sixth year, so that one third may be chosen every second year; and if vacancies happen by resignation, or otherwise, during the recess of the Legislature of any State, the executive thereof may make temporary appointments until the next meeting of the Legislature, which shall then fill such vacancies.

No person shall be a Senator who shall not have attained to the age of thirty years, and been nine years a citizen of the United States, and who shall not, when elected, be an inhabitant of that State for which he shall be chosen.

The Vice-President of the United States shall be President of the Senate, but shall have no vote unless they be equally divided.

The Senate shall choose their other officers, and also a President pro tempore, in the absence of the Vice-President, or when he shall exercise the office of President of the United States.

The Senate shall have the sole power to try all impeachments. When sitting for that purpose, they shall be on oath or affirmation. When the President of the United States is tried, the Chief Justice shall preside; and no person shall be convicted without the concurrence of two thirds of the members present.

Judgment in cases of impeachment shall not extend further than to removal from office, and disqualification to hold and enjoy any office of honor, trust, or profit under the United States; but the party convicted shall nevertheless be liable and subject to indictment, trial, judgment, and punishment, according to law.

SECTION IV. The times, places, and manner of holding elections for Senators and Representatives shall be prescribed in each State by the Legislature thereof; but the Congress may at any time by law make or alter such regulations, except as to the places of choosing Senators.

The Congress shall assemble at least once in every year; and such meeting shall be on the first Monday in December, unless they shall by law appoint a different day.

SECTION V. Each House shall be the judge of the election, returns, and qualifications of its own members, and a majority of each shall constitute a quorum to do business; but a smaller number may adjourn from day to day, and may be authorized to compel the attendance of absent members, in such manner and under such penalties as each House may provide.

Each House may determine the rules of its proceedings, punish its members for disorderly behavior, and, with the concurrence of two thirds, expel a member.

Each House shall keep a journal of its proceedings, and from time to time publish the same, excepting such parts as may in their judgment require secrecy; and the yeas and nays of the members of either House on any question shall, at the desire of one fifth of those present, be entered on the journal.

Neither House, during the session of Congress, shall, without the consent of the other, adjourn for more than three days, nor to any other place than that in which the two houses shall be sitting.

SECTION VI. The Senators and Representatives shall receive a compensation for their services, to be ascertained by law, and paid out of the treasury of the United States. They shall, in all cases, except treason, felony, and breach of the peace, be privileged from arrest during their attendance at the sessions of their respective Houses, and in going to and returning from the same; and for any speech or debate in either House, they shall not be questioned in any other place.

No Senator or Representative shall, during the time for which he was elected, be appointed to any civil office under the authority of the United States which shall have been created, or the emoluments whereof shall have been increased during such time; and no person holding any office under the United States shall be a member of either House during his continuance in office.

SECTION VII. All bills for raising revenue shall originate in the House of Representatives, but the Senate may propose or concur with amendments, as on other bills.

Every bill which shall have passed the House of Representatives and the Senate shall, before it become a law, be presented to the President of the United States; if he approve, he shall sign it, but if not, he shall return it, with his objections, to that House in which it shall have originated, who shall enter the objections at large on their journal, and proceed to reconsider it. If after such reconsideration two thirds of that House shall agree to pass the bill, it shall be sent, together with the objections, to the other House, by which it shall likewise be reconsidered; and if approved by two thirds of that House it shall become a law. But in all such cases the votes of both Houses shall be determined by yeas and nays, and the names of the persons voting for and against the bill shall be entered on the journal of each House respectively. If any bill shall not be returned by the President within ten days (Sundays excepted) after it shall have been presented to him, the same shall be a law in like manner as if he had signed it, unless the Congress by their adjournment, prevent its return; in which case it shall not be a law.

Every order, resolution, or vote to which the concurrence of the Senate and House of Representatives may be necessary (except on a question of adjournment) shall be presented to the President of the United States; and before the same shall take effect shall be approved by him, or being disapproved by him, shall be repassed by two thirds of the Senate and House of Representatives, according to the rules and limitations prescribed in the case of a bill.

SECTION VIII. The Congress shall have power:

To lay and collect taxes, duties, imposts, and excises, to pay the debts and provide for the common defense and general welfare of the United States; but all duties, imposts, and excises shall be uniform throughout the United States.

To borrow money on the credit of the United States.

To regulate commerce with foreign nations, and among the several States, and with the Indian tribes.

To establish an uniform rule of naturalization and uniform laws on the subject of bankruptcies throughout the United States.

To coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures.

To provide for the punishment of counterfeiting the securities and current coin of the United States.

To establish post offices and post roads.

To promote the progress of science and useful arts by securing for limited times to authors and inventors

the exclusive right to their respective writings and discoveries.

To constitute tribunals inferior to the Supreme Court.

To define and punish piracies and felonies committed on the high seas, and offenses against the law of nations.

To declare war, grant letters of marque and reprisal, and make rules concerning captures on land and water.

To raise and support armies, but no appropriation of money to that use shall be for a longer term than two years.

To provide and maintain a navy.

To make rules for the government and regulation of the land and naval forces.

To provide for calling forth the militia to execute the laws of the Union, suppress insurrections, and repel invasions.

To provide for organizing, arming, and disciplining the militia, and for governing such part of them as may be employed in the service of the United States, reserving to the States respectively the appointment of the officers, and the authority of training the militia according to the discipline prescribed by Congress.

To exercise exclusive legislation in all cases whatsoever over such district (not exceeding ten miles square) as may, by cession of particular States and the acceptance of Congress, become the seat of the Government of the United States, and to exercise like authority over all places purchased by the consent of the Legislature of the State in which the same shall be, for the erection of forts, magazines, arsenals, dockyards, and other needful buildings; and

To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, and all other powers vested by this Constitution in the Government of the United States, or in any department or officer thereof.

SECTION IX. The migration or importation of such persons as any of the States now existing shall think proper to admit shall not be prohibited by the Congress prior to the year one thousand eight hundred and eight, but a tax or duty may be imposed on such importation, not exceeding ten dollars for each person.

The privilege of the writ of habeas corpus shall not be suspended, unless when in cases of rebellion or invasion the public safety may require it.

No bill of attainder or ex post facto law shall be passed.

No capitation or other direct tax shall be laid, unless in proportion to the census or enumeration hereinbefore directed to be taken.

No tax or duty shall be laid on articles exported from any State.

No preference shall be given by any regulation of commerce or revenue to the ports of one State over those of another, nor shall vessels bound to or from one State be obliged to enter, clear, or pay duties in another.

No money shall be drawn from the Treasury but in consequence of appropriations made by law; and a regular statement and account of the receipts and expenditures of all public money shall be published from time to time.

No title of nobility shall be granted by the United States. And no person holding any office of profit or trust under them shall, without the consent of the Congress, accept of any present, emolument, office, or title of any kind whatever from any king, prince, or foreign state.

SECTION X. No State shall enter into any treaty, alliance, or confederation, grant letters of marque and reprisal, coin money, emit bills of credit, make anything but gold and silver coin a tender in payment of debts, pass any bill of attainder, ex post facto law, or law impairing the obligation of contracts, or grant any title of nobility.

No State shall, without the consent of the Congress, lay any impost or duties on imports or exports, except what may be absolutely necessary for executing its inspection laws, and the net produce of all duties and imposts, laid by any State on imports or exports, shall be for the use of the Treasury of the United States; and all such laws shall be subject to the revision and control of the Congress.

No State shall, without the consent of Congress, lay any duty of tonnage, keep troops or ships of war in time of peace, enter into any agreement or compact with another State, or with a foreign power, or engage in war, unless actually invaded, or in such imminent danger as will not admit of delay.

ARTICLE II.

SECTION I. The Executive power shall be vested in a President of the United States of America. He shall hold his office during the term of four years, and, together with the Vice-President, chosen for the same term, be elected as follows:

Each State shall appoint, in such manner as the Legislature thereof may direct, a number of electors, equal to the whole number of Senators and Representatives to which the State may be entitled in the Congress; but no Senator or Representative or person holding an office of trust or profit under the United States shall be appointed an elector.

[The electors shall meet in their respective States and vote by ballot for two persons, of whom one at least shall not be an inhabitant of the same State with themselves. And they shall make a list of all the persons voted for, and of the number of votes for each, which list they shall sign and certify and transmit, sealed, to the seat of the government of the United States, directed to the President of the Senate. The President of the Senate shall, in the presence of the Senate and House of Representatives, open all the certificates, and the votes shall then be counted. The person having the greatest number of votes shall be the President, if such number be a majority of the whole number of electors appointed, and if there be more than one who have such majority, and have an equal number of votes, then the House of Representatives shall immediately choose by ballot one of them for President; and if no person have a majority, then from the five highest on the list the said House shall in like manner choose the President. But in choosing the President, the vote shall be taken by States, the representation from each State having one vote. A quorum, for this purpose, shall consist of a member or members from two thirds of the States, and a majority of all the States shall be necessary to a choice. In every case, after the choice of the President, the person having the greatest number of votes of the electors shall be the Vice-President. But if there should remain two or more who have equal votes, the Senate shall choose from them by ballot the Vice-President.][1]

The Congress may determine the time of choosing the electors and the day on which they shall give their votes, which day shall be the same throughout the United States.

No person except a natural born citizen, or a citizen of the United States at the time of the adoption of this Constitution, shall be eligible to the office of President; neither shall any person be eligible to that office who shall not have attained to the age of thirty-five years and been fourteen years a resident within the United States.

In case of the removal of the President from office, or of his death, resignation, or inability to discharge the powers and duties of the said office, the same shall devolve on the Vice-President, and the Congress may by law provide for the case of removal, death, resignation, or inability, both of the President and Vice-President, declaring what officer shall then act as President, and such officer shall act accordingly until the disability be removed or a President shall be elected.

The President shall, at stated times, receive for his services a compensation, which shall neither be increased nor diminished during the period for which he shall have been elected, and he shall not receive within that period any other emolument from the United States, or any of them.

Before he enter on the execution of his office he shall take the following oath or affirmation:—

"I do solemnly swear (or affirm) that I will faithfully execute the office of President of the United States, and will, to the best of my ability, preserve, protect, and defend the Constitution of the United States."

SECTION II. The President shall be Commander-in-Chief of the Army and Navy of the United States, and of the militia of the several States when called into the actual service of the United States; he may require the opinion, in writing, of the principal officer in each of the executive departments upon any subject relating to the duties of their respective offices, and he shall have power to grant reprieves and pardons for offenses against the United States except in cases of impeachment.

He shall have power, by and with the advice and consent of the Senate, to make treaties, provided two thirds of the Senators present concur; and he shall nominate, and by and with the advice and consent of the Senate shall appoint ambassadors, other public ministers and consuls, judges of the Supreme Court, and all other officers of the United States whose appointments are not herein otherwise provided for, and which shall be established by law; but the Congress may by law vest the appointment of such inferior officers as they think proper in the President alone, in the courts of law, or in the heads of departments.

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[1]Superseded by Article XII., Amendments.

The President shall have power to fill up all vacancies that may happen during the recess of the Senate by granting commissions which shall expire at the end of their next session.

SECTION III. He shall from time to time give to the Congress information of the state of the Union, and recommend to their consideration such measures as he shall judge necessary and expedient; he may, on extraordinary occasions, convene both Houses, or either of them, and in case of disagreement between them with respect to the time of adjournment, he may adjourn them to such time as he shall think proper; he shall receive ambassadors and other public ministers; he shall take care that the laws be faithfully executed, and shall commission all the officers of the United States.

SECTION IV. The President, Vice-President, and all civil officers of the United States shall be removed from office on impeachment for and conviction of treason, bribery, or other high crimes and misdemeanors.

ARTICLE III.

SECTION I. The judicial power of the United States shall be vested in one Supreme Court, and in such inferior courts as the Congress may from time to time ordain and establish. The judges, both of the Supreme and inferior courts, shall hold their offices during good behavior, and shall at stated times receive for their services a compensation which shall not be diminished during their continuance in office.

SECTION II. The judicial power shall extend to all cases in law and equity arising under this Constitution, the laws of the United States, and treaties made, or which shall be made, under their authority; to all cases affecting ambassadors, other public ministers, and consuls; to all cases of admiralty and maritime jurisdiction; to controversies to which the United States shall be a party; to controversies between two or more States, between a State and citizens of another State, between citizens of different States, between citizens of the same State claiming lands under grants of different States, and between a State, or the citizens thereof, and foreign States, citizens, or subjects.

In all cases affecting ambassadors, other public ministers, and consuls, and those in which a State shall be party, the Supreme Court shall have original jurisdiction. In all the other cases before mentioned the Supreme Court shall have appellate jurisdiction both as to law and fact, with such exceptions and under such regulations as the Congress shall make.

The trial of all crimes, except in cases of impeachment, shall be by jury, and such trial shall be held in the State where the said crimes shall have been committed; but when not committed within any State the trial shall be at such place or places as the Congress may by law have directed.

SECTION III. Treason against the United States shall consist only in levying war against them, or in adhering to their enemies, giving them aid and comfort. No person shall be convicted of treason unless on the testimony of two witnesses to the same overt act, or on confession in open court.

The Congress shall have power to declare the punishment of treason, but no attainder of treason shall work corruption of blood, or forfeiture, except during the life of the person attainted.

ARTICLE IV.

SECTION I. Full faith and credit shall be given in each State to the public acts, records, and judicial proceedings of every other State. And the Congress may by general laws prescribe the manner in which such acts, records, and proceedings shall be proved, and the effect thereof.

SECTION II. The citizens of each State shall be entitled to all privileges and immunities of citizens in the several States.

A person charged in any State with treason, felony, or other crime, who shall flee from justice, and be found in another State, shall, on demand of the Executive authority of the State from which he fled, be delivered up, to be removed to the State having jurisdiction of the crime.

No person held to service or labor in one State, under the laws thereof, escaping into another, shall, in consequence of any law or regulation therein, be discharged from such service or labor, but shall be delivered up on claim of the party to whom such service or labor may be due.

SECTION III. New States may be admitted by the Congress into this Union; but no new State shall be formed or erected within the jurisdiction of any other State, nor any State be formed by the junction of two or more States, or parts of States, without the consent of the Legislatures of the States concerned, as well as of the Congress.

The Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States; and nothing in this Constitution shall be so construed as to prejudice any claims of the United States, or of any particular State.

SECTION IV. The United States shall guarantee to every State in this Union a republican form of government, and shall protect each of them against invasion, and, on application of the Legislature, or of the Executive (when the Legislature cannot be convened), against domestic violence.

ARTICLE V.

The Congress, whenever two thirds of both Houses shall deem it necessary, shall propose amendments to this Constitution, or, on the application of the Legislatures of two thirds of the several States, shall call a convention for proposing amendments, which, in either case, shall be valid to all intents and purposes, as part of this Constitution, when ratified by the Legislatures of three fourths of the several States, or by conventions in three fourths thereof, as the one or the other mode of ratification may be proposed by the Congress; provided that no amendment which may be made prior to the year one thousand eight hundred and eight shall in any manner affect the first and fourth clauses in the Ninth Section of the First Article; and that no State, without its consent, shall be deprived of its equal suffrage in the Senate.

ARTICLE VI.

All debts contracted and engagements entered into before the adoption of this Constitution shall be as valid against the United States under this Constitution as under the Confederation.

This Constitution and the laws of the United States which shall be made in pursuance thereof and all treaties made, or which shall be made, under the authority of the United States, shall be the supreme law of the land, and the judges in every State shall be bound thereby, anything in the Constitution or laws of any State to the contrary notwithstanding.

The Senators and Representatives before mentioned, and the members of the several State Legislatures, and all executive and judicial officers, both of the United States and of the several States, shall be bound by oath or affirmation to support this Constitution; but no religious test shall ever be required as a qualification to any office or public trust under the United States.

ARTICLE VII.

The ratification of the Conventions of nine States shall be sufficient for the establishment of this Constitution between the States so ratifying the same.

Ratification of the Constitution by the Thirteen Original States.

	States.	Ratified the Constitution.	Vote.
1	Delaware	December 7....1787	Unanimous
2	Pennsylvania	December 12...1787	46 to 23
3	New Jersey	December 18...1787	Unanimous
4	Georgia	January 2.....1788	Unanimous
5	Connecticut	January 9.....1788	128 to 40
6	Massachusetts	February 6....1788	187 to 168
7	Maryland	April 28.....1788	63 to 12
8	South Carolina	May 23.....1788	149 to 73
9	New Hampshire	June 21.....1788	57 to 46
10	Virginia	June 26.....1788	89 to 79
11	New York	July 26.....1788	30 to 28
12	North Carolina	November 21..1789	193 to 75
13	Rhode Island	May 29.....1790	34 to 32

Amendments to the Constitution.

Ten amendments were added to the original Constitution Dec. 15, 1791; 11th, Jan. 8, 1798; 12th, Sept. 25, 1804; 13th, Dec. 18, 1865; 14th, July 28, 1868; 15th, Mar. 30, 1870; 16th, Feb. 25, 1913; 17th, May 31, 1913; 18th, Jan. 29, 1919; 20th, Feb. 6, 1933, and the 21st, Dec. 5, 1933. Amendments must be adopted by three-fourths of the States, acting through their legislatures.

ARTICLE I.

Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise there-

of; or abridging the freedom of speech or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.

ARTICLE II.

A well-regulated militia being necessary to the security of a free State, the right of the people to keep and bear arms shall not be infringed.

ARTICLE III.

No soldier shall, in time of peace, be quartered in any house without the consent of the owner, nor in time of war but in a manner to be prescribed by law.

ARTICLE IV.

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

ARTICLE V.

No person shall be held to answer for a capital or otherwise infamous crime unless on a presentment or indictment of a grand jury, except in cases arising in the land or naval forces, or in the militia, when in actual service, in time of war or public danger; nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use without just compensation.

ARTICLE VI.

In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed, which district shall have been previously ascertained by law, and to be informed of the nature and cause of the accusation; to be confronted with the witnesses against him; to have compulsory process for obtaining witnesses in his favor, and to have the assistance of counsel for his defense.

ARTICLE VII.

In suits at common law, where the value in controversy shall exceed twenty dollars, the right of trial by jury shall be preserved, and no fact tried by a jury shall be otherwise re-examined in any court of the United States than according to the rules of the common law.

ARTICLE VIII.

Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted.

ARTICLE IX.

The enumeration in the Constitution of certain rights shall not be construed to deny or disparage others retained by the people.

ARTICLE X.

The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.

ARTICLE XI.

The judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by citizens of another State, or by citizens or subjects of any foreign State.

ARTICLE XII.

The electors shall meet in their respective States, and vote by ballot for President and Vice-President, one of whom at least shall not be an inhabitant of the same State with themselves; they shall name in their ballots the person voted for as President, and in distinct ballots the person voted for as Vice-President; and they shall make distinct lists of all persons voted for as President, and of all persons voted for as Vice-President, and of the number of votes for each, which lists they shall sign and certify, and transmit, sealed, to the seat of the Government of the United States, directed to the President of the Senate; the President of the Senate shall, in the presence of the Senate and House of Representatives, open all the certificates, and the votes shall then be counted; the person having the greatest number of votes for President shall be the President, if such number be a majority of the whole number of electors appointed; and if no person have such majority, then from the persons having the highest numbers, not exceeding three, on the list of those voted for as President, the House of Representatives shall choose immediately, by ballot, the President. But in choosing the President, the votes shall be taken by States, the representation from each State having one vote; a quorum for this purpose shall consist of a member or members from two thirds of the States, and a majority of all the States shall be necessary to a choice. And if the House of Representatives shall not choose a President, whenever the right of choice shall devolve upon them, before the fourth day of March next following, then the Vice-President shall act as President, as in the case of the death or other constitutional disability of the President. The person having the greatest number of votes as Vice-President shall be the Vice-President, if such number be a majority of the whole number of electors appointed; and if no person have a majority, then from the two highest numbers on the list the Senate shall choose the Vice-President; a quorum for the purpose shall consist of two thirds of the whole number of Senators, and a majority of the whole number shall be necessary to a choice. But no person constitutionally ineligible to the office of President shall be eligible to that of Vice-President of the United States.

ARTICLE XIII.

SECTION 1. Neither slavery nor involuntary servitude, except as a punishment for crime whereof the party shall have been duly convicted, shall exist within the United States, or any place subject to their jurisdiction.

SECTION 2. Congress shall have power to enforce this article by appropriate legislation.

ARTICLE XIV.

SECTION 1. All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws.

SECTION 2. Representatives shall be apportioned among the several States according to their respective numbers, counting the whole number of persons in each State, excluding Indians not taxed. But when the right to vote at any election for the choice of electors for President and Vice-President of the United States, Representatives in Congress, the executive and judicial officers of a State, or the members of the Legislature thereof, is denied to any of the male inhabitants of such State, being twenty-one years of age, and citizens of the United States, or in any way abridged, except for participation in rebellion or other crime, the basis of representation therein shall be reduced in the proportion which the number of such male citizens shall bear to the whole number of male citizens twenty-one years of age in such State.

SECTION 3. No person shall be a Senator or Representative in Congress, or elector of President and Vice-President, or hold any office, civil or military, under the United States, or under any State, who, having previously taken an oath, as a member of Congress, or as an officer of the United States, or as a member of any State Legislature, or as an executive or judicial officer of any State, to support the Constitution of the United States, shall have engaged in insurrection or rebellion against the same, or given aid or comfort to the enemies thereof. But Congress may, by a vote of two thirds of each House, remove such disability.

SECTION 4. The validity of the public debt of the United States, authorized by law, including debts incurred for payment of pensions and bounties for services in suppressing insurrection or rebellion, shall not be questioned. But neither the United States nor any State shall assume or pay any debt or obligation incurred in aid of insurrection or rebellion against the United States, or any claim for the loss or emancipation of any slave; but all such debts, obligations, and claims shall be held illegal and void.

SECTION 5. The Congress shall have power to enforce by appropriate legislation the provisions of this article.

ARTICLE XV.

SECTION 1. The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of race, color, or previous condition of servitude.

SECTION 2. The Congress shall have power to enforce this article by appropriate legislation.

ARTICLE XVI.

The Congress shall have power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several States, and without regard to any census or enumeration.

ARTICLE XVII.

The Senate of the United States shall be composed of two Senators from each State, elected by the people thereof, for six years; and each Senator shall have one vote. The electors in each State shall have the qualifications requisite for electors of the most numerous branch of the State Legislatures.

When vacancies happen in the representation of any State in the Senate, the executive authority of such State shall issue writs of election to fill such vacancies: *Provided*, That the Legislature of any State may empower the executive thereof to make temporary appointments until the people fill the vacancies by election as the Legislature may direct.

This amendment shall not be so construed as to affect the election or term of any Senator chosen before it becomes valid as part of the Constitution.

ARTICLE XVIII.

1. After one year from the ratification of this article the manufacture, sale, or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from, the United States and all territory subject to the jurisdiction thereof for beverage purposes is hereby prohibited.

2. The Congress and the several states shall have concurrent power to enforce this article by appropriate legislation.

3. This article shall be inoperative unless it shall have been ratified as an amendment to the Constitution by the legislatures of the several states, as provided by the Constitution, within seven years from the date of the submission hereof to the states by the Congress.

ARTICLE XIX.

1. The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any state on account of sex.

2. Congress shall have power, by appropriate legislation, to enforce the provisions of this Article.

ARTICLE XX.

SECTION 1. The terms of the President and Vice-President shall end at noon on the 20th day of January, and the terms of Senators and Representatives at noon on the 3rd day of January, of the years in which such terms would have ended if this article had not been ratified; and the terms of their successors shall then begin.

SECTION 2. The Congress shall assemble at least once in every year, and such meeting shall begin at noon on the 3rd day of January, unless they shall by law appoint a different day.

SECTION 3. If, at the time fixed for the beginning of the term of the President, the President elect shall have died, the Vice-President elect shall become President. If a President shall not have been chosen before the time fixed for the beginning of his term, or if the President elect shall have failed to qualify, then the Vice-President elect shall act as President until a President shall have qualified; and the Congress may by law provide for the case wherein neither a President elect nor a Vice-President elect shall have qualified, declaring who shall then act as President, or the manner in which one who is to act shall be selected, and such person shall act accordingly until a President or Vice-President shall have qualified.

SECTION 4. The Congress may by law provide for the case of the death of any of the persons from whom the House of Representatives may choose a President whenever the right of choice shall have devolved upon them, and for the case of the death of any of the persons from whom the Senate may choose a Vice-President whenever the right of choice shall have devolved upon them.

SECTION 5. Sections 1 and 2 shall take effect on the 15th day of October following the ratification of this article (Oct., 1933).

SECTION 6. This article shall be inoperative unless it shall have been ratified as an amendment to the Constitution by the legislatures of three-fourths of the several States within seven years from the date of its submission.

ARTICLE XXI.

SECTION 1. The eighteenth article of amendment to the Constitution of the United States is hereby repealed.

SECTION 2. The transportation or importation into any State, Territory, or Possession of the United States for delivery or use therein of intoxicating liquors, in violation of the laws thereof, is hereby prohibited.

SECTION 3. This article shall be inoperative unless it shall have been ratified as an amendment to the Constitution by conventions in the several States, as provided in the Constitution, within seven years from the date of the submission hereof to the States by the Congress.

The Union comprises 48 states: 13 original states (New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia), and the following, of which 7 were admitted without having been territories and 28 have been territories. Admission is granted by special acts of Congress.

	STATES.	ADMITTED.
1	Vermont	1791, March 4.
2	Kentucky	1792, June 1.
3	Tennessee	1796, June 1.
4	Ohio	1803, February 19.
5	Louisiana	1812, April 30.
6	Indiana	1816, December 11.
7	Mississippi	1817, December 10.
8	Illinois	1818, December 3.
9	Alabama	1819, December 14.
10	Maine	1820, March 15.
11	Missouri	1821, August 10.
12	Arkansas	1836, June 15.
13	Michigan	1837, January 26.
14	Florida	1845, March 3.
15	Texas	1845, December 29.
16	Iowa	1846, December 28.
17	Wisconsin	1848, May 29.
18	California	1850, September 9.
19	Minnesota	1858, May 11.
20	Oregon	1859, February 14.
21	Kansas	1861, January 29.
22	West Virginia	1863, June 19.
23	Nevada	1864, October 31.
24	Nebraska	1867, March 1.
25	Colorado	1876, August 1.
26	North Dakota	1889, November 2.
27	South Dakota	1889, November 2.
28	Montana	1889, November 8.
29	Wa hington	1889, November 11.
30	Idaho	1890, July 3.
31	Wyoming	1890, July 11.
32	Utah	1896, January 4.
33	Oklahoma	1907, November 16.
34	New Mexico	1912, January 6.
35	Arizona	1912, February 14.

By the Constitution, the government of the United States is conducted by three distinct departments, the executive, the legislative, and the judicial.

Executive.—The executive power is centered in a President, Vice-President, and nine chief officers or heads of departments called secretaries, who are collectively known by the popular term of the Cabinet.

President.—The head of the government holds office during the term of four years. Candidates for this office are nominated by the respective parties at what are known as national conventions. In the conduct of party affairs the chief instrument is the standing party committee composed of one member from each state. These are elected every year by the delegation of their states at the national convention. The first

year in which political parties had regular conventions, nominated candidates, and framed platforms was in 1840, and this system has been conducted uninterruptedly since. The Republican Convention at Chicago in 1860 was the first conducted in a large building in the presence of spectators. The membership of a national convention is composed usually of two delegates for each congressional district, four at large for each state, and six from each territory, making a total of about 1,080. To insure attendance of representatives a large number of alternates are appointed. A temporary chairman appointed by the national committee opens the convention. A permanent chairman is then elected, a committee on credentials is appointed, and the convention is organized ready to receive the report of the committee. Sometimes the platform is drawn up before the nominations are made. Friends of the aspirants for nomination present the name after a laudatory speech, and the selection is made by votes of the delegates. The candidate is notified of his nomination by a committee, before whom he makes a speech of acceptance, though this sometimes takes the form of a letter.

Campaign.—Political parties are thoroughly organized and are conducted upon sound business principles. This work is conducted by the party committees and their chairmen. The chairman of a political party is a man with large influence, which he exerts to the utmost in his efforts to bring out the vote and to influence the voters, and these efforts may take the form of simple persuasion, pamphlets, news articles, radio addresses, voting polls, and other methods.

Electors.—In 1845 Congress prescribed that presidential elections should take place on the Tuesday after the first Monday in November. At this election the voters do not elect a President, but choose a certain number of persons from each state who have the power of electing a President. These are known as electors, and together they form the Electoral College. In no case in all elections since 1796 has one single elector voted differently from the way he was expected to vote.

Electoral College.—The respective state representatives to this body meet the first Monday after the second Wednesday in December following their election, cast their ballots for President and Vice-President, and send certified copies of the returns to Washington. These votes are counted by Congress, which meets for that purpose on the 6th day of January following. Should there be no majority of the electoral votes for any one candidate, the Constitution direct that the House of Representatives shall elect a President from the three highest names on the list, each state having one vote; and the manner in which that vote shall be cast for a state in cases of a difference of opinion among the representatives from that state is decided by the majority of votes of the representatives. This provision has been resorted to only twice in the history of the country: namely, in 1801, when Jefferson and Burr had 73 votes each for President, and Jefferson was chosen by the House of Representatives; and in 1824, when there was no majority, the three highest being Adams, Jackson and Crawford, and John Quincy Adams was chosen.

Presidential Succession.—A vacancy resulting from the death or inability of the President is supplied by the Vice-President. There are five instances of such succession: namely, April 4, 1841, Tyler became President by the death of Harrison; July 9, 1850, Fillmore became President by the death of Taylor; April 15, 1865, Johnson became President upon the assassination of Lincoln; September 19, 1881, Arthur became President upon the assassination of Garfield; and September 14, 1901, Roosevelt became President upon the assassination of McKinley; August 4, 1923—Coolidge became President upon death of Harding. In 1792 Congress attempted to provide in case of the death or inability of both President and Vice-President by enacting that the President *pro tempore* of the Senate should discharge the duties of President, and after him the Speaker of the House, but that a new election should follow in two months. On January 19, 1886, Congress provided that in such cases the duties of President shall be discharged by a Secretary of a Department, ranking in order: Secretary of State, Secretary of the Treasury, Secretary of War, Attorney General, Postmaster General, Secretary of the Navy, and Secretary of the Interior. No new election is provided for. In 1933 provision was made for the vice-president elect to take office if the president elect should die before his inauguration.

Term of Office.—The President is elected for four years. His term begins at 12 noon on the January 20 following. Since 1841 six presidents had double terms: Lincoln, Grant, Cleveland, McKinley, Wilson, F. D. Roosevelt. Each President until 1841 was a candidate for reëlection, and of these Washington, Jefferson, Madison, Monroe, and Jackson were elected, but John Adams, John Quincy Adams, and Van Buren were defeated. Between the years 1840 and 1860 no President was renominated. Cleveland was renominated and defeated in 1888, nominated and elected in 1892. Harrison, Taft, and Hoover were renominated but defeated. Washington refused a third term. Grant's friends sought one for him; the first Roosevelt ran on a technicality. F. D. Roosevelt won a third term.

Eligibility.—Of all the officers in the United States government the President and Vice-President alone must be native-born citizens. A candidate for either of these offices must be 35 years of age and have lived 14 years in the country.

Duties of the President.—These are regulated by the Constitution and may be briefly stated as follows: Commander-in-chief of the army and navy, to which he appoints commissions and assigns officers; in time of war he is military chief. He names foreign ministers and consuls, judges of the Supreme Court, and other important federal officers, subject to the consent of the Senate. He may remove from public office without such consent. He directs foreign relations, submits treaties, can pardon any offense except cases of impeachment, can use the militia or naval forces to maintain the law, can veto bills, and may call the attention of Congress by messages to necessary legislation. In 1790 the President's salary was fixed at $25,000 a year; in 1871 raised to $50,000, in 1909 to $75,000, traveling expenses, $25,000. Congress provides for the care and repair of the White House, makes

allowance for lights, stable, hothouse, fuel, and steward's salary, and extends to the President the use of a government vessel for his sea trips. In the intervals between the sessions, the President may appoint temporary officeholders subject to the approval of Congress upon its reassembling. While the President is more powerful in Congress than any other individual, a majority in one or both Houses may resist his efforts to secure good legislation. Presidents most opposed by Congress were Madison in 1809, John Quincy Adams altogether, Jackson in his first term, Tyler by the Whigs, Johnson, Wilson for his war policies, and Hoover by the Democrats.

Departments.—There are ten heads of Departments, or secretaries, who form the Cabinet, and these officers are appointed by the President and the appointment is confirmed by the Senate. The Departments of Foreign Affairs, Treasury, and War date from the Confederation. The offices of Secretary of State and Attorney General were created by an act of 1789, though the Department of Justice was not organized until 1870. The Navy Department was separated from the War Department in 1789. The Postmaster General existed under the Confederation but he was not recognized as equal to the other secretaries until Jackson's administration. The Department of the Interior was created in 1849. The Bureau of Agriculture became a department with a secretary in 1889, the Department of Commerce was organized in 1903, and the Department of Labor in 1913. Each secretary receives an annual salary of $15,000, and holds office during the pleasure of the President.

Secretary of State.—This officer controls foreign negotiations, American consuls, holds interviews and corresponds with the accredited representatives of foreign powers to the United States.

Secretary of the Treasury.—This officer controls the National finances, has charge of the public accounts, directs the plans for public buildings, for coining and printing money, and submits estimates of revenue and disbursements of the government to Congress every year.

Secretary of War.—He is the head of the army, under the President, and controls the several offices relating to the army. Within his department are the control of the United States military academy at West Point, of the National cemeteries, and of river and harbor improvements, and his consent must be obtained before any bridge may be built over any navigable river anywhere in the United States.

Department of Justice.—The Attorney General is the legal adviser to the President and to the heads of the other departments in questions of law relating to their work, prosecutes for the federal government and acts as its special counsel.

Postmaster General.—This officer directs and manages the postal business of the United States. In the discharge of his varied duties he appoints officers and employees of the department (except the four assistant postmasters general, who are appointed by the President); makes postal treaties with foreign governments; and manages the foreign and domestic mail service. He is responsible for the appointment of over 90,000 persons, including all postmasters whose remuneration does not exceed $1,000 a year.

Secretary of the Navy.—In this department is conducted the construction of ships, the manning, equipping and arming of the vessels of war, which is done in the navy yards and at the naval arsenal at Washington; it also controls the naval academy at Annapolis.

Secretary of the Interior.—Supervision over patents, pensions, public lands and surveys, Indians, education, railroads, public parks, and some of the public institutions within the District of Columbia are among his duties.

Secretary of Agriculture.—This officer controls the agricultural experiment stations, the quarantine stations, the weather bureau, forestry, and the bureau of animal industry.

Secretary of Commerce.—This officer controls the census, steamboat inspection, lighthouses, coast survey, foreign and domestic commerce, shipping, fisheries, and investigation of corporations and trusts.

Secretary of Labor.—Under his direction are immigration, naturalization, labor statistics, and the Children's Bureau.

There is a growing list of regular bureaus and commissions not responsible to any cabinet officer, but to Congress and the president. In most cases the heads report to the president. Some of the important ones are the Civil Service Commission, controlling over 800,000 employees, Interstate Commerce Commission, Federal Reserve Board, Tariff Commission, Smithsonian Institution, and Pan American Union. Emergency boards are not included, because of their temporary nature.

Civil Service Employees.—The total number of civilian executive employees in 1940 was 133,645 in Washington, 869,175 outside,—including some 68,578 new in 1940, and 150,000 unclassified as yet. The officials in both houses of Congress and the judges, clerks, marshals, and other court officials are not under the Civil Service Commission.

Judiciary.—The American judiciary system was an evolution from the English courts in the early colonies. After the Revolution the judges were appointed by Congress. The history of the development of courts and of their organization is treated under the head of "Law" elsewhere. There are 9 Supreme Court justices, 48 circuit judges, 150 district, 5 of the Court of Claims, 9 of the U. S. Customs Court (New York), 5 of Customs and Patent Court, and others. Each judge of the United States is appointed by the President, subject to approval by the Senate. Justices of the Supreme Court receive $20,000 a year; circuit judges, $12,500; and district judges, $10,000. Judges leave the bench by death, resignation, retiring on allowance of full salary after 70 years of age, by the discontinuance of the office, or by impeachment. The federal courts exercise a very great power over states, by the right to declare state acts unconstitutional and, consequently, void. By the federal constitution the power is conferred upon federal courts to disallow such state laws as conflict with the constitution or with laws and treaties made constitutional by the United States government. Instances in which the federal courts have passed unfavorably upon acts of Congress have been very few indeed, especially outside of the difficulties arising out of reconstruction after the Civil War. Although the constitution does not demand it, none but law-

LEGISLATIVE BODIES.

	Senate.	House of Representatives.
1. Number	Two from each state.	Four hundred and thirty-five members, appointed according to population—one to every 328,959 inhabitants.
2. How Elected	By direct vote after 1913, Constitution, Art. XVII.	By votes in the several Congressional Districts.
3. Term	For six years, but so arranged by states that one third of the entire Senate is elected every two years.	For two years, which is the life of a Congress, and is divided into two sessions. At the expiration of the term the members for a new House are chosen.
4. Qualifications of Candidates	A citizenship of the United States for at least nine years; a resident of the state; and at least 30 years of age.	A citizen of the United States for at least seven years; a resident of the state; and at least 25 years of age.
5. Salary	Annual of $10,000.	Annual of $10,000.
6. Presiding Officer.	The Vice-President of the United States is *ex officio* President of the Senate; salary, $15,000 a year.	The Speaker, elected by the House at the beginning of its first session; salary, $15,000 a year.
7. Powers	1. Elects a President of the Senate, *pro tempore*, to act in the absence of the Vice-President. 2. Passes upon nominations for office made by the President. 3. With House supervises counting of electoral votes for President and Vice-President. Decides election contests. May change revenue bills proposed by House. Seldom restricts debate. Qualifies its own members, and expels for cause. Holds secret or executive sessions. Members may not be prosecuted for utterances in sessions. 4. Tries all persons impeached by the House. 5. Ratifies, amends, or rejects treaties proposed by the executive departments.	1. Elects a Speaker of the House and other officers. 2. Originates all bills for raising revenues. 3. Joins Senate in counting electoral votes. Like Senate, meets on January 3 after election to organize for business. Has about 50 committees, restricts debate, expels members for cause, and elects its own officers. All members elected every two years. Committee chairmanships assigned in order of seniority. 4. Brings impeachment charges and conducts proceedings before the Senate. May impeach any executive or judicial officer.

yers have ever been appointed to the position of judge of a federal court.

Apportionment of Representatives.—The number of representatives which a state shall have in Congress is appointed according to its population, and the number is adjusted before the meeting of the first Congress after the latest census. From 1789 to 1865 in estimating population 100,000 slaves were considered equivalent to 60,000 free men, but, as no slave voted, the white people of the South had greater representation than did the white people of the North. The Thirteenth Amendment in 1865 adjusted this matter. The number of representatives in the House has been increased after each census except that of 1840, when the number sank from 240 to 232. By the census of 1900 the number of members in the House of Representatives was increased from 356 to 391. In 1910 it was increased to 433, with one each from New Mexico and Arizona in 1912, making 435. In adjusting population the difficulty arises over the fractions that result from dividing the population of the state by the number decided upon as the ratio number, the latest estimate being 328,959. The method introduced in 1910 assumed that the divisor was a continuous quantity between certain limits, changing only by indefinitely small additions. The decisive point at which the decimal part of the quotient of each state passes one half can be easily determined, and divisors were selected midway between each two of these critical points. A series of tables was thus obtained, each apportioning one more representative than its predecessor, and each allotting one representative for every fraction greater than one half and none for the fractions less. Every state, large or small, has one representative. The following table shows the present distribution:—

Alabama	9	Nebraska	4
Arizona	2	Nevada	1
Arkansas	6	New Hampshire	2
California	23	New Jersey	14
Colorado	4	New Mexico	2
Connecticut	6	New York	45
Delaware	1	North Carolina	12
Florida	6	North Dakota	2
Georgia	10	Ohio	23
Idaho	2	Oklahoma	8
Illinois	26	Oregon	4
Indiana	11	Pennsylvania	33
Iowa	8	Rhode Island	2
Kansas	6	South Carolina	6
Kentucky	9	South Dakota	2
Louisiana	8	Tennessee	10
Maine	3	Texas	21
Maryland	6	Utah	2
Massachusetts	14	Vermont	1
Michigan	18	Virginia	9
Minnesota	9	Washington	6
Mississippi	7	West Virginia	6
Missouri	13	Wisconsin	10
Montana	2	Wyoming	1
		Total	435

Variation in apportionment according to the several censuses has been as follows:

Under.	Census.		Apportionment.		Whole Nu'ber of Representatives.
	Year.	Populat'n.	Year.	Ratio	
Constitution	....	.....	1789	30,000	65
First Census	1790	3,929,214	1793	33,000	105
Second Census	1800	5,308,483	1803	33,000	141
Third Census	1810	7,239,881	1813	35,000	181
Fourth Census	1820	9,633,822	1823	40,000	213
Fifth Census	1830	12,866,020	1833	47,700	240
Sixth Census	1840	17,069,453	1843	70,680	223
Seventh Census	1850	23,191,876	1853	93,423	234
Eighth Census	1860	31,443,321	1863	127,381	241
Ninth Census	1870	38,558,371	1873	131,425	292
Tenth Census	1880	50,155,783	1883	151,911	325
Eleventh Census	1890	62,622,250	1893	173,901	356
Twelfth Census	1900	75,994,575	1903	201,860	391
Thirteenth Census	1910	91,972,266	1913	211,877	435
Fifteenth Census	1930	122,093,455	1933	280,674	435

Meetings of Congress.—Unless Congress provides otherwise, they shall meet Jan. 3, next after election, as per Amendment XX to the Constitution in 1933. Congress or President may call extra session. Formerly the life of a Congress was from twelve o'clock on March 4 immediately following the election of representatives, until twelve o'clock noon on March 4 of the next odd year, when Congress is said to "die." The longest session on record was in 1890, when the adjournment took place on October 1, after 240 days of session. From 1789 to 1934 the time of meeting of Congress was the first Monday in December. Until 1791 the sessions were held in New York, then in Philadelphia until 1800, and then in the National Capitol at Washington, D. C.

Salaries.—Between the years 1789 and 1815 the salary of senators and representatives was six dollars a day; from 1817 until 1855, eight dollars; the Act of March 19, 1816, made the salary $1,500 a year, but was violently opposed by the people and was repealed. In 1855 the compensation was made $3,000 a year, and raised in 1865 to $5,000. On the last day of the session in 1873 the salary was made $7,500; this act was repealed early in the next session and the salary was placed at $5,000 a year. But in 1924 the salary was increased to $10,000 a year. Congress pays a total of $2,500,000 a year in salaries and mileage. Mileage is a grant made to senators and representatives to cover their traveling expenses from and to their homes. Between the years 1789 and 1815 each member was granted six dollars for every 20 miles of travel; from 1817 to 1865, eight dollars for every 20 miles; and since 1865 it has been 20 cents a mile. At one time a member from Oregon was obliged to travel 5,000 miles to Washington, drawing for this $2,000.

Speaker.—The presiding officer of the House of Representatives is elected by his party. From 1790 to 1910 the speaker appointed all committees. Party leadership was then taken from him and divided between the chairmen of the Committee on Rules and of the Ways and Means Committee. Both are held responsible to party rules. The caucus of the dominant party becomes the real source of all legislation. Each party is allowed to select its share of each committee. Under this rule the absolute control passes to the House itself and the Speaker's control of it rests in his authority as a presiding officer. His influence is still very great, for he decides which member is entitled to the floor during debates, and by refusing to recognize members may retard or prevent legislation; this power is further increased by his right to state questions, to put them, and to decide points of order.

Committees.—These are selected in the party caucuses, and are promptly elected by the House itself. The 600 committee places are thus distributed among the 435 House members. Committees in the Senate are supposed to be appointed by ballot. All committees meet in committee rooms, of which there are a great number in the Capitol, and such committee room is usually the headquarters upon all occasions for the chairman of that committee. Much of the work of legislation is done in the daily meetings of the committees, and it is not unusual for as many as 1,000 bills to be referred to one committee in a session. The meetings are usually private, though open at nearly all times to any especially interested. With the tremendous growth of business and the enormous amount of work to be done, committee work has become a necessity in order to consider sufficiently the several bills which are presented to the House, and a great deal of a representative's hardest work is done in the committee room. Reports upon bills that have been under consideration are made to the House, and final action is guided almost wholly by that report.

Sessions of Congress.—Both Houses usually meet at noon and the average duration of a session is from four to five hours. Sunday sessions, evening sessions, and all night sessions are not unknown. The sessions of the Senate during its first two years were private; in 1793 the public was admitted; and in 1802 a stenographic reporter was allowed. When a private session of the Senate is now required, the Senate resolves to go into executive session, during which time no spectators are allowed and the journals and records of such meeting are kept private. Secret sessions in the House are practically unknown, though in 1807 that on the Burr question, and in 1811 that on the Act for taking possession of West Florida, were secret. Newspaper reports of debates began in 1800; the *Congressional Globe* was privately started in 1833,

in which debates were published verbatim and so continued until 1873, when its place was taken by the *Congressional Record* conducted by Congress, in which reports of speeches are published daily, but members have the privilege of editing and changing their remarks after utterance, and in hurried sessions a member asks for and receives leave to print speeches which have never been delivered.

State Government.—The government of states, like that of the federal government, is threefold: legislative, executive, and judicial.

State Legislature.—This goes by the name of the General Court in New Hampshire and Massachusetts; of the Legislative Assembly in North Dakota, Oregon, and Montana; of the Legislature in many states; and of the General Assembly in an equal number. When a Legislature consists of two houses it is known as a bicameral form of government; when of only one, unicameral. Government in Georgia was unicameral from 1777 until 1789; in Pennsylvania from 1776 until 1790; and in Vermont until 1836. Nebraska established the unicameral system in 1937. The upper house is always known as the Senate. In nearly all of the states the lower house is called the House of Representatives, except in West Virginia, Virginia, and Maryland, where it is known as the House of Delegates; in New York, Wisconsin, Nevada, and California, the Assembly; and in New Jersey, the General Assembly. Until 1868 the lower house in North Carolina was the House of Commons.

State Executives.—This comprises the Governor, Lieutenant Governor, and, in some cases, heads of departments.

Governor.—The Governor is responsible for the faithful execution of the law; informs the Legislature by message of affairs in the state; may call the Legislature in special session; nominates and appoints under confirmation of the Senate certain of the state officers; fills vacancies which occur during sessions; grants pardons or commutes sentences; has a limited power of veto; may call out the militia to his aid; and is a commander of the militia, with a military staff.

State Officers.—In each state the secretary of state keeps the state records and the great seal; the treasurer has charge of the state funds; an auditor or comptroller in some states audits the accounts; an attorney general looks after the state business at court and is counsel to the state; and the state superintendent of education has charge of all matters relating to public instruction. By their direct responsibility to the people these officials differ from the President's Cabinet in their relation to the executive.

Lieutenant Governor.—In many states this officer is elected to fill a possible vacancy in the Governorship, and to act as President of the Senate. Arkansas, Florida, Georgia, Maryland, New Hampshire, Maine, Tennessee, Utah, Wyoming, New Jersey, West Virginia, and Oregon have no Lieutenant Governor. In most of these the President of the Senate, elected by the Senate, fills any vacancy in the Governorship. But Oregon, Utah, and Wyoming provide that the Secretary of State shall be Governor; Maryland permits the Legislature to elect a successor if in session, otherwise, the President of the Senate takes the office.

District of Columbia.—Chosen in 1790 by act of Congress as the seat of government; Maryland and Virginia gave up claim to this territory. From 1790 until 1800 the seat of government was at Philadelphia. The limits of the District as now existing with its 70 square miles were defined in 1846 and lie wholly on the left bank of the Potomac River. In 1878, because of the heavy indebtedness of the government on a territorial basis, the present system of government by three commissioners was adopted. The people have no vote and no voice in the management of affairs, which is under the control of Congress.

Local Government.—There exist in the United States four forms of local government: (1) The Town System; (2) the County System; (3) the Mixed System; and (4) Municipal Government.

Town System.—This form was based upon the English idea which the early colonists brought with them. The charter is given by the state legislature. The town elects its own officers; imposes and collects its taxes; coöperates with the county and state in the collection of their taxes within its limits.

At the annual meetings reports of the departments for the past year are rendered; taxes are voted; and town officers are chosen. The officers are selectmen varying in number from three to nine; the school committee; the town clerk; town treasurer; assessors; overseers of the poor; surveyors of highways; fence-viewers, etc.

County System.—This system originated in Virginia and was carried to the West by emigrants from that state. The state legislature grants the charter; there is no assembly corresponding to the town meeting, but county officers administer the affairs; the governing body is the County Board or the County Court. Under it are the collector, assessor, superintendent of schools, sheriff, etc.

In some states the subdivisions of the county are called precincts; in others, townships; in Delaware, hundreds; in Georgia, militia districts; in Louisiana, wards; in Mississippi, beats; in Maryland, election districts; and in Tennessee, civil districts.

Mixed System.—In many states there is a combination of the town and the county systems, and the ratio of the one element to the other is of varying degrees. In New York there is more of the town than of the county; in Pennsylvania, more of the county than of the town. In both of these states the county as well as the town is a body corporate and politic. The mixed system and the county system are the only forms found in the West.

Municipal Government.—None of the forms of state government can possibly meet all of the demands of city administration. This is placed beyond the control of the state though the form is modeled to a greater or less degree upon state methods. The chief characteristic of municipal control is the strong centralizing of power. The charter of the city, given by the state legislature, is really the constitution of the city, limits its privileges and defines its duties. The city legislature often consists of a bicameral form of the board of aldermen and the common

council; but New York, Chicago, San Francisco, and a great number of small cities have only one chamber. This body passes city ordinances, levies taxes, and makes appropriations. The executive is the mayor, who stands to the city in much the same position as does the governor to the state. The several administrative departments of the city are under the direction of officials or salaried officers, sometimes by committees from the council. In some cities the mayor presides at the city council; but in larger cities a special judge, called the city or police judge.

The functions of a municipality embrace (1) ways and means of communication and transportation, as well as the supply of light and water; (2) disposal of wastes; (3) protection of life, health, and property; (4) education; (5) recreation; (6) municipal housing; (7) charities and correction.

(1) The providing of ways and means of communication and transportation is the first function of a municipality. In dealing with street traffic it rests with the municipal authorities either to provide street railways or to arrange for such by private enterprise. In Great Britain and her colonies many of the street railways are owned by the municipality, but in the United States private enterprise is the rule. When waterways are encountered, the municipality has to arrange for the construction of bridges, as well as, on occasion, docks, wharves, and harbors. Ferries, too, must be provided. The construction of harbors is usually a function of the national government, though municipal docks are common. The supply of water for household and industrial purposes, as well as for fire protection and street and sewer flushing, is one of the most important municipal services. Water and lighting supplies are usually municipal functions. Municipal markets and slaughter houses are often provided, or else a strict supervision is kept over private markets and food supplies.

(2) *Wastes.*—The provision of an adequate sewerage system, the disposal of garbage and rubbish, and the cleansing of streets are essentially municipal functions. Cemeteries, too, come within the province of the municipality.

(3) *Protection of Life, Health, and Property* comprises the work of the police, the courts, the board of health, the fire department, the provision of public baths, wash-houses, and latrines, as well as the building inspection service.

(4) *Education.*—This includes the work of elementary education, besides manual and technical training, night schools, vacation schools, museums, and libraries. In exercising these functions the municipality is acting as the agent of the state, and is subject to central control.

(5) *Recreation.*—This embraces the provision and maintenance of playgrounds, parks, gymnasiums, swimming baths, besides suitable halls for concerts and lectures.

(6) *Municipal Housing* is almost unknown in the United States but is a characteristic feature of municipal activity in Great Britain and even in India. Houses are built at municipal expense to provide sanitary dwellings for the poorest wage-earners.

(7) *Charities and Correction.*—These include organized poor relief and the maintenance of asylums, reformatories, and occasionally hospitals.

MUNICIPAL REFORM.

Each locality is confronted with its own problem of municipal reform, and too often partisan politics is allowed to run counter to the common weal. The remedy lies with the citizens and taxpayers, who frequently are too indifferent to insist on sound and honest government. A distinct reform was effected in Scotland in 1833, and in England and Wales in 1835, as the result of agitation against corrupt local government. These reform acts were supplemented until in 1888 an act was passed providing that cities and towns of over 50,000 inhabitants should be administrative counties. One of the most important reforms in many American states has been the adoption of constitutional amendments, from 1850 to 1880, prohibiting special acts of the legislature applying to a single municipality. Other agencies of municipal reform are the good government clubs, which are federated into the National Municipal League. One of the best known efforts to reform the abuses in city government is that termed the Federal Plan, which was put into effect in Philadelphia in 1887. All legislative power is vested in the council and all executive power in the mayor and the heads of certain departments nominated by the mayor with the consent of the council. The mayor has also the right of veto. The main advantage of this plan is that power and responsibility are centered in a few individuals.

Municipal Ownership.—From earliest times certain cities of importance have owned lands, constructed harbors, docks, and aqueducts, and made these a source of revenue. But in the nineteenth century municipal-owned water works, gas works, and the like became the rule almost throughout the civilized world. Authorities are at variance regarding the proper scope of municipal ownership; but in the main they are agreed on the following points: (1) it may include all services of a sanitary nature, such as sewerage and water supply; (2) it should restrict its activities to industries of a public character, and not enter into undue competition with private enterprise. But local conditions alone can determine the advisability of public or private ownership, and the relative efficiency and economy are the deciding factors. It is generally conceded that municipal ownership should be run on sound business principles, for in the event of reckless or mismanaged undertakings resulting in financial loss, the deficit would have to be met from the general tax rate.

Municipal ownership of sewerage is almost universal, and no country is better provided in this respect than the United States. Water works are the commonest form of revenue-producing services, while gas works, though frequently owned by the municipality in Europe, are rarely under such ownership in America. Street railways have been developed since 1850, but outside of Great Britain municipal ownership is rare. Electric lighting plants are frequently owned by the municipality in the United States and Great Britain, though more rarely on the continent of Europe. The telephone service is national rather than municipal, and in the United States is controlled by private companies, but in Great Britain the trunk lines are owned by the government postal authorities.

DEPARTMENT OF GOVERNMENT

Alaska.—Following the purchase from Russia in 1867, the government was organized the following year, with little change until after the great gold rush at the end of the century. In 1900 Alaska was made a civil and judicial district; in 1912 a territory was organized. From 1900 towns were allowed to incorporate as municipalities, and to date over 20 have so organized. Alaska has a bicameral system of legislation, and also a dual control by the territory itself and by the United States, a plan leading to considerable duplication of bureaus. The senate contains eight members, two from each judicial district, serving for four years; the house contains 16 members, four from each district, elected for two years. Congress retains the right to repeal acts passed by the territorial legislature, which is also forbidden to pass definite laws on excises, game fishing, and similar subjects. The president appoints a governor and territorial secretary, each for four years. The governor in turn appoints a commissioner of health, a treasurer with consent of the senate, for two and four years respectively; while a commissioner of education is appointed by the territorial board of education for two years, and an attorney general is elected by the people. Judges hold both U. S. and territorial courts. U. S. commissioners act as justices of the peace and in other roles. Government expenses are shared locally and by the United States, the chief territorial revenues being from taxes, license fees, and other imposts, including 25% from the forest supplies.

Hawaii.—By an organic act of April 30, 1900, Hawaii was set up as a territory, a part of the United States. The islands were formally annexed on June 14 of the same year. Administrative machinery is highly organized. The legislature, which meets biennially, comprises a senate of 15 members, elected for four years, seven at one time, eight two years later, and also a house of 30 members, elected for two years. The U. S. president appoints a governor and a secretary for four years, the chief justice and two associates, and eight judges for federal courts. The governor, with advice of the territorial senate, appoints a considerable number of officers, chairman of boards, and superintendents of education, public work, and so on. Hawaii has administration and revenue of its public lands. Appeals are made to the Federal circuit court of the ninth district. Requirements for voting are similar to those in the various states. Seven counties have been set up for administrative purposes among the many islands. Midway Island, farther east, is not included, but two small coral ones, Johnson and Palmyra, are. The Westerly Islands have been constituted the Hawaiian Islands Bird Reservation, largest of its type in the world. Hawaii sends one delegate to the U. S. House of Representatives, who can introduce bills and speak on the floor, but has no vote.

Philippine Islands.—From 1898 to 1902 the islands were under control of military governors, and then under a commission with a governor general at the head, including Gen. Leonard Wood and William Howard Taft. After insistent demands the Congress of the United States passed a conditional independence bill in 1932, vetoed by President Hoover, and passed over his objection. The Philippine Legislature promptly rejected it. A more liberal one, signed in March 1934, was accepted on May 1, the 36th anniversary of Dewey's victory in Manila Bay. After 10 years the islands are to be completely free, when the United States abandons all military control, July 4, 1945. Manual Quezon was inaugurated first president of the Philippines on Nov. 15, 1935, at which time a new constitution went into effect. The U. S. still maintains a resident high commissioner in the Philippines. The Philippine constitution is progressive. It provides that the president and vice president shall hold office for a single term of six years, one legislative chamber of 120 members, initiative and referendum, limited veto for the president, woman suffrage, a supreme court of 7, which may declare laws unconstitutional only by at least two-third vote, regulation of franchises, and a liberal bill of rights. On request of President Quezon, Gen. Douglas MacArthur, retired, of the United States army was asked to organize a system of national defenses. Certain tariffs on imports from the Philippines into the United States, already in force, will be increased after 10 years, the proceeds to be applied to the liquidation of the debt owed to the United States,—about $125,000,000. Immigration to the United States is limited to 50 annually.

Puorto Rico.—Spain ceded this island to the United States on Dec. 10, 1898. Military rule ended on May 1, 1900. The organic act for government was passed in 1917, at which time the United States Supreme Court declared Puorto Rico unorganized territory, unlike Alaska and Hawaii. The act was further changed in 1927 and 1935. The president appoints the governor, with advice of the Senate. The island legislature consists of a Senate of 19 and a House of 39 members, elected for four years by direct male suffrage. Puorto Ricans are recognized as American citizens. The executive departments are justice, finance, interior, education, agriculture and commerce, labor, and health. The President appoints the attorney general, commissioner of education, and an auditor. The governor, subject to the insular senate, appoints the heads of other departments. Five justices of the Supreme Court are appointed by the president. Puorto Rico sends a commissioner to the United States House, but he has only the privilege of speaking, and no vote. The island raises its own taxes, customs, and other revenues, none of which go to the federal government. Following a movement for statehood in the island, a bill in the U. S. Senate in 1936 provided for independence after a transition period of four years, with the levying of tariffs by the United States. It was coldly received in Puorto Rico and was not pressed. The literacy test for voting was abolished in 1935. Congress in that year passed a Rehabilitation Act, providing $41,000,000 for use in the island. According to law Spanish is taught in the first eight grades, with English as a second language; afterwards instruction is in the English language.

Virgin Islands.—Formerly the Danish West Indies, ceded by Denmark to the United States for $25,000,000 in 1917, are a group of three large islands, and many small ones, in the Caribbean east of Puorto Rico. St. Thomas, the chief island and city, is about 1442 miles from New York City. In 1927 Congress gave citizenship to the inhabitants, who are of mixed race, largely colored; in 1936 suffrage was granted all who read and write English, spoken by 98% of the people. During prohibition, trade of the islands was restricted to sugar, bay rum, and other products; more recently the rum industry has again flourished. St. Thomas has a council of 9 members; St. Croix, one of 7; these make up the colonial legislature, meeting each year. The United States appoints a governor.

American Samoa, of which Pago Pago Harbor was acquired in 1872, and part of the island group ceded by Great Britain and Germany in 1900, is governed by the U. S. Navy. Guam, ceded by Spain in 1898, is also in charge of the Navy, which has a powerful radio station there. Uncle Sam owns a few other small Pacific islands. **Panama Canal Zone**, a strip of five miles on each side of the Canal, is administered as an independent agency of the United States, headed by a governor, protected by a garrison, and under general supervision of the Secretary of War.

SPECIAL GOVERNMENT SERVICES

Apart from the ordinary routine of the various government departments, Uncle Sam performs a multitude of services for his citizens. He even maintains an Information Service in Washington, to which various questions may be sent as to agencies. Every department has its numerous bureaus, commissions, agencies, and administrations. In the last generation these have been rapidly increased until they have become a vast and intricate system. Plans for reorganizing and simplifying the activities of Uncle Sam have been considered for a long time. President Hoover urged Congress to act to coordinate the various bureaus, and President Roosevelt also so promised. Much transferring and adjusting has gone forward, but the activities of the government still overlap from department to department. Since 1900 many independent commissions and agencies have been authorized by Congress. Quite a number of these report to Congress, some of them to the president, and a few like the Director of the Budget are virtually uncontrolled. Others have various cabinet heads on their governing boards.

In recent years the federal authorities have issued a publication, frequently revised, to give information as to the classes and nature of the scores of different services. Along with hundreds of pamphlets and other publications, this can be obtained by sending the appropriate sum ($2 for this one) to the Government Printing Office, Washington. It would be impossible, outside a small volume even to describe the many sources of aid to groups, individuals, and the nation as a unit. Only those are mentioned below which are of unusual and special nature or more directly concern the wants of single persons. Every cabinet department has many others besides those we can mention here. Below are also included several agencies or bureaus or commissions that report to no one department head.

Bureau of the Census. As the Constitution provides, since 1790 a Census has been taken every ten years of the inhabitants of the entire United States. At first only meager data were collected, mainly as to families, persons of certain ages, and the like. Gradually the service expanded, until in 1930 the Fifteenth Census included five volumes on Population; two on Occupations; two on Unemployment; eight on Agriculture; one on Horticulture; two on Irrigation and Drainage; three on Manufactures; two on Mines; four on Distribution; and one on Construction. Prior to 1902 each Census organization was disbanded after the decenial statistics had been collected. Then the Census became permanent, until now over 700 are regularly employed, increased to 6000 during the actual decenial enumeration. In addition some 90,000 workers are employed from two to six weeks in the field taking data from house to house. Ten branches are in charge of that many specialists. In 1930 for the first time, data on retail trade were taken. In 1934 and 1935 business conditions were also studied, and in 1936 the listings were even more comprehensive. Every year statistics are collected as to births, deaths, finances of cities over 100,000 in population, prisoners and other inmates of federal and state institutions. Data on selling and production of 75 commodities like cotton goods, hose, boots and shoes, automobiles, and clothing are taken. In some cases the Bureau issued information monthly.

Bureau of Public Health. Organized at present in the Treasury Department, the health service employs 2536, with over 500 part-time workers. The Bureau has charge of 26 marine hospitals, and 131 other relief stations about the country. Some of the numerous services are taking a national health inventory, improving the records of vital statistics, studying community sanitation, such as filers for disposal of sewage in large cities, helping prevent yellow and other fevers, the spread of other diseases like tuberculosis and syphilis, improving conditions in hospitals for mental defectives, and looking out for health in schools.

Consular Services. The United States sends ambassadors and ministers to all important nations. These have to do with diplomatic affairs. In addition hundreds of consuls, vice consuls, and others now make up the foreign service. The first consuls were recognized in 1780, provided for definitely by the Constitution, but save in North Africa were unpaid until after 1816, when small salaries were authorized. Consuls were put under the Civil Service in 1906, and in 1924 and later the system was reorganized, divided into nine classes, with better salaries. A contributory system of pensions was also established for consular servants. The consuls assist distressed seamen in foreign ports, adjust differences between men and masters of seacraft, protect citizens abroad, settle estates of persons dying intestate in a foreign land, look after health conditions, issue passports. An important service, established a few years ago, was

collection of statistics as to possibilities of foreign trade. For instance, an American manufacturer of cutlery inquires as to possibilities of sales in Morocco. The consuls investigate, inform him, and he establishes business there.

Farm Credits. Under an act of Congress in 1916, the secretary of the treasury and four others constituted a board on farm credits and mortgages. Various changes have been made to meet new conditions. The United States is divided into 12 districts, with the same number of land banks to make long-term agreements; 12 intermediate land banks, to make short-term financing; 12 production corporations, to assist in providing various farm commodities. The object is to make it easier for agriculture to hold and retain possession of lands by making long term arrangements on very moderate terms. Other subordinate agencies cooperate to this end.

Federal Communications Commission. In 1934 the Communications Act extended and renamed the old Radio Commission to regulate communications by wire and radio. This board has seven members. Authority is granted over telephone, telegraph, and air services, with regard to quicker means of communication. The country is divided into 21 districts, with inspection service in each, and also with two general "monitor" stations, one at Grand Island, Nebraska, and one at Great Lakes, Ills. These consider violations of the broadcasting wave-lengths and other regulations. No censorship or abridgment of freedom of speech can be attempted, though the president may suspend certain guarantees in case of war or other emergency. The Interstate Commerce Commission is now relieved of any control it once exercised over the means of communication. Control is given as to foreign or cable service from the United States. The law specifies that no discrimination is permitted by a station as between candidates for the same office who wish to broadcast their opinions, but no station is forced to give any candidate such a privilege. If one has it, all must be given the same opportunity.

Federal Power Commission, organized in 1920, with the secretaries of war, interior, and agriculture in charge, was reconstituted in 1930, with five full-time commissioners, appointed by the president under the Federal Power Act. In 1933 the Commission was asked by Congress to make a national power survey, including these items: holding companies as to power operations, power requirements for the railways, rural electrification plans, costs of distributing power and cooperation among agencies, relation of coal to hydroelectric development, and best location of plants.

Federal Reserve System. Legally now the Board of Governors of the Federal Reserve System. First constituted in 1913, this agency has branches in Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Cincinnati, St. Louis, Minneapolis, Kansas City, Dallas, and San Francisco, with 25 sub-branches in other large centers. The main purposes is to supervise generally American banking, to provide for a safer method of discounts, advances, and rediscounts of paper, or, briefly, to make our system more elastic. National banks become members of the Federal Reserve System through their connection with a regional Federal Reserve Bank. The stock is owned by member banks and represents, in case of each bank, 6% of the total paid-up capital of that bank. Part of this is held in reserve and on call by the district bank of the system. The Board of Governors is made up of 6 members, with the secretary of the treasury and comptroller of the currency members ex officio.

Federal Trade Commission. By an act of 1915, and several later ones, the Commission has five members, each serving for seven years, with no more than three from one political party. Business men for years had been complaining of the unfair methods of some of their competitors. So the functions of the body are limited to the two phases of economic and legal as to business practices. Questions often arise as to the misbranding of goods, and so gaining advantage over a more scrupulous competitor; of unfair discrimination as to price, rebates, and other advantages; of compulsory price fixing by manufacturers, and the like. Typical examples are whether it is fair for one company to put out an article under one name or brand, and the same or very similar, under another brand or name, to be sold at an appreciably lower price by large concerns that will buy in quantity; again, whether a jobber is fair in making it appear in his advertising that he sells direct to the consumer from the factory, whereas he is acting as middle man, but claiming not to so act; whether a correspondence school can be called a college, university, or "institute." Everything from tires to electricity, gas, and milk has been considered in one way or another. The Trade Commission serves notices to offending firms to "desist," brings them into court, or posts them as unfair competitors.

Flood Control Act of 1936. Disastrous floods in modern times call for government remedies, since the federal agencies have control of inland waterways. Under the act of 1928, much work was done on the Mississippi system and other main river courses. By 1936 the plans from Cape Girardeau, Missouri, to the mouth of the Mississippi had been completed 90%, but $272,000,000 additional was authorized for further construction, dredging, and building of reservoirs, levees, and bars. In recent years a definite policy has been developed, after years of agitation and of suffering from floods, and 270 projects in 31 states have been marked for completion. The government pays no costs for lands, easements, and the like, unless these mount to over 50% of the cost of the entire improvements. States are compelled to cooperate in these regards. Over 1000 separate projects have been completed,—even to the extent of harbor improvements, port facilities such as huge docks, fish piers, and oil refineries where needed.

Food and Drug Administration. For 50 years the government has sought to protect the public in the matter of foods. The Act of 1906 secured adequate protection in many respects. Others have followed, as conditions arose, such as three concerning labels and three concerning insecticides, naval stores, and caustic poisons. Recently

further legislation has failed to pass Congress for one reason or another. Many adulterants not known in 1906 now get by the laws because those in force do not cover such cases. The government employs many chemists to analyze things on the open market. Some idea of the scope of the work of the Administration may be gained from a partial report of one recent year. In 1935, 3040 actions were started with regard to cheats of various kinds in foods and allied products, decomposition of food, filth found in cans, and substances harmful to health. In the same year, 1029 drug imports were refused, and also 2554 shipments of food. Investigations included the use of cheap soybean flour in macaroni, low-grade vegetable oils in expensive salad dressings, cheese mixed with milk (filled cheese, against the law in some states), too much moisture in fruits, jams and jellies with low fruit content, butter deficient in fats, fruit that had spray residues upon it, and 73 cases of food poisoning. In regard to poison food, but one of the 73 cases involved a commercial product. Much agitation recently concerns the use of containers that have too much tin in them and the use of chemicals in bleaching or otherwise treating foods.

Forest Service. Apart from the increasing demand for forest products, the maintenance of a correct natural balance between cleared and uncleared areas, or cultivated and wild land, receives more and more attention. Dust storms originate in areas that never should have been stripped of their trees or of their prairie vegetation. For many years the Forest Service has tried to educate the public to think more of such matters. At last results are apparent. Flood control, soil conservation, and growth of new timber have long been considered by our foresters. Cutting away the small brush, straightening the streams to make water run off quickly, and taking the tall grasses from the land have all hastened and aggravated floods.

One-third of the area of the nation receives forest service, 615,000,000 acres, of which Uncle Sam owns 165,000,000, and minor government units over 19,000,000 more. Under the Weeks Law, 7,000,000 acres were acquired in 1935, and 4,000,000 in 1936. In the latter year over 300,000,000 trees were planted, and a special report to Congress showed that excessive stocking, drouths, cutting off the vegetation, and forest fires had depleted the forage values on 728,000,000 acres, which had formerly been quite suitable for grazing. In 1936 a special division of wildlife management was organized to preserve the animals of the national domain. Already big game and other wild life have been encouraged, until over a million head live in our national forests, an increase of over 100% in 12 to 15 years. Annually 12,000,000 persons use the national forests for camping and other recreation. Forest rangers who live in the national areas also help prevent fires, which yearly take a staggering total of timber and land coverings. Considerable emergency forest work has been done by the Civilian Conservation Corps and other agencies, but much of this is of temporary benefit only. See article on *Wild Life Reserves.*

Geological Survey, first organized in 1879, seeks to locate the mineral and other natural resources of the country. Geology, the mineral wealth of Alaska, minerals of the continental areas, and chemical and physical researches are the main branches of this service. Some of the special features are a topographical map of the United States, issued in folios as soon as each small area is covered; study of the mineral, water, and other nature resources; and classifications of the public lands.

Government Printing Office. During the Civil War the need for quick printing was felt so acutely that a special printing office was set up in Washington by the government. From time to time it has been enlarged in size and activities, being mainly enlarged in 1895. The work is supervised by an expert printer, who is independent, except that he reports to the president. A Committee on Printing, of Congress, exercises some control over the type and amount of work undertaken. The office employs over 4000, a third of whom are women, runs on double shifts, and often turns out an immense amount of work between 7 in the evening and the opening of Congress the following noon. Speed, secrecy, and reliability must obtain at all times. Branch printing plants are located in the new annex to the Library of Congress and in the State, War, and Navy Building. Millions of pieces of material have been printed for use of government departments and agencies or for sale to the public. Publications of the United States are sent to about 470 libraries through the country, which keep on hand all or most of the 3500 documents printed each year. Monthly indexes are prepared for the same libraries. An Information and Sales Room is maintained in Washington. For those outside lists and costs may be obtained by writing to the Superintendent of Documents, Washington, D. C.

Interstate Commerce Commission. One of the best known of the government agencies, which was organized in 1887, and given additional powers and duties from time to time. The object is to prevent undue advantage, discrimination, or any unfairness as to the rates charged for passenger and freight service. In 1906 the Hepburn Act extended the authority of the Commission to express companies, pipe lines, and sleeping car companies; in 1910 the Elkins Act brought interstate communications (telegraph, telephone, and the like) within the jurisdiction of the group; but this was later transferred to the new Communications Commission; in 1920 Congress asked that an adequate passenger service be planned; and in 1935 motor transportation was assigned to the Commission for study and regulation. Thus the activities have also expanded to include not only rates, but also routings of cars, pooling of freight, an examination of competing water routes, and other matters. After some complaints of discriminations within state borders, the Commission undertook to adjust both passenger and freight charges, so that competition might be fair between places in a state and others in another state nearby. In the *Shreveport case* and others, the Supreme Court upheld the right to fix or change rates within a state when low or high ones there interfere with the flow of commerce between that and nearby states. At present the Interstate Commerce Commission has 11 members.

Library of Congress. Books were collected for the nation before 1800, but were burned when the Capitol was destroyed in 1814. One early purchase was the library of Thomas Jefferson, about 6800 volumes. In 1851 over 35,000 books of the national library were destroyed by fire. Since then the collections have been augmented to gigantic proportions by the purchases authorized by Congress, by copyrighted books deposited as required by law by the authors or publishers, by many gifts and exchanges with libraries, and by deposits of books and material from the Smithsonian Institution. The new library building, completed in 1897, contains 15.29 acres of floor space; an annex in 1933 brought the number to 35 acres and 414 miles of bookshelves. No library of the world is better equipped with files, card indexing systems, a printing plant, and the national copyright office. On June 30, 1940, the Library of Congress housed over 6,000,000 books, millions of pages of manuscripts, and also two million pages in photographic facsimile from documents in foreign libraries, paid for by J. D. Rockefeller, Jr. Besides unrivaled historical material relating to the United States, the library is rich in special collections, a few of which are those on Russian literature (80,000 books), of Judaica (20,000), early, documents, autographs, and the great Vollibehr collection of incunabula (3000), purchased for $1,500,000. This last contains many items not found anywhere else in the world. The Library of Congress is open for readers every day. Under certain restricted conditions, books are sometimes sent to other libraries for use of readers there.

Maritime Commission. Established in 1936 to replace the Shipping Board, organized in 1916, and the merchant marine as provided for in 1920, this commission provides for foreign and domestic shipping and for the national defense in time of war. No more than three of the five members of the board may come from a single political party. In time of war, the board cooperated with the U. S. Navy. One function of the Commission is to investigate seamen's wages. Three main objects are intended: (1) to provide boats enough for domestic and some share of foreign commerce; (2) to build up an auxiliary for use in time of emergency; (3) the boats are to be owned, equipped, and manned by citizens of the United States.

National Archives. From 1877 to 1913 suggestions were made for the housing of government archives, as all modern nations had provided long before. The World War and other events interfered until an appropriation was provided in 1926 for a suitable building. This was started in 1931 and finished in 1933. More than four billion cubic feet of space were needed in Washington alone to preserve documents and papers. The archives building is in form of two cubes, the smaller one containing 21 levels of stacks and vaults for different classes of documents. The director of publications issues catalogs, guides, inventories, and other material. Members from the government departments compose an archives council. There is a national archivist, who reports on January 1 the papers, documents, and printed material which, in his judgment, should be discarded. The building is fireproof, and the individual document containers are also.

National Parks and Monuments. See page 645.

Patents and Copyrights. The government gives individuals the exclusive right to make and market their inventions for a period of 17 years. Improvements or infringements on patents that have expired are not subject to registration. No patent is granted for an idea, or a mere suggestion, but only for some novel article, design, or other patentable form. In early days a model had to be deposited in the Patent Office. Now an accurate working drawing, with complete description of the object, is kept on file in Washington. The rather intricate directions for applying for a patent may be obtained by writing to the Patent Office, Washington, D. C.

Copyrights cover books, periodicals, addresses or speeches, dramatic works, musical works, works of art or models of such, drawings of scientific nature, prints, motion picture plays, and other literary material. Many things may not be copyrighted. Rights to an author hold for 28 years, then go to his family or are renewed to him or to his estate, for another like period, making 56 years in all. Trade marks differ from copyrights, in that they cover some distinctive emblem, device, or descriptive work used in connection with marketing an article. Certain names in common use, pictures of presidents or others, without their consent, seals of fraternal orders, and names of firms, individuals, and many other things are not subject to trade mark. For information in detail write the Copyright Office, Library of Congress, Washington, D. C.

Reclamation Service. Congress in 1902 organized a Bureau of Reclamation in the Department of the Interior. Within the next 25 years, 47 irrigation projects in 17 arid states of the far West had been completed, and 27 more were in process of construction, making a total irrigated area over 3,000,000 acres. Meanwhile the Bureau had provided 18,750 miles of canals and ditches, about 180,000 canal structures, 109 storage dams with a total storage volume of 30,000,000 cubic yards of water. The largest of all such projects was Boulder Dam in Arizona and the Colorado River, which had cost $375,000,000 when operation began on Sept. 11, 1936. The construction required an excavation of over 400,000,000 cubic yards of material, with the use of over 5,500,000 barrels of cement. Boulder Dam is the highest artificial structure of its type, 737 feet altogether, raises the level of the Colorado 582 feet, is 650 feet wide at the bottom, 45 at the top, and the power house at the dam will contain 15 generators.

Some other large dams are the Owyhee in Oregon, 405 feet high; Arrowrock, Idaho, 354 feet; Elephant Butte, New Mexico, 306 feet; Diabalo, Washington, 389 feet; Shoshone, Wyoming, 328 feet; Roosevelt, Arizona, 284 feet; Pathfinder, North Platte, Wyoming, 218 feet. Some dams are used only for irrigation, and others also for power, or water supply for cities or both. Over 50 great dams have been constructed, some of them by aid of private capital, for these uses. See page 642.

Reconstruction Finance Corporation. Established fully in 1932, this agency has done much to stabilize conditions since the beginning of 1929. The secretary of the treasury is one of a board of seven directors, to whom at the start $500,000,000 were given from the Treasury, to be held for the benefit of the United States. Among the main purposes are to provide emergency financing for corporations, banks, or other organizations; to purchase stock of financial institutions to keep them or others from ruin; and to make certain other loans and allocations as demanded by law. Of the total money disbursed, —used as a form of revolving fund,—by September of 1936, 11 billions in value had been handled. Six and a quarter billions went into channels other than those of direct relief of people or allied interests, and of this sum nearly 60% had been paid back to the Corporation by borrowers. Loans had been made to 7468 banking institutions, 88% of which had repaid their loans; depositors of 2688 failed banks had been given allotments; 603 drainage and other local projects had been aided, besides other large and small activities of the RFC.

Rural Services. Besides the conservation of soil, weather service, and other forms of aid to farmers, Uncle Sam maintains a number of special bureaus in the Department of Agriculture. Some of these are the Bureaus of Agricultural Economics, Agricultural Engineering, Biological Survey, Chemistry and Soils, Dairy Industry, Home Economics, Plant Industry, and Public Roads. Recent additions were the Resettlement Administration, Rural Rehabilitation, and Suburban Resettlement. Thus the organization of the Department shows the varied and complicated setup in a cabinet department today. Specific services may now be illustrated.

In Agricultural Economics, the government carries on studies as to production and marketing of farm products. It gathers information as to the crops, livestock, farm conditions and management, standardization, and even foreign openings for American farmers. The Biological Survey studies habits and uses of birds, migratory animals, the increase of fur-bearing stocks, game preserves, and conservation of natural advantages for game and animals useful to mankind. In Dairy Industry, the government fosters better dairy management, sanitary methods of handling milk products, new processes in making cheese and butter, and the transportation of farm goods to markets. Likewise the Bureau of Plant Industry investigates diseases harmful to growing things, studies means of protecting and improving fruits, seeks to produce better grades of fertilizers, and to improve growing conditions in cooperation with the Bureau of Soils. The latter also seeks to utilize farm by-products, to improve the physical and chemical properties of agricultural raw materials, and to classify and map the various types of soils. Again, the United States Experiment Stations, organized in every state and in the territories, conduct many experiments yearly to improve farms and their products. The United States Bureau of Entomology seeks to study smaller animals and bugs which are harmful to growing plants and trees. It also carries on a constant warfare against fungous and other diseases of trees and plants.

For many years the Extension Services of the United States has been justly celebrated. Through the Bureau of Home Economics, and Forest Service, thousands of persons all over the land are constantly informed on questions of food, clothing, care of homes and of animals, farm and home equipment, and other related subjects. Many bulletins are annually distributed on application to the Department of Agriculture, the state Experiment Stations, or other branches of the service. Of particular interest to homemakers are the recipes, information on clothing, food, labor-saving devices and other equipment for the home. More than 300 radio stations donate broadcasting time to bring this information to the public, while the daily market and crop reports of the government and the state units keep rural citizens informed, and alert to changing conditions. Persons interested should write to the Government Printing Office for information as to bulletins and their costs, or to the Experiment Stations of their own states, connected with the state university or agricultural college. Often the county agricultural agents, officers of the farm organizations in local territory, and many libraries have much information of interest to agriculturalists.

Secret Service. This little-known branch, with some other divisions of the government, is an important aid in guarding the president and other officials of the United States. Since the assassination of President McKinley, and later the attempt on the life of President-Elect F. D. Roosevelt, activities of the Secret Service have been much quickened. The days seem past when a president like Lincoln may go about alone and unguarded. From the time a candidate is elected to the hour when he returns to private life, he is under constant guard and observation by some protector. When he makes a journey, elaborate precautions are taken, often weeks in advance. Some of the other varied duties of the Secret Service, which is attached to the Treasury Department, are the unearthing, identification, and conviction of counterfeiters, the discovery of violations of revenue laws, and of other offenses against the Treasury or the government. Other arms of the service relentlessly pursue criminals, assist states, cities, and even individuals in detecting offenses of major nature, such as kidnapping, bank robbery, arson, and many other crimes. Recently, in the assistance given local government units, in the apprehension of men like John Dillinger, Baby-Face Nelson, and their gangs, the so-called "G.-men" have been of great aid to all good citizens.

Securities and Exchange Commission. Everybody has heard the terms *panics, depressions, bad business,* and *prosperity.* Early in the days of the nation, several plans, like those for a central bank which Jackson so sternly opposed, were outlined for insuring a continued flow of business, without the ups and downs, the peaks and valleys of alternate booms and panics or depressions. When panics begin, huge quantities of stocks, other commercial paper, and even real goods like houses and lands, are dumped on the market for

what they will bring, which is often far below their actual value. On the other hand, in times of boom or prosperity, these things sell at an inflated value, or at much above their actual cost or producing level. Marketing of securities that seem peculiarly subject to these up and downs, and to peculiar "refinancing" operations, have long disorganized market values at times of depression. Since 1920 much agitation demanded federal regulation or restriction of stocks of this type.

By the Securities Act of 1933, rather full information as to profits on stocks, commissions, real values back of them, names of those issuing the stocks or bonds, and other data must be submitted to the Federal Trade Commission at least 20 days before the date of first issue of such securities. In 1934 additional acts of Congress set up a bipartisan Securities and Exchange Commission, to take over these duties and administer the various acts. Many things were also provided for by the Exchange Act of 1934, such as licensing of stock exchanges, registration of all issues governed by the act, information as to dealers and their methods, regulation of margins and broker's credit, a definite rate of margin as between the selling price and the amount a would-be buyer must deposit to secure control over a definite stock or similar unit. In 1936 additional laws were passed to coordinate the regulation. Since 1934 the regulation of margins has been controlled by the Federal Reserve governors. Proponents of the acts thus passed assert that they have been of great help to conservative and legitimate activities in stocks and the like.

Smithsonian Institution. An Englishman, James Smithson, in 1826 left his fortune to the United States for "the increase and diffusion of knowledge among men." Twenty years later a legal establishment was set up for the purpose of receiving this and similar gifts. It has nominally at its head a Board of Regents composed of the president, vice president, chief justice, six members of Congress, and six other citizens. An active secretary and a numerous staff are in charge of the Smithsonian. Important scientific researches and discoveries have been made there by men like Henry, Baird, Langley, and Walcott. Individuals and the government have made numerous gifts to all sorts of projects of scientific and humanitarian nature. Expeditions have been sent into remote corners of the world to gather valuable data. Thirteen series of publications have been issued free to many libraries, over 800,000 books have been collected, and museums of historical and scientific information have attained great fame at home and abroad. Various services are in charge of the Smithsonian Institution, including the National Museum, open to the public every day; the National Gallery with a collection of priceless likenesses of important persons; Bureau of American Ethnology, with the aim of studying the American Indians and other early primitive peoples; an Observatory, with branches at Mt. Wilson, Calif., in Chile, and on the Sinai Peninsula; and even a zoological park in Washington. The National Academy of Sciences, allied to the Smithsonian, but legally a separate corporation, has received some princely gifts, such as the $5,000,000 from the Carnegie Corporation.

Social Security. As approved August, 1935, and amended in 1939, the new Social Security Act proposes chiefly to insure (1) decent homes to live in; (2) development of resources so that all may have opportunity to labor; (3) safeguards against misfortunes, dependence in old age, and unemployment. Under the very broad provisions of the Act, the special objectives are unemployment compensation, old age benefits, security for children and helpless, including the blind, extension of public health service, vocational rehabilitation.

The government invites the states to establish a plan of unemployment compensation by obtaining from some classes of labor after Jan. 1, 1940 a sum depending on the average monthly wage while working. Farm labor, home employees, maritime employees, and others are excluded; professional persons are not asked to contribute. The Act applies to establishments employing eight or more. For old age assistance, two plans are proposed, an immediate plan and an annuity plan. The first offers states one-half as much as they contribute for helping persons at least 65 years old, under certain conditions as to their previous employment. The annuity plan provides payments monthly to persons on attaining 65 of their total of at least $2000 in wages after Dec. 31, 1936 and the time they become 65. The minimum monthly payments are $10 and the maximum $85 to a single person. Provision is also made for payments to estates of those who die after they are 65. Many classes of employees are excluded. States are also allowed to enter into cooperation with the federal government in the matter of payments to children in need, to the blind, the crippled, and those unable to employ their own physicians or surgeons. Nearly all the states at once complied with the provisions of the old-age assistance, and most of them in other regards. For example, a single man, who for 10 years has earned at least $50 monthly, on the average, would draw after 65, $22 monthly, and if married, $33; for $100 average wage, he would draw $27.50 or $42.25; on wage of $150, he would draw $33 or $49. Distant relatives also may share.

Soil Conservation. Along with forest and wild animal resources, the soils of many regions are sadly depleted. Destructive results of erosion, washing away of top soils, burning of nutritious plant elements in the soils by forest fires, and man's own lack of skill, carelessness, and indifference have caused the government at least to increase its attention to conservation and restoration of these. The Agricultural Administration Acts of 1933, the Soil Conservation Act of 1935, with certain adjustments and amendments in 1936, are among the recent national attempts to bring our soils back to more producting standing. Direct drouth relief and curtailment of crops by withdrawing acreages from production were temporary measures to meet an emergency. Under the broad terms of the recent acts, soil fertility is to be increased, wasteful practices to be discouraged, erosion to be curtailed if possible and river courses protected from effects of floods. The secretary of agricul-

ture was authorized, under restricted conditions, to give payments to the states that cooperated in this program, the plan to continue until January 1, 1938.

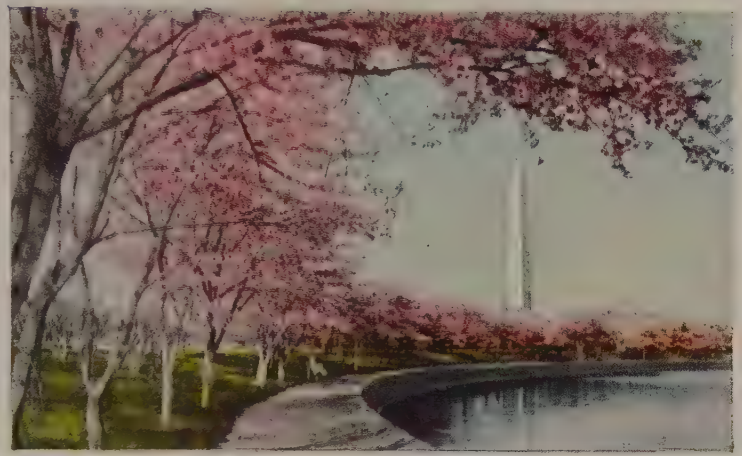
Tariff Commission. After 1880 various controversies, on party and other lines, led to many disagreements and compromises on the matter of rates and exemptions. In both the Arthur and Cleveland regimes, little progress was made, due mainly to failure of the houses of Congress to agree. Some important tariffs have been the McKinley, a high protective measure but exempting sugar and providing for reciprocal rates, 1890; the Wilson, 1894, reduced many rates, particularly on wool; the Dingley, like the McKinley, raised rates and sought high "protection"; the Payne-Aldrich adjusted rates, lowered some, raised fewer; the Underwood-Simmons, 1913, put many articles on the free list; the Hawley-Smoot, 1930, was a compromise measure, signed by Mr. Hoover because he hoped for no better from Congress. This last put 67.8 on the free list, 32.8 on the tariff, but the specific duties and changes caused most of the bickerings. The Payne-Aldrich of 1913 had a free list of 52.6 of articles, a dutiable of 47.4.

Shortly afterward agitation increased for some impartial way of fixing tariffs. At last in 1916 Congress authorized the Commission to be made up of six members, with a secretary, a supervisor, and numerous assistants. The main functions of the Tariff Commission is to study and compare tariffs, and to make recommendations to the president and Congress. Regulation of duties, classifications of objects subject to tariffs, and the effects of rates on wages and labor are among the specific functions. Following the tariffs of 1922 and 1930, with the previous adjustments under Wilson in 1914 and 1921, finally the president, on advice, was allowed to adjust certain tariffs without resorting to new Congressional legislation. President Hoover made some necessary adjustments, and his successor followed suit. The Act of 1930 granted the president additional powers, so that he might be somewhat more free in adjusting rates, with the advice of the Tariff Commission. New investigations were made of prices. Difficulties arose over the enforcement of the provisions of the Agricultural Adjustment Act. Some farm products, as well as nitrogen and others, were adjusted. Cotton cloth received attention. So did a group of related products. In the end some of the provisions of the Smoot-Hawley Tariff were changed, many of them downward in the adjustments. Again, 1934, Congress gave the president authority to institute reciprocal agreements with other nations. President Roosevelt soon made arrangements with Canada in regard to wheat, and with the South American countries as to other farm commodities. By law the tariff could not be changed more than 50%, up or down, on any of the articles so considered.

United States Weather Bureau. From 1891 a meteorological office in the Department of Agriculture has been giving public information about weather conditions and crops. Daily forecasts covering the next 36 hours are taken at many points over the country at 8 morning and evening. items: (1) barometric pressure; (2) present temperatures, with changes since last reports; (3) direction and velocity of the wind; (4) rain or snowfall; (5) humidity; (6) condition as to rain, snow, and other features to expect; (7) nature and direction of clouds. Prediction as to whether there will be rain in a certain, rather limited area is difficult, and hence subject to variations and inaccuracies. One very important feature of the service we learn about only in case of great coastal storms. That is the predictions and storm warnings displayed along the coasts and about the Great Lakes also. The government Weather Bureau has saved untold wealth and many lives by issuing timely warning hours before storms are due.

Veterans Administration. In 1930 the management of the Bureau of Pensions, Veterans' Bureau, and National Homes for Disabled Veterans was consolidated in the U. S. Veterans Administration. The work is divided into six major units, each in charge of an assistant. On June 30, 1936, strange as it may seem, there were still two pensioners on the roll from the dependents of veterans of the War of 1812, and 247 from the Mexican War. Others include either actual veterans or their dependents: 4648 from the Indian Wars; 9664 from the Civil War; 179,169 from the Spanish-American War; and also compensation to 337,867 veterans of the World War, for whom in this manner alone over $400,000,000 have been dispursed. Admission to hospitals of the Veterans Administration in 1936 were 120,365, with 127,000 discharges during the same period. The average length for a soldier in these hospitals is 84 days,—76% being treated generally, and 16% for mental troubles of all sorts, and 8% for pulmonary disorders. There were 8464 deaths. Additional services to veterans consist of physical examinations, dental clinics, and government life insurance.

Wild Life Reserves. These recently have grown in number, until now there are over 200, with others still being added. Ten are designed for big game also. Since birds are known to be among man's best friends, because they destroy huge quantities of harmful insects, designated areas to protect them from hunters are becoming rather common all over the country. Including Alaska and Puorto Rico, the total areas set off as animal sanctuaries make up nearly 10,000,000 acres. Some of the chief large reserves are the National Bison Range in Montana, Niobrara Game Preserve in Nebraska, Sheldon Antelope Refuge in Nevada, Wichita Mountains Wildlife Refuge in Oklahoma, Nunivak Islands Wildlife Refuge in Alaska, Desert Game Range in Nevada, Hart Mountain Game Range in Oregon. Of the many wildfowl refuges may be named the White River in Arkansas, Delta in Louisiana (particularly for geese and ducks), the Seney in Michigan, the Lower Souris in North Dakota, Malheur in Oregon, and the Bear River in Utah. When a Census of big game was taken in 1934, there were about 18,000 elk; 25,000 caribou; over 1200 buffalo; over 1100 moose; nearly 4000 white and black tail deer together; 18,000 mule deer; and 4000 mountain sheep, mostly in their range in Montana.



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VIEWS OF WASHINGTON, D. C.

White House, East Entrance
Washington Monument and Cherry Blossom Walk

U. S. Capitol, West Front
New National Museum

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VIEWS OF WASHINGTON, D. C.

Pan-American Union Building
New Union Station
Connecticut Boulevard Bridge
Smithsonian Institute

White House—South Lawn
Emancipation Statue
House Office Building
Pennsylvania Avenue

DIRECT LEGISLATION

Many election reforms have occurred since 1800, mainly in extensions of the franchise, insuring the elector freedom and secrecy in his voting, and giving him more control over local and state legislation. By 1830 most men of 21 could vote, though some petty property requirements still exist in a few states, and literacy tests are often found necessary. The Fourteenth and Fifteenth Amendments guaranteed freedom to vote, irrespective of race, color, or previous condition of servitude. Wyoming gave women the ballot in 1869, and by 1914 seven states followed suit. By the Nineteenth Amendment in 1920 women voted in the national elections. Reform has taken other directions in the last few decades, some of which will now be considered.

Direct Primary. In the old days a group of politicians and their friends gathered and put men up for office. This method has now largely given way to the direct nomination in a primary election of various candidates for elections. Since the party column, emblem, or designation still obtains, voting is largely by parties, though some efforts have been made to range the electors irrespective of party affiliations, as in the new voting for members of the Unicameral Legislature in Nebraska. It is evident that the direct primary gives voters who go to the polls greater freedom, but often so many candidates appear that much confusion renders void any beneficial results. Placing on the primary ballot names similar to those of well-known citizens also often confuses the electors, or often causes them to vote for men under definite misapprehension of identity. For national elections, the convention method is still in vogue.

Preferential Voting. According to this method, the elector designates his first, second, and other choices in order. This plan or a similar one has been used in West Australia, in South Africa, and in American cities like Grand Junction, Colo., and Seattle. Other plans, sometimes called Proportional Representation voting, have been tried in France with success, in Germany since 1919, and in a limited way in England. Objection has often been made on the well-taken ground that candidates of minor or losing parties obtain no seats. Thus a party, by winning a mere majority of votes, may get all the offices. In 1920 in Pennsylvania, some 1,114,000 Republicans elected 35 members to Congress, whereas 600,000 Democrats elected but one member. So 30,000 Republicans had as much voting strength as all 600,000 Democrats. On the proportional plan, the Democrats would have won 12 of the 36 seats. Under the List System, a party nominates as many candidates as it may wish. Each party obtains as many offices as the total vote justifies. In the Hare system, votes left over after a candidate has enough to elect, are distributed to others of the same party by a rather complicated process. Bosses oppose these plans, for they do away with party controls, but smaller parties tend to multiply and continue to live without justifying their existence.

The Short Ballot is another method to aid the puzzled voter. In 1912 in New York, some of the primary ballots were 14 feet long; they contained scores of names, and many voters became confused. Later the elective offices have been reduced, in some states, and so the candidates are fewer. The commission form of government in cities, increasing the number of appointive offices, simplifying the offices by combinations, city manager plans, and independent voting tend to correct the abuses of many candidates that confuse the voters on election day. Another earlier reform was the adoption of the Australian ballot, whereby each voter is guaranteed the right to vote without having his choice known. Most elections now employ some form of this. Again, voting machines were tried in Lockport, N. Y. in 1892, and 65 were used in Rochester, N. Y. in 1896. In the Nov. 1928 election in all New York state, 80% of the voting was by machine. Counting is swift and unerringly accurate, and devices make cheating unknown. Over 15% of the national vote in 1898 was by such means. In Buffalo, with 218,000 voting, the vote has been tabulated, checked, and announced within 90 minutes of the close of the polls. With straight voting, 1000 can use a machine in a voting day; with split voting, about 600 are accommodated. The greatest claim for the voting machine is that it reduces errors of the voters, many of whom carelessly spoil their ballots.

Corrupt Practice Act. Modern voting methods tend to discourage corruption in buying votes or in sending "repeaters" through the polls. Further, the lavish use of money for even legitimate purposes in national and other elections is now discouraged. Congress in 1925 passed a new act, superseding all others, and providing for the reporting of campaign expenses by national parties. Every contribution of $100 or over must be recorded as to name of the giver and the date, and every expenditure of $10 or more must be accounted for. Amounts that may be spent for certain candidates are limited by law.

Initiative and Referendum. Switzerland for a long time has allowed voters to express to their legislature what bills they desire to have passed. They may also vote on bills that have been passed in a nation or canton referendum. Since 1910 Australia has used some form of referendum frequently. One other form of direct legislation is the *recall*, first tried in Los Angeles in 1902, then in various California cities, and finally adopted by Oregon in 1908 (approved by U. S. Supreme Court), California, 1911, and Arizona, 1912, by constitutional amendments. By this method, a certain proportion of voters may start a movement for an election wherein the entire voting population may vote to recall city officials, judges, and other elective persons. Legislative referendums were approved by the voters in Arkansas and Colorado in 1910, and by 12 others before 1920. Woman suffrage and prohibition were subjects considered by referendum in some states.

FEDERAL EMERGENCY AGENCIES

From time to time emergency activities are ordered by Congress. These are assigned to some cabinet department or are independently sponsored. Early in the administration of Presi-

dent F. D. Roosevelt, a number of emergency acts were passed to create some special board or group to administer a definite set of projects or plans.

Federal Home Loan Bank Board (FHLBB), approved by Congress on May 28, 1935, is composed of one member from each district of the banking system, 12 in all, and 4 chosen by the Board itself. The main object is to assist other credit agencies to finance farm properties, loans, and mortgages. No loan may be made for more than $50,000 or for more than 50% of the appraised value of the property concerned. The interest rate after July 1, 1936, was 4%. Intermediate credit banks, production associations, a credit union system, a commissioner of cooperatives, emergency feed and crop loans, and other agencies assist in carrying out the government specifications. Under the same Board was the Home Owner's Loan Corporation (HOLC), to be liquidated July 1, 1937. There is also a Federal Savings and Loan Insurance plan under the same management.

Commodity Credit Corporation (CCC), of which nine directors were chosen from the officials of the Agricultural Adjustment Administration, was authorized to make loans upon cotton, corn, gum-turpentine, and gum rosin, and other products. The capital was $100,000,000, and most of the loans were paid back with interest. The authority ended on June 30, 1937.

Federal Housing Administration (FHA), with three administrators and many assistants, was set up on June 27, 1934. The object was to make small loans for repair and building of houses, to assist the building trades by creating a greater market for them, and to provide work for idle laborers. Up to 80% of the cost or value could be borrowed on a mortgage granted by any bank, with insurance or guarantee of payment by the government. Payment is made monthly by the borrower in installments, spread over as long as 20 years in some cases. By Dec. 5, 1935 the Administration has done business worth half a billion, while private and other agencies had reported three times the same amount because of similar plans. In that period also, almost 650,000 repair projects had been approved for insurance of mortgage payments.

National Emergency Council (NEC), made up of the various cabinet officers and heads of 25 commissions and boards, was created by executive order on Nov. 17, 1933, to take the place of the old group of the same name. The object is to advise the President, to coordinate the work of the various government agencies, and to serve otherwise as the President may direct. The Council in 1934 set up the Information Service (USIS) to supply information to visitors in Washington, those who call by telephone, or ask for data by letter. Under the Secretary of the Interior, an executive order also established the National Resources Committee (NRC) on June 7, 1935, to secure information as to the land, water, and other natural resources of the country, and to cooperate with state and other units as to transfers and care of land resources.

Federal Deposit Insurance Corporation (FDIC) was organized under the banking Act of 1935 to insure deposits in banks. On June 30, 1935 the amounts on regular deposit in nearly 14,280 banks (not over $5000 to any single depositor) were insured. For this purpose the Treasury subscribed $150,000,000 of stock. Each Federal Reserve bank has subscribed an amount not more than one-half its surplus.

Securities and Exchange Commission (SEC), of three members and a general council, is authorized to administer the Securities Act of 1933. By the original provisions, and by the Public Utility Act of 1935, the Commission has wide powers as to marketing and inspection of securities and the means of selling them. The object is also to eliminate certain forms of holding company operations and to develop certain waterpower resources, through investigation and subsequent action.

Tennessee Valley Authority (TVA), under Act of May 18, 1933, with later amendments, is in charge of a board of three, with offices in Washington and four points in the Tennessee River Valley. Four objects are contemplated: 1, Operating the government-owned plants at Muscle Shoals, Ala.; 2, determining the relative costs of supplying electric power; 3, trying to lower costs of production and distribution of electricity; 4, planning erosion control and reforestation. One government nitrate plant, built during the World War, is kept in condition to operate in a national emergency. Some 18,000,000 trees were planted in the Valley in 1936. Wilson Dam, Norris Dam, Wheeler Dam, and three others make up the plans, which include a 7-foot navigation channel for 385 miles, from Paducah, Ky., to Guntersville, Ala.

Labor Relations Board (NLRB). See department of Economics.

Federal Emergency Administration of Public Works (FEAPW), with the secretary of the interior at the head, was set up in 1933 to reduce unemployment, to assist construction, and to help conserve natural resources. Through various agencies the object was to assist many local projects that would furnish employment and be of lasting benefit to the people.

Works Progress Administration (WPA), similar in purpose to the FEAPW, was set up by executive order under the Emergency Relief Act of 1935. The scope is wider and the types of work more varied and flexible, while all kinds of labor—professional, skilled, untrained, common hands—are employed. Some of the projects approved have been roads, streets, sewers, parks, public buildings, and surveys. Various state, county, municipal, and other local authorities supervise the actual work. In February of 1936, this agency had about 3,000,000 persons on its multitude of payrolls. By the end of the year it had expended over two billion dollars. As part of the WPA, the National Youth Administration (NYA) assisted thousands of young men and women either to find positions or to continue their studies in some college or other school.

Agencies with similar purpose to those described above were the Rural Electrification, Resettlement, Emergency Conservation, Electric Home and Farm Authority, National Reemployment Service, and their branches and local affiliations.

MINOR POLITICAL PARTIES IN THE UNITED STATES.

ABOLITIONISTS. Those who worked together to secure the abolition of slavery.

ADAMITES. The supporters of John Quincy Adams (1821-1832).

AMERICAN PARTY. Originated in New York in 1835, organized as a national party (1852); later known as the Know-Nothing party, and adopted the motto, "America for the Americans."

ANTI-FEDERALISTS. Those who opposed the adoption of the Constitution of the United States and, later, objected to a liberal construction of its terms.

ANTI-IMPERIALISTS. Those who opposed the territorial expansion of the United States, especially to the Philippines.

ANTI-MASONS. Originated in New York in 1826 and was hostile to the Masonic body.

ANTI-NEBRASKA PARTY. Those opposed to the repeal of the Missouri Compromise; principally Northern Whigs; organized in 1854 after the passage of the Kansas-Nebraska Bill.

ANTI-RENTERS. New Yorkers who opposed the collection of rent from the tenants of the old patroon estates (1839-1847).

BARNBURNERS. Radicals of the Democratic party in New York opposed to the extension of slavery; flourished after 1844.

BLACK REPUBLICANS. Southern supporters of the Republican party in sympathy with the negro at the close of the Civil War.

BOURBONS. Old school Southern Democrats; later applied to those who hold obstinately to old traditions in politics.

BUCKTAILS. New York opponents to the policy of Governor Clinton (1815); distinguished by wearing bucktails in their hats.

CARPETBAGGERS. Northern politicians who invaded the South at the close of the Civil War.

CONSTITUTIONAL UNION PARTY. Composed of former Southern Whigs; organized in 1860.

COPPERHEADS. A name given by Republicans during the Civil War to those Northern Democrats who advocated closing the war and who sympathized with the Confederates.

CO-OPERATIONISTS. Those in the South who, just before the war, favored the secession of their own state only in the event of the coöperation of the other states.

COURT PARTY. Supporters of the two rival superior courts in Kentucky.

DOUGHFACES. A name given by John Randolph of Roanoke in 1820 to the Northern members of Congress who voted for the Missouri Compromise.

DRYS. Prohibitionists.

FREE-SOILERS. Those who opposed negro slavery and organized in 1848.

GOLD DEMOCRATS. Disaffected Democrats who, in 1896, refused their support to the regular party platform and favored a gold standard. J. M. Palmer of Illinois was their candidate for President.

GREENBACKERS. Those who between 1876 and 1886 favored the issue of an irredeemable paper currency.

HALF-BREEDS. The moderate wing of the New York Republicans who opposed the Stalwarts from 1881 to 1885.

HUNKERS. The moderate wing of the New York Democrats who opposed the Barnburners after 1844.

INDEPENDENCE PARTY. First organized as Independence League by W. R. Hearst; supported T. L. Hisgen for president, 1908.

KNOW NOTHINGS. The American party.

LIBERALS or LIBERAL REPUBLICANS. Those who opposed the reëlection of Grant in 1872 and sought a liberal policy in the South.

LIBERTY PARTY. Abolitionists about 1840.

LILY WHITES. White Republicans in the South who advocated the exclusion of the negro from the party.

LOCOFOCOS. A faction of New York Democrats in 1835.

LOOSE CONSTRUCTIONISTS. Federalists and Whigs who advocated a liberal interpretation of the Constitution of the United States.

MAHONISTS. Followers in Virginia of General William Mahone, who, in 1878, left the Democratic party.

MIDDLE-OF-THE-ROAD POPULISTS. Those of the Populists who, in 1896, voted for W. J. Bryan for President and Thomas E. Watson of Georgia for Vice-President.

MUGWUMPS. Those nominally identified with a particular party but claiming the right to vote with another party. The Indianapolis *Sentinel* first used the term in 1872; but its popular use dates from its application by the New York *Sun* in 1884 to those Independent Republicans who refused to indorse the candidacy of Blaine for President.

NATIVE AMERICANS. Know-Nothings.

NULLIFIERS. Those who claimed the right of any state to suspend within its borders the operation of any law of the United States; strong in North Carolina from 1828 until 1832.

PEOPLE'S PARTY. Populists.

POPULISTS. Organized in Cincinnati (May, 1891) from among the members of the Grange and the Farmers' Alliance.

PROHIBITIONISTS. Those who advocate the abolition of the liquor traffic; a national party since 1872.

RADICALS. The extreme wing of the Republicans after the Civil War.

READJUSTERS. The Mahonists of Virginia, who, in 1878, favored conditionally repudiating the state debt.

RELIEF PARTY. A movement in Kentucky (and in other states from 1830 to 1860) urging the legislature to enact laws to relieve the people of economic and financial burdens.

REPUDIATORS. Those in Mississippi who advocated repudiating the payment of a large issue of Union bank bonds guaranteed by the state.

SCALAWAGS. Native Southerners who, during the era of reconstruction, united with the Republicans.

SILVER GRAYS. Conservative Whigs.

SILVER PARTY. Largely disaffected Republicans who, in 1896, favored the free coinage of silver and supported the Democratic nominees.

SOCIALISTS. Those who urge the adoption of a socialistic policy in government; a national party since 1892.

STALWARTS. The "machine" wing of New York Republicans led by Roscoe Conkling from 1881 to 1885.

STRICT CONSTRUCTIONISTS. Those who favored a strict interpretation of the Constitution of the United States.

UNION LABOR PARTY. A national party in 1888.

UNION LEAGUES. Political organizations of negroes and white Republicans in the South after the Civil War.

WASHINGTONIANS. An early name for the Prohibitionist party.

WOMAN'S RIGHTS PARTY. Advocates of female suffrage; organized as a national party in 1884. In that year and again in 1888 candidates for President and Vice-President were nominated.

QUALIFICATIONS FOR VOTING IN EACH STATE OF THE UNION

STATE AND REQUIREMENT	RESIDENCE REQUIREMENT			THOSE INELIGIBLE
	State	County	Town, etc.	
Alabama—Citizens and declarants who have good character and understanding; must show poll-tax receipt.	2 yrs.	1 yr.	3 mos.	Persons convicted of treason, embezzlement of public funds, other penitentiary offenses, insane, and idiots.
Alaska—Citizens who can read and write English.[1]	1 yr.	.....	30 d.	See note at end of tables.
Arizona—Citizens or declarants of good understanding. Only payers of taxes may vote on bond issues.[2]	1 yr.	30 d.	30 d.	Persons under guardianship, insane, idiots, or convicted of felony unless pardoned or they have served their terms.
Arkansas—Citizens or declarants of good understanding. Registration not required.[3]	1 yr.	6 mo.	30 d.	Idiots, insane, convicts until pardoned, those who do not pay poll-tax.
California—All who have been citizens at least 90 days, or persons who in 1911 were 60 in age or over.	1 yr.	90 d.	40 d.	Chinese and certain other non-Caucasians, idiots, insane, convicts, those who have stolen public money.
Colorado—Citizens.	1 yr.	90 d.	10 d.	Persons under guardianship, insane, idiots, or convicts unless pardoned or completed their terms.
Connecticut—Citizens who can read English.	1 yr.	6 mos.	.....	Convicts unless pardoned.
Delaware—Citizens. Registration not required.[3]	1 yr.	6 mos.	30 d.	Insane, idiots, fefons, paupers.
Florida—Citizens; must show poll-tax receipt.	1 yr.	6 mos.	30 d.	Persons not registered, insane, paupers.
Georgia—Citizens who can read and write and have paid taxes since 1877.[4]	1 yr.	6 mos.	.....	Persons convicted of crime subject to imprisonment, insane, delinquent taxpayers.
Idaho—Citizens.	6 mos.	30 d.	.....	Chinese, insane, felons, polygamists, bigamists, traitors, bribers.
Illinois—Citizens.	1 yr.	90 d.	30 d.	Convicts until pardoned.
Indiana—Citizens.	6 mos.	.....	60 d.	Convicts, persons disfranchised by court, soldiers, and sailors.
Iowa—Citizens.[4]	6 mos.	60 d.	10 d.	Convicts, defectives.
Kansas—Citizens.	6 mos.	30 d.	30 d.	Insane, those who have guardians, convicts, bribers, defrauders of the government, persons dishonorably discharged from government service.
Kentucky—Citizens who have paid poll tax where required.[4]	1 yr.	6 mos.	60 d.	Traitors, felons, bribers, idiots, insane.
Louisiana—Ability to read and write some language, or those registered before 1912.[5]	2 yr.	1 yr.	3 m.	Idiots, insane, all crimes punishable by imprisonment, embezzlement of public funds.
Maine—Citizens.	3 mos.	3 mos.	3 mos.	Paupers,[6] those under guardianship.
Maryland—Citizens.	1 yr.	6 mos.	6 mos.	Persons convicted of larceny or other infamous crimes, those under guardianship, idiots, insane.
Massachusetts—Citizens able to read and write English, who have paid poll tax.	1 yr.	6 mos.	6 mos.	Paupers (not including U. S. soldiers), persons under guardianship.[6]
Michigan—Citizens.	6 mos.	20 d.	20 d.	None definitely specified.
Minnesota—Citizens.[4]	6 mos.	.....	10 d.	Traitors, felons not pardoned, insane, those under guardianship.
Mississippi—Citizens who can read or understand the state constitution; poll tax required.	2 yrs.	1 yr.	1 yr.	Insane, idiots, felons, delinquent taxpayers.
Missouri—Citizens.[4]	1 yr.	60 d.	60 d.	Paupers, convicts, those who misuse franchise; second offense disfranchises permanently.
Montana—Citizens.	1 yr.	30 d.	30 d.	Felons, idiots, insane.
Nebraska—Citizens.[4]	6 mos.	40 d.	40 d.	Lunatics, persons convicted of treason or felony, U. S. soldiers and sailors.
Nevada—Citizens.	6 mos.	30 d.	10 d.	Insane, idiots, traitors or felons, confederated against the U. S., Chinese.

STATE AND REQUIREMENT	RESIDENCE REQUIREMENT			THOSE INELIGIBLE
	State	County	Town, etc.	
New Hampshire—Citizens.	.....	.....	6 mos.	Paupers (not soldiers), persons excused from taxes at their own request.[6]
New Jersey—Citizens.	1 yr.	5 mos.	.....	Paupers, insane, idiots, those excluded from being witnesses because of crime.
New Mexico—Citizens.	1 yr.	90 d.	30 d.	Insane, idiots, convicts, and Indians not taxed.
New York—Citizens. Literacy test required of first voters.	1 yr.	4 mos.	30 d.	Convicts, bribers and bribe takers in elections, betters on results of elections, unless pardoned.
North Carolina—Citizens who can read.	1 yr.	.....	4 mos.	Idiots, lunatics, convicts, atheists.
North Dakota—Citizens.	1 yr.	90 d.	30 d.	Felons, idiots, convicts unless pardoned, U. S. soldiers, marines, and sailors.
Ohio—Citizens.	1 yr.	30 d.	20 d.	Idiots, insane, felons unless restored to citizenship, U. S. soldiers and sailors.
Oklahoma—Citizens of the United States; native Indians.	1 yr.	6 mos.	30 d.	Felons, paupers, idiots, lunatics, any person in a prison.
Oregon—Citizens.	6 mos.	.....	.....	Idiots, insane, convicted felons, Chinese, U. S. soldiers and sailors.
Pennsylvania—Citizens.[7]	1 yr.	2 mos.	2 mos.	Persons convicted of certain crimes.
Rhode Island—Citizens.[7]	2 yrs.	6 mos.	30 d.	Paupers, lunatics, idiots, bribers, felons.
South Carolina—Citizens who can read and write; or pay taxes; or poll tax; etc.	1 yr.	6 mos.	2 mos.	Paupers, insane, idiots, traitors, those convicted of duelling or other infamous crime.
South Dakota—Citizens.	1 yr.	90 d.	20 d.	Persons under guardian, idiots, insane, traitors, felons.
Tennessee—Citizens who paid poll tax preceding year.	1 yr.	6 mos.	60 d.	Bribers or other felons; those who fail to pay poll tax.
Texas—Citizens; must pay poll tax.[4]	1 yr.	6 mos.	.....	Idiots, lunatics, paupers, convicts, U. S. soldiers and sailors.
Utah—Citizens.	1 yr.	4 mos.	60 d.	Idiots, insane, traitors, those who violate election laws.
Vermont—Citizens.	1 yr.	3 mos.	3 mos.	Unpardoned convicts, deserters from U. S. service during war, ex-confederates.
Virginia—Citizens who can write, own property, or were registered before 1903, or son of such; must have paid poll tax 3 yrs. preceding.	1 yr.	6 mos.	30 d.	Idiots, lunatics, convicts, unless pardoned.
Washington—Citizens.	1 yr.	90 d.	30 d.	None specified.
West Virginia—Citizens.	1 yr.	6 mos.	10 d.	Paupers, idiots, lunatics, convicts, bribers, U. S. soldiers and sailors.
Wisconsin—Citizens.[4]	1 yr.	10 d.	10 d.	Insane, those under guardianship, duelists, convicts unless pardoned.
Wyoming—Citizens.	1 yr.	60 d.	10 d.	Idiots, insane, felons, those who can't read the state constitution.

General Requirements for Voting

In the tables given above, citizenship relates to those born in the United States, or who have been naturalized. A child obtains citizen's rights during his minority if one or both parents become naturalized. If a child is born outside the United States, since May 24, 1934, he becomes a citizen if one of his parents had been a resident and citizen of the United States previously. Congress made all Indians citizens on June 2, 1924, but voting is withheld in two or three states, or is restricted. Chinese were first excluded in 1882. Courts have ruled that Chinese, Japanese, Hawaiians, Hindus, Burmese, Arabians, and East Indians "are not free white persons", and hence may not apply for citizenship. One contemplating naturalization, or voting for the first time, should make local inquiries of courts or election boards as to other requirements. Some states, counties, or even election districts have petty restrictions not noted in the preceding tabulations.

Some Special Requirements in States or Districts

[1] Citizenship was conferred by an Act of May 7, 1934 on the Indians of Alaska who founded the colony known as Metlakahtla and who had resided there from Jan. 1, 1900.

[2] Besides Arizona, a few other states exclude non-taxpayers from voting on appropriations, bond issues, or other grants of money. In many localities, only taxpayers may vote in school elections.

[3] Arkansas and Delaware seem to be the only states where registration is not required at all. See next note.

[4] Registration is required in certain districts in some states, but not in all. Georgia requires it in some counties. Iowa, Kansas, and Nebraska require registration in all cities; Kentucky in cities of the first three classes; Minnesota in cities over 1200 in population; Missouri in cities of 10,000 over and counties of 100,000 or over; Wisconsin in cities of 5000 or over; and Texas in cities of 10,000 or over. In these states, registration is not required in the smaller units of government.

[5] Louisiana abolished the *alternative* property requirement of $300 in value in 1922 by constitutional amendment.

[6] Paupers in Maine may be excluded by local election boards. In Massachusetts, New Hampshire, and West Virginia, special acts have provided that persons on relief are not deprived of their votes.

[7] If the voter is 22 years old (that is, a first voter) he must have paid within two years a state or county tax.

[8] In South Carolina the clergy and teachers may vote in the state after a residence there of six months.

FACTS REGARDING

Order.	Presidents. Life Dates.	PARENTS' NAMES.	Education. Early Vocation. Religious Faith.	Wife's Name. Date of Marriage. Number of Children.
1	WASHINGTON, GEORGE. Born February 22, 1732, near Bridges Creek, Westmoreland County, Va. Died December 14, 1799, at Mt. Vernon, Va., of pneumonia, aged 67. Buried at Mt. Vernon, Va.	Eldest son of second family of Augustine Washington, a planter, of English descent. Mary Ball, second wife of Augustine Washington.	Limited education at school until 16. Surveyor, 1748; major, 1751; planter, 1758. Episcopalian.	Martha (Dandridge) Custis (1732-1802) widow with two children, in 1759, John and Martha Parke Custis. Washington had no children.
2	ADAMS, JOHN. Born October 30, 1735, at Braintree, now Quincy, Norfolk County, Mass. Died July 4, 1826, at Quincy, Mass., of debility, aged 90. Buried at Quincy, Mass.	Son of John Adams, a farmer, and descendant of Henry Adams, a Puritan emigrant of 1640 from England. Susanna Boylston.	Graduated from Harvard, 1755. Taught school for a short time; studied law, and admitted to the bar, 1758. Entered politics. Congregationalist.	Abigail Smith (1744-1818), daughter of Rev. William Smith, in 1764. Had three sons, of whom President John Quincy Adams was one, and two daughters.
3	JEFFERSON, THOMAS. Born April 13, 1743, at Shadwell, Albemarle County, Va. Died July 4, 1826, at Monticello, Va., of chronic diarrhœa, aged 83. Buried at Monticello, Albemarle county, Va.	Son of Peter Jefferson, a planter of Welsh descent, and of Jane Randolph, a sister of William Randolph of Tuckahoe.	Graduated from William and Mary, 1762. Read law under George Wythe of Virginia, and admitted to the bar, 1767. Entered politics. Liberal.	Martha (Wayles) Skelton (1748-1782), widow of Bathurst Skelton, in 1772. Had one son and five daughters.
4	MADISON, JAMES. Born March 16, 1751, at Port Conway, King George County, Va. Died June 28, 1836, at Montpelier, Va., of debility, aged 85. Buried at Montpelier, Hanover county, Va.	Son of James Madison, a planter of English descent, and of Nelly Conway.	Graduated from Princeton, 1771. Studied law. Became a statesman. Episcopalian.	Dolly (Payne) Todd (1772-1849), widow, in 1794. No children.
5	MONROE, JAMES. Born April 28, 1758, at Head of Monroe's Creek, Westmoreland County, Va. Died July 4, 1831, at New York City, of debility, aged 73. Buried at Hollywood Cemetery, Richmond, Va.	Son of Spence Monroe, a planter of Scotch descent, and of Eliza Jones.	Left William and Mary College to enter the army, 1776; abandoned the law for a public life. Episcopalian.	Eliza Kortwright (1768-1830), in 1786. Had two daughters.
6	ADAMS, JOHN QUINCY. Born July 11, 1767, at Quincy, Norfolk County, Mass. Died February 23, 1848, at Washington, D. C., of paralysis, aged 80. Buried at Quincy, Mass.	Son of the second President of the United States, John Adams, of English descent, and of Abigail Smith, a daughter of Rev. Wm. Smith.	Graduated from Harvard, 1787. Studied law with Theophilus Parsons, and was admitted to the bar, 1790. Congregationalist.	Louisa Catherine Johnson (1775-1852), in 1797. Had three sons, of whom the statesman and diplomat, Charles Francis Adams (1807-1886), was one, and one daughter.
7	JACKSON, ANDREW. Born March 15, 1767, near Cureton's Pond, Union County, North Carolina. Died June 8, 1845, at Hermitage, Tenn., of consumption, aged 78. Buried at Hermitage, near Nashville, Tenn.	Son of Andrew Jackson, a farmer of Scotch-Irish ancestry, and of Elizabeth Hutchinson.	Worked at saddler's trade, then, 1784, began the practice of law and was admitted to the bar. Appointed public prosecutor, in Tennessee, 1788. Presbyterian.	Rachel Donelson Robards (1767-1828), daughter of John Donelson, and divorced wife of Captain Robards, in 1791. No children.

THE PRESIDENTS.

Political Faith. Age at Election. Political Opponents. Electoral Vote.	Events During Term of Office.	After Life.
Federalist. Fifty-seven. *Election of 1789.* Washington, 69; John Adams, 34; John Jay, 9; R. H. Harrison, 6; John Rutledge, 6; John Hancock, 4; George Clinton, 3; Samuel Huntingdon, 2; John Milton, 2; James Armstrong, 1; Benj. Lincoln, 1; Edw. Telfair, 1. Washington was inaugurated in 1789. *Election of 1792.* Washington, 132; John Adams, 77; George Clinton, 50; Thomas Jefferson, 4; Aaron Burr, 1. Washington was inaugurated in 1793. Held office 7 years, 10 months, 4 days in all.	Admission of Vermont, Kentucky, and Tennessee, 1791-1796; Assumption of state debts, 1790; Chartering of bank, 1791; Erection of national mint, 1792; Whisky insurrection, 1794; Trouble with Indians, 1794; Retirement of Jefferson from the cabinet and the ascendency of Hamilton; Jay treaty, 1796; Scurrilous attacks on Washington by the followers of Jefferson. Invention of the cotton gin, 1793.	Followed agriculture. Was appointed commander-in-chief (1798) of the national army, because of prospect of war with France.
Federalist. Sixty-one. *Election of 1796.* John Adams, 71; Jefferson, 68; Thos. Pinckney, 59; Burr, 30; Samuel Adams, 15; Oliver Ellsworth, 11; Geo. Clinton, 7; John Jay, 5; James Iredell, 3; Geo. Washington, 2; John Henry, 2; S. Johnson, 2; C. C. Pinckney, 1. John Adams was inaugurated in 1797. Held office 4 years.	X. Y. Z. correspondence, 1798; Threatened war with France, 1798; The Alien and Sedition laws, 1798; Virginia and Kentucky resolutions, 1798-1799; Weakening of the Federalist Party by rivalry of Adams and Hamilton. City of Washington made the national capital, 1800.	Served in the Massachusetts Constitutional Convention of 1820.
Republican. Fifty-seven. *Election of 1800.* Jefferson, 73; Burr, 73; John Adams, 65; C. C. Pinckney, 64; Jay, 1; Tie vote for Jefferson and Burr; choice devolved upon House of Representatives. Jefferson had votes of ten states, which elected him president. Inaugurated in 1801. *Election of 1804.* Jefferson, 162; C. C. Pinckney, 14. Inaugurated in 1805. Held office 8 years in all.	War with Tripoli, 1802; Repeal of excise tax, 1802; Ohio admitted as a state, 1803; Purchase of Louisiana, 1803; Lewis and Clark expedition, 1804; Treaty of peace with Tripoli, 1805; Napoleon issues the Berlin decree, 1806; Burr conspiracy, 1807; Embargo act, 1807; Invention of steamboat, 1807; Non-intercourse act, 1809.	Jefferson retired to his plantation at Monticello, Va. He exerted an important influence on the government through his writings. He founded the University of Virginia
Republican. Fifty-seven. *Election of 1808.* Madison, 122; C. C. Pinckney, 47; Geo. Clinton, 6. Madison was inaugurated in 1809. *Election of 1812.* Madison, 128; DeWitt Clinton, 89. Madison was inaugurated in 1813. Held office 8 years in all.	British and French armed vessels excluded from American waters, 1810; Harrison defeats Indians at Tippecanoe, 1811; War of 1812; Louisiana admitted, 1812; Loan of $25,000,000, and issue of treasury notes for $10,000,000, 1814; Hartford convention, 1814; direct tax of $6,000,000, 1815; Treaty with eight Indian tribes east of the Mississippi, 1815; United States bank chartered by Congress, 1816; Indiana admitted, 1816.	Retired to Montpelier, Va., where he devoted himself in later life to promoting the interests of the University of Virginia. In 1829 he served in the Virginia Constitutional Convention.
Republican. Fifty-eight. *Election of 1816.* Monroe, 183; Rufus King, 34: Monroe was inaugurated in 1817. *Election of 1820.* James Monroe, 231; John Q. Adams, 1. Monroe was inaugurated in 1821. Held office 8 years in all.	Acquisition of Florida, 1819; Missouri compromise, 1821; the Monroe doctrine, 1823; Visit of Lafayette to United States, 1824; Treaty with Russia (54°, 40′, n. lat.), 1825; Admission of Missouri, Mississippi, Illinois, Alabama, and Maine.	Retired to private life in Virginia, where he served as a member of the Virginia Constitutional Convention in 1830.
Republican. Fifty-seven. *Election of 1824.* Andrew Jackson, 99; J. Q. Adams, 84; Wm. H. Crawford, 41; Henry Clay, 37. Vote given to House of Representatives, choosing from among the three highest; the Clay faction joined with that of Adams and defeated Jackson. Adams was inaugurated in 1825. Held office 4 years.	Completion of the Erie canal, 1825; Dispute between state of Georgia and United States upon the removal of the Creek Indians, 1825-1829; Rise of Anti-masonic Party, 1826; Completion of first railroad in United States, 1827; "Tariff of abominations," 1828.	After term of office had expired, he returned to Washington and entered the House of Representatives, serving from 1830 to his death.
Democrat. Sixty-one. *Election of 1828.* Jackson, 178; John Q. Adams, 83. Jackson was inaugurated in 1829. *Election of 1832.* A. Jackson, 219; Henry Clay, 49; John Floyd, 11; Wm. Wirt, 7. Jackson was inaugurated in 1833. Held office 8 years in all.	The President reforms the cabinet, 1831; "Spoils System," 1832; Bank bill vetoed by President, 1832; Black Hawk War, 1832; Nullification in S. Carolina, 1832; Henry Clay compromise tariff, 1833; Force bill, 1833; Removal of bank deposits from National bank, 1833; Treaty with Seminole Indians, 1834; Santa Anna captures the "Alamo," Texas, 1836; admission of Arkansas, 1836; Michigan, 1837.	Passed remainder of his life at the "Hermitage," near Nashville, Tenn., always taking a deep interest in public affairs.

Order.	Presidents. Life Dates.	PARENTS' NAMES.	Education. Early Vocation. Religious Faith.	Wife's Name. Date of Marriage. Number of Children.
8	VAN BUREN, MARTIN. Born December 5, 1782, at Kinderhook, Columbia County, N. Y. Died July 24, 1862, at Lindenwold, N. Y., of asthmatic catarrh, aged 79. Buried at Kinderhook, N. Y.	Son of Abraham Van Buren, a farmer of Dutch extraction, and of Maria Hoes.	Limited education. Studied law with William P. Van Ness in New York City, and was admitted to the bar, 1803. Entered politics. Reformed Dutch.	Hannah Hoes (1783-1819), in 1807. Had four sons, one of whom, John, was graduated from Yale (1828), and became attorney-general of New York (1845-1846).
9	HARRISON, WILLIAM HENRY. Born February 9, 1773, at Berkeley, Charles City County, Va. Died April 4, 1841, at Washington, D. C., of bilious pleurisy, aged 68. Buried at North Bend, Hamilton County, Ohio.	Son of Benjamin Harrison (1740-91), a statesman of English origin, and of Elizabeth Bassett.	Educated at Hampden-Sidney College, leaving in 1790 to enter the army. Entered politics in 1799. Episcopalian.	Anna Symmes (1775-1864), in 1795. Had six sons and four daughters.
10	TYLER, JOHN. Born March 29, 1790, at Greenway, Charles City County, Va. Died January 17, 1862, at Richmond, Va., of a bilious attack, aged 71. Buried at Hollywood Cemetery, Richmond, Va.	Son of John Tyler, a jurist of English ancestry, and of Mary Armistead.	Graduated from William and Mary, 1807. Was admitted to the bar, 1809. Entered the Legislature, 1811. Episcopalian.	Married first to Letitia Christian (1790-1842), in 1813. Had three sons and four daughters. Married a second time to Julia Gardiner (1820-1889), in 1844. Had five sons, one of whom, Lyon Gardiner, became president of William and Mary College in 1888, and two daughters.
11	POLK, JAMES KNOX. Born November 2, 1795, near Pineville, Mecklenburg County, North Carolina. Died June 15, 1849, at Nashville, Tenn., of chronic diarrhœa, aged 53. Buried at Polk Place, Nashville, Tenn.	Son of Samuel Polk (originally Pollock), a farmer of Scotch-Irish descent, and of Jane Knox.	Graduated, 1818, from University of North Carolina. Studied law with Felix Grundy of Tennessee, and was admitted to the bar, 1820. He entered politics, 1823. Presbyterian.	Sarah Childress (1803-1891), in 1824. No children.
12	TAYLOR, ZACHARY. Born November 22, 1784, near Orange C. H., Orange County, Va. Died July 9, 1850, at Washington, D. C., of bilious fever, aged 65. Buried at Springfield, Ky.	Son of Col. Richard Taylor, an officer of the Revolutionary War, a planter of English origin, and of Sarah Strother.	Received an elementary education, and worked on a plantation. Entered the army, 1808, where he was gradually promoted. Episcopalian.	Margaret Smith (1788-1852), in 1810. Had one son and three daughters.
13	FILLMORE, MILLARD. Born January 7, 1800, at Summerhill, Cayuga County, N. Y. Died March 9, 1874, at Buffalo, N. Y., of debility, aged 74. Buried at Buffalo, N. Y.	Son of Nathaniel Fillmore, a farmer of English descent, and of Phebe Millard.	Had little opportunity for an education. Studied law and was admitted to the bar, 1823. Entered political life by his election as an Antimason to State Legislature. Unitarian.	Married first time to Abigail Powers (1798-1853), in 1826. Had one son and one daughter. Married a second time in 1858, Caroline Carmichael McIntosh (1813-1881), a widow.
14	PIERCE, FRANKLIN. Born November 23, 1804, at Hillsborough, Hillsborough County, N. H. Died October 8, 1869, at Concord, N. H., of inflammation of stomach, aged 64. Buried in Concord, N. H.	Son of Benjamin Pierce, a farmer of English descent, and of Anna Kendrick.	Graduated from Bowdoin, 1824. Studied law under Senator Levi Woodbury. Was admitted to the bar, 1827. Entered politics, 1829. Episcopalian.	Jane Means Appleton (1806-1863), in 1834. Had three sons.
15	BUCHANAN, JAMES. Born April 23, 1791, at Cove Gap, Franklin County, Penn. Died June 1, 1868, at Wheatland, Penn., of rheumatic gout, aged 77. Buried at Lancaster, Penn.	Son of James Buchanan, a merchant of Scotch-Irish descent, and of Elizabeth Speer.	Graduated from Dickinson College, 1809. Was educated for the bar. Began the practice of law, 1812. Served as a private in War of 1812. Entered politics, 1814. Presbyterian.	Unmarried.

THE PRESIDENTS.

Political Faith. Age at Election. Political Opponents. Electoral Vote.	Events During Term of Office.	After Life.
Democrat. Fifty-four. *Election of 1836.* Van Buren, 170; W. H. Harrison, 73; Hugh L. White, 26; Daniel Webster, 14; Willie P. Mangum, 11. Van Buren was inaugurated in 1837. Held office 4 years.	Commercial panic of 1837: Sub-treasury bill, 1840; Disturbance in Canada, 1837; Resumption of specie payments in New England and New York, 1838.	Renominated in 1840 for the Presidency. Defeated by W. H. Harrison. In 1844 again renominated, but was defeated. In 1848 nominated by Free-soil Party.
Whig. Sixty-eight. *Election of 1840.* W. H. Harrison, 234; Van Buren, 60; Jas. G. Birney, —. Harrison was inaugurated in 1841. Held office 1 month.	Vice-president Tyler takes the oath of office, as president, April, 1841.	
Democrat. Fifty-one. Took oath of office as president on the death of Pres. Harrison, Apr., 1841. Held office 3 years, 11 months.	Bill to re-charter the Bank of United States vetoed by President, 1841; Repeal of Sub-treasury act, 1841; Dorr rebellion in Rhode Island, 1842; Ashburton treaty with England, 1842; Dedication of Bunker Hill monument, 1843; Morse and the telegraph, 1844; Annexation of Florida, 1845; Mormons and Abolitionists.	Retired to his estate in Charles City County, Va. Presided over Peace Convention at Washington in 1861.
Democrat. Forty-nine. *Election of 1844.* Polk, 170; Henry Clay, 105; Jas. G. Birney, —. Polk was inaugurated in 1845. Held office 4 years.	Admission of Texas, 1845, and Iowa, 1846; Hostilities begun between Mexico and the United States, 1846; Independent Treasury system re-enacted, 1846; Wilmot proviso, 1846; Treaty with Great Britain, 54°, 40′, n. lat., 1846; Admission of Wisconsin, 1848; Gold discovered in California, 1848.	
Whig. Sixty-four. *Election of 1848.* Taylor, 163; Lewis Cass, 127; Martin Van Buren, —. Taylor inaugurated 1849. Held office 1 year, 4 months, 5 days.	Clay compromise regarding the slavery dispute ("Omnibus Bill"), 1850. Vice-president Fillmore takes oath of office, as president, July 10, 1850.	
Whig. Fifty. Took oath of office as president on the death of Pres. Taylor. Held office 2 years, 7 months, 26 days.	Fugitive Slave Law signed, 1850; Filibustering expeditions, 1851.	Candidate for President in 1852 before the National Convention of the Whig Party. In 1856 he was candidate for President on the ticket of the Know-Nothing or American Party. Spent the remaining years of his life at Buffalo.
Democrat. Forty-eight. *Election of 1852.* Pierce, 254; Winfield Scott, 42; John P. Hale, —; Daniel Webster, —. Pierce was inaugurated in 1853. Held office 4 years.	Purchase of Arizona and New Mexico, 1853; opening of the World's Fair at New York, 1853; Perry's treaty with Japan, 1854; Kansas-Nebraska bill, 1854; Ostend Manifesto, 1854; Assault on Senator Sumner, 1856; Rise of the Republican Party, 1856.	Traveled in Europe.
Democrat. Sixty-five. *Election of 1856.* Buchanan, 174; John C. Fremont, 114; Millard Fillmore, 8. Buchanan was inaugurated in 1857. Held office 4 years.	Dred Scott decision, 1857; Tariff of 1857; Panic of 1857; Minnesota admitted, 1858, Oregon, 1859; Discovery of silver in Nevada and Colorado, 1859; John Brown's raid, 1859; Election of Abraham Lincoln, 1860; Secession of South Carolina, 1860; Formation of Southern Confederacy, 1861; Jefferson Davis president; Morrill tariff, 1861.	Published a defense entitled, "Mr. Buchanan's Administration on the Eve of the Rebellion."

Order.	Presidents. Life Dates.	PARENTS' NAMES.	Education. Early Vocation. Religious Faith.	Wife's Name. Date of Marriage. Number of Children.
16	LINCOLN, ABRAHAM. Born February 12, 1809, near Hodgensville, Larue County, Ky. Died April 15, 1865, by assassination at Washington, D. C., aged 56. Buried in Springfield, Ill.	Son of Thomas Lincoln, a farmer of English descent, and of Nancy Hanks.	Self-educated farm hand. Entered for service in the Black Hawk War, 1832. Read law. Entered politics, 1832. Liberal.	Mary Todd (1818-1882) in 1842. Had four sons, of whom Robert Todd Lincoln, a prominent lawyer and politician, was one.
17	JOHNSON, ANDREW. Born December 29, 1808, in Raleigh, Wake County, N. C. Died July 31, 1875, at Carter's Depot, Tenn., of paralysis, aged 66. Buried at Greeneville, Greene County, Tenn.	Son of Jacob Johnson, a sexton and constable of English descent, and of Mary McDonough.	Limited education; self-educated. Tailor in early life. Entered politics, 1828. Methodist.	Eliza McCardle (1810-1876) in 1827. Had three sons and two daughters.
18	GRANT, ULYSSES SIMPSON. Born April 27, 1822, at Point Pleasant, Clermont County, Ohio. Died July 23, 1885, at Mt. McGregor, N. Y., of cancer, aged 63. Buried at Riverside Park, New York City.	Son of Jesse Root Grant, a tanner of Scotch ancestry, and of Hannah Simpson, daughter of John Simpson.	Graduated from West Point, 1843. Entered the army as brevet second lieutenant. In the Mexican War, 1847; commander in chief of the armies of the U. S., 1864. Methodist.	Julia Dent (1826-1902) in 1848. Had three sons and one daughter.
19	HAYES, RUTHERFORD BIRCHARD. Born October 4, 1822, at Delaware, Delaware County, Ohio. Died January 17, 1893, at Fremont, Ohio, of paralysis of the heart, aged 70. Buried at Fremont, Ohio.	Son of Rutherford Hayes, a merchant of Scotch ancestry, a descendant in the sixth generation of Geo. Hayes, who left Scotland in 1680 and settled in Windsor, Conn., and of Sophia Birchard.	Graduated from Kenyon College, 1842. Studied law under Thomas Sparrow of Columbus, and spent two years in the Harvard Law School (1843-1845). Admitted to the bar, 1845. Fought in Civil War. Entered politics. Methodist.	Lucy Ware Webb (1831-1889) in 1852. Had seven sons and one daughter.
20	GARFIELD, JAMES ABRAM. Born November 19, 1831, at Orange, Cuyahoga County, Ohio. Died September 19, 1881, at Long Branch, by assassination, aged 49. Buried in Cleveland, Ohio.	Son of Abram Garfield, a farmer of English descent, and of Eliza Ballou.	Graduated from Williams College, 1856. Learned the carpenter's trade and worked at it in school vacation of 1850. Worked on a farm. Taught Latin and Greek in Hiram Institute. Practised law. Joined the army, 1861. Entered politics. Disciples of Christ.	Lucretia Rudolph (1832-——) in 1858. Had four sons, one of whom, Harry A., is president of Williams College, and James Rudolph was secretary of the interior in the Roosevelt cabinet, and one daughter.
21	ARTHUR, CHESTER ALAN. Born October 5, 1830, in Fairfield, Franklin County, Vt. Died November 17, 1886, at New York City, of Bright's disease, aged 56. Buried in Albany, N.Y.	Son of William Arthur, a clergyman of Scotch-Irish ancestry, and of Malvina Stone.	Graduated from Union College, 1848. He began to practise law, 1853. Entered politics. Episcopalian.	Ellen Lewis Herndon (1837-1880) in 1859. Had one son and one daughter.
22 & 24	CLEVELAND, STEPHEN GROVER. Born March 18, 1837, at Caldwell, Essex County, N. J. Died June 24, 1908, at Princeton, N. J., of debility, aged 71. Buried at Princeton, N. J.	Son of Richard Falley Cleveland, a clergyman of English descent, and of Anna Neal.	Public school education. Taught school (1853). Studied law; admitted to practice, 1859. Entered politics. Presbyterian.	Frances Folsom (1864-——) in 1886. Had one son and three daughters.

THE PRESIDENTS.

Political Faith. Age at Election. Political Opponents. Electoral Vote.	Events During Term of Office.	After Life.
Republican. Fifty-two. *Election of 1860.* Lincoln, 180; Stephen A. Douglas, 12; J. C. Breckinridge, 72; John Bell, 39. Lincoln was inaugurated in 1861. *Election of 1864.* Abraham Lincoln, 212; Geo. B. McClellan, 21. Lincoln was inaugurated in 1865. Held office 4 years, 1 month, 11 days.	Attack on Fort Sumter, April 12, 1861; Civil War between North and South, 1861-1865; Admission of new states (Kansas, 1861, West Virginia, 1863, Nevada, 1864); Emancipation proclamation, 1863; Assassination of the President, April 14, 1865; Vice-president takes oath of office; The Trent affair; New York riots.	
Republican. Fifty-six. Took oath of office as president on the assassination of President Lincoln, for the remainder of the term from April 15, 1865-1869.	Reorganization of Southern states, 1865; Payment of national debt begun, 1865; Tenure of office act, 1867; Purchase of Alaska, 1867; Impeachment of the President, 1868; Six states re-admitted, 1868; Burlingame treaty with China, 1868; Thirteenth and Fourteenth amendments 1865 and 1868; Full pardon to citizens of seceded states, 1868; Atlantic cable, 1866; Admission of Nebraska, 1867.	Retired to home in Greeneville, Tenn. Was chosen United States senator in 1875, and sat during the short extra session in March.
Republican. Forty-six. *Election of 1868.* Grant, 214; Horatio Seymour, 80. Grant was inaugurated in 1869. *Election of 1872.* Grant, 286; Horace Greeley, ——; Charles O'Conor, ——; James Black, ——; Thomas A. Hendricks, 42; B. Gratz Brown, 18; Charles J. Jenkins, 2; David Davis, 1. Grant was inaugurated in 1873. Held office 8 years in all.	Completion of the Pacific Railroad, 1869; All Southern states re-admitted to the Union, 1870; Fifteenth Amendment to the Constitution, 1870; Tweed ring in N. Y., 1871; Ku-Klux Klan, 1871; Great fires at Chicago, 1871, and Boston, 1872; Treaty of Washington, 1871; Settlement of the Alabama claims, 1872; Business panic of 1873, Whisky ring, 1875; Sioux War, 1876; Centennial exposition, at Philadelphia, 1876.	Retired to private life in New York. Wrote the recollections of his military life.
Republican. Fifty-four. *Election of 1876.* Rutherford B. Hayes, 185; Samuel J. Tilden, 184; Peter Cooper, ——; Green Clay Smith, ——; James B. Walker, ——. Hayes was inaugurated in 1877. Held office 4 years.	Withdrawal of troops from the South, 1877; Great railroad strikes, 1877; Yellow fever at the South, 1878; Remonetization of silver, 1878; Resumption of specie payment, 1879; Eads improvement of the navigation of the Mississippi, 1879; Treaty with China, 1880.	After his retirement he supported philanthropy and education. Acted as president of the States Board for the instruction of freedmen, and as president of the National Prison Association.
Republican. Forty-nine. *Election of 1880.* Garfield, 214; W. S. Hancock, 155; James B. Weaver, ——; Neal Dow, ——; John W. Phelps, ——. Garfield was inaugurated in 1881. Held office 6½ months.	Assassination of President Garfield July 2, 1881. Vice-president Arthur takes oath as president.	
Republican. Fifty. Took oath of office as president, 1881, on the assassination of President Garfield. Held office 3 years, 5½ months.	Passage of the Edmunds bill, 1882; Completion of East River Suspension Bridge, 1883; civil service reform commission, 1883; Reduction in rates of letter postage to two cents, 1883 and 1885; Cincinnati riot, 1884; New Orleans exhibition, 1884.	
Democrat. Forty-seven. *Election of 1884.* Cleveland, 219; James G. Blaine, 182; John P. St. John, ——; Benjamin F. Butler, ——; P. D. Wigginton, ——. Cleveland was inaugurated in 1885. Held office 4 years. *Election of 1892.* Opponents. Cleveland, 277; Benjamin Harrison, 145; James B. Weaver, 22; John Bidwell, ——; Simon Wing, ——. Cleveland was inaugurated in 1893. Held office 4 years.	First term, 1885-1889; civil service reform, 1885; Riot at Chicago, 1886; Charleston earthquake, 1886; Presidential succession act, 1886; Interstate commerce act, 1887; Chinese immigration act, 1888; Mills tariff, 1888; Western blizzards, 1888. Second term, 1893-1897; World's Fair at Chicago, 1893; Panic of 1893; Repeal of Sherman act, 1893; Coal strike, 1894; Wilson tariff act, 1894; Amnesty granted to the Mormons, 1894; Extension of civil service reform, 1894; Atlanta exhibition, 1895; Admission of Utah, 1896; Arbitration of the Venezuela question, 1896.	At end of his first term he retired to New York to the practice of law, but kept in touch with the political interests of his party. At end of second term he retired to Princeton, N. J., where he lived to the time of his death.

Order	Presidents. Life dates.	PARENTS' NAMES.	Education. Early Vocation. Religious Faith.	Wife's Name. Date of Marriage. Number of Children.
23	HARRISON, BENJAMIN. Born August 20, 1833, at North Bend, Hamilton County, Ohio. Died March 13, 1901, at Indianapolis, Ind., of pneumonia, aged 67. Buried at Indianapolis, Ind.	Son of John Scott Harrison, a farmer of English descent, and of Elizabeth F. Irwin. Benjamin was a grandson of the ninth president of the U. S., Wm. Henry Harrison.	Studied at Farmers College, near Cincinnati, and graduated from Miami University in 1852. Studied law. Reporter of the Supreme Court of Indiana, 1860. Entered the Federal army, 1862. Presbyterian.	Married first Caroline Lavinia Scott (1832–1892) in 1853. Had one son and one daughter. A second time he married Mary Scott (Lord) Dimmick (1858—). Had one daughter.
25	MCKINLEY, WILLIAM. Born January 29, 1843, at Niles, Trumbull County, Ohio. Died September 14, 1901, by assassination, at Buffalo, N. Y., aged 57. Buried at Canton, Ohio.	Son of William McKinley, an iron manufacturer of Scotch-Irish ancestry, and of Nancy C. Allison.	Studied at Poland Academy and Alleghany College, did not graduate, taught school for several years, went into business with his father, studied law, admitted to bar 1867; entered politics 1869. Methodist.	Ida Saxon (1844–1907) in 1871. Had two daughters, who died in infancy.
26	ROOSEVELT, THEODORE. Born October 27, 1858, at 28 East 20th st., New York City. Died at Oyster Bay, Jan. 6, 1919.	Son of Theodore Roosevelt, a merchant of Dutch ancestry, and of Martha Bulloch.	Harvard graduate 1880; attended Columbia Law School, entered politics 1881; U. S. Civil Service Commissioner 1889–1895; Asst. Sec. of Navy 1897–1898; Spanish American War 1898; Gov. of N. Y. Jan. 1, 1899, to Dec. 31, 1900; first president March 4 to Sept. 14, 1901. Reformed Dutch.	Married Alice Lee (—— 1884), daughter of George Cabot Lee of Boston, Mass., in 1883. Had one daughter, Alice. Married a second time Edith Kermit Carow (——), daughter of Chas. Carow of New York City, in 1886. Had four sons and one daughter by second marriage.
27	TAFT, WILLIAM HOWARD. Born September 15, 1857, at Cincinnati, Ohio. Died, March 8, 1930 at Washington, D. C. Buried in the National Cemetery, Arlington, Virginia.	Son of Alphonso Taft, secretary of war under Grant, 1876, a lawyer of English descent, and of Louise M. Torrey.	Graduated Yale 1878; Cincinnati Law School 1880; local political position 1882 to 1890; Solicitor Gen. U. S. 1890–1892. Taught law Univ. Cincinnati 1896–1900; Pres. Philippine Com. 1900–1904; First Civil Gov. of P. I. 1900–1904; sent to Rome 1902; Sec. of War 1903–1908; adjusted Cuban Insurrection 1906. Unitarian.	Helen Herron in 1886. Has two sons and one daughter.
28	WILSON, THOMAS WOODROW. Born December 28, 1856, at Staunton, Va. Died at Washington, D. C., Feb. 3, 1924, age 68. He was buried at Washington, D. C.	Son of Joseph R. Wilson, a clergyman of Scotch-Irish descent, and of Jessie Woodrow.	Princeton graduate 1879; Univ. of Va. Law 1882; Post-graduate John Hopkins 1886; taught at Bryn Mawr, Wesleyan, Princeton, 1885–1902; Pres. of Princeton 1902–1910; Gov. of N. J. 1910–1913. Presbyterian.	Helen Louise Axson in 1885, who died at the White House, August 6, 1914. Had three daughters. Married a second time, Dec. 18, 1915, Mrs. Edith (Bolling) Galt.
29	HARDING, WARREN GAMALIEL. Born Nov. 2, 1865, at Corsica, Ohio. Died at San Francisco, Aug. 2, 1923, age 58. Buried at Marion, Ohio.	Son of George T. Harding, a physician, and Phebe Dickerson. His ancestry was Scotch-Dutch.	Graduated from Ohio Central University; worked as a printer on a Marion (Ohio) newspaper; State Senator, 1900–1904; elected to U. S. Senate, 1915. Baptist.	Florence Kling, married in 1891. No children. Mrs. Harding died in 1924.
30	COOLIDGE, CALVIN. Born July 4, 1872, at Plymouth, Vt. Died January 5, 1933, at Northampton, Mass. Buried at Plymouth, Vt.	Son of John C. Coolidge and Victoria Moor. His parents were farmers, of English ancestry.	Amherst graduate 1895, read law at Northampton, Mass., admitted to practice 1897, state Senator 1912, Lt. Gov. 1916–1918, Governor of Mass. 1918, reelected 1919. Congregationalist.	Grace Goodhue, of Burlington, Vt., married in 1905. Had two children, John and Calvin. The latter died from blood-poisoning in 1924.
31	HOOVER, HERBERT CLARK. Born Aug. 10, 1874, at West Branch, Iowa.	Son of Jesse Clark Hoover and Hula Randall Minthorn. His ancestry was Dutch and French Huguenot.	Worked way through Leland Stanford; mining engineer in many lands, 1895–1913; chairman Amer. and general Com. on relief in Belgium, 1914–1919. Sec. of Commerce till July, 1928. Quaker.	Lou Henry, of Monterey, Calif., married in 1899. Two sons are Herbert C. Hoover, Jr. and Allan Henry.

Electoral Vote. Political Opponents. Age at Election. Political Faith.	Events During Term of Office.	After Life.
Republican. Fifty-five. *Election of 1888.* Benjamin Harrison, 233; Grover Cleveland, 168; Clinton B. Fisk, ——; Alson J. Streeter, ——; R. H. Cowdry, ——; James L. Curtis, ——. Harrison was inaugurated in 1889. Held office 4 years.	Oklahoma lands opened 1889; Montana, Washington, admitted 1889; in 1890, Sherman Silver Act, McKinley Tariff, Pension Act, Idaho, Wyoming admitted; Hawaiian protectorate, Chinese Exclusion law, 1892; Civil Service reform, 1893.	After leaving office he was professor of international law at Leland Stanford University, Cal. In 1899 appeared as counsel for Venezuela before commission appointed to arbitrate boundary dispute with England. Was principal representative of the United States at the Hague Conference in 1899.
Republican. Fifty-three. *Election of 1896.* McKinley, 271; William J. Bryan, 176; Joshua Levering, ——; John M. Palmer, ——. McKinley was inaugurated in 1897. *Election of 1900.* McKinley, 292; William J. Bryan, 155; John G. Woolley, ——; Wharton Barker, ——; Eugene V. Debs, ——; Joseph F. Malloney, ——. McKinley was inaugurated in 1901. Held office 4 years, 6 months, 10 days.	Dingley tariff, 1897; Spanish-American War, 1898–1899; Hawaii becomes a part of the United States, 1898; United States receives Samoa, 1899; Exposition at Buffalo, 1901; Assassination of the President at Buffalo, September 6, 1901; Theodore Roosevelt becomes president September 14, 1901.	
Republican. Forty-two. Took oath of office as president on the death of President McKinley, September 14, 1901. *Election of 1904.* Roosevelt, 336; Alton B. Parker, 140; Eugene V. Debs, ——; Silas C. Swallow, ——; Thomas E. Watson, ——. Roosevelt was inaugurated in 1905. Held office 7 years, 5 months, 18 days.	Hay-Pauncefote treaty ratified 1901; anthracite coal strike, reciprocity treaties with Cuba, Newfoundland, 1902; Dept. of Commerce and Labor, Panama Canal Commission, Portsmouth treaty 1905; Oklahoma admitted 1907; two-cents postage with Gt. Britain, Arbitration treaties with France and China 1908.	In March, 1909, Mr. Roosevelt headed a scientific expedition to Africa, outfitted by the Smithsonian Institution. Contributing editor to the *Outlook* (1909–1914). From October, 1913, to May, 1914, Mr. Roosevelt was occupied in what he termed a "zoo-geographical reconnaissance" in South America. He traveled widely, penetrating far into the interior of tropical Brazil, where he spent about five months.
Republican. Fifty-one. *Election of 1908.* William H. Taft, 321; William J. Bryan, 162; Eugene V. Debs, ——; Eugene W. Chafin, ——; Thomas E. Watson, ——. Taft was inaugurated in 1909. Held office 4 years.	Payne-Aldrich Tariff Bill passed 1909; campaign publicity bill, Postal savings bank law 1910; New Commerce Court, Judicial Code recodified, fortification of Panama Canal, Japanese Treaty, Canadian Reciprocity Arbitration, Treaty with Gt. Bt. and France, 1911; New Mexico, Arizona admitted, Workmen's Compensation, Employers' Liability, Pension, Civil Service bills passed 1912; Parcel post, XVIth Amendment, Department of Labor, 1913.	Kent professor of law at Yale Univ. 1913–1921, Chief-Justice of the U. S. Supreme Court from June 30, 1921, until he sent his resignation from Asheville, N. C., Sept. 3, 1930, where he had gone for his health. Recognized as foremost legal authority.
Democrat. Fifty-six. *Election of 1912.* Woodrow Wilson, 435; Theodore Roosevelt, 88; William H. Taft, 8; Eugene V. Debs, ——. Wilson was inaugurated in 1913. *Election of 1916.* Woodrow Wilson, 276; Chas. E. Hughes, 255; Allan L. Benson, ——; J. Frank Hanley, ——. Wilson was inaugurated in 1917. Held office 8 years.	XVIIth Amendment ratified, income tax enacted, Federal ownership of Alaskan railway, trust regulation. War Measures: Merchant ships armed, National Defense Council organized, national administration of food and coal, U. S. controls railroads, Emergency Fleet corporation. Senate refuses ratification of Versailles Treaty, and also independence to Philippines.	Retired from office broken in health, due to the excessive strain of the past 4 years. Lived in Washington, D. C., until his death.
Republican Fifty-five. *Election of 1920.* Warren G. Harding, 404; James M. Cox, 127; Eugene V. Debs, ——; P. P. Christensen, ——; A. S. Watkins, ——. Harding was inaugurated in 1921.	Ratification of Columbia treaty, Fordney-McCumber Tariff Act, Agricultural Credits Act, British Debt Refunding Act, veto of bonus bill sustained, ship subsidy bill failed, "Farm Bloc" organized, routine legislation of post-war questions.	
Republican. Fifty-one. Took oath of office as President Aug. 4, 1923, at Plymouth, Vt., immediately upon hearing of President Harding's death. *Election of 1924.* Calvin Coolidge, 382; John W. Davis, 136; Robt. M. La Follette, 113. Coolidge was inaugurated in 1925.	Mexican government recognized. Bonus bill passed over Coolidge's veto. Mellon Tax Bill passed. Oil scandals involved Sec. Fall, Sec. Denby, and Daugherty. All resigned. Government economy stressed. Vetoed Bursum Bill increasing pensions and bill increasing pay of postal employees.	Wrote articles for magazines, practiced law and became director in large insurance company, died unexpectedly; cause was ascribed to coronary thrombosis.
Republican. Fifty-five. *Election of 1928.* Herbert C. Hoover, 444; Alfred E. Smith, 87. Hoover was inaugurated in 1929.	Called special session of Congress. Farm relief measure passed. Tariff somewhat revised. Commission appointed to study law enforcement.	Retired to his home at Palo Alto, Cal., engaged in rest, study, and research. Hoover received more honorary degrees from colleges at home and abroad than any other president, thirty of them prior to becoming president.

Order	Presidents. Life Dates.	PARENTS' NAMES.	Education. Early Vocation. Religious Faith.	Wife's Name. Date of Marriage. Number of Children.
32	ROOSEVELT, FRANKLIN DELANO. Born, Jan. 30, 1882, at Hyde Park, N. Y.	Son of Jas. Roosevelt and Sarah Delano. Ancestry was Dutch, his family having settled in New York about 1649.	Harvard graduate 1904; Columbia Law School 1907; entered politics 1910; Asst. Sec. of Navy 1913–1919; Candidate for Vice Pres. 1920.; Gov. of N. Y. 1928–1930	Anna Eleanor Roosevelt, daughter of Elliott Roosevelt, younger brother of Pres. Theo. Roosevelt, Mar. 17, 1905; children Anna Eleanor, James, Elliott, Franklin, Jr., John A.

HISTORIC UTTERANCES OF OUR PRESIDENTS.

"To be prepared for war is one of the most effectual means of preserving peace."—*Washington.*

"Knowledge is in every country the surest basis of public happiness."—*Washington.*

"The more homogeneous our citizens can be made—the greater will be our prospect of permanent union; and a primary object of such a national institution (university) should be the education of our youth in the science of government."—*Washington.*

"Toward the preservation of your government and the permanency of your present happy state, it is requisite not only that you steadily discountenance irregular oppositions to its acknowledged authority, but also that you resist with care the spirit of innovation upon its principles, however specious the pretexts."—*Washington.*

"If national pride is ever justifiable or excusable it is when it springs, not from power or riches, grandeur or glory, but from conviction of national innocence, information, and benevolence."—*John Adams.*

"All, too, will bear in mind this sacred principle, that though the will of the majority is in all cases to prevail, that will to be rightful must be reasonable; that the minority possess their equal rights, which equal law must protect."—*Jefferson.*

"A wise and frugal government, which shall restrain men from injuring one another, shall leave them otherwise free to regulate their own pursuits of industry and improvement, and shall not take from the mouth of labor the bread it has earned. This is the sum of good government."—*Jefferson.*

"We are firmly convinced—that with nations as with individuals our interests soundly calculated will ever be found inseparable from our moral duties, and history bears witness to the fact that a just nation is trusted on its word when recourse is had to armaments and wars to bridle others."—*Jefferson.*

"The destined career of my country will exhibit a Government pursuing the public good as its sole object . . . ; a Government which watches over the purity of elections, the freedom of speech and the press, the trial by jury . . . ; a Government which avoids intrusions on the internal repose of other nations, and repels them from its own . . . ; and which . . . seeks by appeal to reason and by its liberal examples to infuse into the law which governs the civilized world a spirit which may diminish the frequency or circumscribe the calamities of war . . . ; a Government, in a word, whose conduct within and without may bespeak the most noble of all ambitions—that of promoting peace on earth and good will to man."—*Madison.*

"Let us by all wise and constitutional measures promote intelligence among the people as the best means of preserving our liberties."—*Monroe.*

"To impose taxes when the public exigencies require them is an obligation of the most sacred character—. To dispense with taxes when it may be done with perfect safety is equally the duty of their representatives."—*Monroe.*

"The history of the late wars in Europe (Napoleonic) furnishes a complete demonstration that no system of conduct, however correct in principle, can protect neutral powers from injury from any party: that a defenceless position and distinguished love of peace are the surest invitations to war, and that there is no way to avoid it other than by being always prepared and willing for just cause to meet it."—*Monroe.*

"Our political creed is—that the will of the people is the source and the happiness of the people, the end of all legitimate government upon earth; . . . that the firmest security of peace is the preparation during peace of the defenses of war; that a rigorous economy and accountability of public expenditures should guard against the aggravation and alleviate when possible the burden of taxation;—that the policy of our country is peace and the ark of our salvation union . . . ."—*John Q. Adams.*

"The duties of all public officers are so plain and simple that men of intelligence may readily qualify themselves for their performance; and I can not but believe that more is lost by the long continuance of men in office than is generally to be gained by their experience."—*Jackson.*

"No free government can stand without virtue in the people and a lofty spirit of patriotism, and if the sordid feelings of mere selfishness shall usurp the place which ought to be filled by public spirit, the legislation of Congress will soon be converted into a scramble for personal and sectional advantages."—*Jackson.*

"All communities are apt to look to government for too much.—They (the framers of the Constitution) wisely judged that the less government interferes with private pursuits the better for the general prosperity."—*Van Buren.*

"I can conceive of no more sublime spectacle . . . than a rigid adherence to the principles of justice on the part of a powerful nation in its transactions with a weaker and uncivilized people whom circumstances have placed at its disposal."—*Wm. Henry Harrison.*

"It may be laid down as an axiom founded in moral and political truth that no greater taxes should be imposed than are necessary for economical administration of the Government, and that whatever exists beyond should be reduced or modified."—*Tyler.*

"After so much experience it can not be said that absolute unchecked power is safe in the hands of any one set of representatives, or that the capacity of the people for self-government, which is admitted in its broadest extent, is a conclusive argument to prove the prudence, wisdom, and integrity of their representatives."—*Polk.*

Electoral Vote. Political Opponents. Age at Election. Political Faith.	Events During Term of Office.	After Life.
Democrat Fifty *Election of 1932* Franklin D. Roosevelt, 472; Herbert Hoover, 59. Took office March 4, 1933. *Election of 1936* Franklin D. Roosevelt, 531; Alfred M. Landon, 8. Took office January 20, 1937. *Election of 1940* Franklin D. Roosevelt, 449; Wendell L. Willkie, 82. Took office January 20, 1941.	Repeal of XVIIIth Amendment, Nat'l. Recovery Act, Banking Holiday; all gold called in, gold devaluated. Important Supreme Court decisions. Wage and hour laws. Adopts and repeals Neutrality Act. Cash and Carry Act to aid Britain. National Conscription Act. Defenses strengthened. Passage of Lease-Lend Bill, all-out aid to Britain.	

"By holding the representatives responsible only to the people, and exempting him from all other influences, we elevate the character of the constituent and quicken his sense of responsibility to his country."—*Taylor.*

"Among the acknowledged rights of nations is that which each possesses of establishing that form of government which it may deem most conducive to the happiness and prosperity of its own citizens, of changing that form as circumstances may require, and of managing its own internal affairs according to its own will. . . . The great law of mortality ought to have a national as well as a personal and individual application."—*Fillmore.*

"Public affairs ought to be so conducted that a settled conviction shall pervade the entire Union that nothing short of the highest tone and standard of public morality marks every part of the administration and legislation of the General Government."—*Pierce.*

"Next in importance to the maintenance of the Constitution and the Union is the duty of preserving the Government free from the taint of even the suspicion of corruption. Public virtue is the vital spirit of republics, and history proves that when this has decayed and the love of money has usurped its place, although the forms of free government may remain for a season, the substance has departed forever."—*Buchanan.*

"Labor is prior to and independent of capital. Capital is only the fruit of labor, and could never have existed if labor had not first existed. Labor is the superior of capital, and deserves much the higher consideration."—*Lincoln.*

"With malice toward none, with charity toward all, with firmness in the right as God gives us to see the right, let us strive to finish the work we are in, to bind up the nation's wounds, to care for him who shall have borne the battle and for his widow and his orphan, to do all which may achieve a just and lasting peace among ourselves and with all nations."—*Lincoln.*

"Monopolies, perpetuities, and class legislation are contrary to the genius of free government, and ought not to be allowed."—*Johnson.*

"The education of the masses becomes of the first necessity for the preservation of our institutions. They are worth preserving, because they have secured the greatest good to the greatest proportion of the population of any form of government yet devised."—*Grant.*

"The corrupting doctrine that 'to the victors belong the spoils' is inseparable from Congressional patronage as the established rule and practice of parties in power. . . . Members of Congress will not be relieved from the demands made upon them with reference to appointments to office until by legislative enactment the pernicious practice is condemned and forbidden."—*Hayes.*

"We have no standard to measure the disaster that may be brought upon us by ignorance and vice in the citizens when joined to corruption and fraud in the suffrage."—*Garfield.*

"A nation is justified in repudiating its treaty obligations only when they are in conflict with great paramount interests. Even then all possible means for modifying or changing those obligations by mutual agreement should be exhausted before resorting to the supreme right of refusal to comply with them."—*Arthur.*

"It is the duty of those serving the people in public places to closely limit public expenditures to the actual needs of the Government economically administered, because this bounds the right of the Government to exact tribute from the earnings of labor or the property of the citizen, and public extravagance begets extravagance among the people."—*Cleveland.*

"The lessons of paternalism ought to be unlearned, and the better lesson taught that while the people should patriotically and cheerfully support their Government its functions do not include the support of the people."—*Cleveland.*

"Every thoughtful American must realize the importance of checking at its beginning any tendency in public or private station to regard frugality and economy as virtues which we may safely outgrow. The toleration of this idea results in the waste of the people's money by their chosen servants and encourages prodigality and extravagance in the home life of our countrymen."—*Cleveland.*

"If the educated and influential classes in a community either practice or connive at the systematic violation of laws that seem to them to cross their convenience, what can they expect when the lesson that convenience or a supposed class interest is a sufficient cause for lawlessness has been well learned by the ignorant classes?"—*Benj. Harrison.*

"No political party can long pursue advantage at the expense of public honor or by rude and indecent methods without protest and fatal disaffection in its own body."—*Benj. Harrison.*

"The severest economy must be observed in all public expenditures, and extravagance stopped wherever it is found, and prevented wherever in the future it may be developed."—*McKinley.*

"The preservation of public order, the right of discussion, the integrity of courts, and the orderly administration of justice must continue forever the rock of safety upon which our Government securely rests."—*McKinley.*

"The man who advocates anarchy directly or indirectly, in any shape or fashion, or the man who apologizes for anarchists or their deeds, makes himself morally accessory to murder before the fact."—*Roosevelt.*

"Organized capital and organized labor alike should remember that in the long run the interest of each must be brought into harmony with the interest of the general public; and the conduct of each must conform to the fundamental rules of obedience to the law, of individual freedom, and of justice and fair dealing toward all."—*Roosevelt.*

"We are neither for the rich man as such nor the poor man as such; we are for the upright man, rich or poor."—*Roosevelt.*

"Never before have men tried so vast and formidable an experiment as that of administering the affairs of a continent under the forms of a democratic republic. . . . If we fail, the cause of free self-government throughout the world will rock to its foundations, and therefore our responsibility is heavy, to ourselves, to the world as it is today, and to the generations yet unborn."—*Roosevelt.*

"Votes are not bread, constitutional amendments are not work, referendums do not pay rent or furnish houses, recalls do not furnish clothing, initiatives do not supply employment or relieve inequalities of condition or of opportunity."—*Taft.*

"Power in the hands of great business men does not make me apprehensive, unless it springs out of advantages which they have not created for themselves. Big business is not dangerous because it is big, but because its bigness is an unwholesome inflation created by privileges and exemptions which it ought not to enjoy."—*Wilson.*

"Great democracies are not belligerent. They do not seek or desire war. Their thought is of individual liberty and of the free labor that supports life and the uncensored thought that quickens it. Conquest and dominion are not in our reckoning, or agreeable to our principles."—*Wilson.*

"I believe in my heart that the world has never witnessed a case, and never will witness a case where one people desired to make war on another people."—*Wilson.*

"I have said to the people we meant to have less of government in business as well as more business in government."—*Harding.*

"Government's obligation affirmatively to encourage development of the highest and most efficient type of citizenship is modernly accepted, almost universally."—*Harding.*

"The unrestrained tendency to heedless expenditures and the attending growth of public indebtedness, extending from Federal authority to that of State and municipality and including the smallest political subdivision, constitute the most dangerous phase of government today."—*Harding.*

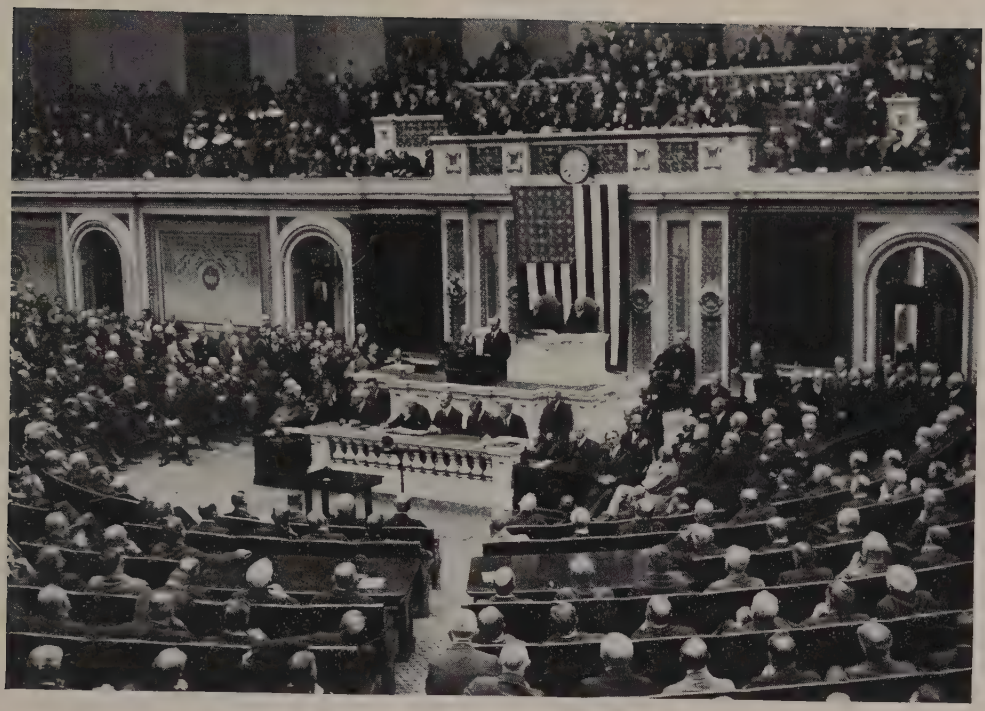
"Anybody can reduce taxes, but it is not easy to stand in the gap and resist the passage of increasing appropriation bills which would make tax reduction impossible."—*Coolidge.*

"Nothing is so fundamental to the integrity of a republican form of government as honesty in all that relates to the conduct of elections."—*Coolidge.*

"I want the people of all the earth to see in the American flag the symbol of a Government which intends no oppression at home and no aggrandisement abroad, which, in the spirit of a common brotherhood, provides assistance in time of distress."—*Coolidge.*

AN OUTLINE HISTORY OF THE MAJOR POLITICAL PARTIES IN THE UNITED STATES.

Name.	Period.	Leaders.	Principles.	Accomplishments.	Reasons for Break-up.
Federalist.	1789 to 1824 (approximate).	Hamilton, Adams, Jay, Marshall.	Strong central government. U. S. Bank. Excise. Opposed to French radicalism.	U. S. finances stabilized. Federal authority asserted. Mississippi River opened up. Treaty with Eng. (Jay's).	Growth of democracy in U. S. Passage of Alien and Sedition Laws. Disagreements among leaders.
Republican or Democratic-Republican.	1789 to 1828 (approximate).	Jefferson, Burr, Madison, Monroe, Gallatin.	Strict limits on power of Federal government. Government by masses rather than classes. Anti-British. Extreme personal liberty. Few laws.	Checked aristocratic tendencies of Federalists. Purchased Louisiana and Florida. Reduced national debt and taxes. Chartered second U. S. Bank. Prosecuted second War with Great Britain.	This party imperceptibly merged into the modern Democratic party about the time Jackson became leader.
National Republican.	1824 to 1834 (approximate).	Clay, Webster, J. Q. Adams.	Protective tariff. Internal improvements by Federal appropriations. Federal Bank.	Textile and iron industries protected. New South American republics encouraged.	Anti-Jackson elements came together to form Whig party.
Democratic.	1828 to present day.	Calhoun, Hayne, Jackson, Benton, Van Buren, Douglas, Davis, Tilden, Cleveland, Bryan, Wilson, Smith, Roosevelt, Farley.	States-rights. Free-trade (merging into low protection). No Federal money for local improvements. Opposed to colonial expansion.	Annexed Texas. Maintained low tariff before Civil War. Supported Civil Service reform. Fought high tariff. Supported interests of farmer and working man as opposed to the privileged classes. Supported laws intended to check trusts.	
Whig.	1834 to 1856 (approximate).	Clay, Webster, Seward.	Protective Tariff. Internal Improvements. Federal Bank.	Being an opposition party most of the time it accomplished little, the Compromise of 1850 being its greatest achievement.	The Northern and Southern Whigs divided on the subject of slavery. The death of Clay and Webster left the party without leaders.
Republican.	1854 to present time.	Seward, Lincoln, Chase, Conklin, Blaine, Sherman, McKinley, Roosevelt, Aldrich, Taft, Lodge, Penrose, Coolidge, Hoover.	High Protection. Imperialism. Sound money. Extension of power of Federal government. Internal improvements.	Saved the Union from disruption. Imposed military rule on the South after the Civil War, thus preventing reconciliation of the sections. Resumed specie payment after the Civil War. Adopted deflation measures. Annexed Hawaii, The Philippines, and Porto Rico. Built the Panama Canal. Adopted Sherman Anti-Trust Law. Created Interstate Commerce Commission.	



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AMERICAN GOVERNMENTAL SESSIONS—II

1 President Calvin Coolidge reading his first message to the 68th Congress (assembled in the Hall of the House of Representatives, December 7th, 1923).

2 Pan-American Conference with late President Harding at White House; representatives of five Central-American countries and the President's Cabinet.

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AMERICAN GOVERNMENTAL SESSIONS—III

The Washington Arms Parley

Left to right: Garrett, Secretary General of Conference; Van Karnebeck, Netherlands; Dr. Sze, China; Lord Balfour, Great Britain; Secretary of State Hughes, U. S. A.; Premier Briand, France; Shanze, Italy; Baron de Marchienne, Belgium; Prince Tokugawa, Japan; Count D'Alte, Portugal.

English Debt Funding Mission

Left to right, seated: Secretary Hoover, U. S. A.; Rep. Burton, Ohio; Rt. Hon. Stanley Baldwin, Chancellor of Exchequer; M. C. Norman, Governor, Bank of England; Eliot Wadsworth, Asst. Secretary of Treasury, U. S. A.; Sen. Smoot, Utah; Secretary of State Hughes; Secretary of Treasury Mellon. Standing: Secretaries of the Conference.

PRESIDENTIAL ELECTIONS.

There is, properly speaking, no popular vote for President and Vice-President; the people vote for electors, and those chosen in each state meet therein and vote for the candidates for President and Vice-President. The record of any popular vote for electors prior to 1824 is so meager and imperfect that a compilation would be useless. In most of the states, for more than a quarter of a century following the establishment of the government, the State Legislatures "appointed" the Presidential electors, and the people therefore voted only indirectly for them, their choice being expressed by their votes for members of the Legislature. In this tabulation only the aggregate electoral votes for candidates for President and Vice-President in the first nine quadrennial elections appear.

1789. Previous to 1804, each elector voted for two candidates for President. The one who received the largest number of votes was declared President, and the one who received the next largest number of votes was declared Vice-President. The electoral votes for the first President of the United States were: George Washington, 69; John Adams, of Massachusetts, 34; John Jay, of New York, 9; R. H. Harrison, of Maryland, 6; John Rutledge, of South Carolina, 6; John Hancock, of Massachusetts, 4; George Clinton, of New York, 3; Samuel Huntington, of Connecticut, 2; John Milton, of Georgia, 2; James Armstrong, of Georgia, Benjamin Lincoln, of Massachusetts, and Edward Telfair, of Georgia, 1 vote each. Vacancies (votes not cast), 4. George Washington was chosen President and John Adams Vice-President.

1792. George Washington, Federalist, received 132 votes; John Adams, Federalist, 77; George Clinton, of New York, Republican (*a*), 50; Thomas Jefferson, of Virginia, Republican, 4; Aaron Burr, of New York, Republican, 1 vote. Vacancies, 3. George Washington was chosen President and John Adams Vice-President.

1796. John Adams, Federalist, 71; Thomas Jefferson, Republican, 68; Thomas Pinckney, of South Carolina, Federalist, 59; Aaron Burr, of New York, Republican, 30; Samuel Adams, of Massachusetts, Republican, 15; Oliver Ellsworth, of Connecticut, Independent, 11; George Clinton, of New York, Republican, 7; John Jay, of New York, Federalist, 5; James Iredell, of North Carolina, Federalist, 3; George Washington, of Virginia, John Henry, of Maryland, and S. Johnson, of North Carolina, all Federalists, 2 votes each; Charles Cotesworth Pinckney, of South Carolina, Federalist, 1 vote. John Adams was chosen President and Thomas Jefferson Vice-President.

1800. Thomas Jefferson, Republican, 73; Aaron Burr, Republican, 73; John Adams, Federalist, 65; Charles C. Pinckney, Federalist, 64; John Jay, Federalist, 1 vote. There being a tie for Jefferson and Burr, the choice devolved upon the House of Representatives. Jefferson received the votes of ten States, which, being the largest vote cast for a candidate, elected him President. Burr received the votes of four States, which, being the next largest vote, elected him Vice-President. There were 2 blank votes.

1804. The Constitution of the United States having been amended, the electors at this election voted for a President and a Vice-President, instead of for two candidates for President. The result was as follows: For President, Thomas Jefferson, Republican, 162; Charles C. Pinckney, Federalist, 14. For Vice-President, George Clinton, Republican, 162; Rufus King, of New York, Federalist, 14. Jefferson was chosen President and Clinton Vice-President.

1808. For President, James Madison, of Virginia, Republican, 122; Charles C. Pinckney, of South Carolina, Federalist, 47; George Clinton, of New York, Republican, 6. For Vice-President, George Clinton, Republican, 113; Rufus King, of New York, Federalist, 47; John Langdon, of New Hampshire, 9; James Madison, 3; James Monroe, 3. Vacancy, 1. Madison was chosen President and Clinton Vice-President.

1812. For President, James Madison, Republican, 128; De Witt Clinton, of New York, Federalist, 89. For Vice-President, Elbridge Gerry, of Massachusetts, 131; Jared Ingersoll, of Pennsylvania, Federalist, 86. Vacancy, 1. Madison was chosen President and Gerry Vice-President.

1816. For President, James Monroe, of Virginia, Republican, 183; Rufus King, of New York, Federalist, 34. For Vice-President, Daniel D. Tompkins, of New York, Republican, 183; John Eager Howard, of Maryland, Federalist, 22; James Ross, of Pennsylvania, 5; John Marshall, of Virginia, 4; Robert G. Harper, of Maryland, 3. Vacancies, 4. Monroe was chosen President and Tompkins Vice-President.

1820. For President, James Monroe, of Virginia, Republican, 231; John Q. Adams, of Massachusetts, Republican, 1. For Vice-President, Daniel D. Tompkins, Republican, 218; Richard Stockton, of New Jersey, 8; Daniel Rodney, of Delaware, 4; Robert G. Harper, of Maryland, and Richard Rush, of Pennsylvania, 1 vote each. Vacancies, 3. Monroe was chosen President and Tompkins Vice-President.

Year of Election.	Candidates for President.	States.	Political Party.	Popular Vote.	Plurality.	Electoral Vote.	Candidates for Vice-President.	States.	Political Party.	Electoral Vote.
1824	Andrew Jackson,	Tenn.	Rep.	155,872	50,551	(*b*) 99	John C. Calhoun,*	S. C.	Rep.	182
	John Q. Adams,*	Mass.	Rep.	105,321	....	84	Nathan Sanford,	N. Y.	Rep.	30
	Henry Clay,	Ky.	Rep.	46,587	....	37	Nathaniel Macon,	N. C.	Rep.	24
	Wm. H. Crawford,	Ga.	Rep.	44,282	....	41	Andrew Jackson,	Tenn.	Rep.	13
							M. Van Buren,	N. Y.	Rep.	9
							Henry Clay,	Ky.	Rep.	2
1828	Andrew Jackson,*	Tenn.	Dem.	647,231	138,134	178	John C. Calhoun,*	S. C.	Dem.	171
	John Q. Adams,	Mass.	Nat. R.	509,097	....	83	Richard Rush,	Pa.	Nat. R.	83
							William Smith,	S. C.	Dem.	7
1832	Andrew Jackson,*	Tenn.	Dem.	687,502	157,313	219	M. Van Buren,*	N. Y.	Dem.	189
	Henry Clay,	Ky.	Nat. R.	530,189	....	49	John Sergeant,	Pa.	Nat. R.	49
	John Floyd,	Ga.	Ind.	33,108	....	11	Henry Lee,	Mass.	Ind.	11
	William Wirt,	Md.	Anti-Mas'nic		....	7	Amos Ellmaker (*c*),	Pa.	Anti-M	7
							Wm. Wilkins,	Pa.	Dem.	30
1836	Martin Van Buren,*	N. Y.	Dem.	761,549	24,393	170	R. M. Johnson (*d*)*	Ky.	Dem.	147
	W. H. Harrison,	O.	Whig.			73	Francis Granger,	N. Y.	Whig.	77
	Hugh L. White,	Tenn.	Whig.			26	John Tyler,	Va.	Whig.	47
	Daniel Webster,	Mass.	Whig.	736,656	....	14	William Smith,	Ala.	Dem.	23
	Willie P. Mangum,	N. C.	Whig.			11				
1840	W. H. Harrison,*	O.	Whig.	1,275,017	146,315	234	John Tyler,*	Va.	Whig.	234
	Martin Van Buren,	N. Y.	Dem.	1,128,702	....	60	R. M. Johnson,	Ky.	Dem.	48
	James G. Birney,	N. Y.	Lib.	7,059	....	....	L. W. Tazewell,	Va.	Dem.	11
							James K. Polk,	Tenn.	Dem.	1
							Thomas Earle,	Pa.	Lib.	....
1844	James K. Polk,*	Tenn.	Dem.	1,337,243	38,175	170	George M. Dallas,*	Pa.	Dem.	170
	Henry Clay,	Ky.	Whig.	1,299,068	....	105	T. Frelinghuysen,	N. J.	Whig.	105
	James G. Birney,	N. Y.	Lib.	62,300	....	....	Thomas Morris,	O.	Lib.	....

*Elected. (*a*) The first Republican party is claimed by the present Democratic party as its progenitor. (*b*) No candidate having a majority of the electoral vote, the House of Representatives elected Adams. (*c*) Candidate of the Anti-Masonic Party. (*d*) Elected by Senate.

PRESIDENTIAL ELECTIONS—*Continued.*

Year of Election.	Candidates for President.	States.	Political Party.	Popular Vote.	Plurality.	Electoral Vote.	Candidates for Vice-President.	States.	Political Party.	Electoral Vote.
1848	Zachary Taylor,*	La.	Whig.	1,360,101	139,557	163	Millard Fillmore,*	N. Y.	Whig.	163
	Lewis Cass,	Mich.	Dem.	1,220,544	.....	127	William O. Butler,	Ky.	Dem.	127
	Martin Van Buren,	N. Y.	F. Soil.	291,263	.....	...	Charles F. Adams,	Mass.	F. Soil.	...
1852	Franklin Pierce,*	N. H.	Dem.	1,601,474	220,896	254	William R. King,*	Ala.	Dem.	254
	Winfield Scott,	N. J.	Whig.	1,380,576	.....	42	William A. Graham,	N. C.	Whig.	42
	John P. Hale,	N. H.	F.D. (*i*)	156,149	.....	...	George W. Julian,	Ind.	F. D.	...
	Daniel Webster, (*k*)	Mass.	Whig.	1,670	.....	...				
1856	James Buchanan,*	Pa.	Dem.	1,838,169	496,905	174	J. C. Breckenridge,*	Ky.	Dem.	174
	John C. Fremont,	Cal.	Rep.	1,341,264	.....	114	William L. Dayton,	N. J.	Rep.	114
	Millard Fillmore,	N. Y.	Amer.	874,538	.....	8	A. J. Donelson,	Tenn.	Amer.	8
1860	Abraham Lincoln,*	Ill.	Rep.	1,866,352	491,195	180	Hannibal Hamlin,*	Me.	Rep.	180
	Stephen A. Douglas,	Ill.	Dem.	1,375,157	.....	12	H. V. Johnson,	Ga.	Dem.	12
	J. C. Breckinridge,	Ky.	Dem.	845,763	.....	72	Joseph Lane,	Ore.	Dem.	72
	John Bell,	Tenn.	Union.	589,581	.....	39	Edward Everett,	Mass.	Union.	39
1864	Abraham Lincoln,*	Ill.	Rep.	2,216,067	407,342	(*e*) 212	Andrew Johnson,*	Tenn.	Rep.	212
	George B. McClellan,	N. J.	Dem.	1,808,725	.....	21	Geo. H. Pendleton,	O.	Dem.	21
1868	Ulysses S. Grant,*	Ill.	Rep.	3,015,071	305,456	(*f*) 214	Schuyler Colfax,*	Ind.	Rep.	214
	Horatio Seymour,	N. Y.	Dem.	2,709,615	.....	80	F. P. Blair, Jr.,	Mo.	Dem.	80
1872	Ulysses S. Grant,*	Ill.	Rep.	3,597,070	762,991	286	Henry Wilson,*	Mass.	Rep.	286
	Horace Greeley,	N. Y.	D. & L.	2,834,079	.....	(*g*)	B. Gratz Brown,	Mo.	D. & L.	47
	Charles O'Conor,	N. Y.	Dem.	29,408	.....	...	John Q. Adams,	Mass.	Dem.	...
	James Black,	Pa.	Temp.	5,608	.....	...	John Russell,	Mich.	Temp.	...
	Thomas A. Hendricks	Ind.	Dem.	.....	.....	42	George W. Julian,	Ind.	Lib.	5
	B. Gratz Brown,	Mo.	Dem.	.....	.....	18	A. H. Colquitt,	Ga.	Dem.	5
1876	Samuel J. Tilden,	N. Y.	Dem.	4,284,885	250,935	184	T. A. Hendricks,	Ind.	Dem.	184
	Rutherford B. Hayes*	O.	Rep.	4,033,950	.....	(*h*) 185	William A. Wheeler,*	N. Y.	Rep.	185
	Peter Cooper,	N. Y.	Gre'nb.	81,740	.....	...	Samuel F. Cary,	O.	Gre'nb.	...
	Green Clay Smith,	Ky.	Pro.	9,522	.....	...	Gideon T. Stewart,	O.	Pro.	...
	James B. Walker,	Ill.	Amer.	2,636	.....	...	D. Kirkpatrick,	N. Y.	Amer.	...
1880	James A. Garfield,*	O.	Rep.	4,449,053	7,018	214	Chester A. Arthur,*	N. Y.	Rep.	214
	W. S. Hancock,	Pa.	Dem.	4,442,035	.....	155	William H. English,	Ind.	Dem.	155
	James B. Weaver,	Iowa	Gre'nb.	307,306	.....	...	B. J. Chambers,	Tex.	Gre'nb.	...
	Neal Dow,	Me.	Pro.	10,305	.....	...	H. A. Thompson,	O.	Pro.	...
	John W. Phelps,	Vt.	Amer.	707	.....	...	S. C. Pomeroy,	Kan.	Amer.	...
1884	Grover Cleveland,*	N. Y.	Dem.	4,911,017	62,683	219	T. A. Hendricks,*	Ind.	Dem.	219
	James G. Blaine,	Me.	Rep.	4,848,334	.....	182	John A. Logan,	Ill	Rep.	182
	John P. St. John,	Kan.	Pro.	151,809	.....	...	William Daniel,	Md.	Pro.	...
	Benjamin F. Butler,	Mass.	Peop.	133,825	.....	...	A. M. West,	Miss.	Peop.	...
	P. D. Wigginton,	Cal.	Amer.	.....	.....	...			Gre'nb.	
1888	Grover Cleveland,	N. Y.	Dem.	5,538,233	98,017	168	Allen G. Thurman,	O.	Dem.	168
	Benjamin Harrison,*	Ind.	Rep.	5,440,216	.....	233	Levi P. Morton,*	N. Y.	Rep.	233
	Clinton B. Fisk,	N. J.	Pro.	249,907	.....	...	John A. Brooks,	Mo.	Pro.	...
	Alson J. Streeter,	Ill.	U. L.	148,105	.....	...	C. E. Cunningham,	Ark.	U. L.	...
	R. H. Cowdry,	Ill.	U. L.	2,808	.....	...	W. H. T. Wakefield,	Kan.	U. L.	...
	James L. Curtis,	N. Y.	Amer.	1,591	.....	...	James B. Greer,	Tenn.	Amer.	...
1892	Grover Cleveland,*	N. Y.	Dem.	5,556,918	380,810	277	Adlai E. Stevenson,*	Ill.	Dem.	277
	Benjamin Harrison,	Ind.	Rep.	5,176,108	.....	145	Whitelaw Reid,	N. Y.	Rep.	145
	James B. Weaver,	Iowa	Peop.	1,041,028	.....	22	James G. Field,	Va.	Peop.	22
	John Bidwell,	Cal.	Pro.	264,133	.....	...	James B. Cranfill,	Tex.	Pro.	...
	Simon Wing,	Mass.	Soc. L.	21,164	.....	...	Charles H. Matchett,	N. Y.	Soc. L.	...
1896	William McKinley,*	O.	Rep.	7,104,779	601,854	271	Garret A. Hobart,*	N. J.	Rep.	271
	William J. Bryan,	Neb.	Dem.	6,502,925	.....	176	Arthur Sewall,	Me.	Dem.	149
	William J. Bryan,	Neb.	Peop.		.....	...	Thomas E. Watson,	Ga.	Peop.	27
	Joshua Levering,	Md.	Pro.	132,007	.....	...	Hale Johnson,	Ill.	Pro.	...
	John M. Palmer,	Ill.	N.Dem.	133,148	.....	...	Simon B. Buckner,	Ky.	N.Dem.	...
1900	William McKinley,*	O.	Rep.	7,207,923	849,790	292	Theodore Roosevelt,*	N. Y.	Rep.	292
	William J. Bryan,	Neb.	Dem. P.	6,358,133	.....	155	Adlai E. Stevenson,	Ill.	Dem. P.	155
	John G. Woolley,	Ill.	Pro.	208,914	.....	...	Henry B. Metcalf,	O.	Pro.	...
	Wharton Barker,	Pa.	MP(*m*)	50,373	.....	...	Ignatius Donnelly,	Minn.	MP(*m*)	...
	Eugene V. Debs,	Ind.	Soc. D.	87,814	.....	...	Job Harriman,	Cal.	Soc. D.	...
	Jos. F. Maloney,	Mass.	Soc. L.	39,739	.....	...	Valentine Remmel,	Pa.	Soc. L.	...
1904	Theodore Roosevelt,*	N. Y.	Rep.	7,623,486	2,545,715	336	C. W. Fairbanks,	Ind.	Rep.	336
	Alton B. Parker,	N. Y.	Dem.	5,082,754	.....	140	Henry G. Davis,	W. Va.	Dem.	140
	Thomas E. Watson,	Ga.	Pop.	117,935	.....	...	Thomas H. Tibbles,	Neb.	Pop.	...
	Eugene V. Debs,	Ind.	Soc.	402,286	.....	...	Benjamin Hanford,	N. Y.	Soc.	...
	Silas C. Swallow,	Pa.	Pro.	258,787	.....	...	George W. Carroll,	Tex.	Pro.	...
1908	Wm. H. Taft,*	Ohio	Rep.	7,679,006	1,269,900	321	Jas. S. Sherman,*	N. Y.	Rep.	321
	Wm. J. Bryan,	Neb.	.....	6,409,106	.....	162	John W. Kern,	Ind.	Dem.	162
	Eugene W. Chafin,	Ariz.	Prohib.	252,683	.....	...	Aaron S. Watkins,	Ohio	Prohib.	...
	Eugene Debs,	Ind.	Soc.	420,820	.....	...	Ben Hanford,	N. Y.	Soc.	...
	Thomas E. Watson,	Ga.	Peoples	.....	.....	...	.....	.....	.....	.....
1912	Woodrow Wilson,*	N. J.	Dem.	6,286,214	2,160,194	435	Thos. Marshall,*	Ind.	Dem.	435
	Theodore Roosevelt,	N. Y.	Prog.	4,126,020	.....	88	Hiram Johnson,	N. Y.	Prog.	88
	Wm. H. Taft,	Ohio	Rep.	3,483,922	.....	8	Jas. S. Sherman,	N. Y.	Rep.	(*n*) 8
	Eugene Debs,	Ind.	Soc.	897,011	.....	...	Nicholas M. Butler,	Calif.	Rep.	...

*Elected. (*e*) Eleven southern states not voting. (*f*) Three southern states disfranchised. (*g*) Horace Greeley died after election, and Democratic electors scattered their vote. (*h*) There being a dispute over the electoral vote of Florida, Louisiana, Oregon, and South Carolina, they were referred by Congress to an electoral commission composed of eight Republicans and seven Democrats, which, by a strict party vote, awarded 185 electoral votes to Hayes and 184 to Tilden. (*i*) Free Democrat. (*k*) In Massachusetts. There was also a Native American ticket in that state, which received 184 votes. (*m*) Middle of the Road or Anti-Fusion People's party. (*n*) Sherman died before the election and Butler was substituted.

PRESIDENTIAL ELECTIONS—*Continued.*

Year of Election.	Candidates for President.	States.	Political Party.	Popular Vote.	Plurality.	Electoral Vote.	Candidates for Vice-President.	States.	Political Party.	Electoral Vote.
1916	Woodrow Wilson,*	N. J.	Dem.	9,129,606	591,385	277	Thos. Marshall,*	Ind.	Dem.	277
	Chas. E. Hughes,	N. Y.	Rep.	8,538,221	.....	254	C. W. Fairbanks,	Ind.	Rep.	254
	J. F. Hanly,	Ind.	Prohib.	220,506	.....	...	Ira Landrith,	N. J.	Prohib.	...
	A. L. Benson,	N. Y.	Soc.	585,113	.....	...	G. R. Kirkpatrick,	Tenn.	Soc.	...
1920	Warren G. Harding,*	Ohio	Rep.	16,152,200	7,004,847	454	Calvin Coolidge,*	Mass.	Rep.	454
	Jas. M. Cox,	Ohio	Dem.	9,147,353	.....	127	Franklin D. Roosevelt,	N. Y.	Dem.	127
	Eugene Debs,	Ind.	Soc.	919,799	.....	...	Seymour Stedman,	Ill.	Prohib.	...
	P. P. Christensen,	Utah	F.-L.	265,411	.....	...	August Gillhaus,	N. Y.	Soc. L.	...
	A. S. Watkins,	Ohio	Prohib.	189,408	.....	...	D. Leigh Colvin	.....	Prohib.	...
1924	Calvin Coolidge,*	Mass.	Rep.	15,721,016	7,335,430	382	Chas. Dawes,*	Ill.	Rep.	382
	J. W. Davis,	W. Va.	Dem.	8,385,586	.....	136	Chas. W. Bryan,	Neb.	Dem.	186
	Rob't. La Follette,	Wis.	Prog.	4,826,471	.....	13	Burton Wheeler,	Mont.	Prog.	13
	H. P. Faris,	Mo.	Pro.	57,551	.....	...	Marie C. Brehm,	Calif.	Pro.	...
1928	Herbert Hoover,*	Calif.	Rep.	21,392,190	6,375,747	444	Charles Curtis,*	Kas.	Rep.	444
	Alfred E. Smith,	N. Y.	Dem.	15,016,443	.....	87	Joseph T. Robinson,	Ark.	Dem.	87
	Norman Thomas,	N. Y.	Soc.	267,420	.....	...	James H. Maurer,	Pa.	Soc.	...
	Wm. Z. Foster,	N. Y.	Wkrs.	48,770	.....	...	Benjamin Gitlow,	N. Y.	Soc.	...
1932	F. D. Roosevelt,*	N. Y.	Dem.	22,821,857	7,060,016	472	John N. Garner,*	Tex.	Dem.	472
	Herbert Hoover,	Calif.	Rep.	15,761,841	.....	59	Charles Curtis,	Kas.	Rep.	59
	Norman Thomas,	N. Y.	Soc.	884,781	.....	...	James H. Maurer,	Pa.	Soc.	...
	William Z. Foster,	N. Y.	Com.	102,991	.....	...	James W. Ford,	Ala.	Com.	...
	W. D. Upshaw,	Ga.	Pro.	81,674	.....	...	Frank S. Regan,	Ill.	Pro.	...
1936	F. D. Roosevelt*	N. Y.	Dem.	27,476,673	10,797,090	523	John N. Garner*	Tex.	Dem.	523
	Alfred M. Landon	Kas.	Rep.	16,679,583	.....	8	W. Frank Knox	Ills.	Rep.	8
	Norman Thomas	N. Y.	Soc.	187,720	.....	...	Thomas C. O'Brien	Wis.	Soc.	...
	Earl Browder	Kas.	Com.	80,159	.....	...	James W. Ford	N. Y.	Com.	...
1940	F. D. Roosevelt*	N. Y.	Dem.	27,241,939	4,914,713	449	Henry A. Wallace*	Iowa	Dem.	449
	Wendell L. Willkie	Ind.	Rep.	22,327,226	.....	82	Charles L. McNary	Oregon	Rep.	82
	Norman Thomas	N. Y.	Soc.	116,796	.....	...	Maynard C. Krueger	Ill.	Soc.	...
	Earl Browder	Kan.	Com.	48,789	.....	...	James W. Ford	N. Y.	Com.	...

*Elected.

VICE-PRESIDENTS OF THE UNITED STATES

Name.	Birthplace.	Year.	Paternal Ancestry.	Residence.	Qualified.	Politics.	Place of Death.	Year.	Age at Death.
1John Adams	Quincy, Mass.	1735	English	Mass.	1789	Fed.	Quincy, Mass.	1820	90
2Thomas Jefferson	Shadwell, Va.	1743	Welsh	Va.	1797	Rep.	Monticello, Va.	1826	83
3Aaron Burr	Newark, N. J.	1756	English	N. Y.	1801	Rep.	Staten Island, N. Y.	1836	80
4George Clinton	Ulster Co., N. Y.	1739	English	N. Y.	1805	Rep.	Washington, D. C.	1812	73
5Eldridge Gerry	Marblehead, Mass.	1744	English	Mass.	1813	Rep.	Washington, D. C.	1814	70
6D. D. Tompkins	Scarsdale, N. Y.	1774	English	N. Y.	1817	Rep.	Staten Island, N. Y.	1825	51
7John C. Calhoun	Abbeville, S. C.	1782	Scotch-Irish	S. C.	1825	Rep.	Washington, D. C.	1850	68
8M. Van Buren	Kinderhook, N. Y.	1782	Dutch	N. Y.	1833	Dem.	Kinderhook, N. Y.	1862	79
9R. M. Johnson	Louisville, Ky.	1780	English	Ky.	1837	Dem.	Frankfort, Ky.	1850	70
10John Tyler	Greenway, Va.	1790	English	Va.	1841	Dem.	Richmond, Va.	1862	72
11George M. Dallas	Philadelphia, Pa.	1792	English	Pa.	1845	Dem.	Philadelphia, Pa.	1864	72
12Millard Fillmore	Summerhill, N. Y.	1800	English	N. Y.	1849	Whig	Buffalo, N. Y.	1874	74
13William R. King	Sampson Co., N. C.	1786	English	Ala.	1853	Dem.	Dallas Co., Ala.	1853	67
14J. C. Breckinridge	Lexington, Ky.	1821	Scotch	Ky.	1857	Dem.	Lexington, Ky.	1875	54
15Hannibal Hamlin	Paris, Me.	1809	English	Me.	1861	Rep.	Bangor, Me.	1891	81
16Andrew Johnson	Raleigh, N. C.	1808	English	Tenn.	1865	Rep.	Carter Co., Tenn.	1875	66
17Schuyler Colfax	New York City, N. Y.	1823	English	Ind.	1869	Rep.	Mankato, Minn.	1885	62
18Henry Wilson	Farmingham, N. H.	1819	English	Mass.	1873	Rep.	Washington, D. C.	1875	63
19Wm. A. Wheeler	Malone, N. Y.	1812	English	N. Y.	1877	Rep.	Malone, N. Y.	1887	68
20Chester A. Arthur	Fairfield, Vt.	1830	Scotch-Irish	N. Y.	1881	Rep.	New York City, N. Y.	1886	56
21T. A. Hendricks	Muskingum Co., O.	1819	Scotch-Irish	Ind.	1885	Dem.	Indianapolis, Ind.	1885	66
22Levi P. Morton	Shoreham, Vt.	1824	Scotch	N. Y.	1889	Rep.	Rhinebeck, N. Y.	1920	96
23A. E. Stevenson	Christian Co., Ky.	1835	Scotch-Irish	Ill.	1893	Dem.	Chicago, Ill.	1914	78
24G. A. Hobart	Long Branch, N. J.	1844	English	N. J.	1897	Rep.	Paterson, N. J.	1899	55
25Theo. Roosevelt	New York City, N. Y.	1858	Dutch	N. Y.	1901	Rep.	Oyster Bay, N. Y.	1919	61
26C. W. Fairbanks	Unionville Center, O.	1852	English	Ind.	1905	Rep.	Indianapolis, Ind.	1918	66
27J. S. Sherman	Utica, N. Y.	1855	English	N. Y.	1909	Rep.	Utica, N. Y.	1912	57
28Thos. R. Marshall	N. Manchester, Ind.	1854	English	Ind.	1913	Dem.	Washington, D. C.	1925	71
29Calvin Collidge	Plymouth, Vt.	1872	English	Vt.	1921	Rep.	Northampton, Mass.	1933	60
30Chas. G. Dawes	Marietta, O.	1865	English	Ill.	1925	Rep.	.....	....	..
31Chas. Curtis	Topeka, Kans.	1860	Eng.-Fr.-Ind.	Kans.	1929	Rep.	Washington, D. C.	1936	76
32John N. Garner	Red River Co., Tex.	1869	English	Texas	1933	Dem.	.....	....	..
33Henry A. Wallace	Adair County, Iowa	1888	Scotch-Irish	Iowa	1941	Dem.	.....	....	..

SPEAKERS OF THE U. S. HOUSE OF REPRESENTATIVES.

Congress	Years.	Name	State.	Born.	Died.	Congress	Years.	Name.	State.	Born.	Died.
1	1789–91	F. A. Muhlenburg	Pa.	1750	1801	32, 33	1851–55	Linn Boyd	Ky.	1800	1859
2	1791–93	Jonathan Trumbull	Ct.	1740	1809	34	1855–57	Nathaniel P. Banks	Mass.	1816	1894
3	1793–95	F. A. Muhlenburg	Pa.	1750	1801	35	1857–59	James L. Orr	S. C.	1822	1873
4, 5	1795–99	Jonathan Dayton	N. J.	1760	1824	36	1859–61	Wm. Pennington	N. J.	1796	1862
6	1801–07	Theo. Sedgwick	Mass.	1746	1813	37	1861–63	Galusha A. Grow	Pa.	1823	1907
7–9	1799–1801	Nathaniel Macon	N. C.	1757	1837	38–40	1863–69	Schuyler Colfax	Ind.	1823	1885
10, 11	1807–11	Joseph B. Varnum	Mass.	1750	1821	41–43	1869–75	James G. Blaine	Me.	1830	1893
12, 13	1811–14	Henry Clay	Ky.	1777	1852	44	1875–76	Michael C. Kerr	Ind.	1827	1876
13	1814–15	Langdon Cheves	S. C.	1776	1857	44–46	1876–81	Samuel J. Randall	Pa.	1828	1890
14–16	1815–20	Henry Clay	Ky.	1777	1852	47	1881–83	John W. Keifer	Ohio	1836	1932
16	1820–21	John W. Taylor	N. Y.	1784	1854	48–50	1883–89	John G. Carlisle	Ky.	1835	1910
17	1821–23	Philip P. Barbour	Va.	1783	1841	51	1889–91	Thomas B. Reed	Me.	1839	1902
18	1823–25	Henry Clay	Ky.	1777	1852	52, 53	1891–95	Charles F. Crisp	Ga.	1845	1896
19	1825–27	John W. Taylor	N. Y.	1784	1854	54, 55	1895–99	Thomas B. Reed	Me.	1839	1902
20–23	1827–34	Andrew Stevenson	Va.	1784	1857	56, 57	1899–03	David B. Henderson	Ia.	1840	1908
23	1834–35	John Bell	Tenn.	1797	1869	58–61	1903–11	Joseph G. Cannon	Ill.	1836	1926
24–25	1835–39	James K. Polk	Tenn.	1795	1849	62–65	1911–19	Champ Clark	Mo.	1850	1921
26	1839–41	R. M. T. Hunter	Va.	1809	1887	66–68	1919–25	Frederick H. Gillett	Mass.	1851	....
27	1841–43	John White	Ky.	1805	1845	69, 70	1925–31	Nicholas Longworth	Ohio	1869	1931
28	1843–45	John W. Jones	Va.	1805	1848	70, 71	1932–33	John N. Garner	Texas	1869	....
29	1845–47	John W. Davis	Ind.	1799	1850	72, 73	1933–34	Henry T. Rainey	Ill.	1860	1934
30	1847–49	Robert C. Winthrop	Mass.	1809	1894	74	1935–36	Joseph W. Byrns	Tenn.	1869	1936
31	1849–51	Howell Cobb	Ga.	1815	1868	75, 76	1936–40	Wm. B. Bankhead	Ala.	1874	1940
						77	1940–	Sam Rayburn	Texas	1882	....

PRESIDENTIAL CABINET OFFICERS.

SECRETARIES OF STATE.

Presidents.	Cabinet Officers.	Residence	Date of Appointment.	Presidents.	Cabinet Officers.	Residence.	Date of Appointment.
Washington	Thomas Jefferson	Va.	1789	Lincoln	William H. Seward	N. Y.	1861
"	Edmund Randolph	"	1794	Johnson	"	"	1865
"	Timothy Pickering	Mass.	1795	Grant	Elihu B. Washburne	Ill.	1869
Adams	"	"	1797	"	Hamilton Fish	N. Y.	1869
"	John Marshall	"	1800	Hayes	William M. Evarts	"	1877
Jefferson	James Madison	Va.	1801	Garfield	James G. Blaine	Me.	1881
Madison	Robert Smith	Md.	1809	Arthur	F. T. Frelinghuysen	N. J.	1881
"	James Monroe	Va.	1811	Cleveland	Thomas F. Bayard	Del.	1885
Monroe	John Quincy Adams	Mass.	1817	Harrison	James G. Blaine	Me.	1889
J. Q. Adams	Henry Clay	Ky.	1825	"	John W. Foster	Ind.	1892
Jackson	Martin Van Buren	N. Y.	1829	Cleveland	Walter Q. Gresham	Ill.	1893
"	Edward Livingston	La.	1831	"	Richard Olney	Mass.	1895
"	Louis McLane	Del.	1833	McKinley	John Sherman	Ohio	1897
"	John Forsyth	Ga.	1834	"	William R. Day	"	1898
Van Buren	"	"	1837	"	John Hay	"	1898
Harrison	Daniel Webster	Mass.	1841	Roosevelt	Elihu Root	N. Y.	1905
Tyler	"	"	1841	Taft	Philander Chase Knox	Pa.	1909
"	Hugh S. Legare	S. C.	1843	Wilson	William J. Bryan	Neb.	1913
"	Abel P. Upshur	Va.	1843	"	Robert Lansing	N. Y.	1915
"	John C. Calhoun	S. C.	1844	"	Bainbridge Colby	N. Y.	1920
Polk	James Buchanan	Pa.	1845	Harding	Chas. E. Hughes	N. Y.	1921
Taylor	John M. Clayton	Del.	1849	Coolidge	Frank B. Kellogg	Minn.	1925
Fillmore	Daniel Webster	Mass.	1850	Hoover	Henry T. Stimson	N. Y.	1929
"	Edward Everett	"	1852	Roosevelt	Cordell Hull	Tenn.	1933
Pierce	William L. Marcy	N. Y.	1853				
Buchanan	Lewis Cass	Mich.	1857				
"	Jeremiah S. Black	Pa.	1860				

POSTMASTERS GENERAL.

Washington	Samuel Osgood	Mass.	1789	Grant	John A. J. Cresswell	Md.	1869
"	Timothy Pickering	"	1791	"	James W. Marshall	Va.	1874
"	Joseph Habersham	Ga.	1795	"	Marshall Jewell	Ct.	1874
Adams	"	"	1797	"	James N. Tyner	Ind.	1876
Jefferson	"	"	1801	Hayes	David McK. Key	Tenn.	1877
"	Gideon Granger	Ct.	1801	"	Horace Maynard	"	1880
Madison	"	"	1809	Garfield	Thomas L. James	N. Y.	1881
"	Return J. Meigs, Jr.	Ohio	1814	Arthur	Timothy O. Howe	Wis.	1881
Monroe	"	"	1817	"	Walter Q. Gresham	Ind.	1883
"	John McLean	"	1823	"	Frank Hatton	Iowa	1884
J. Q. Adams	"	"	1825	Cleveland	William F. Vilas	Wis.	1885
Jackson	William T. Berry	Ky.	1829	"	Don M. Dickinson	Mich.	1888
"	Amos Kendall	"	1835	Harrison	John Wanamaker	Pa.	1889
Van Buren	"	"	1837	Cleveland	Wilson S. Bissell	N. Y.	1893
"	John M. Niles	Ct.	1840	"	William L. Wilson	W. Va.	1895
Harrison	Francis Granger	N. Y.	1841	McKinley	James A. Gary	Md.	1897
Tyler	"	"	1841	"	Charles Emory Smith	Pa.	1898
"	Charles A. Wickliffe	Ky.	1841	Roosevelt	Henry C. Payne	Wis.	1902
Polk	Cave Johnson	Tenn.	1845	"	Robert J. Wynne	Pa.	1904
Taylor	Jacob Collamer	Vt.	1849	"	Geo. B. Cortelyou	N. Y.	1905
Fillmore	Nathan K. Hall	N. Y.	1850	"	Geo. Von L. Meyer	Mass.	1907
"	Samuel D. Hubbard	Ct.	1852	Taft	Frank H. Hitchcock	Ohio	1909
Pierce	James Campbell	Pa.	1853	Wilson	Albert S. Burleson	Texas	1913
Buchanan	Aaron V. Brown	Tenn.	1857	Harding	Will H. Hayes	Ind.	1921
"	Joseph Holt	Ky.	1859	"	Hubert Work	Colo.	1922
"	Horatio King	Me.	1861	"	Harry S. New	Ind.	1923
Lincoln	Montgomery Blair	Md.	1861	Coolidge	"	Ind.	1925
"	William Dennison	Ohio	1864	Hoover	Walter F. Brown	Ohio	1929
Johnson	"	"	1865	Roosevelt	James A. Farley	N. Y.	1933
"	Alexander W. Randall	Wis.	1866	"	Frank C. Walker	N. Y.	1940

Presidential Cabinet Officers—*Continued.*

SECRETARIES OF THE INTERIOR.

Presidents.	Cabinet Officers.	Residence.	Date of Appointment.	Presidents.	Cabinet Officers.	Residence.	Date of Appointment.
Taylor	Thomas Ewing	Ohio	1849	Cleveland	William F. Vilas	Wis.	1888
Fillmore	James A. Pearce	Md.	1850	Harrison	John W. Noble	Mo.	1889
"	Thos. M. T. McKernon	Pa.	1850	Cleveland	Hoke Smith	Ga.	1893
"	Alexander H. H. Stuart	Va.	1850	"	David R. Francis	Mo.	1896
Pierce	Robert McClelland	Mich.	1853	McKinley	Cornelius N. Bliss	N. Y.	1897
Buchanan	Jacob Thompson	Miss.	1857	"	Ethan A. Hitchcock	Mo.	1899
Lincoln	Caleb B. Smith	Ind.	1861	Roosevelt	"	"	1901
"	John P. Usher	"	1863	"	James R. Garfield	Ohio	1907
Johnson	"	"	1865	Taft	Richard A. Ballinger	Wash.	1909
"	James Harlan	Iowa	1865	"	Walter L. Fisher	Ill.	1911
"	Orville H. Browning	Ill.	1866	Wilson	Franklin K. Lane	Cal.	1913
Grant	Jacob D. Cox	Ohio	1869	"	John B. Payne	Ill.	1920
"	Columbus Delona	"	1870	Harding	Albert B. Fall	N. M.	1921
"	Zachariah Chandler	Mich.	1875	"	Hubert Work	Colo.	1923
Hayes	Carl Schurz	Mo.	1877	Coolidge	"	"	1925
Garfield	Samuel J. Kirkwood	Iowa	1881	"	Ray O. West	Ill.	1928
Arthur	Henry M. Teller	Colo.	1882	Hoover	Ray L. Wilbur	Cal.	1929
Cleveland	Lucius Q. C. Lamar	Miss.	1885	Roosevelt	Harold L. Ickes	Ill.	1933

SECRETARIES OF AGRICULTURE.

Cleveland	Norman J. Colman	Mo.	1889	Wilson	Edwin T. Meredith	Iowa	1920
Harrison	Jeremiah M. Rusk	Wis.	1889	Harding	Henry C. Wallace	Iowa	1921
Cleveland	J. Sterling Morton	Neb.	1893	Coolidge	Henry C. Wallace	Iowa	"
McKinley	James Wilson	Iowa	1897	"	Howard M. Gore	W. Va.	1924
Roosevelt	"	"	1901	"	William H. Jardine	Kan.	1925
Taft	"	"	1909	Hoover	Arthur M. Hyde	Mo.	1929
Wilson	David F. Houston	Mo.	1913	Roosevelt	Henry A. Wallace	Iowa	1933
				"	Claude R. Wickard	Ind.	1940

ATTORNEYS GENERAL.

Washington	Edmund Randolph	Va.	1790	Lincoln	Titian J. Coffey (*ad int.*)	Pa.	1863
"	William Bradford	Pa.	1794	"	James Speed	Ky.	1864
"	Charles Lee	Va.	1795	Johnson	"	"	1865
Adams	"	"	1797	"	Henry Stanberry	Ohio	1866
"	Theophilus Parsons	Mass.	1801	"	William M. Evarts	N. Y.	1868
Jefferson	Levi Lincoln	"	1801	Grant	Ebenezer R. Hoar	Mass.	1869
"	Robert Smith	Md.	1805	"	Amos T. Ackerman	Ga.	1870
"	John Breckenridge	Ky.	1805	"	George H. Williams	Ore.	1871
"	Cæsar A. Rodney	Del.	1807	"	Edwards Pierrepont	N. Y.	1875
Madison	"	"	1809	"	Alphonso Taft	Ohio	1876
"	William Pinkney	Md.	1811	Hayes	Charles Devens	Mass.	1877
"	Richard Rush	Pa.	1814	Garfield	Wayne MacVeagh	Pa.	1881
Monroe	"	"	1817	Arthur	Benjamin H. Brewster	"	1881
"	William Wirt	Va.	1817	Cleveland	Augustus H. Garland	Ark.	1885
J. Q. Adams	"	"	1825	Harrison	William H. H. Miller	Ind.	1889
Jackson	John McP. Berrien	Ga.	1829	Cleveland	Richard Olney	Mass.	1893
"	Roger B. Taney	Md.	1831	"	Judson Harmon	Ohio	1895
"	Benjamin F. Butler	N. Y.	1833	McKinley	Joseph McKenna	Cal.	1897
Van Buren	"	"	1837	"	John W. Griggs	N. J.	1898
"	Felix Grundy	Tenn.	1838	"	Philander C. Knox	Pa.	1901
"	Henry D. Gilpin	Pa.	1840	Roosevelt	"	"	1901
Harrison	John J. Crittenden	Ky.	1841	"	W. H. Moody	Mass.	1904
Tyler	"	"	1841	"	Chas. J. Bonaparte	Md.	1906
"	Hugh S. Legaré	S. C.	1841	Taft	George W. Wickersham	N. Y.	1909
"	John Nelson	Md.	1843	Wilson	James C. McReynolds	Tenn.	1913
Polk	John Y. Mason	Va.	1845	"	Thomas Watt Gregory	Texas	1914
"	Nathan Clifford	Me.	1846	"	A. Mitchell Palmer	Pa.	1919
"	Isaac Toucey	Ct.	1848	Harding	Harry M. Daugherty	Ohio	1921
Taylor	Reverdy Johnson	Md.	1849	Coolidge	Harlan F. Stone	N. Y.	1924
Fillmore	John J. Crittenden	Ky.	1850	"	John G. Sargent	Vt.	1925
Pierce	Caleb Cushing	Mass.	1853	Hoover	William D. Mitchell	Minn.	1929
Buchanan	Jeremiah S. Black	Pa.	1857	Roosevelt	Homer S. Cummings	Conn.	1933
"	Edwin M. Stanton	Ohio	1860	"	Frank Murphy	Mich.	1939
Lincoln	Edward Bates	Mo.	1861	"	Robert H. Jackson	N. Y.	1940
				"	Francis Biddle	Pa.	1941

SECRETARIES OF THE TREASURY.

Washington	Alexander Hamilton	N. Y.	1789	Jackson	Levi Woodbury	N. H.	1834
"	Oliver Wolcott	Ct.	1795	Van Buren	"	"	1837
Adams	"	"	1797	Harrison	Thomas Ewing	Ohio	1841
"	Samuel Dexter	Mass.	1801	Tyler	"	"	1841
Jefferson	"	"	1801	"	Walter Forward	Pa.	1841
"	Albert Gallatin	Pa.	1801	"	John C. Spencer	N. Y.	1843
Madison	"	"	1809	"	George M. Bibb	Ky.	1844
"	George W. Campbell	Tenn.	1814	Polk	Robert J. Walker	Miss.	1845
"	Alexander J. Dallas	Pa.	1814	Taylor	William M. Meredith	Pa.	1849
"	William H. Crawford	Ga.	1816	Fillmore	Thomas Corwin	Ohio	1850
Monroe	"	"	1817	Pierce	James Guthrie	Ky.	1853
J. Q. Adams	Richard Rush	Pa.	1825	Buchanan	Howell Cobb	Ga.	1857
Jackson	Samuel D. Ingham	"	1829	"	Philip F. Thomas	Md.	1860
"	Louis McLane	Del.	1831	"	John A. Dix	N. Y.	1861
"	William J. Duane	Pa.	1833	Lincoln	Salmon P. Chase	Ohio	1861
"	Roger B. Taney	Md.	1833	"	William P. Fessenden	Me.	1864

Presidential Cabinet Officers—*Continued.*

SECRETARIES OF THE TREASURY—*Continued.*

Presidents.	Cabinet Officers.	Residence.	Date of Appointment.	Presidents.	Cabinet Officers.	Residence.	Date of Appointment.
Lincoln	Hugh McCulloch	Ind.	1865	Harrison	Charles Foster	Ohio	1891
Johnson	"	"	1865	Cleveland	John G. Carlisle	Ky.	1893
Grant	George S. Boutwell	Mass.	1869	McKinley	Lyman J. Gage	Ill.	1897
"	William A. Richardson	"	1873	Roosevelt	Leslie M. Shaw	Iowa	1902
"	Benjamin H. Bristow	Ky.	1874	"	George B. Cortelyou	N. Y.	1907
"	Lot M. Morrill	Me.	1876	Taft	Franklin MacVeagh	Ill.	1909
Hayes	John Sherman	Ohio	1877	Wilson	William G. McAdoo	N. Y.	1913
Garfield	William Windom	Minn.	1881	"	Carter Glass	Va.	1918
Arthur	Charles J. Folger	N. Y.	1881	"	David F. Houston	Mo.	1920
"	Walter Q. Gresham	Ind.	1884	Harding	Andrew W. Mellon	Pa.	1921
"	Hugh McCulloch	"	1884	Coolidge	"	"	1925
Cleveland	Daniel Manning	N. Y.	1885	Hoover	"	"	1929
"	Charles S. Fairchild	"	1887	Roosevelt	William H. Woodin	N. Y.	1933
Harrison	William Windom	Minn.	1889	"	Henry Morgenthau, Jr.	N. Y.	1934

SECRETARIES OF WAR.

Washington	Henry Knox	Mass.	1789	Johnson	Edwin M. Stanton	Pa.	1865
"	James McHenry	Md.	1796	"	U. S. Grant (*ad int.*)	Ill.	1867
Adams	"	"	1797	"	Edwin M. Stanton	Pa.	1868
"	Samuel Dexter	Mass.	1800	"	John M. Schofield	N. Y.	1868
Jefferson	Henry Dearborn	"	1801	Grant	John A. Rawlins	Ill.	1869
Madison	William Eustis	"	1809	"	William T. Sherman	Ohio	1869
"	John Armstrong	N. Y.	1813	"	William W. Belknap	Ia.	1869
"	James Monroe	Va.	1814	"	Alphonso Taft	Ohio	1876
"	William H. Crawford	Ga.	1815	"	James Don Cameron	Pa.	1876
Monroe	Isaac Shelby	Ky.	1817	Hayes	George W. McCrary	Ia.	1877
"	Geo. Graham (*ad int.*)	Va.	1817	"	Alexander Ramsey	Minn.	1879
"	John C. Calhoun	S. C.	1817	Garfield	Robert T. Lincoln	Ill.	1881
J. Q. Adams	James Barbour	Va.	1825	Arthur	"	"	1881
"	Peter B. Porter	N. Y.	1828	Cleveland	William C. Endicott	Mass.	1885
Jackson	John H. Eaton	Tenn.	1829	Harrison	Redfield Procter	Vt.	1889
"	Lewis Cass	Ohio	1831	"	Stephen B. Elkins	W. Va.	1891
"	Benjamin F. Butler (*ac.*)	N. Y.	1837	Cleveland	Daniel S. Lamont	N. Y.	1893
Van Buren	Joel R. Poinsett	S. C.	1837	McKinley	Russell A. Alger	Mich.	1897
Harrison	John Bell	Tenn.	1841	"	Elihu Root	N. Y.	1899
Tyler	"	"	1841	Roosevelt	William H. Taft	Ohio	1904
"	John C. Spencer	N. Y.	1841	"	Luke E. Wright	Tenn.	1908
"	James M. Porter	Pa.	1843	Taft	Jacob McG. Dickinson	Ill.	1909
"	William Wilkins	"	1844	"	Henry L. Stimson	N. Y.	1911
Polk	William L. Marcy	N. Y.	1845	Wilson	Linley M. Garrison	N. J.	1913
Taylor	George W. Crawford	Ga.	1849	"	Newton Diehl Baker	Ohio	1916
Fillmore	Winfield Scott (*ad int.*)	Va.	1850	Harding	John W. Weeks	Mass.	1921
"	Charles M. Conrad	La.	1850	Coolidge	John W. Weeks	Mass.	1925
Pierce	Jefferson Davis	Miss.	1853	"	Dwight F. Davis	Mo.	1925
Buchanan	John B. Floyd	Va.	1857	Hoover	James W. Good	Iowa	1929
"	Joseph Holt	Ky.	1861	"	Patrick Jay Hurley	Okla.	1929
Lincoln	Simon Cameron	Pa.	1861	Roosevelt	George H. Dern	Utah	1933
"	Edwin M. Stanton	Pa.	1862	"	Harry H. Woodring	Kas.	1937
				"	Henry L. Stimson	N. Y.	1940

SECRETARIES OF THE NAVY.

Adams	George Cabot	Mass.	1798	Fillmore	John P. Kennedy	Md.	1852
"	Benjamin Stoddert	Md.	1798	Pierce	James C. Dobbin	N. C.	1853
Jefferson	"	"	1801	Buchanan	Isaac Toucey	Ct.	1857
"	Robert Smith	"	1801	Lincoln	Gideon Welles	"	1861
"	Jacob Crowninshield	Mass.	1805	Johnson	"	"	1865
Madison	Paul Hamilton	S. C.	1809	Grant	Adolph E. Borie	Pa.	1869
"	William Jones	Pa.	1813	"	George M. Robeson	N. J.	1869
"	B. W. Crowninshield	Mass.	1814	Hayes	Richard W. Thompson	Ind.	1877
Monroe	"	"	1817	"	Nathan Goff, Jr.	W. Va.	1881
"	Smith Thompson	N. Y.	1818	Garfield	William H. Hunt	La.	1881
"	Samuel L. Southard	N. J.	1823	Arthur	William E. Chandler	N. H.	1882
J. Q. Adams	"	"	1825	Cleveland	William C. Whitney	N. Y.	1885
Jackson	John Branch	N. C.	1829	Harrison	Benjamin F. Tracy	"	1889
"	Levi Woodbury	N. H.	1831	Cleveland	Hilary A. Herbert	Ala.	1893
"	Mahlon Dickerson	N. J.	1834	McKinley	John D. Long	Mass.	1897
Van Buren	"	"	1837	Roosevelt	William H. Moody	"	1902
"	James K. Paulding	N. Y.	1838	"	Paul Morton	Ill.	1904
Harrison	George E. Badger	N. C.	1841	"	Charles J. Bonaparte	Md.	1905
Tyler	"	"	1841	"	Victor H. Metcalf	Cal.	1906
"	Abel P. Upshur	Va.	1841	"	Truman H. Newberry	Mich.	1908
"	David Henshaw	Mass.	1843	Taft	George Von L. Meyer	Mass.	1909
"	Thomas W. Gilmer	Va.	1844	Wilson	Josephus Daniels	N. C.	1913
"	John Y. Mason	"	1844	Harding	Edwin Denby	Mich.	1921
Polk	George Bancroft	Mass.	1845	Coolidge	Curtis D. Wilbur	Cal.	1924
"	John Y. Mason	Va.	1846	Hoover	Chas. F. Adams	Mass.	1929
Taylor	William B. Preston	Va.	1849	Roosevelt	Claude A. Swanson	Va.	1933
Fillmore	William A. Graham	N. C.	1850	"	Charles Edison	N. Y.	1940
				"	Frank Knox	Ill.	1940

Presidential Cabinet Officers—*Continued.*

SECRETARIES OF COMMERCE.

Presidents.	Cabinet Officers.	Date of Residence.	Appointment.	Presidents.	Cabinet Officers.	Residence.	Date of Appointment.
Roosevelt...	Geo. B. Cortelyou.....	N. Y...	1903	Coolidge....	Herbert Hoover.....	Cal....	1925
" ...	Victor H. Metcalf.....	Cal....	1904	"	William F. Whiting.....	Mass..	1928
" ...	Oscar S. Straus.....	N. Y...	1909	Hoover.....	Robt. P. Lamont.....	Ill.....	1929
Taft.....	Charles Nagel.....	Mo....	1906	Roosevelt...	Roy D. Chapin.....	Mich..	1932
Wilson.....	Wm. C. Redfield.....	N. Y...	1913	" ...	Daniel C. Roper.....	N. C...	1933
"	Joshua W. Alexander...	Mo....	1919	" ...	Harry Hopkins.....	N. Y..	1938
Harding....	Herbert Hoover.....	Cal....	1921	" ...	Jesse Jones.....	Texas.	1940

SECRETARIES OF LABOR.

Wilson.....	Wm. B. Wilson.....	Pa. ...	1913	Hoover.....	Jas. J. Davis.....	Pa. ...	1929
Harding....	Jas. J. Davis.....	Pa. ...	1921	Roosevelt...	William N. Doak.....	N. Y.	1931
Coolidge....	"	Pa. ...	1925	" ...	Frances Perkins.....	N. Y.	1933

JUSTICES OF THE UNITED STATES SUPREME COURT.

(Names of the Chief Justices in Italics.)

Name.	Service.		Born.	Died.	Name.	Service.		Born.	Died.
	Term.	Yrs.				Term.	Yrs.		
John Jay, N. Y.....	1789–1795	6	1745	1829	Ward Hunt, N. Y.....	1872–1882	10	1811	1886
John Rutledge, S. C.....	1789–1791	2	1739	1800	*Morrison R. Waite*, Ohio...	1874–1888	14	1816	1888
William Cushing, Mass....	1789–1810	21	1733	1810	John M. Harlan, Ky.....	1877–1911	34	1833	1911
James Wilson, Pa.....	1789–1798	9	1742	1798	William B. Woods, Ga.....	1880–1887	7	1824	1887
John Blair, Va.....	1789–1796	7	1732	1800	Stanley Matthews, Ohio...	1881–1889	8	1824	1889
Robert H. Harrison, Md....	1789–1790	1	1745	1790	Horace Gray, Mass.....	1881–1902	21	1828	1902
James Iredell, N. C.....	1789–1799	9	1751	1799	Samuel Blatchford, N. Y...	1882–1893	11	1820	1893
Thomas Johnson, Md.....	1791–1793	2	1732	1819	Lucius Q. C. Lamar, Miss..	1888–1893	5	1825	1893
William Paterson, N. J.....	1793–1806	13	1745	1806	*Melville W. Fuller*, Ill.....	1888–1910	22	1833	1910
John Rutledge, S. C.....	1795–1795	..	1739	1800	David J. Brewer, Kan.....	1889–1910	21	1837	1910
Samuel Chase, Md.....	1796–1811	15	1741	1811	Henry B. Brown, Mich....	1890–1906	16	1836	1913
Oliver Ellsworth, Ct.....	1796–1800	4	1745	1807	George Shiras, Jr., Pa.....	1892–1902	10	1832	1934
Bushrod Washington, Va...	1798–1829	31	1762	1829	Howell E. Jackson, Tenn..	1893–1895	2	1832	1895
Alfred Moore, N. C.....	1799–1804	5	1755	1810	*Edward D. White*, La.....	1894–1921	27	1845	1921
John Marshall, Va.....	1801–1835	34	1755	1835	Rufus W. Peckham, N. Y..	1895–1909	14	1838	1909
William Johnson, S. C.....	1804–1834	30	1771	1834	Joseph McKenna, Cal.....	1898–1925	27	1843	1926
Brockholst Livingston, N. Y.	1806–1823	17	1757	1823	Oliver W. Holmes, Mass...	1902–1932	29	1841	1935
Thomas Todd, Ky.....	1807–1826	19	1765	1826	William R. Day, Ohio.....	1903–1922	19	1849	1922
Joseph Story, Mass.....	1811–1845	34	1779	1845	William H. Moody, Mass..	1907–1910	4	1853	1917
Gabriel Duval, Md.....	1811–1836	25	1752	1844	Horace H. Lurton, Tenn...	1909–1914	5	1844	1914
Smith Thompson, N. Y.....	1823–1843	20	1767	1843	Charles E. Hughes, N. Y..	1910–1916	5	1862	.....
Robert Trimble, Ky.....	1826–1828	2	1777	1828	Joseph R. Lamar, Ga.....	1910–1916	5	1857	1916
John McLean, Ohio.....	1829–1861	32	1785	1861	Willis Van Devanter, Wyo.	1910–1937	27	1859	1941
Henry Baldwin, Pa.....	1830–1844	14	1779	1814	Mahlon Pitney, N. J.....	1912–1923	11	1858	1924
James M. Wayne, Ga.....	1835–1867	32	1790	1867	James C. McReynolds, Ky.	1914–1941	27	1862	.....
Roger B. Taney, Md.....	1836–1864	28	1777	1864	Louis D. Brandeis, Ky.....	1916–1939	23	1856	1941
Philip P. Barbour, Va.....	1836–1841	5	1783	1841	John H. Clarke, Ohio.....	1916–1922	6	1857	.....
John Catron, Tenn.....	1837–1865	28	1786	1865	*Wm. H. Taft*, Conn.....	1921–1930	9	1857	1930
John McKinley, Ala.....	1837–1852	15	1780	1852	George Sutherland, Utah..	1922–1938	14	1862	1941
Peter V. Daniel, Va.....	1841–1860	19	1785	1860	Pierce Butler, Minn.....	1922–1939	17	1866	1939
Samuel Nelson, N. Y.....	1845–1872	27	1792	1873	Edward T. Sanford, Tenn..	1923–1930	7	1865	1930
Levi Woodbury, N. H.....	1845–1851	6	1789	1851	*Harlan F. Stone*, N. Y.....	1925–....	....	1872	.....
Robert C. Grier, Pa.....	1846–1870	23	1794	1870	*Charles E. Hughes*, N. Y...	1930–1941	11	1862	.....
Benjamin R. Curtis, Mass..	1851–1857	6	1809	1874	Owen J. Roberts, Pa.....	1930–....	....	1875	.....
John A. Campbell, Ala.....	1853–1861	8	1811	1889	Benj. N. Cardozo, N. Y...	1932–1938	6	1870	1938
Nathan Clifford, Me.....	1858–1881	23	1803	1881	Hugo S. Black, Ala.....	1937–....	....	1886	.....
Noah H. Swayne, Ohio.....	1861–1881	20	1804	1884	Stanley Reed, Ky.....	1938–....	....	1884	.....
Samuel F. Miller, Iowa.....	1862–1890	28	1816	1890	Felix Frankfurter, Mass...	1939–....	....	1882	.....
David Davis, Ill.....	1862–1877	15	1815	1885	Wm. O. Douglas, Conn....	1939–....	....	1898	.....
Stephen J. Field, Cal.....	1863–1897	34	1816	1899	Frank Murphy, Mich.....	1940–....	....	1893	.....
Salmon P. Chase, Ohio.....	1864–1873	9	1808	1873	James F. Byrnes, S. C.....	1941–1942	1	1879	.....
William Strong, Pa.....	1870–1880	10	1808	1895	Robert H. Jackson, N. Y...	1941–....	....	1892	.....
Joseph P. Bradley, N. J....	1870–1892	22	1813	1892	Wiley Rutledge, Iowa.....	1943–....	....	1894	.....

UNITED STATES FEDERAL COURTS.

THE SUPREME COURT. Final judicial authority rests in the Supreme Court made up of a chief justice and eight associate justices. This court hears only cases on appeal, save those involving ambassadors and other foreign representatives, trials in which a state is a party, and a few others, in all which the court has original jurisdiction. Salary of the chief justice is $20,500; of associates, $20,000; chief clerk, $6,000; marshal, $5,500; and reporter, $8,000.

COURT OF CLAIMS. Organized first in 1855 to try claims against the United States. It has a chief justice and four associates, all drawing $12,500 each.

CIRCUIT COURT. Tries appeals from district courts, and also has original jurisdiction in many important cases. The United States is divided into ten different areas, with a court of three or more judges in each area. Salary, $12,500 each.

DISTRICT COURTS. One or more in every state and territory, with more restricted jurisdiction than the Circuit Court, but hearing appeals and trying original cases. Salary, $10,000.

CIRCUIT COURT OF APPEALS. Made up of the district and circuit judges of each particular area and also the justice of the Supreme Court who has jurisdiction over the area.

COURT OF CUSTOMS AND PATENT APPEALS. Established first in 1909, with one justice and four associates, each granted $12,500 a year.

CUSTOMS COURT. Established by the Tariff Act of 1930. Sits in New York to hear cases as to customs and similar claims. Each of the nine judges gets $10,000 a year salary.

SOME FAMOUS INDIAN CHIEFS.

ATTUCKS, CRISPUS (*c.* 1720-1770). The first person killed in the Boston Massacre, which is considered the opening of the American Revolution. He was an Indian-negro half-blood, living at Framingham, Mass. Attucks was a sailor and is said to have been the leader of the crowd who fired upon the soldiers in front of the old State House. Massachusetts honored his memory by erecting a monument on Boston Common in 1888.

BLACK HAWK (1767-1838). Chief of the Sac Indians (1788-1838). Took part against the Americans in the War of 1812; made and broke treaties with the United States and precipitated the Black Hawk War (1831-1832); defeated by General Dodge near the Wisconsin River (July 21, 1832), and at Bad Axe River by General Atkinson (August 1-2, 1832); Black Hawk surrendered August 27.

BLUE JACKET. A famous Shawnee chief, who is known chiefly as leader of the Indian forces in the battle at Presque Isle, Ohio, with General Wayne, August 20, 1794. Blue Jacket was opposed to peace, but after Wayne defeated the Indians he signed the treaty of 1795 with the General at Greenville, Ohio, and also the treaty of Ft. Industry, Ohio, July 4, 1805.

BRANT, JOSEPH (THAYENDANEGEA) (about 1742-1807). A famous Mohawk chief, who served with the British during the War of Independence; fought at Cherry Valley, Minisink, and Oriskany. He was not at the Wyoming Massacre; visited England (1786). Fiske says, "He was perhaps the greatest Indian of whom we have any knowledge."

COLBERT, WILLIAM. Chickasaw chief, termed the warrior of his nation. Aided the Americans in the Revolution, leading the Chickasaw allies against the hostile tribes. Served nine months in the regular infantry during the war of 1812, and then led his warriors against the hostile Creeks.

CORNPLANTER (1732-1836). Chief of the Seneca Indians, a half-breed, the son of John O'Bail, or O'Beal, a trader. Became unpopular because of taking part in the treaties of Ft. Stanwix, 1784, and Ft. Harmon, 1789, by which large grants of land were made to the United States, and by signing the treaties of September 15, 1797, and July 30, 1802. In 1790, he, with Halftown, laid before Gen. Washington at Philadelphia the grievances of his people. Six hundred and forty acres of land within Pennsylvania were granted to him by that state March 16, 1796, "for his many valuable services to the whites." In 1866 a monument to his memory was erected on his reservation by the state of Pennsylvania.

CRAZY HORSE (-1877). A great chief of the Oglala Sioux. Leader with Sitting Bull in Custer's massacre. Later surrendered to General Miles. Being suspected of stirring up another war was arrested in 1877, but escaped from the guard and was shot.

GERONIMO (*c.* 1834-1909). A medicine man and prophet of the Chiricahua Apaches. Native name Goyathlay. On account of depredations committed against frontiersmen the government decided to remove the tribe from their reservation in San Carlos, Arizona. Geronimo fled to Mexico with others, returned and was arrested. In 1882 hostile movements were made against the inhabitants of New Mexico and Arizona, and General Crook had orders to capture the chief and his band. An agreement was made and surrender agreed upon in March, 1886, but Geronimo and his followers fled across to Mexico. General Miles, who was in command, pursued, and the following August they were captured. Three hundred and forty, comprising the entire band with leaders, were sent to Florida as prisoners of war, later to Alabama and finally to Ft. Sill, Oklahoma.

HOLLOW-HORN BEAR (1850-1913). Brulé Sioux chief. Attacked United States troops in Wyoming and Montana in 1868, and the next year took part in a raid on laborers on the Union Pacific Railroad. Later he became captain of police at Rosebud Agency, South Dakota, and five years afterwards was appointed second lieutenant under Agent Spencer, but ill health compelled him to resign. As an orator of great ability, he was chosen by the Sioux to be their speaker in 1889, when General Crook was sent to Rosebud to make an agreement with the Indians there. Took part in the inaugurations of Presidents Roosevelt and Wilson.

JOSEPH (-1904). A great general of the Nez Percés, and their leader in the hostilities of 1877. Joseph and his band did not recognize the treaty of 1863, whereby their ancient home in northeast Oregon was given to the whites, and continued to live there, collisions between Indians and whites steadily increasing. A peaceful settlement by the removal of the Indians to Lapwai reservation in Idaho was nearly effected when outrageous acts of the whites brought on war. The whites lost heavily in several engagements, after which extraordinary generalship was exhibited by Joseph in a retreat of over 1,000 miles, "worthy to be remembered with that of Xenophon's ten thousand."

KEOKUK (*c.* 1780-1848). A Sac leader and diplomat of great ability. Became chief councilor in the Sac assembly, enjoying great popularity among his people until the Black Hawk War, during which he remained so passive that he lost influence both socially and politically. At this time the political union of the Sacs and the Foxes was broken, largely as a result of intrigues by Keokuk, and he, with a band of unpatriotic Sacs obtained protection from the Foxes under their chief Padweshik. In the negotiations following the Black Hawk War, Keokuk aided the government so cleverly that he was made chief of the Sacs, his appointment being received by Sacs and Foxes with ridicule and contempt. In 1845 he removed to Kansas, where his death occurred. His remains were removed to Keokuk, Iowa, in 1883. There they were reinterred in the city park, and the citizens of the town erected a monument over his grave. In the capitol at Washington stands a bronze bust of Keokuk.

LONE WOLF (-1879). Kiowa chief. In 1867 signed the treaty of Medicine Lodge, Kansas, whereby his people first agreed to be placed on a reservation; in 1872 leader of a delegation to Washington. His son was killed by the Texans in 1873, which enraged Lone Wolf, and in the outbreak of 1874 he became the leader of the hostile part of his tribe; surrendered in 1875 and was kept three years at Ft. Marion, Florida.

MASSASOIT (1580-1661). Sachem of the Wampanoags; visited Plymouth (1621), and concluded with Governor Carver a treaty of friendship, which was faithfully adhered to for 54 years, the first diplomatic act recorded in the history of New England.

OSCEO'LA (1804?-1838). Famous Seminole chief; he grew up among the Seminoles and when the whites pushed southward opposed them. In 1835 Osceola's wife, being the daughter of a fugitive slave woman, was claimed by her mother's former owner. Infuriated at this, Osceola resolved vengeance on the whites, and began the Second Seminole War; taken prisoner (1837) and held in captivity at Ft. Moultrie till his death.

PHILIP or **METACOMET** (? -1676). Famous Indian chief; son of Massasoit; sachem of the Wampanoags; at first firm friend of white settlers, but, realizing that settlement of the country by them meant the destruction of his own people, began what is known as "King Philip's War" in 1774; 13 towns destroyed, 600 inhabitants killed. The Indians were defeated and King Philip was killed at Mount Hope.

PONTIAC (*c.* 1720-1769). A famous Ottawa chief; leader of confederated tribes against the English (1763-1765) though professing loyalty to English king; by concerted action, all but four of the fourteen English posts were captured; peace being declared between England and France, Pontiac also made a treaty; murdered by an Illinois Indian.

RED JACKET (1751-1830). Seneca Indian chief. During the Revolution he fought for the English; helped the United States against Tecumseh (1810). Probably the most eloquent of the Indian race.

SITTING BULL (1837-1890). Famous Sioux chief. Slaughtered whites. On his refusal to settle down on a reservation General Sheridan with his troops in 1876 opened a campaign against him. General Custer carried on Sheridan's work and at Little Big Horn in June of 1876 there was a slaughter of the troops by the Indians. The chief escaped to Canada but returned in 1881 with a general pardon from General Miles. In 1888, by the advice of Sitting Bull, the Sioux refused to sell their lands. In 1890 he was the leader of the impending uprising among the Indians during the "Messiah" affair. He was killed in North Dakota in 1890 while an attempt was being made to save him from arrest.

TECUMSEH (1775-1813). Celebrated chief of the Shawnee Indians; in the battle of Tippecanoe (1811) his followers were defeated by Harrison. The importance of his aid to the British in the war of 1812 cannot be overestimated.

UNCAS (-about 1683). A famous sachem of the Mohegan Indians of Connecticut. As a Pequot chief he revolted (1635) and with a number of Indians formed the Mohegans. He fought against the Indians and with the English in the Pequot War (1637) and was given a grant of the Pequot lands. He defeated the Narragansett chief, Miantonomoh, in 1643 and later caused his death.

THE BRITISH EMPIRE.

The United Kingdom.—In England the term "Constitution" has not quite the same meaning as in the United States. In this country it denotes a written instrument, which constitutes the supreme law of the land. In England, the Constitution implies the whole political organism, with its laws, usages, and unwritten traditions. A republican constitution is "framed" artificially by a convention; the English Constitution is the natural growth of generations, and is broad-based on the principles of personal liberty and equality. Being for the most part unwritten, its growth and adaptability are unimpeded; and it has developed steadily and securely along the lines of progress, keeping pace with the march of civilization. This flexibility, far from endangering the stability of the government, is the mainstay of its strength, due largely to the conservatism of the English mind. The Constitution forms a part of the English Common Law; yet, unlike the United States, there is no positive law for the establishment of the national representation. The Cabinet, though the actual organ of executive government, is a body unknown to the law, and has never been recognized by any statutes, any rule of Common Law, or any resolution of either House of Parliament. In form, the government is a constitutional or limited monarchy; but in reality, it is a government by the people, a true democracy ruled by a king.

The supreme political authority in the United Kingdom is vested in the Sovereign and Parliament. There is a maxim that "the King can do no wrong"; which means that as every official act is necessarily done in accordance with the law, and as no unlawful act can be recognized as an act of the Crown, whatever the King does officially is done lawfully. "*Nihil enim aliud potest rex nisi id solum quod de jure potest.*" The Legislative is vested in Parliament, but the latter possesses no independent authority, being merely the council of the Crown. Its functions are deliberative, and the control which it exercises over every department of the Executive is indirect. Every act of state remains the act of the King, who by his powers of prorogation and dissolution has the means of checking rash or unwise legislation. In practice the executive authority rests with the Cabinet—a committee of ministers nominated by the Crown on the recommendation of the Prime Minister, but whose power depends upon the possession of a majority in the Commons. The Cabinet thus provides an additional check in the modern system of Parliamentary Government. The ministers are the natural leaders of both Houses. The chief of the Cabinet and the ministry is the Prime Minister or Premier, who exercises important functions and is the chief adviser of the Crown. He is personally appointed by the Sovereign, and is the medium between the Cabinet and the Crown. His resignation or death dissolves the Cabinet. His colleagues are of his own selection, though subject to Royal approval. In the same manner, he fills vacancies in the ranks of deans, bishops, and archbishops, and on his recommendation titles and honors are conferred. "Nowhere in the wide world," says Gladstone, "does so great a substance cast so small a shadow; nowhere is there a man who has so much power, with so little to show for it in the way of formal title or prerogative." Before 1905 the Premier had no recognition in Common Law. His office had no legal existence, but his actual official position was usually that of First Lord of the Treasury. The Premier is the leader of the particular House of which he is a member. The following offices invariably entitle the holder to Cabinet rank: First Lord of the Treasury, Lord Chancellor, Lord President of the Council, the Secretaries of State for the Home Department, Foreign Affairs, the Colonies, for War, and for India, Chancellor of the Exchequer, and First Lord of the Admiralty. The offices which may or may not carry with them a seat in the Cabinet include those of Lord Privy Seal, Chancellor of the Duchy of Lancaster, Postmaster General, First Commissioner of Works, President of the Board of Trade, President of the Board of Agriculture, President of the Local Government Board, Lord Lieutenant of Ireland, Lord Chancellor of Ireland, Chief Secretary for Ireland, Secretary for Scotland. Members of the Cabinet are necessarily Privy Councilors, and their deliberations are confidential. It is the duty of ministers to prepare for Parliament all business connected with the administration, to furnish a suggested budget for the current year, to advise specific improvements in the laws, and to criticise measures brought forward by non-official members. The ministerial control is, however, merely persuasive and advisory, and does not in any way interfere with any member's freedom of action. Every member of Parliament has the right to bring forward whatever proposal he thinks fit, without asking leave of the Crown or of any committee. There are no references to Standing Committees as in the Congress of the United States. A ministry remains in power so long as it holds the confidence of the Commons. It usually resigns when it is defeated upon some question of supreme importance. In such a case the Premier either resigns, or asks leave to appeal to the country, and in the latter course being determined upon a general election ensues.

The Three Estates.—Parliament consists of the Sovereign and the Three Estates of the Realm, viz., the Lords Spiritual, the Lords Temporal, and the Commons; the Lords Spiritual and Temporal together forming the House of Lords. Parliament, unless dissolved by the Crown, exists for seven years. It is one of the curiosities of Parliament that the French language is still used in proclaiming the Royal assent to any bill. When a public measure is approved, the Clerk of the Parliaments (the chief officer of the House of Peers) says, "*Le roy* (or, *la reyne*) *le veult.*" In the case of a private bill he says, "*Soit fait comme il est desire.*" Should the bill pertain to subsidies, the formula is, "*Le roy* (or, *la reyne*) *remercie ses bons sujets, accepte leur benevolence, et ainsi le veult.*" In case of the Crown giving a refusal, the official then says, "*Le roy* (or, *la reyne*) *s'avisera.*" This power of rejection was last exercised in 1707 by Queen Anne.

The House of Lords is composed of (1) Spiritual Peers (2 archbishops and 24 bishops); (2) Temporal Peers by hereditary right, or by creation; (3) representative peers of Scotland

and Ireland; (4) Lords of Appeal (of whom there may not be more than four). By the Act of Union between England and Scotland, the Scottish peers send 16 representatives to the Lords, who sit till Parliament is dissolved. The Irish peers elect 28 representatives for life. The number of Peers on the "Roll" in 1937 was 740. The House of Lords has both legislative and judicial authority, and is the highest appellate court of the realm. The Lord High Chancellor is by prescription Speaker of the House of Lords, and is the chief legal adviser of the Crown. The office may not be held by a Roman Catholic.

The House of Commons is composed of representatives from county, borough, and university constituencies in the United Kingdom. The word "commons" meant originally all those who enjoyed common rights, and were subject to common duties. The House of Commons thus means the House, not of the common people, but of the communities. Persons of full age, with certain exceptions, may be elected to the House of Commons. The following are disqualified: English and Scotch peers (though Irish peers, with the exception of the 28 representatives in the House of Lords, may be elected for any constituency in Great Britain); all English, Scotch, and Irish judges, clergymen of the established church of either England or Scotland; Roman Catholic priests; unnaturalized aliens; government contractors; imbeciles; persons convicted of certain offenses; sheriffs and returning officers. No property qualification is needed. Each member receives £400 a year, unless receiving salary for some other office. By the law of 1918 all the former complicated qualifications for voting were swept away and three simple ones substituted: six months residence; or the occupation of business premises; or the holding of a University degree. If a man is engaged in business in one constituency and has his residence in another he may vote in both constituencies; or if he is a graduate of an accredited University he may vote for the University representative. Plural votes are limited to two. In the case of women the voting age was fixed at 21. Seats were also redistributed by this act, making the representative districts more nearly equal in population, except in Ireland which was left with its over-representation in the Commons. The Act of 1918 enfranchised over 8,000,000 voters, 6,000,000 being women. Unnaturalized aliens, and men who, within twelve months, have received parochial assistance other than medical relief, are disqualified. Elections for members of Parliament are by secret ballot. At the general election in 1935 the Conservatives won a sweeping victory over their Labor and Liberal opponents, and Stanley Baldwin became Prime Minister. This was a blow to the Laborites, who had been steadily gaining, but its effect on the historic Liberal party was worse, for it was almost wiped out. The business of the Commons is conducted in public, on the principle that what directly concerns all should be heard by all. A striking feature of the procedure is the power vested in the Speaker, who ranks as first Commoner, and is responsible for order in the House. The Speaker takes no part in debate, and never votes unless it is necessary to give a casting vote. The House of Commons holds the exclusive and historic right to initiate all Money Bills. No member of the Commons can resign his seat, but by accepting the stewardship of the "Chiltern Hundreds" this can be effected. Under a statute of Anne any member of the House of Commons who accepts a remunerative office thereby forfeits his seat. This Act is now skillfully applied to meet the convenience of unwilling members. As soon as the vacancy is produced, the "stewardship" is immediately resigned that it may be at the disposal of any other member.

The bicameral system, and the *Lex et Consuetudo Parliamenti*—the code of rules governing parliamentary procedure—are peculiar to the Anglo-Saxon race, and have been copied by the legislatures of many other countries. The merit of the bicameral system lies in the mutual restraint exercised by the two Houses, as well as in the fact that this dual division of power is an essential guarantee for freedom.

Dominions Beyond the Seas.—The outlying dominions of Great Britain consists of her Colonies, Dependencies, and Protectorates (a complete list of which will be found elsewhere). The colonies fall naturally into three divisions:—

(1) *Crown Colonies,* ruled by the Imperial Government; e. g., Hongkong.
(2) *Representative Governments,* in which the legislature is partly elective and partly controlled by the Governor; e. g., Jamaica.
(3) *Responsible Governments,* possessing a separate Constitution; e. g., Canada and Australia.

On Dec. 11, 1931 King George V. signed the Statute of Westminster, passed by Commons on Nov. 24. This legalized for the British Empire certain declarations, notably those made by the Imperial Conferences of 1926 and 1930. By this statute the Governor General sent from Great Britain to the major nations of class 3 is said to represent the Crown, and not "the Government of Great Britain." So the nations of Canada, Australia, New Zealand, South Africa, Northern Ireland, and the Irish Free State are recognized as self-governing members of the British Commonwealth of Nations. Already in 1925 a new Secretaryship of State for these Dominions had been established.

I. Crown Colonies.—Taking Hong Kong as an illustration, we see that these are governed by a representative from Great Britain, with or without an Executive Council. At home a secretary for Colonies heads the Colonial Office which manages the Crown Colonies. South Rhodesia and other parts of Africa are also included. So is Newfoundland (until recently a dominion), because of financial difficulties there. Much freedom is given most crown colonies in all local affairs. For a fuller account of the units of the British Empire, see article in Department of History.

II. Representative Governments.—As a type of a partially autonomous colony we may instance Jamaica, where the Crown merely reserves the right of veto on the local legislation,

and appoints the chief public officials. A representative council was established in Jamaica as early as 1661 (six years after the taking of the island); but this was abolished in 1866, and in 1884 a partially elective assembly was instituted. The government now consists of a Governor, a Legislative Assembly of 29 members (5 official, 10 appointed by the Crown, and 14 elected), and a consultative Privy Council. In the case of elected members the term of service is limited to five years. All financial measures must be sanctioned by the Governor before they are submitted to the consideration of the Legislature. Boards are elected in each of the 15 parishes for the administration of local affairs.

III. Responsible Governments.—The Common Law is an Englishman's birthright, and the principles by which he is governed are the same throughout the British dominions. These principles, however, necessarily differ in their local application. Just as every town in the United Kingdom makes its own by-laws, though conforming to the general law of the realm, so by an extension of this idea does each colony determine its own laws for its own internal needs, whilst in other respects maintaining its allegiance to the home government. Colonists are thus subject to two kinds of law; one Imperial and personal, the other local and territorial. The British constitution is the parent of all the colonial governments, and as these young institutions grow to manhood the inherited features become more pronounced. Each colony has its Governor, who takes the place of the King. In the Dominion of Canada and the Commonwealth of Australia (the two examples of responsible government which we are giving), the local representative of the Imperial Government is called the Governor General. His position is a dual one. First, he must safeguard Imperial interests; and, second, he must discharge his duties as a local constitutional ruler—as agent of the Crown in the domestic government of the colony. (1) He is a constituent part of the Legislature, and at his discretion gives his assent or veto to any bill which has passed both Houses. In practice, however, the Governor General does not veto a bill, but reserves any to which he deems it unwise or improper to assent. His consent may be overridden by the home government, Canadian bills within two years, and Australian within one. In both colonies no vote, resolution, or bill appropriating public moneys may be passed unless first recommended by him. The reason is that the Executive, being responsible for the finances of the colony, must have the chief voice in the national expenditure. (2) The Governor General is head of the Executive, and as such the majority of his functions are exercised. In both capacities he acts mostly on the advice of ministers; in Canada he has the King's Privy Council, in Australia the Executive Council. He nominates the members of these councils, but in doing so observes the principles of responsible government, and selects them from the dominant party in the Lower House. In domestic administration, he invariably acts on the advice of the council. His chief power lies in summoning, proroguing, and dissolving Parliament. This constitutes a real check and balance and the knowledge that the Executive has this power effectually chastens the caprice to which all assemblies are prone. In military and naval affairs the Governor General has extensive powers; whilst in connection with the judicial system he exercises important functions. In Canada he has control over provincial legislation and administration, and the appointment and dismissal of the Lieutenant Governor is in his hands. The nomination of the chief permanent officials rests with the Governor General in Council, but in Canada that of the subordinate officers is regulated by a Civil Service Act, which restricts the powers of the political head. Australia, too, has its Civil Service Act, which effectually prevents all jobbery and "graft." This act provides for a non-political method of appointment by a body of Commissioners, who are permanent officers and free from party influence.

In both these great federations the Legislature is composed of the Crown, a Senate, and a Lower House, called in Canada the House of Commons, in Australia the House of Representatives. Of the two federations the Canadian is the more monarchical, the Australian the more democratic. The Canadian constitution is a gift of the home parliament. Authority is largely centralized, and the provinces have a restricted measure of legislative power. The senators, like English peers, are nominees of the Crown, *i. e.*, of the ministry of the day. They represent the provinces in unequal but prescribed proportions, and hold office for life. The Senate is thus only a revising and restraining body, though ostensibly a Council of Provinces; and it suffers from the inherent weakness of such a body, when it chances to clash with the Lower House, which is truly representative. The constitution of the Commonwealth is equally an Act of the Imperial Parliament, but was won only after years of debate and insistence. But the position of the Australian Senate in the body politic is totally different from that of the Canadian Upper House. It is essentially a Council of States, representing the states as states; and its members are directly elected by the people voting as distinct and separate elements. It is as democratic a body as is conceivable and its members are largely drawn from the laboring classes. In Australia, no member of either House is permitted to take, or agree to take, any fee for services rendered to the Commonwealth, or in the Parliament to any person or state. This clause virtually debars professional men such as barristers from entering Parliament, and results in the inordinate representation of labor. Members of both Houses in both Federations are paid; in Australia each member receiving £400 a year, and in Canada a sessional allowance of $2,500 and an additional grant for traveling expenses. The authority of the Federal Parliament is more restricted in Australia than in the Dominion; for the constituent states have each retained almost the same powers they had previous to the Federation. The Canadian provinces on the other hand relegated most of their legislative rights to the Federal Parliament. But whereas the Dominion stands solid as a nation, the Commonwealth is still but a coterie of states torn by inter-provincial jealousy and suspicion.

PARLIAMENTARY LAW.

Definition.—*Parliamentary Law* is the term used to denote that body of rules and usages which govern the conduct of legislative or deliberative assemblies. First developed in England its spread has coincided with the growth of popular government and each year witnesses an increase in the number of such rules.

Obtaining the Floor.—To obtain the floor one must rise and address the presiding officer by his official title, as, "*Mr. President,*" or "*Madam President,*" etc. If recognized the chairman will call the member by name, which is equivalent to permission being given to speak. If one rises while another member is speaking he is out of order and can not claim the floor when the member has finished. If several members rise at the same time the chairman should recognize the one whose business requires prior consideration, or the question may be left to the vote of the assembly. The member who has the floor can only be interrupted by (1) *a motion to reconsider,* (2) *a point of order,* (3) *an objection to the consideration of the question,* (4) *a call for the orders of the day,* (5) *a question of privilege,* (6) *a demand that the question be divided,* (7) *a request for information that requires immediate answer.*

Motions and Resolutions.—A motion is a proposal that the assembly take certain action or indorse certain views. A lengthy motion is usually put in the form of a written resolution, which begins with the words, *Resolved, That—.*" If the introducer wishes to give the reason for his motion the preamble should begin, "*Whereas ——*". The preamble is amended last.

Seconding Motions.—With certain exceptions all motions require a second. In small assemblies it is not necessary for the seconder to rise or be recognized. Nominations, inquiries, motions to reconsider, questions of order, and call for division, do not require a second.

Debate.—A member may not speak twice on the same question so long as there are persons who have not had the floor and who desire to speak. Members must confine their remarks to the immediate question under consideration.

Putting the Question.—When the discussion appears to be over the chairman asks "*Are you ready for the question?,*" and if no one speaks he puts the question, first calling for the affirmative and then the negative. The usual form of putting the question is as follows: "*The question is on the adoption of the resolution (reading it). Those in favor of the resolution say aye; those opposed say no. The ayes have it and the resolution is adopted.*" Or the chairman may request a show of hands and announce the result after counting them.

Common Motions and Their Objects.—(1) *To modify or amend.* If a re-wording is necessary it is well to submit it to a committee. (2) *To defer action.* This motion should fix the time at which the motion will be considered, and requires only a majority vote. By a two-thirds vote it may be made the order of the day for a fixed hour or day and take precedence over all other business. A motion to lay on the table postpones action indefinitely. (3) *To suppress debate.* This may be done by calling for the previous question, and requires a two-thirds vote. (4) *To suppress the question.* This may be done by objecting to its consideration, moving to postpone indefinitely, moving the previous question, or moving to lay on the table. All require a two-thirds vote.

Privileged Motions.—(1) *Fix time of adjournment.* This motion should state the exact time for the meeting of the assembly. (2) *To adjourn.* This is usually a privileged motion and not debatable. (3) *Take a recess.* Upon re-assembling business is continued where it left off. (4) *Questions of privilege.* These usually relate to personal matters such as defamation of character, etc. (5) *Orders of the day.* This is a motion that the regular order of business for the day be taken up. It can not be debated or amended and requires a two-thirds vote to defeat it. *A General Order* is made by postponing a question to a certain day or hour. It does not suspend any rule and does not interrupt business. To make a *Special Rule* requires a two-thirds vote because it suspends all rules that interfere with its consideration except those relating to motions for adjournment or recess, or to questions of privilege, or to special orders made previously.

Incidental Motions.—*Questions of order and appeal.* Such questions take priority over all but privileged motions; are decided by the presiding officer without debate unless he appeals to the assembly or two members appeal from the decision.

Suspension of the Rules.—This is done by a two-thirds vote and only when there is no question before the assembly. It can not be debated or amended. A more common practice is for a member to ask unanimous consent to bring up the business out of its order. If the chairman announces that he hears no objections the member proceeds.

Division of a Question.—Only principal motions and amendments are subject to division. The question to divide is not debatable. The chairman usually divides a question by paragraphs when several subjects are involved, but if he does not a member may take a motion to divide.

Motions Relating to Voting.—After the question has been put a division may be called for if a vote has already been taken viva voce or by show of hands. This is done by rising or by calling the roll.

Requests.—*Parliamentary Inquiry.* A member may at any time address a parliamentary question to the chairman who will answer it if the question is pertinent. *Request for information.* This may be addressed either to the chairman or the person who is speaking. If to the latter the chairman asks the speaker if he will yield to a question, and if he consents directs the questioner to put his question. *Leave to withdraw.* The introducer of a motion may request the privilege of withdrawing it, and, without objection, it will be granted. After the question has been stated he can not withdraw without the consent of the assembly. *Reading papers.* This may only be done with the consent of the assembly. *To be excused from duty.* A member does not have to accept an appointment, but

once having accepted he must get the permission of the chairman to resign it.

Subsidiary Motions.—*To lay on the table.* This motion only yields to privileged motions and is not debatable. It may be applied to any main motion, or to any question of privilege or order of the day. When a motion is taken from the table it must be unchanged in form. If a motion to lay on the table has been lost a similar motion can not be made until the question has been debated. A vote to lay on the table can not be reconsidered. *The previous question.* This motion takes precedence over all subsidiary motions except to lay on the table. It can not be debated or amended and requires a two-thirds vote. Its object is to bring about an immediate vote on the pending question, and its effect is to terminate debate. *Fixing the time limit of debate.* This is not a debatable question. If passed the order applies to all incidental and subsidiary motions and the motion to reconsider. An order to extend debate applies only to the pending question and such others as are specifically mentioned. When the assembly has voted to close debate or limit it any motion to postpone or to commit can not be moved until the vote adopting the order has been reconsidered; but the pending question may be laid on the table, and if it is not taken from the table until the hour appointed for closing the debate and taking the vote no debate or motion to amend is allowed, as the chair should immediately put the question. *To postpone to a certain time.* This may be debated, but the arguments must not be on the main question. This motion takes precedence over the motions to amend, to commit, and to postpone indefinitely. It must fix the time during the present session or the next one immediately following. The effect of postponing a question is to make it the order of the day for the time fixed for its consideration, and if it is not then disposed of it becomes unfinished business. To amend this motion requires a two-thirds vote.

Reference to Committee; Commit.—This motion takes precedence over motions to amend or to postpone indefinitely, but gives way to all other subsidiary and privileged motions. It may be debated as to the main question. The chairman usually refers the motion to the proper committee but he may refer the matter to the assembly to decide. If it goes to a special committee he may appoint the members of the committee or the assembly may elect them. Each member is limited to one nomination and the chairman usually chooses from the list nominated. The purpose of reference to committee is to have a thorough investigation made or to have the question put in better form. Unless a chairman of the committee is designated the member first selected becomes the chairman, and thus it is important to have the first-named member one who is competent to serve in that capacity.

Discharging a Committee.—After a special committee has submitted its final report it is discharged without motion. During the consideration by the committee the assembly can not discuss the question referred to the committee, although it may "*discharge the committee from further consideration*" of the business.

Amending.—The motion to amend takes precedence over the motion to postpone indefinitely but yields to all other motions. It can be amended and debated. Amendments require only a majority vote even though the main question requires a two-thirds vote, the only exception being amendments to constitutions, by-laws, or rules of order all of which require a two-thirds vote. *Form of amendments:* (1) *To insert or add;* (2) *to strike out;* (3) *to strike out and insert, or to substitute,* as when a paragraph is struck out and a new one offered. The motion to insert should always specify the word before or after which the insertion is to be made. The motion to strike out should locate the word or words wherever they occur. It is the duty of the chairman to state accurately the new form of the motion or question even showing what effect the revision will have upon the original motion. Amendments are voted on first, and after they have all been disposed of the chairman will call for a vote on the original resolution. After words have been added or inserted they can not be struck out except by striking out the entire paragraph or by a reconsideration. Only consecutive words may be struck out. If it is desired to strike out separated words a motion must be made for each one or group. The motion to strike out and insert is a combination, and in considering it the words to be struck out are first taken up and then the new words are debated. While an amendment is being considered it is not in order to make a motion to insert or strike out a paragraph. A motion to substitute one paragraph for another is considered by taking up first the amendments to the paragraph to be omitted, and then the amendments to the new paragraph. *Improper amendments:* Amendments must be germane to the question to be amended; they must not have the effect of nullifying the meaning of the original question; they must not change one form of amendment to another form; they must have a serious meaning, and they must not be identical with another question previously decided upon. *The following motions can not be amended:* To adjourn; call for the orders of the day; question of order, and appeal; objection to consideration of a question; call for a division; leave to withdraw a motion; a request of any kind; lay on the table; take from the table; reconsider; the previous question; postpone indefinitely; amend an amendment; nomination.

To Take from the Table.—This motion can not be made while a question is under consideration, and gives way to privileged and incidental motions. It is not debatable nor can it be made until some business has been taken up since the question was laid on the table. A member who rises to make a motion to take from the table takes the floor over a member who rises to make a main motion. The question taken from the table must be the same one that was laid on the table.

Reconsider.—*The motion to reconsider can only be made on the day the vote was taken or the day immediately following. This motion must be made by one who voted for the question,* but any member may second it. It can be made even when another member has the floor, or when another question is pending, or after the motion to adjourn has been carried provided the chairman has not declared the assembly adjourned.

The motion to reconsider can not be amended, postponed indefinitely, or referred to a committee. If the reconsideration is laid on the table or postponed definitely the question to be reconsidered and all adhering questions go with it. The previous question and the motions limiting or extending the limits of debate may be applied to it when it is debatable. It is undebatable only when the motion to be reconsidered is undebatable. When the motion to reconsider is lost it can not be made again except by general consent. *The following motions, after being voted on, can not be reconsidered:* Adjourn; take a recess; lay on the table; take from the table; suspend the rules or order of business; reconsider. *Affirmative votes on the following can not be reconsidered:* Proceed to the orders of the day; adopt or amend; repeal or rescind the constitution, by-laws, or rules of order. *A negative vote on the motion to postpone indefinitely can not be reconsidered.* After a committee has taken up the question referred to it a motion to reconsider is not in order. After the motion to reconsider is passed the business is taken up in the same form as it was before the motion to pass it was carried, and may be debated or amended. Rules limiting debate, etc., apply just as though the question had not been voted on. A vote can not be reconsidered in the committee of the whole.

Rescind, Repeal, or Annul.—A vote may be rescinded by a two-thirds vote, or by a majority vote, provided notice of the motion has been given at the previous meeting. This motion is the same in effect as the one to strike out the entire resolution, paragraph, rule, section, etc. It can only be introduced when nothing is before the assembly. It can not be made if the question can be reached by calling up the motion to reconsider which has previously been made. It is debatable and yields to all privileged and incidental motions. The motion to reconsider is not in order after something has been done as a result of the vote, or where a contract is involved, or where a resignation has been acted upon, or an election or expulsion has been voted.

Renewal of a Motion.—*The following motions can not be renewed at the same session:* To adopt or postpone a main motion indefinitely; to amend; to reconsider, unless the question has been altered materially; to object to the consideration of a question; to fix the time of adjournment; to suspend the rules for the same purpose at the same meeting. The chairman must use firmness in preventing motions for renewal being made for the purpose of delay.

Ratify.—This motion is made for the purpose of confirming some action which needs the consent of the assembly to make it valid, but the motion to confirm is not in order when it applies to something which could not be regularly done under the constitution or by-laws.

Dilatory, Absurd, or Frivolous Motions.—The chairman is the judge of such motions, but an appeal may be taken to the assembly. Where the purpose of the motion is clearly to delay or make ridiculous it is the duty of the chairman to protect the assembly.

Debate.—The length of time allowed for debate is a subject that should be covered by local rules, ten minutes being the usual time allowed. *No member should be permitted to speak more than twice on the same subject without leave being given, the two-thirds rule applying.* Every member should be permitted to speak once, if he desires, before any one has spoken twice. These rules do not apply to the committee of the whole. The member who sponsors the business before the assembly is allowed to close the debate after all others have finished. Amendments are treated as new questions to be governed by the rules governing debates in general. A member is not allowed to speak against his own motion, though he may vote against it. The chairman can not arbitrarily shut off debate by putting the question before the assembly is ready for it.

Conduct of Debate.—Members must confine their remarks to the question under consideration. It is customary to avoid the use of names in referring to members, rather speaking of them in such manner as *"the gentleman who preceded me,"* etc. Officers should be spoken of and addressed by their official titles, as *"Mr. Secretary."* If it is desired to ask a question of one who is speaking the person desiring information rises and says, *"Mr. Chairman, I should like to ask the gentleman a question."* The chairman then asks the speaker if he is ready to yield to a question. If he yields the time comes out of the time alloted to him. The two members do not address each other directly, but use the chairman as the intermediary. The chairman may interrupt the speaker at any time to state a point of order or to give information. While the chairman is speaking the one who has the floor takes his seat.

Closing Debate and Preventing Debate.—When the discussion appears to be ended the chairman asks, *"Are you ready for the question?"* If no one rises to speak the question is put. Debate is not formally closed until both the affirmative and negative are put. Debate may be closed at any time by a two-thirds vote under the rules governing the previous question; or the length of time to be allowed for debate may be fixed in advance by the assembly. *While it requires a mere majority vote to lay on the table the same vote may take from the table.* Discussion may be prevented altogether by a two-thirds vote.

Principles of Debate and Undebatable Motions.—Motions to suppress, extend the limits of, or to limit debate are undebatable. A subsidiary motion is debatable if its effect is to interfere with the right of the assembly to take up the original question at some future time. By "undebatable" is not meant that the motion may not be explained or questions asked and answered concerning it. *The following motions open the main question to debate:* Postpone indefinitely; reconsider a debatable question; rescind; ratify. *The following are the undebatable motions:* Fix the time of re-assembling; adjourn; take a recess; call for the orders of the day; suspension of the rules; objection to the consideration of the question; incidental motions; lay on the table; previous questions, and motions to close, limit, or extend the limits of debate; amend an undebatable motion; reconsider an undebatable motion.

Voting.—The usual method of voting is *viva voce* (by the voice). Another way is by *"show of hands."* Other methods are by *rising*, by *ballot*, by *roll call("yeas and nays")*. Since the re-

sponsibility of announcing the decision rests upon the chairman he may require a second vote, a rising vote, or a show of hands. Any member may demand a rising vote (division), which will be granted if it has sufficient support, the number depending upon the local by-laws. Where the chairman is in doubt as to the result he says, *"the ayes seem to have it";* then, if no one objects, he says, *"the ayes have it."* In announcing the vote the chairman states first whether or not the motion is carried; second, what the effect of the vote may be; third, what business will next be taken up. *A plurality is not sufficient to carry a motion or to elect, a majority being necessary.* In case of a tie the motion is lost. The chairman, though a member of the assembly, can not vote to make it a tie, and then vote to break the tie. A member may change his vote up to the time the result is announced. Voting is not compulsory. Voting by ballot is not usual except in secret societies. When a record of the votes is desired the yeas and nays are ordered, and the secretary or clerk calls the roll, the members answering "yea" or "nay" as their names are called. Any one not desiring to vote answers "present." If it is desired to save time the chair can assume general consent to unimportant motions and dispense with motions, unless there are objections. Under general consent business can be transacted almost as though there were no rules of procedure. *The following motions require a two-thirds vote:* Change any part of the constitution, by-laws, or rules; amend or rescind a standing rule, a program or order of business, or a resolution previously adopted, without notice being given at a previous meeting; to take up a question out of its proper order; suspend the rules; make a special order; discharge an order of the day before it is pending; refuse to proceed to the orders of the day; sustain an objection to the consideration of a question; previous question; limit, or extend the limits of, debate; extend the time appointed for adjournment or for taking a recess; close nominations; expel from membership; discharge a committee when previous notice has not been given.

Committees (Special and Standing).—A special committee is appointed for the purpose of considering some special matter, and is discharged once it presents its report. A standing committee is one that remains through the entire session. The first member named becomes the chairman unless the rules provide for a different mode. Discussion is carried on in an informal manner, the chairman usually taking the leading part. The privilege of reconsidering a vote is freely granted. A quorum must be present to transact business, but a smaller number may meet for the purpose of discussion and investigation. The report of the committee is the majority report but is always referred to as the committee report, not the majority report. A minority report may be submitted, but if there is objection to receiving it a vote of the assembly must be taken, a majority being necessary to receive. If the committee appoints a sub-committee the latter makes its report directly to the committee. Committee reports are made at the time provided for them in the order of business, the chairman generally making the report. To call a committee report up out of its order requires a two-thirds vote. The acceptance of a report takes place when the report is read, without any formal motion. *A vote to accept the report adopts it.*

The Committee of the Whole.—This form of committee is usually resorted to when a large legislative or deliberative assembly wishes to discuss informally some matter that it does not want to refer to a special or standing committee. The presiding officer of the assembly appoints some one to act as chairman of the committee of the whole; rules of debate are less rigid; most voting is viva voce; and, when the motion that the committee rise is carried, the presiding officer resumes his place, and the chairman makes his report as from an ordinary committee.

Officers and their Duties.—*"Mr."* or *"Madam"* is always prefixed to the title of the presiding officer. He always refers to himself as *"the chair." His principal duties are as follows:* To call the meeting to order; announce the business to be taken up in proper order; recognize members who desire to speak; put votes and announce the result; preserve order and protect the assembly from time-wasting motions; decide questions of order (subject to appeal); sign all orders and resolutions which require his signature. *The secretary or clerk:* The secretary is the recording officer of the assembly and the keeper of all records not otherwise taken care of. *His duties are as follows:* To call the roll; notify officers and committees of their appointment; furnish information that he may have; keep the minutes; send out call for meetings. Sometimes these duties are divided betwen a Recording Secretary and a Corresponding Secretary. An important duty of the secretary is to furnish the presiding officer with an order of business for the day.

The Minutes.—The record of the business of an assembly is usually called the minutes. *The following are the essential features of the minutes:* The kind of meeting, regular, stated, etc.; name of the assembly; date and place of the last meeting; officers present; whether or not the minutes were approved; all the main motions and points of order and appeals, whether sustained or lost, and all other motions that were not lost or withdrawn; hour of adjournment.

Miscellaneous.—A session of an assembly is, in theory, a continuous meeting which is not terminated by a recess or temporary adjournment. Usually a meeting is closed by a simple motion to adjourn; the society meets again at the time provided for by the rules or by resolution. In case of the illness of the presiding officer the assembly can not elect a chairman pro tem to serve through the session unless notice of such election has been given in advance. A quorum is the number that must be present in order to transact business and is usually a majority, although where it is found difficult to get so large a number, getting a quorum is made easier. When some member calls attention to the fact that there is no quorum present business is suspended until a quorum is secured.

Order of Business.—Unless the rules provide for a different order the following may be used as a satisfactory order of business:

(1). Reading the minutes of the previous meeting.

(2). Reports of boards and standing committees.
(3). Reports of special committees.
(4). Special orders.
(5). Unfinished business and general orders.
(6). New business.

Nominations and Elections.—Nominations may be made on the floor of the assembly, or they may be referred to a nominating committee. When the committee makes its report other nominations may be made by members not on the committee. Nominations do not require a second. The usual method of election is by ballot, but where just enough candidates have been nominated to fill the offices a motion may be made that the secretary cast the ballot for the offices, naming each one separately.

Constitutions.—*A Constitution should contain only the following:* (1) Name and object of the society; (2) Qualification of members; (3) Officers and their election; (4) Meetings of the society (including only what is essential, leaving details to the by-laws); (5) Method of amending the constitution. These main articles are usually divided into sections. It is well not to load down the constitution with details. To amend the constitution it is necessary to give notice of the amendment, and to require a two-thirds or three-fourths vote.

By-Laws.—All the rules which are of such importance that they can not be changed without previous notice, except those included in the constitution or the rules of order, are included in the by-laws. It is customary for societies to adopt a few rules of order in their by-laws, and then adopt a standard work on parliamentary law as their authority.

Rules of Order.—These should contain only the rules that have to do with the transaction of business in an orderly fashion, and they are largely the same in all societies. *Every society should adopt a rule such as the following: "The rules contained in (a standard work on parliamentary law) shall govern the society in all cases to which they are applicable, and in which they are not inconsistent with the by-laws or the special rules of order of this society."*

The Organization of Mass Meetings, Conventions, and Permanent Societies.—*Mass meetings.* Those responsible for the meeting should meet in advance and decide where the meeting shall be held, who shall nominate the temporary and the permanent chairman, and, in general, make up in advance a business program for the meeting. The meeting is called to order by some one chosen by the committee or the persons responsible for the meeting, and he calls for nominations for the position of chairman. When the latter is elected he at once takes the chair and calls for the election of a secretary, who, when elected, takes his seat near the chairman. Then the chairman directs the secretary to read the call for the meeting and then calls on the person who seems to know most about it to make further explanations. Then a series of resolutions, prepared in advance, may be offered for consideration. If such resolutions are not prepared a committee on resolutions is appointed, to report as soon as possible. *Permanent societies.* All preliminary steps should be carefully taken before the first meeting is held, including the securing of copies of constitutions and by-laws which might serve as a model. The first meeting is conducted very much in the same manner as a mass meeting, described above, the usual topic of speech being the purposes of the proposed society. Then a vote is taken on the advisability of forming such an organization. If carried, a motion is made for the appointment or election of a committee to draft a constitution and by-laws. The meeting usually adjourns after such business is transacted, to meet at a stated time. At the second meeting the former officers serve until their successors are elected. The secretary reads the minutes, and they are approved. The report of committees is next taken up, the one on the constitution and by-laws coming first. The chairman of the committee reads the constitution and by-laws and moves their adoption. The chairman of the meeting directs them to be read paragraph by paragraph, when amendments may be made. After it has been adopted in this manner it is voted on as a whole. If carried, a recess is taken while the members come forward and sign the constitution. Upon re-assembling the secretary reads the list of the members of the society. Then the by-laws are taken up, the procedure being the same as that of the constitution. After the adoption of the by-laws the election of permanent officers takes place, the mode of nomination and election usually being prescribed in the by-laws. If nomination by committee has been agreed upon the meeting may take a recess until the committee is ready to report. Any member is entitled to make nominations after the committee has made its report. *Conventions.* As a general thing conventions maintain an organization which render the preliminary steps described above unnecessary. At the last meeting committees on credentials, registration, and program are provided for. The first business after the opening of the convention is the report of the committee on credentials, which includes merely a list of the accredited delegates and alternates. After this report has been approved the report of the program committee is heard, and, if adopted, becomes the order of business. The procedure from then on follows the usual order.

DEVELOPMENT OF LAW
INTERNATIONAL LAW
NATURALIZATION
CONSTITUTIONAL LAW
COMMERCIAL LAW
CONTRACTS
NEGOTIABLE INSTRUMENTS
CORPORATIONS
LANDLORD AND TENANT
EIGHT-HOUR LAWS
PROPERTY RIGHTS
DECISIONS OF UNITED STATES SUPREME COURT
DICTIONARY OF POLITICAL SCIENCE

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EMINENT AMERICAN JURISTS

John Marshall
William H. Taft, Chief Justice Supreme Court
Joseph McKenna, Supreme Court Justice
Joseph Choate
Edward D. White, Chief Justice
George W. Wickersham

BOOK XII.

LAW.

LAW.
From a Mosaic in the House Reading Room, Congressional Library, Washington.
BY FREDERICK DIELMAN.

HISTORY OF THE DEVELOPMENT OF LAW. MOSAIC LAW. ORIENTAL LAW. CODES OF LYCURGUS, SOLON, DRACO, AND OTHER GREEKS. ROMAN LAW. JUSTINIAN PANDECTS AND INSTITUTES. TRIAL BY ORDEAL, TORTURE, COMBAT AND JURY. INTERNATIONAL LAW. CONSTITUTIONAL LAW. CRIMINAL LAW. COMMERCIAL LAW. EXEMPTION LAWS. PROPERTY RIGHTS OF MARRIED WOMEN. EPOCH MAKING DECISIONS OF SUPREME COURT. DICTIONARY OF POLITICAL SCIENCE TERMS.

THE DEVELOPMENT OF LAW.

Early Laws.—Early laws are the outgrowth of social customs or habits. It is very difficult to distinguish clearly between early religion, morals, and law. In the earliest times each man was a law unto himself, and he punished offenses against himself and righted his own wrongs according to his own strength. Vengeance is sanctioned by early laws, and redress and justice are left to a man or his kin. Not only Mosaic but early Anglo-Saxon codes are specific in stating exactly what degree of vengeance each offense deserves according to a list. This action cannot in any sense be regarded as legal; it is only moral. But it is the germ from which law as applying to right and justice was evolved. Just as soon as the community assumes the responsibility of righting the wrongs of others, then the punishment begins to take on a legal rather than a religious or moral aspect. Where the right to be enforced was clear, and where the violation of it was beyond doubt as to both the fact and the agent, early legal codes were ample and explicit. But there was no provision for settling controversies or disputes in the earliest times. The need of this, and the means of doing it, was the evolution or the institution of the court.

Mosaic Law.—This is at once the fullest and, presumably, the most familiar of the codes of ancient times. In the Book of Leviticus are two codes: the Law of Holiness and the Priestly Code. The Law of Holiness was compiled during the Exile and nearly conforms to the Priestly Code, which was presented to the Jewish community at Jerusalem through Ezra and Nehemiah and finally adopted as a binding law in 444 B. C. These codes are both religious and moral. The hygienic and sanitary obligations imposed upon the people have been shown to be of the very nature that the existing conditions most demanded, and are abundant proof of the wise administration by which they were issued.

Babylonian Law.—This great commercial nation developed highly complex laws. The code of Hammurabbi (2000 B. C.) contained 280 edicts. Forms of deeds, mortgages, leases, contracts of sale and partnership, together with records of loans and interest, have been preserved. The earliest known will is that of Sennacherib (700 B. C.).

Medes and Persians.—The codes of these early peoples have become proverbial for their severity and especially for their immutability. "The law of the Medes and Persians which changeth not" carries with it an idea of a law of

unusual severity and an impartial and certain dispensation of punishment. The people are known to have been cruel and merciless as is recorded in Isaiah xiii., and this spirit, most probably aggravated by their ambitious struggle against repression by the Assyrians, was manifested in their code of laws.

India.—The law of India, originally indistinguishable from religion, was derived primarily from the Vedas (*c.* 1000 B. C.), supplemented by the Dharmasmriti, or traditions in rhythmical form, including the Mahabharata (*c.* 100) and by innumerable commentaries or handbooks, the most noted being the Manava Dharmasastra, or laws of Manu (about 200), all of which were rules of life rather than authoritative codes.

Lycurgus.—Whether or not Lycurgus was legendary, it remains true that the laws of Sparta brought about her military supremacy. The law was practically military discipline. The child was inured to hardship, taught gymnastics and military drill. Specific punishment was laid down for each offense, and justice was administered impartially and inflexibly.

Draco.—In the seventh century B. C., Draco compiled a code of laws for the government of Athens. So severe were the penalties attaching to crime, that it was said that the code was written in blood.

Solon.—What Lycurgus did for Sparta, Solon effected for Athens. Archon in 594 B. C., he compiled a code of laws, based upon his Eastern experience, which, by their wise and just provisions, served as models for other nations.

Roman Law.—Romans defined three kinds of law: *jus civile*, the law which governed citizens; *jus gentium*, the law of nations; and *jus naturale*, the law of nature. The earliest versions of Roman civil law were essentially religious until 500 B. C. at least. It would seem that there were some laws in which the plebeians did not share. The laws were at first dispensed by patricians. The frequent complaints of injustice and partiality which the plebeians made, led (about 451 or 450 B. C.) to the formulation of the Twelve Tables. By them the law was the same for both classes except in the matter of marriage, which difference disappeared in 445 B. C. This Law of the Twelve Tables was to the Roman people a charter of liberties, and they were loath to change or amend its laws. The priests alone interpreted the law until 252 B. C., when the office of pontifex maximus was opened to a plebeian. Roman civil law was not applicable to allies or conquered peoples unless expressly provided by treaty. For them special laws grew up out of decrees by rulers and senate between 250 and 150 B. C.

Roman citizenship was gradually extended throughout all Italy until Caracalla in the third century made all free inhabitants of the empire Roman citizens. In this way Roman civil law became the law of the whole empire. Papinian, Paul, and Ulpian were prominent jurists during this period.

Among the many attempts at codification of Roman laws the most important are:—

1. *The Codex Gregorianus*, 295.
2. *The Codex Hermogenianus*, early in the fourth century.
3. *The Codex Theodosianus*, published under the direction of Emperor Theodosius II. of the Byzantine Empire, in 438.
4. *The Codex Justinianus*, by Emperor Justinian, consisting of:—
   (*a*) *The Institutes* (of November, 533), based on the Institutes of Gaius.
   (*b*) *The Digest* or *Pandects* (of December, 533), composed of excerpts from the law literature from 100 B. C. to 300.
   (*c*) *The Codex* (between April, 529, and December, 534).

These were written in Latin, to which some new (*novellae*) constitutions were added in Greek. These law books persisted until the tenth century, when they were condensed into a Greek code called the *Basilica*. This latter lasted until the capture of Constantinople by the Turks in 1453.

Roman Law with Teutonic Modifications.—In the Middle Ages those Teutonic governments erected upon the ruins of the western Roman Empire were governed by Roman law, of which several compilations were made. Among these were:—

1. *Lex Romana Visigothorum*, or the "Breviary of Alaric" (506), issued at Aire in Gascony by authority of Alaric II. This was the chief authority in western Europe until the eleventh century.
2. *The Leges Barbarorum*, a name given to compilations to govern other nations, including:—
   (*a*) *The Lex Antiqua of the Visigoths*, fifth century.
   (*b*) *The Lex Gundobada of the Burgundians*, fifth century.
   (*c*) *The Lex Salica of the Franks*, fifth century.
   (*d*) *The Law of the Riparian Franks*, sixth century.
   (*e*) *The Law of the Longobards*, seventh century.

Local laws gradually superseded these *leges barbarorum*. Special systems of law gradually grew out of the changes which occurred within the nations, especially from the development of municipalities. For a time the works of Justinian lost something of their eminence. Later, in the tenth and eleventh centuries, they were used in the colleges and universities, and were soon restored to the position of the leading authority on jurisprudence.

Trial by Ordeal.—As a religious ceremony, ordeal was a common means of proving the guilt or innocence of suspected persons from the most ancient times. Prior to the introduction of Christianity among the peoples of northern Europe, ordeal was practised among the Celts of Ireland, the Germans, and the Slavs. Trial in the ordinary sense was unknown among these peoples in the Middle Ages. The accused submitted to tests by boiling water, from which he took objects by plunging in his bare hand; by fire, into which he thrust his hand; by red-hot iron, either by carrying an iron rod from three to nine paces or walking upon red-hot plowshares, sometimes by walking blindfolded among 6, 9, or 12 of these; by cold water, in which the innocent sank and the guilty floated; by the cross, where both accused and accuser held uplifted hand before the cross, the decision

being given in favor of the one who endured the test for the longer time. Among the Anglo-Saxons the eating of a piece of bread or cheese by the accused was regarded as an infallible test of innocence. After religious exercises a piece of bread or cheese was given to him and if he was able to swallow it this power was regarded as a proof of his innocence. The ordeal of the bier required the suspected murderer to touch the body of the murdered person, and in cases of guilt it was expected that blood would flow from the wounds. Religious ceremonials were forbidden to be practised at trials by ordeal in 1215, and by the end of the thirteenth century its practice had nearly ceased.

Trial by Torture.—Apart from its use as a means of punishment or of revenge, torture, or the infliction of severe bodily pain, has had its uses in the past to extort confession or evidence. In the Middle Ages it was made use of in Europe as a means of securing evidence in cases of suspected heresy, and it was not until 1816 that its use was forbidden by Papal bull. The rack, scourge, fire, hooks, boots, pincers, and manacles are a few of the ingenious contrivances employed by different peoples and at different times in the administration of torture. As an instrument of torture the rack was introduced into England by the Duke of Exeter, and popularly known as "the Duke of Exeter's Daughter." When practised by the more enlightened nations, its use has been deplored as a necessary evil. At the same time, writers are found who have condemned its use not only on humanitarian grounds but by reason of its unreliability in discovering the truth, for very often innocent persons either from weakness or exhaustion pleaded guilty or accused others wrongfully to escape its pains. The last recorded use of torture in England was during the reign of Charles I. (1640). Its use was abolished by Prussia, Saxony, Austria, and Switzerland before 1750. Russia finally abolished it in 1801. It was practised in France as late as 1814 under the Bourbons; in Württemberg (1806), Bavaria (1807), Hanover (1822), and Baden (1831).

Trial by Combat.—This mode of determining the right or of proving innocence was much in vogue in feudal times. It flourished during the age of chivalry and was an essential feature of knighthood. The Norman kings firmly established the practice throughout England and gave it a regular place in the judicial procedure. A most elaborate code of regulations prescribed the details. In its earliest stages the appeal to this form of trial was permitted in a great variety of cases, but it was soon limited to the decision of cases of felony in criminal law and to disputes regarding the title to lands. In cases of women, infirm persons, or children, a champion might be chosen or any knight might offer his services to protest by single combat against the accusation. Victory was supposed to decide the question of innocence. The modern system of dueling was in many respects a survival of the trial by combat. Its decline was very largely due to the proved and acknowledged superiority of methods in the ordinary courts of law and it was gradually superseded by trial by jury. As an appeal in cases of felony, the last known case of trial by battle occurred in England as late as 1818 in the case of Ashford *v.* Thornton. The practice was forbidden in England by an act passed in 1819. This method of trial was never practised in the United States.

Trial by Jury.—A form of trial in which a body of laymen act as the judges of the truth of facts in dispute at a trial or an action at common law. Its origin is obscure, but it is known that it was customary in the reign of Henry II. (1154-1189). In these earlier times the jurymen were not only judges, but very often witnesses as well. The sheriff acting under a writ known as venire facias, summons citizens residing in the county to attend a term of court for the purpose of acting as jurors. The group of men so summoned are known as talesmen, and from them are chosen a sufficient number to compose a jury. In the process of choice both sides have the privilege of challenging the fitness of any of these to serve as jurymen, after examination into such fitness. The jury is then sworn and the trial begun. All evidence must be given in the hearing of the jurymen, after which the respective lawyers address the jury and sum up the evidence. The judge then makes a review of the case for the instruction and benefit of the jury, and this review is known as the charge. The jury then retires from the court room and is locked in a room until a verdict has been arrived at, or until there is sufficient reason to believe that a unanimous verdict cannot be reached. In the latter case a new trial may be had. It is necessary for all of the jurors to agree upon a verdict, and in a criminal trial this verdict is either guilty or not guilty, and in a civil action either for the plaintiff or for the defendant. The qualifications for jury service vary in the several jurisdictions, but, speaking generally, all persons between the ages of 21 and 60 are liable to be called upon unless they are exempted or disqualified by insanity, conviction of some crime, or by sex, for women are generally not eligible. After the jury is sworn, its members are then entitled to compensation for their services. A special, or struck, jury is selected with a special regard to the intelligence and education of its members to try difficult or complicated cases. In some courts, as in probate, surrogate, and in special cases of equity, questions of fact are decided by the judges and no jury is employed. Especially is this true when the questions involved are those of law and not of fact. In practice, the absence of a single juror suspends the trial until his return, and in cases of death or withdrawal of a single juror at any stage of the trial before a verdict is reached the trial is terminated immediately and proceedings must be begun anew and a new jury selected. The grand jury consists of not more than 23 nor fewer than 12 members, who are good and sufficient men chosen by order of the sheriff to attend court to consider the various indictments or bills which are laid before them, and it is their duty to inquire into each case to ascertain whether or not there is sufficient ground to require a trial. When they find sufficient evidence to warrant a trial they are said to return a true bill. They have the further power of making suggestions to the court for the application of any remedial action to any condition of affairs existing within the jurisdiction as may seem to them advisable.

INTERNATIONAL LAW.

Rights, Powers, and Obligations of States.—The essential rights of a state are (1) sovereignty, (2) independence, and (3) equality. These bear upon one another and are, perhaps, only different phases of sovereignty. (1) Sovereignty implies the exclusive, uncontrolled exercise of powers within the state, whether of making treaties with other states or of governing itself. It is the great essential of existence, for without it the community would not be a state. The sovereignty of the United States dated from July 4, 1776, and not from 1782, when the English treaty recognized its independence. (2) Independence denies the right of any other state to interfere with the sovereignty of a state. (3) Equality is the right of a state to have all of the rights which other states enjoy; and is in no way dependent upon relative size or power.

Where a state is made up of a number of united states the central government is responsible for the acts of the individual units, over whose acts it may not have any control.

No state can render assistance to the colonies or provinces in revolt against the parent state.

The rule of non-interference in the affairs of another state is to be observed except in unusual cases. The interference of the United States in Cuban affairs against Spain was based upon self-protection of commerce and individual rights and upon the laws of humanity. France interfered with affairs in Mexico in 1861 and 1863 ostensibly to protect the rights and property of French citizens in Mexico, but really to check the growth of the United States and to increase French prestige.

The balance of power is really the recognition by international law of the right of interference as a means of protection of contiguous nations, one against the encroachments of another.

The Monroe Doctrine promulgated by President Monroe in his message in 1823 was aimed at the absolutists of Spain, who wished to bring back the Latin countries of America into subjection to the mother country; and it opposed any foreign interference which meditated the changing of the constitution or altering the form of government of an American state and also any interference by force. Since that time many absurd constructions have been put upon the original views. It was quite in harmony with this doctrine for the United States, as soon as her hands were freed in the Civil War, to march her troops to the frontiers of Mexico and to cause the withdrawal of the French and the collapse of the government of Maximilian there in 1866. But it was absurd for Congress to attempt to invoke the principle against the French company which had secured the right or concession to dig the canal across the Isthmus of Panama. There is nothing intended in the principle which will cause the United States to police the continent of America or to become a party in the wars of any little Latin republic which may choose to solicit its aid.

Equality involves national etiquette and is very elaborately observed in some of the monarchies of Europe. The tendency is strongly setting towards equality of rank.

The precedence of ambassadors of equal rank is now decided by the length of residence. The question of whether the German or the English ambassador should take precedence at Washington would be decided by the greater length of residence or priority of appointment.

Property Rights of a State or the Acquisition of Territory.—A nation's right to territory or property is based upon (1) occupation of land that was vacant before and by public and uninterrupted prescription, or (2) from occupation by colonies or other incorporation of land previously occupied, or (3) by conquest generally accepted by other nations and so recognized, or (4) by purchase or gift.

Mere discovery is not enough to establish a claim to territory; there must be some occupation which is of benefit to the territory claimed. The United States based its claim to Oregon on Gray's discovery of the Columbia River in 1792, on Lewis and Clark's exploration in 1805 and 1806, on the settlement made at Astoria, and on contiguity to United States possessions, which then extended to the Rocky Mountains.

A nation has rights over (1) all land within its boundaries and over such rivers, lakes, inland seas, and other waters as lie wholly within its boundaries; (2) the mouths of rivers, bays, and estuaries providing access to the land; (3) the sea along its coasts to the distance of a marine league (three miles).

The high sea is open and free to all nations. All nations have equal rights to fish upon the high seas or upon banks and shoals in them. The Banks of Newfoundland are open to all nations to fish in; but the right to cure and dry fish upon the shores or to fish in bays or mouths of rivers is a private right of the nation owning them. Such waters are often called a *mare clausum*, or closed sea. Such are bays of the sea, such as Delaware Bay, which was declared in 1793 to belong to the United States alone. The Black Sea was made neutral by the treaty of Paris in 1853.

A river which forms the boundary between two nations is to be used equally by both nations and the dividing line is presumed to run through the middle of the river, unless other causes determine otherwise. Where the upper waters of a river belong to one nation and the lower courses to another, the former is considered as having only a moral right to use the lower courses. But this is generally arranged by treaty. The St. Lawrence, after forming the boundary between parts of the United States and Canada, flows wholly in its lower courses through British territory. Previous to the Reciprocity Treaty of 1854 Great Britain refused to acknowledge any right to its use by citizens of the United States. That treaty gave to the United States rights to its use equal to those enjoyed by British subjects; though these rights are subject to termination on notice. In exchange the United States gave British subjects equal rights to the use of Lake Michigan.

Right of Intercourse and Rights of Foreigners within a State.—Where a nation resorts to non-intercourse, it ceases to be protected by international law.

A nation which prevents another nation from commercial intercourse for the purpose of procuring actual necessaries not elsewhere obtainable commits an act of hostility towards that nation.

No nation can prevent another nation from

peaceably using its usual mode of communication with a third nation. No nation can prevent another from intercourse with a third nation against the will of the latter. Every nation is bound to truth and honesty in its intercourse with other nations.

No state can in time of peace exclude property accredited to subjects of a friendly state or expel them after admission without good reasons properly submitted to their home government. Shipwrecked, stranded, or other unfortunate visitors must be treated humanely and all their property rights observed.

Foreigners admitted into a country are subject to the laws of that country.

Naturalization.—Each nation has the right to regulate the manner in which aliens may become naturalized. An alien may become a citizen of the United States in the following manner:—

Declaration of Intention.—First, he shall declare upon oath before any authorized court or his authorized deputy, in the district in which the alien resides, 2 years at least prior to his admission, and after he is 18 years of age, that it is his intention to become a citizen of the United States. Such declaration shall give the name, age, occupation, personal description, place of birth, last foreign residence and allegiance, the date of arrival, and the present place of residence.

Conditions for Citizenship.—Second, not less than 2 years, nor more than 7, after he has made such declaration, he shall make and file a petition in writing which shall set forth that he is not a disbeliever in or opposed to organized government, or affiliated with any body of persons so disbelieving, a polygamist, or a believer in it, and that it is his intention to become a citizen of the United States, to renounce absolutely and forever all allegiance to any foreign prince, potentate, state, or sovereignty, and that it is his intention to reside permanently within the United States, and further state whether he has ever been denied admission as a citizen and upon what grounds, which he must prove have been removed.

Oath of Allegiance Upon Application.—Third, he must take oath in open court that he will support the Constitution of the United States, that he absolutely and entirely renounces and abjures all allegiance and fidelity to any foreign prince, potentate, state, or sovereignty, and particularly by name, of which he was before a subject or citizen; that he will defend and support the Constitution of the United States against all enemies, foreign and domestic, and bear true faith and allegiance to the same.

Conditions of Citizenship.—Fourth, he must satisfy the court that he has resided continuously within the United States 5 years at least, and within the state or territory where the court is held, 1 year preceding his application, and during that time has behaved as a man of good character.

Titles of Nobility.—Fifth, he must renounce any hereditary title or order of nobility in the kingdom or state from which he came.

Widow and Minor Children.—Sixth, if the alien who has declared intention dies before he is actually naturalized, the widow and minor children may be naturalized by complying with the other provisions of this act without declaring intention.

Children of Naturalized Persons.—The children of persons who have been duly naturalized under any law of the United States, or who, previous to the passing of any law on that subject, by the government of the United States, may have become citizens of any one of the states, being under the age of 21 years at the time of the naturalization of their parents, shall, if dwelling in the United States, be considered citizens thereof.

Citizens' Children Born Abroad.—The children of persons who now are, or have been, citizens of the United States, shall, though born out of the limits and jurisdiction of the United States, be considered citizens thereof.

Citizenship of Women by Marriage.—Any woman who is now or may hereafter be married to a citizen of the United States, and who might herself be lawfully naturalized, shall be deemed a citizen.

Aliens in the Army and Navy.—Any alien at the age of 21 years and upwards who has enlisted or may enlist in the armies of the United States, and has been or may be honorably discharged, shall become a citizen upon his petition without any previous declaration, if he proves at least 1 year's residence within the country. Aliens honorably discharged from service in the Navy or Marine Corps, having served 5 consecutive years in the former, or after one enlistment of 4 years in the latter, shall become citizens without previous declaration.

Naturalization Prohibited.—(*a*) No alien shall be admitted to become a citizen who has not for the continued term of 5 years next preceding his admission resided within the United States.

(*b*) No alien who is a native citizen or subject, or a denizen of any country, state, or sovereignty with which the United States is at war, at the time of his application, shall then be admitted to citizenship.

(*c*) No person who disbelieves in or is opposed to organized government, or who is a member of or affiliated with any organization entertaining or teaching such disbelief in or opposition to organized government, or who advocates or teaches the necessity or propriety of the unlawful assaulting or killing of any officer or officers, either specified individuals or officers of the government, because of his or their official character, or who is a polygamist, shall be naturalized or made a citizen of the United States.

(*d*) No alien shall be naturalized or admitted as a citizen of the United States who cannot speak the English language, unless prevented by some physical disability, if otherwise qualified.

(*e*) No state or court shall admit Chinese to citizenship.

Protection Abroad to Naturalized Citizens.—All naturalized citizens of the United States while in foreign countries are entitled to and shall receive from this Government the same protection of persons and property which is accorded to native-born citizens.

The Right of Suffrage.—The right to vote comes from the State, and is a State gift. Naturalization is a Federal right and is a gift of the Union, not of any one State. (See Table

of Qualifications for Voting in each State, pages 1148 and 1149.)

Extradition.—Almost all nations refuse to punish their subjects for foreign crimes against foreign states or their subjects. The right of asylum or of shelter of criminals seeking refuge in foreign countries is becoming more and more limited. It is usually met by an agreement or treaty of extradition. The United States has extradition treaties with nearly all nations. When extradition of a refugee criminal is asked by another nation, certain judges may issue a warrant for his arrest, try him to see that the crime charged comes within the scope of the treaty, and to see that there is some evidence of his guilt. If satisfied the criminal is handed over to the executive. The President, through the Secretary of State, shall then surrender him within two months to the officer or agent of the nation claiming him. If not so surrendered he is liberated. The crimes usually covered by extradition treaties are murder, forgery, assault with intent to kill, piracy, arson, and robbery.

Ambassadors and Consuls.—One nation is not bound to be represented by an ambassador at the court of another, but, if diplomatic relations have once existed, it is a breach of friendship to discontinue them, and this discontinuance precedes a declaration of war. A nation is not forced to receive an ambassador from another nation, if there is good reason for a refusal, such as the uncertainty of the sovereignty of the state he represents in times of civil war; or if the person of the ambassador is obnoxious, or if he is of notoriously bad character.

When an ambassador is sent abroad he is furnished with credentials which specify the degree of power with which he is invested and a list of the subjects upon which he is entitled or empowered to treat. Until such credentials have been presented at the court to which he is sent and are received by that court, he is not recognized officially. The first duty, then, of an ambassador at a foreign court is to present his credentials and establish his status.

An ambassador enjoys very great privileges of exemption from laws and immunity while in a foreign country in his official capacity. This is to secure the fullest freedom to act at all times in the interests of his country. These privileges exist even in case of a declaration of war against his country until he has time to leave the country after the declaration. He is then entitled to liberty of exit. Should he remain longer than is necessary after such dismissal or declaration of war, his status then becomes that of an ordinary traveler.

No private or public person may use force or violence against the person of an ambassador; and the state is bound to afford him, his property, household, and servants full protection.

An ambassador cannot be arrested or imprisoned for any offense, civil or criminal. Any punishment or civil redress must come through the ambassador's sovereign.

The papers of an ambassador relating to his official business are in all cases inviolate.

An ambassador is not usually subject to taxes or to customs duties on goods imported for his own use.

An ambassador may be recalled, sent home, or declare his mission terminated for good reason. It is his duty to call upon the chief executive of the country, present his letter of recall, and ceremoniously take his leave.

The commercial agents of a country residing abroad are called consuls, and include consuls general, consuls, vice-consuls, and consular agents.

A consul's duties mainly consist in expediting matters of commercial importance and of representing his country in all such transactions. Diplomatic powers may or may not attach to his office.

Consuls enjoy no such immunities as are accorded to ambassadors. They are amenable to the laws of the country in which they reside just as are other foreigners.

Treaties.—Treaties, conventions, or contracts may be made by a nation with an individual, body of individuals, or with other nations.

Only properly constituted authorities or persons deputed by them can make treaties.

No treaty can be made which will in any way override the constitution; nor to bind a nation to do anything that flagrantly sacrifices the interests of the nation; nor to bind the nation to do anything which is morally wrong.

Treaties made through false representations or by force are not binding.

Defensive treaties are made to secure the parties mutually against encroachments by other nations.

Treaties of neutrality are mutual obligations binding the parties to take no part in conflicts between other powers.

Offensive and defensive alliances bind the parties to aid one another in all cases of conflict of either of the parties against other powers.

If a treaty has been made and signed by representatives having full powers, the treaty becomes binding at the time of signature. In such cases the ratification by the respective governments becomes retroactive.

It may be specified that the treaty shall become binding only upon ratification by the respective governments. In such cases the states are bound only from the date of ratification. The constitution of the United States requires that all treaties must be ratified by the consent of two thirds of the Senate before it becomes valid. The right of changing terms of conditions is also claimed by the Senate; and such changes are not to be regarded as violations of the treaty.

Where a treaty is flagrantly and repeatedly broken by one party, the other party may regard it as broken and either claim redress or demand its observance.

In interpreting a treaty the common usage of words is to be followed unless it involves an absurdity. If two meanings are possible, that one is chosen which confers the least benefit or advantage to the party who caused or demanded the insertion of the clause. That party is penalized for not making his meaning perfectly clear. Obscure passages may often be explained or cleared up by a consideration of other parts or passages of the treaty. In such cases causes of insertion and reasons for the act are to be considered. Clauses involving hard conditions or cruelty to one of the parties are to be considered strictly so as to minimize the hard conditions; while those which favor justice, equity, and hu-

manity are to be interpreted broadly so as to confer the fullest benefits.

War.—The causes of a just war are (1) the defense of any right which the state is bound to protect; (2) the redress of a wrong; (3) the prevention of an apprehended injury; (4) the protection of individual inhabitants; (5) to avenge insults to national reputation, to the flag, to an ambassador, or to its good name; (5) to enforce terms of a treaty or contract; and (6) to punish great wrongs against religion or liberty.

Rights of a nation are often enforced by acts short of actual war, such as embargo, which detains foreign vessels in port; or reprisal, which consists in seizing from a nation an equivalent of what it has taken, in the failure to get back the actual things taken, and corresponds to levying by force upon property to an equal amount of a debt or damage. Other means are the pacific blockade and a demonstration of force.

A declaration is not now insisted upon by international law, nor is it always practised by nations. This does not arise from a desire to take advantage of the unpreparedness of another nation, but is caused by the superior means of communication and publicity which the age affords. No one can plead ignorance of the prospect of war, which nearly always is preceded by a long chain of portentous events and communications. It is, however, advisable to give notice that a state of war exists, to enable neutrals, foreigners within the nation, and others to act in accordance with the laws governing such cases.

Weapons Forbidden in War.— The use of poisoned weapons, the poisoning of springs of water, use of hired assassins, a copper bullet poisoning the wound, explosive and dumdum bullets, detachable lance heads, barbed bayonets, and similar devices which entail needless suffering are forbidden in war.

Rules of War.—Private persons taking no part in the war are to be unmolested; but those participating are not afforded protection. The property of non-participants is to be uninjured. Contributions and requisitions are permissible. The commander of any detached force may require from the people supplies of food, shelter, and means of transportation, for which receipts are given. But pillage and devastation are neither justifiable nor politic. Spies in disguise may be punished by death; but those in their own uniform are to be treated as ordinary prisoners of war.

Humanity in Warfare.—In addition to the prohibition of weapons which entail needless suffering, much has been done to alleviate the suffering which the use of modern death-dealing agencies have caused. The Convention of Geneva in 1864, and again in 1868, introduced the Red Cross movement. Those engaged in hospitals, ambulances, and similar work were distinguished by wearing a badge of a red cross on a white ground. Another conference at Brussels in 1874 at the call of the czar of Russia, the Oxford Code of 1880, and the several meetings at The Hague in recent years have sought to bring about a more humane treatment of sufferers in war.

CONSTITUTIONAL LAW.

Constitutional law is that which refers to the constitution as a permanent system of government as distinguished from statutory and common law, which relates to matters subordinate to the constitution. It consists of rules and laws relating to the sovereign body, that is, how that body is composed, what are the mutual relations of its constituents, and how the various functions of legislation, judicature, and administration are performed. These rules may or may not take the form of absolute laws; for example, the constitutional rule that the British king and Parliament constitute the sovereign cannot be strictly called a law It is also a rule that the king shall not withhold his assent to a measure which has passed both Houses of Parliament; this neither can be termed a law. At the most the royal veto would in such a case be unconstitutional, but not illegal.

Constitutionalism implies a representative or popular form of government, and as such is of comparatively modern growth. One of the fundamental parts of a complete constitution is the organization of the state so that the "amending power" is duly provided for. Where the constitution is a written one, like that of the United States, the line of demarcation between constitutional law and ordinary statute law is clearly defined; but in England, which has in the main an unwritten constitution, it is not so easy to determine of what constitutional law consists, seeing that the enacting authority in both cases is identical. Its principles must be chiefly gathered from parliamentary statutes, customs, and precedents. Generally speaking, the sovereignty inherent in the constitution, the accepted principles of liberty, the construction of the government, and the question and character of popular representation, are essentially subjects of constitutional law. In England such questions are perforce dealt with by Parliament the same as any ordinary law. In a constitutional crisis the House of Commons appoints a committee to "search its journals for precedents." The unwritten constitution of Great Britain is mobile, adaptative, and constantly undergoing change. This is in contrast with the fixed constitution of the United States, written out in one authoritative code.

The constitution of the United States, which was ratified by each state separately, clearly defines the relationship between the central and the local government, so that neither can destroy nor modify the other. It is worthy of record that the first written American constitution (the "Articles of Confederation," of November, 1777) was defective in that it made no provision for the continuing organization of the state. It created only a central government, which could not legally assume sovereign power. In other words the sovereign, the state, had no legal organization in the system. This defect was rectified in the convention which met at Philadelphia, in May, 1787, the change being brought about largely through the instrumentality and adroitness of Abraham Baldwin and Alexander Hamilton.

The legislative powers of the United States legislature are not to extend to particular kinds of bills, e. g., *ex post facto* bills; the President's

veto can only be overridden by a majority of two thirds in both houses; the constitution itself can only be changed in any particular by the consent of the legislature or conventions of three fourths of the several states; and lastly, the judges of the supreme court are to decide in all cases when the constitutionalism of any act of the legislature is in dispute. In the face of these provisions few changes are ever introduced; and in point of fact, only fifteen constitutional amendments have been passed since the framing of the constitution. The unwritten constitution of England has, on the other hand, changed much, particularly in curtailing the powers of the Crown and the Lords, and correspondingly increasing the power of the Commons through their nominees, the Ministry. The constitution of the United States more nearly approached the model of the British constitution at the end of the eighteenth century, and the president to-day has very much the same powers as the British sovereign of that period.

The bicameral system, which, in England, has made generally for good government by reason of its "checks and balances" is not an ideal form for a democratic legislature, although in practice its advantages far outweigh its drawbacks. In the American constitution, as Bagehot points out, "the Upper House has as much authority as the second; it could produce the maximum impediment, the deadlock, if it liked; if it does not do so it is owing, not to the goodness of the legal constitution, but to the discreetness of members of the chamber." In England the two Houses are far from having equal power, and in the end the will of the Commons must prevail.

In the United States, as in Switzerland and Germany, the constitution is in form an alliance among a number of independent states, and it is always a moot point how far the independence of each state has been sacrificed by submission to a federal constitution. In the United States constitutional progress is somewhat hampered by reason of every amendment requiring ratification by the separate vote of three fourths of the states. A distinguishing feature of the United States constitution is the categorical completeness with which it treats of civil liberty. In England and France, for example, the question of civil liberty is at all times at the mercy of the government. In the matter of organization and the details of administration we have much to learn from European constitutions; but as regards the position and true relations of liberty, imperfect though many of our conceptions be, the American system stands as a model for the constitutions of the Old World.

CRIMINAL LAW.

The criminal or penal law is that portion of the law which deals with crimes. Crimes have been described as offenses against the state and prosecuted by the state, in contradistinction to civil injuries, which are offenses against individuals and prosecuted by private persons. Strictly speaking, all illegal acts are offenses against the state. Torts or civil injuries are offenses for which the injured party may seek redress in the courts. A tort may also be a crime which is punishable both civilly and criminally.

The criminal law of England rests on a basis of common law, modified by judicial interpretation and by statute. In the United States the criminal law is largely based on the common law of England and that of the United States. Several of the states have recast and codified their criminal law. Each state has criminal jurisdiction for all ordinary crimes perpetrated within its borders and is independent of the jurisdiction of the federal courts. The crimes dealt with by the latter are treason, piracy, and other offenses against the laws of nations, crimes committed in the District of Columbia, in the territories, and other dependencies of the United States and on the high seas, and other criminal offenses specially defined by act of Congress, e. g., counterfeiting of securities or United States coin, fraudulent naturalization, and bankruptcy, and the like.

Crimes are divided into treasons, felonies, and misdemeanors. Treasons include offenses against the state, for example, resistance to the authority of the sovereign power; felonies and misdemeanors are not always easy to distinguish from each other, but, generally speaking, felonies are the more serious crimes, such as murder, homicide, arson, house-breaking, etc., while misdemeanors are minor crimes prosecuted civilly as in personal actions for injuries. Attempts to commit crimes are themselves crimes. It is laid down in Russell *On Crimes* (Vol. I. p. 189) that "an attempt to commit a felony is a misdemeanor, and an attempt to commit a misdemeanor is a misdemeanor, whether the offense be so by common law or by statute." Until 1861 under this ruling an attempt to commit murder was only a misdemeanor at common law in England punishable by two years' imprisonment; but now such an attempt is a felony and punishable accordingly. Persons accused of a crime may be either principals of the first or second degree, or accessories before or after the fact. Participation in the commission of a felonious act is in itself a felony.

In the United States criminal procedure follows generally the procedure of the common law. Misdemeanors are invariably dealt with by police magistrates. In cases of felony the accused is entitled to trial by jury, the latter being drawn from the state or district in which the crime was committed. An accused person is further protected by the amendment of the constitution, article V., which reads: "No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a grand jury, except in cases arising in the land or naval forces, or in the militia, when in actual service in time of war or public danger; nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation." Article VIII. is likewise in the interest of the accused: "Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted."

COMMERCIAL LAW.

Speaking strictly there is no separate and distinct commercial law in the Anglo-American legal system as there is in countries whose legal systems are based upon the Civil Law, where there are codes of commerce and separate commercial tribunals. The origin of the distinct body of commercial law to be found in the countries of continental Europe and their colonies elsewhere was in the Law Merchant or custom of merchants, i. e., the usages of the mercantile class in the Middle Ages and the centuries immediately succeeding. In England this Law Merchant was incorporated into the general law in the eighteenth century and became part of the common law governing particular transactions. As such, it was adopted in the United States. The subjects usually dealt with in the Commercial Codes of European and Latin American countries are Mercantile Persons, i. e., persons whose transactions are within the Commercial and not the Civil Code, Partnerships and Companies, Agents, Factors, and Brokers, Commercial Paper, Loans and Pledges, Maritime Law, Carriers and Transportation, Warehousemen, Bankruptcy, Trademarks and Patents.

Contracts: Conception, Definition, and Classification.—One person may acquire rights against another because of some act of the latter or of both, intended to create such rights, or because of some act not so intended but which the law visits with liability and to which it attaches the consequence of creating such rights. Contracts belong to the first class. They belong to the class of what are called legal transactions or acts-in-the-law, that is, acts intended to produce legal consequences to which the law concedes the effect of creating the consequences intended. Such acts require:—

(1) That the parties doing them have legal capacity so to act,

(2) That they act freely, with knowledge of the facts and without being deceived,

(3) That they act with reference to some possible or permissible subject matter, and

(4) Usually that the act be expressed in or accompanied by some prescribed form. If the third or fourth requirements are not complied with, the acts have no legal effect and are said to be *void*. If the act is deficient with respect to the third requirement, the act is subject to be set aside by the person compelled or mistaken or deceived and is said to be *voidable*. If the defect is in the first requirement in some cases it is void (married women, except as changed by statute, and lunatics under guardianship) and in some (infants and lunatics not under guardianship) it is voidable. These general propositions apply also to contracts.

A Contract is a promise or agreement enforceable by law. The law does not enforce every promise a person may make nor every agreement a number of persons may enter into. Not only must the four requirements above noted be complied with, but the purpose must be to create a legal result. If the parties did not intend the promise or agreement to be legally binding—as, for example, if they intended a joke, or a banter, or an example for instruction, or if they were merely acting, there is no contract.

Classification of Contracts proceeds upon the fourth requirement above set forth, that is, the form in which the act is expressed or by which it is accompanied. If the form is that of a writing, sealed by the party or parties and delivered, there is a formal contract. In the case of *negotiable instruments* (see *infra*) the form is of some importance also, and they are quasi-formal contracts. Where the contract, whether written or oral, does not take on either of these forms, it is said to be a simple contract.

Contracts under Seal.—In legal parlance any instrument in writing to which the parties have set their seals is called a deed. Where such instruments contain promises, such promises are called, technically, covenants. If such an instrument acknowledges a debt or promises to pay money, it is called a bond. Contracts under seal are also called specialties. The requisites of such contracts are:—

(1) That they be in writing,

(2) That the party or parties seal them,

(3) That they be delivered—that is, that the person to be bound part with control, intending the instrument to take effect. In America it is also generally required that they be accepted by the party to whom the promise is made. Promises or agreements so made require no consideration. Originally a seal was an impression on wax or on the substance written on, made by the party or by some one in his presence and by his direction as his seal. But by legislation or judicial decision a wafer or scroll, or the word "seal," or the letters "L. S." now suffice where seals are in use. The distinction betwen contracts under seal and simple contracts is abolished in Alaska, Arizona, California, Idaho, Indiana, Iowa, Kentucky, Mississippi, Missouri, Montana, Nebraska, Nevada, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, and Texas. In these states, except Nebraska, Nevada, Ohio, and Oklahoma, any contract in writing is presumed to have been made upon consideration, but the contrary may be shown and will invalidate it. In Alabama, Michigan, New Jersey, New York, Oregon, and Wisconsin, the presence of a seal, by statute, only creates a presumption of consideration—that is, the contract may be proved to be without consideration, but stands unless and until such proof is made.

Simple Contracts.—In simple contracts the form is of no consequence. The requisites are:—

(1) That the parties be agreed, or, in legal parlance, that there be a meeting of their minds, and (2) that there be consideration.

Offer and Acceptance.—It takes two or more parties to make a simple contract. The everyday saying that silence gives consent cannot be relied upon in this connection. Agreement is composed of two elements, *offer* and *acceptance*.

An offer is a proposal by the one party, called the offerer, that something be agreed to between them; an acceptance is an assent to or compliance with that proposal by the other party, called the offeree, with the intention and for the purpose of entering into the agreement proposed. An offer

(1) Must be communicated;

(2) Must be complete, so that it needs nothing but acceptance to make a complete contract;

(3) Must be intended seriously (except that if the person to whom it is made understands it seriously and a reasonable man in his place would have done so, there is a contract), and

(4) May be revoked (i. e., recalled) unless there is a collateral contract, with all the requisites of an independent contract, not to revoke it. It will remain open and capable of acceptance for the time fixed by its terms, unless revoked, and if no time is fixed, will remain open for a reasonable time. It may be so made as to be capable of several successive acceptances, in which case there is a new contract upon each acceptance; but after each the offerer may revoke it before there is any further acceptance. An offer comes to an end, so as not to be capable of acceptance thereafter, by lapse of the time fixed for acceptance, by lapse of a reasonable time if none is fixed, or by death of either offerer or offeree before acceptance. It also comes to an end by the making of a counter-offer or by rejection by the offeree, in which cases it is no longer open even though the time fixed for acceptance has not yet elapsed. But it may be renewed after lapse of the time fixed by acts or words of the offerer which amount to treating the offer as still in force.

Revocation of an offer must be communicated to the offeree before acceptance or it has no effect. But it need not be communicated by the offerer himself. Moreover, where the offer is made by advertisement, as in the case of offers of rewards, it may be revoked in the same way, provided the revocation is given the same publicity as was given to the offer.

Acceptance may be in the form of

(1) A promise, so that the contract consists of a promise on each side, the promise of the one being given in exchange for the promise of the other, or

(2) An act, so that the contract consists of a promise on one side and an act on the other, the promise being made in exchange for the doing of the act and the act being done in exchange for the promise. In the former case the contract is *bilateral;* in the latter it is *unilateral.* The acceptance must cover the whole offer and must coincide with it. If not, or if it changes the terms of the offer, there is no acceptance, but only a counter-offer. A mere inquiry, however, as to what the offer means or whether the offerer will make a different offer is not a counter-offer and will not put an end to the original offer. Also the promise or act claimed to constitute an acceptance must have been intended as such. Cross-offers in the same terms do not make a contract. The acceptance must refer to the actual offer made by the offerer, and not to something else understood by the offeree. Otherwise there is said to be no meeting of minds. But if a reasonable man could only understand the offer as made in one way, a person who accepts it on that understanding makes a contract even if the offerer did not so mean it. Likewise if the acceptance would be understood in one way only by a reasonable man, the offerer has a right to rely on it as having that meaning, and if he does so, there is a contract, though the offeree had another meaning. Where an offer is sent by telegraph and the message is incorrectly transmitted and accepted in the form in which it is received, the authorities are not agreed whether there is a contract.

Consideration.—All simple contracts require a consideration. The reason for this is in reality historical, so that consideration is as much a form as a seal. Except in case of formal contracts, Anglo-American law does not enforce a promise unless it is made upon a consideration. The consideration of a promise is the thing given or done in exchange for the promise, provided such thing is regarded legally as a detriment to the promisee or person to whom the promise is made. If a promise is given in exchange for another promise, there is a bilateral contract. If an act is done in exchange for a promise, there is a unilateral contract. As the consideration is something given or done in exchange for the promise, it follows that there must be, as lawyers put it, a present consideration; that is, there must be something which is regarded legally as a detriment to the promisee at the time of and in exchange for the promise. Something done or given or forborne in the past will not suffice. But if the prior act, done at the request of the promisor, was such as to give rise to a duty on the part of the promisor to pay the reasonable value of the service rendered him or benefit received by him, or if the prior act was something which it was the duty of the promisor to do and was done under such circumstances as to give rise to a duty of reimbursement for the service rendered (see *infra* QUASI-CONTRACTS), a subsequent promise to pay a fixed sum in liquidation of such liability is supported by a present consideration. Also, where a pre-existing obligation is voidable by the promisor, or he has a statutory defense which he may or may not interpose, such as a discharge in bankruptcy or the statute of limitations, a subsequent promise to pay is often said to be sustained by the past consideration of the pre-existing obligation. But it is more correct to say that the new promise operates as a waiver of the defense and enables the original obligation to be enforced.

If there is what is legally deemed a detriment to the promisee, the amount or the proportion it bears to the value of the promise is not material. Adequacy of consideration is not taken into account in this connection. But there must be a detriment. Hence a promise to pay a *greater* sum in consideration of payment of a liquidated *smaller* sum is unenforceable.

In a bilateral contract, each promise is consideration for the other. Hence if either is *void,* as against public policy or for incapacity of the promisor to make it or for any other reason, or is too indefinite to be enforceable, there is no consideration for the other. But a promise that is merely *voidable* is consideration for the other.

By "detriment" in this connection the law means simply the doing by promisee of something he is not bound to do. It is no matter that what he does is actually no harm to him pecuniarily or otherwise. His doing in exchange for the promise what he is not bound to do is held legally to be a detriment to him. He has exerted himself to do what he was under no obligation to do and so is to that extent worse off in exchange for the promise. Hence doing what is for the doer's benefit, if he is not bound to do it and does it at the instance of the promisor in exchange for the latter's promise, is a consideration. But doing what one is already bound to do is not a detriment and hence is not a consideration.

Part Payment of a Debt.—It follows from the conception of consideration that payment or promise to pay less than the whole amount of a *liquidated and undisputed* indebtedness is no consideration for release, discharge, extension, or promise to discharge, extend, or not to sue upon such indebtedness. This is the general and well-settled common-law rule. But it is subject to some qualifications and explanations. These may be stated conveniently as four propositions:—

1. Payment of part before maturity is consideration for discharge, extension, or promise to discharge or extend the remainder.

2. Giving or promising to give something other than money or doing something or promising to do something other than pay money in settlement or satisfaction or for an extension of a debt is a consideration, and in such case the pecuniary value of what is given or done or promised is of no consequence.

3. A payment of part or promise to pay part of a debt, made by a third person, not a party to the indebtedness, is consideration for discharge or extension of the remainder.

4. If the debtor binds himself to pay interest for a fixed period beyond maturity, so that he cannot tender the money owing during that time and require the creditor to accept it, there is consideration for an extension for that time.

Promises to do what one is bound to do.—It may be said, as a general proposition, that doing or promising to do what one is already bound to do by reason of contract with the other party or of contract with a third person or of some legal relation or official duty, is not a consideration. But in Alabama, Maryland, Massachusetts, New Jersey, and Vermont, the courts hold to the contrary where the thing done or promised was owing to the promisor already or to a third person by contract of the promisor. And where the general proposition is recognized, it must be noted that where there is a pre-existing contract duty on the part of the promisor to the promisee, the parties may by mutual agreement rescind, that is, put an end to, the contract and thus terminate the duty; and if they do, the doing or promising to do a part or all of what was due before is consideration for a new agreement.

Compromises.—Discontinuance of a pending action or dismissal of a suit in which person or property has been attached, or release of such person or property without discontinuance or dismissal, is consideration for a promise when the holding of the person or property under such attachment is lawful or it is a doubtful question whether such holding is lawful or not; but it is no consideration where the attaching party is clearly liable in damages for so holding or continuing to hold. In the latter case he only does his legal duty in releasing the person or property and his performance of that duty is nothing to give in exchange for a promise. But giving up a legal right is a consideration, and honest litigation of bona fide claims in the courts is a right. Hence settlement of or forbearance to sue upon a claim is consideration for a promise given in exchange therefor in case the promisee had a cause of action, that is, a right to recover in court upon his claim, or in case, although in fact or in law he did not have one, it was doubtful at the time of the compromise whether he had one or not or he believed in good faith and on reasonable grounds that he had one. If he had no cause of action and did not believe he had one, a compromise or forbearance to sue upon his claim is not a consideration.

Accord and Satisfaction.—"Accord," says Blackstone, "is a satisfaction agreed upon between the party injuring and the party injured, which, when performed, is a bar of all action upon this account." "Injury" here means cause of action—a right to sue and get relief in the courts—not a mere property or contract right uninfringed. If such a cause of action exists, the parties may agree on a satisfaction to be given and received, and when the thing agreed on as satisfaction is done, or, as the law books say, the accord is executed, it is a defense to the original claim. An unexecuted accord, that is, a promise to give or do something in satisfaction of a cause of action, is no defense unless the creditor or claimant agreed to take the promise in satisfaction of his claim. But if the accord is executed, i. e., the promise is performed, or the promise as such was taken in satisfaction of the claim, it is a defense to the original cause of action.

Subscriptions.—A subscription, in which a number of persons unite in agreeing to pay the sums set opposite their names for some purpose set forth in the paper, may be a mercantile or business subscription or a charitable subscription. In the former case it is fair to assume that a business transaction was intended and hence that acceptance of the subscription by the payees implies a promise on their part to use the money for the specified purpose in exchange for the promise to contribute it. This is consideration. But it is always wiser to put an express counter-promise of this sort in the paper itself. In the case of a charitable subscription, it is fair to assume that the parties intended a gratuity rather than a business transaction. Hence it is the more advisable to insert the express counter-promise or else, where seals are in use, to have the subscribers affix their seals. The prevailing view appears to be that the subscribers or any of them may revoke (withdraw from) the subscription until work has been done or liabilities have been incurred by the payee in reliance upon it, and that upon the beginning of work or incurring of liability on the faith of the subscription it becomes binding.

Assignment of Contracts.—Where the contract is unilateral, there is practically a debt due from the promisor to the promisee. Hence, an assignment in this case is like any other assignment of a right to recover in the court, or, as it is called in law, of a chose in action. (See *infra*, PERSONAL PROPERTY.) But an assignment may attempt to do more than this. It may purport to transfer not only the assignor's right to the benefit of performance by the promisor, but the right to control or direct such performance as well. In that case, as a general proposition, the promisor must agree to the assignment or the assignee cannot hold him to the performance. But assent to such an assignment is said to be implied from the nature of the contract where from its terms it is evident that there is no choice of persons involved and that the performance may take place between any two men with-

out material difference to those who take part. The rule is the same, and for the same reasons, where the assignment purports both to transfer the rights and to delegate the duties of the assignor under the contract. But if it tries to go further and to relieve the assignor from liability to the other party to the contract, it must be assented to by the latter, or it cannot have that effect.

Joint Contracts.—Contracts, with respect to the promisors, may be joint, or joint and several, or several. With respect to the promisees, they are either joint or else several. A promise is the joint promise of two or more where, for the purpose of the promise, they are to be taken as one; where it is the promise of all of them collectively, but not that of each individually. It is the several promise of each when each promises for himself, so that there is no collective promise, but only an individual promise of each promisor. It is joint and several where it is so made that, although expressed as one, it is really two; made up of (1) the collective promise of all and (2) the individual promises of each. Joint contracts must be enforced against all the promisors jointly. If less than the whole number are sued, that fact may be shown in abatement of the action. But legislation has greatly relaxed this rule in most jurisdictions. Moreover, if the claim is put in judgment against less than all, those who were not sued may show the judgment as a bar to any action against them on the promise, because there was but one promise and that one has already changed its form and become a judgment. Where two or more persons make the same promise at the same time or in the same instrument, *prima facie*, it is a joint promise. But if there are what are called "words of severance," the promise will be joint and several. By "words of severance" are meant any words indicating that the collective promise of all is also the individual promise of each, as "we jointly and severally promise," or "I promise" (when two or more execute the promise), or "I, we, or either of us." Where the promise is joint and several all the promisors may be sued jointly or each or any one separately; but not a number less than all jointly.

In case there is a judgment for or against any one promisor, it does not bar pursuit of the claim against the others, as in case of a joint contract; but there can only be one satisfaction. A release or discharge of one joint promisor or debtor releases all. But this is not so if the right to pursue the others is reserved in the release or discharge; and a contract not to sue one does not discharge the others, nor can the others use it as a defense. In case one of the joint promisors or joint debtors dies, the survivors may be sued, and at common law they alone were liable, and could only hold the estate of the deceased for its share by proceeding in equity. But statutes to-day allow the creditor to enforce his claim directly against the estate or the representatives of the deceased in such cases. If one of a number of joint promisees dies, the survivors succeed to the right to collect the money or enforce the promise, but the estate of the deceased may compel them to account for its share of the proceeds. Also all the joint promisees, or, if some have died, all the survivors, must join in an action to enforce the promise. But there is a great diversity of legislation in the several states modifying these rules and a lawyer should be consulted with reference to the details.

Statute of Frauds.—Although the law prescribes no form for a simple contract, certain contracts must be *proved* by a written instrument or written memorandum or they are not enforceable. This does not mean that such contracts must of necessity be reduced to writing when made. They are not *void* if not expressed in writing. But when an action is brought upon such a contract, the contract must be proved by written evidence, either in the form of a written instrument in which it was set forth when made, or by some subsequent memorandum of its terms. This requirement grows out of an English statute, enacted in 1676, called the Statute of Frauds and Perjuries, or, shortly, the Statute of Frauds. The provisions of that statute which have to do with contracts are contained in the fourth and seventeenth sections. The fourth section provides that no action shall be brought upon any of the following five classes of contracts unless evidenced by some written instrument or note or memorandum thereof in writing, signed by the party sought to be charged or some one lawfully authorized by him:—

1. Special promises by executors or administrators to pay debts of the deceased out of their own property.
2. Contracts of guaranty.
3. Contracts upon consideration of marriage.
4. Contracts for the sale of land or sales of lands or any interests in lands.
5. Contracts not to be performed within one year from the making thereof. These provisions have been reënacted everywhere in America. The seventeenth section provides that contracts for the sale of goods, wares, and merchandise for the price of £10 or more shall not be enforced unless the buyer shall accept and actually receive part of the goods sold or shall make a part payment or give something by way of earnest money to bind the bargain, or a note or memorandum in writing of the bargain shall be made, signed by the parties to be charged or their authorized agents. The provisions of this section have been reënacted in most American jurisdictions, but they are not in force in Alabama, Arizona, Delaware, Illinois, Kentucky, Louisiana, New Mexico, North Carolina, Ohio, Pennsylvania, Rhode Island, Tennessee, Texas, Virginia, and West Virginia.

Fourth Section.—Taking up the fourth section first, the first and third provisions speak for themselves. The second provision covers all agreements by one person to become responsible for any civil liability incurred by another. The undertaking is said by lawyers to be "collateral"; and it is said that "original" undertakings are not included in the statute. In other words, to come within the statute, there must be three persons concerned; a creditor, a principal debtor, and a guarantor. Hence if one promises to pay his own debt or the debt of a partnership of which he is a member, the promise need not comply with the statute. For the same reason, there must be a subsisting and legal liability of the debtor to the creditor, or the promise of the third person to pay the claim is not gov-

erned by the statute. Other exceptions to this provision are:—

1. Contracts of indemnity, that is, contracts to save the promisee from loss in case he permits another to incur a liability to him or incurs liability to another.

2. Promises to the debtor (not the creditor) to pay the former's debt.

3. Contracts which discharge the debtor's liability to the creditor and substitute a newly-created liability of the promisor.

4. Contracts to pay the creditor out of property of the debtor put in the hands of the promisor for that purpose.

5. Contracts to pay or assume the debt of another made by the promisor for his own benefit and for a consideration inuring to the promisor alone. But the first of these exceptions is not recognized by the courts in Mississippi, Missouri, North Carolina, Ohio, Pennsylvania, and Tennessee, and there is not entire agreement as to the details of the fifth. The fourth subdivision of section four applies not only to contracts for the sale of land and for the creation of estates or interests in or liens or charges upon land, but also for the disposition of buildings and fixtures which in law are regarded as a part of the land. But growing crops are not within the provision; nor is a contract to sever a fixture from the land and dispose of it when severed. With respect to sales of timber growing upon land, most American jurisdictions hold that the statute applies. The fifth provision of section four applies only to promises which cannot, according to their terms, be performed within a year. Hence it has no application:—

(1) Where no time for performance is fixed,

(2) Where performance is made to depend on a condition or contingency which may be performed or may happen within a year,

(3) Where performance is to take place within a period longer than a year, but may, consistently with such provision, take place within a year.

Seventeenth Section.—The seventeenth section, where it is in force, applies to all sales and contracts for the sale of tangible personal property. And, in this country, it includes also shares of stock and other choses in action (see *infra*, PERSONAL PROPERTY) which have a tangible form. Whether contracts for the future delivery of property are within this section has been the subject of much controversy. In this country, two rules exist. In Massachusetts, a contract is governed by the statute where it is for the sale of articles existing at the time of the contract or for the making and sale of articles such as the seller manufactures or procures for the general market in the ordinary course of his business, whether on hand at the date of the contract or not. This rule is adhered to in California, Connecticut, Georgia, Maine, Michigan, Minnesota, New Hampshire, New Jersey, New Mexico, Washington, Wisconsin, and Wyoming. In New York, if the article to be sold is not in existence at the time the contract is made, or is not at that time in a condition to be delivered, the contract is not covered by the statute, unless the acts to be done by the seller are such as will not alter the essential character of the artiele contracted for. This rule is adopted in Iowa, Maryland, South Carolina, and Vermont.

The Note or Memorandum in Writing.—The note or memorandum need not be made at the time of the contract; a subsequent memorandum will suffice unless made after suit is brought. It need not be in any particular form. Indeed, it may consist of several distinct letters or papers provided they are connected and complete and do not need to be eked out by oral testimony. It must show the terms of the contract and show who are the parties to it. Whether and how far it must express the consideration of the contract has been the subject of much dispute and no general rules can be laid down safely within the compass of this discussion. Only the party who is sought to be held need sign. And the signature need not be at the end. The name written or printed anywhere on the paper, even as a letterhead, will suffice, if adopted by the party to identify the writing as his.

Conditions.—A promise may be absolute, that is, it may be a promise to do something at all events, or it may be subject to limitations. Such limitations may be in respect of the time of performance, or accompany performance, or supervene and defeat a liability to perform. A condition is an act or event which must precede some change in the legal relations of the parties. With respect to the mode of their creation, conditions are express, implied in fact, or implied in law. With respect to the mode of their operation, they are precedent, concurrent, or subsequent. An express condition is one stated in the agreement or promise in express terms. A condition implied in fact is one not expressed in the agreement or promise, but intended by the parties—such intention appearing from the fact that the condition must be performed in order that the promise may be performed. A condition implied in law is one which, without being either expressed or intended by the parties, is supplied or imported into the contract by the courts in the interest of fair dealing. A condition precedent is an act or event which must be performed or exist before any liability accrues under the promise. Conditions are concurrent where liability to perform on each side of a bilateral contract is dependent upon simultaneous performance on the other side. In such cases, the *act* which must precede liability on each side is a tender of performance on the other side. A condition is subsequent where it provides that an existing liability to perform is to terminate or be put an end to by some act or event other than performance itself. Conditions precedent and conditions concurrent may be express, implied in fact, or implied in law. All conditions subsequent are express. In the law of contracts, the courts prefer and imply conditions concurrent wherever possible. As between conditions precedent and conditions subsequent, courts prefer the latter in the law of property, the former in the law of contracts.

Express Conditions, Warranties, Representations.—A representation is a statement, express or by implication (i. e., by acts or conduct), of some material fact affording a reason or motive to another for entering into a legal transaction. A warranty is a contract, collateral to a legal transaction (which may be and usually is itself another contract) by which a party thereto undertakes or promises that cer-

tain facts are or shall be as he represents them to be. The untruth of a representation does not give rise to a cause of action or affect a contract unless the representation was made fraudulently or was made recklessly in known ignorance of the facts represented. The untruth of a warranty, of itself, gives rise to a cause of action upon the warranty. In insurance policies and charter parties a representation or promise, which is made by the parties an essential part of the contract, is called a warranty, and is a condition precedent to liability upon the contract. Whether a representation or promise in a policy of insurance or a charter party is also a warranty, depends on whether the parties have expressly, or by unexpressed intention, gathered from the whole contract, made the validity of or liability under the contract dependent on the truth or the performance of such representation or promise. Express conditions must be complied with strictly, while conditions implied in law require a substantial compliance only. The rule as to express conditions is subject to some qualifications. Courts incline to construe express conditions so as not to work unjust forfeitures or oppressions, as contrasted with mere loss of privilege. Again, in New York, express conditions in building contracts, such as a requirement of production of an architect's certificate as a condition of payment, are treated the same as conditions implied in law. The prevailing American doctrine is that such conditions must be complied with literally, except that fraud of the architect or his refusal to exercise an honest judgment, will excuse a failure to produce his certificate, even though he did not collude with the owner. But fraud of the party who insists upon the condition, or collusion between the owner and the architect in the case put, will excuse from performance of an express condition in all jurisdictions. Where performance of something by the promisee to the satisfaction of the promisor is made an express condition precedent to the liability of the promisor, if the subject matter is one of personal taste and judgment, the decision of the promisor is decisive, even though wrong and unreasonable, if it is honest; but where the subject is one of which any one else may judge equally well, the courts generally construe the condition to require only such performance as ought to satisfy a reasonable man.

Conditions Implied in Law.—The law implies conditions in bilateral contracts only. The reason for implying them in such contracts is that, as there are two promises, each given in exchange for the other, justice and fair dealing demand that neither party be permitted to enforce the promise of the other while in default of performance of his own. Hence, wherever it is possible, consistently with the terms of the contract, the courts will hold that performance, or at least tender of performance, on one side is a condition of calling for performance upon the other side; and they will hold that the two sides of a bilateral contract are conditions concurrent wherever they can reasonably do so. There are, however, cases where this cannot be done, and conditions precedent are implied. A breach of promise gives rise to a cause of action. But if the promise is also a condition, the breach is a defense and an excuse for non-performance on his part of the promise given by the promisee in exchange for the one broken. It is not every breach of the promises made in a bilateral contract which will be held a breach of condition also. If the breach takes place at the outset, before any part of the contract has been performed, a less breach will be held a breach of condition than where it takes place after part performance. But in general, and especially after part performance, the breach of contract on one side, in order to be a breach of condition available to the other side as a defense or as ground for non-performance on that side, must go to the essence of the contract, i. e., must defeat the chief object or at least a very important object of the agreement. In America, the courts generally hold that in mercantile contracts provisions as to time are of the essence of the contract. In other cases the terms and circumstances of the contract must determine the question. A majority of American jurisdictions make it a condition implied in law that the promisor shall not repudiate his promise or announce in advance of the time for performance that he will not perform. In such jurisdictions the other party in such case may treat the contract as broken completely and may sue at once. But in some jurisdictions he must wait till the time fixed for performance has elapsed before suing.

Impossibility of Performance.—Impossibility of performance of a promise may be inherent, that is, the promise may have been to do a thing intrinsically impossible or impossible under circumstances existing when it was made, or supervening; that is, it may have been possible of performance when made or possible intrinsically, but a change of circumstances may have occurred which has made performance impossible. As it is one of the requisites of all legal transactions that the intention of the parties be directed to a possible result, in case a promise is intrinsically impossible it is void. If it was apparently possible, but circumstances unknown to the parties exist which render it impossible, the promise may be voidable for mistake. In case of supervening impossibility some distinctions must be taken. If the promise was intrinsically possible, and the promisor assumed the risk of supervening impossibility, unless the contract is a wager, he is absolutely liable. But in contracts for personal service, it is a condition implied in fact that the person who promises such service shall be able physically to perform.

Contracts in Restraint of Trade.—A contract in restraint of trade may be made as part of and incident to a transfer of a business and its good will from promisor to promisee, or independent thereof. If made as a part of such a transfer it is valid and enforceable, provided it does not go beyond what is reasonably necessary for the protection of the business sold or transferred. In general the restriction should be limited both with respect to time and with respect to space. A general promise not to engage in the business in question anywhere at any time would hardly be reasonable under any circumstances. In drawing such agreements, care should be taken to limit the time and the place to the demands of a reasonable protection of the business transferred, and, in practice, it is safest to have the agreement drawn or passed

upon by a lawyer. An agreement not to engage in any business—not limited to the particular business sold or transferred—is obviously unreasonable and is invalid. Sales of existing business concerns to competitors for the purpose of suppressing competition and creating combinations in restraint of trade are now rendered invalid or at least are visited with penalties by legislation in the several states, and, so far as interstate commerce is affected, by federal legislation.

Wagering Contracts.—Originally wagers were not held intrinsically invalid, but were only invalid legally where the wager involved something inherently illegal or immoral. But legislation changed the rule in England, and in the United States many jurisdictions refused to follow it, so that by judicial decision or legislation all wagers are held contrary to public policy, and void. With respect to wagering contracts of a commercial nature, it may be said that wagers upon the prices of provisions, grain, stock, securities, and the like, upon the basis of "settlement of differences," are unlawful. But this does not mean that all agreements for future sale or partial delivery, even though made on margin or by way of option, are necessarily illegal. In an increasing number of states option contracts of this sort are being declared illegal by statute. But, except as modified by statute, contracts for future delivery are valid, even though the seller does not have the property sold; and buying and selling on margin is not unlawful, provided actual transactions are intended, and not colorable ones to cover actual gambling. Consequently option contracts are not inherently and necessarily unlawful, and the burden of showing that they are colorable and are mere cloaks for what are in fact gambling transactions is upon the person who asserts their invalidity. But if it is shown that neither party intended an actual transaction, each contemplating simply an adjustment by settlement of the difference between the contract price and the market price at the time of settlement, the transaction is void. If both parties, when the contract was made, contemplated actual sale and delivery, they may afterwards settle differences in price by way of performance. If neither intended actual sale and delivery at the time, a subsequent contract providing for actual delivery will nevertheless be upheld. If one of them contemplated actual sale and delivery, but the other intended only a settlement of differences, the former may enforce the contract but the latter may not.

Other Contracts Against Public Policy.—As was said at the outset, it is true of all legal transactions that they must be directed to a legally permissible result. The law will not sanction acts or agreements which have for their purpose anything illegal or contrary to good morals. Hence contracts which have for their plain and acknowledged purpose the violation of the laws of another state are unenforceable. So also the sale of articles which can only be used for illegal or immoral purposes creates no obligation. But sales of ordinary articles of merchandise which can be and usually are used for proper and lawful purposes, are valid, even if the purchaser intends and makes a different use. Yet there may be cases where the purpose is so obviously for use in immoral or unlawful pursuit that the transaction is void, as in case of a letting to a notorious prostitute. All promises and agreements also which tend to corruption, public or private, are void. That is, they are void not only where they involve breach of duty on the part of public officers or deceit of or fraud upon the public, but also where they involve breach of private relations of trust and confidence or fraud upon individuals. Moreover, all promises and agreements that obstruct the administration of justice are invalid. Hence any agreement to stifle a prosecution for a criminal offense, or any agreement, the consideration of which is that one who has committed a crime shall not be prosecuted or that evidence that might convict him shall be suppressed, concealed, or withheld, is void.

Alteration of Written Instruments.—As a general proposition, alteration of a written instrument in any material respect, whether by addition, interlineation, erasure, or substitution, deprives the instrument of legal effect; but to have this consequence the alteration must be made intentionally. An alteration made with the consent of the other party amounts to a new agreement, changing the terms of the original, and will be upheld as such.

Interpretation.—The purpose of interpretation is to find out exactly what the parties intended. To this end the primary clue or index is the literal meaning of the words they have used, or, if the words used have a special significance in the trade, art, or profession in which they were engaged, or a customary meaning in the locality where they contracted, such special or local meaning. If, so considered, their language is ambiguous or the apparent meaning does not seem reasonable, resort is to be had to the context, that is, to the remainder of the instrument or agreement or to instruments or documents executed at the same time or at other times as parts of the same transaction. If the intention still remains in doubt, the intrinsic merit of the various possible interpretations must be considered, and that interpretation is to be adopted which appears most fair, just, and reasonable under all the circumstances. In general, the language of a writing in case of doubt will be taken more strongly against the party who drew it, and hence, presumably, chose language most favorable to himself. The instrument will be construed, so far as possible, so as to reconcile every part of it with every other and thus give effect to every clause and provision; as between an interpretation that would make the instrument or the agreement or any part of it illegal, or invalid, and one that would give it full effect, the latter is to be adopted, and as between those parts which are printed or typewritten and those inserted in writing (or in case of a printed form inserted in typewriting) the inserted matter, in case of conflict, is to be followed.

Drawing Written Contracts.—If an agreement is of enough importance to be reduced to writing, it is usually of enough importance to be drawn or passed upon by a lawyer. A trifling fee at the outset will often save controversy, expense, and litigation later. In general, the danger of contracts drawn up by laymen is, not defect of form, for form counts for little or noth-

ing, but neglect to consider and provide against possible contingencies, so that when something occurs that should have been but was not guarded against or provided for, the writing affords no guide and differences arise. A lawyer, from experience, knows what these contingencies are. It is very rare that a layman appreciates them or that his experience covers all of them. If, however, the layman insists upon drawing his own contract, the chief things for him to do are: (1) to be sure that he clearly understands exactly what the several terms of the agreement are; (2) to state the several things agreed to in plain, simple, non-technical language so clearly that no one can misunderstand, and (3) to ask himself diligently what contingencies may arise to alter or modify the situation, determine what is desired or intended in each of such contingencies, if they happen, and provide fully and clearly for each. Do not try to use technical expressions. Do not try to fill out blank forms. Both are apt to be blind guides, except to the expert. The great thing is to ascertain and to say exactly what you mean. Clear understanding of the precise terms of the agreement and of the contingencies that may affect it is worth more than all the forms that were ever invented. There is always danger that the attention of the layman will be diverted from the substance of the agreement to the form he is trying to follow or the blank he is trying to fill out. No amount of formality will supply deficiencies in substance.

Quasi-Contracts.—The underlying principle of quasi-contract is that one person ought not to be enriched unjustly at the expense of another, and hence where the former, because of mistake, oppression, failure of consideration, or non-performance, impossibility of performance or unenforceability of a contract, is found holding money or property or the benefit of labor or services of the latter, not given to him voluntarily, i. e., as a mere gift, for which he has rendered no equivalent, and which, therefore, it is inequitable and unconscientious for him to retain, the law requires the person holding such money or property to restore the money or the value of the property or services as if he had actually promised so to do.

One who holds money or property paid or delivered to him under a mistake of material fact, is bound to restore the money or the value of the property, unless the person to whom it was paid or delivered has, before he knew of the mistake, changed his position; that is, done something in reliance on or because of such payment or delivery whereby he would suffer loss if compelled to make restitution. Unless there has been a change of position, it does not matter that the mistake was a negligent one on the part of the person who made it. By "material" mistake is meant a mistake inhering in the transaction itself as contrasted with a mistake in the "inducement" thereto—i. e., in the motive or in matters which led to the transaction. To be material, the mistake must be as to the transaction itself, as where one signs a note supposing it is a receipt or a deed of conveyance supposing it is a lease, as to the person, as where one believes he is dealing with one person when in fact it is another person, or as to the object dealt with, as where the parties have one piece of land in mind and actually contract about another. But mistake as to the person is only material in those transactions in which there is a choice of persons. Where, as in sales for cash of property taken after inspection, the person dealt with is wholly indifferent, a mistake in the person is of no consequence. It is generally laid down that mistake of law will not afford ground for relief. But there are many exceptions.

Compulsion.—In the same way money paid by one person to another under compulsion may be recovered back, unless it was actually owing. The compulsion need not be actual physical compulsion. Threatened seizure of or sale of property under legal process, injury to business, or arrest may put such pressure on a person that he does not pay voluntarily. On the same principle, if any one, but especially a public officer or a public service company, extorts money to induce the performance of a duty it owes already without any such payment, the money may be recovered.

Default Under Contract.—Where a party to a contract who has received benefit or advantages thereunder fails to perform his part of the agreement, the other party who has performed or has performed part, may, instead of prosecuting his ordinary remedy for damages for breach of the contract, choose to repudiate the contract on his part also. In such case it follows that the former holds something, not given him as a mere gift, for which he has rendered no equivalent, and he is liable to restore it, if money, or its value, if property or services. In case of services, however, some courts allow only the contract wage or compensation to be recovered. If performance of a contract becomes impossible, money paid or property delivered or services performed thereunder, without any equivalent, may be recovered on the same principle. So also, if the contract is not enforceable because of the Statute of Frauds. But if the contract is void for illegality, there can be no recovery upon Quasi-Contract for money paid, property transferred or services rendered thereunder, because, the parties being equally at fault (in legal phrase, *in pari delicto*), the law will not help either of them. If they are not equally at fault, as, for example, if one of them has been in a position to and has exerted pressure upon the other, or if the transaction was made illegal in order to protect the one from the other, the one less at fault may recover benefits conferred upon the other under the contract for which he has received no equivalent. In most jurisdictions, also, there are special statutes permitting recovery of money lost in gambling.

Negotiable Instruments: Bills of Exchange, Promissory Notes and Checks.—Negotiable instruments, so-called because, unlike other "choses in action" (see *infra*, PERSONAL PROPERTY) the legal title to them could be transferred, and transfer of them by indorsement and delivery to a purchaser in good faith, for value, before maturity, will have the effect of cutting off defenses which the maker may have had against the prior holder, are now governed in most jurisdictions by a statute known as the Negotiable Instruments Law. That statute is modeled upon the English Bills-of-Exchange Act, 1882. It had its inception in this country

in the Conference of Commissioners on Uniform State Laws, which, in 1895, instructed its committee on Commercial Law to prepare a draft of a statute codifying the law of bills and notes. The draft was prepared accordingly, was adopted by the Conference of Commissioners in 1896, and, on the recommendation of the Commissioners, has been adopted in the following jurisdictions: Alabama, Arizona, Colorado, Connecticut, District of Columbia, Florida, Idaho, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming. Probably in a few years it will be in force throughout the United States. In the main the statute does not change the substance of the law as it has existed heretofore, but puts it in a more simple and orderly form and reconciles or eliminates conflicts and inconsistencies, which had grown up gradually in the course of decision in the several states. A summary of its provisions, as nearly as possible in its very words, with an indication of the most important local differences and rules recognized in jurisdictions where the statute is not in force, follows:—

Form and Interpretation.—An instrument to be negotiable must (1) be in writing, signed by the maker or drawer, but pencil writing suffices; (2) contain an unconditional promise or order to pay a sum certain in money; but in Georgia, Illinois, and Indiana, notes payable in produce or merchandise are negotiable by virtue of special statutes, and in the same way notes payable in cotton are negotiable in Mississippi; (3) be payable on demand or at a fixed or determinable future time; (4) be payable to order or to bearer—hence if the instrument is payable to a person named and not to his order or to bearer, it is not negotiable; also (5) where the instrument is a bill of exchange the drawee (person on whom it is drawn) must be named or otherwise indicated with reasonable certainty.

By "sum certain" is meant a fixed, definite sum of money. But the sum payable is a "sum certain" within the meaning of the Negotiable Instruments Law, although it is to be paid with interest or by stated installments or by stated installments with a provision (called an acceleration clause) that upon default in payment of any installment or of interest the whole shall become due, or with exchange, either at a fixed rate or at the current rate, or with costs of collection or an attorney's fee in case payment shall not be made at maturity. Where the Negotiable Instruments Law is not in force, authorities differ as to the effect of making the note payable with exchange. In Minnesota and Texas the rule is the same as that prescribed by the Negotiable Instruments Law. But in Indiana and South Carolina such a provision makes the note non-negotiable. Provisions for payment of an attorney's fee in case of non-payment at maturity are unenforceable in Arkansas, Kentucky, Michigan, Nebraska, North Carolina, Ohio, Oregon, and Virginia. Such a provision destroys negotiability in California, Minnesota, South Carolina, and South Dakota.

A promise to pay is unconditional within the meaning of the Negotiable Instruments Law, although it is coupled with an indication of a particular fund out of which reimbursement is to be made or a particular account to be debited with the amount paid or a statement of the transaction which gives rise to the instrument, such as, for instance, that the instrument was given for the purchase price of something named therein. But an order or promise to pay out of a particular fund is not unconditional, and hence the instrument containing it is not negotiable.

By "fixed or determinable future time" the statute means that the instrument must be payable (1) at a fixed period after date or sight, or (2) on or before a fixed or (absolutely) determinable specified future time, or (3) on or at a fixed period after the occurrence of a specified event which is certain to happen (such as the death of the maker), though the *time* of its happening may be uncertain. But if it is payable upon a contingency, it is not negotiable, even if the event does actually take place. For example, a note payable when some person specified comes of age is not negotiable, because he may not live to come of age, and so the note may not become payable.

If the instrument contains an order or promise to do anything beyond payment of money, it is not negotiable. Exceptions to this are provisions authorizing the sale of collateral securities if the instrument is not paid, provisions for confession of judgment upon the instrument, waivers of exemption and other like laws for the benefit of the maker or drawer, and provisions allowing the holder, if he chooses, to require something to be done instead of payment. Provisions for confession of judgment and for waiver of legal protection or benefits are not allowed in many states, and in these the statute does not change the rule. It merely prevents such provision from affecting the negotiability of the instrument.

It is not necessary that the instrument be dated or recite that value has been received or specify the place where it is drawn or the place where it is payable. In many states, however, there are special statutes requiring notes given in payment for patent rights to state that such is the consideration. Where these or similar statutes are in force, the general provision of the Negotiable Instruments Law does not alter the rule. If no time for payment is expressed, the instrument is payable on demand. When it is knowingly made payable to the order of a fictitious or non-existent person, or the name of the payee does not purport to be the name of any person or the only or last indorsement is an indorsement in blank (that is, an indorsement of the name of the indorser only) the instrument is payable to bearer as well as when it is payable "to bearer" or to a person named "or bearer." Ante-dating or post-dating, unless done for an illegal or fraudulent purpose, does not affect the validity of the instrument.

Consideration.—Every negotiable instrument is presumed to have been issued for a valuable consideration, and every one whose signature appears upon it is presumed to have become a party thereto for value. Any consideration that would support a simple contract (see *supra*, CONTRACTS—*Consideration*) is held to be "value," and in addition (differing from simple

contracts) any antecedent or pre-existing debt. A holder who has a lien upon the instrument (as, for example, a pledgee of a note as collateral security) is considered a holder for value to the extent of his lien. Want of consideration or failure of consideration (i. e., that in exchange for which the instrument was given proves to be of no value or non-existent, or, if a promise, is not done or performed) is a defense against any one except a holder "in due course" (i. e., one who took for value, before maturity, without notice of any defense). If the failure of consideration is partial it is a defense to the extent of such failure except against the holder in due course. An accommodation party (i. e., one who becomes a party to the instrument, without receiving value, in order to lend his name to another), is liable to a holder for value, although such holder knew him to be an accommodation party only.

Negotiation.—A negotiable instrument is negotiated (i. e., transferred so as to make the person to whom it is transferred the "holder" of it) by delivery if it is payable to bearer, and by indorsement and delivery if it is payable to order. The indorsement must be written upon the instrument itself or upon a paper attached thereto.

Indorsements.—An indorsement may be either special or in blank, and may also be restrictive, qualified, or conditional. The holder may convert a blank indorsement into a special indorsement by writing over the signature of the indorser in blank any contract consistent with the character of the indorsement. A special indorsement specifies the indorsee, so that the indorsement of the latter becomes necessary to any further negotiation of the instrument. An indorsement is restrictive when it prohibits further negotiation of the instrument or makes the indorsee agent of the indorser for collection (e. g., "pay John Stiles, for collection," or simply "for collection"), or makes the indorsee a trustee for some one else (e. g., "pay John Stiles for account of Thomas Jackson"). A special indorsement to a person named without adding "or order" or "to the order of" is not restrictive. An indorsee who takes by a restrictive indorsement acquires the right to receive payment and to sue upon the instrument. If the restrictive indorsement authorizes him to indorse (e. g., "pay John Doe or order for collection"), he may transfer his rights as indorsee to another; but in that case his indorsee acquires only the title of the first indorsee under the restrictive indorsement. One who takes by restrictive indorsement takes subject to defenses which the maker might have set up had there been no indorsement. Where the Negotiable Instruments Law is not in force, most jurisdictions hold, as the statute prescribes, that an indorsee for collection may sue upon the instrument. But he cannot do so in Minnesota. A qualified indorsement relieves the indorser of all liability *as indorser*, and operates only to transfer the instrument to the indorsee. It may be made by adding to the indorser's signature the words "without recourse," or any words of similar import. Such an indorsement does not impair the negotiability of the instrument and does not serve to put the indorsee on inquiry as to equities between the original parties. Where the indorsement is conditional, a party liable on the instrument may disregard the condition and pay the holder whether the condition has been fulfilled or not, and the holder will take the money subject to the rights of the conditional indorser. If an instrument payable to bearer is indorsed specially, the instrument is still subject to negotiation by delivery, but the person who indorsed specially is liable as indorser only to such holders as take through his indorsement. If an instrument is drawn or indorsed to a person as cashier or other fiscal officer of a bank or corporation, it is *prima facie* (that is, unless and until the contrary is shown) payable to the bank or corporation and negotiable by its indorsement or by that of the officer. Unless the indorsement bears a date which shows the contrary, every negotiation *prima facie* is considered to have taken place before maturity.

Rights of the Holder.—The holder may sue in his own name (whereas at common law the assignee of non-negotiable choses in action had to sue in the name of his assignor). Payment to the holder in due course of business discharges the instrument. A "holder in due course" is one to whom the instrument was negotiated under the following conditions: (1) it was complete and regular upon its face; (2) he became the holder before it was overdue and without knowledge that it had been previously dishonored, if such was the fact; (3) he took it in good faith (that is, intending actually to buy it as a business transaction, and not merely to cut off defenses of the maker or some other party thereto) and for value; (4) at the time it was negotiated to him, he had no notice of any infirmity in the instrument or defect in the title of the person negotiating it. If the instrument is payable on demand, and is negotiated an unreasonable time after its issue, the holder is not a holder in due course. What is a reasonable time depends upon the facts of each case. A few days could not suggest to any one that the instrument had been dishonored. A few months might, depending on circumstances. A year or more would almost certainly do so. The holder must not only have taken the instrument but must have paid the full amount agreed to be paid therefor before receiving notice of any infirmity in the instrument or defect of title in the person negotiating it, or he will not be a holder in due course. If he has paid part before receiving notice, he is a holder in due course to the extent of such payment. The title of the person who negotiates an instrument is considered defective when he obtained it, or any signature to it, by fraud, compulsion, or other unlawful means, or for an illegal consideration, or when his negotiating it is a breach of faith or amounts to fraud. To constitute notice of an infirmity in the instrument, or defect in the title of the person negotiating it, the person to whom it is negotiated must have had actual knowledge of the infirmity or defect or knowledge of such facts that his taking the instrument amounted to bad faith. A holder in due course holds the instrument free from any defect of title of prior parties and free from defenses available to prior parties among themselves, and may enforce payment for the full amount of the instrument against all parties liable upon it. In the hands of any holder other than a holder in due course,

a negotiable instrument is subject to the same defenses as if it were non-negotiable. But a holder who derives his title through a holder in due course, and who is not himself a party to any fraud or illegality affecting the instrument, has all the rights of the holder in due course through whom he takes as against all parties prior to the latter. By "prior" parties are meant those who became parties by making, drawing, accepting, or negotiating before the indorsement in question. Every holder is taken to be a holder in due course unless and until the contrary is shown. But when it is shown that the title of any person who has negotiated the instrument was defective, the burden is on the holder to prove that he, or some person under whom he claims, took as a holder in due course.

Liability of Parties.—The maker of a negotiable note contracts to pay it according to its terms, and is the person primarily liable upon it. The drawer of a bill of exchange or of a check contracts that the instrument will be accepted or paid, as the case may be, on due presentment, according to its terms, and that if it is dishonored and due notice is given, he will pay the amount to the holder or to any indorser who may be compelled to pay it. The acceptor of a bill contracts to pay it according to the terms of his acceptance, and is the person primarily liable. A person who places his signature upon a negotiable instrument otherwise than as maker, drawer, or acceptor, is taken to be an indorser unless he uses words that clearly show an intention to be bound in some other way (e. g., as guarantor). Where a person who is not maker or drawer or payee puts his signature in blank upon a negotiable instrument before delivery, he is called an irregular indorser. The Negotiable Instruments Law provides that an irregular indorser shall be liable as indorser, subject to three rules: (1) If the instrument is payable to the order of a third person, he is liable to the payee and to all subsequent parties; (2) if the instrument is payable to the order of the maker or drawer, or is payable to bearer, he is liable to all parties subsequent to the maker or drawer; (3) if he signs for the accommodation of the payee (i. e., to enable the payee to negotiate it), he is liable to all parties subsequent to the payee. Every person negotiating an instrument by delivery (i. e., where payable to bearer or indorsed in blank prior to the negotiation) or by a qualified indorsement (i. e., one "without recourse") warrants (1) that the instrument is genuine and in all respects what it purports to be; (2) that he has good title to it; (3) that all prior parties had capacity to contract; and (4) that he has no knowledge of any fact which would impair the validity of the instrument or render it valueless. He is liable for damages for breach of any of the warranties which the law creates, even though he did not indorse at all or indorsed "without recourse." But where the negotiation is by delivery only, only the immediate transferee has the benefit of the warranty involved in the transfer, and the warranty of capacity of the parties to contract does not apply to municipal or corporate bonds or to public or private securities other than bills of exchange and promissory notes. An indorser, except one who makes a qualified indorsement, warrants (1) that the instrument is genuine and what it purports to be; (2) that he has a good title to it; (3) that all prior parties had capacity to contract; and (4) that the instrument is valid and subsisting at the time of his indorsement. In addition to the warranties involved in his indorsement, his indorsement is a contract that on due presentment the instrument shall be accepted, or paid, or both, according to its tenor, and that if it is dishonored, and due notice is given, he will pay the amount of it to the holder or to any subsequent indorser who may be compelled to pay it. Among themselves, in the absence of special agreement, indorsers are liable in the order in which they indorsed.

Presentment for Payment.—Presentment for payment is not necessary in order to hold the person primarily liable on the instrument, but it is necessary in order to hold the drawer of a bill or check and in order to hold indorsers. Where the instrument is not payable on demand, presentment must be made on the day it falls due. If payable on demand, presentment must be made within a reasonable time after the instrument is "issued" (i. e., first delivered, complete in form, to a person who takes it as holder). But a bill of exchange payable on demand may be presented for payment within a reasonable time after the last negotiation of it. Presentment must be made by the holder or by some one authorized to receive payment on his behalf, at a reasonable hour on a business day, to the person primarily liable, or, if he is absent or cannot be reached, to any person found at the place where presentment is to be made. Presentment for payment must be made at the place of payment specified in the instrument, if any is specified. If no place is specified, but the address of the person to make payment is given in the instrument, it must be presented there. Otherwise it is to be presented at the usual place of business or residence of the person who is to make payment. If no such place may be found, with reasonable inquiry, it may be presented to the person who is to make payment, wherever found, or at his last known place of business or residence. If payable at a bank, presentment for payment must be made during banking hours, unless the person to make payment has no funds there to meet it at any time during the day, in which case presentment at any time before the bank is closed on that day is sufficient. If the party primarily liable is dead, and no place of payment is specified, presentment must be made to his executor or administrator, if any. Where the persons primarily liable are liable as partners, and no place of payment is named, presentment may be made to any one, even though the partnership has been dissolved. But in other cases of joint debtors on the instrument, unless a place of payment is named, presentment must be made to all. If the drawer has no right to expect or require that the drawee or acceptor will pay the instrument, presentment for payment is not necessary to hold the drawer; nor is it necessary to charge an indorser where the instrument was made or accepted for his accommodation, and he has no reason to expect that it will be paid if presented. If delay in making presentment is caused by circumstances beyond the control of the holder, it will be excused. But he must make presentment with reasonable diligence after the cause of delay

ceases to operate. Presentment is dispensed with where, after the exercise of reasonable diligence, it cannot be made and where the drawee is a fictitious person. It may also be waived in writing or orally, and waiver may be shown by the usage of the parties or the business. The instrument is dishonored by non-payment when it is duly presented and payment is refused or cannot be obtained, or where presentment is not necessary or dispensed with and the instrument is overdue and unpaid. When the instrument has been dishonored, and notice has been given, it is said that the liability of drawers, indorsers, and parties secondarily liable has "become fixed." The holder now has a right to resort to them for payment, and they are no longer regarded as sureties for the person primarily liable. By the Law Merchant, three days of grace were allowed for payment after the date fixed by the instrument. The Negotiable Instruments Law has abolished days of grace, but it provides that if the instrument falls due on Sunday or a holiday, it is payable on the next succeeding business day. This was the rule of the Law Merchant also. Where days of grace exist, if the last day of grace falls on Sunday or a holiday, but two days are allowed.

Notice of Dishonor.—Notice of dishonor must be given to the drawer and to each indorser, and, in general, any drawer or indorser to whom such notice is not given is discharged. It may be given by or on behalf of the holder or by or on behalf of any party who might be compelled to pay the holder, and on so doing could claim reimbursement from the party notified. It may be given by agent, and the agent may give the notice in his own name. If given by or on behalf of the holder all subsequent holders and all prior parties who have a right of recourse against the party notified are entitled to the benefit of the notice. It may be written or oral. If written it need not be signed, and may be supplemented by an oral communication. A misdescription of the instrument does not invalidate it unless the misdescription actually misleads the party notified. But it must identify the instrument and must indicate that the instrument has been dishonored by non-acceptance or non-payment. It may be given by personal communication or delivery or through the mails, and either to the party himself or his agent. If the party to be notified is dead, it must be given to his executor or administrator, if any. If there is none, it may be sent to his last residence or last place of business. With respect to partners and joint debtors, the rule is the same as in case of presentment. The notice may be given as soon as the instrument is dishonored, and, if the parties reside in the same place, must be given as follows: (1) If given at the place of business of the person to receive notice, before the close of business hours on the day following; (2) if at his residence, before the usual hours of rest on the day following; (3) if sent by mail it must be deposited in the post office so as to reach him in the usual course of mail on the day following. If the parties reside in different places, if the notice is sent by mail, it must be deposited in the post office in time to go by mail the day following the day of dishonor, or if there is none at a convenient hour, by the next mail thereafter. If given in some other manner, it must be within the time in which a notice by mail, duly given, would have been received. If properly addressed and deposited in the post office, there is due notice, notwithstanding any miscarriage in the mails; and the term post office in the statute includes branch post offices and letter boxes. Where a party has added an address to his signature, notice must be sent to that address. If he has given no address, it must be sent to the post office where he is accustomed to receive letters, either his place of business, or his office, or any place where he is staying. If he actually receives it in time, it is no matter where it was addressed. Notice may be waived, and a waiver of "protest" is held to waive presentment and notice. Delay is excused and notice itself dispensed with in like circumstances as in case of presentment. But in addition, if drawer and drawee are the same person, or the drawee is a fictitious person, or the drawer has stopped payment, the drawer is not entitled to notice of dishonor. Notice need not be given to an indorser where the drawee is a fictitious person, and he knew it, or where the instrument was made or accepted for his accommodation.

Bills of Exchange.—An inland bill of exchange is a bill which on its face is both drawn and payable within the state. Any other bill is called a foreign bill. The bill may be drawn on two or more drawees jointly, but not in the alternative or in succession. But the drawer or any indorser may insert the name of a "referee in case of need," that is, of a person to whom the holder may apply, in case the bill is not accepted or is not paid. In such a case, the holder may resort to such person or not as he sees fit.

Acceptance of Bills of Exchange.—The acceptance must be in writing, signed by the drawee. The usual form is "accepted," followed by the signature of the drawee. The holder has the right to insist that the acceptance be written on the bill, and may treat the bill as dishonored if this is not done. But an acceptance on another paper will bind the acceptor in favor of any one to whom it is shown and who takes the bill for value on the faith of it. The drawee is allowed 24 hours after presentment in which to decide whether or not to accept, but if he destroys the bill or refuses to return it after 24 hours, he is held to have accepted. This provision is not in force in Illinois.

Protest.—Protest is only necessary in case of dishonor of a foreign bill of exchange by non-acceptance, or, if not previously dishonored by non-acceptance, by non-payment. If it is not made the drawer and indorsers are discharged. But it is much better and safer to resort to a notary public and have protest made in all cases, as the record of the notary affords a certain and convenient mode of proof, and the notary usually has given an official bond upon which recourse may be had if he makes a mistake resulting in loss. The protest must be in writing, signed and sealed by the notary, and must be attached to the bill or to a copy of it. It must be made at the place and on the day of dishonor of the bill. In other respects the rules governing it are similar to those governing notice of dishonor.

Checks.—The Negotiable Instruments Law provides expressly that its rules applicable to bills of exchange payable on demand shall apply to checks, except as otherwise provided. Three special points should be noted: (1) a check must be presented for payment within a reasonable time after it is issued, or the drawer will be discharged from liability to the extent of any loss caused by the delay (e. g., intervening insolvency of the drawee); (2) where the check is certified by the bank on which it is drawn, the certification is equivalent to an acceptance; (3) if the holder procures the check to be certified, the drawer and all indorsers are discharged.

Agency.—An agent is a person appointed to do some act or to act generally on behalf of another. The latter is called the "principal"; and what the agent does in execution of his agency is regarded legally as if done by the principal. An attorney-at-law is an agent who conducts the legal business of his principal, here called his "client." An attorney in fact is an agent appointed by a deed, called a power of attorney. (See *infra*, CONVEYANCING). A factor is an agent to whom goods are consigned for sale upon commission. If he undertakes to become responsible to the principal for payment by or solvency of those to whom he sells, he is called a *"del credere* agent." A broker is an agent employed to buy or sell without having possession of the property or to go between the parties and bring them together.

Appointment of Agents.—In general, no form is necessary. A course of conduct which shows an intention that the agent act for and on behalf of the principal will suffice. And if the course of conduct is such that a reasonable man would so interpret it, those who deal with the supposed agent in reliance on the appearance so created will be permitted to hold the supposed principal as what his acts have made him appear.

Ratification.—Although one who acts as agent has no authority, the person for whom he has assumed to act may treat the act as authorized and thus become bound thereby as if he had authorized it in the first instance. This is called ratification. One may ratify expressly or by accepting the benefit of the transaction with knowledge of all the facts. But one who ratifies must ratify the whole. He cannot ratify that part which is to his advantage and repudiate the remainder.

General and Special Agents: Execution of the Agency.—A general agent is one employed either to manage the whole business of the principal or in a position of a generally recognized character, which, from its nature, carries a considerable apparent authority. A special agent is one appointed for a particular occasion or purpose which does not involve any apparent authority beyond what is specially given. The principal is bound by what the general agent does within the scope of his authority, even if contrary to the instructions given him. He is only bound by the acts of the special agents so far as they were authorized. The agent ought always, if only for his own protection, to act in the name of his principal. Thus he should not sign "Richard Roe, Agent," but "John Doe, by Richard Roe, his agent." Otherwise there is danger that he may be held personally upon a transaction into which he intended to enter as agent only. If he acts in his own name without disclosing his principal, the principal may nevertheless sue or be sued upon the transaction, because in truth it is his. But the agent may be held personally, because the other party dealt with him supposing him to be the party in interest. Also if the principal sues in such a case, the other party may make any defense he might have made against the agent. The agent having been chosen because of the confidence reposed in him personally, cannot delegate his agency to another. But he has the power to do anything reasonably necessary to execution of his agency, which includes the employment of sub-agents for whose acts he is liable as principal. He is responsible to the principal for execution of his authority according to the terms thereof. If he exceeds his authority or violates his instructions, he may make the principal liable to third persons, but he will himself be liable to the principal for the resulting loss. When he deals with third persons as agent, he impliedly warrants his authority, and is liable to them if his acts fail to bind the principal for lack of authority.

Rights and Duties of Agents.—An agent is a fiduciary, that is, he occupies a relation of trust and confidence. Hence he must deal with his principal in the utmost good faith, must fully disclose to him all facts bearing on transactions between himself and the principal, must not make any secret profit out of the agency, and must account to the principal for it if he does, and occupies the position of a trustee with respect to money and property in his hands. He is entitled to be reimbursed for expenses properly incurred in the course of the agency. Whether or not he is entitled to compensation depends upon his contract with the principal.

Revocation.—Agency is terminated by death of either principal or agent. It may also be revoked by the principal unless the agency is "coupled with an interest" (i. e., unless the agent is agent of the principal for some purpose of the agent's as well as of the principal's). But if the agency is generally known, the principal on revoking should notify third persons who have been in the habit of dealing with the agent as such, or he may be bound by the appearance of agency which he suffers to continue.

Suretyship and Guaranty.—A surety enters into a joint or joint and several contract along with the principal debtor (called the principal) upon the same consideration, so that in form both principal and surety have joined in the promise or undertaking. A guarantor enters into an independent contract, collateral to the contract or obligation of the principal, upon an independent consideration, if made after the principal's obligation is incurred, to be answerable for performance by the principal. A guaranty must be evidenced by writing (see *supra*, CONTRACTS, STATUTE OF FRAUDS). As between principal and surety, the former ought to pay or perform. Hence he is said to be primarily and the latter to be secondarily liable. As between the creditor and the surety, the latter is a joint or joint and several debtor. But if the principal knows the latter to be surety, he is bound so to act as not to interfere with the rights of the

surety, as between him and the principal, growing out of the surety's secondary liability.

Release or Discharge of Surety or Guarantor.—As the contract of a guarantor is collateral, obviously he cannot be liable unless there is an obligation on the part of a principal, to which his agreement may be collateral. Hence if the principal is not liable or the liability of the principal is extinguished, the collateral liability comes to an end also. Moreover, the surety or guarantor may be discharged (1) by acts of the creditor without his consent, altering materially the contract with the principal; (2) by acts which, without his consent, take away his right to pay the creditor, and for his own protection obtain thereby the immediate power to enforce the creditor's rights against the principal. Hence an extension of time to the debtor on consideration and for a definite period, a surrender of securities to the principal, or a material variation of the surety's or guarantor's risk, without the latter's consent, is a discharge. In the absence of statute, the better opinion (though the matter is in dispute) is that surety or guarantor cannot compel the creditor to sue the principal first; his remedy is to pay the debt and enforce the creditor's rights against the principal himself for his own protection. But statutes allow him to notify the creditor to sue, and release him in case the notice is not complied with, in Alabama, Arkansas, Illinois, Indiana, Iowa, Kentucky, Mississippi, Missouri, North Carolina, Ohio, South Dakota, Tennessee, Texas, Virginia, and Washington. The same result is reached by judicial decision in New York, Pennsylvania, and partially in Minnesota.

Rights of Surety.—In addition to the right to pay the debt and succeed to the creditor's rights against the principal debtor for his own protection, a surety has a right against the principal to be indemnified for whatever he has been compelled to pay on the debt, against his cosureties to compel them to contribute their shares of what he has had to pay, supposing he has paid more than his share, and against the principal to compel the latter to exonerate him by paying the debt.

Rights of the Creditor.—The creditor, except when notice is allowed as above explained, may proceed immediately against guarantor or against surety, if he is jointly and severally liable, or against principal and surety jointly, if they are jointly liable, to collect the debt. He also has a right to require the guarantor or surety to apply on the debt any securities the principal may have given him for his indemnity.

Partnership.—Partnership is the relation between persons who have agreed to combine their money or property or labor or skill or some of them in a joint enterprise or business, and to share the profits. The basis of partnership is agreement, and the law does not recognize the partnership as an entity or legal person. Herein it differs from a corporation, the basis of which is the authority of the state creating a legal entity or person distinct and apart from the individual incorporators. Hence, while a corporation owes debts, not the stockholders or members, a partnership does not owe debts legally, but the partners owe them. That is, the liability of members or stockholders in a corporation is a limited one, usually extending only to the amount unpaid upon their shares. But the partners in a partnership are joint debtors, and are liable for the whole amount of the partnership indebtedness. It is common, however, for statutes to provide for special or limited partnership, in which a special partner, who advances or has advanced money to the business, receives a share of the profits for the use of his money, and is not liable for debts. Such statutes require that the name of the special partner shall not appear in the firm name, and that the partnership agreement (or articles) shall be filed in some specified public office. It follows also from the legal conception of a partnership that debts due to it are legally due to the partners as joint creditors. Hence, if one partner dies, the debt, in legal understanding, is due to the surviving partner. But he must account to the estate of the deceased partner for the latter's share. Conversely, the legal liability for partnership debts, in case of death of one partner, is imposed on the survivor. But the latter is entitled to be repaid out of the estate of the deceased for anything he may pay upon such debts beyond his share. On the same ground, suits against the partnership originally had to be, and, even after modern legislation allowing suits by or against partnerships in the partnership name, may be brought against the partners jointly, just as against any other joint debtors, and either the property of any partner or the partnership property may be levied upon under execution to pay the debt. Moreover, a creditor of a partner, for a debt in which the partnership has nothing to do, may levy execution upon the partnership property and sell the debtor's interest therein, as in any other case of joint ownership.

Powers and Duties of Partners.—Each partner is the agent of the partnership, and hence of all the partners, with respect to the partnership business. If among themselves they have agreed to limit the authority of some one partner, he may become liable to his co-partners if he exceeds such limitation. But persons who deal with the partnership are entitled to assume that any partner may bind all, unless they know of the limitation. Partnership is a fiduciary relation, and all that was said above (see AGENCY, *supra*) as to the nature and consequences of such a relation applies here also. A partner cannot sell or transfer his share or any part of it so as to bring a new partner into the partnership without the consent of all his co-partners. And if a new one is so brought in, he becomes a co-owner of partnership property and joint debtor for its debts from the time he is taken in. He is not liable for prior debts, and the former partner whose place he takes is still liable therefor. But it may be agreed that he shall assume the liability of the retiring partner.

Dissolution.—A partnership, if formed for a fixed and limited time, is dissolved by expiration of that time; if not, it may be dissolved by notification of any one to the others that it is dissolved. In either case, it is dissolved if all consent, if a partner dies, or if one of the partners becomes bankrupt. It may also be dissolved by a court if one of the partners become insane or incapable of acting, or so conducts

himself as to prevent proper carrying on of the business, or if the business can only be carried on at a loss. Where a court winds up a partnership, it will pay the partnership creditors first out of the partnership assets, and will allow creditors of the individual partners to take only what is left.

Corporations.—A corporation is regarded in law as a person distinct from its members, so much so that it may have rights against them and they in turn have rights against it or toward it. It derives its existence from the state. Formerly each corporation was created by a special act, for that purpose called a charter. The practice now is to provide by general law, that ordinary business corporations may be formed by a simple process of adopting articles of association or incorporation and filing them or a certificate thereof in some designated public office.

Corporations are of two kinds, public and private. A public corporation is one created for some purpose of government, such as a city, a village, a school district. Other corporations, even where they are public-service corporations, like railway, telegraph, telephone, and express companies, are called private corporations. In case of charitable, religious, library, and sometimes social institutions or societies, which are permitted to incorporate, the statutes prescribe an organization without capital stock. But in other cases the interest which the members have in the corporation is represented by shares in the capital stock, the total amount of which is fixed by the charter or articles. The stockholders are not in any sense the owners of the property or assets of the corporation. The corporation owns them. The stockholders own merely the shares, which give them a right to participate in the control of the corporation, receive dividends, if any are declared, and upon winding up of the corporation, to receive a share in the residue after payment of all claims against the corporation in the proportion which their shares of stock bear to the whole capital.

Powers of Corporations.—A corporation may sue and be sued in the corporate name, may have and use a seal, and may make reasonable by-laws, not inconsistent with law, for its government. It also has what is called legally "perpetual succession"; that is, the corporate existence is in no way affected by changes in its membership, and its property and obligations belong to and are those of the legal entity, no matter who are the members or how the membership changes. But the corporation only has the powers and can only use its powers for the purpose provided in its charter articles. An act outside of what is so provided is said to be *ultra vires*, that is, beyond its powers. If it attempts to do *ultra vires* acts, any stockholder may obtain an injunction. The corporation cannot enforce *ultra vires* contracts against third persons, and some authorities hold that *ultra vires* acts are wholly void.

Management of Corporations.—The charter or articles provide how a corporation shall be managed or governed. As a general proposition, the ultimate government is in the meeting of all the stockholders, in which each has one vote for each share which he holds. The immediate management is usually in a board of directors. These directors occupy a fiduciary relation to the corporation and to the stockholders (see *supra*, AGENCY). In case of mismanagement, in breach of the duties imposed by this relation, a stockholder may bring a suit on behalf of the corporation to enjoin the mismanagement and compel restitution to the corporation of money or property it is equitably entitled to.

Stock and Stockholders.—Shares are usually evidenced by certificates and are transferable on the books of the corporation by surrender of the old certificate and taking out a new one running to the new shareholder. The usual practice is to execute a blank power of attorney on the back of the certificate authorizing the holder to make such transfer, so that practically when the original holder has indorsed it, the certificate can pass by delivery. But at law the person who is registered on the books as stockholder is regarded as owning the shares, and he only is entitled to vote at meetings and to receive dividends.

Dissolution.—A corporation may be dissolved by expiration of the time fixed in its charter or articles, by voluntary surrender of its franchises, or by forfeiture, either for not using its franchises or for misusing them, at suit of the state. Statutes in many jurisdictions also provide for the judicial winding up of insolvent corporations, on the vote of the stockholders, or at the instance of certain public officers.

Property.—The law distinguishes two kinds of property, real property and personal property. The distinction is an arbitrary and technical one, and is by no means as easy as the layman usually supposes it. Real property, on the death of the owner, descends at once to the heir or heirs, unless disposed of by will; personal property, whether there is a will or not, passes at once to the executor or administrator, by whom, if disposed of by legacies in the will, it is turned over to the legatees, or, if there is no will, it is distributed among the next of kin of the deceased owner. Estates in land, except for a fixed period of time, i. e., for years, and certain rights called "incorporeal hereditaments," such as rights of way and other like rights in another's land, rights to take something from another's land (called profits), franchises, annuities and rents, are real property. Everything else that may be owned, including estates in land of definite duration, is personal property.

Personal Property.—The technical term for personal property is "chattels" or "goods and chattels." Chattels are of two kinds: chattels real, that is, estates in land less than freehold (i. e., for years or at will), and chattels personal, that is, all other forms of personal property. Chattels personal are classified as choses in possession, that is, tangible corporeal chattels and choses in action, that is, incorporeal chattels, such as notes, book accounts, shares of stock, bonds, judgments, and the like.

Choses in Action.—Originally the law did not allow choses in action to be transferred. Later it allowed transfer of claims upon contract or for injury to property to the extent that the assignee might sue and collect in the assignor's name. Statutes now allow him to sue in his own name in most jurisdictions. But

claims for salary of public officers not yet earned cannot be assigned.

Joint and Common Ownership. — Where two or more persons own a chattel in undivided shares they are to-day owners in common. Partners as to debts due the firm, and trustees, executors, and administrators are an exception. They are held joint owners, so that is one dies the legal title goes to the survivors. In case of ownership in common, the share of a deceased owner is treated like any other property. Ownership in common of chattels is a very unsatisfactory form of ownership. Each owner is entitled to possession, and the possession of one is that of all. Hence unless the chattel is divisible (e. g., so many tons of hay or bushels of grain), if one owner in common excludes the other from the use of the chattel, the latter's only remedy is to go and take it, if he can, without breach of the peace. Even if there is a contract how it shall be used, he can only sue for breach of that contract. If the chattel is divisible, there may be partition by either taking his share. In any case there may be partition by agreement, or if the chattel is indivisible and they cannot agree, by suit for that purpose. If repairs are necessary, either may repair, and if the other has agreed or has been notified and refused to do anything, the latter may be held for his share of the reasonable expense of necessary repairs.

Acquisition of Chattels.—There are two modes of acquisition: original acquisition, by which one gets a new and independent title (without regard to any pre-existing rights of others), and derivative acquisition, in which one gets whatever title the person from whom he takes has to give him. One mode of original acquisition is occupation, i. e., taking possession with intent to become owner, of wild animals (not on another's land), or of abandoned chattels (provided one is rightfully on the land where he finds them). An abandoned chattel is one of which the owner has relinquished possession intending to give up all his rights in it. Another mode is adverse possession of the chattel for the period of the statute of limitations. Another mode is called accession. The person seized of land for the time being, even if wrongfully, becomes the owner of the fruits and products of the soil he removes therefrom while seized. The owner of animals becomes owner of the increase born to such animals. Another form of accession takes place where materials of two persons are united or where one person expends labor upon another's materials so as to change their form. In the former case, if they cannot be separated, the whole belongs to the owner of the principal materials, but the other has a claim for the value of what he thus loses. In the latter, if the new form is of a value greatly in excess of the old one, the person who has made the change by his labor in good faith is owner, but the other has a claim for the value of the materials; if the new form is not of a value greatly exceeding that of the old one, the original owner does not lose his property. Still another mode is confusion. If the property of two persons is confused so that the original components of the new mass cannot be distinguished, each owns an undivided share in the new mass to the extent to which his property is represented therein. If the proportion of the original components to the new mass cannot be ascertained, and the confusion was made willfully and fraudulently by one of the parties, the whole is awarded to the innocent party.

Derivative acquisition takes place by law when one who has converted to his own use another's chattel and has been sued for the conversion pays the judgment. By satisfying the judgment he becomes owner as of the date of the conversion. It takes place by act of the parties in case of gift, legacy, sale, or mortgage.

Gifts.—A gift is a gratuitous transfer of a chattel from one person to another. Gifts must be accepted by the donee (person to whom the gift is made), but acceptance is presumed. They are of two kinds: *inter vivos*, i. e., between living persons, and *causa mortis*, i. e., in contemplation of death and conditioned on death ensuing. Gifts of each kind require delivery of the article to the donee or to some one for him. A gift *causa mortis* is one made in contemplation of death from disease or from some impending peril. If death does not ensue, the gift does not take effect. And the donor (giver) may revoke the gift at any time. When a gift *inter vivos* is complete by delivery or one *causa mortis* by delivery in the lifetime of the donor and death of the donor from the disease or casualty feared, it is not revocable.

Sales.—A uniform statute on the subject of sales of personal property has been approved by the Commissioners on Uniform State Laws, and has been adopted in six jurisdictions. It is likely that eventually it will be put in force throughout the United States. At present, however, the common law on the subject is generally in force. The word "sale" is used in two senses. Strictly it means an agreement by which the seller (legally called the vendor) transfers to the buyer (vendee) the whole of some existing property right for a price in money. But the term is also used to mean a contract to make such a transfer at some future time (executory sale). In an executory sale, one need not be owner; he may bind himself to procure and transfer in the future. But no one can give any better or greater title by a sale than he has to transfer. Even though the buyer takes for value without notice, except in the case of negotiable instruments, he only gets the title of the seller, whatever that was. If, however, one sells something he does not own and warrants the title, in case he afterwards acquires title to it, that title will pass to the vendee, because the law will not allow the vendor to deny the title he purported to convey and warranted. If a bill of sale, i. e., a written transfer of the property under seal (except where seals are abolished, see CONTRACTS, *supra*), is executed and delivered, title passes thereby at once. If not, if the subject of the sale is not specific, e. g., 10 horses, but not 10 particular horses, 10,000 bushels of wheat, but not the wheat in a particular elevator, title passes to the buyer on delivery. If the subject is specific, when title passes depends on the intention of the parties; if they intend an immediate transfer, it passes; if they intend an executory sale to be completed later by carrying out the agreement, it does not. Until title has passed to the buyer, the risk of loss of the article (e. g., by destruction, burning, death, etc.) is on the seller. Delivery to a common

carrier consigned to the buyer is a delivery which passes title to the buyer unless the parties have agreed otherwise. Where the sale is on credit and the property is sent to the buyer by a common carrier or any agency other than the buyer's agent or servant, the seller may stop it while in transit and retake it, in case it has not come into the buyer's possession and control, if the buyer becomes insolvent. This is called the right of stoppage *in transitu*. Where section 17 of the Statute of Frauds is in force (see CONTRACTS, *supra*) it applies to sales.

Warranty.—Every sale of a chattel which at the time of the sale is in the seller's possession carries with it by implication a warranty that the seller has title to what he sells. But there is no implied warranty of quality. As to that the buyer takes the risk unless there is an actual (express) warranty. There are exceptions, however. If something is ordered from a manufacturer for a special purpose of which he has knowledge, he warrants by implication that it shall be reasonably fit for that purpose. Express warranties are subject to an exception that if the buyer had an opportunity to inspect the thing warranted, the warranty does not cover obvious defects which any one could discover by an ordinary examination. If the sale is procured by fraud, it is voidable (see CONTRACTS, *supra*). But if not, a mere breach of warranty does not give the buyer a right to set aside an executed sale. His remedy is to sue for breach of the warranty.

Chattel Mortgages.—A chattel mortgage is in form a conveyance of personal property to a creditor upon a condition that if the debt is paid according to the terms of the obligation, the transfer shall be void and the property revest in the mortgagor. Originally if the debt was not paid at maturity, the mortgagee simply had a complete title to the property. But equity allowed the mortgagor to redeem and the mortgagee to sue in equity to require him to do so, and cut off (foreclose) the right of redemption if he did not. To-day statutes everywhere provide a simple and inexpensive foreclosure by taking possession of the property, selling at public sale after notice, and applying the proceeds on the debt. Blanks for chattel mortgages adapted to local requirements may be procured in any community, but a few suggestions and warnings about the use of them may be made. The description of the property should be such as to afford notice to third persons. Hence the property must not only be described clearly but *located*. The place where the property is situated is an important element of the description, and should not be omitted. It is also important to bear in mind that a power of sale by the mortgagor, without requiring him to account to the mortgagee for the proceeds of sales, is a fraud on other creditors, and makes the mortgage void as to them. If there is nothing in the mortgage upon this matter, but the mortgagee knows of and permits sales without an accounting for the proceeds, other creditors may set the mortgage aside. Where a mortgage is given upon a stock of goods, therefore, one ought to be careful to insert a provision therein covering this point. The mortgagee should also see to it that the form or blank used contains a clause authorizing foreclosure in case the mortgagee feels "unsafe or insecure." This will enable him to take the property, if with good reason he believes his security is becoming impaired. If the mortgage is for a small sum, it is for the advantage of both parties to include a waiver of the statutory requirements as to notice of sale, and even to agree to a private sale. Unless waived, all statutory provisions must be substantially complied with. If not, the mortgagee may become liable to the mortgagor for conversion of the property. Statutory provisions as to recording or filing chattel mortgages vary greatly in the different states. These should be looked up and carefully complied with. Otherwise other creditors may defeat the security.

Possession of Chattels: Bailments.—Without being the owner of a chattel, one may nevertheless have the right to possession of it against every one, including the owner, or against every one but the owner, by reason of bailment, or pledge, or lien, or finding. A bailment is a delivery of possession of a chattel by one person (called the bailor) to another (called the bailee) to be held by the latter for the purpose of the bailment and redelivered when that purpose is accomplished. Bailments are of three kinds: (1) those for the sole benefit of the bailor, such as a deposit for safe keeping without compensation; (2) those for the sole benefit of the bailee, such as gratuitous loan of an article; and (3) those for the benefit of both, such as delivery to a carrier for transportation for hire or delivery to a creditor by way of pledge. In the first class, the bailee is excused if the property is lost or stolen or destroyed unless he was grossly negligent. In the second he is held to a high degree of care, and is liable if the property is lost or stolen or destroyed unless he uses such care. In the third class he is held to ordinary care such as prudent men generally employ.

Pledges.—A pledge or pawn is a bailment of a chattel as security for a debt, the pledgee acquiring a right to retain possession until the debt is paid. If the debt is not paid, he may foreclose by suit for that purpose or he may give reasonable notice to the owner and proceed to sell at auction and apply the proceeds on the debt. The pledgee may assign his rights to another, or even pledge them, if he does so subject to the rights of the pledgee, but he has no right to sell before the debt is due or to repledge as his own so as to cut off the right to redeem. If he does so, the pledgor may sue for conversion and recover the difference between the value of the property and the amount of the debt. Whatever pledgee may do, the pledgor is not entitled to possession until he pays or tenders the amount of the debt. In case of pledges of negotiable instruments or other choses in action, called collateral securities, the instruments, indorsed where necessary, are delivered to the pledgee and a written contract is usually entered into specifying the manner in which the securities shall be disposed of in case the debt is not paid. Reference may be made to Jones, *Pledges* (2 ed.), Boston, 1901, or Colebrooke, *Treatise on the Law of Collateral Securities* (2 ed.), Chicago, 1898.

Liens.—A lien is a right to hold possession of the property of another until some claim of the person in possession is satisfied. This is the original use of the term, and a lien of this sort

is called a "common-law lien." There are also statutory liens, which give a right to sell for satisfaction of the claim, and even, in some cases, to take possession of the property and have it sold. With respect to extent, liens are special or general, that is, they are rights to hold (or hold and sell) for a particular claim, or to hold (or hold and sell) for all sums due from the owner to the lien holder. Of the latter type is the lien of the factor upon goods of the principal in his hands. Special liens are given by the common law to the carrier for freight upon the property transported (but not on other property), to the innkeeper upon all property brought into the inn by a guest which the innkeeper is bound to receive, as security for the board and lodging on that occasion (but not on prior occasions), and to any other person to whom a chattel is delivered in order that he do some work upon or perform some service with respect to it, provided its value is increased by such work or service. Such liens give a right to hold until the claim is paid, but not to sell for payment. Strictly, such a sale can only be had by foreclosure in court. Statutes now give liens also to stable keepers for the keep of horses, and to persons who take animals for pasturage (called "agisters"), and in many diverse cases of the sort. These statutory liens may usually be foreclosed by notice to the debtor and public sale, as in case of a pledge. If the lien holder gives up possession, he loses his lien, and can only sue for the debt.

Finding Chattels.—One who finds a lost chattel (even if on the land of another, provided he is there rightfully at the time) acquires a right to take and hold possession against every one except the owner. He must deliver to the owner, and has no right to hold for expenses incurred or for a reward, unless a definite sum has been offered by way of reward, in which case he can hold for that sum. If a finder loses, a second finder must restore to the former, subject to the paramount right of the owner. An important distinction exists between lost chattels and those that are merely mislaid. An article is lost when, without intending it, the owner has let it get out of his control or possession. If he puts it in a place which is in the custody or control of another intentionally, and then forgets to remove it, the person in charge of such place has the right to hold it, and another cannot claim the right to take possession of it as a finder.

Real Property: Conveyancing.—The law of real property is the most technical and difficult part of our legal system. Hence, unless one is sure that he knows what he is about, it is very unwise for the layman to do anything of consequence involving a point of real property law without the advice of a lawyer. It is particularly necessary to remember that rights and interests in land are governed by the law of the place where the land is situated, and that the laws of the several states differ greatly in many important details in the law of real property. One should not assume that rules with which he is familiar in his own locality will govern estates in land in other jurisdictions. Conveyancing blanks adapted to local requirements may be had of stationers almost everywhere. Hence it would subserve no useful purpose to insert forms here, especially as the practice of different jurisdictions varies so greatly. But a few suggestions and cautions may be of use.

Forms and Conveyancing Blanks.—Care should be exercised in the selection of blank forms of conveyances. There is often a great difference in forms, and one ought never to fill out a form and assume that it will suffice without first reading it very carefully, unless it is one with which he is familiar. Many clauses which are highly desirable in such instruments as mortgages, for instance, will not be found in every blank. It is wise also to look a blank over before using it unless one is familiar with it, in order to avoid mistakes in filling it out. Never abbreviate. Neither the names of parties nor the description of the property should be abbreviated. Avoid also erasures, alterations, and interlineations. They are dangerous and may be fatal to some subsequent use of the instrument which may be desired. Draw it over rather than erase or alter.

Deeds.—Title to freehold estates in land (i. e., for life or in fee simple, that is, to one and his heirs and assigns forever) can only be transferred by a formal conveyance, which takes place to-day by execution and delivery of a deed. Except where private seals are abolished (see CONTRACTS, *supra*), the deed must be under seal. It takes effect when it is delivered, i. e., when the grantor (person who conveys) puts it out of his control with the intention that it operate. He may deliver it upon condition (technically *in escrow*), so that it is beyond his control, and yet will not be turned over to the grantee or will not operate till the condition is performed. A deed which releases or conveys the interest or estate of the grantor without any covenant or covenants as to title is generally called a quit-claim deed. One which contains covenants warranting the title is generally called a warranty deed. The covenants in a warranty deed not only subserve the purpose of assuring the grantor's title, but they also operate to transmit to the grantee or his successors in interest any title which the grantor acquires afterwards, unless he reacquires the title he warranted. Hence a warranty deed is much to be preferred.

In describing the parties, the first name of grantor and grantee ought to be given in full, as, if litigation ensues, it may be essential to know the full name. If in the chain of title the grantor is described by his initials, it is better to have him make the conveyance by his full name and add a recital to show that he is the person referred to by the initials, as "John Doe, described in a certain conveyance from ..... to ....., dated ....., and recorded in ....., as J. Doe. It often happens that errors creep into conveyances, and that the name under which the title is held is not the real name of the grantor. In such case it is best to describe him by his true name, and refer to the prior conveyance and the description therein as illustrated above. The residence of grantor and grantee respectively ought also to be inserted carefully. While this is in no way essential, it is often highly convenient subsequently when some claim arises with respect to title.

Great care should be taken to have the description of the property complete, certain, and accurate. Avoid such crude and ambiguous descriptions as "the east ten feet of lot one," or "ten feet off of lot two." If it is not possible to describe by reference to a plat or government subdivision, so that the tract must be bounded, always begin at a known point or at a point on a known line, or, if that is impossible, at a point located by course and distance from two known points. So far as possible, run along known lines, stating direction and distance, and, where this cannot be done, wherever possible run parallel to known lines, stating the line to which you run parallel, the direction and the distance. Be careful to see that your boundaries connect. Remember that, in case of discrepancy, monuments and known points prevail over distances, and also that, in general, where a highway or stream is described as a boundary, or a line is run along a stream or highway as a boundary, the middle of the stream or highway is understood. If the parties intend otherwise, care should be taken to make their intention manifest.

Where witnesses are required, be sure that they are disinterested. If different grantors sign at different times, the witnesses ought to indicate whose signature they attest.

With respect to acknowledgment, the following points are important: It should be taken by a magistrate authorized to take it; the magistrate should not be beneficially interested in the conveyance in any way; he should be careful to distinctly ask each grantor if the conveyance is his voluntary act and deed, otherwise, in many jurisdictions, a conveyance of a homestead may fail; if he has a seal he should affix it to his certificate, and he should sign the certificate officially; if the instrument conveys lands outside of the state, the acknowledgment should always be taken before some officer having a seal. Finally, one should see to it that the signatures conform to the names in the body of the deed.

If covenants or conditions restricting the use of the land are desired, a lawyer should be consulted, as the law on this subject is complex and technical.

Mortgages.—What has been said as to deeds applies also to mortgages, which are a form of deed.

Leases.—The foregoing suggestions apply also to leases. But a few further suggestions may be made. At common law the landlord is not bound to make repairs. Hence, if it is intended he shall repair, there must be a covenant to that effect in the lease. In a lease of land with buildings there should also, in most jurisdictions, be a provision as to rent in case of destruction by fire. There should also be provisions as to sub-letting and assignment. If restrictions upon the use of the property are inserted, in order to make them effective there should be a condition that the term shall cease in case they or any of them are not adhered to.

Abstracts of Title.—The purpose of an abstract is to enable a lawyer passing upon the title to do so conveniently and intelligently. *An abstract is of no particular value unless it is examined and the title approved by some competent person.* It must be borne in mind also that there are a number of very important points which an abstract cannot meet for the reason that the record does not and cannot disclose them. Among these are (1) a forged deed; (2) a false certificate of acknowledgment upon conveyance of a homestead; (3) insanity of a grantor; (4) false returns of service in judicial proceedings; (5) the possibility that there are persons in possession whose claims are not of record. These are not all of equal importance in all jurisdictions. But in one jurisdiction or another each one might be fatal.

Landlord and Tenant.—In order to be liable to pay rent, or for the use and occupation of land, one must be occupying as tenant. One who is in possession claiming adversely cannot be held for rent. The remedy against him is to sue for the profits he has received while wrongfully in possession. One may be a tenant, however, without a formal lease, if he is in possesion in subordination to and acknowledging the title of the landlord. The most important incidents of the relation of landlord and tenant are: (1) that the tenant is estopped to deny the landlord's title, that is, having entered as tenant, he cannot assert any claim of ownership or title adverse to the landlord or claim to hold under a different landlord, no matter how well founded the claim may be, without first giving up possession; and (2) that every letting carries with it by implication a covenant on the part of the lessor that the lessee shall quietly enjoy the premises let, that is, that neither the lessor nor any one claiming under or adversely to him shall evict the lessee. The eviction may take place by actual ouster or by depriving the lessee of the use of a substantial part of the demised premises. In case of such an eviction the lessee may sue the lessor for damages, or he may surrender his term. Except in case of eviction, the lessee cannot surrender without the assent of the lessor. Rent is also an incident of the relation. If none is provided for, and it is not intended that the lessee shall hold gratuitously, he will be liable for the reasonable value of use and occupation from the time he took possession. For the lease of itself gives no estate. It merely gives a right to enter on the land and get possession. When possession is taken under the lease, the lessee acquires an estate. Usually rent is provided for by covenants in the lease. In such case, the covenants provide when it is to be given and when it is payable.

Tenancies may be for years, that is, for a definite period of a year or longer, at will, that is, so long as the parties wish, or periodical, that is, for a certain period, as a month, a quarter, or a year, and then for successive like periods until terminated by notice. A tenancy for a definite, fixed period comes to an end by its own limitation when the period elapses. No notice is necessary. A tenancy at will terminates whenever either party so notifies the other, or does any act manifestly inconsistent with the tenancy, or dies. A periodical tenancy may be terminated by notice given by either party. If from week to week, or month to month, or quarter to quarter, notice must be given at or prior to the beginning of a new period to terminate the tenancy at the end of that period. Where it is from year to year, six months' notice suffices at common law, but this has been altered in some jurisdictions by statute. Tenancies may terminate also, under provisions of the lease, for failure to pay rent, for breach of covenant as to use of the land, and the like, if the landlord enforces the forfeiture. Statutes usually provide to-day that a tenant whose rent is in arrears may be treated as holding over his term.

A tenant who holds over his term is called a tenant at sufferance. If, however, he holds over with the consent of the landlord, he is held to be a tenant upon the same conditions as those in the prior lease. Where one is tenant, but no term is specified, he is considered a periodical tenant, according to the nature of the property and custom with respect thereto. In case of farms, which are usually rented by the year, he would be held a tenant from year to year. In case of houses, which are usually rented by the month, a tenancy from month to month would be presumed.

A tenant is liable for damages, and, if the lease so provides, to forfeiture of his term, if he commits waste, that is, if he destroys or permanently alters, without the consent of the landlord, any appurtenance to the land to the injury of the reversion. He may, however, before or at the end of his term, remove trade, ornamental, or domestic fixtures, which he has placed thereon during the tenancy, if he can do so without destroying them or injuring the land. If he accepts a new lease, after having put on such fixtures, he should be careful to expressly reserve the right to remove them.

Wills.—No one ought to attempt to draw any but a very simple will without legal advice. But the following suggestions and cautions may be of use:—

1. If there is any room for dispute as to the sanity of the testator (person who makes the will), care should be taken to fortify against litigation, not only in the scheme of disposition of the estate, but by seeing to it that adequate proof is at hand as to the condition of the testator at the time the will was made.

2. If the circumstances are such that undue influence may be claimed, great care should be taken to meet such claim. The witnesses should be persons whose integrity is not open to question, and who will carry weight with a jury; and the testator should make a clear and explicit statement to them, in a manner in which they will not be likely to forget, and under circumstances precluding all inference that the testator is under compulsion or coercion at the time.

3. Uncertainty in gifts and in descriptions must be carefully avoided. The will cannot be reformed. The testator will be dead when questions arise under it, and oral evidence of what he meant will not be admissible. Hence one should be absolutely sure of all descriptions, both of persons and of property.

4. Remember that property must be given to some one, either specifically or by a residuary gift (i. e., gift of all that remains after specific gifts). Mere exclusion of an heir without a gift to some one else will accomplish nothing.

5. Bear in mind that shares or gifts may lapse by death of the donees before the gifts take effect, and make proper provision therefor.

6. If a paper or document is referred to, and its provisions are to be part of the will, *it must be in existence* when the will is made, and *must be identified* clearly.

7. There ought always to be a gift of the residue of the estate.

8. If there is any reason to suspect a prior will has been made, insert a clause revoking all prior wills. It is safer to insert such a clause in all cases.

9. *Do not alter the instrument after execution.* If a change is desired, re-execute, or execute a codicil.

10. The witnesses ought to be thoroughly disinterested, clear-headed persons, who will be believed by a jury in case of contest. No one should be a witness who benefits under the will in any way.

11. As a contest by disappointed persons, who, if there was no will, would take as heirs or next of kin, is a possibility, if not a probability, see to it that beneficiaries under the will, who will be charged with undue influence, are not about when it is executed and witnessed.

Form of a Will.—The following short form may be used as a guide:—

I, John Doe, of the city of ....., county of ....., and state of ....., do make this my last will and testament, that is to say:—

1. I appoint Richard Roe of said city of ....., executor of this will.

2. I give and bequeath to John Stiles of ....., county of ....., the sum of one thousand ($1,000.00) dollars.

3. I give and devise to Thomas Jones of said city of ....., all of lot numbered one (1) in block numbered one (1) in said city of .....

4. All the rest and residue of my property, both real and personal, of which I shall die seized or possessed, I give, devise, and bequeath to my wife, Mary Doe.

5. I hereby revoke any and all former wills by me made.

In testimony whereof I have hereunto set my hand this ..... day of ..... 19...

John Doe.

Signed, published, and declared by the above named John Doe as and for his last will and testament, in the presence of us and each of us, who, in his presence, and at his request, and in the presence of each other, have hereunto set our hands as witnesses.

George Jackson,
of ....., County of .....
James Brown,
of ....., County of .....

INTEREST LAWS AND STATUTES OF LIMITATIONS.

States, Territories, and Provinces.	Interest Laws.		Statutes of Limitations.		
	Legal Rate. Per ct.	Rate Allowed by Contract. Per ct.	Judgment, Years.	Notes, Years.	Open Accounts Years.
Alabama	8	8	20	6	3
Alaska	8	12	10	6	6
Arizona	6	10	4	4	3
Arkansas	6	10	10	5	3
California	7	any	5	4	4
Colorado	8	any	20	6	6
Connecticut	6	6	*k*	6	6
Delaware	6	6	10 *h*	6	3
District of Col.	6	6 *g*	12	3	3
Florida	8	10	20	5	3
Georgia	7	8	7	20	6
Hawaii	8 *a*	12	20	6	6
Idaho	7	12	6	5	4
Illinois	5	7	20	10	5
Indiana	6	8	20	10	6
Iowa	6	8	*d*	10	5
Kansas	6	10	5	5	3
Kentucky	6	6	15	15	2
Louisiana	5	8	10	5	3
Maine	6	any	20	6	6
Maryland	6	6	12	3	3
Massachusetts	6	any	6 *c*	6	6
Michigan	5	7	6	6	6
Minnesota	6	10	10	6	6
Mississippi	6	8	7	6	3
Missouri	6	8	10	10	5
Montana	8	12	10	8	5
Nebraska	7	10	5	5	2
Nevada	7	12	6	6	4
New Hampshire	6	6	20	6	6
New Jersey	6	6	20	6	6
New Mexico	6	12	7	6	4
New York	6	6 **	20 *j*	6	6§
North Carolina	6	6	10	3*	3
North Dakota	6	10	10	6	6
Ohio	6	8	5	15	6
Oklahoma	6	10	5	5	3
Oregon	6	10	10	6	6
Pennsylvania	6	6	5 *f*	6‡	6
Puerto Rico	6	12 *e*	5	3	3
Rhode Island	6 †	any	20	6	6
South Carolina	7	8	10	6	6
South Dakota	7	12	20	6	6
Tennessee	6	6	10	6	3
Texas	6	10	10	4	2
Utah	8	12	8	6	4
Vermont	6	*m*	8	6 *n*	6
Virginia	6	6	20	5*	5
Washington	6	12	6	6	3
West Virginia	6	6	10	10	5
Wisconsin	6	10	20 *b*	6	6
Wyoming	8	12	21	10	8
Alberta	5	any	20	20	6
British Columbia	5	any	20	20	6
Manitoba	6	any	6 ‡	6	6
New Brunswick	5	any	20	6	6
Nova Scotia	5	any	20	6	6
Ontario	5	any	20	6	6
Prince Edward Is.					
Quebec	5	any	30	5	5
Saskatchewan					
Territories					
Newfoundland	6	any	6	6	6
Mexico	6	6	6	3	3

*Under seal, 10 years. †Unless a different rate is expressly stipulated. ‡Under seal, 20 years. **New York has legalized any rate of interest on call loans of $5,000 and upward, on collateral security. §Six years from last item. (*a*) Judgments, 6 per cent. (*b*) Justice Court judgments, 6 years. (*c*) Witnessed, 20 years. (*d*) Twenty years from time when new suit may be brought, which is 15 years after first judgment. (*e*) Pawnbrokers, 4 per cent. per month. (*f*) Ceases to be a lien after the period unless revived. (*g*) Licensed money lenders may receive 12 per cent. (*h*) Subject to renewal. (*j*) Not of record, 6 years. (*k*) No limit. (*m*) No statute. (*n*) Except witnessed promissory note, 14 years.

Penalties for usury differ in the various States. California, Colorado, Maine, Massachusetts (except on loans of less than $1,000), Montana, and Nevada have no provisions as to penalties. Loss of *principal and interest* is the penalty in Arkansas and New York. Loss of principal in Delaware and Oregon. Loss of interest in Alabama, Alaska, Arizona, District of Columbia, Florida, Idaho, Illinois, Iowa, Louisiana, Michigan, Minnesota, Mississippi, Nebraska, New Jersey, North Carolina (double amount if paid), North Dakota (double amount if paid), Oklahoma, Porto Rico, South Carolina, South Dakota, Texas, Virginia, Washington (double amount if paid), Wisconsin, Hawaii, and Wyoming. Loss of excess of interest in Connecticut, Georgia, Indiana, Kansas, Kentucky, Maryland, Missouri, New Hampshire (three times), New Mexico, Ohio, Pennsylvania, Tennessee, Vermont, and West Virginia. Loss of principal and interest in Rhode Island, also fine or imprisonment.

Interest.—In nearly all jurisdictions it is allowed by law to demand interest on all overdue accounts calculated at a fixed rate from the time the account became due. But the usual business procedure is not to demand the interest unless the creditor is forced to sue for his claim.

By "legal rate" is meant the rate which is usually allowed by law when no rate has been agreed upon by the parties, or in cases in which the law allows interest. "Conventional rate" is the highest rate which may be agreed upon by contract. In Ohio, for instance, the legal rate is 6, while the conventional rate is 8.

Limitations.—Laws of limitation affecting the time at which an action may be begun, measured from the time at which a cause for action occurred. Such laws were passed in the reigns of Edward I. and Henry VIII. The law known as the "Statute of Limitations" was passed in 1624 in the reign of James I. This act has been adopted by the states of the Union with very slight modification.

Generally speaking, actions in which the title to real estate is involved, or those based upon a contract under seal, must be brought within 20 years; upon contracts not under seal, within 6 years; and those based upon personal tort, within 2 years. Some states reduce the longer period to 10 years. Many states make short periods in special cases of administrators and executors in order to expedite the winding-up of estates.

In cases of debt a new promise to pay or a payment on account in many states revives the debt, and the period of limitation would be calculated from the last payment or from the date of the new promise to pay executed in writing. The defense of limitation must be pleaded in the courts of most of the states to be effective.

Judgment.—A temporary or final decision or adjudication of the rights of the parties in an action or a proceeding before a court of justice. This judgment expires or becomes dormant in the states as indicated in the table, and in some states may be revived from time to time. Other modifications are also noted there.

Usury.—Any excess of interest over and above that which is established by law. In some states, as shown above, penalties for usurious rates of interest are provided. When the fact is shown that interest beyond the legal rate has been taken, no plea can justify it. Where a contract has been made involving the payment of a higher rate of interest than the legal rate, no action for usury would lie unless the contracted rate exceeds that allowed by contract.

EIGHT-HOUR LAWS.

ALASKA.—Eight hours constitute a day's labor on all public works, and in all mines and workings, smelting and reduction works, and at coke ovens.

ARIZONA.—Eight hours constitute a day's labor on all public works and in all mines and workings, smelting and reduction works, blast furnaces, rolling mills, etc.

ARKANSAS.—Eight hours are a day's work on public highways and bridges and for railway telegraph operators.

CALIFORNIA.—Unless otherwise expressly stipulated, eight hours constitute a day's work. The time of service of all laborers, workmen, and mechanics employed upon any public works of, or work done for, the State, or for any political subdivision thereof, whether the work is to be done by contract or otherwise, and of employees in mines and smelters, is limited and restricted to eight hours in any one calendar day.

COLORADO.—A day's work for all workingmen employed by the State, or any county, township, school district, municipality, or incorporated town, and for all employees in underground or open cut mines or workings, and in smelting and refining works, is restricted to eight hours.

CONNECTICUT.—Eight hours of labor constitute a lawful day's work unless otherwise agreed. Railroad telegraph operators controlling the movement of trains may work but eight hours, except at stations kept open only in the daytime. Engineers, firemen, machinists and other mechanics employed in State institutions may work but eight hours, except in case of emergency.

DELAWARE.—Eight hours are a lawful day's work for all municipal employees of the city of Wilmington.

DISTRICT OF COLUMBIA.—A day's work for all laborers and mechanics employed by the District of Columbia, or by any contractor or sub-contractor upon any public works of the District, is limited to eight hours.

HAWAII.—For all mechanics, clerks, laborers, and other employees on public works and in public offices eight hours of actual service constitute a day's work.

IDAHO.—Eight hours' actual work constitutes a lawful day's labor for manual laborers employed by the day on all state, county, and municipal works. Labor in mines and smelters is limited to eight hours per day.

ILLINOIS.—Eight hours are a legal day's work in all mechanical employments, except on farms, and when otherwise agreed; the law does not apply to service by the year, month, or week. Eight hours constitute a day's labor on the public highways.

INDIANA.—Eight hours of labor constitute a legal day's work on the public roads, and for all classes of mechanics, workingmen, and laborers, excepting those engaged in agricultural and domestic labor. Overwork by agreement and for extra compensation is permitted.

IOWA.—Eight hours are a day's labor on public roads.

KANSAS.—Eight hours are a day's work for all laborers, mechanics, or other persons employed by or on behalf of the State or any county, city or township, or other municipality.

KENTUCKY.—Eight hours constitute a day's work on all public works of the State.

MARYLAND.—No mechanic or laborer employed by the mayor or city council of Baltimore, or by any agent or contractor under them, shall be required to work more than eight hours as a day's labor.

MASSACHUSETTS.—Eight hours shall constitute a day's work for all laborers, workmen, and mechanics employed by or on behalf of the Commonwealth or any county therein, or of any city or town in the Commonwealth upon acceptance of the statute by a majority of voters present and voting upon the same at any general election.

MINNESOTA.—Eight hours constitute a day's labor for all laborers, workmen, or mechanics employed by or on behalf of the State, whether the work is done by contract or otherwise.

MISSISSIPPI.—Eight hours are a day's labor on highways.

MISSOURI.—Eight hours constitute a legal day's work. The law does not prevent an agreement to work for a longer or a shorter time and does not apply to agricultural laborers. It is unlawful for employers to work their employees longer than eight hours per day in mines and smelters, or as train dispatchers, etc., on railroads, unless the office is open only during the daytime. Eight hours are a day's labor on highways, and on all public works in cities of the second class.

MONTANA.—Eight hours constitute a legal day's work for persons engaged to operate or handle hoisting engines at mines. The law applies only to such plants as are in operation sixteen or more hours per day, or at or in mines where the engine develops fifteen or more horse-power, or where fifteen or more men are employed underground in the twenty-four hours. A day's labor on public works and in smelters, underground mines and in railroad and other tunnels is limited to eight hours.

NEBRASKA.—Eight hours constitute a day's work on public roads and on all public works in cities of first class.

NEVADA.—For labor on public highways, in and about all mines, in smelters, plaster and cement mills, as train dispatchers, etc., on railroads, and on all works and undertakings carried on or aided by the State, county, or municipal governments, the hours of labor are fixed at eight per day.

NEW JERSEY.—Eight hours is the limit of a day's work by any person employed by, or on behalf of the State or any municipality thereof.

NEW MEXICO.—Eight hours constitute a day's labor in all employment by or on behalf of the State or municipality.

NEW YORK.—Eight hours constitute a day's work on highways, and on work done by or for the State, or a municipal corporation, whether directly by contractors or sub-contractors; also for all classes of employees, except in farm or domestic labor, though overwork for extra pay is permitted in private employments.

NORTH CAROLINA.—Train dispatchers, etc., on railroads may work only eight hours except by permission of the corporation commission.

NORTH DAKOTA.—Eight hours are a day's labor on the public roads.

OHIO.—Eight hours constitute a day's work on all public works; also in all engagements to labor in any mechanical, manufacturing, or mining business, unless otherwise expressly stipulated in the contract.

OKLAHOMA.—Eight hours constitute a day's labor on all public works, and in underground mines.

OREGON.—Eight hours constitute a day's labor on all public works, and in underground mines yielding metal.

PENNSYLVANIA.—Eight hours of labor shall be deemed and held to be a legal day's work in all cases of labor and service by the day where there is no agreement or contract to the contrary. This does not apply to farm or agricultural labor or to service by the year, month, or week. Eight hours constitute a day's labor for all mechanics, workmen, and laborers, in the employ of the State or of any municipal corporation therein, or otherwise engaged on public works. This act shall be deemed to apply to employees of contractors. Engineers hoisting workmen at anthracite coal mines may work but eight hours per day.

PHILIPPINE ISLANDS.—Eight hours constitute a day's work on highways.

PUERTO RICO.—No laborer may be compelled to work more than eight hours per day on public works.

SOUTH DAKOTA.—For labor on public highways a day's work is fixed at eight hours.

TENNESSEE.—Eight hours shall be a day's work on the highways.

TEXAS.—Eight hours constitute a day's work on the highways; and by train dispatchers, etc., except at stations where but one operator is employed.

UTAH.—Eight hours constitute a day's labor on all works carried on or aided by the State, county, or municipal governments, in all underground mines or workings, in smelters and all other establishments for the reduction of ores.

WASHINGTON.—Eight hours in any calendar day shall constitute a day's work on any work done for the State, or for any county or municipality, and in underground coal mines.

WEST VIRGINIA.—Eight hours shall constitute a day's work for all laborers, workmen, and mechanics who may be employed by or on behalf of the State, and for telegraph operators directing the movements of trains where three or more passenger or 10 or more freight trains pass in 24 hours.

WISCONSIN.—In all engagements to labor in any manufacturing or mechanical business, where there is no express contract to the contrary, a day's work shall consist of eight hours, but the law does not apply to contracts for labor by the week, month, or year. Eight hours constitute a day's labor on the public highways. Employees on public works and train dispatchers may be employed but eight hours per day.

WYOMING.—Eight hours' actual work constitute a legal day's labor in all undeground mines, in smelters, and on all State and municipal works.

UNITED STATES.—A day's work for all laborers, workmen, and mechanics employed by the United States, or by any contractor or sub-contractor upon any public works of the United States, including dredging and rock excavation in river and harbor work, is limited to eight hours.

CANADA.—Eight hours shall constitute a day's work for all laborers, workmen, and mechanics who may be employed by or in behalf of the Dominion of Canada.

REQUIREMENTS FOR ADMISSION TO THE BAR.

The Committee on Legal Education of the American Bar Association recommended the following provisions "as forming a consistent system that shall both protect the profession and guide the student":—

CITIZENSHIP, AGE, CHARACTER.—No one should be admitted to the bar unless he is of good moral character, is 21 years of age, and is a citizen of the state.

REGISTRATION.—Upon beginning professional study a student should register his name in the office of a clerk of a court of record or in a law school that is incorporated, or is a department of an incorporated university.

GENERAL EDUCATION.—Prior to registration a student should prove that he has received at least the equivalent of a high school education, such proof being made by filing certificates, or by passing examinations, as may be determined by the law examiners.

TERM OF STUDY.—A candidate should not be admitted to the bar until the end of three full calendar years of law study.

BOARD OF EXAMINERS.—In all parts of the state the requirements for admission to the bar should be uniform, and should be administered by a State Board of Law Examiners, appointed by the court of last resort, for three years, part of them being appointed each year; they should recommend an appropriate order of study and should designate the statutes, leading cases, and practical forms with which students must become familiar, and in all other practicable ways should aid candidates to study in a systematic and useful manner.

EXAMINATIONS, REGULATIONS, SCOPE, ETC.—No candidate should be admitted to the bar without examination, except as herein provided.

Law examinations should be held at such times and places as the court of last resort may see fit, due announcement being made as to times, places, and subjects; they should consist chiefly of written answers to printed questions; they should be devoted chiefly to solving and discussing legal problems similar to those arising in office practice and in litigation; and questions should not be so framed as to admit "yes" and "no" answers. A candidate should be permitted, if he desires, to divide the law examination into two parts; the first part to cover the more elementary subjects and to be taken not earlier than one year after registration, and the second part to cover the more advanced subjects and to be taken not earlier than three years after registration.

ADMISSION OF ATTORNEYS FROM OTHER JURISDICTIONS.—Upon petition, the law examiners should relieve from all requirements, save character, age, and citizenship, a candidate who is already a member of the bar of a state in which there are equivalent requirements for admission, or in which, after admission, he has been in active practice for five years.

These recommendations are practically in force in all the states with a few variations.

Proof of good moral character required by all.

Residence within the state and citizenship of the United States is required in Alabama, Alaska, Arizona, Arkansas, Colorado, Illinois, Maine, Michigan, Minnesota, Mississippi, Montana (either), Nebraska, New Mexico, New York, Ohio, Oklahoma, Oregon (either), Rhode Island, Washington, Wisconsin, and Wyoming; citizenship only required in California, Connecticut, Georgia, Hawaii, Kansas, Louisiana, Massachusetts, New Hampshire, Porto Rico, South Carolina, Tennessee, Utah, and Vermont; residence only is required in Delaware, Idaho, Iowa, Kentucky, Maryland, Nevada, North Dakota, Philippines, South Dakota, Texas (six months), Virginia (six months), and West Virginia; District of Columbia, Florida, New Jersey, North Carolina, and Pennsylvania no requirements; Indiana admits any voter.

ALABAMA.—Study of law 3 years; if other than legal qualifications are satisfactory, by written examination; fee, $25; degree of B.L. from Univ. of Alabama admits without examination; attorneys from other states admitted after 5 years' practice before Supreme Court of their own state; fee, $100.

ALASKA.—Examination by district court, 75% average with not less than 65% in any subject; final oral examination, same grade; fee, $25; attorneys from states if practicing in highest court.

ARIZONA.—Three-year law course or equivalent; written examination, 70% average; fee, $10, license, $10; non-resident, $35; outside attorneys, five years' practice; fee, $50.

ARKANSAS.—Written examination, 75%; fee, $5, tax, $10; by diploma from State University; outside attorneys with 3 years' practice before highest court; fee, $10.

CALIFORNIA.—Examination end of first year, 70%; exempted if first year completed in accredited school; must pass final "Bar Examination," 70%; fee, $30; outside attorneys who practiced 4 years of preceding 6; fee, $100; requirements strict.

COLORADO.—Four classes: (1) non-residents practicing 10 of 11 preceding years, (2) non-residents practicing 5 of 6 preceding years, requirements equal to Colorado, (3) non-residents not in (1) or (2), (4) residents not admitted in any state; (1) and (2) admitted by affidavit; fee, $35; (3) and (4) two years college, three-year course approved day school or equivalent; examination oral and written; fee, $10.

CONNECTICUT.—Graduate from approved college or preparatory school or having passed a literary examination, 60%; 3 years in law school or 4 in office; fee, $15; outside attorneys with 5 years' practice; fee, $35.

DELAWARE.—A diploma from a university or college in good standing; or an academic examination necessary; 3 years' law course in office of practicing attorney; written examination; 3 years' practice in another state required from other attorneys.

DISTRICT OF COLUMBIA.—Three years law school or equivalent; after Oct. 1, 1944, school must be approved by court; written examination; fee, $25; outsiders admitted without examination if their states reciprocate.

FLORIDA.—Three years minimum study under preceptor or approved law school; oral or written examination, 75%; fee, $25; graduates of approved Florida schools on diploma; outsiders producing certificate; fee, $50.

GEORGIA.—Examination by 2 practicing attorneys admits applicant to final written examination before judge of Superior Court; 70% average; fee, $15; graduates of the various law schools in the state are admitted without examination; license, $5; attorneys from other states without examination if their states reciprocate.

HAWAII.—Applicants file a written application, giving character and term of study; practice in the Supreme Court permitted members of the bar of the highest court in another state or territory, or those who have studied law two years; fee, $10; Hawaiian citizens may qualify as practitioners in the District Courts.

IDAHO.—High school, two years college; 3-year law course or equivalent, or diploma from Idaho Law School, or school approved by American Bar Association; written or oral examination, 70%; license, $34.50; outside attorneys if practicing 5 of 7 preceding years before highest court; fee, $50.

ILLINOIS.—Preliminary 4-year high school and 2 years college; law school course of 1296 hours or equivalent; written examination; outside attorneys practicing 5 of 7 preceding years, if standards equal in both states; fee, $100.

INDIANA.—Supreme Court has exclusive jurisdiction; 2 years college, 3 years law school or equivalent; written or oral examination, 40 questions; fee, $15; outside attorneys practicing before highest court admitted on certificate; fee, $40.

IOWA.—Power of admission vested in Supreme Court; preliminary education, 2 years college; 3 years law school or its equivalent; written examination, 75%; fee, $5; outside attorneys practicing 5 of 7 preceding years licensed upon proper certification; fee, $50.

KANSAS.—Preliminary, 4 years each high school and college; graduate of State Law School or equivalent; oral or written examination; fee, $35; others, practicing up to 6 months of time of application for 5 years, examined separately.

KENTUCKY.—Standard high school, one year college; legal education of 2 years in approved school; written examination; outside attorneys practicing 5 years admitted where requirements are equal; fee, $25.

LOUISIANA.—High school or equivalent; fee, $25; at least 3 years in law school or equivalent; 3 years' notice of intention required; outside attorneys, graduate of approved law school, by examination.

MAINE.—Education sufficient to admission in third year classes of approved college; fee, $20; 3 years in approved office or law school; written examination, 70% average; outside attorneys practicing 3 years admitted on certificate; fee, $70.

MARYLAND.—Petition court of appeals 3 years prior; fee, $5; 2 years college or equivalent; must pass character committee; 3 years legal study in any approved school, eligible to examination; fee, $25; Maryland residence necessary; outside attorneys admitted without examination if practicing 5 years.

MASSACHUSETTS.—File proof of study, equal one-half of work required for bachelor's degree in approved school; fee, $15; not less than 3 years law course or equivalent; written examination; others, intention to practice in state is necessary; 3 years before highest court, upon proof and recommendation, admits without examination.

MICHIGAN.—Two years in accredited college equivalent to admission to third year of accredited Michigan college; fee, $20; 3 year law course in approved school or 4 years with attorney; written examination, 75%;

non-resident who proves to satisfaction of board he intends to maintain office, practiced 3 preceding years, licensed upon proper recommendation; fee, $50.

MINNESOTA.—Preliminary education equal to 2 years of Univ. of Minnesota requirements; fee, $25; graduate of approved law school or 4 calendar years under practicing attorney; office students examined yearly; all must take examinations; non-residents submitting proof of practicing preceding 5 years before highest court admitted without examination; fee, $100.

MISSISSIPPI.—Applicant must have at least a high school education; fee, $10; admission on examination regardless of school attendance, 70%; graduate of State University on diploma; outsiders, where requirements are equal, practicing 3 preceding years; fee, $10.

MISSOURI.—Four years high school, 2 years college; fee, $25; 3 years or equivalent study of law; proof of 3 years' practice in other state admits.

MONTANA.—Two years at State University or equivalent; proof of 2 years' study of law by 2 lawyers of state; fee, $25; others, practicing before highest court, requirements equal to this state, upon proof of license and character.

NEBRASKA.—Proof of accredited high school, 2 years college; fee, $10; 3 years law school or equivalent; examination written or oral; others practicing 5 of 10 preceding years, if ratings are equal to this state; fee, $35.

NEVADA.—High school diploma, 2 years college or equivalent; legal 3 years' law course or equivalent; fee, $15; if successful, $35 additional; others, practice 3 out of preceding 5 years; proof of character; fee, $100.

NEW HAMPSHIRE.—Two years of college; fee, $10; 3 years' law school or equivalent, examination, 70%; practice in highest court of another state admits here.

NEW JERSEY.—Declare intention 3 years before examination and have same sanctioned by attorney of 5 years' standing; college degree or equivalent; clerkship of 3 years required with attorney of 5 years' practice; 24 months credit may be had by attending law school; written examination; non-residents take examination; if practicing 10 years, preliminary requirements voided. To be counselor, pass examination, reside and practice in state 3 years.

NEW MEXICO.—Graduate of approved law school; fee, $25: if practicing in another state; fee, $50: on motion; fee, $100; others practicing before highest court 7 years, on certificate; ill health exceptions.

NEW YORK.—Preliminary examination, 2 full college years or equivalent; fee, $25; final examination, approved law school, or proof of 4 years' study employed as clerk; oral or written test; non-residents admitted without examination if 5 years' practice before highest court.

NORTH CAROLINA.—Two years approved college or equivalent; 3 years approved law school; fee, $23.50; any person may protest admission of applicant in writing; other applicants file license from own state; fee, $73.50.

NORTH DAKOTA.—Proof of 2 years of college; 3 years in law school or office must equal course at State University; written and oral examination; fee, $20; non-residents on motion; fee, $3; license, $10 annually.

OHIO.—Application fee $15; file declaration of intention to study law; preliminary, 2 years in approved college; 3 years approved law school; written examination, 75%; others (1) admitted elsewhere but not practicing last 5 years, examined, fee, $18 and (2) practicing attorneys with equal rating, no examination, fee, $50.

OKLAHOMA.—Four-year high school, accredited to State University or holder of teacher's certificate; 3 years law school or office, or 4 years part time; written examination, 75%; fee, $10; outsiders on motion if practicing 5 continuous years, if not practicing, by examination; fee, $25.

OREGON.—Approved high school, 2 years college; examination taken prior to one year after commencing law study; 3 years approved law school with diploma; fee, $20; others practicing 3 of preceding 5 years upon proof of license given right for 2 years; if no complaint made in period it becomes permanent; fee, $75.

PENNSYLVANIA.—Application fee, $35; registered with attorney practicing 5 years preceding registration; college graduate registered without examination, others take preliminary examination; fee, $35; 3 years law course or equivalent part time school and clerkship; all must serve 6 months' clerkship prior admission; non-residents on standards equal to Pennsylvania may register and be examined and serve 6 months' clerkship in state; non-residents with one year or more practice examined without registration; fee, $85; attorneys of 8 years may be admitted on motion; fee, $125.

PHILIPPINE ISLANDS.—Applicants must have completed the course formerly required by the Spanish legation for the degree of Bachelor of Arts, or its equivalent, or the course found in the curriculum of the Government Normal School; three years' study of law; written examination; 75 per cent. average; fee, 30 pesos, Philippine currency; examination in the codes of the islands for all other attorneys.

PORTO RICO.—Applicants holding a diploma from any accredited law school in the United States are admitted to practice upon presenting such diploma to the Supreme Court and passing a general examination in local law; without a diploma, written examination necessary; 75 per cent. average; two years' active practice, including one year in the District Court of Porto Rico, admits without examination.

RHODE ISLAND.—Two years approved college, equivalent to 2 years at Brown Univ.; fee, $10; 3 years approved law school and 6 months clerkship, or 4 years combined; others practicing 10 years, on license.

SOUTH CAROLINA.—Application fee, $5; high school or equivalent prior to study of law; 2 years law or office; course prescribed by Supreme Court; examination, 75%; fee, $5; others, 5 years' practice without examination; fee, $10.

SOUTH DAKOTA.—Applicants 3 classes: (1) graduated within 6 years preceding application from approved law school; (2) within such period completed course or clerkship of 3 years (abolished after Sept. 1, 1942); (3) practiced 5 years outside state preceding application. (1) and (2) take examination, 75%; (3) may be required to take examination; graduates of State University admitted without examination until September 1, 1948; fee, $25.

TENNESSEE.—Application and intention to register; fee, $10; non-residents, $50; after July 1, 1941, high school, 2 years college; 2 years in law school or 5 in office; examination, 75%; others, with equal rating or proof of 5 years' practice.

TEXAS.—File declaration of intention unless graduate of law school; proof of character; 60 hours of college work or equivalent; 3 years law; written examination, 75% average—none less than 65%; fee, $31; applicants from other states examined; must have 7 years' experience; non-residents within 5 miles of border may take examination and practice; fee, $21.

UTAH.—Two years college prior to legal study; approved law school or 4 years study; oral and written examination; fee, $20; others practicing 3 out of 5 preceding years before highest court may be examined; fee, $125.

VERMONT.—Two years college; 3 years law school or office; law school graduate, 6 months office; examination oral and written; others, 6 months residence preceding application; 3 years' practice and proof of qualifications; if no practice, by examination.

VIRGINIA.—Certificate of court showing qualifications; 2 years law study or degree; written examination, 75%; fee, $15; others 6 months' residence preceding application; practicing 3 of 5 preceding years admitted without examination; fee, $10.

WASHINGTON.—Residence of 90 days waived in case of graduates of approved schools who apply within 8 months after graduation; fee, $25; must present diploma from approved school; non-graduates with 2 years college work may obtain clerkship for 4 years; fee, $25; others with 5 years' practice and proper qualifications presented within 3 years of actual practice may be examined; fee, $75.

WEST VIRGINIA.—Preliminary 2 years college study or equivalent; 3 years law or equal; fee, $20; others must establish residence; 5 years' practice admits to examination; fee, $25; less than 5 years' practice, must satisfy academic and legal qualifications; diploma from State University admits without examination.

WISCONSIN.—Application with qualifications; fee, $10; 2 years approved college or admitted to any approved law school. In residence 3 years of last 5 prior to application or part time equivalent; law school approved by American Bar Association; written or oral examinations, 75%; others admitted on certificate, if practicing 5 of preceding 8; graduates of State University or Marquette on diploma.

WYOMING.—Application with qualifications; fee, $15; 3 years law or equivalent; examinations written; others, 6 months' residence required; practice 5 of 8 preceding years admits to examination; fee, $15.

EXEMPTION LAWS.

ALABAMA. A homestead not exceeding 160 acres of land, or a lot in a city, town, or village, with a dwelling house thereon, not exceeding the value of $2,000; personal property to the value of $1,000; may be selected by the debtor; lot in cemetery used as a burial place for family; pew in church; wages to amount of $25 a month. Waiver of exemption is not valid unless joined in by the wife.

ALASKA. No homestead law. Specified articles of personal property, $750 to $1,000; wages for 30 days preceding judgment.

ARIZONA. Homestead of the head of a family not to exceed $2,500; personal property of every family, $500 besides wearing apparel, and half month's wages.

ARKANSAS. For single person, personal property besides wearing apparel, $200; for head of a family, personal property value of $500; for a head of a family outside of any town or city, 160 acres of land not to exceed $2,500 or not less than 80 acres without regard to value; in city or town, not exceeding one acre, $2,500, or not less than one fourth of an acre without regard to value; wages of laborers and mechanics for sixty days.

CALIFORNIA. The homestead on which debtor resides value of $5,000, if he is the head of a family; if not, $1,000. Personal property exempt includes chairs, tables, desks, and books, $200; necessary household and kitchen furniture, sewing machine, stoves, beds, etc.; provisions for family for three months, three cows, four hogs, two horses, oxen or mules; seed, grain, and vegetables for sowing, not above $200 in value; tools and implements of husbandry of the debtor, not exceeding $1,000; the necessary instruments of a surgeon, physician, surveyor, or dentist, with professional library and necessary office furniture; the professional library of attorneys, judges, ministers of the gospel, editors, school teachers, and music teachers, and their necessary office furniture; miner's cabin, not exceeding $500, with all tools and gear necessary for his business, not exceeding $500. Two horses or mules with harness, and the miner's claim worked by him, not exceeding $1,000 in value.

COLORADO. A homestead consisting of house and lot in town or city, or a farm of any number of acres, in value not exceeding $2,000, is exempt if occupied by a householder and head of a family, provided it has been entered on record as a homestead and so specified in the title. Personal property, including wearing apparel of the debtor and his family, pictures, schoolbooks, library, etc., and household furniture, not exceeding $100; provisions for six months, tools, implements or stock in trade, $200; one cow and calf, 10 sheep and necessary food for six months; working animals up to $200; the library and implements of a professional man up to $300; pew in church and burial sites and one half month's wages, but in no case less than $30. Pensions are also exempt. The head of a family may select personal property to the value of $1,000; others, $300.

CONNECTICUT. The homestead actually occupied by the owner not exceeding in value $1,000 is exempt. Personal property is exempt as follows: Libraries not above $500 in value; a cow worth $150; 10 sheep, not exceeding in all $150; poultry not exceeding $25 in value; two hogs and 200 pounds of pork; implements of trade, the horse, harness, buggy, and bicycle of a practising physician, and the boat, not exceeding $200 in value, of a person engaged in fishing, and used for that purpose; necessary apparel, bedding, and household furniture; pew in church and lot in burial ground; one sewing machine; wages due and not exceeding $25, and, under conditions, money due from insurance and mutual benefit societies, are also exempt.

DAKOTA (NORTH and SOUTH). A homestead consisting of not more than 160 acres, with buildings and appurtenances thereon, and personal property defined by statute, aggregating in value not to exceed $5,000 (N. D.), is exempted to a householder. A firm can claim but one exemption, not a several exemption for each partner. Tools and implements of a mechanic to the value of $200, books and instruments of a professional man to the value of $600, are also exempt.

DELAWARE. Family pictures, family Bible, and library; lot in burial ground and pew in church; family wearing apparel and tools and implements necessary to carry on business, the whole not exceeding $75 in value, are exempt from attachment. In addition to the above the head of a family may claim $200 of personal property. In Newcastle county wages of laborers are also exempt. No homestead law. In the county of Kent the amount of exemption is reduced from $75 to $50 and from $200 to $150 on household goods.

DISTRICT OF COLUMBIA. Family wearing apparel; household furniture to the amount of $300; provisions and fuel for three months; tools or instruments necessary to carry on any trade, to the value of $200; library and implements of a professional man or artist not above $300; family pictures and library to the value of $400; one horse, mule, or yoke of oxen; one cart, wagon, or dray, and harness for such team; one cow, one hog, six sheep, farming utensils, with food for team for three months, are exempt from attachment or sale on execution, except for servants' or laborers' wages. There is no homestead exemption.

FLORIDA. A homestead of 160 acres of land, together with improvements, in the country, or a residence and one half acre of ground in a village or city, is exempted to the head of a family; also personal property to the value of $1,000. No property is exempt from sale for taxes or for obligations contracted for its purchase or for the erection of improvements thereon. The wages of every laborer who is the head of a family are also exempt under any process of law.

GEORGIA. Each head of a family, or guardian, or trustee of a family of minor children, and every aged or infirm person, or person having the care and support of dependent females of any age, who is not the head of a family, is entitled to realty, or personalty, or both, to the value in the aggregate of $1,600. Said property shall be exempt from levy and sale by virtue of any process whatever, under the laws of this state, except for taxes, purchase money of the homestead, labor done thereon, or material furnished therefor, or for the removal of incumbrances.

IDAHO. A homestead worth $5,000 is exempted to a householder who is head of a family; either husband or wife may select the homestead. Personal property is also exempted to the value of $300. Exemption does not extend to purchase-money or to mortgages on the property. Any person other than the head of a family is entitled to an exemption of $1,000.

ILLINOIS. A homestead valued at $1,000 is exempted to every householder who has a family; such exemption not covering liabilities for purchase-money or improvement of the homestead. After the death of a householder his family are entitled to the exemption so long as the survivor occupies it, or until the youngest child is 21 years of age. There are also exempted to every person wearing apparel, schoolbooks, family pictures and family Bible, and $100 worth of other property selected by the debtor. In addition to this, $300 worth may be selected by the debtor if head of a family; but such selection cannot be made from any money or wages due; no exemption is allowed when the debt is for the wages of laborer or servant; $50 of wages is exempt to every head of a family if residing with the same.

INDIANA. There is no homestead exemption; any resident householder has exempted real or personal property, or both, to the amount of $600 on any debt founded on contract since May 31, 1879. On debts founded on contracts made previous to that date, exemption is $300. Exemption does not, in any event, affect liens for labor, purchase-money, or taxes.

IOWA. A homestead in country of 40 acres, or in town or city of one half acre, with improvements and buildings to the aggregate value of $500, is exempted to the head of every family. If less than $500 in value, it may be increased to that amount. It is not exempted from execution for the purchase-money thereof, or for debts contracted prior to its acquirement. Upon the death of either husband or wife the homestead passes to the survivor. Professional men are allowed their libraries, instruments, etc., and a team and wagon; printers retain their presses and type to the value of $1,200. The head of a family may claim wearing apparel, tools, a gun, his library, and furniture to the extent of $200 in value. The personal earnings of the debtor for 90 days preceding the execution, certain stock, with food for them for six months, a pew in church and a lot in a burying ground are also exempt. Non-residents and unmarried persons, not being heads of families, can only claim their ordinary wearing apparel and trunk necessary to carry the same to the value of $75.

KANSAS. An independent fortune is exempted in this state. A homestead of 160 acres of farming land, or of one acre within an incorporated town or city, with buildings and improvements thereon, with no limit to value. The head of every family is allowed personal property as follows: the family library, schoolbooks, and family Bible; family pictures and musical instruments in use; pew in church and lot in burial ground; all wearing apparel of the family, beds, bedsteads and bedding, one cooking stove and appendages, and all

other cooking utensils, and all other stoves and appendages necessary for the use of the debtor and his family; one sewing machine, spinning wheel, and all other implements of industry, and all other household furniture not herein enumerated, not exceeding $500 in value; two cows, ten hogs, one yoke of oxen and one horse or mule, or in lieu of one yoke of oxen and one horse or mule, a span of mules or horses; 20 sheep and their wool; food for the support of the stock for one year: one wagon, two plows, drag and other farming utensils not exceeding in value $300; grain, meat, vegetables, groceries, fuel, etc., for the family for one year; the tools and implements of any mechanic, miner, or other workman, kept for the purpose of carrying on his business, together with stock in trade not exceeding $400 in value; library, instruments, and office furniture of any professional man. Residents, not the head of a family, have tools, implements, and stock in trade up to $400. No personal property is exempt for the wages of any clerk, mechanic, laborer, or servant. A lien on the homestead may be created by husband and wife joining in the mortgage.

KENTUCKY. To bona fide housekeepers with a family are exempted from execution and attachment for debt: a homestead to the value of $1,000; two work beasts, or one work beast and one yoke of oxen; two cows and calves; one wagon or cart; two plows and gear; ten head of sheep; provisions for family and provender for stock not exceeding $70 value; the tools and stock of a mechanic who is a housekeeper and has a family, not exceeding $100 in value; libraries or instruments of professional men, which may not exceed in value $500; the wages of a laboring man to the amount of $50, except for house rent and necessaries.

LOUISIANA. A homestead of 160 acres of land, with buildings and improvements thereon, is exempted to the head of a family, if owned and occupied as a residence, together with personal property, the whole not to exceed $2,000; all wearing apparel, implements, stock, etc., with provisions and supplies necessary for the plantation for one year. If the wife own separate property in her own right to the value of $2,000 there is no exemption.

MAINE. Homestead, $500; $100 wearing apparel, bedding, and furniture; $150 library; $300 team; $50 poultry; $100 sewing machine; $10 lumber; cow and heifer, 10 sheep and lambs, plow, wagon, mowing machine, a two-ton boat, the flax, raw and manufactured, from one acre of ground; provisions, fuel, seed, grain, provender for stock, and tools. After the debtor's death his family has the benefit of the exemptions.

MARYLAND. Besides wearing apparel, books, and tools used for earning a living, there is exempt other property to the value of $100. No homestead.

MASSACHUSETTS. Homestead, $800 (must be recorded as such); furniture, $300; sewing machine, $100; library, $50; tools and implements, $100; stock in trade, $100; boats and outfit, $100; one cow, one hog, and six sheep, and wages under $20.

MICHIGAN. Forty acres of land, with improvements, in the country, or house and lot worth $1,500 in town; furniture, $250; library, $150; two cows, five hogs, 10 sheep, team, tools, provisions, and fuel. No exemptions from execution for purchase-money.

MINNESOTA. Eighty acres, with improvements, in country, or lot with dwelling on it, in town; household property, $500; wagon, plows, and farming implements, $300; three cows, 10 hogs, 20 sheep, yoke of cattle, and a horse, or, instead, a pair of horses; one year's provisions, fuel, feed for stock, and seed grain; a miner's or mechanic's tools and stock in trade to $400; the library and instruments of a professional man; $25 in wages of a laboring man, earned within the last 30 days, and, where the debtor is publisher of a newspaper, his complete outfit to value $2,000, and stock $400.

MISSISSIPPI. To householding head of family, 160 acres of land and improvements in country, or house and lot in town, either to value of $3,000; tools and farming implements necessary for two male laborers; library and instruments of professional man to value of $250; two horses or mules or a yoke of oxen; two cows and calves, 10 hogs, 20 sheep; wagon, $100; personal property, $250; one sewing machine; provisions and provender; wages of a laborer, $50 a month.

MISSOURI. To head of family, 160 acres in the country to the value of $1,500, a lot (30 rods) in small town of same value, or lot (18 rods) in city having 40,000 inhabitants, to value of $3,000; 10 choice hogs, 10 choice sheep and their wool, two cows and calves; all necessary farm implements for one man; two work animals and $25 worth of feed; wearing apparel of family; four beds, bedding, tools, and implements of any mechanic; necessary books for professional men and teachers.

MONTANA. House and a quarter acre lot in town, or a farm of 160 acres, neither to exceed $2,500 in value; personal property to the value of $1,400. No exemptions are good against a mortgage, a mechanics' lien, or a claim for purchase-money.

NEBRASKA. Dwelling and 160 acres of land in country, or two adjoining lots in town, value $2,000. If he has no real property, the debtor may retain personal property to value $500. Clothing, furniture, provisions, animals, tools, and other things as per statute, and 90 per cent. wages of laborer. Exemptions are not good against mechanics' lien, mortgage, or purchase-money.

NEVADA. Homestead, $5,000; tools, implements, and other personal property, as per statute; miner's cabin, $500.

NEW HAMPSHIRE. Homestead, $500; $100 furniture; $100 tools; $200 books; $50 fuel and provisions; sewing machine, cook stove, bedding and clothing, one hog, six sheep, one yoke of oxen or one horse, and four tons of hay.

NEW JERSEY. Homestead, $1,000, and $200 household property.

NEW MEXICO. Homestead, $1,000; $10 furniture; $20 tools; $25 provisions.

NEW YORK. Homestead, $1,000; $250 furniture, tools, team, and other personal property; wages, $20.

NORTH CAROLINA. A homestead to the value of $1,000, and personal property worth $500. No exemption is good against taxes, purchase-money, or mechanics' liens.

OHIO. Homestead is exempt to the value of $1,000; if appraised to a higher value, a partition is made, or an appropriate rental is charged. Clothing and necessary furniture are exempted; tools and farming implements to value $100; $50 worth of provisions and three months' wages; one horse or yoke of cattle, harness, and wagon; one cow, two hogs, six sheep, and 60 days' provender, or, instead, $65 in household property; a professional man's books, $100. When resident debtor, being head of a family, has no homestead, he may retain personal property to the value of $500, besides other exempted property.

OKLAHOMA. Exemption to head of a family outside of city or town not to exceed 160 acres; and in a city or town not more than one acre; in addition thereto, certain personal effects and equipment appertaining to the various vocations. These exemptions do not apply to corporations for profit, to a non-resident, or a debtor who is in the act of removing his family from the territory, or who has absconded, taking with him his family. To a single person: wearing apparel, tools, apparatus, and books belonging to a trade or profession; one horse, saddle, and bridle, or one yoke of oxen; current wages for personal service. In certain classes of debts all exemptions are invalid.

OREGON. Homestead 160 acres not in town, $1,500; if in town or city, not to exceed one block, but in no case to be reduced to less than 20 acres nor one lot. Musical instruments, books, and pictures, $75; household effects, $300; clothing, $100, and clothing to each member of the family, $50; team, tools, instruments, library, or whatever is needed in the trade or profession of debtor, $400; 10 sheep, two cows, five hogs, three months' provisions and six months' provender. No exemption is good against a claim for purchase-money.

PENNSYLVANIA. Clothing, books, sewing machine, and $300 worth of other property. Right may be waived. No homestead.

RHODE ISLAND. Furniture and supplies for family, $300; tools, $200; library, $300; wages, $10; clothing; one cow and one hog; debts secured by negotiable paper. No homestead.

SOUTH CAROLINA. Homestead, $1,000; this right cannot be waived. Furniture, wagons, live stock, and tools, to value of $500. Homestead exemption cannot hold against an execution for the purchase-money, a lien for improvements or for taxes. Any person not the head of a family may have clothing, tools, etc., to $300.

TENNESSEE. Only the head of a family can have the benefit of exemptions; $1,000 homestead and a variety of personal property designated by statute, prominent items, being horses, mules, oxen, cows, calves, wagon, tools, lumber, grain, provisions, beds, bedding, furniture, and $30 wages.

TEXAS. Two hundred acres of land with improvements, in the country, or city property to value at time of being designated as homestead (regardless of the value of after improvements) of $5,000; furniture, farming implements, tools, books, five cows and calves, two yoke of cattle, two horses and wagon, a carriage or buggy, 20 hogs, 20 sheep, provision, provender, and many other articles. The exemption of the homestead is not good against taxes, purchase-money, or mechanics' lien; but in this last case the contract must have been signed by both husband and wife. On the death of a husband, the widow and children may have one year's support out of the estate, and if the property be not in such shape as to be exempted by law, enough may be sold to raise an allowance for homestead to value of $5,000 and other property $500. Any person not the head of a family may have exempted clothing, books, horse, bridle, and saddle.

UTAH. Homestead, $1,500; $250 worth of chairs, tables, desks, also musical instruments actually used by the family; necessary house and kitchen furniture, $300; sewing machine, pictures, wearing apparel, farming implements, $300; seed for planting, $200; crops growing or harvested, $200; miner's cabin, $500; also working appliances for same amount.

VERMONT. Homestead, $500; growing crop, clothing, furniture, sewing machine, tools, one cow, 10 sheep, one hog, three hives of bees, poultry, one yoke of oxen or two horses, fuel, provisions, and provender; also the instruments and library of a professional man, $200.

VIRGINIA. The head of a family who is a householder has a homestead exemption to the value of $2,000, which may be in real or personal property, both or either; also clothing, sewing machine, furniture, and animals; books, $100; tools, $100. The value of the exemptions outside of the homestead is varied according to the number in family, and ranges from $50 to $500.

WEST VIRGINIA. Homestead, $1,000, where the property has been granted or devised for the purpose, to the head of a family, or where he has devoted such property to that purpose by having it so recorded; also personal property to value of $200; tools to mechanic, $50.

WASHINGTON. Homestead (must be actually occupied) to the value of $2,000; clothing, books, bedding, and household goods to value of $500; one small boat to value of $50; two cows, five hogs, bees, poultry, fuel, and provisions. To a farmer, two horses, or two yoke of oxen, and farming implements to value of $500. To professional man, library worth $1,000, office furniture, and fuel. To lighterman, his boats, to value of $250. To drayman, his team.

WISCONSIN. Forty acres in the country, or one quarter of an acre in town, with the dwelling thereon; clothing, household furniture, $200; books, two cows, 10 hogs, 10 sheep, one horse, and yoke of cattle, or a pair of horses and mules, farming tools, one year's provisions and provender. To a mechanic, tools $200; professional man, his library, $200; a publisher or printer, his outfit for $1,500. To any head of a family, three months' earnings, not to exceed $60 a month. No exemption good against a mechanics' lien or claim for purchase-money.

WYOMING. House and lot in town or 160 acres of land in the country, either to value of $1,500; tools, team, and stock in trade of mechanic, miner, or other person, $800. Benefit of exemption can only be claimed by a bona fide resident householder.

ONTARIO. The exemptions from execution are, speaking generally: the beds and bedding in ordinary use by the debtor and his family; necessary wearing apparel and a list of domestic utensils necessarily incident to living, not to exceed in value the sum of $150; necessary provender for 30 days not to exceed in value the sum of $40; a cow, six sheep, four hogs, and 12 hens, in all not to exceed the value of $75; tools and implements ordinarily used in the debtor's occupation to the value of $100, or the debtor may elect to receive the proceeds of the sale of such tools up to $100. Under the Free Grants and Homestead Act, there is an exemption from liability for any debt incurred before the issue of the patent and for 20 years from date of location, except where the land itself is mortgaged or pledged or for the payment of taxes.

QUEBEC. The exemptions from execution are: beds, bedding, and bedsteads in ordinary use by debtor and his family; necessary wearing apparel; one stove and pipes, and a number of smaller articles; all necessary fuel, meat, vegetables, fish, flour not more than sufficient for ordinary consumption of debtor and family for three months; four cows, six sheep, four hogs, and food therefor for the winter; tools and implements or chattels ordinarily used in debtor's occupation. No real estate.

NEW BRUNSWICK. Wearing apparel; beds, kitchen utensils; tools of trade to the value of $100 are exempted.

NOVA SCOTIA. Necessary wearing apparel; beds, bedding, and bedsteads of debtor and his family; household utensils not exceeding in value $20; food enough for 30 days' consumption and not exceeding in value $40; one cow, two sheep, and hay and food therefor for 30 days; tools or chattels ordinarily used in the debtor's occupation to the value of $30. No real estate.

PRINCE EDWARD ISLAND. Necessary wearing apparel and bedding for the debtor and his family; tools and instruments of his trade or calling; £5 in money and his last cow are exempted from execution out of Supreme Court; wearing apparel and bedding of debtor and his family; the tools and implements of his trade; one cook stove and one cow, in all amounting in value to $50, are exempt from process out of County Court.

MANITOBA. Household goods to the value of $500; tools, agricultural implements, and necessaries used by the debtor in his trade, occupation, or profession, to the value of $500; homestead to the extent of 160 acres being the residence of the debtor, the buildings and improvements thereon; or the town residence of the debtor to the value of $1,500, provided that no real or personal property shall be exempt from seizure or sale under execution for the purchase price of the same. A debtor cannot waive his exemption from seizure and sale under execution.

NORTHWEST TERRITORIES. Necessary clothing of the defendant and his family; furniture and household furnishings belonging to defendant and his family to the value of $500; also certain personalty exclusive of the foregoing and homestead not exceeding 160 acres; house and buildings occupied by the defendant, also the lot or lots on which same is situate according to the registered plan, to the extent of $1,500; defendant is entitled to his choice from a greater number of articles from the same class.

BRITISH COLUMBIA. Personal property of debtor to the value of $500 is exempt from execution. No goods or personalty, however, is exempt from seizure in respect to debts contracted in regard to the identical goods. The stock in trade of a merchant is not exempt from seizure although under $500, and it can be sold to satisfy a judgment. Registered homesteads are exempt from execution to the value of $2,500.

PROPERTY RIGHTS OF MARRIED WOMEN.

ALABAMA. Married women may hold all property, real and personal, acquired before and after marriage, as a separate estate not liable for the husband's debts, and it may be devised or bequeathed as by a single woman. This separate estate is liable for debts contracted by the woman before marriage, and for contracts after marriage for articles of comfort and support of family. The wife is entitled to dower of one half of husband's real estate, if he leave no lineal descendants and his estate is not insolvent; if insolvent, then to one third; one third if there are any descendants, provided she has no separate estate; if her separate estate is less than the dower interest would be, she is entitled to as much as would make it equal. Women attain their legal majority at 21, but may marry without consent of their parents at 18.

ARIZONA. Married women may carry on business and sue and be sued in their own names. All property acquired before marriage, and all afterwards acquired, by gift, grant, devise, or inheritance, is separate estate, liable for her own but not for her husband's debts. She may control it and dispose of it in all respects like a single woman. The wife must join in all deeds and mortgages of real estate except unpatented mining claims.

ARKANSAS. Married women have absolute and unqualified right in property of every kind and are not liable for debts or contracts of the husband. But a schedule under oath, and verified by some other reputable person, must be made by the husband and wife, and filed in the recorder's office of the county where the property is, and of the county where they reside. The wife may control her property, may carry on business on her sole and separate account, may sue and be sued, may make a will and may insure her husband's life for her benefit. The widow is entitled to one third part of the estate, unless legally relinquished by her.

CALIFORNIA. All property acquired in any manner before marriage, or afterwards by gift, grant, inheritance, or devise, is wife's separate property, controlled by her and not liable for debts of the husband. The husband's property similarly acquired is not liable for debts of the wife. All property acquired after marriage by husband or wife, except as above, shall be common property, but under the husband's control. Dower and curtesy are abolished, but the survivor takes half the common property after payment of debts and expenses of administration. A married woman may dispose of her separate estate by will without the consent of her husband and insure her husband's life for her benefit.

COLORADO. Married women are treated in all respects, as to their property rights, as if they were single. A wife may carry on trade or business, sue or be sued, contract debts, transfer real estate, and in all ways bind her separate property, without the husband's joining. She may make a will, but cannot bequeath more than half her property away from her husband without his consent in writing. The husband cannot by will deprive his wife of over one half of his property. Dower is abolished. The husband is liable for debts of the wife contracted before marriage to the extent of the property he may receive through her, but no further.

CONNECTICUT. Previous to the year 1877, the husband acquired a right to the use of all the real estate of the wife during her life and if he had a child by her and survived her, then during his own life as tenant by curtesy. By the Act of May 20, 1877, the rights of married women are materially enlarged. Any woman married after that date retains her real estate as if unmarried. She may make contracts, convey real estate, and sue or be sued in regard to any property owned by her at the time of marriage, or afterwards acquired. The estate is liable for her debts, and, jointly with her husband, for debts contracted for joint benefit of both or household expenses. The separate earnings of a wife are her sole property. A surviving husband or wife is entitled to use for life of one third in value of real and personal property legally or equitably owned by the other at the time of death.

DAKOTA (NORTH and SOUTH). Married women may transact business in all respects the same as if unmarried. Neither husband nor wife has any interest in the separate estate of the other. The earnings and accumulations of the wife are her separate property and not liable for the husband's debts nor even for household debts contracted by her as her husband's agent. Her separate property is, however, liable for her own debts, contracted before or after marriage, if such debts are contracted on her own responsibility.

DELAWARE. Married women, married since 1873, retain all real and personal property held at marriage, or since acquired from any person other than the husband, as their separate estate, and not subject to the disposal of the husband or liable for his debts. They may receive wages for personal labor, sue or be sued in respect to their own property as if unmarried; and the rents, issues, and profits of their separate estate are not controlled by the husband. The widow is entitled to one third dower of all the lands and tenements whereof the husband was seized at any time during her marriage, unless she shall have relinquished such right for and during the term of her natural life. She may be an administratrix, and the husband's life may be insured for her benefit if premium does not exceed $150.

DISTRICT OF COLUMBIA. Married women may bequeath, devise, or convey property or interest therein in the same manner as if unmarried. Real or personal property belonging to the wife at marriage or afterwards acquired is separate estate. She may sue and be sued in all matters pertaining to her property, and the husband is not liable for any contracts made by her in respect to her personal estate.

FLORIDA. Married women retain all real or personal property owned at marriage or acquired thereafter, and are not liable for the husband's debts, without his consent in writing and legally executed. In order that it shall be free from his debts, the property must be inventoried and recorded within six months after marriage or subsequent acquirement of the property. The wife may sell and convey all real estate inherited by her the same as if she were unmarried; but her husband must join in all sales, transfers, and conveyances of her property, both real and personal. She is entitled to dower in a life estate in one third of all the real estate of which her husband was seized and possessed at his death or at any time during his life, unless she has relinquished the same; also an absolute one third of his personalty.

GEORGIA. Married women retain as a separate estate all property in their possession at the time of marriage, or afterwards acquired, and are not liable for any debts, defaults, or contracts of the husband. By consent of her husband advertised for four weeks she may become a free trader, in which event she is liable the same as if unmarried. The wife may not bind her estate by any contract of suretyship, either in behalf of her husband or any other person. The widow takes dower in one third of all the lands of which her husband was seized at his death; and wife and children, after the husband's death, are entitled to one year's support from his property, all other claims yielding to this.

IDAHO. All property, both real and personal, owned at marriage or afterwards acquired, by either wife or husband, remains a separate estate. All property acquired after marriage is held in common. Separate property of the wife should be inventoried with the county recorder; the husband has control of it during marriage, but cannot create a lien or encumbrance unless joined by the wife, who is examined separately. If the husband mismanages, or commits waste, the district court may, on application of the wife, appoint a trustee to manage her separate property. Upon the death of husband or wife, half the common property goes to survivor; if no direct descendants, all goes to survivor.

ILLINOIS. Married women may own in their own right realty and personalty, may sue and be sued, contract and incur liabilities, the same as if unmarried; but they may not enter into or carry on any partnership business without consent of the husband, unless abandoned by him or he is incapable of giving assent. Beyond the necessaries, the husband is not liable for debts of the wife, except in cases where he would be jointly liable if the marriage did not exist. The estate of both is liable for family expenses, but the wife's separate earnings are her own. A surviving wife or husband takes one third of all the realty of the deceased, unless relinquished in due form. The husband and wife are put upon the same footing as to dower, and the estate of curtesy is abolished.

INDIANA. Married women retain all realty and personalty owned by them at marriage, or afterwards acquired, and are not liable for the husband's debts. The husband is liable for debts of the wife contracted before marriage only to the extent of the personal property he may receive from or through her, or derive from sale or rent of her lands. She may sell personal property but she may not convey or encumber her real estate unless the husband joins. Suits against her separate estate should be brought in the name of both. A widow takes one third of her deceased husband's real estate in fee simple, free from all demands of creditors, where the estate does not exceed $10,000; where the estate is over $10,000 and under $20,000 she takes one fourth; and one fifth if it exceeds $20,000. She also takes one third of the personalty after payment of debts, and in all cases takes $500, without accounting, and may occupy the dwelling and forty acres of land for one year, rent free.

IOWA. Married women may own in their own right real and personal property acquired by descent, gift, or purchase, may sell, convey, and devise the same, may sue and be sued, make contracts and buy goods in their own name. Wife or husband is not liable for the debts of the other before marriage, or for separate debts incurred afterwards. The wife's earnings are her own, and her note is good against her own estate. Women attain majority at 18, or earlier, upon marriage; a female of 14 may marry. The surviving wife or husband is entitled to one third of the real estate of the deceased, free from all claims of creditors. If they leave no children, survivor takes one half, parents the other half.

KANSAS. Married women have the same property rights as men, and may make contracts, carry on business, sue and be sued, and sell or convey real estate precisely as their husbands; their earnings or profits are their own. A note or indorsement made by a married woman will bind her property the same as if unmarried. Homestead is absolute property of widow and children, and neither wife nor husband may bequeath more than half their property without written consent of the other. If either dies intestate and without children, the entire property goes to the survivor.

KENTUCKY. Married women may hold real or personal property as a separate estate free from the control of the husband or liability for his debts. By petition to the circuit court, in which the husband must join, she may acquire the right to transact business in her own name. Unless dower be barred, forfeited, or relinquished, she takes one third of the real estate and one half of the personal property.

LOUISIANA. Married women may hold and control both real and personal property owned at time of marriage; all property or revenues of separate property acquired by either husband or wife after marriage is held in common, and is divided equally between them at dissolution of the marriage either by death or divorce. The wife may carry on a separate business, but her husband will be bound by her contracts, so long as the community of property exists; she cannot sue without the concurrence of her husband, nor bind herself or her property for his debts. There is no right of dower to the wife.

MAINE. A married woman holds real and personal property, acquired in any way except from the husband, the same as if single. She may make contracts, sue and be sued, and do business in her own name; and her property may be taken to satisfy judgments against her. Her property is liable only for her own debts. She joins husband in a deed selling his property to relinquish dower. He joins with her in selling hers only when such property comes from him. A wife, being abandoned by her husband, may be allowed to take and use his personal property. Dower, life estate in one third of all husband's real property owned during coverture; one half if no children. He has same interest in deceased wife's estate.

MARYLAND. Property acquired by a married woman is her own, controlled by herself, and is free from her husband's debts. She conveys by joint deed with the husband, but devises and bequeaths the same as if single. She may be sued with her husband on joint contracts made by them, and the property of both is equally liable. Dower one third, if they have children; one half, if none.

MASSACHUSETTS. The property of a married woman is managed by herself, and is not liable for her husband's debts. She may make contracts, sue and be sued, and do business in her own name, provided a certificate is filed by her or her husband in the office of the town clerk. Contracts and conveyances between husband and wife are not allowed. Her conveyances of real estate are subject to husband's tenancy by curtesy. A wife cannot make a will affecting her husband's right to one half of the personal property, or his tenancy by curtesy in her real estate, without his written consent. Dower as by common law.

MICHIGAN. Married women own and control property the same as if single. A wife may do business in her own name and make contracts, even with her husband. Her separate property is liable for wrongs committed by her. Widow has dower, but there is for the surviving husband no right of tenancy by curtesy.

MINNESOTA. A married woman holds property in her own name. She may make contracts, and her property is liable only for her own debts. She cannot sell or convey real estate further than a mortgage for purchase money or a three years' lease, without her husband joining her. Contracts between husband and wife are void. The surviving husband or wife keeps the homestead for life.

MISSISSIPPI. A married woman holds property acquired in any manner, and the revenues therefrom, for her own use and free from control or liability of her husband. She may convey and encumber the same as if single, but husband joins in conveyance. She may devise and bequeath. Deed from husband to wife is void as to creditors at time of making it. A wife may not encumber her estate by mortgage or otherwise for her husband's debts; she may do business on her own account the same as if single, and is then liable for her contracts, housekeeping, and family expenses. She joins her husband in conveyance of homestead, but not in that of his other property. Dower in property of which the husband dies seized.

MISSOURI. A married woman controls her own property, and holds it through a trustee, free from liability for her husband's debts. She may make contracts, sign notes, and do business in her own name. She may make a will. She joins her husband in his conveyances to release dower. Her dower is one third for life of all lands owned by husband.

MONTANA. A list of married woman's property filed and recorded saves it from being liable for the husband's debts, except necessaries for herself and children under 18. A married woman may become a sole trader by recording her intention. If she invests more than $10,000 in business she must make oath that the surplus did not come from her husband. The husband is not liable for debts contracted by her in business. She is also responsible for the maintenance of her children. A surviving husband or wife takes one half of deceased's property, if no children; one third if there are.

NEBRASKA. A married woman holds her separate property free from the disposal of her husband and from liability for his debts. She may bargain, sell, make contracts, do business, sue and be sued, all so far as her separate estate may warrant; but she cannot become surety for another, not even being allowed to bind herself for her husband's debts. Property coming to the wife from the husband is not privileged as her separate property.

NEVADA. The separate property of a married woman which is controlled by herself is such as she may have owned before marriage or acquired afterwards by gift, devise, or descent. All property acquired otherwise, by either husband or wife, is common property, and under the absolute control of the husband. On the death of the husband the widow receives one half of the common property.

NEW HAMPSHIRE. A married woman holds property owned before marriage or acquired afterwards, except what may come from the husband, for her own use. She may sell, convey and encumber, devise and bequeath, do business, give notes, sue and be sued. Her contracts are binding, excepting that there can be no contracts or conveyances between husband and wife, nor can the wife become security for her husband. Wife is entitled to dower.

NEW JERSEY. The property owned before marriage, and such as she may acquire afterwards by gift, descent, or bequest, is the sole property of a married woman and is not liable for the husband's debts. She may make contracts, but cannot sell or encumber her real estate without consent of husband. She cannot indorse notes or become security. She joins husband in his conveyances and mortgages. Dower and curtesy.

NEW MEXICO. The separate property of a married woman is what she owned previous to marriage, or what she may inherit. All that she acquires afterwards, and the revenues of her separate estate, go into the common property. The husband has control and management of her separate estate and the common property. There is no dower, but on decease of the husband the wife's private property is first deducted; then she receives one half of the common property, after all debts are paid. If there be no children she has a right to all the common property.

NEW YORK. Married women may have real and personal property, buy and sell, and do business in their own names. A married woman is liable for debts contracted in her own trade or business, or when an agreement or contract has been made for the benefit of her separate property, when, by the terms of such instrument, her separate property is to be charged with the liability. Dower.

NORTH CAROLINA. A married woman's separate property is not liable for her husband's debts. She may devise and bequeath, but must have husband's consent to convey. Unless she be a free trader, she can make no contract other than for personal or family necessities or for payment of antenuptial debts, without the consent of her husband. She becomes a free trader, the husband assenting, by filing her intention. Common law dower and one year's subsistence.

OHIO. The property of a married woman is not liable for her husband's debts; beyond a three years' lease or a contract for the improvement of her real estate, she cannot sell or encumber it without the consent of her husband. If a married woman engages in trade, her separate property is liable for the debts she may then contract, and she may sue and be sued the same as if single. A deserted wife must procure an order from court, by which she shall have all property rights as a *feme sole*. Dower in all real estate owned by husband during coverture.

OKLAHOMA. Neither husband nor wife has any interest in the property of the other. Either may enter into any engagement or transaction with the other, or with any other person, respecting property which either might, if unmarried, subject, between them, to rules which control the actions of persons occupying confidential relations. The wife may,

without consent of husband, convey her separate property. Woman retains the same legal existence and personality after marriage as before, and receives the same protection of her rights as does her husband. She may hold and transfer real and personal property; may buy and sell goods, give notes or other obligations, and sue and be sued, same as if unmarried.

OREGON. A married woman holds her property free from the control or debts of her husband. She may make contracts, buy and sell, and give notes, and her own property will be liable. The husband joins in her conveyances. She may make a will, but it must not interfere with her husband's rights of curtesy.

PENNSYLANIA. The property of a married woman is held as her separate estate, but is chargeable for family necessaries ordered by her. A wife cannot make a contract or conveyance without her husband joining her. By obtaining leave from the court she may have the benefit of her own earnings. She may make a will, saving the husband's rights by curtesy. She may deposit money in bank and write checks against it in her own name. Dower, one third of all real estate owned by husband during coverture.

RHODE ISLAND. A married woman's property is held by trustees for her separate use free from her husband's debts. She cannot make contracts of do business. She may make a will subject to husband's right by curtesy.

SOUTH CAROLINA. The property of a married woman cannot be seized for her husband's debts. A married woman can bequeath, devise, and encumber her separate property. She can buy in her own name, and have conveyances made to her, and make contracts, the same as if she were single. A gift from husband to wife is not good against a creditor's claim. Dower rights.

TENNESSEE. A married woman has her separate property free from the husband's control and from liability for his debts. She may encumber, convey, or devise her separate property without being joined by her husband in the deed. Widow has dower in one third of husband's real estate, and a child's share in his personalty. The husband dying intestate, leaving no heirs, the wife inherits all his property.

TEXAS. The property owned by husband or wife before marriage, and what either may acquire afterwards, by gift, devise, or descent, is community property. The husband controls the common property and the wife's separate estate. The common property is liable for the debts of either, and the husband may dispose of it. At the death of either, the survivor takes one half and the children the other half of the common property. The husband joins wife in conveyance of her separate property. She joins him in conveyance of homestead. A married woman cannot do business in her own name, but she may become security for her husband by mortgaging her separate estate.

UTAH. A married woman's separate property is held, managed, controlled, and disposed of by herself. A wife may carry on business, sue and be sued, give notes and make contracts same as if single.

VERMONT. The property of a married woman is held separate, and is not liable for her husband's debts. In conveyance of the wife's real estate the husband must join in deed. A married woman may make a will. Widow has dower in one third the real estate of which the husband died seized.

VIRGINIA. A married woman holds the property owned by her previous to marriage, and what she may afterwards acquire, as sole trader, free from the control of her husband, and from liability for his debts. She may make a will subject to husband's rights by curtesy. Common law dower.

WEST VIRGINIA. The property of a married woman, however acquired, except from the husband, is held for her sole and separate use. Husband must join in conveyances of real estate. Dower.

WASHINGTON. The property owned before marriage by husband or wife, and all acquired afterwards by gift, devise, or descent to either, is separate property. All otherwise acquired is common property, subject to control of the husband. He also controls the separate property of the wife, but cannot sell or convey it without her joining in the deed. To save the separate property of the wife from attachment for husband's debts, there must be an inventory of it on record.

WISCONSIN. A married woman has all property rights the same as if single. She may buy and sell, lend and borrow, make conveyances, and have real estate conveyed to her, and all such business may be transacted between her and her husband as between strangers. She may sue alone, but in being sued she must be joined to husband. Dower, life interest in one third of all husband's realty held during the marriage. Husband has wife's realty for life.

WYOMING. A married woman may carry on business, make contracts, keep her own earnings, hold property, real or personal, receive the rents in her own name, sue and be sued, make a will, free from any control or interference of her husband, the same as if she were single. Her property is not liable for the debts of her husband. Women in this state have the right to vote and hold office.

CANADA. In the provinces of the Dominion, generally, a married woman holds all her property and earnings, free from the control of her husband. It is liable for her debts before marriage, and her husband is not. She may manage it and bequeath it. She is entitled to dower, but there is no tenancy by curtesy. In the province of Quebec the law is modified by the French law. There all the personal property and gains of both parties are put together, and form the community property, which the husband administers. Each can bequeath only his or her interest, and the heirs of each inherit the interest of each.

EPOCH-MAKING DECISIONS OF THE UNITED STATES SUPREME COURT.

MARBURY vs. MADISON. The only point at issue in this case was that of the power of the U. S. Supreme Court to issue a writ of mandamus, but Chief-Justice John Marshall, after giving the opinion that the Court had no such power, went out of his way to lay down the much more important doctrine that whenever a law of Congress was at variance with the U. S. Constitution the courts must cling to the Constitution and refuse to obey that act. Few single events have played so great a part in molding the history of this country as this decision.

McCULLOCH vs. MARYLAND. The question in this famous case was whether or not the states could tax a bank chartered by the U. S. John Marshall, after upholding the right of the U. S. to charter such an institution, declared that such a tax was not constitutional since it tended to put an agency of the Federal government under the control of the states. The most important part of this decision had to do with Marshall's enunciation of the doctrine of implied powers—that Congress, in carrying out the powers specifically granted to it by the Constitution, was justified in exercising other powers if the latter aided in the more perfect execution of the former.

MARTIN vs. HUNTER'S LESSEE. The decision in this case, establishing a very important precedent, was that the U. S. Constitution operated upon states in their corporate capacity; that the law-making bodies of the states were in every case under the U. S. Constitution, and bound by the paramount authority of the U. S. The centralizing influence of this decision was great.

COHENS vs. VIRGINIA. Another decision asserting the supremacy of the U. S. over the states. This time Marshall upheld the right and the duty of U. S. courts to hear cases appealed from state courts. A Virginia court had previously denied this power.

DARTMOUTH COLLEGE CASE. By this decision a charter became a contract as the word contract was understood in common law, and even a state legislature could not break or modify it without the consent of the other party. The importance of this decision is to be found in the fact that charters of private corporations were perpetual unless a time limit was fixed in them.

GIBBONS vs. OGDEN. Could a state grant a monopoly to a private corporation doing an interstate transportation business? John Marshall answered "no"; that this was clearly interstate commerce, and by the Constitution Congress controlled interstate commerce. This decision was the first of a number of decisions widening the meaning of the word "commerce." Marshall's declaration that "commerce" was synonymous with "intercourse" has been always accepted since.

COLLECTOR vs. DAY. By this decision salaries of state officials were declared to be exempt from a Federal income tax.

SLAUGHTER HOUSE CASES. The Fourteenth Amendment had declared that "all persons born or naturalized in the U. S. are citizens of the U. S. and the state wherein they reside." And that "no state shall make or enforce any law which shall abridge the privileges and immunities of citizens of the U. S." When were the privileges and immunities of U. S. citizens abridged? In the

Slaughter House cases the Supreme Court wisely decided that too broad an interpretation of the word "abridge" would have the effect of limiting too much, the power of the states over their own citizens. The effect of the indefinite wording of the Fourteenth Amendment has been unfortunate as it has resulted in endless litigation. The good results of the Amendment have been negligible.

GRANGER CASES. In these cases the Supreme Court upheld the right of the states to control corporations within their boundaries, even though they might be interstate railroads. The result of these decisions was a confusing mass of regulatory laws passed by western legislatures in their efforts to curb the growing power of railroads.

NORTHERN SECURITIES CASE. The Sherman Act had declared every combination a conspiracy in restraint of trade. To get around this definition holding companies were organized for the purpose of controlling the stock of hitherto-competing corporations. But the Supreme Court decided that holding companies came under the Sherman Act, and were therefore illegal.

BRENNAN vs. TITUSVILLE. (153 U. S. 289). A tax upon persons selling goods by sample is inoperative as to persons soliciting orders for a house without the state "Interstate commerce cannot be taxed at all even though the same amount should be laid on domestic commerce." A state cannot demand a license fee from citizens of other states selling goods within its limits, it can levy a tax or demand a license fee if the article offered for sale is in the possession of the seller, even if it is the produce of another state.

DICTIONARY OF TERMS USED IN POLITICAL SCIENCE.

ABSOLUTISM. A system of government in which the sovereignty is lodged in a single authority without legal restraint. Absolute authority may be exercised by an individual in a republican as well as a monarchical form of government.

ADJOURNMENT. A temporary suspension of the meetings of a legisaltive assembly.

ADMINISTRATION. The group of officials entrusted with the execution of the laws. (See Government). The work of actually carrying laws into execution is called administration. The states of continental Europe have a distinct body of law known as administrative law, which applies only to administrative officers.

ADVISORY OPINIONS. Informal opinions rendered by judges in regard to the constitutionality of a bill being considered by a legislative body. Such opinions do not have the force of law, but are given in order to keep legislatures from passing acts which might be declared unconstitutional. The courts of Maine, Massachusetts, New Hampshire, and Rhode Island are authorized to render such decisions.

ALIEN. In international law the term is used to denote a citizen of a foreign state residing or visiting in a country other than his own. Upon naturalization he loses the status of alien.

ALLEGIANCE. A term of constitutional law used to denote the obligation that binds the subject or citizen to his state. It may be natural (by birth), or acquired (by naturalization). Some states have taken the position that natural allegiance can never be thrown off,—"Once an Italian, always an Italian."

ALLOCATION. As used in connection with government this term usually refers to the process of dividing up lands and distributing them among the landless. This may be done, as in Ireland, by parliamentary enactment, or, as in Russia, by direct confiscation.

ALTERNATE. A person designated lawfully to act in place of another, usually at a political gathering.

AMBASSADOR. The highest rank of diplomatic representatives.

AMENDMENT. As used in U. S. constitutional law the term refers to the formal addition of a new clause to a constitution.

AMNESTY. An act of a sovereign power wiping out past offences. It differs from a pardon in the fact that the latter presupposes guilt and the former does not. It may take the form of a general amnesty applying to a number of persons.

ANARCHY. A political and social theory based on the principle that each individual should rule himself without the intervention of government.

APPELLATE JURISDICTION. The power and authority of a superior court to take cognizance of, to hear and determine a cause, upon appeal, for the purpose of correcting or revising the proceedings of a lower court.

APPORTIONMENT. The fixing of the number of representatives to which electoral areas shall be entitled, by virtue of population or some other basis fixed by law.

APPROPRIATION. A legislative act determining the objects for which the public moneys may be spent.

ARBITRATION. The settlement of disputes by reference to parties not interested in the questions involved. Used principally in international disputes, and disputes between employers and employees.

ARCHIVES. The records, files, correspondences, accounts, and other documents arising in the transaction of public business.

ARISTOCRACY. A form of government in which the power resides in the hands of the few, usually the "well-born." Or, a term used to denote the upper class of society whether or not they enjoy special political privileges.

ARMISTICE. A suspension of military hostilities, usually for the purpose of discussing peace.

ASSESSMENT. The authoritative fixing of property valuation for the purpose of taxation.

ATTACHE. A person assigned by a government to the suite of an ambassador or minister.

ATTAINDER. The loss of civil rights because of conviction of treason or some other heinous offence. A bill of attainder is a legislative act imposing punishment.

BALLOT. A slip of paper used by voters in expressing their choice for elective offices.

BALLOT, AUSTRALIAN. The method of secret, written voting, first used in Australia.

BALLOT, SHORT. A ballot containing the names of only a few elective offices.

BELLIGERENCY. A term of international law used to denote a state of armed and legally recognized hostility. In the case of rebels or insurgents a recognition of their belligerency puts them on the plane of organized states in most respects.

BICAMERAL. The division of a legislative assembly into two houses or chambers.

BILL. A proposed legislative enactment formally introduced by a member of the body.

BILL, OF RIGHTS. A document solemnly assented to by a sovereign whereby the rights of the people will be respected. Or, formal constitutional enactments protecting the rights of the people.

BIMETALLISM. The legal parity of gold and silver as units of exchange.

BLOCKADE. A measure of war by which one belligerent aims to cut off the communication of other belligerents. A "paper" blockade is one that can not be enforced, and, according to international law, need not be respected by neutrals.

BOARD. A group of persons appointed or elected for the duty of administering some law or laws.

BOROUGH. A unit of local self-government. In England a borough was an electoral area for the election of representatives to the House of Commons.

BOSS. A term used to denote an autocratic party leader.

BOUNTY. Money paid by the government to private industries for the purpose of encouraging them to continue in that particular business. See Subsidy.

BOYCOTT. An agreement entered into by a number of persons whereby they will have no dealings with another person or association of persons.

BUDGET. The financial statement of a government for a definite period outlining the object and amount of expenditures; the sources and expected amounts of revenue, and the balancing of these two estimates.

BUNDESSTAAT. A term invented by German political scientists and used to signify that form of federal government in which the states are subordinate to the central government.

BUREAU. The largest subdivision of an executive or administrative department.

BUREAUCRACY. A system of government in which administrative officers, usually responsible only to an

autocrat, carry on the government in a high-handed manner. The "bureaucratic" tendency is noticeable in all countries today.

BY-ELECTION. A special election held to fill a vacancy in a legislative assembly. (British term).

BY-LAW. Rules and regulations which govern voluntary associations.

CABINET. The group of advisors constituting the principal executive officers of a state.

CABINET GOVERNMENT. As now used this term implies the existence of a responsibility of the chief executive officers to the popularly elected house of Parliament. The Cabinet remains in power until it loses the confidence of the legislative body, when it must resign.

CALENDAR. A register containing a list of the bills reported from committees.

CAMPAIGN. The period preceding an election devoted to bringing before the people the issues involved.

CANDIDATE. A person who seeks some political office, appointive or elective.

CANVASS. A party or individual survey of the political field preliminary to the election.

CAPITULATION. Restriction placed upon semi-barbarous or non-Christian states interfering with their control over Christian aliens within their borders.

CARTEL. An agreement between belligerents regulating intercourse during war.

CAUCUS. An informal meeting of party members for the purpose of deciding questions of party policy or the choosing of candidates.

CENTRALIZATION. A term used to signify that form of government in which the local governments are subordinated to the central government. There may be degrees of centralization.

CHALLENGE. The formal questioning by an authorized person of another's right to vote.

CHANCELLOR. A high dignitary of government, as The Lord High Chancellor; Chancellor of the Exchequer. In Germany the Chancellor corresponds to the English Premier.

CHANCERY. A court of general equity jurisdiction.

CHARGE D'AFFAIRS. A person acting temporarily in the place of a diplomat of high rank.

CHARTER. The organic law of colonies, granted by the mother-country; or a document granted by a state to public, quasi-public, or private corporations conferring upon them privileges.

CHECKS AND BALANCES. A system whereby the departments of government act as a check against each other, restraint being considered more important than co-operation.

CITY. A local self-governing area which has conferred upon it the greatest amount of power.

CITIZEN. An individual who owes obligations to a certain state, and in return possesses rights not granted to non-citizens.

CIVIL SERVICE. Technically, the whole body of public officials occupying subordinate positions.

CIVIL SERVICE, REFORM. A reform designed to do away with the "spoils system" by providing for competitive examinations and secure tenure of office.

CIVIL SERVICE, COMMISSION. A body appointed to enforce civil service regulations.

CLOSURE. A term used to include all rules of legislative assemblies which shut off debate.

CODIFICATION. The reduction of a body of law to direct and systematize legislative form.

COLLECTIVISM. The ownership by the community of all agencies of production.

COMBINE. The popular name for combination or trust.

COMMISSION. Group of persons appointed or elected to administer law.

COMMISSION FORM OF GOVERNMENT. A system of municipal government which centralizes all legislative and executive authority in the hands of a small elective body.

COMMITTEE. A selected group of persons in a legislative body appointed or elected to consider certain proposed laws and prepare reports of their deliberations.

COMMITTEE OF THE WHOLE. The whole body of a legislative chamber sitting as a committee.

COMMON CARRIER. One engaged in the business of transportation for the general public.

COMMUNISM. A social system in which there is no private property.

COMPTROLLER. A high fiscal officer in a state.

CONCURRENT JURISDICTION. The authority of different tribunals to hear the same kind of cases.

CONCURRENT POWERS. Powers that may be exercised equally by two governments, such as the states and the United States.

CONFEDERATION. A federal form of government in which the component states retain the greater portion of the power. See Staatenbund.

CONFIRMATION. As used in the U. S. this signifies the consent of a legislative body to the acts of an executive.

CONGRESS. The legislative branch of the U. S. government. Or, a group of persons gathered together for diplomatic or other purposes.

CONSTITUTION. The organic law of a state.

CONSTRUCTION. The method of interpreting constitutions. By broad construction is meant that the constitution is stretched to cover many things not specifically mentioned in the document. By strict or narrow construction is meant that the constitution is narrowly interpreted.

CONTRABAND. Goods which may be seized by belligerents if destined for the enemy.

CONTRACT THEORY OF GOVERNMENT. The theory that the state first began when people voluntarily surrendered their rights of complete government to rulers.

CONVENTION. A custom of long standing (British). A group of persons assembled for the purpose of setting on foot some political program.

CORPORATION. "An artificial being, invisible, intangible, and existing only in contemplation of law." (John Marshall). They are either public, as cities, or private, as a manufacturing company, or quasi-public, as a railroad company.

COUNTY. An important subdivision of a state possessing powers of self-government.

CROWN. In English political terminology the term crown is now used to denote the executive department.

CURRENCY. As used in the U. S. currency refers only to paper money.

DARK HORSE. A comparatively unknown person brought forward as a candidate for some important political office.

DECLARATORY STATUTES. Statutes passed to remove doubts or to settle conflicting judicial decisions as to what the common law is upon given points.

DE FACTO GOVERNMENT. As distinguished from a de jure government, one that has been irregularly set up and which has not been generally recognized by other states.

DE JURE GOVERNMENT. The government recognized by other nations as the real government, even though it may not be actually in power at the time.

DEMOCRACY. That form of government in which the people rule. A monarchy may be a true democracy.

DEPENDENCY. A country which is not directly a part of but which is under the control of another country.

DISFRANCHISEMENT. The legal deprivation of the privilege of voting.

DISTRICT SYSTEM. The ordinary method of representation by which the area to be represented is divided into small sections, each electing one representative.

DIVISION OF POWERS. A term used to denote the separation of the powers of government functionally into the legislative, the executive, and the judicial branches.

DUAL GOVERNMENT. A form of political structure, such as the U. S., where the work of government is divided between two organizations, both supreme in their own spheres.

DUE PROCESS OF LAW. A term for which jurists will not make a general definition, but apply it to the case at hand. If an individual has been wronged in the process of a trial he may plead "due process."

ELASTIC CLAUSE. That clause in the U. S. Constitution which states that Congress shall have the power to "make all laws that are necessary and proper for carrying into execution the foregoing powers." (Art. I, sec. 8, par. 18).

ELECTION. The selection by the voters of persons to hold public office.

ELECTORAL COLLEGE. The name given to the meeting of the state electors in the process of choosing a President of the U. S.

EMBARGO. In international law an embargo is a form of reprisal by which ships or other property are seized or detained by a state.

EQUITY. That body of principles which brings about the solution of a case in some way beyond the normal action of the common law.

ESCHEAT. The reversion of property to the state by reason of the lack of competent heirs.

ESTIMATES. The official analysis of necessary expenditures for the ensuing year.

EXCISE. Duties imposed upon the process of manufactures or upon domestic trade.

EXECUTIVE. That branch of the government entrusted with the enforcement of the law.

EXEQUATUR. The official writ of authority granted by an executive to consuls representing that state.

EXPATRIATION. The renunciation or the abandonment of nationality.

EX POST FACTO. A law which in operation punishes persons for the commission of an act which was not criminal at the time of its commission, or increasing the penalties thereof.

EXTRADITION. The legal process of returning persons accused of crime to the state in which the crime was committed.

EXTRATERRITORIALITY. The principle of international law by which certain persons, royal or diplomatic usually, and certain lands are out of the jurisdiction of the state in which they happen to be found.

FABIAN SOCIALIST. A group of English socialists who use and co-operate with existing institutions for their own purposes. Their theory is that socialism will come by process of evolution.

FAVORITE SON. A phrase used to denote a presidential candidate little known outside of his own state who receives the support of that state in the nominating convention.

FEDERAL. That form of government in which the powers of government are distributed among a number of co-ordinate bodies.

FILIBUSTERING. As used in legislative bodies filibustering means the deliberate obstruction of proceedings by such devices as unnecessary roll-calls, etc.

FRANCHISE. An authorization by the state to a corporation to occupy a particular street or other public property with its wires, tracks, etc.

FUSION. The union of two or more parties for the purpose of defeating a majority party.

GENERAL COURT. As now used this term is the official appellation of the legislatures of Massachusetts and New Hampshire.

GENTLEMEN'S AGREEMENTS. Verbal agreements entered into by officials of corporations whereby competition between them will not take place.

GERRYMANDER. A political device used by politicians to unite the electoral areas of the state in such a way that their party will be enabled to elect a greater number of representatives than they would if the districts were symmetrically laid out.

G. O. P. "The Grand Old Party," the Republican.

GOVERNMENT. The agency through which the state puts its will into execution.

GRAFT. Public money wrongfully taken by public officials.

GRANDFATHER CLAUSE. One of the methods resorted to by some of the southern states in order to disfranchise the negroes, basing voting on the citizenship of grandparents.

HABEAS CORPUS. A legal process used to prevent unlawful detention of a person accused of crime.

HENCHMAN. One of the assistants of a political boss.

HIGH SEAS. That part of the water area of the earth over which no state can claim jurisdiction.

IMPEACHMENT. The act of bringing formal charges or accusations against a person holding public office before a tribunal competent to take cognizance of such cases.

IMPERIALISM. The policy of colonial expansion.

IMPLIED POWERS. The doctrine of constitutional interpretation set forth first by John Marshall that incidental powers were to be implied from the express powers granted to Congress.

IMPOSTS. As used in the U. S., this refers only to indirect taxes.

INDICTMENT. A written accusation of crime formally presented by a grand jury.

INDIVIDUALISM. The theory of government best expressed by Thomas Jefferson who stated that "that government is best that governs least."

INFORMATION. A formal charge brought against some person by a state attorney accusing him of committing a crime. Similar to an indictment.

INITIATIVE. A form of direct legislation in which the voters, by petition, propose laws.

INJUNCTION. A court order restraining a person or group of persons from doing something.

INSURGENT. As now used this term refers to members of a legislative body who leave their party.

INTERPELLATION. A formal, written question addressed to a Cabinet officer by a hostile member of Parliament. In France ministers are often overthrown by ministers failing to answer these questions satisfactorily.

INTERVENTION. In international affairs, the interference of one state in the internal affairs of another.

ISOLATIONIST. A term used to describe those persons who believe that the United States should live unto itself as much as possible.

JINGO. A term, of English origin, applied to excessively patriotic persons, who are always willing for their country to "fight at the drop of a hat."

JURISPRUDENCE. The science of law.

JURY, GRAND. The body of persons charged by the state with the duty of bringing indictments against persons accused of crime.

JURY, PETIT. A body of persons charged by the state with the duty if passing upon the guilt or the innocence of persons accused of crime.

JUS SANGUINIS. The practice adhered to by some states of identifying the nationality of the child with that of its parents, no matter where it is born.

JUS SOLI. The practice adhered to by some states of determining the nationality of a person by the place of his birth, rather than by parentage.

LAISSEZ FAIRE. An individualistic doctrine holding that the state should not interfere in the personal affairs of citizens for the purpose of regulating relations between individuals or groups of individuals. Opposes all "social legislation."

LANDSLIDE. An overwhelming party victory.

LAW. Any rule that the courts will enforce.

LAW, CIVIL. That body of national law which is distinct from the "common law."

LAW, COMMON. That body of national law which is distinct from written law.

LAW, CONSTITUTIONAL. That body of rules and principles which determines the form of governmental organization in a state, and assigns to the respective departments their powers and duties.

LAW, CRIMINAL. The body of laws and customs which defines and determines the degree of punishment of offences against the state.

LAW, FUNDAMENTAL. Another term for constitutional law.

LEGAL TENDER. Money which may be used in the payment of debts, and which the creditor is obliged to accept.

LEGISLATION, DIRECT. The enactment of laws by the voters directly without the intervention of the legislature.

LEGISLATIVE REFERENCE BUREAU. An agency of the state whose duty it is to draft bills for members of the legislature. In some cases its duties extend also to investigation.

LIBERAL. A term applied to persons whose political, social, and economic views lie somewhere between the radical on the one hand, and the reactionary or conservative on the other.

LOBBY. A modern term applied to persons who, because of personal interest or of pay, use their influence to have legislators vote for the bills desired by them.

LOG-ROLLING. An expression, peculiarly American, which means, in effect, "you vote for my bill and I will vote for yours."

MACHINE. A political organization.

MANDAMUS. A command issuing from a court directing some corporation or public officer to preform some duty.

MINISTERIAL RESPONSIBILITY. The system, best worked out in England, whereby the ministers are responsible for all their acts to the popularly elected chamber of Parliament.

MINISTER PLENIPOTENTIARY. The diplomatic rank next below that of Ambassador.

MINORITY REPRESENTATION. (See proportional representation).

MODUS VIVENDI. Temporary agreement pending the permanent settlement of an international issue.

MONARCHY. That form of government in which the political head is a king or prince.

MUCK-RACKING. Indiscriminate attacks upon persons holding public office.

MUGWUMP. A term used to denote a person independent in politics, especially one who deserts his party.

NATION. Strictly, a term applied to people of a common race. Broadly, a term applied to persons having a common allegiance.

NATIONALIST. One who adheres to a racial group as a political unit.

NATURALIZATION. A process of formally changing citizenship from one state to another.

NEUTRALIZATION. A term of international law meaning the bestowal "by convention of a neutral character upon states, persons and things which would or might otherwise bear a belligerent character."

NIHILISM. A political theory closely resembling anarchism.

NOMINATION. The choice within a party of persons to represent that party in the general election. Also, the selection of persons to fill public office by executive choice.

OBITER DICTUM. That part of the opinion of a judge which passes upon points not connected in any close degree with the main point or points at issue.

ORDINANCE, EXECUTIVE. Regulations issued by a chief executive or heads of executive departments.

ORDINANCE, MUNICIPAL. Statutory enactments of a city or borough council.

ORIGINAL JURISDICTION. The authority possessed by courts to hear cases instituted for the first time.

PAIRING, LEGISLATIVE. The practice of members of opposite political parties in legislative assemblies agreeing not to vote in the absence of the other person.

PANEL. The list of names drawn for jury service.

PARISH. A local district possessed with some power of self-government, but commonly used, as in England, for the purpose of administering ecclesiastical and charitable affairs.

PARLIAMENT. The name applied to the general legislative body of nearly all countries.

PARTICULARISM. Attachment of persons for their own region or section of a country rather than devotion for the national state.

PARTY. A group of persons united for the purpose of securing political measures considered advantageous to the group.

PATERNALISM. A social theory which holds that the state should take over all functions which, in private hands, have a tendency to divide the people into unequally-privileged classes.

PATRONAGE. Public offices which are within the bestowal of legislators.

PLATFORM. The publicly announced principles of a party or candidate for public office.

PLURALITY. The highest number of votes received by any candidate, regardless of what percentage of the whole number it constitutes.

PLUTOCRACY. The government by the wealthy.

POLICE POWER. The power of the state to take care of the health and safety of its citizens.

POLL. The place where the electors vote (U. S.). Or, the voting itself.

POOLING. The practice of railroads of dividing the business among themselves according to some basis agreed upon, for the purpose of doing away with competition.

PORK BARREL. An expression referring to public funds which are used by legislators for local and selfish interests.

PRECINCT. The smallest political subdivision of an electoral area.

PREFECT. The chief administrative officer of a French department.

PREMIER. The head of a Cabinet in a state having the system of ministerial responsibility.

PRESENTMENT. A charge brought by a grand jury on its own responsibility without the evidence having been put before it by the state prosecuting officer.

PRESIDENT. The chief executive or presiding officer of a state or organization.

PRESIDENT, PRO TEM. One who acts in the place of the regular presiding officer.

PRESIDENTIAL ELECTORS. Persons chosen by the voters of the states to elect a President of the U. S.

PRESIDENTIAL SUCCESSION. The Law of Congress regulating the succession to the presidency, providing that the office, in case of the death or inability of the President and Vice-President to perform the duties of the office, shall devolve upon the members of the Cabinet in order of the establishment of their offices.

PRIMARY. A party election at which candidates for public office are chosen.

PRIMARY, DIRECT. A party election at which the voters vote directly for candidates to fill public office.

PRIME MINISTER. See Premier.

PROPORTIONAL REPRESENTATION. A system devised to allow minority parties to have representation in legislative assemblies in proportion to their voting strength in a large electoral area.

PROROGATION. The formal ending of a session of Parliament.

PROTECTORATE. A state whose sovereignty is impaired by reason of the fact that another state exercises control over it.

PROTOCOL. A term of international law referring to the points of agreement entered into between states serving as the basis for a definitive treaty.

PROXY. A written authority authorizing one person to act as the agent of another in voting. This is only legal in private corporations or fraternal organizations.

QUORUM. The specified number of voters which must be present in a legislative body in order legally to transact business.

QUO WARRANTO. A writ issued by a competent court against a person holding office.

RADICAL. The term applied to persons who believe that the rights of property should give way completely before the rights of persons.

RECALL. A political device which enables the voters to remove from office persons whom they have elected.

RECIPROCITY. A tariff agreement between nations making mutual concessions.

REFERENDUM. The submission to the electorate of proposed statutory or constitutional laws.

REPUBLIC. A state in which the titular head is elected or appointed, by contrast with monarchy.

RESULTING POWERS. Powers resulting from a liberal interpretation of the U. S. constitution as a whole.

RIDER. A bill, order, or resolution attached to another proposed legislative enactment containing subject matter entirely different from that of the primary bill.

RING. A closely-knit group of political leaders who are in politics for their own selfish ends.

SECTIONALISM. The tendency toward the formation of groups based on geographical divisions.

SENATE. A legislative chamber.

SEPARATION OF POWERS. The division of the powers of government among the legislative, the executive, and the judicial departments.

SERVITUDES. In international law this term refers to the restrictions on the jurisdiction of a state over some internal questions.

SHIRT SLEEVE DIPLOMACY. The carrying on of diplomatic relations in a direct, somewhat informal manner, as distinguished from the traditional indirect manner.

SOCIALISM. A theory which upholds the belief that the state should own and operate the means of production and distribution.

SOVEREIGNTY. The original, supreme and unlimited power inhering in all politically independent commonwealths.

SPEAKER. The presiding officer of popularly-elected legislative houses.

SPHERE OF INFLUENCE. A part of a territory inhabited by uncivilized people marked out by one of the European powers as a field for exploitation.

SPOILS SYSTEM. The practice of filling offices with party workers and favorites.

STAATENBUND. A confederation of states in which the central government plays a subordinate part.

STAMPEDE. The mass action of delegates to a nominating convention in hastening to cast their votes for the candidate who seems sure to win.

STAND PAT. A term meaning conservative partisan.

STARE DECISIS. The prevailing principle in courts of law that precedents will generally be recognized as binding.

STATE. A group of people permanently occupying a fixed territory, with a government competent to carry on the business of a sovereign people.

STATUTE. The legislative will of the state embodied in written form.

STEAM-ROLLER. The action of the leaders of a political convention in suppressing freedom of action among the rank and file of the delegates.

SUBSIDY. Government grant to private corporations.

SUFFRAGE. The act of the electorate in choosing representatives or deciding issues.

SYNDICALISM. A radical movement aiming to unite the workmen of the world for the purpose of destroying the capitalist.

TORY. A term, British in its origin, meaning a reactionary person.

TOWN. A local unit of government possessing varying degrees of autonomy.

TOWNSHIP. A subdivision of a county, corresponding to a district in southern states.

TREATY. A formal, written agreement between two or more states.

TRUST. A business company formed for the purpose of controlling the stock of a number of companies engaged in the manufacture of similar articles of commerce.

ULTRA VIRES. A term meaning that a corporation has exceeded the powers granted to it by its charter.

UNIT RULE. The rule prevailing in Democratic national nominating conventions that states must vote as a unit, that is, the vote of the delegates can not be divided among different candidates.

UNITARY STATE. The form of government in which all power is centered in the general government.

VETO. The power given to executives to refuse assent to legislative enactments.

WARD. Territorial subdivision of a city.

WARD-HEELER. Satellite of the political boss of a ward.

WHIG. A party which stood for progress, as contrasted with Tory (England).

WIRE-PULLING. Use of political influence for selfish ends.

ECONOMICS

CAPITAL
LABOR
WAGES
TRADE UNIONS
EIGHT-HOUR DAY
STRIKES AND LOCKOUTS
ARBITRATION
UNEMPLOYMENT
BANKS AND BANKING
SAVINGS BANK
TRUST COMPANIES
LOAN INSTITUTES
MONEY
DICTIONARY OF COINS AND COINAGE
STOCK EXCHANGE
BONDS AND SECURITIES
INSURANCE
PUBLIC FINANCE
PUBLIC INDEBTEDNESS
BUDGET
CUSTOM DUTIES
UNITED STATES TREASURY
LEADING FINANCIAL EVENTS
DICTIONARY OF BUSINESS AND FINANCIAL TERMS

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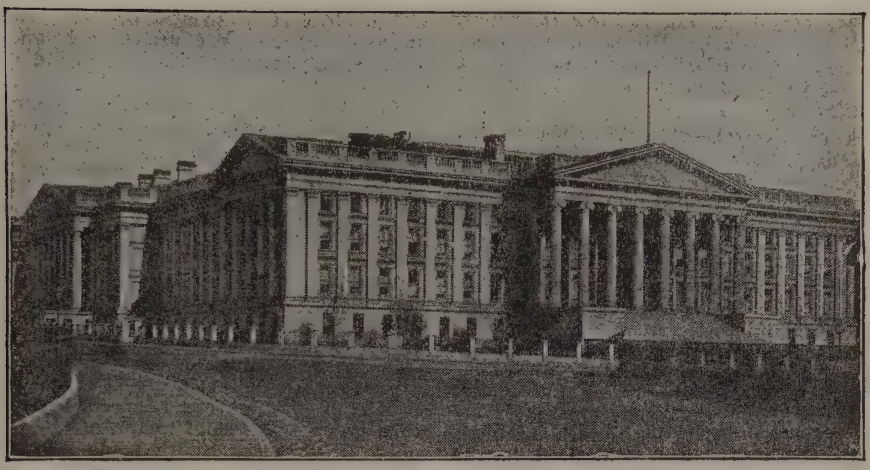
GREAT INDUSTRIES—LUMBERING

1 A group of Redwoods. 2 Felling a giant fir, at least 500 years old. 3 Logs on the way to the mill, Washington. 4 Trucking logs, Oregon. 5 Log rafts floating down stream. 6 Logs in "boom" awaiting cutting. 7 On its way to become useful lumber. 8 Loading lumber at mill, Oregon.

BOOK XIII.

ECONOMICS.



U. S. TREASURY, WASHINGTON, D. C.

CAPITAL, LABOR, AND WAGES. TRADES UNIONS. STRIKES. BANKS AND BANKING. LOAN INSTITUTES. DICTIONARY OF COINS AND COINAGE. SINGLE AND DOUBLE MONETARY STANDARDS. PAPER MONEY. STOCKS AND STOCK EXCHANGES, BONDS. CREDIT. INTEREST. INSURANCE. PUBLIC FINANCE. REVENUE. PUBLIC SECURITIES. FINANCES OF UNITED STATES AND GREAT BRITAIN. POSTAL SAVINGS BANKS. UNITED STATES TREASURY. SUMMARY OF FINANCIAL EVENTS. DICTIONARY OF BUSINESS AND FINANCIAL TERMS.

CAPITAL.

Capital is "that part of wealth which is devoted to obtaining further wealth." The money used to provide shelter, protection, tools, materials, food, and maintenance of the laborers is capital, according to Mill. Though still in dispute, it is generally conceded that capital, from the standpoint of political economy, ought not to include immaterial things such as health, skill, or strength, nor the free gifts of nature.

Circulating capital is that which performs the whole of its office in a single use.

Fixed capital exists in a durable shape, and a return to it is made at definite periods.

Wage capital is that which provides food, shelter, clothes, and protection to the laborer.

Auxiliary capital provides tools, machines, factories, buildings, and even railroads, canals, roads, and ships as well as raw materials.

History of Capital.—Among savage races and primitive men, weapons and implements for hunting and fishing represent the sole capital. As man advanced to the pastoral stage, flocks and herds constituted a larger and richer capital. In the agricultural stage which followed, his agricultural implements and stock formed a more complicated form of capital. In the industrial development of nations the invention of machinery caused such heavy investments that capital took a new and independent position in production. Since the invention of the steam engine and its perfection (1776) the importance of capital has constantly increased until, in the United States at least, one who is without capital, however skilled he may be, is forced to become the hired employee of others.

The natural result from capital is interest. In the Mosaic law and in the early Christian days there was a deep-rooted objection to interest. It would appear that in those days arts and productions were of the simplest kinds, and in the manufactures there was slight need of credit. Whatever was loaned was for immediate use and to relieve distress. Hence the idea that one who profited by the sufferings of others was to be censured. Even the Greek and Roman philosophers—Plato, Aristotle, the Catos, Cicero, Seneca, and Plautus,—all without giving any good reason, were loud in their condemnation of interest. But interest came to be allowed by Greek and Roman laws, and was generally recognized until the Middle Ages, when the Church took up a crusade against it. And while greater reason for its condemnation is given by Gonzalez Tellez, Thomas Aquinas, and others within the

Church, the Protestant reformers such as Zwingli, Luther, Melanchthon, and Calvin more or less openly approved of it. In 1640, chiefly through the profuse writings of Salmasius, the tide turned in favor of interest, and it was defended and supported by nearly all of the great writers. Bacon, North, Locke, Stewart, Hume, Galiani, Vasco, Beccaria, Mirabeau, and Bentham wrote in support of interest, but Turgot was the first to approach the study of interest in a scientific way.

Theories of Capital.—Turgot's theory, like that of Adam Smith, was unsatisfying and somewhat contradictory. For convenience of reference it has been called the Fructification theory, because it likens capital to rent-bearing land, and interest from capital to the fruit which the rented land bears.

Ricardo's theory deals more with the rate of interest than with the reasons for interest, except that if no interest were given capitalists would not invest. Torrens, McCulloch, and others are among the supporters of Ricardo.

The Productive theory maintains that capital produces wealth and that the investor is entitled to a share of what his wealth produces. This theory was first advanced by J. B. Say in 1803, and it has been supported in recent times by Roscher, Leroy-Beaulieu, Scioloja, and others. Roscher claimed that capital produces more goods. Lord Lauderdale in 1804 taught that capital produces more value. This view is supported by Malthus, Henry Carey, Peshine Smith, Thünen, and Strassburger.

J. B. Say advanced the theory that capital, in some unexplained way, has a use value, and that the capitalist ought to be paid interest for being deprived of its use when he invests it. This theory has been taken up and elaborated by German writers; but modern economists criticise it by asking what possible use he would make of it as capital if he did not invest it.

The Abstinence theory was elaborated by N. W. Senior (1836) from hints given by the writings of both Adam Smith and Ricardo. It holds that as all capital is the result of labor, the surplus represents the results of labor performed not with a view to satisfying immediate needs but with an eye to the future. As the capitalist gained this capital by self-denial and abstinence he ought to be indemnified by interest. Though this theory is now generally abandoned it had the support of such eminent economists as J. S. Mill, Jevons, Cairnes, Roscher, Schiiz, Max Wirth, Rossi, Molinari, and Garnier.

The Labor theory is a modification of the abstinence theory, and holds that the capitalist ought to be paid for labor performed, and regards capital as stored-up labor. James Mill, McCulloch, Courcelle-Seneuil, Rodbertus, and Schäffle support this view.

The Exploitation or Socialist theory holds that all goods are the product of human labor; that the laborer does not hold the full value of his labor; but that the capitalist takes advantage of the needs of the laborer who is compelled by hunger to sell his labor to the capitalist at a less rate than its true value. Adam Smith and Ricardo advanced the idea that labor is the source of value; Hodgskin and Sismondi contributed to the development of the idea; but Proudhon, Rodbertus, Lasalle, and Marx took it up and have been its most ardent advocates.

LABOR.

In an economic sense labor is human effort, either physical or mental or both, directed to some useful and productive end, and is the main factor in the production and distribution of wealth.

Different views of labor have been held at different times by various schools of economists. On the decay of feudalism, the Mercantilists set greater store on the accumulation of the precious metals than on the development of labor. Mercantilism differed from modern protectionism in that its chief aim was to perpetuate cheap labor and cheap agricultural products. The French school of Physiocrats, the founder of which (Quesnay) is by many regarded as the father of political economy, held that all labor except agricultural was unproductive, since the latter alone produces a surplus beyond the immediate needs of the laborer. Hume and Adam Smith advanced a broader conception, and showed that labor is the chief factor in the production of wealth. Adam Smith made a curious distinction between productive and unproductive labor, maintaining that the former includes only such activities as lead to some concrete commodity. According to this reasoning, the workers who supply man's material needs are representative of productive labor, whereas the services of the physician who saves a human life must be classed under the category of unproductiveness. The fallacy of such reasoning was emphasized by John Stuart Mill, who pointed out that labor does not create commodities but utilities. It is the form alone which is changed. Whatever adds to the supply of consumable utilities is essentially productive, the difference between one kind of service and another being merely in degree.

Since the days of the old economists, two lines of thought have been developed. The socialists, led by Karl Marx, argue that, since increase of labor produces increase of wealth, private property in capital and land ought to be abolished that labor may receive its proper share of the value which it alone creates. The other school of economists hold that value is not in direct ratio to the quality of labor, but is regulated by the incidents of supply and demand, and is, moreover, a wise adjustment and interdependence of capital and labor.

Labor is of two kinds, forced and free. Arguments in favor of forced labor are no longer seriously adduced; for since the introduction of free labor into England in the fifteenth century and the abolition of slavery in America during the nineteenth, the progress of economic thought has kept pace with the widening conceptions of labor.

Wages.—In its restricted sense wages is the compensation given for hired services. The Physiocrats and the earlier economists, such as Adam Smith and, to a certain extent, Ricardo, taught that the price of labor should afford the worker neither more nor less than a mere subsistance. John Stuart Mill and Malthus developed the wages fund theory, which more recent

economists have generally discarded. Mill and his followers reasoned that, as labor is dependent on capital, wages must be paid out of and limited by the accumulated wages fund at the employers' disposal; hence increase of capital must be the foremost consideration, since by this means a larger sum can be apportioned for wages. The alternative method of increasing wages would be to cut down the number of participants. The fallacy of this theory was not generally recognized till about 1870, when Thornton and Walker vigorously attacked it, and advanced what is known as the productivity theory. Wages, instead of being paid out of capital, represent the price of a product already created by labor. Economically, the product itself is the reward of labor; and, since increase of wages tends to enhance the efficiency of labor and the value of the product, it is clearly demonstrated that higher wages are essentially economical.

Wages depend on labor supply, ability to bargain, cost of living, and prosperity in a region or industry. Wages tend to follow the cost of living, but sometimes lag behind. Take manufacturing, mining, and rail transportation, for example, to illustrate what is called real wages—a phrase meaning what one's income or wages will buy, not in terms of actual money received. In these three industries the average wages in 1909 were 20.7 cents an hour, but in 1919 they had risen to 50.2. Yet the cost of living too went up, so that the wages actually would buy only 10.7% more goods in 1919 than in 1909. Both wages and cost of living reached a peak in June, 1920.

Manufacturing, mining, and railroading wages made up 27% of the workers' income in 1909, and about 24% in 1939. If we take the years 1923–1925 as rated at 100, then the comparative figures for other years would be as follows: for 1909, 72.5; for 1919, 88.5; for 1929, 104.7; for 1939, 146.1. Actual wages in 1939 were about 45% higher than in 1929; but the cost of living was also much higher, tending to offset any apparent gains. Adjusted to agree with changes in the cost of living, between 1923 and 1929 wages rose 6.2%; with a reduction of 12.7% between 1929 and 1933; and a rise again (mostly from 1937 to 1939) of 73.9%. (Data from the U. S. *Monthly Labor Review* for September, 1940.)

The Bureau of Labor Statistics of the United States estimates the average weekly wage and compares this with the cost of living at various times. The year 1923 is taken as 100. In 1921 wages were 92.2 and cost of living 103.6; in 1923, 99.1 and 99.2; in 1930, 96.8 and 97.0; in 1933, 68.3 and 75.8; and in 1938, 89.3 and 83.0 respectively.

The National Industrial Conference Board, a private corporation, in its *Economic Almanac* for 1940 has a complete table for national income from 1799 to 1938. It has been adjusted to agree with the cost of living.

Year	Income in millions	Income of individuals
1799	677	$216
1849	2,420	235
1900	16,158	480
1920	68,434	567
1930	72,398	634
1933	44,713	495
1938	62,450	580

A less inclusive estimate for national income for 1938 divides the total of $47,589,000,000 into these chief classes: Agriculture, $6,140 million; mining, 1,429; electricity and gas, 1,267; manufacturing, 12,208; construction, 1,359; transportation, 4,439; communications, 944; trade, 8,019; service, 1,341; varied, 6,995; and miscellaneous, 3,450. The wage of .247 in 1914 had risen to .731 an hour in 1940. Under the Fair Labor Standards Act, in October, 1939, the wages of about 650,000 laborers went up to 30 cents from 25 an hour. The Department of Agriculture states that farm wages, including board, were $21.21 in 1909; $43.29 in 1919; $40.61 in 1929; and averaged $27.47 in 1939. So the average per day, 1939, was but $1.30.

The wages of women in factories have been lower than those for men, but lately have risen much above their former levels. Greater freedom of women to bargain for places usually occupied by men has followed the advent of women suffrage. Between 1923 and 1929, however, the wages for women were about 80% of those for male unskilled laborers.

Investigations among the makers of garments in 1939 were carried on by the government in 22 states among 2,287 firms, including 65.4% of all women employed in the garment making trade, and covering the wages of 141,607 workers. The wages range from an average of 38.5 cents an hour for makers of dresses sold by the dozen to a high of 78 cents for unit-priced goods. In shops making garments sold singly, one-third of the workers were unionized; some 40% of the total were in New York City. Some 15% of workers were getting less than 30 cents an hour. Average wages for dozen-priced garment workers were $14.56 a week, with highest in Boston, $18.10, and lowest in Virginia, $9.75. For unit-priced goods, highest was $29.84. Lower costs of living in some localities might make these wages more equal than they seem.

Trades Unions.—One of the most characteristic features of modern industrialism has been the growth of various organizations for the promotion of the interests of wage-earners. The idea is by no means new. The merchant guilds of the Middle Ages had their counterpart in the various clubs of journeymen, while in its elaborate system of caste India for centuries has possessed many of the essentials of trades unionism. But with the rise of new industrial conditions, the lines of demarcation between capital and labor, employer and employed, became more pronounced, and the forces of labor felt the growing need of union to combat the encroachments of the capitalists. As such unions became more numerous and aggressive, rigorous laws were passed against them in England, culminating in the Combination Acts of 1799 and 1800, which made every form of trade combination unlawful. But the principles involved were too deep-rooted; and urged on by the teachings of socialistic propagandists, the trades unionists struggled manfully for recognition till the Trades Union Act of 1871 gave a legal status to their unions. Their rights and powers were further established by the Employers' and Workmen's Act of 1875. The granting of the franchise and the increased political importance of the workman has still further stimulated the

development of labor organizations. Employers have come to regard trades unions as a necessary part of the economic machinery, while the employees no longer plead for concessions in the matter of wages and hours of labor, but frequently dictate the conditions of employment.

In the United States, labor organizations first became prominent about 1830, the same as in England. They began to figure in politics in 1829, when a labor delegate was elected to the assembly of the state of New York. The first national union is said to have been the International Typographical Union of North America, established in 1850. Since then almost every trade has been banded together on local or national lines, and many of these organizations, by virtue of their numbers and corporate wealth, have become powerful industrial and political factors. They have their recognized organs; their representatives are prominent in the legislatures of every state; their claims and demands are voiced in Congress. Generally they realize that it is more effectual to redress their grievances by constitutional means than to have constant recourse to the final weapons of all such unions—the boycott and the strike. Boards of arbitration and reconciliation have been introduced by many trades, and public opinion has been assiduously educated and won over. The modern trades union does not usually seek to gain its ends by restricting the output and interfering with production; it relies rather on the effectiveness of the so-called "common rule," that is, a standard rate, a normal day, and collective bargaining. It insists on the maintenance of a minimum wage and satisfactory conditions in the factories and shops. Some economists hold that the "common rule" tends to improve and develop business enterprise, for with its application arises the necessity of increasing the output, and to do this improvements in equipment and management must constantly be devised.

Knights of Labor.—This general labor organization in the United States was founded in Philadelphia, in 1869, by Uriah H. Stevens, a garment cutter, and embraced all sorts and conditions of persons over 16 years of age, barring only bankers, lawyers, liquor dealers, and gamblers. At first the order was clothed in secrecy, its very name being guarded; but this policy was abandoned in 1882. The original aim of the founders was to bring about a system of coöperative industry in place of the wages system. They later sought to bring about social and political reforms, such as the nationalization of land, unlimited coinage of silver, the prohibition of child labor and convict labor, the establishment of direct legislation, and compulsory arbitration. It was the first organization of workingmen to admit employers, women, and unskilled laborers, and was opposed to the exclusiveness of trades unions generally. From 1878 to 1887 its membership leaped from 10,000 to 800,000. The least desirable element of the working classes gladly swelled its ranks to batten on its funds in emergencies. Strikes were so recklessly indulged in that the resources of the body were almost depleted, and in 1893 the membership had declined to about 40,000. About 1900 the Knights disbanded, some joining the American Federation of Labor and some becoming independent unions.

American Federation of Labor.—One of the most remarkable phases of the industrial movement within the last 50 years has been the federation of unions. These confederations have the same general objects as their constituent bodies, and their relationship is somewhat analogous to that of Congress towards the states therein represented. Among such organizations the most important is the American Federation of Labor, organized in Pittsburgh in November, 1881, under the name of "The Federation of Organized Trades and Labor Unions," with the idea of establishing a federation of trade unionists distinct from the Knights of Labor. Its present name was adopted in December, 1886, on which date it comprised 13 national and international trades unions, 6 local unions, and 6 city federated unions, with a total membership of about 350,000. With the decline of the Knights of Labor, the federation became paramount.

The A. F. of L. is a federation of international, federal, and local unions. The table below shows that membership tends to fall off in times of prosperity and to rise during times of depression. Much of the efforts of the A. F. of L. has been to organize skilled workers in the common trades, not all workers as a whole. In 1939 the membership consisted of 32,631 local unions, 102 national and international groups, with 1,517 other local and trade unions affiliated. Yearly conventions are held to fix policies and elect officers, who govern the organization from a central office in Washington, D. C. Membership in typical years since 1900 is shown below:

Year	Membership	Year	Membership
1900	548,321	1930	2,961,096
1905	1,494,300	1931	2,889,550
1910	1,562,112	1932	2,532,261
1915	1,946,347	1933	2,216,796
1916	2,072,702	1934	2,608,011
1917	2,371,434	1935	3,045,347
1918	2,726,478	1936	3,422,398
1919	3,260,068	1937	2,860,933
1920	4,078,740	1938	3,623,087
1921	3,906,528	1939	4,006,359
1925	2,877,297	1940	4,247,443
1929	2,933,545		

Congress of Industrial Organizations.—Led by the president of the United Mine Workers, in 1936 the Congress of Industrial Organizations (known as the C. I. O.) began to approach the workers in many large industrial plants. Their plan was to organize, not by trades, but all employees of all trades and no trades in one factory, into a large and powerful union. The sit-down strike, during which workers took possession of the plant and refused to leave it, was outlawed by the Supreme Court in 1937. Public opinion tended strongly to condemn the practices growing out of such industrial disputes. The two great labor bodies separated on the matter of organization plans, and all efforts of arbitration and of the federal government failed to unite them. The C. I. O. also tended to take sides in political issues, but joined with the A. F. of L. in censuring certain activities of agents of the National Labor Relations Board.

Collective Bargaining.—Employers have been forced to recognize that labor troubles can not be eliminated by merely raising wages. While the question of wages is the cause of a large per cent of the strikes, the demand for collective bargaining is becoming increasingly important as a cause of misunderstanding between the employers and wage earners. Trade unions, by encouraging their members to demand the right to bargain collectively with their respective employers, have done much to break down the old system of individual bargaining.

A movement toward collective bargaining received its greatest impetus in England during the World War. But even as far back as 1863, references are found to committees representing men in a given shop or department of a plant. Such committees have come to be known as "shop committees." The Reconstruction Committee of the British Government appointed a committee in 1916 which later came to be known as the Whitley Committee, to study the problem of "securing a permanent improvement in the relations between employers and workmen" and to "recommend means for securing that industrial conditions affecting the relations between employers and workmen shall be systematically reviewed by those concerned, with a view to improving conditions in the future."

The Whitley Committee made its first report in March 1917 and a final report in June 1918, recommending a "three-fold system, comprising works committees, district councils, and the national industrial council, in each industry in which employers and employees were sufficiently well organized for the purpose."

It will be noted that the Whitley plan necessitated that the workers be combined in a strong organization and that the employers organize so that collective bargaining could be carried out through the machinery of the labor unions and employers' organizations. In other words, collective bargaining was made a supplement to trade unionism.

The Whitley Committee recognized that the worker is at a great disadvantage when bargaining as an individual with his employer. He has only his services to sell and he can not afford to be unemployed for long periods, because it means that he and his family must go hungry and inadequately clothed. This fear of unemployment will often cause the worker to accept the wages and conditions offered by his employer even though he knows them to be inadequate, because he realizes that he must choose between the employers offer or unemployment.

According to the Whitley plan an attempt is made to adjust disputes when they arise in a given plant, by having the causes of the trouble investigated by the shop committee composed of representatives of employers and employees in the particular shop or department. In case the shop committee fails to effect a settlement, the dispute is carried on to the district council. The national council acts as a court of last resort. Collective bargaining has developed much further in England than in the United States.

In the United States the employers accepted the principle of collective bargaining in general, but many of them have refused to use it in connection with trade unions. They take the stand that they are willing to bargain collectively with the men in their own employ, but that they are unwilling to deal with outside union representatives. In other words, employers who hold this view are attempting to make collective bargaining a substitute for trade unionism rather than a supplement to unionism as is done in England.

Trade Unions and Injunctions.—An injunction is a writ issued by a court of equity restraining the "defendants from doing, or permitting others under their control, to do, an act which is deemed to be inequitable as regards the rights of some other party to such proceedings in equity." The purpose of the injunction, then, is to prevent wrongs or injuries for which there are no adequate compensating damages or when there is no certain pecuniary standard for the measurement of the damage.

There is a feeling on the part of the labor unions that the injunction was used against them in an unjust manner during the period immediately following the signing of the armistice. They felt that each case which went against them served as a precedent for the next decision and that each succeeding decision tended to further limit the legal activities of the workers. There was some ground for the existence of this view on the part of the workers, because during the prosperous years before 1920, when the workers were in an unusually strong bargaining position, there were comparatively few injunctions issued against them. A few of the states had issued orders restraining the workers from certain acts but no federal restraining orders were granted until the latter part of 1919 when the United Mine Workers were enjoined from calling a strike and distributing strike funds. The request for the injunction was based primarily upon the Lever Food and Fuel Control Act, a law enacted as a wartime measure to prevent monopolizing, hoarding and manipulating the supply and distribution of necessities during the war. The court was therefore using wartime measures against labor a year after the war was over. Workers resented this action still more when the court held in one case that the terms of the Lever Act which applied to profiteering were unconstitutional, and so refused to use it against profiteers.

The workers even felt that the protection granted them by the Clayton Act of 1914 had been unjustly taken from them by some of the decisions rendered at this time. The Clayton Act was passed as an amendment to the Sherman Anti-trust Law of 1890 and provided in part that the labor of human beings should not be considered as a "commodity or article of commerce." It also stated that labor organizations were not to be construed as illegal combinations in restraint of trade under the Anti-trust Law. Section 20 provided that no restraining order or injunction should be granted by the judge or court of the United States in a case between employers and employees growing out of a dispute concerning terms and conditions of work, unless necessary to prevent irreparable injury to the party making the application and where there is no adequate legal remedy for such injury. Peaceful picketing was made legal by this section of the act.

Tactics used by the employers during this period were probably due in large part to a reaction after the disturbing consequences of war conditions and were not continued for very long.

International Labor Congresses.—The first international labor congress was held at Geneva, Switzerland, in 1866, when over 60 delegates assembled from England, Germany, France, and Switzerland. The second international congress was held in the following year at Lausanne, and in 1869 the third and more widely representative congress sat at Basal. This congress almost unanimously resolved that all landed property should be held in common, and advocated "the destruction of all states, national and territorial, and on their ruins the founding of the International State of Laborers." International congresses were held at Dresden (1871), The Hague (1872), at which there was a rupture with the socialistic faction, Paris (1886), Berlin (1891), Zurich (1897). After the congress at The Hague in 1872, the socialists worked on more independent lines, and the first avowedly socialistic labor congress met in Paris (1889). A second was held at Brussels in 1891, when America and every European country except Portugal and Russia were represented. Two years later 385 social delegates met at Zurich, when it was decided that anarchists should not be admitted. The fourth congress at London (1896) was still more important, and its 800 delegates included representatives from Argentina and Australia. This congress urged the abolition of (1) the capitalist class, (2) landed property, and (3) standing armies. The miners, too, have held international congresses annually since 1890, but these assemblages have come largely under the dominance of the radical socialists.

Eight Hour Day.—The effort to shorten the hours of labor in all countries has led to the rather general acceptance of eight hours as the proper period for a day's work. The success of the eight hour day has resulted from the pressure of public opinion, because of the alleged advantages of the shorter working day. It is held that shorter hours in industry will provide work for the unemployed; increase the market for commodities by augmenting the consumption power of the population; increase the efficiency of labor; improve the conditions of the worker and make him a better citizen; and increase the opportunities of the workers to enjoy and live a fuller, social, cultural and religious life. According to the 1909 census of manufactures, 76 per cent of the 6,500,000 employees covered by the report were working more than 54 hours per week. Considerable progress was made for the next few years as is shown by the 1914 census of manufacturers. According to this census report, 25 per cent of the employees in industry were working from 60 to 72 hours per week. With the outbreak of the World War and the consequent unprecedented demand for labor, the workers gained many concessions in the way of shorter hours. The 1919 census, shows that 48.6 per cent of the 9,096,372 wage-earners reported were working 48 hours or less per week. In 1914 only 11.8 per cent of the workers were employed in establishments where the prevailing hours of labor per week were 48 or less. Without attempting to give in detail the history of the movement toward the shorter working day, it may be briefly outlined as follows:

1780. London bookbinders worked 14 hours less meal hours.
Trades unions formed by them to reduce the day by one hour.
1786. Day reduced for London bookbinders to 13 hours.
1790. Hours of labor practically unlimited in England.
Children often worked 15 hours a day and over.
1794. Day reduced for London bookbinders to 12 hours.
1796. A board appointed to investigate the condition in the mills at Manchester.
1802. The elder Sir Robert Peel carried a bill to mitigate the worst evils. It accomplished little, but was a precedent for further work.
Hours of only the little children limited to 12 a day.
The English workman labored from 11 to 14 hours.
1806. Unsuccessful strike of London bookbinders.
Shipbuilders and caulkers of New York City organize for ten hour day.
1810. Ten hour day granted to London bookbinders.
1815. Parliamentary inquiry into labor conditions in England.
1817. Robert Owen of New Lanark introduced a ten-and-a-half-hour day in his mill.
1819. Act forbade employment of children under nine in English mills.
Children between nine and sixteen to work 72 hours a week exclusive of meals.
1824. English bill repealing Combination Laws gives trades unions the right to organize.
1825. Sir John Hobhouse carried a bill legalizing Saturday half holiday.
Strikes for ten hour day common in New York.
Artisans in New York work 12 hours a day. Textile workers, from 13 to 15 hours. Women and children often began at 5:00 A. M. and worked 15 hours.
1830. Richard Oastler, "the Factory King," began an agitation for a ten hour day, for which he suffered persecution and imprisonment.
1831. Sir John Hobhouse carried a law forbidding any cotton operatives under 21 from working at night; and limiting the week's work for all under 18 to 69 hours.
Workingmen organized in Boston, Mass., to secure a ten hour day.
1832. Tom Sadler, the factory representative, moved a ten hour bill.
Factory girls in Lowell, Mass., worked 78 hours a week.
1833. Lord Ashley (Earl of Shaftesbury) limited the working hours for children under 13 to 48 a week.
1835. Ten hour day became general in Baltimore, Md., before 1840, as a result of strikes.
1840. English commission took up the question of labor and hours.
Mining act forbade employment of women or boys under ten in underground work.
President Martin Van Buren declared a ten hour day in the navy yard at Washington and in other public works.
Shipbuilders generally adopted a ten hour day.
1844. Sir Robert Peel's government passed factory acts lightening the burdens of operatives.
1845. Mass meeting at Pittsburg, Pa. (June 16), attended by over 5,000 persons, advocated ten hour day.
First national industrial convention of the United States held at New York (October) to agitate for ten hours.
Strikes and mass meetings held in many places, and some successful.
Textile workers in Massachusetts petition the legislature for ten hours.
1847. Ten hour bill passed in England by Mr. Fielden.
Shipbuilders in the United States try unsuccessfully to do away with the ten hour day.
1848. Hours of labor in Paris fixed at 10; and at 11 elsewhere in France.
Law of September 9 makes a day of 12 hours the maximum.
1849. First labor legislation in the United States was the law in Pennsylvania which fixed the ten hour day for cotton, woolen, silk, paper, bagging, and flax operatives, and for masons.
1853. Some mills at Lowell, Mass., adopted the ten hour day.
1856. Public meeting of stone masons held at Melbourne, Australia, for eight hour day.
"Eight hour league" formed at a meeting of the united trades in Melbourne, and all union men forbidden to work more than eight hours after

April 21, 1856. The 22d of April is there yet known as "Eight Hour Day."

1860. Nine hour movement revived in England, but was unsuccessful on account of depression in trade.
1864. English act extended ten hour day to many trades.
1865. Mills at Stourbridge still running 13 hours.
1866. The National Labor Union formed at Baltimore.
1867. Connecticut passes a law that eight hours shall be a day's work unless otherwise agreed.
1869. General Banks (June 24) introduced an eight hour bill which passed both houses of Congress and was signed at once by President Grant. Law went into force in Charlestown navy yard (July 6), though wages were cut one fifth. Those who wished might work ten hours for the old wages.
Boston Eight Hour League formed by Ira Steward and George E. McNeill.
20,000 workmen parade in New York and demand the eight hour day.
Eight hour leagues formed in many places, and strikes are numerous.
1871. Many strikes in England for a nine hour day.
1872. Nine hours granted in England to many skilled workmen.
1873. Depression retards the movement.
1874. Massachusetts enacts a ten hour law for women and for children under 18.
Hours for textile workers in England reduced from 60 to 56½ per week.
Fifteen inspectors appointed in France to carry out the law of 1848. More stringent factory laws passed in France.
1877. Great railway strikes in the United States caused by wages disputes.
Germany limits working hours.
Switzerland passed the Federal Factory Labor Law limiting maximum working hours to 11 in all factories and to ten on Saturdays and public holidays.
1878. English Factory Acts codified.
Many strikes in England over the efforts of employees to revive the ten hour day.
1880. Massachusetts amends Factory Laws.
Employers endeavor to have law repealed. Bureau of Labor statistics conducts an investigation.
1881. Report of Carroll D. Wright, Chief of the Bureau, completely vindicated the ten hour law.
Socialist movement began in England.
1882. Royal commission investigates eight hour law conditions in Australia.
1883. Eight hour clause added to the Knights of Labor demand.
1886. Great labor agitation and strikes in the United States. Haymarket riots in Chicago.
1887. Germany limits the day to ten hours for those under 16.
Labor Day instituted in the United States.
1888. Matchmakers' strike in England leads to the forming of many new unions.
Coal miners in Westphalia strike for eight hours.
Gas workers in England have the day reduced from 12 to 8 hours.
1889. Masons at Leipzig carry a ten hour day.
1902. The hours in English textile factories were restricted to 55½ hours.
1908. Danbury Hatter's Case. The court held the Union liable for the acts of its members.
1909. The English coal miners obtained reductions averaging about four hours per week.
1915. Munition workers in Connecticut won a succession of strikes for the eight hour day.
The coal miners won the eight hour day.
1916. The Adamson act gave the basic eight hour day to the railroad workers.
1917. Eight hour day established in Alaska.
1917. Thirteen states limit hours for women and children.
1918. Germany fixes eight hours for all industries.
1918. President vetoed increase of hours from seven to eight in government executive departments.
1919. Wisconsin establishes a weekly day of rest in factories and mercantile houses.
1922. Engineering Societies reported on the bad effect of long hours of labor.
1924. On August 13 the United States Steel Corporation announced a basic eight hour day.
United States Labor Review reported increased wages and more efficiency under shorter day.
1927. For 72 trades the average hours were 45 a week.
1930. In building trades fifty per cent of workers were on a five day week.
1931. Automobile, clothing, dyeing, radio, and printing trades extended the five day week.
1933. Various codes under the N. R. A. fixed hours and conditions of labor in many trades.
1935. Compulsory limitation of hours and fixed wages declared unconstitutional by the Supreme Court.
1936. All contractors on government work ordered to observe an eight-hour day.
1938. Wages and Hours Law proposed to reduce hours in two years to 44, then to 42, and finally to 40 hours weekly.

Strikes and Lockouts.—A strike is a concerted refusal to work on the part of a body of employees till their demands are complied with by the employer. A cessation of work due to the employer closing down his establishment in order to force his employees into submission is a lockout. In almost all serious labor disputes both strikes and lockouts occur, and are not always easily distinguishable. In actual effect they are the same. Whether it is called a strike or a lockout is largely a question of tactics, each side having due regard to the important factor of public opinion. To defeat the attitude of the men the employer may seek to employ non-union men to fill the posts of the strikers; while the men, on their side, usually try to prevent this by boycotting and picketing.

Previous to the repeal of the combination laws in 1825, strikes in England were prohibited by law. In the United States, strikes were comparatively few before the Civil War. The first strike of serious proportions was that of railway employees in 1877. From 1881 to 1905 there were 38,303 strikes and lockouts in the United States, affecting 199,954 establishments, and throwing 9,529,434 employees out of work. In the building trade alone during that period there were 9,564 strikes, involving 69,899 establishments, 917,905 strikers, and throwing 1,083,699 out of work.

Practically every country experienced an unprecedented number of strikes and lockouts during the World War. This is because strikes and lockouts are manifestations of industrial unrest and they are, therefore, more prevalent in some phases of the business cycle than in others. During periods of great prosperity when prices are rapidly rising, strikes increase in number, and take the nature of offensive strikes. This is because in periods of great business activity, laborers take the offensive in trying to maintain their standard of living by demanding that their money wages be increased at least as rapidly as prices are rising. During periods of depression the employers take the initiative in an attempt to lower wages, while workers act on the defensive in resisting wage reductions. In periods of prosperity, therefore, it is found that the major portion of the strikes result from acts or demands of the laborers, whereas in periods of declining activity the majority of the strikes are due to the acts of employers. The following table shows the total number of strikes and lockouts reported to the Bureau of Labor Statistics in certain years, 1917 and afterwards:

STRIKES AND LOCKOUTS AS TO CAUSES

Cause of Dispute	Number of disputes beginning in—							
	1917	1920	1927	1929	1930	1933	1935	1939
Increase of wages	1,571	1,429	142	101	62	309	368	441
Decrease of wages	36	147	57	72	62	136	178	131
Wages and hours	378	269	43	75	53	107	96	97
Other wage causes	18	121	85	125	62	372	73	20
Decrease of hours	132	62	20	16	5	1	33	8
Increase of hours	18	8	3	....	1	2	12	8
Others as to hours	378	2	9	23	8	6	2	14
Recognition of union	292	308	119	92	120	168	177	360
Recognition and wages	132	87	20	50	24	82	194	242
Recognition and hours	27	6	2	1	3	4	7	11
Recognition, wages, hours	48	45	7	26	18	70	168	242
Recognition, etc	13	6	23	100	5	30	14	25
General conditions	38	116	47	95	30	31	151	324
Discharge of employees	208	170	50	41	46	91	232	127
Unfair products	9	30	3	2	3	2	42	48
Sympathy	71	67	23	20	12	10	12	81
Jurisdiction	21	20	13	21	28	16	25	75
Other conditions	168	213	....	41	47	123	218	276
Unclassified	881	405	68	12	64	....	1	49
Total	4,470	3,411	784	903	653	1,681	2,003	2,639

Strikes increase in times of rising prices, as between 1914 and 1916, and in times of social adjustment as between 1936 and 1940. Arbitration by officials of the National Labor Relations Board brought unions and employers together in 38% of the disputes in 1939, but union men and employers agreed together in 41% of the cases. Kansas, Massachusetts, Colorado, and a number of cities have tried compulsory arbitration, but seldom has this been satisfactory to all concerned.

Strikes in 1939 were called by three groups of unions. The affiliated unions of the American Federation of Labor initiated 50% of reported strikes, with 32% of idle workers, and for 22% of idle days. The Congress of Industrial Organization called 29% of the 2,639 strikes reported, but they had 60% of the striking workers during the year, and these lost 72% of the time of idleness. Unaffiliated groups called 434 strikes, mainly in ladies garment trades in large cities. New York City had 587 of the strikes during the year, more than any 10 other cities combined.

Strikes recently tend to be short. The average of 29 days in 1939 was increased because of a few long, stubborn walkouts. Some 952 lasted less than a week; 593 less than two; 460 from two to less than four; 380 from a month to less than two; 116 from two to three; and only 138 more than three months in 1939. "Sit-down" strikes originated in 1936, with 48; increased to the high point of 477 in 1937, and sank to only 6 in 1939, in which year the men in only two were completely successful.

FURTHER STUDY OF STRIKES IN CERTAIN YEARS
From U. S. Department of Labor

Year	Number	Workers Involved	Men-days Idle	Avg. Men Per Strike	Days Idle Per Man
1927	784	329,939	26,218,628	467	79
1928	604	314,210	12,631,863	520	40
1929	921	288,572	5,351,540	313	18
1930	637	182,975	3,316,808	287	18
1935	2,014	1,117,213	15,456,337	555	13
1937	4,740	1,860,621	28,424,857	393	15
1938	2,772	688,376	9,148,273	248	13
1939	2,613	1,170,902	17,812,219	448	15

Federal Control.—More and more government control over industry is being exercised. Since 1937 Labor Relations Board offices have been set up in some 22 cities. To July, 1940, at least 28,000 cases had been considered, affecting at least six million workers. Of these, 48% were closed by agreement of the contestants; 17% were dismissed by the Board; 27% were withdrawn by the complainers; and 8% were closed otherwise. Some 111 cases went to the Circuit Courts of Appeals. The Board was upheld, wholly or in part, in about 90 cases, and not in 21. In 147 instances the Court rendered a decision by agreement.

The majority of cases in the Supreme Court was decided for the Board, but some of the Board orders were modified in one or more respects. The *Fansteel Case* (306 U. S. 240) was most stubbornly fought. The Board was justified in interfering but the Court said it exceeded its own authority in "reinstating men who had engaged in a sit-down strike," which the Supreme Court outlawed, 1937.

In 146 cases the Board supervised elections of employees to determine conditions of joining unions. Contests were frequent between the so-called industrial and the "craft" unions as to jurisdiction. The A. F. of L. and the C. I. O. agreed as to who should organize in many cases. In 43 disagreements, the A. F. of L. gained the vote of the Board in 16; the C. I. O. in 19; in 7 both; and no action was necessary in one. Of cases brought by the A. F. of L., 116 called for industrial unions, and 68 for the craft type.

The National Labor Relations Board aimed to replace strikes by voluntary agreements. When the Board began in 1936, 36% more strikes were recorded than board cases; in 1938, the latter exceeded strikes by 28%. Some 500 agreements were made, including ¾ in the steel industry, and ⅘ in the rubber. The Board often was charged with arbitrary acts, and the Courts issued cautions against going beyond specified powers.

Times of stress increase union demands for wages to keep pace with rising prices. During the first months of 1941 strikes multiplied fast and President Roosevelt created a new board to study the situation.

OUTCOME OF DISPUTES AS REPORTED

Result	Disputes and Cessations ending in—							
	1917	1919	1920	1925	1930	1933	1935	1939
Won by employers	395	687	677	253	294	464	669	534
Won by employees	749	627	472	349	167	475	886	1,048
Compromise	720	797	448	138	159	571	374	852
Arbitration	137	50	61	51	....	....	....	....
Protest strike	....	....	....	....	27	15	61	156
Result unreported	191	59	214	198	20	19	13	49
Totals	2,192	2,220	1,872	989	667	1,544	2,003	2,639

Strikes cause great loss of wages and profits. In 1921 the total was over four billions, and one strike in New York cost the workers a half million a day. In a peak year for number of strikes, 1919, with over 3,630, four million man days were lost. At $3.00 a day, you can see the cost. In 1937, a high year, over 28 million man days were lost. Wages then averaged over 69 cents an hour. In 1938, however, there were only ⅓ as many strikes as in 1937, when the number was 4,740. Lowest year since 1915 for days lost was 1930, with 3¼ million days; average for each worker, 18 days. Total man days of idle time from strikes in 1939 were about 18 millions.

Arbitration.—Many plans have been put forward with a view to the adjustment of labor disputes, and the prevention of strikes altogether. Many of these hinge on arbitration in some form or other, such, for example, as an arbitration board formed by the National Civic Federation, or by mutual arrangement, or by government authority. The weak point of all unofficial boards is that their services and decisions may or may not be entertained, whereas in the case of an official board no such possibility arises. It is argued that as men discover that commercial wars are unprofitable, and that their interests are promoted by agreement, the days of strikes will pass away without any state interference whatever. But statistics show no clear indication of any such tendency; whereas, in New Zealand, on the other hand, since the inauguration of compulsory arbitration in 1895, there have been no serious strikes, and such as have occurred have, for the most part, been quickly and satisfactorily adjusted.

But it is pointed out by economists that conditions in Australia are different from those in America. The Australian population is more homogeneous, and industrial development is more complex in the United States than in Australia. Attempts have been made in the United States to settle disputes by compulsory arbitration but they have not met with much success. Voluntary arbitration has been more successful. The Erdman Act of 1898 provided for arbitration of railroad disputes. Several disputes were adjusted through the machinery provided by this act, but in 1913 when it was seen that a strike of railroad firemen was inevitable, the Newlands Act was passed in order to provide for additional machinery of arbitration. The pending strike was averted, but in 1916 the Board of Mediation and Conciliation provided for in the Act, failed to effect an agreement in a railroad dispute. The Adamson law, providing for the eight hour day for railroad employees was passed in September 1916 to avert the strike. Under wartime federal control of railroads which began in December 1917, a Board of Railroad Wages and Working Conditions was established to handle disputes. Four railway boards of adjustment were established later. At the termination of federal control of railroads, provided for in the Transportation Act of 1920, the Railroad Labor Board was created to supersede the four adjustment boards. It consists of nine members representing the employers, employees, and the public. It has no compulsory power for enforcing its decisions, but depends upon influencing public opinion by publishing its decisions.

During the period of the United States' participation in the World War, several other adjustment agencies were created for settling labor disputes. The Emergency Construction Wage Adjustment Commission was created in June 1917; the Shipbuilding Labor Adjustment Board was established in August 1917; the President's Mediation Commission was appointed in September 1917; the National Adjustment Commission was created in October 1917; the National War Labor Board was established in March, 1918. These boards were all very successful in effecting adjustment of labor disputes during the war, but they failed to function successfully under peace time conditions and were, therefore, abolished.

An attempt at compulsory arbitration was tried in Kansas after the war. In 1920 the Kansas Court of Industrial Relations was created with mandatory powers. The court consisted of three members, and its functions were administrative rather than judicial. Strikes and lockouts were prohibited and the court had power to take over and operate industry in cases where production was curtailed. In 1923, the Supreme Court of the United States rendered the Kansas Court practically impotent by declaring that it was unconstitutional for the Court to determine wages since it would be denying the freedom of contract and labor.

England passed the Industrial Courts Act in 1919 based upon recommendations of the Whitley Committee. The Act contains no antistrike clause, and arbitration is purely voluntary. The machinery of arbitration is to be used only in cases of emergency when the employers and employees fail to effect an agreement. Collective bargaining and conciliation through government agencies tend to reduce the number and duration of time of strikes.

Labor Bureaus.—Led by Massachusetts, which instituted a "Bureau of Statistics of Labor" in 1869, other states have established similar bu-

reaus. The United States Bureau of Labor (later the Department of Labor) was created in 1885 with Carroll D. Wright as commissioner. The Department of Labor issues various publications from time to time.

Congress also in 1935, by the Wagner Act, set up a National Labor Relations Board of three members. The main objects are to investigate activities of both employers and employees in all labor controversies; and to see that employees have rights to organize and bargain as to wages and other conditions. Cases at once came into the courts. The U. S. Supreme Court, on April 12, 1937, affirmed the provisions of the act, but stated that the application must be confined within the stated purposes declared by Congress. In the five cases then before the Court, freedom of the press was again upheld and the rights of labor to organize and of men to join unions without being discharged for so doing. In three instances workers had been discharged for joining a union. Since products of factories move in interstate commerce, the Wagner Act was held to apply to these cases.

France instituted a labor bureau in 1891, Germany in 1892, and England in 1893. Almost all European countries and the British colonies now possess similar departments; and the exact and unbiased information they supply, apart from other services, has proved most valuable.

Labor Legislation.—Legislation in favor of the working classes is a product of the nineteenth century, for only then was the principle of industrial liberty fully recognized and applied. England led the way with its factory acts, intended to safeguard the life and limb of the worker. In the United States, labor legislation was later and has been much fostered by trades unionism. Among the statutes enacted by the states in the interest of labor, the most common are those referring to (1) the protection of life and health, (2) the hours of labor, (3) child labor, (4) convict labor, and (5) employers' liability.

1. Protection of Life and Health.—Various laws are devised differing in detail, but having for their common object the protection of the work-people from accident, disease, and fire, and the maintenance of sanitary surroundings.

2. Hours of Labor.—In 1892 Congress passed a law that eight hours shall constitute a day's work in the government service. Most states have laws to protect workers. If men are allowed to work for long hours, as sometimes on railways because of some emergency, they must be given a period of rest immediately following. Many states forbid longer than 16 hours of continuous labor. Hours have been reduced 20% in recent years, while efficiency has increased the same.

3. Child Labor.—In most states it is illegal to employ child labor in mines, factories, and workshops before a certain age is reached. The age varies from 12 to 18. In nearly all states children must remain in school until they are 14, but a few states allow them to attend part time from 12 to 16 years of age. Labor of young children in factories and mills is almost unknown in our country now. In 1924 an amendment was proposed to the Constitution, forbidding employment until the age of 18.

4. Convict Labor.—Legislation is commonly directed against the products of convict labor being placed upon the open market, the state preferring to support its prisoners in complete or partial idleness rather than let them work usefully for their own maintenance.

5. Employers' Liability.—The employer is held liable for damage to life or limb as a result of his negligence to carry out the requirements of the common law. He must provide a safe work-place, as well as safe tools and appliances; he must give notice of any hidden danger, and issue and enforce rules necessary for the adequate protection of his work-people. Except in a case where any of these statutes are violated by the employer, an employee is held to assume the ordinary risks of his employment, as well as the risk of injury from the negligence of another employee. The principle of employers' liability was extended in England by the Workmen's Compensation Act of 1897, which in effect abolished the question of contributory negligence. In 1900, and again in 1906, the application of this law was still further extended.

Laws in 1908 made railroads liable for accident to employees. All basic industries now have such provisions. Workers must use due caution, and frequently compensation is refused because they are negligent while on duty. By 1940 all states but one had compensation for industrial injuries. Various forms of insurance provide some protection for men and their dependents. The costs are usually paid by the employers.

Despite all safeguards, in 1938 over 16,000 were killed while at work, and over 90,000 were permanently injured. The records since then show some reduction. Accidents in shops, in the home, and from automobile disasters still make up three large classes of fatal injuries.

6. Minimum Wage.—Several states in the United States have passed minimum wage laws which provides minimum standards of pay for certain groups of laborers. These laws apply only to the lowest wage groups, which are composed of women, miners, and low skilled male workers. Australia was the first country to enact minimum wage laws. Her example was followed by other countries including Great Britain. The United States was rather tardy in enacting legislation of this kind, but in 1912, Massachusetts made the first start by passing the minimum wage law as a result of recommendations of a commission appointed in 1911. In 1925, twelve states had minimum wage laws. In some states, these laws are administered by a commission without powers of enforcement. In others, the minimum wage boards have compulsory powers.

Court decisions tend to favor the principle of minimum wages. The Fair Labor Standards Act, from 1938, provided that wages in shops for goods in interstate trade must be at least 30 cents an hour. The Social Security Act, the Wagner Act, and other laws provide old-age insurance, forbid taking dues for labor unions out of wages by the paying office, raise the age at which children may work part time—usually 14 years or above—outlaw the sit-down strike, employing of women and youths in hazardous occupations, and dismissing employees for union activities. Other grants are made for the public good. Child actors, any working for parents, or on farms when not required to attend school are exempted.

Unemployment.—The labor force, those normally employable, includes about 50% of all over ten years old. It has varied little relatively since 1800. Those unable to obtain work usually number over a million, even in times of prosperity, not including the aged, men on strike, or those who are ill. In 1929 both highest in employed (48 millions), and lowest in unemployment (429 thousand) were attained. Yet 1933 was characterized by highest number out of work since we have had American records, 12,744,000. In April, 1940, after another fairly low point in 1937, the number unemployed was over 8 millions. It is predicted that the labor force by 1980 will reach 67 millions. More jobs must be found to take up the slack that now prevails. After a war or boom all kinds of labor show a surplus when the reaction or normal period comes. Seasonal unemployment also accounts for many cases.

During the great depression of the 1930's, various measures were taken to get men again on the payrolls. The government employed at one time over 4 millions, and for several years not fewer than a million and a half. Between 1929, a low year, and 1940, the force of regular government employees rose from 833,163 to 1,292,905. Nearly all states provided for some form of compensation for men out of work, but at first the grants were very small each month,—in some cases not over $10. The laws provided from $15 in most states to $30, the highest, in Texas. Only six states asked the workers to contribute. Firms contributed from 2.7% to 3%, or a little more, of the normal payroll totals to state funds. The federal treasury also allocated $58,000,000 in 1938 and over $80,000,000 in 1939 to the various states.

The *Economic Almanac* of the National Industrial Conference Board has a number of tables of data on employment. The figures taken from these appear below.

CONDENSED TABLE OF EMPLOYMENT
(Figures in thousands: add 000)

Year	Labor Force	Employed	Unemployed
1900	29,025	27,378	1,647
1910	38,133	37,580	573
1920	41,897	41,339	558
1929	48,354	47,925	429
1933	50,830	38,086	12,744
1935	51,879	42,357	9,522
1937	53,011	46,639	6,372
1939	54,393	45,326	9,067

Estimates by the American Federation of Labor for each year vary by a million in both the employed and unemployed lists,—the former being lower and the latter 900,000 higher for 1929, 1933, and 1939.

EMPLOYMENT IN MANUFACTURING, 1914–1940
(From *Economic Almanac*, 1940)

Year	Employed (Add 000)	Weekly Wages	Hours Weekly	Living Costs
1914	8,769	$12.68	51.5	61.3
1923	10,592	26.61	49.2	100.0 [1]
1930	9,770	25.84	43.9	96.7
1935	9,757	22.23	37.2	82.6
1939	10,243	27.04	37.6	85.2
1940 [2]	10,771	28.09	38.7	85.4

[1] Scale: 1923 equals 100. [2] January, 1940.

PERCENTAGE OF MEN EMPLOYED IN INDUSTRIES IN JUNE, 1939 COMPARED WITH THE AVERAGE FOR 1923-25, USING 100 AS AN INDEX

Group of Industries	Men Employed	Pay-roll
Iron and steel	87.5	80.7
Machinery	95.6	96.4
Railroad repair shops	89.2	89.2
Lumber	66.8	60.4
Stone, clay, glass	74.4	66.9
Textiles, etc.	94.9	77.6
Leather	88.1	69.3
Food products	122.8	125.6
Tobacco	63.8	58.9
Paper and printing	104.7	102.2
Chemicals, oil	109.2	119.8
Rubber products	80.2	84.2
All manufacturing	90.6	85.9

BANKS AND BANKING.

A bank is an institution for the custody, loan, exchange, or issue of money. Banks receive from their depositors money on current account or on deposit account. The former is subject to withdrawal by check to suit the convenience of the depositor; the latter can only be withdrawn at the expiration of a certain interval. Interest may or may not be allowed according to the kind of bank and the nature of the arrangement. Banks are authorized to invest and reloan the money intrusted to them, their transactions being subject to state and national laws. Banks perform other services, such as issuing and collecting drafts and bills of exchange, etc., each bank having its own special function.

The history of banking carries us back to dim antiquity. The primitive idea of banking was the custody of other people's money, combined with foreign money-changing. Bills of exchange would seem to have been the first credit transactions of the ancients, and it has been proved that the Assyrians were familiar with these instruments many thousands of years ago; while the *Bunnyas*, or native bankers, in India have negotiated their *Hoondees* for many centuries. In Greece and Rome bankers, or *argentarii*, as they were called by the Romans, received money on current and deposit account, and dealt in foreign bills of exchange. They also loaned the money in their keeping, charging a higher interest than that allowed to the depositor. So firmly established had the banking system become that by the time of Justinian a special body of laws had been formed dealing with the subject. In the Middle Ages, the Jews performed some of the functions of bankers, but owing to the insecurity of property and the instability of commerce, banking was little more than money lending. The bank of Venice was founded in 1157 to facilitate the handling of a forced government loan, the interest of which was punctually paid. But it was not till after the levying of similar loans in 1480 and 1510 that the Bank of Venice may be considered a bank in the modern sense of the word.

Both Florence and Venice had long been famous for their bankers and money lenders, but not till the rise of the Banco di Rialto at

Venice, in 1587, may modern banking be said to have been inaugurated. This bank received deposits on call, and allow depositors the privilege of transferring their credits by written order. Perhaps the first bank to undertake the custody of depositors' money on an extensive scale was the Bank of Amsterdam, founded in 1609. Like the Bank of Hamburg, and the Banco del Giro, founded in the same century, this bank was not authorized to issue notes or to lend money. The credits of these banks, resting on actual coin deposited, prepared the way for the check and deposit system associated with our modern system of banking. The eighteenth century saw the evolution of two distinctive features of modern banking, viz., the issue of bank notes depending for their acceptance and circulation on the credit of the bank, and the granting of deposit accounts on the credit of the customers. Although bank notes had been employed for many centuries in the East, they were unknown in Europe before 1661. In that year the Bank of Sweden issued notes mainly to avoid the shipment of copper coin. The first bank notes issued in England were the receipts given by the London Goldsmiths for money given into their safe keeping, and these receipts (known as "Goldsmiths' notes") freely circulated in the latter half of the seventeenth century.

In the history of banking in the United States, banks of issue figure most prominently. The old Colonial idea of a "bank" was an institution for loans and not deposits, the loans being usually in the form of notes issued by authority of the Colonial governments. When the Continental paper currency collapsed in 1781, Congress chartered the Bank of North America, with power to issue notes, and so provide a circulating medium for the whole country. Three years later the Bank of New York and the Bank of Massachusetts at Boston were chartered; but the issue of paper money by the various states continued till such issues were prohibited by the Federal Constitution. The First Bank of the United States was chartered on February 25, 1791, with an authorized capital of $10,000,000, one fifth of which was subscribed by the government. Its notes were receivable for all dues to the United States government. Congress failed to recharter the bank in 1811, and its business passed to the State banks. Five years later, the Second Bank of the United States was chartered with an authorized capital of $35,000,000, one fifth subscribed by government. Its efforts to regulate the issues of state banks rendered the bank unpopular. Largely owing to the opposition of President Jackson, the bank was not rechartered, and in 1836 it ceased to be a national institution.

I. State Banks.—In the years following 1811 the banks specially chartered by the various states rapidly increased, more especially after the suspension of specie payments in 1814. When President Jackson's campaign (known as the "Bank war") against the Second Bank of the United States began in 1830, the aggregate note issues were $61,000,000, while the total amount of specie in the country was only $30,000,000. In 1834 the note issues rose to $94,000,000 and the specie to $41,000,000. The number of state banks had increased to 713 in 1836, with an aggregate note circulation of over $140,000,000. Unsound principles of banking prevailed, and note issues were frequently expanded beyond all prospect of redemption. In consequence the state banks collapsed at one of the most critical periods of the history of the United States. The panic of 1837, however, had a salutary effect on banking methods, and the note circulation, which had been inflated to $149,000,000 in 1837, shrank to $58,000,000 in 1843, steadily rising again to $202,000,000 in 1861.

The five years' financial crisis from 1837 to 1842 was a memorable epoch in the annals of American development, ranking in importance with the funding of the public debt (1783–1790) and the financing of the Civil War (1861–1865). This crisis decided the fate of the state banks and determined the fundamental policy of all future governments. It took the state banks about 20 years to recover from the widespread disaster. The number of banks increased steadily year by year after 1853, and at the beginning of the Civil War there were about 1,500 state and local banks operating in the Union.

State banks are practically the same as national banks in their operations, except that they have not the privilege of note issue. Previous to 1865 they issued bank notes, but in that year Congress passed a law taxing these notes 10 per cent., which soon resulted in their retirement. In the Eastern States, state banks have virtually disappeared, though they are numerous in other sections of the country.

II. National Banks.—To secure a uniform bank currency, as well as to extend the market for United States bonds, the United States Congress, in 1863, passed a law authorizing the establishment of a number of banks under federal charter, with an aggregate circulation not exceeding $300,000,000. The act was recast in 1864 when the present system was laid down. Each national bank must invest a certain proportion of its capital in United States registered bonds to be deposited at the Treasury. This must not be less than one fourth when the capital is over $150,000 and not less than one third when the capital is below that figure. The provision that no bank was allowed to have a smaller capital than $50,000 was amended in 1900, when the organization of banks with a capital of $25,000 was permitted in towns of 3,000 population. New York was made a central reserve city, and one half of the reserves of banks in reserve cities might be deposited in New York banks. Chicago and St. Louis were subsequently made central reserve cities. The chief amendments to the national banking law were the act of 1874, making the United States Treasury the agency for the redemption of notes, and requiring each bank to deposit with the Treasurer the equivalent of 5 per cent. of its circulation as a redemption fund; the act of 1875, which abolished all limitations upon the volume of circulation, and the act of March 14, 1900, which authorized the issue of notes to the par value of bonds deposited in the Treasury, provided such bonds are not selling at a discount.

All national banks, except the Bank of North

America, Philadelphia, are obliged to have the word "National" as part of their name, others not so chartered being prohibited from using this title. This affords protection to the public by giving assurance that such an institution is safeguarded by national restrictions. A national bank may receive on deposit money subject to check—on which it does not, as a rule, allow interest, make loans to corporations and individuals collect drafts, and, to a limited extent, may purchase and hold real estate. Among its important duties are the buying and selling of exchange; making collateral loans; discounting and negotiating bills of exchange, promissory notes, and other forms of indebtedness.

Ten per cent. of its paid capital stock was formerly the limit which a national bank might loan to any one person. This limit was increased to 10 per cent. of the capital and surplus (provided that 30 per cent. of the capital is in no case exceeded) by an act of Congress in 1906.

National banks are not allowed to establish branches, although they are permitted to operate branches acquired by merger with national banks. This is because the national bank absorbed with its branches must have been established under state charters and acquired its branches prior to its nationalization.

Since the incorporation of these banks only 5½ per cent. of their total number have been closed on account of insolvency, in nearly every case violations of the national bank laws or fraudulent management being the reason.

National Bank Notes.—The issue of circulating notes by the national banking associations was first authorized for a term of twenty years by a law that was enacted February 25, 1863, and which was recast in the act of June 3, 1864, entitled "An Act to provide a national currency secured by a pledge of United States bonds, and to provide for the circulation and redemption thereof." This act, with subsequent amendments, was embodied in the Revised Statutes of the United States in 1873. The law has been amended from time to time, and is now contained in what is known as the "National Bank Act."

National bank notes are of equal value throughout the length and breadth of the United States, and complete protection is given to the holder; for each bank must secure unmatured interest-bearing United States bonds, in registered form, equal in amount to the total issue of the notes desired. Thus a safe and sound currency, circulating without discount or distrust throughout the country, is provided.

To provide against too great a contraction in the currency, the total amount of national bank notes outstanding is not allowed by the government to be reduced more than $9,000,000 in any one month, except that notes secured by bonds called for redemption may be retired.

In payment of taxes, excises, public lands, and all other dues to the United States except duties on imports, national bank notes shall be received at par in all parts of the United States. With the exception of the redemption of the national currency and the interest on the public debt, they are also receivable for all salaries and other debts and demands owed by the United States to corporations, associations, and other individuals within the United States. They must not be counted in the "reserve" of a national bank, as they are not legal tender. The notes of each national bank must be received at par by all other national banks. The Treasurer, but not the assistant treasurers, may redeem the notes in "lawful money" of the United States.

III. Federal Reserve Banks.—The Federal Reserve Act became a law on December 23, 1913, when it was signed by the President. Beyond any question, this Act is one of the most important laws ever passed by the Congress of the United States. Its purpose, as stated in the preamble of the bill, is "to provide for the establishment of Federal reserve banks, to furnish an elastic currency, to afford means of rediscounting commercial paper, to establish a more effective supervision of banking in the United States, and for other purposes."

For a generation or more it has been generally admitted that our banking and currency laws were inadequate and unscientific, and attempts have been made, more or less spasmodically, to reform them. This legislation, which was not in full force for three years, gave to the people a new banking and currency system which, while designedly not revolutionary in nature, does, nevertheless, add what may be called a superstructure to the present national banking system.

The Act provides for the division of the entire continental United States, except Alaska, into twelve districts, known as Federal reserve districts. In each of these districts a city is designated as a Federal reserve city, and in each of these cities is to be a bank known as the Federal Reserve Bank of Boston, or Chicago, as the case may be. The twelve cities so designated are Boston, New York, Philadelphia, Cleveland, Richmond, Altanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas, and San Francisco. Every national bank in each district is required to become a member of the system. State banks and trust companies may also join, although not compelled to do so. Member banks must subscribe for stock of the Federal reserve bank of their district to the amount of 6% of their capital and surplus, one half of this being paid in practically at once, and the other half subject to call. The capital stock of each Federal reserve bank must be not less than $4,000,000, and is entitled to 6% cumulative dividends.

The Federal reserve banks receive deposits only from member banks and from the United States Government. The deposits carried by member banks are the reserves of those banks, except their cash reserves.

Next to the mobilization of reserves, as mentioned above, the most important function of the Federal reserve banks is that of rediscounting for member banks. All paper rediscounted must have a maturity at the time of rediscount of not more than ninety days and must be commercial paper, that is to say, notes, drafts, and bills of exchange issued or drawn for agricultural, industrial, or commercial purposes, or the proceeds of which have been used or are to be used for such purposes.

The next most important service rendered by the Federal reserve banks is that of issuing what is known as Federal reserve currency. This

currency is an obligation of the United States Government, issued through the Federal reserve banks. When a reserve bank wants currency it delivers to the Federal Reserve Board, or its agent, commercial paper to the amount of currency desired. It pays interest to the Federal Reserve Board for the currency received, and also must carry a reserve of gold equal to 40% of the currency received and outstanding. Therefore, back of each dollar of Federal reserve currency, there is 100% of commercial paper and 40% of gold.

We have here an elastic currency, a currency that expands as business expands, and contracts as business contracts. It is a scientific currency, similar in principle to that which the experience of the world has demonstrated to be sound and responsive to the demands of business.

At the head of the Federal reserve system stands the Federal Reserve Board, in Washington. This Board is composed of seven members, the Secretary of the Treasury, the Comptroller of the Currency, and five citizens appointed by the President of the United States for ten year terms, subject to confirmation by the Senate. This board is given powers greater, perhaps, than are possessed by any other board or commission in the country, except the Supreme Court of the United States. In addition to exercising general supervision over the Federal reserve banks, the board has power to permit or require one reserve bank to rediscount for another reserve bank; to suspend, for not over 30 days, the reserve requirements; to supervise the issue and retirement of reserve notes; to remove any officer or director of a reserve bank; to permit national banks to act as trustee, executor, administrator, or registrar of stocks and bonds; to suspend, for cause, and operate a reserve bank; to examine, at its discretion, the accounts, books, and affairs of each Federal reserve bank and each member bank, etc. It will thus be seen that the powers granted the Federal Reserve Board give that body great influence and authority over the banking and currency systems of the country. Present tendencies as indicated in the banking acts of 1933 and 1935, especially the latter, is to curtail the powers of the Reserve Board and increase the powers of the Treasury Department.

The table given below shows the progress of the Federal Reserve system in significant years. The year now ends in December.

IV. Bank of England.—This greatest of financial institutions is situated in the center of London, and covers an area of about four acres. Its corporate name is, "The Governor and Company of the Bank of England," and its management is in the hands of a governor, deputy governor, and 24 directors, who are elected by the shareholders. Every Thursday the directors meet, and the influence of this gathering is felt throughout the world. The bank is a private corporation. Over 925 persons are employed. "Bank of England" notes are issued by it, and no interest is allowed on deposits. Every night since the riot of 1780 a guard of soldiers has been marched into the bank for its protection.

The institution was devised and founded by William Paterson, the first charter being issued on July 27, 1694, by authority of an act of Parliament. It was stipulated that the entire subscribed capital ($6,000,000) was to be lent to the government at 8 per cent., and an allowance of $20,000 for management. The bank was granted the privilege of issuing "bills payable in coin on demand," and transferable "to bearer on demand." At first these promissory notes had to be indorsed on transference, but in 1704 this statutory requirement was repealed, and from that time the banks in England have issued notes of £5 and upwards. The original charter was for only eleven years, but it has been constantly renewed, the last renewal being in 1844. By the act of Peel's government, the Bank of England was divided into two separate departments—the "issue" and the "banking." The monopoly of the bank to issue notes in London and within a radius of 65 miles (granted in 1826) was left untouched, and is in force to this day. The "issue department" deals only with the circulation of notes, some $150,000,000 being constantly in the hands of the public. The "banking department" differs from other banking concerns, having the management of the public debt and paying the dividends upon it. It also holds the government deposits, assists in the collection of the revenue, and is universally recognized as the bank of other banks. At present the currency of England is largely in the hands of this bank, and the reserves of all London banks are kept there.

In the bank's weekly published statements is given the discount at which it will handle first-class paper. The rate of interest allowed by all

COMBINED BALANCE SHEET OF ALL FEDERAL RESERVE BANKS
(In thousands of dollars: add 000)

Year	Gold Reserve	Total Assets	Deposits	Fed. Reserve Notes	Fed. Reserve Bank Notes	Capital Paid in	Surplus
1915	321,068	485,342	412,952	13,385	.....	54,846	.....
1920	2,023,916	6,244,580	1,750,600	2,325,629	214,610	99,020	164,745
1925	2,782,349	4,960,423	2,297,264	1,694,771	.....	116,602	217,837
1929	3,020,951	3,754,363	2,696,471	1,709,816	.....	167,025	254,398
1930	3,037,193	4,856,183	2,539,411	1,354,881	.....	170,444	276,936
1931	2,738,341	5,731,492	2,460,065	2,383,948	.....	164,650	174,630
1932	2,992,623	5,940,115	2,469,993	2,688,871	.....	152,303	259,421
1933	3,590,738	6,874,888	2,887,885	2,960,748	180,563	145,527	278,599
1934	5,124,347	8,228,752	4,261,702	3,160,777	28,664	146,777	139,228
1935	7,835,361	11,025,052	6,385,978	4,047,052	337,078	130,512	169,736
1936	9,121,155	12,524,693	7,108,919	4,638,197	354,660	130,836	167,044
1937	9,481,015	12,883,074	7,575,819	4,661,627	360,720	132,745	173,469
1938	12,165,806	15,582,677	10,087,947	4,790,047	324,316	134,575	175,422
1939	15,524,217	19,029,300	12,939,921	5,274,522	300,531	135,599	176,416

the London joint-stock banks on deposits is usually at the rate of one and one half per cent. less than the rate of discount given by the Bank of England. The rate of interest on overdrafts, the discount rate throughout Great Britain, and the interest rates allowed by London banks on cash balances of foreign correspondents are all established by the rate of discount allowed by the Bank of England. It also fixes the rate of discount on documentary bills, as to the rebating of interest on account of anticipating repayment. The influence of this rate of discount is felt by all international bills of exchange, and it often acts as a protection to the gold held by the bank itself, increasing the value of money in London, encouraging imports, and checking exports of gold.

The Bank of England is known as the "Old Lady of Threadneedle Street."

V. Bank of England Notes.—The only form of paper money—or bank bills—in general use in Great Britain; their promise to pay, in paper money,—similar to our national bank circulation. Notes are printed and all the machinery of issuing, redeeming, cancellation, etc., is performed by the "issue department." A debt due to the Bank of England from the government is the security of the notes to the sum of £11,015,100; £7,434,900 may be issued against securities, but there must be a deposit of coin or bullion against all additional notes issued. The use of one fifth silver is granted by law, but only gold is used. Bank of England notes are legal tender except in Scotland and Ireland.

VI. Bank of France.—After Napoleon had become First Consul, he desired a financial institution that would be subservient to the government, as well as of use to it, and therefore established in 1800 the Bank of France. Its central, or head, office is in Paris, where the interest rates used throughout the country are regulated. These same rates are used in the transaction of the business of discounts and advances at the branches or auxiliaries of the central bank, in or connected with all the principal cities and towns of the country. The rate of discount has never been raised by the bank above 9 per cent.

The government nominates the gevornor and two sub-governors, while the stockholders, with the exception that three of the regents must be chosen from the treasury disbursing agents, select the general council, consisting of 15 regents and three censeurs.

While very largely under control of the government, shares held by individuals represent ownership in the Bank of France.

Bank notes can be issued by no other institution in the country, and are under the supervision of the regents, who are held responsible and must report to the government. While the bank makes it a point to keep on hand a large amount of bullion and coin, its general assets and credit are the only security for the notes; but if necessary the bank would be supported by the credit of the government. While redeemed in specie, these notes are legal tender. Payments are generally made by bank notes or specie, since checks are seldom used in France. As a result, a large issue of bank notes is demanded.

BUDGET ESTIMATES OF FRANCE
(Money in francs: add 000)

Year, Jan. 1	Revenues	Expenses
1935	46,991,968	47,817,012
1936	40,449,887	40,306,809
1937	44,396,742	48,168,497
1938	53,781,106	52,179,527
1939	79,961,183	79,889,137

FRENCH NATIONÁL PUBLIC DEBT
(Money in francs: add 000)

Kind of debt	Jan. 1, 1938	Jan. 1, 1939
Perpetual debt	50,038	50,030
Amortizable debt	232,853	228,717
Short term debt	35,992	33,931
Floating debt	51,343	66,429

French per capita debt, 1927, 7491 francs; 1930, 7202; 1935, 8249; 1939, 10,520.

VII. Bank of Germany.—The Reichsbank, or Imperial Bank of Germany. In 1765 the king of Prussia founded a state institution called the Royal Bank, which in 1846 became a bank of issue. This was succeeded by the Imperial Bank of Germany, on December 31, 1875, which continued in operation until 1924 when the new Reichsbank was organized. Like the Bank of France, the old Reichsbank ownership was represented by shares held by individuals, but in reality it was under government control. The Reichsbank was in Berlin, but had many branches throughout the empire. When its discount rate reached 4 per cent., all other banks had to agree; if lower, they could cut under not more than one quarter of 1 per cent. The rate of discount before the war was never higher than 7 per cent, and only once in 30 years, for a brief period, did it reach that point.

Discounting bills, both inland and foreign, formed a large part of the bank's business. It also received, held, and disbursed government funds, received deposits, and issued circulation, but was obliged by law to keep in its vaults the value of one third of its outstanding notes in cash, which consisted of bullion, coin, or notes of the imperial treasury. Discounted bills had to represent the remainder. Upon presentation at any of the branches, its notes had to be paid in gold, as they were not legal tender. They were part of the general liabilities of the bank, and had no prior claim upon its assets. The note issue was bound by three limitations. First, in excess of what was covered by its cash reserve, no more than 472,829,000 marks (known as its "Kontingent") could be issued, although this could be increased by the "Kontingent" of a smaller bank of issue, which passed to the Reichsbank when the former went out of business; second, any excess above this list was taxed 5 per cent. per annum; third, the previously mentioned holding of one third cash.

The New Reichsbank.—On August 30, 1924, laws were passed by the Reichstag providing for the establishment of a new bank of issue in Germany. These laws were drafted in compliance with the Dawes Committee plan for financial reorganization and currency stabilization.

The new Reichsbank has a practical monopoly of the note issue for a period of 50 years. Notes

issued by the bank are called reichsmarks. These reichmarks are exchangeable for the present circulation at the rate of one trillion marks for one reichsmark.

The capital of the new bank must amount to at least 300,000,000 and may not exceed 400,000,000 gold marks. The organization of the new Reichsbank is very similar to that of the old bank, but certain foreign powers exercise supervision acting through the board of managers. There is a general board composed of seven foreign and seven German members. The president of the bank is elected by majority vote of the general board. The president then appoints the members of the managing board, who must all be of German nationality. The managing board exercises the predominating influence in the administration of the bank.

In addition to note issue, the bank has other important functions, such as conducting the country's clearing system; furnishing a discount market by discounting good commercial paper running 90 days or less; and acting as the fiscal agent of the government.

SUMMARY OF ORDINARY GERMAN FINANCING

(Figures in millions of Reichsmarks: add 000)*

Year March 1	Ordinary taxes	Excises	Customs	Totals
1935	4,970 *	2,100	1,150	8,220
1936	6,170	2,230	1,250	9,650
1937	7,840	2,320	1,332	11,492
1938	9,820	2,550	1,594	13,964
1939	13,061	2,833	1,818	17,712

* Reichsmark quoted at about .4033 of a dollar, U. S. gold, on Dec. 31, 1938.

SUMMARY OF ACKNOWLEDGED GERMAN NATIONAL DEBT

Nature of debt admitted	Millions and tenths of Reichsmarks
War debt from before 1914	2,726.2
Other debts before Apr. 1, 1924	580.9
External loans	1,257.3
Internal loans (long time)	19,576.8
Internal loans (short time)	6,534.9
Totals	30,676.1 *

* No regular budget printed since 1935. Totals do not include such special bills as 12,597 billions of marks, as of Sept. 30, 1937; nor any special levies, with no guarantee of repayment.

Gold Reserves of Central Banks	July 1, 1934 (Figures in millions: add 000,000)	July 1, 1939 000,000)
Total of 50 Countries	$21,304	$34,518
United States	7,931	17,518
Canada	133	1,070
England	1,579	3,300
France	5,321	3,500
Germany	30	160
Italy	567	200
Russia	716	1,000
Argentina	405	431
Japan	384	164

VIII. Clearing House.—Previous to the establishment of the London Clearing House in 1775, each banker was obliged to send his clerk to every other banker in London in order to collect his dues. In that year a "clearing house" or common center of exchange was decided upon, where the representatives of each bank could meet daily for the exchange of bills and the settlement of differences. Eventually the clearing house and each bank making use of it opened an account at the Bank of England, and at the close of each day the balances are now adjusted by transfers from one account to another. What each bank owes the clearing house is shown by the total, and if the amount held by any particular bank is larger than the total amount against it, the clearing house owes it the balance, and it is called a "creditor bank." But if it owes more than the amount of checks which it holds against the other banks, it must pay that amount to the clearing house, and is a "debtor bank." Of course, the total amount of debits will just offset the credits at the close for the day of the clearing house transactions, since that merely acts as a medium for settlement. Naturally checks drawn by a bank's depositor in favor of another depositor of the same bank do not pass through the clearing house. To enjoy full privileges, a bank must be a member of the clearing house association, and the expenses are shared among the banks.

The country banks are represented in the London Clearing House by their London agent. The more important provincial towns have clearing houses of their own. The great public usefulness of such institutions may be inferred from the fact that checks aggregating about $45,000,000,000 pass through the London Clearing House each year. In the United States similar institutions have been established in over 100 cities, the most important being the New York Clearing House, founded in 1854.

TRANSACTIONS OF THE NEW YORK CLEARING HOUSE, SELECTED YEARS, SINCE 1854:

Year Ending Sept. 30	No. of Banks	Total Capital	Clearings for Year	Average Daily Clearings	Balance for Year	Average Daily Balance	Balance to Clearings
			(Money tot	als in thousands:	add 000)]		
1854	50	47,657	5,750,456	19,104	297,411	988	5.17%
1860	50	69,890	7,231,143	23,402	380,693	1,232	5.26
1865	55	69,684	26,032,384	84,796	1,035,765	3,374	3.97
1870	61	82,417	27,804,539	90,274	1,036,485	3,365	3.72
1875	59	80,435	25,061,238	81,899	1,408,609	4,603	5.62
1880	59	60,475	37,162,129	121,510	1,516,539	4,956	4.07
1885	64	58,613	25,250,791	82,016	1,295,355	4,247	5.12
1890	65	60,812	37,660,687	123,074	1,753,040	5,728	4.65
1895	67	62,623	28,264,379	92,232	1,896,574	4,247	6.71
1900	64	74,222	51,964,589	170,936	2,730,442	5,729	5.25
1905	54	115,973	91,879,318	302,235	3,953,876	13,006	4.33
1910	50	132,350	102,553,959	338,462	4,195,294	13,846	4.09
1915	63	178,550	90,842,708	299,811	5,340,847	17,627	5.87
1918	59	205,850	174,524,179	575,987	17,255,063	56,947	9.88

TRANSACTIONS OF THE NEW YORK CLEARING HOUSE, SELECTED YEARS, SINCE 1854—Continued

Year Ending Sept. 30	No. of Banks	Total Capital	Clearings for Year	Average Daily Clearings	Balance for Year	Average Daily Balance	Balance to Clearings
1920	55	261,650	252,338,249	830,060	25,216,212	82,948	9.99
1925	36	326,350	276,873,935	913,775	29,721,103	98,089	10.73
1929	24	617,125	456,937,947	1,508,046	50,462,034	166,541	11.04
1930	23	632,725	399,471,638	1,318,388	56,638,163	186,925	14.18
1931	26	666,475	287,735,302	949,621	37,783,326	124,697	13.13
1935	21	614,955	174,415,779	577,536	22,911,551	75,866	13.14
1936	21	526,174	186,490,263	615,479	26,263,055	86,677	14.08
1937	21	523,547	194,891,611	645,336	28,975,697	95,946	14.86
1938	21	523,125	163,106,984	540,089	25,071,240	83,017	15.37
1939	21	518,997	170,578,531	582,179	27,396,158	93,502	16.06
1940	21	518,518	157,508,323	521,551	28,691,775	95,006	18.22

Total clearings for 87 years, $8,369,818,566,863.64; balances, $812,374,583,693.94. Largest day's transaction on record, Oct. 31, 1929; exchanges, $3,853,040,114.48; and balances $378,201,061.08. Indirectly, over 400 institutions clear through the association.

Bank clearings for 1929 and 1933, the highest and lowest respectively since 1920, and for 1938:

(Figures in billions: add 000,000)

City	1929	1933	1938
New York	$477,242	$157,414	$165,156
Chicago	36,714	9,612	14,561
Philadelphia	31,837	12,424	17,969
Boston	27,610	9,405	10,507
Detroit	11,558	1,941	4,420
San Francisco	10,938	4,685	7,053
Pittsburgh	10,264	3,795	5,561
Cleveland	7,964	2,531	4,352
Kansas City, Mo.	7,451	2,864	4,406
St. Louis	7,278	2,897	4,211
Baltimore	5,287	2,044	3,274
Minneapolis	4,705	2,518	3,256

IX. Savings Banks.—Organized under state laws or, if in the District of Columbia, under Federal laws, with the expectation that the deposits received shall be chiefly the savings of small earners,—laborers, wage-earners, and small salaried persons in general. These are supposed to be unable to intelligently invest money for themselves, and a suitable form of investment for their small savings is not easily found. The "Board of Investment" or "Finance Committee" is elected for the purpose of safely investing the aggregate savings deposited in the bank. In some states the legal restrictions controlling the investment of savings bank funds are very lax and unsafe, in others very strict and conservative. Of the latter class are those of New York, Massachusetts, Connecticut, and possibly Vermont, Maine, and New Hampshire.

According to the rules and regulations of the bank, interest ranging from three to five per cent. is paid on money deposited. Savings institutions consider safety before profit, and afford a sound investment.

The rise of modern banking really dates from the establishment at Venice of the Banco di Rialto, in 1587. Daniel Defoe originated the modern "savings bank" idea, suggesting it in 1697. But "father of savings banks" is the title given to Rev. H. Duncan, of Ruthwell, Dumfriesshire, who, in 1810, established one which accumulated $5,800 in four years.

Mutual savings banks numbered 634, and stock banks 1,466 in 1914; in 1933, 576 mutual and 219 only of stock banks. Statistics following are from reports of the Controller of the United States Currency:

ALL U. S. SAVINGS BANKS SINCE 1820
(In column 4 add 000)

Year	Number of Banks	Number of Depositors	Total Deposits	Average to Depositor
1820	10	8,635	1,138[1]	132[1]
1830	15	16,931	2,537	150
1840	61	78,701	14,052	178
1850	108	251,364	43,431	173
1860	278	693,870	149,278	215
1870	517	1,630,846	549,874	337
1880	629	2,335,582	819,107	351
1890	921	4,258,893	1,524,845	358
1900	1,002	6,107,083	2,449,548	401
1910	1,759	9,142,908	4,070,486	445
1915[2]	630	8,305,562	3,946,069	475
1915[2]	1,529	2,380,496	856,546	360
1920	620	9,445,327	5,172,348	548
1920	1,087	1,982,229	1,319,654	666
1930	606	11,895,075	9,190,969	773
1930	714	2,207,519	1,166,192	528
1931	600	12,356,114	10,017,225	811
1931	654	1,918,578	1,122,085	533
1932	594	12,521,750	10,021,852	800
1932	502	1,617,737	832,563	514
1933	576	12,683,788	9,699,509	765
1933	219	1,378,555	705,589	512
1934	578	13,077,111	9,764,596	747
1934	318	1,283,046	694,261	541
1935	571	13,213,211	9,902,107	749
1935	341	1,359,414	714,900	526
1936[2]	566	13,165,945	10,037,169	762
1937	564	13,265,605	10,185,738	768
1938	562	12,505,071	10,146,230	811
1939	553	13,266,172	10,382,208	782

[1] All over $500 called $1,000; over 50 cents called $1.
[2] From 1915 to 1935, the first figures in each set are for mutual banks, those owned by depositors; second in each set, for stock banks, those owned by others than the depositors. Both are combined after 1935. In 1939 there were, besides, $11,045,000 in private banks, with 23,476 depositors.

In European countries savings banks have been principally encouraged by public authorities. The prevailing type in Germany is the municipal savings bank. Similar banks are common in France, Austria, and Italy; there are also a few in Denmark, Sweden, Russia, and Japan. Many of these banks pay as much as four per cent. interest, and are thus a great attraction to small depositors. In England postal savings banks were established under an act of 1861, and largely took the place of the trustee savings banks. In 1870 Belgium reorganized the state savings bank and made the post office the medium for the collection and payment of deposits. Postal savings banks were introduced into Italy in 1876, the Netherlands in 1881, France and Sweden in 1882, Austria in 1883, and Hungary in 1886. Japan, Russia, and the British colonies have postal banks.

X. Legal Investments for Savings Banks.—Circulars of bond houses often contain expressions such as "Legal for New York savings banks," "Legal for Connecticut savings banks," given that a bank official will know that he may in strict compliance with the law purchase such bonds, and, since that is true, the private investor may feel safe in purchasing the same. For in what stocks, bonds, etc., a savings bank may invest the money of its depositors is specifically regulated by the laws of the greater number of states. Of all the eastern states, New Hampshire, Maine, Vermont, Connecticut, Massachusetts, and New York, in climax order, most strictly limit their savings banks investments, while there is very little limitation upon those of Maryland, Pennsylvania, and New Jersey, and practically none upon those of Rhode Island. Naturally the investments of the first named are generally considered the safest for the public.

XI. Trust Company.—A corporation chartered under state laws to receive and execute trusts. *Usually* with powers to carry on a general commercial banking business, and to act in many different fiduciary capacities. These fiduciary capacities may include acting as executor under a will; administrator of the estate of a deceased person; guardian of the estate of an infant, or spendthrift; trustee under a will, a deed of trust, or a mortgage. They have become general as transfer agents for large corporations; caretaker of the estates of incompetents; and in many cases underwriters of loans for other corporations or municipalities. Unlike national banks they are not subject to government control, though they may perform the functions of ordinary banking institutions, but may not issue bank bills. The laws regulating the transactions of trust companies differ widely in the various states. The first corporation in the United States with the powers of trustee is the Farmers' Insurance and Loan Company (later the Farmers' Loan and Trust Company) chartered in New York in 1822. Eight years later the New York Life Insurance Company was established, and in 1836 the Pennsylvania Company was incorporated as a trust by the State of Pennsylvania. The number of such companies increased more rapidly after the Civil War.

The growth of trust companies has been rapid; in 1890 there were only 149 in the United States; in 1900 this number had further increased to 290; by 1910 this number had further increased to 1091, or more than ten times the number in 1880. Within the past two decades, from 1910 to 1930, the growth of trust companies has again increased, due to the licensing of national banks to act in this capacity. Again, this increase is due largely to the fact, that many corporations have been chartered as trust companies instead of banks, in order to benefit by the greater latitude allowed to the former under the laws.

Trust companies receive deposits subject to check, allowing as a rule interest of from two to three per cent. on such accounts. It is probably due to this fact that their business has increased so extensively in recent years. Another reason is that their public usefulness is being more generally recognized, and it is becoming more usual to appoint a trust company as executor, trustee, guardian, or administrator than to appoint private individuals; for the company is regarded as a permanent institution, and consequently more to be relied upon.

STATISTICS OF ACTIVE BANKS IN THE UNITED STATES
(Money sums in thousands: add 000)

Items Accounted For	1920 30,139 banks	1925 28,841 banks	1930 24,079 banks	1935 16,053 banks	1939 15,146 banks
Assets					
Loans, discounts, overdrafts	$30,650	$33,598	$40,510	$20,419	$21,516
Government, other securities	11,252	15,375	17,945	24,217	28,386
Cash	1,076	951	866	785	1,042
Balances with other banks	7,291	8,956	10,312	11,613	19,584
Other assets	2,559	3,018	3,829	3,353	3,073
Total assets	$52,828	$61,898	$73,462	$60,387	$73,601
Liabilities					
Capital	$ 2,703	$ 3,170	$ 3,889	$ 3,605	$ 3,205
Surplus, undivided profits	3,251	4,181	6,392	4,230	5,184
Circulation	688	648	652	222	.....
Total deposits	41,725	51,995	59,847	51,586	64,577
Bills payable, rediscounts	3,285	925	606	61	27
Other liabilities	1,427	1,131	1,968	671	704
Total liabilities	$53,079	$62,050	$73,354	$60,375	$73,647

In the above table all active banks, not in receivership, in 1939 were made up of national banks (5,209); state banks (including commercial and trust companies doing banking business, 9,321); mutual savings banks (552), and private banks (64).

In 1938, 15,341 banks held licenses. In 1921, 505 banks failed; in 1929, 659; in 1935, 34; in 1939, 42. In 1933, from Jan. 1 to the 4th of March, 408 closed, and 2,113 failed to open after the "bank holiday." Licensed, July 1, 1933 to Dec. 31, 1936, 1,242.

Reserves with Reserve Agents are included in balances with other banks, as were also exchanges for clearing house purposes and all cash items. Since 1933, cash in hand has been included with Other Assets. Under Liabilities, reserve accounts are included as surpluses. Capital includes also capital notes and debentures in banks other than national.

A few other changes in accounting make totals, as reported in tables printed in the past, seem inconsistent with present items. Trust companies are now listed officially under commercial banks.

STATISTICS OF ALL ACTIVE NATIONAL BANKS
(Money sums in thousands: add 000)

Items Accounted For	1920 8,030 banks	1925 8,072 banks	1930 7,232 banks	1935 4,431 banks	1939 5,209 banks
Assets					
Loans, discounts, overdrafts	$13,502	$12,596	$14,897	$ 7,369	$ 8,574
U. S. and other securities	4,051	5,705	6,888	10,716	12,553
Cash	450	360	342	406	531
Balances with other banks	4,045	4,432	5,073	6,463	10,544
Other assets	1,228	1,170	1,672	1,103	979
Total assets	$23,276	$24,263	$28,872	$26,057	$33,181
Liabilities					
Capital	$ 1,224	$ 1,368	$ 1,744	$ 1,810	$ 1,563
Surplus, undivided profits	1,398	1,601	2,232	1,277	1,827
Circulation	688	648	652	222	....
Total deposits	17,167	19,922	23,269	22,518	29,470
Bills payable, rediscounts	2,071	395	237	5	4
Other liabilities	728	228	990	221	318
Total liabilities	$23,276	$24,162	$29,124	$26,053	$33,182

The fiscal year of national banks ends on June 30. National banks include all those chartered and supervised by the federal government. Most of these now join in insuring their depositors. Statements concerning classification of assets, found at the bottom of page 1238 also apply to the national banks in the table on the page above. On page 1238 national banks are, of course, included in the totals of all banks.

LOAN INSTITUTES.

Various organizations, for the most part co-operative, are designed to provide a safe investment for the savings of persons of small means, and to loan funds to members at reasonable rates, for the purpose of housebuilding and the like. They exist under various designations, such as homestead aid associations, mutual loan associations, coöperative banks, coöperative savings and loan associations, building societies, etc. In Great Britain such associations are incorporated by registration by the registrar of friendly societies, with whom their rules must be filed. A society is there permitted to borrow to the extent of two thirds of the amount advanced on mortgages; for sums beyond this the members of the managing committee are personally liable. In the United States, building and loan associations are in many states placed under the same laws as savings banks, while in others they are free from special regulations.

Building and Loan Associations.—Incorporated under the laws of many of our states, this form of bank encourages real estate investments, owning of homes, and saving of money, by assisting those of limited means to accumulate money for improvements on lands, paying incumbrances thereon, and erecting buildings. Over 700,000 homes have been acquired by this means. A large percentage of shareholders in the local associations are working people.

To join a Building and Loan Association, a person has to subscribe for one or more shares whose final value is usually $200. By so doing he pledges himself to pay a stated sum in fixed periodical installments, and must suffer prescribed penalties if he fails to do so. These payments he agrees to make until the shares are fully paid, that is, reach their stated values, these requirements being more quickly met because of the proportion of the earnings of the institution allotted to the shareholders' credit. When an association has on hand money to loan, a shareholder may borrow from it money upon real estate up to the face value of his

MEMBERSHIP AND TOTAL ASSETS
OF BUILDING AND LOAN ASSOCIATIONS

Year.	Number of Associations.	Total Membership.	Total Assets.
1895	5,770	1,545,129	$579,627,765
1900	5,356	1,495,136	571,366,628
1905	5,264	1,642,127	629,344,257
1910	5,869	2,169,893	931,867,175
1915	6,806	3,334,899	1,484,205,875
1917	7,269	3,838,612	1,769,142,175
1918	7,484	4,011,401	1,898,344,346
1919	7,788	4,289,326	2,126,620,390
1920	8,633	4,962,919	2,519,914,971
1921	9,255	5,809,888	2,890,764,621
1922	10,009	6,364,144	3,342,530,953
1923	10,744	7,202,880	5,942,939,880
1924	11,844	8,554,352	4,765,937,197
1925	12,403	9,886,997	5,509,176,154
1926	12,626	10,665,705	6,334,103,807
1927	12,804	11,326,261	7,178,562,451
1928	12,666	11,995,905	8,016,034,327
1929	12,342	12,111,209	8,695,154,220
1930	11,777	12,343,354	8,828,611,925
1931	11,442	11,338,701	8,417,375,605
1932	10,997	10,114,792	7,750,491,084
1933	10,727	9,224,105	6,977,531,676
1934	10,919	8,370,146	6,450,424,392
1935	10,534	7,049,567	6,888,710,326
1936	10,256	6,125,971	5,741,935,430
1937	9,768	6,233,019	5,711,658,410
1938	8,951	6,829,167	5,629,564,869
1939	8,328	6,499,511	5,664,262,030

COMPARISON OF SIX STATES

Year	State	Total Membership	Total Assets
1933	Pennsylvania	884,065	$957,791,288
1939	Pennsylvania	465,981	481,790,597
1933	Ohio	1,968,129	1,283,665,876
1939	Ohio	1,438,559	827,015,918
1933	Massachusetts	436,920	502,873,869
1939	Massachusetts	421,691	492,254,576
1933	California	350,000	359,894,896
1939	California	223,820	276,904,146
1933	Illinois	792,300	394,648,000
1939	Illinois	373,834	346,856,591
1933	New York	593,098	422,141,280
1939	New York	591,791	422,334,142

shares, paying a small premium in addition to legal rate of interest. The plan of fixing the premium is now generally adopted; but formerly the shareholders were offered at stated intervals the loanable money of the association, it being awarded to best bidders. Using the shares as collateral, some associations loan money to members up to a certain percentage (say 90 per cent.) of amount paid in.

When all the required payments upon shares have been made, the return of his money, plus his share of the earnings of the association, may be demanded by the subscriber.

In the United States the first institution of this kind was organized in Frankford, Pa., in 1831, and in the next twenty years a number of similar associations were established in Philadelphia, though none were incorporated till 1849. After the Civil War their numbers rapidly increased until in 1876 there were in Philadelphia alone over 450 associations.

In England building and loan associations are known as "building societies"; the first originating in Birmingham in 1781. Their numbers increased considerably during the nineteenth century, and special legislation was enacted in 1838 and 1874. Similar societies exist in most European countries; in Germany they are called *Baugenossenschaften.*

Money.—Money is both an accepted medium of exchange and a measure of value. Any article of value will suffice for the purpose, but stamped metal, and especially gold and silver or their representative in paper notes, are the most convenient and universally acceptable. In primitive forms of commerce object was bartered for object, as is occasionally done to-day in many parts of the world. But soon the need was felt for some fixed standard of value so as to render exchanges easier and more equitable. For this purpose objects which were in popular demand either for use or ornament became the first media of exchange. Various commodities and objects have been utilized as money; tin was used in Britain and Syracuse; lead in Burma; iron in Sparta; furs in Siberia and Alaska; skins and platinum in Russia; silk and other fabrics of fixed length in China, Tibet, and certain parts of Africa; nails in Scotland; soap in Mexico; bullets and wampum in Massachusetts; logwood in Campeche; tobacco in Virginia. Various kinds of eatables have also been employed as money; rice grains by the ancient Koreans as well as by the modern Filipinos; grains of salt in Abyssinia and at Laos; cubes of pressed tea in Mongolia; codfish in Newfoundland; sugar in the West Indies; cattle in Germany and Rome. In the early days of Rome money of wood and leather was in circulation. The next stage in the development of money was in the selection of objects whose value was determined by their rarity, and even in our times we can find numerous instances of these primitive forms. The Pelew islanders treasure up as current money a certain number of obsidian or porcelain beads and terra-cotta prisms. In the island of Yap blocks of aragonite take the place of money; this rock, being unknown on the island, has to be sought for in the Pelews, and the larger the block the greater its value. This illustration will serve to show that the rarity of a substance is not enough to answer all the essentials of money. A condition of suitable money is that it may be easily handled, and though small in size may represent a high value, either real or fiduciary. Such, for example, are the teeth of the Wapiti deer (*Cervus canadensis*), which the Shoshone Indians and the Bannocks of Idaho and Montana still utilize in their transactions. Such also is the skin-money of the ancient Scandinavians and Carthaginians, the cocoa-seed money of the ancient Mexicans, the animal skull-money of the Mishmee, etc.

Several kinds of shells are still used as money; the *Dentalum entalis* by the Indians of the northwest; the *Venus mercenaria*, transformed into wampum, by the Indians of the Atlantic coast, etc., and in particular the cowry shell, which is commonly used in various parts of Asia, Africa, and the islands of the Indian and Pacific ocenas. In Bengal about a century ago 2,400 to 2,560 cowries were worth a rupee. But the cowry most widely circulates in tropical Africa, which fact is largely explained by its rarity; in consequence the rate of exchange is much higher in Africa than in Asia.

The origin of true money must however be traced to metals. Iron or bronze plates were used as money in Assyria, among the Mycenians, and the ancient Britons. Metal plates of varying form are still generally employed as money in Africa, for example, the *loggos* or pickaxes of the negroes of the Upper Nile, the iron plates of the natives of the Ubangi district, the spearheads of the Jurs, the X-shaped bronze objects made in Lunda and current all over the Kongo, and rings of copper in central Africa; while up to fifty years ago in Cambodia thin iron rings about six inches long and weighing about seven ounces each were used as money.

In regard to primitive money it will be noted that it could easily be transformed into articles of utility (lance-iron, arrowhead, sword, shovel and the like). In China the first bronze money was in the form of a knife, the handle of which terminated in a ring; eventually the blade disappeared altogether leaving only the ring, which was transformed into the well-known Chinese money, pierced with a square hole, called *sapec* or "cash." In central Africa brass or copper wire which may be readily utilized is employed as money. Silver bars, which are cut up into pieces as required, are also current money in China, just as they were in Russia in the fifteenth century.

Whatever article or substance is invested with the functions of money the result is the same in that it fixes the measure of value for all commodities; not only for those actually bought and sold but for all those which are marketable. Some economists hold that money is more important as a measure of value than even as a medium of exchange. Money also serves as a standard of value, enabling us to estimate the relative value of commodities at different periods. This function is distinct from, though subordinate to, that of money as a measure of value, for the latter function is that of a common denominator for one and the same time.

It is important that money should be stable in value, hence the choice of the precious metals among civilized nations. Precious stones,

though answering many of the requisites of money, lack the essential qualities of divisibility and uniformity. Stability of value becomes the more important when deferred payments are to be taken into account; and the precious metals perform this function better than any other commodity.

The value of money is largely dependent upon the law of supply and demand. The supply is obviously the quantity of money in existence; the demand is determined by many factors, chief of which are (1) the volume of exchanges to be effected; (2) the rapidity of circulation, stimulated greatly by savings banks; (3) the universal employment of credit. The latter in particular exercises a dominant influence on the demand for money. The elaborate organizations which owe their origin to the use of credit do the greater part of their transactions without the actual interchange of money, balances alone being settled in specie. Money as a medium of exchange is thus greatly economized by the establishment of such agencies.

The early American colonists experienced much difficulty with regard to their currency, for as the supplies of money drawn from England were much in excess of their exports to that country it followed that their metallic wealth rapidly left these shores, driving the colonists back on other devices. Articles of food and produce were made "legal tender" in some states; the wampum of the Indians was used in others. Another plan adopted by the colonists was to increase the nominal value of the English current coins. A similar device is employed to-day in the Azores, the continental Portuguese money being rated at 25 per cent. in advance of its face value.

The paper money first issued in Massachusetts in 1690, though serving to form the habits of the people, collapsed altogether about the time of the Revolution, for the paper was practically irredeemable. In 1782 as much as $500 of this paper currency had to be given in exchange for one Spanish silver dollar. Specie, secured through foreign loans, for a time bolstered up the circulation. The chartering of the Bank of North America at Philadelphia in 1782, and the coinage of money by the Federal government, gradually overcame these difficulties. Of foreign coins which circulated in the country first place must be given to the Spanish dollar, which even as late as 1857 was accepted as legal tender in all of the United States post offices. Specie payments were suspended from January 1, 1862, to January 1, 1879, and during the greater part of that period gold and silver coins were not in circulation except on the Pacific coast, where, it is estimated, the specie circulation generally was about $25,000,000. (The monetary system of the United States will be found fully treated in the Dictionary of Financial Terms.

The stock of money in the United States between 1890 and 1939, as reported by the U. S. Mint, was as follows:

Year.	Gold Coin and Bullion.	Silver Dollars.	Subsidiary Silver.	Federal Reserve Notes.	National Bank Notes.	Total including Others.*
1890	$ 695,563,029	$380,083,304	$ 76,825,305		$185,970,775	$ 1,685,123,429
1895	636,256,023	547,777,049	76,954,434		211,691,035	1,819,359,557
1900	1,034,384,444	566,131,027	82,863,742		309,640,444	2,339,700,673
1905	1,367,655,088	568,228,865	114,824,189		495,719,806	2,883,109,864
1910	1,636,043,478	568,227,508	155,158,748		713,430,733	3,419,591,483
1915	1,985,539,172	568,272,478	185,430,250	$ 84,260,500	819,273,593	3,989,456,186
1920	2,865,482,492	258,857,494	258,855,239	3,405,877,120	719,037,730	8,158,485,864
1925	4,360,382,000	522,061,078	283,471,971	1,942,239,530	733,366,074	8,303,631,583
1929	4,324,350,860	539,960,848	304,187,449	2,194,970,415	704,294,442	8,538,796,192
1930	4,534,865,716	539,959,520	310,978,375	1,746,500,885	698,317,468	8,306,564,064
1931	4,915,921,258	539,958,327	308,619,365	2,101,578,450	697,004,446	9,079,623,698
1932	3,918,596,000	540,008,000	304,883,000	3,028,397,215	736,674,213	9,003,907,691
1933	4,317,554,384	540,007,398	298,634,122	3,336,866,350	970,601,088	10,078,416,523
1934	7,856,180,556	540,007,124	295,891,990	3,350,987,755	954,694,753	13,634,380,567
1935	9,115,643,492	545,642,265	313,423,778	3,492,853,620	769,095,645	15,113,034,715
1936	10,608,416,678	647,080,503	331,715,133	4,296,309,560	871,721,815	17,402,493.297
1937	12,318,871,165	547,079,989	358,975,368	4,508,972,920	272,164,455	19,376,690,005
1938	12,962,953,931	547,079,506	373,461,187	4,420,815,000	220,687,930	20,096,864,732
1939	16,110,078,913	547,078,920	379,811,734	4,765,988,750	189,291,607	23,754,736,319

* These others include United States notes, minor coin, and Federal Reserve bank notes.

Paper Money.—Primarily paper money was representative, that is, it was metallic currency in another and more convenient form. Such is the function of the United States gold and silver certificates, each of which represents an equivalent amount of specie deposited in the treasury. But paper money in the strict sense of the term is based on credit, and is merely a promise to pay without any absolute guarantee being afforded that the promise will be fulfilled. So long as "inconvertible" paper money is not issued in excess of public demands, its value does not tend to depreciate, but immediately the supply becomes excessive paper is at a discount, gold and silver being correspondingly at a premium. Unlike metallic money, there is always the danger of overissue regardless of the actual requirements of the community. Modern history furnishes examples of excessive issues of paper money, notably the *mandats* and *assignats* of the French Revolution, the "greenbacks" of the Civil War, the irredeemable currency of Italy, Russia, and Austria. The effect of overissue is usually disastrous to commerce and international credit.

Paper money in America was first issued by the colonists; Massachusetts, as already referred to, issuing bills aggregating £7,000 in 1690, and soon increasing to £10,000, to pay the soldiers who had served in the war with Quebec. What was originally only intended as a make-

shift became a practice. Rhode Island issued paper money so recklessly that in 1750 it had depreciated to one twenty-fifth of its par value. Parliament in 1751 vetoed the further issue of such money on the part of the New England colonies, and in 1754 extended the veto to the remaining colonies. To carry on the Revolutionary war, paper money was issued again and again, the amount authorized by Congress aggregating $41,000,000 by 1779, while the states on their own accord issued paper amounting to $209,000,000. The ratio of paper to silver was 40 to 1 in 1780; and at this ratio the central government paid $119,000,000 for paper retired and destroyed. By the funding act of 1790 paper was accepted in exchange for government stock at one per cent of its face value. In this way $6,000,000 was received and canceled.

The first paper money ever issued by the government of the United States was authorized by the acts of July 17 and August 5, 1861. The notes issued were called "demand notes," because they were payable on demand at certain designated subtreasuries. They were receivable for all public dues, and the secretary was authorized to reissue them when received, but the time within which such reissues might be made was limited to December 31, 1862. The amount authorized by these acts was $50,000,000. An additional issue of $10,000,000 was authorized by the act of February 12, 1862, and there were reissues amounting to $30,000. The demand notes were paid in gold when presented for redemption and they were received for all public dues, and these two qualities prevented their depreciation. All other United States notes were depreciated in value from 1862 until the resumption of specie payments. The act of February 25, 1862, provided for the substitution of United States notes in place of the demand notes, and the latter were therefore canceled when received. By July 1, 1863, all except $3,770,000 had been retired, and nearly three millions of this small remainder were canceled during the next fiscal year. These notes were not legal tender when first issued, but they were afterwards made so by the act of March 17, 1862.

The principal issue of United States paper money was officially called United States notes. These were well-known "greenbacks" or "legal tenders." The act of February 25, 1862, authorized the issue of $150,000,000, of which $50,000,000 was in lieu of an equal amount of demand notes, and could be issued only as the demand notes were canceled. A second issue of $150,000,000 was authorized by the act of July 11, 1862, of which, however, $50,000,000 was to be a temporary issue for the redemption of a debt known as the temporary loan. A third issue of $150,000,000 was authorized by the act of March 3, 1863. The total amount authorized, including the temporary issue, was $450.000,000, and the highest amount outstanding at any time was $449,338,902 on January 30, 1861. There are still outstanding $346,681,016.

Single and Double Monetary Standards.—The needs of exchange have given rise to various systems of currency, in which gold, silver, and paper are generally combined. When only one metal is used as a standard of value the system is termed "monometallism"; when the use of both gold and silver at a fixed relative value is authorized as legal tender to any amount, it is known as "bimetallism."

Most of the great powers have adopted a monometallic system, gold being received at the mints without limit and converted into coin. Where a gold standard obtains, silver and baser coins have merely a subsidiary value, and are regarded as tokens, that is, their nominal value is in excess of their intrinsic value. These subsidiary coins are usually legal tender only up to a limited amount, and the quality issued from the mints is likewise restricted and determined by circumstances. Gold is invariably the standard of value under a monometallic system, though this is not absolutely essential. When the gold mines of California and Australia were producing an enormous output, the Belgian government about 1851 demonetized gold and substituted silver as the standard.

Under a bimetallic system if the market ratio between gold and silver differs from the legal ratio, one of the metals is sure to be shipped abroad. To meet such a contingency bimetallic countries reduced the fineness of the silver currency, and introduced a token coinage. This provision, combined with the issuing of certificates to represent the larger coins, placed the subject of bimetallism in a new light, and the question was narrowed down as to whether gold alone or gold and silver in conjunction provided the better standard of value, the question of circulation being no longer potent.

It is the fundamental requirement of bimetallism that both metals should be on exactly the same legal footing, and not merely that they should circulate conjointly. In the United States the present currency is not bimetallic; for the silver dollar, though not limited in legal tender, is yet limited in amount, and cannot be freely coined at the instance of any individual.

The question as to the respective merits of a single or a double monetary standard has given rise to much controversy. The arguments for and against bimetallism may be briefly stated. The bimetallists contend that (1) bimetallism would assure the maintenance of a par value between the two metals; (2) steadiness of exchange between gold-using and silver-using countries; (3) a more stable standard of value than is possible in a gold standard, since bimetallism rests on a broader basis and a decline in prices is less likely to occur. The monometallists argue (1) that bimetallism has been thoroughly tried by individual nations and found unsatisfactory, owing chiefly to one or other metal being exported when its bullion value was greater in some other country, since law cannot fix values; (2) that international bimetallism, if such could be brought about, would not be a guarantee of a universal ratio being either established or maintained; (3) the evils for which bimetallism is proposed as a remedy are of small consequence, and so far as affording relief goes it is held that bimetallism is only theoretical besides being more complicated and artificial, and would break down in practice; while some contend that (4) changes in prices have either no relation to the money supply at all, or else their influence is not so disturbing as the bimetallists claim, while their

compensations more than counterbalance their disadvantages.

To the argument that one or other metal would be likely to be exported, the bimetallists reply that the demand for the use of metals for coinage far outstrips any other demand; and furthermore the law can and does influence the value of metals, and the commercial ratio would perforce adjust itself to the legal ratio. This point is refuted by their opponents, who successfully argue that the French law of 1801, which fixed the ratio between gold and silver at 15½ to 1, did not control the market ratio. To this the bimetallists rejoin that the area was too restricted, and that if an international bimetallic system could be brought about, such a possibility would be absolutely eliminated.

Between 1871 and 1873 Germany substituted a gold standard, being enabled to do this by reason of the enormous indemnity paid by France, $54,600,000 of which was paid to Germany in gold coin. In 1873 the coinage of silver was suspended by the Paris mint, while in the United States, silver had almost entirely gone out of use, and Congress suspended the coinage of the standard silver dollar. The opening up of new silver mines, together with the huge surplus stock of silver thrown upon the market by Germany, caused the price of silver to rapidly decline. Public pressure was brought on Congress, and in 1878 an act was passed providing for the purchase of silver and the coinage of silver dollars. In twelve years 368,000,000 standard silver dollars were issued, but the price of silver began to fall, for it was not possible to keep this enormous quantity of silver in circulation. The government therefore by an act of March 14, 1900, extended the policy of issuing silver certificates, each representing actual coins deposited in the treasury. This act limited the denominations to $10 and under, except that ten per cent. of the total value of such certificates may be issued in denominations of $20, $50, and $100 at the discretion of the secretary of the treasury. Neither silver certificates nor silver dollars are redeemable in gold.

The Sherman Act of 1890 forced the Treasury to buy 4,500,000 ounces of silver a month for coinage to support legal tender notes. In 1893 the panic caused Congress to repeal the act and suspend coining of silver. Then about $260,000,000 in bonds were created to sustain a diminishing gold reserve. A dominant issue in the political campaigns of 1896 and 1900 was the coining of silver, as advocated by Bryan and his followers, in a ratio of 16 to 1 in value. Any owner of bullion was supposed to get this coined "free" at any U. S. mint. The actual ratio, as between the two metals, was 31.60 to 1 in 1895 and 80.39 in 1938. In 1938 about 33.7 cents worth of silver went into a dollar.

Following Great Britain in 1931, most nations went off the gold standard. On Feb. 1, 1934, the U. S. gold dollar was demonetized to 15 5/31 ounces of fine gold troy instead of the previous 25.8 ounces, and the value rose from $20.67 to $35 an ounce, giving the government a handsome profit. Gold was then withdrawn from circulation and melted into bullion bars, now deposited at Fort Knox, Ky. Since 1938 our surplus purchases of silver have been stored at West Point, N. Y.

Below is a report of the Director of the U. S. Mint as to money stocks of various nations. The money is in terms of the various currencies.

MONETARY STOCKS OF THE CHIEF NATIONS IN 1938
(Figures in thousands, except last column: add 000)

Country	Money Unit	U. S. Equivalent	Gold Stock	Silver Stock	Paper Money	Population	Per Capita
North America:							
United States	Dollar	$1.000	$14,511,624	$5,367,711	6,306,141	130,694	$200.36
Canada	Dollar	.9906	193,088	30,483	209,618	11,209	38.65
Mexico	Peso	.1993	29,000	54,409	296,000	19,479	29.48
Costa Rica	Colon	.1779	867	128	27,000	623	45.94
Cuba	Peso	.9993	.....	69,394	55,349	4,200	29.70
Guatemala	Quetzal	1.000	8,742	1,707	7,677	3,045	5.95
Haiti	Gourde	.2000	.....	122	7,126	2,600	2.79
Honduras	Lempira	.5000	.....	4,667	2,135	1,000	6.81
Newfoundland	Dollar	.9906	.....	2,042	29	289	7.17
Nicaragua	Cordoba	.1923	394	130	9,964	900	11.67
Panama	Balboa	1.000	.....	1,010	.....	548	1.87
Salvador	Colon	.8466	6,603	.....	14,424	1,665	12.63
Barbados	Dollar	1.7165	.....	644	598	191	6.50
Jamaica	Pound	4.6703	.....	.....	513	1,153	.45
South America:							
Argentina	Peso	.31135	431,561	.....	1,117,957	12,958	119.58
Bolivia	Boliviano	.0328	3,486	6	288,090	3,300	88.36
Brazil	Milreis	.0586	32,423	41,047	4,810,000	44,116	110.69
Chile	Peso	.0312	29,902	334	794,657	4,635	178.97
Colombia	Peso	.5700	26,970	11,379	66,231	8,600	12.16
Ecuador	Sucre]	.0695	5,521	499	69,061	3,000	24.37
Paraguay	Peso	1.6335	81	.....	1,238,685	950	1,303.97
Peru	Sol	.2020	23,146	4,646	107,708	7,100	19.16
Uruguay	Peso	.6147	72,799	3,127	94,066	2,120	80.19
Venezuela	Bolivar	.3134	57,633	38,139	140,443	3,530	66.92
Europe:							
Belgium	Belga	.1684	728,104	5,791	22,615,000	8,386	2,784.27
Bulgaria	Lev	.0123	24,536	22,875	2,800,500	6,371	447.01
Czechoslovakia	Koruna	.0351	94,605	.....	6,949,594	15,239	462.25
Denmark	Krone	.2084	53,366	.....	441,050	3,793	140.35
Eire	Pound	4.6703	16,462	4,737	17,110	2,937	13.05
Finland	Mark	.0206	25,390	.....	2,085,891	3,630	581.63
France	Franc	.0263	2,430,376	79,074	110,934,775	41,980	2,702.33
Germany	Reichsmark	.4008	25,543	511,770	8,604,293	78,679	116.22

MONETARY STOCKS OF THE CHIEF NATIONS IN 1938—Continued

Country	Money Unit	U. S. Equivalent	Gold Stock	Silver Stock	Paper Money	Population	Per Capita
Great Britain	Pound	$4.6703	$ 2,696,043	$ 280,218	538,609	47,485	$ 74.02
Greece	Drachma	.0086	32,886	2,610	7,239,000	7,107	1,023.57
Hungary	Pengo	.1964	36,734	2,696	863,370	10,111	89.30
Iceland	Krona	.2084	1,018	.....	12,520	118	114.74
Italy	Lira	.0526	192,885	.....	18,956,000	43,509	440.11
Netherlands	Florin	.5436	994,525	90,677	992,607	8,727	237.53
Norway	Krone	.2346	99,598	1,642	474,000	2,921	169.87
Poland	Zloty	.1887	84,514	72,803	1,406,178	35,090	44.55
Portugal	Escudo	.0424	68,758	.....	2,240,000	7,460	309.47
Rumania	Leu	.0073	132,791	34,912	34,901,649	19,852	1,766.54
Spain	Peseta	.0500	525,000	.....	9,212,000	25,000	389.45
Sweden	Krona	.2405	320,870	218	1,060,678	6,310	219.02
Switzerland	Franc	.2261	699,095	45,274	1,751,018	4,210	592.73
Yugoslavia	Dinar	.0228	56,955	22,143	6,921,000	15,630	447.86
Asia:							
Arabia	Pound	4.6703	824	1,635	.....	7,000	.35
British Malaya	Dollar	.5430	.....	15,305	105,435	6,037	20.00
Ceylon	Rupee	.3486	14	9,639	45,109	5,780	9.47
China	Yuan	.1611	18,000	.....	.....	450,000	.04
Hong Kong	Dollar	.2917	.....	.....	245,063	988	248.04
Cypress Is.	Pound	4.6703	.....	1,027	1,220	373	6.02
India, Br.	Rupee	.3486	274,578	254,063	2,064,329	359,186	7.22
Indochina, Fr.	Piaster	.2632	.....	5,951	166,568	23,300	7.41
Iraq	Dinar	4.6703	.....	2,802	4,000	3,670	1.85
Iran	Rial	.0580	25,626	23,548	816,000	15,000	67.68
Japan	Yen	.2721	163,476	.....	2,755,000	102,674	28.42
Neth. E. Indies	Guilder	.5436	79,552	51,857	187,590	67,400	4.73
Palestine	Pound	4.6703	.....	5,184	4,975	1,425	7.08
Philippines	Peso	.5000	807	19,009	183,437	13,685	14.85
Syria	Pound	.5204	1,312	1,185	30,850	3,600	9.26
Thailand	Baht	.4281	.....	30,482	147,832	14,650	12.17
Turkey	Piaster	.8080	29,378	.....	204,744	16,800	13.94
Africa:							
Algeria, Tunis	Franc	.0263	7,819	3,156	2,389,816	10,070	283.09
Br. E. Africa	Shilling	.2335	.....	16,591	54,007	12,468	5.66
Br. W. Africa	Pound	4.6703	.....	7,005	2,891	25,183	.39
Egypt	Pound	4.7888	52,229	19,454	20,456	16,030	6.75
Morocco	Franc	.0263	3,696	1,952	637,609	7,180	89.59
Rhodesia	Pound	4.6703	2,105	801	1,182	1,320	3.09
Union S. Africa	Pound	4.6232	224,085	16,052	19,304	9,889	26.76
Oceania:							
Australia	Pound	3.7206	2,628	38,862	49,201	6,930	12.21
New Zealand	Pound	3.7372	23,086	8,784	15,334	1,604	29.43

DICTIONARY OF COINS AND COINAGE

FOREIGN AND DOMESTIC

ABYSSINIA. The current coin is the Maria Theresa dollar of Austria. But a new coin, the Menelik dollar, or talari, worth about 2 shillings or nearly 50 cents of United States money, weighs 28.075 grams of .835 fine silver. The half, quarter, eighth, and sixteenth (guerche or piaster) of a talari are of silver. The besa (one hundredth of a talari) and the half and quarter guerche are of copper.

AFGHANISTAN. The rupee seems to be the usual currency. The mint at Kabul was for some years under the supervision of a European. The smallest silver coin yet minted is the kiran of the value of half the Kabuli rupee, but a smaller coin of the value of a British threepence is to be issued. In addition a gold coin of the value of the British sovereign ($4.86), new silver coins of the value of the British crown ($1.21) and half crown, and a large bronze coin of the size of the British crown and the value of about 10 cents were determined upon, but have never yet been issued as currency. Small copper "pice" are coined and of these 72 are reckoned as equal to a Kabuli rupee.

ALGERIA. The money is the same as that of France.

ANGEL. An old English gold coin bearing the figure of an angel. First struck in the reign of Edward IV. in 1465; equal in value to 6s. 8d., later to 8s., and afterward to 10s. or $2.43. Last struck by Charles I. in 1634.

ANGELET. An old English gold coin; a half-angel.

ANGELOT. (1) An old French gold coin first struck in 1340 by Philip VI.; equal to a half-angel. (2) A gold coin struck by Henry VI. of England for use in his French dominions.

ARGENTEUS. A Roman silver coin introduced by the emperor Caracalla and equal to a denarius and a half. It took the place of the denarius, and later became a copper coin plated with silver. Equal to 25½ cents.

ARGENTINE REPUBLIC. The silver peso fuerte or dollar of 100 centavos has a par value of 4 shillings or about 97 cents of United States money. The 5-dollar gold coin weighs 8.0645 grams .900 fine and contains 7.25805 grams of pure gold. The silver dollar weighs 25 grams of .900 fine and contains 22.5 grams of fine silver. Silver coins of 50, 20, and 10 centavos, with both nickel and copper fractional pieces, are also struck. The paper dollar is worth about 44 cents of United States money.

AS. A Roman copper coin varying in value from 12½ to 1 cent.

AUSTRALIA. The legal currency is that of Great Britain. Accounts are kept in pounds, shillings, and pence.

AUSTRIA-HUNGARY. By the law of August 2, 1892, the monetary system was reformed on a gold basis and the coins under that act are: gold 20-crown piece of 6.775067 grams of .900 fine and containing 6.09756 grams of pure gold equals 16s. 8d. or $4.06 United States money; gold 10-crown piece equals $2.03; gold ducat equals 11 crowns 29 heller, or 9s. 4¾ d., or $2.28; silver crown of 5 grams .835 fine and containing 4.175 grams of pure silver equals 100 heller, or half a gulden, or 10d., or 20 cents; nickel 20-heller equals 10 kreuzer of the old coinage, or 2d., or 4 cents; nickel 10-heller equals 5 kreuzer (old), or 1d., or 2 cents; bronze 2-heller equals 1 kreuzer (old), or 0.2d., or about 4 mills; bronze 1-heller equals ½ kreuzer (old), or 0.1d., or about 2 mills. Silver gulden or florins are still legal tender.

BAHAMAS. British silver and bronze coins are legal tender for all sums. American half-dollars and quarter-dollars are current at the rate of 2s. and 1s. respectively.

BAHREIN ISLANDS. Coins in use are British sovereigns, Indian rupees worth 16d. or 33 cents, Austrian (Maria Theresa) dollars worth from 19d. to 27d. or from 39 to 45 cents, and Turkish lire worth from 18s. 4d. to 19s. 4d. (about $4.45 to $4.70).

BARBADOS. British gold, silver, and bronze coins are circulated as well as 5-dollar notes of the Colonial Bank.

BASUTOLAND. The currency is exclusively British.

BECHUANALAND PROTECTORATE. The currency is British money.

BELGIUM. Belgium belongs to the Latin Monetary Union. The standard coin of value is the franc of a par value of 25.22½ francs to the English pound sterling, or about equal to 19.3 cents of United States money.

BERMUDA. The currency is British. Silver is legal tender for any amount. There is no paper money in circulation except a few Bank of England notes.

BOKHARA. The Russian ruble is current everywhere. The Bokhara silver tenga is valued at 10 cents of United States money.

BOLIVIA. Gold standard was adopted September, 1906. The unit of account will be the gold peso, weighing 1.5976 grams .916 fine and worth about 97.3 cents of United States money. The boliviano in use at present has a nominal value of 96 cents, but is actually worth about 49.9 cents.

BORNEO, BRITISH. The decimal or dollar system is in use. The coins are ½ cent and cent in bronze; 1, 2½, and 5 cents in nickel. The rest of the money is in the shape of notes of 25 cents, 50 cents, and 1, 5, 10, and 25 dollars.

BRAZIL. The milreis of 1,000 reis has a par value of 54.6 cents of United States money. In December, 1905, the government was authorized to coin silver into 2, 1, and ½ milreis pieces, weighing 20, 10, and 5 grams respectively of silver .900 fine.

BULGARIA. There are a few gold coins of 100, 40, 20, and 10 leva or francs, but 10 and 20 franc foreign pieces supply the demand. The 5 leva (francs), 2 leva, 1 lev, and ½ lev are of silver; the 20 stotinki (centimes), 10, 5, and 2½ are of nickel; and the 10, 5, 2, and 1 stotinki are of copper. The franc is equal to 19.3 cents.

CANADA. The value in Canada of the money of the United Kingdom is fixed by law as follows:—

Sovereign or pound	equals	$4.86
Crown	equals	1.20
Half-crown	equals	.60
Florin	equals	.48
Shilling	equals	.24
Sixpence	equals	.10

Canada has no gold coinage of its own, the English sovereign and the United States gold eagle of $10, with its multiple and half, are legal tender. Notes or bills are issued exclusively by the government for $4, $2, $1, and for 25 cents. No bank is allowed to issue notes for a less sum than $5.

CAPE OF GOOD HOPE (CAPE COLONY). The currency is exclusively British. All accounts are kept in pounds, shillings, and pence.

CENT. A coin of the United States and of Canada, equal in value to one hundredth of a dollar. In the United States the word *cent* dates from the act of 1786.

1787. A mint was established at New Haven, Conn., and "Fugio" or "Franklin" cents were coined.
1791. Pattern cents with the head of Washington were struck in England.
1792. Congress authorized the issue of a cent of 264 grains of copper, and a corresponding half-cent.
1793. These coins issued, but the cent was reduced to 208 grains.
1796. Weight of the cent reduced to 168 grains and the half-cent proportionately. New design.
1808. The Head of Liberty changed.
1816. Head of Liberty again changed.
1815 and 1835. No copper coins issued.
1851. Three-cent piece of ¾ silver authorized—12⅜ grains.
1853. Weight of 3-cent piece reduced to 11.52 grains.
1857. Half-cent discontinued. Old large copper cent reduced to 72 grains of the proportion of 88 parts copper to 12 of nickel.
1864. Bronze cent authorized; weight, 48 grains and composed of 95 parts copper and 5 parts tin and zinc. The 1-cent and 2-cent pieces made a legal tender for sums not to exceed 10 and 20 cents. The 2-cent piece weighed 96 grains.
1865. The 1-cent and 2-cent coins were made legal tender for only 4 cents. The 3-cent coin was ordered of ¾ copper and ¼ nickel and to weigh 30 grains. Legal tender for not more than 60 cents.
1866. A 5-cent piece authorized of ¾ copper and ¼ nickel, to weigh 77.16 grains and to be legal tender for sums not exceeding $1.
1873. The 2-cent piece discontinued. The 5-cent piece weighing 77.16 grains and the 3-cent piece of 30 grains were to consist of ¾ copper and ¼ nickel, and a 1-cent piece of 95 parts copper and 5 parts tin and zinc to weigh 48 grains were authorized. Legal tender for not more than 25 cents.
1890. The 3-cent piece was discontinued.
1909. Lincoln cent, new design, authorized.

The rare cents are those of 1793, 1799, 1804, and the copper cent of 1856. The rare half-cents are those of 1793, 1831, 1840 to 1848, and 1852.

CEYLON. A decimal coinage, using the rupee of India with cents in place of annas and pice.

CHILE. The gold coins of Chile are the 20, 10, and 5 peso coins called respectively the condor, doblon, and escudo. The 10-peso piece weighs 5.99103 grams .916 fine and contains 5.49178 grams of pure gold, and is valued at $8.65 of United States money. The silver peso weighs 20 grams of .835 fine silver and is worth about 36.5 cents of United States money. The 2½, 2, 1, and ½ centavo are of bronze.

CHINA. The monetary unit of China is the copper cash, of which about 17½ equal 1 cent of United States money. Another coin largely used is the "hundredth of a dollar" or the "10 mills" piece. Its face value is about 6 mills and its intrinsic value about ¼ cent in United States money. The Haikwan or customs tael is 1 tael weight (1.3 oz.) of pure silver and is equal to about 83.2 cents. The dollar, equal in value to the Mexican dollar, is commonly used. By the treaty with England (1902) China promised to take steps to make her coinage uniform, but results of any effort are not yet apparent.

COLOMBIA. The gold dollar is the monetary unit and weighs 1.59765 grams .916 fine and its value is the same as the United States dollar. Gold coins are 1, 2½, and 5 dollars. The silver coins are the dollar (.900 fine), the half dollar (.835 fine), the peseta of 20 cents, and the real of 10 cents (.900 fine). Thirty-three grams of silver are considered equal to 1 gram of gold.

CONGO INDEPENDENT STATE. The legal money is that of Belgium, but on the Upper Congo the currency consists of brass rods.

COSTA RICA. The gold colon is the monetary unit. It is of .900 fine gold, weighs .778 grams, and is equal to 46.5 cents of United States money. Fractions of the colon are of silver and include the 50, 25, 10, and 5 cent pieces of .750 fine silver.

CRETE. Cretan money is similar to that of Greece. The drachma of 100 lepta is equal to the French franc of 19.3 cents.

CROWN. An English 5-shilling silver coin, equal in value to $1.21 of United States money. A half-crown is 2s. 6d., equal to 60 cents of United States money.

CUBA. There is no Cuban currency or paper money. The Spanish gold dollar is worth 90½ cents; the silver dollar, 80 cents; and the American dollar, 99 cents. The peso is worth 60 cents; the half-peso, 30 cents; the peseta, 12 cents; the real, 6 cents; and the half-real, 3 cents. The French louis is worth $3.82.

CYPRUS. English gold coins; and Cyprus silver and Cyprus copper piasters, half-piaster, and quarter-piaster. Of these, 9 piasters equal 1 English shilling or 24 cents of United States money.

DENMARK. The monetary unit is the krone of 100 öre, of a value of 26.8 cents. The 20 and 10 kroner pieces are of gold. The 2-kroner silver piece contains 12 grams of pure silver. The öre is equal to about ¼ of a cent of United States money.

DOLLAR. The monetary standard of value of the United States and Canada. It contains 100 cents and is equal to 4s. 1.3d. of English money. Established in the United States by resolution of Congress, July 6, 1787. The silver dollar and the decimal system were established by act of Congress, August 8, 1786. The coinage was begun April 2, 1792, when the mint was established. The weight of the silver dollar has varied as follows.—

Act of April 2, 1792, 371¼ grains of pure silver or 416 grains of standard silver.
Act of January 18, 1837, 412½ grains .900 fine, containing 371¼ grains of pure silver.
Act of March 3, 1849, gold dollars were 25.8 grains .900 fine of 23.22 pure gold.

Act of February 12, 1873, this latter was made the unit of value in the United States.
Act of September 26, 1890, suspended the coinage of gold dollars.
Act of February 28, 1878, ordered the secretary of the treasury to buy every month silver bullion to the value of not less than $2,000,000 nor more than $4,000,000 to be coined into standard silver dollars.
Sherman act of July 14, 1890, repealed the last mentioned law and ordered the monthly purchase of 4,500,000 ounces of silver and the coinage of 2,000,000 ounces. This act was repealed in 1893.
The gold dollar of 25.8 grains (or 1.6718 grams) .900 fine is the monetary unit according to the law of March 14, 1900.
The silver dollar weighs 412.5 grains or 26.730 grams .900 fine and contains 371.25 grains or 24.057 grams of fine silver.

EAGLE. A United States gold coin; a 10-dollar gold piece. An eagle weighs 258 grains or 16.71818 grams .900 fine and contains 232.2 grains or 15.0464 grams of fine gold. The eagle is worth in English money £2 1s. 1d. A double eagle is a 20-dollar coin, and a half-eagle a 5-dollar gold piece.

ECUADOR. The gold condor is equal to the English sovereign ($4.8665). It contains 7,3224 grams of fine gold. It is composed of 10 sucrés (each equal to 48.7 cents).

EGYPT. The monetary unit is the gold Egyptian pound of 100 piasters. It weighs 8.5 grams .875 fine and contains 7.4375 grams of fine gold and is worth $4.943 of United States money. There are also 20, 10, 5, 2, and 1 piaster silver pieces; 1, ½, one fifth, one tenth piaster pieces in nickel; and one twentieth and one fortieth piaster in bronze. Most of the gold coin in Egypt and Sudan is English.

FALKLAND ISLANDS. Same as in Great Britain.

FARTHING. An English bronze coin of which 4 make a penny. A farthing is equal to half a cent of United States money.

FIJI ISLANDS. Money is the same as in Great Britain.

FINLAND. The markka of 100 penni is equal to a franc or 19.3 cents of United States money. There are 20 and 10 markka gold pieces; 2, 1, ½, and ¼ markka pieces in silver; and 10, 5, and 1 penni pieces of copper.

FLORIN. An English 2-shilling silver coin, equal in value to 48½ cents of United States money. A Netherlands gold coin of the value of 40.2 cents.

FORMOSA. Coinage is the same as in Japan.

FRANC. A French silver money of account which is the unit of the French monetary system. It has also been adopted as the unit of currency by Belgium and Switzerland, and for the lira of Italy and the drachma of Greece. It is of the value of 19.3 cents in United States money.

FRANCE. The franc of 100 centimes is the monetary unit. It is equal to about 19.3 cents of United States money. The 20-franc, and the 10-franc pieces are of gold. Silver coins are 5 francs, 2 francs, 1 franc, ½ franc, and 20 centimes. The bronze coins are the 10 and 5 centime pieces.

FRENCH INDO-CHINA. The silver pieces are piaster (worth about 48 cents), ½ piaster, one fifth piaster, and one tenth piaster. The Mexican dollar has the same value as the piaster.

FRENCH WEST AFRICA. The use of French money is compulsory.

GAMBIA. The legal currency is British, but French 5-franc pieces are freely circulated to the extent of about £90,000.

GERMANY. The mark of 100 pfennige has a value of 23.8 cents of United States money and nearly that of the English shilling. The thaler is 3 marks. The 10-mark gold piece is called a krone; and the 20-mark and doppel-krone. Silver coins are the 5 marks, 2 marks, 1 mark and 50 pfennige. The 10-pfennige and 5-pfennige pieces are of nickel. The smaller coins are of bronze.

GIBRALTAR. The legal currency is that of Great Britain, but Spanish money is freely circulated.

GOLD COAST. A silver currency has been lately introduced on a British standard, but cowries are still used for small purchases.

GREECE. The drachma of 100 lepta is equal to the franc or 19.3 cents of United States money. The gold coins of the United States, Great Britain, Austria, Germany, Denmark, Russia, Spain, Turkey, and Egypt are legal at a reduction of ¼ per cent. from their nominal value.

GUATEMALA. The dollar or peso of 100 centavos has a value of about 49.9 cents of United States money. The real of nickel has a nominal value of 12½ cents. The half-real and quarter-real are also of nickel.

GUIANA, BRITISH. The colonial currency is in gold dollars worth 4s. 2d. or of the same value as the United States dollar. Some British gold, silver, and bronze coins are in circulation.

GUINEA. An English gold coin formerly in use. The guinea is now only a money of account and is made up of 21 shillings or one shilling more than a pound or a sovereign.

HAITI. The gourde or dollar has a nominal value of 97 cents, and is equal to 5 francs but has a fluctuating value. The 10, 5, 2, and 1 gourde pieces are of gold; the 50-centime, 20-centime, and 10-centime pieces are of silver; the 3-centime, 2-centime, and 1-centime pieces are of bronze.

HONDURAS. The silver peso or dollar of 100 cents weighs 25 grams .900 fine. The other silver pieces are 50, 25, 20, 10, and 5 cents.

HONDURAS, BRITISH. United States gold was adopted as the standard on October 15, 1894. The British sovereign and half-sovereign are legal tender for $4.86 and $2.43 respectively.

HONG-KONG. The following are current in Hong-kong:—

Mexican dollar equals 100 Hong-kong cents, equal to 54.2 United States cents.
British dollar equals 100 Hong-kong cents, equal to 53.8 United States cents.
Chinese tael equals 10 mace or from 75 to 83 United States cents.
100 candareens equal 1,000 cash or about 80 cents.

Hong-kong 50, 20, 10, 5, and 1 cent pieces imported from England. The mil or cash is no longer coined.

INDIA, BRITISH EAST.

Pie equals .33 farthing or ¼ cent.
3 pie equal 1 pice, or 1 farthing, or ¾ cent.
12 pie or 4 pice equal 1 anna, or 1 penny, or 2 cents.
16 annas equal 1 rupee, or 1s. 4d., or 33 cents.
15 rupees equal £1 or $4.8665.
100,000 rupees equal 1 lac of rupees.
10,000,000 rupees equal 1 crore of rupees.

ITALY. Money is similar to that of France, the names being altered to the Italian form. The lira of 100 centesimi is the same as the franc (equal to 19.3 cents of United States money). The 20-lire and 10-lire pieces are of gold; the 5-lire, 2-lire, and 1 lira are of silver; the 20 and 25 centesimi of nickel; the 10, 5, 2, and 1 centesimo of bronze.

JAMAICA. The legal currency is that of Great Britain, but various United States coins are freely circulated. Notes of the Colonial Bank and of the Bank of Nova Scotia are current.

JAPAN. The yen is the standard of value but is not coined. It is equal to 49.8 cents of United States money. The gold coins are 20, 10, and 5 yen pieces; the silver are 50, 20, and 10 sen pieces; the 5-sen piece of nickel; and the 1-sen and 5-rin of bronze. The sen is the hundredth part of a yen, and the rin is the tenth of a sen.

KOREA. The coinage is the same as that of Japan, excepting that Korean characters are inscribed instead of Japanese.

LEEWARD ISLANDS. The legal currency is that of Great Britain.

LIBERIA. The coins are those of Great Britain, but accounts are usually kept in dollars and cents of the United States. There is a Liberian coinage in silver and copper. The silver coins are 50, 25, and 10 cent pieces; copper, 2 and 1 cent pieces.

MADAGASCAR. The only legal coin is the 5-franc piece with subdivisions in silver, and copper 5 and 10 centimes. Italian, Belgian, and Greek coins are also current. The natives used to cut the coins into small parts and weigh them to make fractional parts, but the government is now withdrawing these pieces from circulation at the rate of 30 grams of silver for each 5-franc piece.

MALTA. The legal currency is that of Great Britain.

MARIA-THERESA THALER OR DOLLAR. An Austrian silver coin. It is still coined with the date of 1780 for circulation in Abyssinia and Zanzibar. It is equal to $1.02 of United States money, nominally, but its value fluctuates. In Bahrein it is worth from 19d. to 27d.

MARK. A silver coin of the German empire containing 5 grams of silver, or 0.20784 of that of a United States silver dollar. Silver coins of the value of 2 marks, and

gold coins of the value of 5, 10, and 20 marks are also current. The gold coins contain 0.3584229 gram of fine gold per mark, the value of which is consequently $0.23821 in United States money.

MAURITIUS. The standard coin is the Indian rupee with annas and pice. All accounts are kept in rupees.

MEXICO. The monetary unit since March, 1905, is the silver peso or dollar, the legal value of which is fixed at .75 gram of pure gold. The silver peso weighs 27.073 grams .9027 fine and .0793 copper, and contains 24.438 grams of fine silver. It is divided into 100 centavos. The 50, 20, and 10 centavo pieces are of silver .800 fine and .200 copper. The bronze coins are 2 and 1 centavo pieces. The 5-centavo piece is of nickel. The Mexican dollar is equal to 49.8 cents of United States money.

MONTENEGRO. Montenegro has no coinage of its own. Austrian paper money, Turkish silver, and French and English gold circulate freely. There are three banks, the Bank of Montenegro at Cettinje and the banks of Podgoritza and Niksic at these places.

MOROCCO. The blankeel or muzoona is equal to 6 floos, or 0.08 English pence, or about 0.16 cents of United States money. The ounce or okia is equal to 4 blankeels or 0.64 cents, and the mitkal is equal to 10 ounces or 6.4 cents. Spanish dollars, pesetas, and Moorish coins minted in France are current. In silver, the dollar is equal to 10 dirhems. The dirhem is usually worth about 7½ cents.

NEPAL. The silver mohar is valued at 6 annas and 8 pies of British India currency. Copper pice, 50 of which make a silver mohar, are also coined. The rupee of India is current everywhere.

NETHERLANDS. The monetary unit is the 10-florin gold piece, which weighs 6.720 grams .900 fine and contains 6.048 grams of fine gold. The florin weighs 10 grams .945 fine and contains 9.45 grams of pure silver. The florin is worth 40.2 cents of United States money. The gulden, guilder, or florin of 100 cents; the rijks daalder or 2½ guilders; and the cent, ½ cent, and 2½ cents are the other common coins.

NEWFOUNDLAND. A decimal system is used, of which the legal coin is the gold dollar of 100 cents, equal to 4s. 1.3d. of British money.

NEW GUINEA, BRITISH. The legal currency is that of Great Britain.

NEW ZEALAND. The legal currency is that of Great Britain.

NICARAGUA. The system is the same as that of Honduras, though Mexican, Chilean, Peruvian, and other South and Central American coins are issued. The silver peso or dollar is worth about 49.9 cents of United States money.

NIGERIA. No uniform currency exists. British coins have been introduced and are freely used.

NORTHERN NIGERIA. The barter system prevails, but is being gradually displaced by the use of British coinage.

NORWAY. The Norwegian krone of 100 öre is equal in value to 26.8 cents of United States money. The 20-kroner gold piece weighs 8.960572 grams .900 fine, containing 8.0645 grams of pure gold.

ORANGE RIVER COLONY. The currency is exclusively British.

PANAMA. The monetary unit since September, 1904, is the gold balboa, weighing 1.672 grams .900 fine, and is legally equivalent to the gold dollar of the United States. The peso and its divisions are of silver. Two silver pesos of Panama currency are reckoned as one United States gold dollar.

PARAGUAY. The peso or dollar of 100 centavos has a nominal value of 97 cents of United States money. Five gold dollars of Paraguay equal 1 pound sterling of $4.8665.

PENNY. An English bronze coin, equal in value to 2 cents of United States money. A penny weighs 145.83 grains or 9.45 grams of a mixture of copper, tin, and zinc.

PERSIA. The monetary unit of Persia is the krân, a silver coin of fluctuating value, now worth about 10 cents. Gold coins are the 10 toman, 5 toman, 2 toman, 1 toman, ½ toman, and the ¼ toman; a gold toman being worth about $1.75, while a silver toman is worth only about 80 cents. Accounts are reckoned in dinars, of which 1,000 make a krân.

PERU. The libra, of gold, is of the same value as an English sovereign ($4.8665). The 5-sol piece (gold) is half a libra. The silver sol (one tenth of a libra), one half sol, one fifth sol, one tenth sol, and one twentieth sol; the 2 centavo and 1 centavo (100 centavos equal 1 sol) are of bronze.

PIASTER. (1) The unit of the Turkish currency, a silver coin worth about 4.4 cents in United States money. (2) The Spanish dollar or peso, worth about 97 cents.

PORTUGAL. The milreis or 1,000 reis is equal to $1.08 of United States money. The 10, 5, 2, and 1 milreis are of gold; the 10, 5, and 2 testoon pieces are the silver 1,000, 500, and 200 reis pieces; the 100 reis and 50 reis are of nickel; while the 20, 10, and 5 reis are of bronze.

POUND SCOTS. Equal to only one twelfth of a pound sterling. It, too, was composed of 20 shillings, each of which was equal to only an English penny.

POUND STERLING. An English money measure consisting of 20 shillings, 240 pence, or 960 farthings. It was originally equal to a pound weight of silver. It is equal in value to $4.8665 of the money of the United States or Canada. There is no coin by this name.

ROUMANIA. The legal unit is the lëu, equal to the franc or 19.3 cents of United States money. The 20, 10, and 5 leï pieces are of gold; the 20, 10, and 5 bani (centimes) are of nickel.

RUPEE. An East Indian silver coin. It is current in Bahrein Islands and in other remote places with a fluctuating value. In India it is largely only a money of account. Nominally it is equal to 33 cents of United States money, or 1s. 4d. of English money, or 16 annas of East Indian money.

RUSSIA. The ruble of 100 kopecks is the legal unit of money. A ruble is worth 51.5 cents of United States money. The imperial of 15 rubles, the half-imperial of 7½ rubles, the 10 rubles, and 5 rubles are of gold.

SALVADOR. The dollar of 100 centavos is worth about 49.9 cents of United States money.

SANTO DOMINGO. The United States gold dollar has been the standard of value since 1897. The silver coinage and the paper money which are in circulation are debased and depreciated.

SERVIA. The dinar is equal to a franc or 19.3 cents of United States money. The 20-dinar gold piece is the milan-d'or. There is also a 10-dinar gold piece. The 5, 2, 1, and ½ dinar are of silver; the 10 and 5 paras are of bronze; and the 20, 10, and 5 paras of nickel.

SEYCHELLES. The currency is based on the Indian rupee with annas and pice.

SHILLING. An English silver coin weighing 87.27 grains or 5.6552 grams .925 (or 37–40) fine and containing 80.727 grains or 5.231 grams of fine silver. An English shilling equals 24 cents of United States money.

SIAM. The tical, a silver coin, worth about 29 cents of United States money; the salung, equal to ¼ of a tical; the fuang, or ⅛ of a tical. Three dollars are equal to 5 ticals. The tical is made up of 64 atts, 4 ticals make a tamlung, and 80 ticals make a catty.

SIERRA LEONE. The legal currency is that of Great Britain.

SOMALILAND PROTECTORATE. The currency is based upon that of India, the rupee having the same value as there.

SOVEREIGN. An English gold coin of the value of $4.8665 in United States money. It weighs 123.274 grains or 7.9881 grams .916 (or eleven twelfths) fine and contains 113.001 grains or 7.3224 grams of fine gold.

SPAIN. The peseta of 100 centesimos is equal to 19.3 cents of United States money. The 20, 10, and 5 peseta pieces are of gold; the 5 peseta and 1 peseta pieces are of silver and are of the same weight and fineness as the French equivalents.

STRAITS SETTLEMENTS. By Order of Council (February 11, 1907) a Straits Settlements dollar of 312 grains or 20.217 grams .900 fine was authorized. Other subsidiary coins are 50, 20, 10, and 5 cents silver; and cent, half-cent, and quarter-cent in copper. The value of a dollar has been fixed at 56.8 cents in United States money.

SWEDEN. The krona or crown is equal to 26.8 cents of United States money and is made up of 100 öre. There is a 20-kronor gold piece and a silver krona.

SWITZERLAND. The franc is equal to 19.3 cents of United States money and is made up of 10 batzen or 100 rappen or centimes. The 20-franc piece is of gold; the 2-franc, franc, and ½-franc are of silver.

TASMANIA. The legal currency is that of Great Britain.

TONGA (FRIENDLY ISLANDS). Since May 1, 1905, British coin is the only legal tender. Accounts are kept in dollars, shillings, and pence.

TRANSVAAL COLONY. The currency is British. Money of the late South African Republic is also current.

TRINIDAD. There is a Colonial Bank and a branch of the Union Bank of Halifax, each of which issues 5-dollar notes. The British currency is legal.

TUNIS. Pieces similar to those of France and coined in France.

TURKEY. The piaster of Turkey is equal to 4.4 cents of United States money. The Turkish lira or gold medjidié is equal to 100 piasters or to $4.40 of United States money.

UGANDA PROTECTORATE. Currency is based on the Indian rupee of 1s. 4d. or 33 cents, with silver and copper fractional pieces. Cowrie shells are used by the natives but are not accepted by the government.

URUGUAY. Uruguay has no gold coins. The peso of silver, 25 grams in weight and .900 fine, worth 93 cents of United States money, and the fractional ½ peso, peso, and one tenth peso are of silver. One, 2, and 4 centesimo pieces are of bronze.

VENEZUELA. The bolivar is valued at 19.3 cents of United States money. Five bolivars are equal to one Venezuelan silver dollar. The Venezuela peso is not in circulation, but is a money of account, equal to 4 bolivars.

WINDWARD ISLANDS. Currency is that of Great Britain, but United States coins circulate freely.

ZANZIBAR. The Maria Theresa dollar is the unit, under the Sultan's authority but the British Indian rupee circulates almost universally. The dollar is the standard unit of business value, and has a fixed value of 2 rupees 2 annas, and the rupee is worth 47 cents.

Stock Exchange.—An association of stockholders designed for organized speculation and investment in securities. The primary function of a stock exchange is to provide a regular market for stocks, bonds, and other securities, and to establish prices based on the most reliable and accurate information. The stock exchange exercises an enormous influence on commerce, both domestic and international, and is so highly organized and delicately adjusted that it reflects movements and influences from every corner of the globe. Furthermore, the leading exchanges of the world are so intimately related and interdependent that whatever affects one affects the others.

The modern stock exchange was foreshadowed in London nearly 200 years ago, when, during the South Sea Bubble in 1720, the London brokers carried on their work at Garraway's Coffee-house in 'Change Alley, and other temporary quarters. This association developed into the London Stock Exchange, whose records, however, do not date farther back than 1798. The Paris Bourse was established in 1724, Vienna in 1761, and the New York Stock Exchange in 1792. The first definite organization in America was really formed early in the eighteenth century, when a number of stockbrokers drew up and adopted a constitution in Philadelphia.

The membership of the London Stock Exchange is nearly 6,000, the entire body of members being re-elected annually. The qualification for membership is that the applicant must be a British subject, guaranteed by three members to the extent of £500 each. The Bourse at Paris, as at Berlin and Vienna, is restricted as regards trading membership; in the latter Exchange trading is confined to a *Sensale* consisting of 40 licensed brokers elected from the members of the stock exchange at large. The London Stock Exchange is the leading financial mart of the world. The transactions consist of (1) investments; (2) speculative purchases and sales of shares, on margins or "covers"; (3) speculation on the rise and fall of the quotation of shares, in which there is no expectation of actual delivery and payment; (4) "option" dealing, or trading in what are called in the United States "put" and "call," and "straddle" contracts, or "privileges."

As generally understood, a "stock exchange" is any place, even in the open air, where securities are bought and sold, but in the largest cities such transactions are carried on in a special building, or some part of one, occupied for that purpose.

The New York Stock Exchange is a voluntary association of about 1,100 members, and is not an incorporated stock company, like the London Exchange. It occupies one of the finest building in New York not many yards away from the cottonwood tree opposite No. 60 Wall Street, where on May 17, 1792, twenty-four brokers assembled and signed an agreement fixing the rates of commission, and creating a protective league. Subsequent meetings were held at the Tontine Coffee-house, Wall and Water streets, but not until 1817 was the New York Exchange organized on present lines. In 1827 it was housed at Merchant's Exchange on Wall Street on the site of the old Custom-house. Thence in 1854, after having been removed to 43 Wall Street and back again, it was located at William and Wall Streets; in 1856 at Lord's Court at William and Beaver Streets; and in 1865 on its present site.

By a decision of the New York Supreme Court, stock exchanges may enact such rules and regulations governing their affairs as seem necessary for the carrying on of their business, provided such rules and regulations are not contrary to the law of the land.

Stock Exchange Clearing House.—As actual deliveries to each and every broker caused much over-certification of checks, the "clearing-house" system was introduced for simplifying the delivery of securities sold between members of a stock exchange. This system was successfully operated in Europe before its introduction in America, and was established in Philadelphia and Boston before its adoption in New York in 1892.

The New York system is based on daily deliveries, the European on the "fortnightly settlement" plan.

Each stock exchange member at the close of a day's business delivers a "clearance sheet" on which his sales and purchases of active securities are recorded. That as little money as possible may be handled in the settlement, the clearing house reconciles all deliveries between different parties and adjusts the cash differences by paying or receiving the balances due, thus delivering all intermediate parties who are "even" in stock.

Each day a delivery price is fixed for each stock, the clearing house basing its reckoning thereon in assigning the receipts or deliveries. It is generally the even price, most nearly that of the last of the day for the stock in question.

Bonds are cleared only on special occasions.

For clearing each 100 shares of stock of $100 par value a charge of 2½ cents is made, and only 100-share lots or multiples thereof are cleared.

To facilitate the borrowing of money on the stock exchange is a very important duty of this clearing-house system. If Rice & Co. bought 500 shares of Labrador and Florida at 100, the next day they would, in the ordinary course of business, be obliged to pay perhaps $50,000 to take up the stock, and then make a loan with their bank, furnishing a margin of 20 per cent., thus necessitating a cash outlay of about $10,000. But they in turn, at an agreed rate of interest, loan these 500 shares to Travers & Co., the clearing house just offsetting the next day. As may be seen, no money changes hands in the transaction, and Rice & Co. are not obliged to first pay for the 500 shares of stock before loaning them to Travers & Co.

Stock Exchange Seat.—The interest in a stock exchange which enables a person to buy or sell securities thereupon is not called a share of stock, but a "seat," to own which one must be duly elected a member of the exchange, pay his initiation fee, and share in the exchange's assets and liabilities.

The business transacted naturally affects the demand for seats, which vary in price accordingly. The record price on the New York Exchange up to February 18, 1929, was $629,000; but the quotation was $2,750 in 1871; $13,000 in 1896; $95,000 December 27, 1934. On this exchange the initiation fee is $2,000; on the Boston Exchange, $500; up to January 1, 1935, the record price for a seat at Boston was $45,000. Permission is sometimes given a member to transfer or sell his seat to another person.

Commissions for the sale or purchase of securities can be charged by the owner of a seat only in accordance with the rules of the exchange. Between members rates are less than for others. If Alfred White owns a "seat" but does not wish to go upon the "floor" to personally buy or sell securities, he may employ some other member to act for him, paying him a reduced commission amounting to $2.00 for 100 shares; from which the term "two dollar man" originated.

Bond.—A coupon-bearing (or registered) note under seal. The instrument by which a government, municipality, or corporation contracts and agrees to pay a certain sum of money on a particular date, though sometimes reserving the right for earlier payment. Quarterly, semi-annual, or annual interest is represented by the coupons. A note is simply a definite promise for the payment of money signed by the party bound without the formality of witnesses or seal, while a bond, according to the rule in many jurisdictions, must be witnessed in the same way as a deed or other formal conveyance of property, and requires a seal.

Usually a government or municipality simply issues its promise to pay under seal in the form of a bond, although to pay the principal or interest, or both, certain revenues are sometimes pledged; but it is unnecessary to mortgage property to secure the issue, as is generally done in the case of a "corporation bond."

When corporations have issued the limit of stock legally permitted, but require additional money; or when the issuing of stock at satisfactory prices does not bring in sufficient funds for the capital of the corporation, it issues "bonds." If a prosperous company earning and paying, for instance, 10 per cent. dividends upon its stock, requires more money for extensions and additions, and were to issue more stock, that would be the same as borrowing money at the rate of 10 per cent. But having found that the needed money can be raised by the issue of bonds bearing 5 per cent. interest, it makes such an issue, with the expectation that the increased capital will return earnings as great as that already invested, or 10 per cent. Therefore, the difference between the amount of the sale of bonds bearing interest at 5 per cent., and the anticipated earnings of the new capital, or 5 per cent., would result in increasing the rate of dividends upon the stock already issued.

Government Bonds.—Only the interest-bearing obligations of the United States were formerly understood by this term, but now it includes the government issues of Great Britain, Germany, Japan, etc. Our government bonds sell at a lower interest return—equivalent to a higher price—than those of any other nation. Of those bearing only 2 per cent. interest, the lowest rate of any issue, there are outstanding over $600,000,000, this being accounted for by the fact that the government maintains the standard of gold payments and is believed to be able to meet its obligations; that the bonds cannot be taxed by the government, state, or other municipality of the Union; and that national banks may deposit them with the government to secure circulation (the issuing of national bank notes).

Coupon and registered bonds are issued by the government. Registered bonds cannot legally be transferred into coupon bonds, but coupon bonds may be changed into registered bonds of the same loan. If this is to be done, send them to the "Secretary of the Treasury, Division of Loans and Currency." The conversion is made without charge by the department. The "transfer books" close on the 15th day of the month preceding interest payment on the 4 per cent. loans of 1925. In all other cases the books are closed during the whole month immediately preceding dates of interest payments. If bonds are not received for transfer before or on the day named for the closing of the books, the interest for that quarter will be paid to the parties whose name appears in the old bonds, as they cannot be transferred until after the books are reopened.

Whether the interest is held in the form of money, draft, or check, and whether the bonds are owned by a corporation or an individual, the interest upon United States government bonds is taxable, according to a decision to that effect handed down by the United States supreme court in 1906. Transactions in government bonds are carried on more largely through bankers than upon the stock exchange, the quotations in such cases varying somewhat from those upon the latter place.

If the low interest is no objection, government securities of the United States, Great Britain, and many other nations are probably the safest investment that can be made, as they are in constant demand among insurance companies,

banking institutions, etc., and always afford a ready market. Furthermore, they are less affected than any other securities by industrial and political conditions.

By the financial bill which became law on March 14, 1900, the United States government for the first time in its history has issued bonds payable specifically in United States gold coin. Three classes of bonds, viz., those bearing interest (1) at 5 per cent. per annum payable on February 1, 1904; (2) at 4 per cent. per annum payable July 1, 1907, and (3) at 3 per cent. per annum payable August 1, 1908, were surrendered for exchange into 2 per cent. consols.

Of the bonds above mentioned the consols of 1930 and the Panama Canal bonds are payable, principal and interest, in United States gold coin of the present standard value. The 3 per cent. bonds of 1908–1918, the 4 per cent. bonds of 1925, and the 3 per cent. certificates of indebtedness are payable in "coin."

INSURANCE.

Insurance in some form or other is probably as old as maritime commerce. Certain it is that the first risks to be insured against were incidental to the dangers of the deep. From insuring vessels against loss by fire, shipwreck, or piracy, marine insurance was extended to cover the lives of the mariners, and more particularly of the merchants, who in those days used generally to accompany their merchandise shipped to Mediterranean ports. These merchants before embarking would pay a premium to some underwriter to guarantee payment of their ransom in the vent of capture by Moorish or other pirates. Gradually the field of insurance became widened, and a *policy* was issued to any person who paid the necessary *premium*.

One of the primary objects of insurance was to safeguard creditors, especially those who advanced money with which to purchase some lucrative post, (for until comparatively modern times appointments were usually bought and sold). The Chamber of Insurance was founded in 1574 by royal patent for the purpose of regulating and registering all such contracts. This Chamber was destroyed in the great fire of London, 1666, and was succeeded by the "Office of Assurances." Policies could there be registered verbatim, but presumably the bulk of the transactions related to marine insurance.

I. Life Insurance.—The object of life insurance as a provision for wife and children does not seem to have prevailed before the beginning of the seventeenth century; and the earliest record of insurance with such an object is dated 1622. Life insurance seems to have been invariably underwritten by private individuals up to 1699, that being the year in which the first association was established, viz., "The Society of Assurance for Widows and Orphans." In 1706 another English society was founded, called "The Amicable Society for a Perpetual Insurance." This was to consist of 2,000 members, each of whom paid an entrance fee of ten shillings and a yearly subscription of £6, 4s. The same amount of premium was paid by each member irrespective of age, but no person was admitted under 12 or over 55. It was not till 1807 that varying rates of premium were introduced. This society was amalgamated with the "Norwich Union" in 1864. It is interesting to note that the Amicable was the only insurance society to survive the South Sea Bubble.

Life Insurance (or Assurance, as it is frequently called in England) is primarily to cover the pecuniary loss that would otherwise be occasioned by the death of the individual insured. It includes a saving or investment element known as endowment insurance. Life insurance computations differ radically from those of fire and marine insurance, for the following reason: while in fire and marine the risks of loss do not greatly change from year to year, and there may never be a loss, in life insurance the risk of loss, i.e., the chance of death, increases steadily, and the death loss is certain to occur within some definite period. To obviate the serious disadvantages of a premium that increases from year to year, the "level" premium is computed, i.e., a premium without change, so adjusted that the overpayments of the earlier years and their interest earnings make up the deficiencies of the later years. The fund thus set aside constitutes the reserve held against the policy and provides for whatever return is made to a policyholder who does not keep up his policy to the end. Whole life policies provide for the payment of the sum insured whenever death occurs; the premiums may be continuous during the existence of the policy, or commuted to a limited number of payments (say 10 or 20) of larger amount. Endowment policies provide for payment of the sum insured at a definite time, or before that time in case of death. Term policies only provide for payment on death within a stated period.

State supervision of insurance began about the middle of the nineteenth century. In 1849 the first general insurance act was passed by New York state, and its insurance department inaugurated in 1859, or four years later than Massachusetts had established its insurance department and adopted the Actuaries' Table of Mortality, based on the combined experience of seventeen British companies. In 1868 the New York Insurance Department adopted the American Experience Table of Mortality now in general use. State supervision and insurance departments are now general. In England and Canada a mortality table known as "Hm" or Twenty Offices Table has been used. The latest British authority is the "Om" (1893) Table.

STATISTICS OF LIFE INSURANCE

Summary of All Companies of the United States (Money figures in millions; policies, in thousands)

Year.	Assets (Dec. 31).	Liabilities.	Total Income.	Paid to Policyholders.	Total Policies (Dec. 31).
1890	771	679	401	90	5,203
1900	1,742	1,493	642	169	14,385
1905	2,706	2,373	642	265	22,494
1910	3,876	3,386	781	387	29,968
1915	5,190	4,938	1,043	545	44,034
1920	7,320	6,989	1,764	745	66,500
1925	11,538	10,867	3,018	1,243	97,630
1930	18,880	17,862	4,594	2,247	122,212
1931	20,160	19,116	4,850	2,607	122,759
1932	20,754	19,774	4,653	3,087	115,763
1935	23,216	22,220	5,072	2,535	117,370
1938	27,756	26,511	5,357	3,744	124,478

Financial Condition of Companies
(Money figures in thousands)

On Dec. 31.	1920.	1932.	1938.
No. of companies	272	328	308
Capital stock	66,905	161,920	150,936
Death losses	349,964	905,267	937,283
Dividends	157,547	562,694	435,431
Reserve funds	6,337,970	17,839,178	23,202,369
New business—			
Ordinary [1]	8,489,971	8,911,083	8,151,283
Industrial	1,615,474	4,792,828	4,783,552
Group			1,861,115
Total in force—			
Ordinary	25,091,538	73,780,240	76,071,004
Industrial	7,189,852	17,265,390	4,783,552
Group			12,910,263
Policies written—			
Ordinary [2]	3,924	4,721	4,213
Industrial	9,325	19,771	17,432

[1] Includes group insurance until 1925.
[2] Includes group before 1925 and after 1935.

Insurance Written and in Force in 1937

Division	Ordinary		Industrial	
New England	717,799	6,576,102	370,788	2,175,007
Mid. Atlantic	3,373,975	27,473,487	1,361,662	7,668,322
E. North Cent.	2,876,702	21,095,433	939,957	4,396,037
W. North Cent.	1,068,883	8,245,984	240,232	1,076,598
S. Atlantic	1,068,105	7,505,810	900,656	2,270,659
E. South Cent.	481,728	3,162,887	401,009	781,169
W. South Cent.	831,079	4,867,705	317,524	729,646
Mountain	303,452	2,054,143	40,367	163,189
Pacific	943,051	6,559,201	171,150	843,325

II. Fire Insurance.—Those taking out fire insurance may benefit by the following suggestions:—

That you may understand your rights, become familiar with the laws of the state under which you are insuring. No matter how much the insurance is above the value of the property, you can, in most states, collect only the amount of the actual damage; but in New Hampshire and some other states, in accordance with the "valued policy" in effect there, you may, should the buildings be totally destroyed by fire, collect the amount of the loss, without regard to the amount of insurance placed thereon; and so the company will most probably not insure the property for more than it is worth.

Permission must be obtained from the agent to allow premises intended for occupancy to remain vacant longer than is provided for in the policy.

If the foundation of a building is impervious to fire, or if it would be of no value to the insured should the building be destroyed by fire, the item of foundation may be specifically omitted from the policy.

An accurate list of all the furniture or personal property insured, giving the probable value of each article, should be made, and kept in a place secure against fire. By some people the bills of all articles of furniture and property covered by such an insurance are filed away, that, should a dispute arise over the adjustment of a claim, they may be produced as evidence. If a change is made in the location of furniture or moveable goods covered by such an insurance, the agent must be notified.

The insurance policy should not be kept in the building insured therein.

Read the policy through, noting the date of expiration, as the agent may not at the time inform you that it has expired, and so your property may go unprotected. Make sure that it contains a clause permitting other insurance, and also a clause covering loss or damage from lightning.

Carefully fulfill the conditions of the policy.

Premiums should be paid promptly.

Notify the agent immediately in case of loss.

It is less expensive in the long run to take out a policy for some period like three years than one for a shorter time.

The policy should bear this or a similar indorsement if the property is mortgaged:—

"Payable in case of loss to ....., mortgagee, as his interest may appear."

Below are given data covering transaction of both United States and foreign companies:—

Fire and Lightning Insurance
(Money sums in millions and tenths)

	1920	1932	1938
U. S. Companies	124	174	161
Foreign companies	45	38	37
Gross ins. sold—			
U. S. companies	$71,409.1	111,727.0	[1]
Foreign	28,785.6	21,079.0	
Net premiums	450.9	508.0	368.5
Net losses paid	226.0	272.1	151.3
Net expenses	219.5	237.6	184.5
Taxes	27.6	18.4	18.6

[1] From Spectator Company, Philadelphia, and National Board of Fire Underwriters. Gross business not reported after 1935.

Various Forms of Insurance in 1939
(Sums in thousands: add 000)

Form of policy	Premiums	Losses
Accident	46,297	19,834
Auto Collision	6,598	3,584
Auto fire and theft	1,828	616
Auto liability	206,874	112,920
Auto property damage	56,063	29,136
Auto, unspecified	4,956	2,368
Burglary and theft	25,934	7,661
Credit	2,858	2,224
Engines, machines	3,827	1,136
Fire	1,028	404
Fidelity	40,319	12,414
Health	17,741	11,860
Liability	78,785	33,147
Livestock	680	461
Plate glass	4,712	5,092
Property damage	625	1,095
Sprinkler, water	625	243
Steam boiler	8,131	950
Surety	47,482	10,871
Workmen's compensation	159,250	88,577
Other forms	1,001	474

Many other forms of insurance are available today. Statistics given above do not cover 180 mutual fire companies with $333,000,000 assets. In 1939 losses paid were: for windstorms, over $17,000,000; riots, explosions, $745,000; hail, $4,144,000; ocean marine, $20,000,000; inland marine, $19,000,000; aircraft, $469,750; rain and floods, $240,000; earthquakes, $8,550. Fire losses, in U. S., increased from $74,600,000 in 1880, to $160,000,000 in 1900; $214,000,000 in 1910; and $172,000,000 in 1915. In 1939 the loss reported was about $280,000,000, according to National Board of Underwriters.

III. Assessment and Fraternal Insurance.—A very old form of insurance commonly main-

tained by Granges and secret orders. As each member is assessed for his proportion of the expense of the society and the death losses, the annual premium to be paid by the insured is not a fixed sum, but is subject to change. It is probably the cheapest kind of insurance, but also the most uncertain, many associations having failed, while the assessments are sometimes high. It is taken out principally in small amounts and by persons of limited means.

IV. Industrial Insurance.—Insurance for small amounts, payments on the premium being usually made each week, taken out by those who cannot or who do not wish to insure for so large a policy as, perhaps, $1,000. While it does not essentially differ from ordinary insurance, the cost is nearly double, and it is criticised by many as encouraging the insurance of children and infants, which is objectionable, especially among the very poor. In many cases a burial fund is provided by such insurance.

V. Accident Insurance.—By this form of insurance, taken out largely by travelers or by those whose work is perilous, the one taking a policy may, in case of accident to himself, recover from the company. The payment—according to the policy—is so much per week during the time of disablement, and is usually limited to a fixed number of weeks, or it is a given sum if death results from the accident, or smaller stated sums if the loss of sight or of a limb, or a lesser permanent injury, is suffered. The latter payments would be in addition to the weekly payments on account of disability.

Accident insurance in England owes its rise to the sudden development of railway traveling about the middle of the nineteenth century. In the United States it dates from the formation of the Travelers Insurance Company of Hartford, Connecticut, in 1863. Originally the premiums were uniform, regardless of age or occupation; but now all occupations are grouped into classes of varying degrees of risk. As a rule no person under 18 or over 65 is accepted for this form of insurance.

Accident insurance has been made an advertising feature by many periodicals, a fixed insurance covering the purchaser of the current issue until the appearance of the next number.

VI. Liability Insurance.—In regard to certain classes of securities, notably those of street railways, this subject should be considered by investors. Even though the corporation named is thought to be of good financial standing, accidents are quite likely to occur, especially where grades, curves, etc., are necessitated, and the company may be called upon to pay out for damages a sum equal to its earnings for some time to come, perhaps even suffering financial disaster. But unless there is special state legislation to the contrary, a mortgage has prior right over a claim for damages. In regard to a railroad the opposite is true. But most railroads are such large corporations that the loss resulting from accidents would scarcely be enough to cause them financial distress.

"Liability insurance" is quite generally carried by gas and electric light companies, and they do not, besides, offer much risk of accident to the public the responsibility for which would rest with the company.

A very desirable and not expensive class of insurance called "Employers' Liability Insurance" is carried by many corporations, insuring against loss to the company by accident to employees.

PUBLIC FINANCE.

Public finance is the science which deals with the receipts and expenditures of the state. It is intimately related to political science and political economy, drawing largely from both and yet contributing to both. The leading German authorities on the subject treat public finance as an integral part of political economy, although as a science the former is much older. Under medieval governments the methods were simple, for expenditures were met from the personal revenues of the ruler, or by gifts, fees, penalties, etc.; there being no separation of the income of the state from that of the sovereign. But as soon as a direct levy was made in order to secure a revenue for public needs beyond the upkeep of the royal household, public finance both as a science and an art began to be studied. The greatest impetus given to the subject previous to the nineteenth century was by the writings of the German Cameralists; but in England and France public finance was more or less neglected, the only section on the subject to receive any attention being taxation. Public finance falls naturally under four heads, viz.: Public Expenditure, Public Revenue, Public Indebtedness, and Financial Administration.

I. Public Expenditure.—Expenditures may be classified as follows: (*a*) those for the common benefit, including the general expenditures for the support of the administrative and legislative departments, including the diplomatic corps and everything necessary thereto, the expenses of money circulation, national defense and maintenance of order, education, construction of public buildings, building and maintenance of roads, waterways, harbors, canals, lighthouses, signal stations, weather bureau, life-saving stations, etc.: and (*b*) those for the benefit of individuals. The second category may be sub-divided into (1) expenditures conferring a special benefit on certain classes, because of their incapacity or dependence, and treated as common benefit, e.g., relief of poverty and sickness, pensions, care of the defective; (2) expenditures conferring a special benefit on some and a common benefit on all, e.g., the administration of justice, the postal service, and special rights such as copyrights and patent rights, the laying out of streets, building of sewers, etc.; (3) those conferring a special benefit only on individuals, e.g., all of the great industries carried on by the state or by cities, all government and municipal monopolies and the like. There is a certain process of evolution by which all these expenditures tend to belong to the first class.

Under a federal government like that of the United States expenditures must be apportioned between the central and the state governments, and further between the latter and the local governments. The table shows expenditures of the Federal government for certain typical years ending June 30, the totals being in thousands:

Fiscal Year.	Civil and Miscellaneous.[1]	War Department.[1]	Navy Department.[1]	Indians.	Pensions.[2]	U.S. Veterans' Bureau.	Postal Deficiency.	Interest on Public Debt.	Others and Total Expenditures.
1900	$ 131,689	$ 134,775	$ 55,953	$10,175	$ 140,877	.....	$ 7,231	$ 40,160	$ 520,861
1905	127,968	126,094	117,550	14,236	141,774	.....	15,065	24,646	567,279
1910	171,581	189,823	123,174	18,504	160,696	.....	8,496	21,343	693,617
1915	200,533	202,160	141,836	22,130	164,388	.....	6,637	22,903	760,587
1916	191,753	183,176	153,854	17,570	159,302	.....	5,500	22,901	734,056
1917	1,141,123	377,941	239,633	30,598	160,318 [3]	$ 3,326	.....	24,743	1,977,682
1918	6,075,053	4,869,955	1,278,840	30,888	181,138	68,863	2,221	189,743	12,696,702
1919	6,523,641	9,009,076	2,002,311	34,593	221,615	105,085	344	619,216	18,514,880
1920	2,663,412	1,621,953	736,021	40,517	213,344	107,730	115	1,020,252	6,403,344
1921	1,559,115	1,118,076	650,374	41,471	260,611	357,007	130,128	999,145	5,115,928
1925	667,715	370,981	346,142	38,755	218,321	516,167	23,217	881,807	3,063,105
1929	890,240	425,947	364,562	34,087	229,781	581,213	94,700	678,330	3,298,859
1930	994,774	464,854	374,166	32,067	220,609	602,738	91,714	659,348	3,440,269
1931	1,130,346	487,718	354,071	37,489	1,013,041 [4]	[4]	145,644	611,560	3,779,868
1932	2,137,111	478,889	357,821	32,608	1,053,114 [4]	[4]	202,876	599,277	4,861,696 [5]
1933	2,265,878	450,766	349,732	27,225	944,672 [4]	[4]	117,380	689,365	4,845,018
1935	4,437,652	489,155	436,448	27,419	373,805 [4]	[4]	63,970	820,926	8,216,066
1936	6,254,317	618,919	529,032	28,876	399,066 [4]	[4]	86,039	749,397	9,736,506
1937	5,915,914	628,348	556,884	36,933	396,047 [4]	[4]	41,879	866,384	9,277,299
1938	4,978,321	644,525	596,278	33,378	402,779 [4]	[4]	44,259	926,281	8,419,474
1939	5,395,880	695,969	672,969	46,964	416,721 [4]	[4]	41,237	940,540	10,011,748

[1] To 1915 the Civil Expenditures made by War and Navy Departments are included in this column; afterward, under respective departments.

[2] Includes only Army and Navy pensions for service prior to World War. Does not include salaries, or payments to World War veterans by War Risk Insurance Bureau and Veterans' Bureau.

[3] From 1917 to 1921, expenditures by Bureau of War Risk Insurance, and those for vocational rehabilitation.

[4] Combined in expenditures of Veterans' Administration, not including those for civil service and Canal Zone retirement funds. Army and Navy pensions (including fees of examining surgeons) amounted to $220,608,931 in 1930; to $373,804,501 in 1935; and to $416,720,951 in 1939.

[5] Figures for 1932 and afterward include money advanced on account of the Reconstruction Finance Corporation.

II. Public Revenue.—The main sources of public revenues are threefold: (*a*) taxes, that is, revenue collected from all the citizens by compulsion on the ground that what is necessary for and beneficial to all should be contributed to by all; (*b*) fees, that is, revenue collected by compulsion and which confers some special benefit upon the persons from whom it is levied; and (*c*) "prices," that is, contractual revenue or, in other words, wealth created by the state for itself. Revenue is also derived from gifts, property by reversion, fines and penalties, and the like, but these minor sources play a comparatively insignificant part in public finance.

In the days of feudalism the needs of the state were provided for without the use of money; but with the growth of public functions came the need of public revenues. At first extraordinary payments, that is, those beyond the receipts from domains, were of a voluntary nature, as is clearly shown by their names—*beden, benevolences, dona, petitiones.* As the requirements became permanent the demands grew also permanent and eventually became compulsory. This change has invariably been coincident with the growth of constitutionalism and popular representation; and the revenues, which originally were at the absolute disposal of the monarch, gradually passed under the control of the representatives of the people. Compulsion is now a universal feature of taxation, while the uniformity of the revenue systems of various countries is accounted for by the fact that the same principle underlies them all, viz., that common necessity and benefit beget common obligations. Modifications in the forms of taxation are owing to the search for new measures, but the justification remains the same. "Prices," as Professor Seligman calls them, represent the value of commodities or services made or rendered by the government expressed in terms of money. These contractual revenues or "prices" merely represent a change in form of the wealth already owned, the state converting into money privileges, services, and material things which it has brought into being.

In addition to a revenue system being adequately productive and capable of yielding a steady income, it must likewise be elastic, permitting of expansion in case of sudden need.

Under a federal form of government it is necessary that the constituent states should have independent revenues, for lack of financial independence tends to beget a loss of political independence. In the United States this is provided for by leaving direct taxation to the state and local governments, while customs, duties, to a large extent excise duties, are left to the Federal government. Regarding the legal theory in the United States of what constitutes the just measure of taxation, Judge Cooley says: "What is aimed at is, not taxes strictly just but such taxes as will best subserve the general welfare of political society."

The table (omitting last 000) on the next page shows the major governmental receipts in certain fiscal years from 1900 to 1939:

III. Public Indebtedness.—Public indebtedness consists of both funded and unfunded debts. A funded debt is one which provides capital for permanent needs or for purposes of war, and covers a longer period. An unfunded or floating debt is generally for some temporary need, such for instance as the payment of the current dues of the treasury, and is of relatively shorter duration. No sharp line, however, can be drawn between these two classes.

A state may borrow in only two ways: (*a*) by compelling people to lend, (*b*) by offering terms to which people assent. The first may

TABLE OF ORDINARY GOVERNMENTAL RECEIPTS
(Figures in thousands: add 000)

Year.	Customs.	Income and Profits Tax.	Miscellaneous.	Sale of Public Land.	Miscellaneous Receipts.	Total Ordinary Receipts.	Total Surplus (+) or Deficit (−).
1900	$233,165		$ 293,328	$2,837	$ 35,911	$ 567,241	$+ 46,380
1905	261,799		234,096	4,859	43,521	544,275	− 23,004
1910	333,683	$ 20,952	268,982	6,356	45,539	675,502	− 18,105
1915	209,787	80,202	335,468	2,167	66,787	697,911	− 62,676
1916	213,186	124,937	387,765	1,888	54,759	782,535	+ 48,478
1917	225,962	359,681	449,685	1,893	81,903	1,124,325	− 853,357
1918	179,998	2,134,006	872,028	1,969	247,950	3,664,583	− 9,303,254
1919	184,458	3,018,784	1,296,501	1,405	561,204	5,152,257	−13,370,638
1920	322,903	3,944,949	1,460,082	1,910	959,508	6,694,565	+ 212,475
1925	547,561	1,760,538	828,638	624	642,728	3,780,149	+ 250,505
1926	579,430	1,982,040	855,599	754	544,932	3,962,756	+ 377,768
1927	605,500	2,224,993	644,422	621	643,859	4,129,394	+ 635,810
1928	568,986	2,173,953	621,019	385	678,006	4,042,348	+ 398,828
1929	602,263	2,330,712	607,308	315	492,653	4,033,250	+ 184,787
1930	587,001	2,410,987	628,308	396	551,250	4,177,942	+ 183,789
1932	327,755	1,057,336	503,670	170	232,296	2,121,228	− 3,153,098
1933	250,750	746,206	858,218	103	383,079	2,238,356	− 3,068,267
1934	313,434	817,861	1,822,642	99	161,417	3,115,554	− 3,253,393
1935	343,353	1,099,119	2,178,571	87	179,337	3,880,407	− 3,782,966
1936	386,812	1,426,575	2,086,276	74	216,219	4,115,957	− 4,952,929
1937	486,357	2,157,526	2,439,613	71	210,317	5,293,840	− 3,252,540
1938	359,187	2,634,618	3,039,700	96	208,060	6,214,661	− 1,449,626
1939	318,837	2,182,301	2,978,920	248	187,517	5,667,824	− 3,600,514

be termed forced loans; these are mostly obsolete, but irredeemable paper money is commonly spoken of as a "forced loan." The second may be styled contractual debts, which may be divided into two groups, viz., contracts containing provisions intended to insure additional confidence, and those where confidence is so assured that no such provisions are taken. The first group may be subdivided into two classes: (1) where confidence rests upon the fact that the loans are not expended but are detained to meet the debt charges, such as voluntary deposits with and without interest, statutory deposits including guarantee funds of various kinds with and without interest, insurance, deposits of coin or bullion to secure circulating notes, and estates in hands of the courts pending litigation; (2) where confidence rests on the fact that definitely specified revenues are set aside for the payment of the debt, based either on the revenues of a particular period, or on prices, fees, or special taxes. The second group comprises contracts which call for (*a*) repayment of the principal only, e.g., redeemable notes not legal tender and not assured by any deposit; (*b*) payment of principal and interest, e.g., bonds and annuities, and (*c*) payment of interest only, e.g., perpetual bonds and permanent annuities. As a rule the leading nations are able to secure loans without resorting to any special method of gaining confidence, their credit alone being sufficient. The greater part of European debts consists of "perpetual bonds," which fix no date at which they mature, but are redeemable whenever the debtor state chooses.

The first debts of the United States were in the form of simple perpetual bonds with no limitations. After the war of 1812, a time limit was set within which it was promised not to redeem the bonds. The "limited option" debt was introduced by the United States government in 1862, the bonds being made "redeemable at the pleasure of the United States after five years, and payable twenty years from date of issue." These were termed "five-twenties." A like plan was followed in the so-called "ten-forties." Next in importance to perpetual bonds are the "terminable annuities"; but life and other terminable annuities are being replaced by perpetual bonds. The favorite European form of public debt is that of lottery loans, but as this partakes of the nature of gambling it is a form which finds no favor in Great Britain or the United States.

UNITED STATES PUBLIC DEBT
(All figures save per capita in thousands)

Year	Interest Bearing	Without Interest	Matured (Non-Int.)	Per Capita
1800	.....	82,976	.....	$15.87
1840	3,573	.....	.....	.41
1870	2,035,881	397,003	3,570	63.19
1900	1,023,479	238,762	1,176	16.56
1915	969,759	219,998	1,507	11.83
1920	24,061,095	230,075	6,748	228.32
1925	20,210,906	275,123	20,243	177.82
1930	15,921,892	231,701	31,715	131.38
1933	22,157,643	315,118	65,911	179.32
1935	27,645,230	825,274	230,663	261.20
1939	39,891,844	411,280	142,293	308.34

ITEMIZED PUBLIC DEBT FOR 1940
(In thousands: add 000,000)

Total gross debt	$40,445
Bonds	27,572
Notes	7,243
Treasury certificates	1,308
Special issues	3,770
Balance in general fund	2,817
Net debt	38,440

IV. Financial Administration.—Financial administration is concerned with the preparation of the budget, the control of the public funds and expenditures, and the collection of the revenues. The importance of correct methods of fiscal administration has been more

generally recognized in Europe than in the United States or Great Britain, where the subject has been largely left to publicists and jurists.

The Budget.—The establishment of this is the most conspicuous feature of modern fiscal systems, with the right of the people's representatives to vote taxes and appropriations. In America comparatively little advance has been made beyond the first fiscal methods that were established. But in European countries the budget has reached a higher development, due largely to conflicting interests of the legislature.

In England the fiscal year commences April 1, and ends March 31. Each administrative department prepares its "Estimates" for the coming year in the fullest detail, and upon these minute statements the Chancellor of the Exchequer bases his estimate for presentation to Parliament; he at the same time presents a brief showing how he expects to raise revenues to meet the proposed expenditures, and what new taxes, etc., if any, are needed. This statement forms the budget. Neither directly nor indirectly can Parliament increase the appropriations requested by the Ministry, nor can it add new appropriations.

In the United States the reports of the administrative officers, the president, and the secretary of the treasury, are made to Congress, but no formal budget is presented as in England. The finances are regularly dealt with by two separate committees, viz., the "Committee on Ways and Means" and the "Committee on Appropriations," dealing respectively with taxation and appropriations. There is no constitutional control of these committees, nor is there anything theoretically to prevent any member of the House from presenting an entirely new set of bills on his own account without reference to the committees.

Since the establishment of a protective policy the United States government has been in possession of large funds which are independent of the expenditures. The revenue laws are necessarily sundered from appropriations. The system has its advantages, but it entirely prevents any systematic supervision of the finances as a whole, and permits of no gauging of the relative proportions of the various appropriations. Unlike England, where credits expire at the end of the fiscal year, in the United States they usually remain in force until the whole sum is used up or till the object is attained. The chief advantage of the American system is that it permits greater scrutiny by the legislature of the specific items of each appropriation.

In England after the budget has been voted the funds are deposited with the Bank of England, subject only to the order of the comptroller and auditor general. No payment can be made without (1) an act of Parliament, (2) a requisition by the treasury issued to the comptroller general, (3) a credit-grant for the amount authorized by the act, (4) a treasury order, for the money to be transferred to the paymaster general of the service. When the expenditures have been made, the various accounts, with their vouchers, are examined by the Parliament Committee of Public Accounts.

In the United States the executive officers hold direct control of the funds, subject to the orders of Congress. The original system of control, audit, and record was very complicated and was changed by the Act of Congress of July 31, 1894. Six auditors are now appointed: (1) For the Treasury Department, (2) for the War, (3) for the Interior, (4) for the Navy, (5) for the State, etc., (6) for the Post Office. This division of accounts is a distinct gain both in speed and simplicity.

CUSTOMS DUTIES.

These duties are levied upon commodities when they cross the national frontier, or enter within a customs area. Duties on goods entering a city are called *octroi*, and are more of the nature of excises. Originally customs duties were levied both on imports and exports. With the exceptions of Turkey, European nations have almost altogether abolished duties on exports; Russia, Italy, Austria, and Switzerland still retain a few export duties on indigenous products. The German customs duties yield nearly 27 per cent. of the gross receipts, the English 25 per cent., the French and the Italian 15 per cent. The purposes of customs duties are both fiscal and political. The difference between a protective tariff and a revenue tariff may be described as follows: A *protective tariff* is primarily designed to prevent importation, entirely or partially, and to raise the prices of imported commodities so as to protect and encourage the native product. A *revenue tariff* is fixed so as not intentionally to leave any trace upon native industries, and it based on principles like those of the excise, the duties being laid upon commodities of great consumption and tax-bearing capacity. Strictly speaking, however, there is no such thing as a tariff for revenue only, for the effect of all customs duties on trade is very far-reaching. With the exception of England, Holland, Belgium, Switzerland, Norway, and Denmark, the protective principle is generally applied to every customs tariff.

In fixing the protective tariff there is always the danger that if the duties are so high as to afford absolute protection, loss of revenue will result from the foreign commodities which perforce are excluded. As soon as it is found that the importation of any article begins to fall off it is a sure indication that the tariff has exceeded the highest revenue-producing limit.

The customs tariff was the only source of tax revenue which the new Federal government had after the War of Independence. The first tariff act was passed July 4, 1789. Until 1812 the tariffs were virtually revenue and not protective tariffs. New industries then began clamoring for protection and from 1816 onward a protection sentiment was sedulously fostered. The only serious reaction against this policy was in the so-called free-trade period from 1846 to 1860. The duties on classified articles ranged from 5 per cent. to 100 per cent. *ad valorem*, but many of these duties were reduced in 1857. On March 2, 1861, Congress passed the Morrill tariff, which increased protective duties, particularly on woolen goods and iron. On the outbreak of the war a series of new tariffs was made, imposing duties upon commodities hitherto

free, and raising the protective duties. The act of 1864 enumerated nearly 1,500 articles at an average rate of almost 50 per cent. This tariff was not appreciably changed until 1883. The only noteworthy changes down to 1894 were the acts of 1870, 1873, and 1883, and the McKinley Act of 1890, the latter removing duties on purely revenue articles but increasing the protective features. The Wilson bill, a Democratic measure, became a law in 1894, without the president's signature. It reduced many duties, removed the duty on wool, and provided for an income tax. The latter feature was declared unconstitutional by the Supreme Court, business depression caused a falling off of imports, and the measure was pronounced a failure. The Dingley Act of 1897 followed the leading provisions of the McKinley Act. The duties, especially on wool, woolen goods, pottery, and cutlery, were higher than in the Act of 1890. Lumber was again dutiable, and hides were taxed for the first time. The Payne Act of 1909 removed the duties on hides and reduced those on lumber and other articles. Many rates remained unchanged; others were increased,—the average being a slight reduction. The Underwood Act of 1913 removed all duty from food animals, unmanufactured lumber, wheat and its products, wool, and many other articles. The average ad valorem rate was about 26 per cent.—a decrease of about 28 per cent. from the Payne Act. The Fordney-McCumber Tariff of 1922 raised the rates appreciably above those fixed by any previous act. Under the Fordney-McCumber Act 63.8% of goods was dutiable. The Hawley-Smoot Act, effective June 18, 1930, revised many rates, increasing the list to 67.8% or 50.7% *ad valorem*, compared with 38.5%. President Hoover reluctantly signed the bill which was passed after months of bickerings in both a special and the regular sessions. Adjustments were made in 1934. American fruit, steel, and machinery were traded with Canada for wheat, livestock, and dairy produce. Agreements with Switzerland, Holland, Finland, and other countries followed.

UNITED STATES TREASURY.

The United States Treasury department was created by act of Congress in 1789. The Secretary at its head has control over the administration of the finances and currency, and in addition supervises the national banks, the construction and maintenance of public buildings, the public health and marine hospital service, the life-saving service, secret service, etc. He is assisted by three assistant secretaries. The business of the department is distributed among the following offices and bureaus: the comptroller and the assistant comptroller of the treasury, six auditors, the treasurer, the register, the comptroller of the currency, the commissioner of the internal revenue, the bureau of engraving and printing, the marine hospital service, and the mint. The director of the mint supervises the mints and assay offices throughout the country. The bureau of engraving has charge of the preparation of designs, bank notes, stamps, bonds, and other national securities.

A national treasury influences not only finance, but all branches of industry and commerce. The banking transactions of a country are largely affected by those of the treasury. National treasuries vary in different countries. The British exchequer is limited in its fiscal functions; those of France and Germany have a national bank associated with them; while in the United States the treasury combines within itself both fiscal and banking functions. Considered as a bank the United States Treasury, with its branches all over the Union, is the largest banking institution in the world.

Sub-Treasury.—The first was established in 1846, in Wall street, New York, where it is still located. There are now nine, established in Boston, New York, Philadelphia, Baltimore, New Orleans, St. Louis, Cincinnati, Chicago, and San Francisco.

The larger proportion of the Government's money transactions with the people are conducted through the New York sub-treasury, which is in direct charge of the Assistant Treasurer of the United States. Among its many duties are the redemption of mutilated paper money, refunding and redeeming Government bonds, payment of checks issued in settlement of government bond interest, pension expenditures.

Money from the custom-houses, post offices, and other departments of the Government are received by the sub-treasuries. By telegraphic transfers of money from one part of the country to another they are of great service. Gold deposited at one sub-treasury may be credited by telegraph to a person at another sub-treasury point. For sudden needs, currency may be so transferred. For such accommodation the Government makes a charge.

Australian gold is often used by London in payment of its own debts in New York, since when received at San Francisco it may, through the sub-treasuries, be immediately credited to persons in New York.

Income Tax.—The United States has been far behind other countries in the development of the income tax. The federal government first imposed an individual income tax at the time of the Civil War, but it was a war measure and was therefore repealed soon after the war. In 1894, another income tax law was passed but was held unconstitutional before it ever went into effect. The United States first taxed corporate incomes in 1909.

The ratification of the constitutional amendment in 1913, giving Congress power to impose an income tax without regard to the constitutional rule of apportionment, was followed immediately by an income tax law which has been extended and revised many times. The present United States income tax law is contained in the revenue act of 1940. According to the 1940 act, a normal and surtax is imposed upon the individual net incomes of citizens and residents (section 12), except for certain credits and deductions allowed. For example, the normal tax does not apply to corporate dividends or to interest on United States obligations. A single person is allowed a personal exemption of $1000, while the head of a family or married person living with husband or wife is entitled to an exemption of $2000 with $400 additional for each person (other than husband or wife)

dependent upon or receiving support from the tax payer. The exemptions are different for non-resident aliens.

State employees after 1939 were subject to tax, and federal employees subject to state tax. Certain incomes and gifts are exempted. Beyond the normal tax of 4% on net incomes over $4,000, others called surtaxes are added. These are shown in the table below. If a man has an income of $9,000, for example, his normal tax will be $360, and his surtax $200 more plus 8% on all above $8,000 or $80, making his total tax of both kinds $640.

TABLE OF SURTAXES

Surtax Net Income	Per Cent	Total Surtax
$0 to $4,000	None	None
4,000 to 6,000	4	$80
6,000 to 8,000	6	200
8,000 to 10,000	8	360
10,000 to 12,000	10	560
12,000 to 14,000	12	800
14,000 to 16,000	15	1,100
18,000 to 20,000	21	1,880
20,000 to 22,000	24	2,360
26,000 to 32,000	30	5,240
32,000 to 38,000	33	7,220
38,000 to 44,000	36	9,380
44,000 to 50,000	40	11,780
50,000 to 60,000	44	16,180
70,000 to 80,000	50	25,880
90,000 to 100,000	56	36,780
100,000 to 150,000	58	65,780
250,000 to 300,000	64	158,780
500,000 to 750,000	70	467,780
1,000,000 to 2,000,000	73	1,377,780
2,000,000 to 5,000,000	74	3,597,780
5,000,000 up	75	.....

The Revenue Act of October, 1940 provided taxes on estates and gifts as shown below:

FEDERAL ESTATE TAX RATES

(Including 10% defense tax effective June, 1940)

Estate ($40,000 Exempt)	Rate	Tax Including Defense Tax
$40,000	None	None
50,000	2%	$220
110,000	12	5,852
440,000	20	64,372
1,040,000	29	205,876
10,040,000	65	$4,277,812

FEDERAL GIFT TAX RATES

(Including 10% defense tax effective June, 1940)

Gift ($40,000 and $4,000 [a] Exempt)	Rate	Tax Including Defense Tax
$44,000	None	None
74,000	4½%	$990
114,000	9	4,455
444,000	15	54,945
1,044,000	21¾	183,645
5,044,000	39¾	1,586,145
10,044,000	48¾	4,094,145
50,044,000	51¾	$26,699,145

[a] $4,000 excluded for each beneficiary for each year.

SUMMARY OF THE LEADING FINANCIAL EVENTS.

1860 B. C. Money is mentioned as a medium of commerce in Genesis xxiii., when Abraham purchased a field as a sepulcher for Sarah.

c. 700 B. C. Egibe's bank at Babylon mentioned.

690 B. C. The coinage of money is ascribed to Lydians, possibly about this date.

594 B. C. Taxes levied by Solon, the Athenian legislator.

480 B. C. Darius levied a land tax by assessment.

445 B. C. The law of 1491 B. C. enforced by Nehemiah.

350 B. C. Livy first mentions the *argentarii* or Roman dealer in money.

269 B. C. The Romans gave their silver the name of "moneta."

808 A. D. Bank in Italy said to have been established by the Lombardy Jews.

928. Athelstan enacts regulations for the government of the mint.

994. England. One pound equals three of modern money. Three principal taxes in Anglo-Saxon times were (1) the "ship-geld," a tax imposed on each shire for naval purposes; (2) the "danegeld" (see 1068); (3) the "fumage," or "hearth tax."

1067. England. Taxes in specie are introduced by William I.; he raises them arbitrarily.

1068. England. The danegeld tax is revived; land is taxed at one shilling; this tax disappeared after 1163.

1108–1137. France. Under Louis VI. the communes are freed from court interference on the payment of a tax.

1125. England. Henry I. takes severe measures against false coining.

1133–1322. Tax called "scutage," or "land tax," rose with Henry III., of England; fell into disuse, 1322.

1157. Founding of the Bank of Venice; this bank was destroyed by the French invasion in 1797.

1173. The public funding system originated in Venice.

1188. England. Taxes on movables began with the "Saladin tithe"; this tax was one tenth of rent and movables, paid by all except crusaders.

1189–1334. Tax on rents and movables continued in England.

1194. Insurance first used in Italy.

1194. Richard I. of England levied a tax on all plowed land, known as the "carucage," i.e., the amount of land that could be covered by one plow (caruca) in a season.

1224. England. Tax of 1194 merged in the tax on movables (see 1188).

1257. The English gold coin first appears.

1275. "Ancient customs" toll slightly raised; granted Edward I. of England by parliament.

1312–1327. England. Tallage was tax collected from tenants of the royal demesne, on occasions of unusual expense.

1334. England. Fifteenths and tenths tax.

1341. English parliament prohibits usury.

1345. Founding of the Bank of Geneva.

1345. Failure of the Florentine bankers for large sums, including 1,500,000 gold florins owed them by Edward III. of England.

1350. France. Philip VI. enforces the gabelle tax (salt tax).

1350–1354. France. John II. debases the coinage.

1377. The first poll-tax imposed in England.

1377. England. Tallage of groats, a tax of four pence, granted the king by parliament.

1382. France. The malleteers revolt against a bread tax.

1401. Founding of the Bank of Barcelona (the earliest existing bank).

1407. Founding of the Bank of Genoa.

1483. Charles VIII. of France made the "taille" (tallage) permanent; this tax was both real and personal.

1483. "Vingtiemes," or twentieths, a tax which was first used with the taille; the former disappeared with Charles VIII. of France.

1504. The true English shilling first coined by Henry VII.

1522. Loans for the public service were raised by Wolsey in England; and again in 1525.

1523. Insurance policies first used in Florence.

1545. England. The coin is debased; the rate of interest fixed at 10 per cent.

1548. France. Bordeaux revolts against the salt tax.

1556. England. Founding of the Royal Exchange, London; opened 1687.

1560. Insurance first used in England. First life insurance company, The Amicable; established 1706.

1560. A shilling is struck in Ireland worth nine pence; but it is to be current at twelve.

1574. In Holland money is made of pasteboard.

1587. The Banco di Rialto established in Venice. This marks the inauguration of modern banking.

1601. First law of insurance in Britain enacted.

1609. The Bank of Amsterdam founded. This was probably the first modern bank to undertake the custody of depositor's money on a larger scale.

1619. The Banco di Rialto was absorbed by the Banco del Giro. The latter loaned 5,000,000 ducats to the government of Venice.

1619. Founding of the Bank of Hamburg, the oldest bank in Germany. Modeled on the Bank of Amsterdam.

1621–1664. In New York taxation under the West India Company first took the form of indirect taxes on goods imported and exported.

1623. Word *interest* first used in an act of parliament of James I. for a lawful increase as compensation for the use of money lent. Rate fixed by this act was

£8 for the use of £100 for a year in place of usury at £10 before taken.
1634. General Court of Massachusetts established following principle: towns shall have respect to levy every man according to his estate; poll taxes came into use later.
1635. Founding of the Bank of Rotterdam.
1640. The first louis d'or pieces are struck in France.
1651. Commonwealth lowers the yearly rate of interest in England to £6 on £100.
1656–1658. Cromwell, advised by Samuel Lamb, establishes a public bank.
1660. England. Interest rate of 1651 confirmed.
1661. The Bank of Sweden issued bank notes to avoid the transportation of copper coin. This is the first recorded instance of the use of bank notes in Europe.
1662. Milled shillings coined in England.
1663. England. Guineas first coined from gold brought from Guinea.
1663. A goldsmith, Francis Child, opens a bank in England.
1667. First run on London bankers.
1667. Insurance against fire in London, began the year after the great London fire.
1672. England. Charles II. closes the Exchequer, and seizes £1,200,000; a commercial panic follows.
1680. Hoare's Bank begun, England.
1688. Window tax established in England.
1689. England's public debt was £664,263.
1689. Ireland. James orders the issue of a coinage of brass money.
1690. Paper money first issued in the American colonies by Massachusetts.
1690. Rise of the English funding system.
1692. Establishment of a permanent land tax in England.
1694. Bank of England projected by William Patterson, a Scotch merchant, to meet the difficulty experienced by William III. in raising the supplies for the war against France; this date marks the establishment of the national debt of England.
1695. England. A recoinage act is passed; causes a commercial panic.
1695. Founding of the Bank of Scotland with an original capital of £100,000 sterling.
1695. France. A variable tax of the ancient monarchy was the "capitation," of system of poll taxes; was continued up to the Revolution.
1696. Office for insuring buildings opened in England.
1696. Run on Bank of England.
1696. First regular insurance office in London, the Hand-in-Hand.
1702. England's national debt £16,394,702.
1708. Bank monopoly established in England by forbidding a company exceeding six persons to act as bankers.
1710. Sun fire-office established in England.
1710. Louis XIV. of France revived the vingtieme, as a war tax; it remained up to the Revolution.
1710–1720. South Sea Bubble.
1713. Rate of interest in England reduced to £5 (yearly) on £100.
1716. The Sinking Fund Act is passed to redeem the debt of the Bank of England.
1716. Oldest county bank, Wood's at Gloucester, England, opened.
1716. The first bank of issue was established in France by John Law. This bank survived only until 1721.
1718. France's shares in Law's Mississippi scheme rise from £500 to £18,000.
1718. Law's Bank becomes the Royal Bank of France, with exclusive authority to coin money, and to receive all taxes and government imports.
1720. France. Failure of the Mississippi scheme; Royal Bank suspends payment; panic follows.
1720. First marine insurance companies are the Royal Exchange and the London Insurance.
1720. First fire-office in Scotland.
1721. Irish house of commons rejected a bill to establish a national bank.
1727. Establishment of the Royal Bank of Scotland at Edinburgh.
1728. First insurance in the colonies was at Boston by the Sun. (English Company.)
1733. England. Fifty tons of half pence and farthings are sent from the Tower to Ireland.
1736. Founding of the Bank of Copenhagen.
1738. Bank post bills issued in England.
1741. New Exchange at Bristol is erected.
1745. England. Run for gold upon rebellion in the North.
1746. British Linen Company incorporated as a bank by royal charter.
1749. France. Tax is levied of one twentieth of all incomes including those of the privileged orders.
1750. First fire-office in Germany.
1752. Insurance done in Philadelphia.
1765. Founding of the Bank of Berlin.
1775. Continental paper money issued during the American Revolution; first issued.
1775. Establishment of the London Clearing House.
1776. Founding of the Bank of Caisse d'Escompte, France.
1776. Louis XVI. suppressed the Corvees; taxes which were both real and personal; they were reestablished but disappeared in 1793.
1780. Founding of Bank of North America in Philadelphia.
1781. France. Necker's "Compte Rendu," the first public exposition of the revenue and expenses of the state, is published.
1783. Establishment of Bank of Ireland at St. Mary's Abbey.
1784. Founding of the Bank of Massachusetts.
1784. Founding of the Bank of New York.
1786. Establishment of the double standard in the United States with a ratio of 1 to 15.25.
1786. Founding of the Bank of St. Petersburg.
1787. Founding of the Bank of the East Indies.
1787. First savings bank instituted at Berne, Switzerland.
1789. United States. The first customs tariff act, July 4.
1790. First United States refunding act approved. Under it the state debts and the foreign and domestic debt of the nation were consolidated and refunded in three classes of bonds.
1790. The taille is suppressed in France.
1791. The First Bank of the United States is chartered by Congress with an authorized capital of $10,000.000, one fifth of which is subscribed by the government.
1792. Adoption of the ratio of 1 to 15 and establishment of a mint with free and gratuitous coinage in the United States; the silver dollar equal to 371¼ grains fine, the eagle to 274½ grains fine.
1792. Duties laid on spirits distilled within the United States, followed by an act further regulating these duties and imposing a tax on stills.
1792. Savings bank opened in Basel, Switzerland.
1793. £10 notes issued in England.
1794. First fire insurance policy issued in the United States at Hartford, Ct.
1794. France. The "maximum," fixing the prices of commodities, is repealed.
1794. The execution of the laws of 1792, imposing a tax on spirits and stills, leads to the Whiskey Rebellion.
1797. Cash payments suspended by the Bank of England.
1797. £1 and £2 notes issued in England.
1797. Bank Restriction Act in England.
1798. The first direct tax in the United States is levied upon the 16 states.
1798–1806. Income tax introduced in England; set aside in 1816; restored in 1842 as a substitute for the indirect taxes.
1799. A "Benevolent Institution" begun by Rev. Joseph Smith of Wendover.
1801. Stock Exchange in Capel court, London, established.
1803. The Bank of France founded; establishment of the double standard on the basis of the ratio of 1 to 15½, notwithstanding the fact that the market ratio is then about 1 to 15.
1803. Bi-metallic currency recommended for Germany.
1803–1804. A "Charitable" bank instituted at Tottenham.
1807. Prussia. Establishment of general industrial freedom; new industries were taxed; this tax was called the "industry tax."
1807–1812–1822–1824. United States. Efforts to refund.
1809. Bramah's machine for numbering notes adopted in England.
1810. Introduction of the silver standard in Russia on the basis of the ruble if 17.99 grams of fine silver, followed in 1871 by the coinage of imperials, or gold pieces of 5 rubles, of 5.998 grams; therefore, with a ratio of 1 to 15. This ratio was changed by the increase of the imperial to 5 rubles, 15 kopecks, and later to 1 to 15.45.
1811. Prussia. A poll tax of one half thaler from every person over 12 years of age was instituted for the meal tax in all places except the larger towns.
1814. Bank opened at Edinburgh, Scotland.
1815. Great depreciation of paper money in England, reaching 26½ per cent. in May. Course of gold, £5 6s. and of silver, 71½d. per ounce standard. In December the loss was only 6 per cent.; gold at this period was quoted at £4 3s., and silver at 64d.
1816. Abolition of the double standard in England, which had had as its basis the ratio of 1 to 15.21, and adoption of the gold standard on the basis of the pound sterling at 7.322 grams fine in weight. Coinage of divisional money at the rate of 66d. per ounce. Ex-

treme prices, £4 2s. for gold and 64d. for silver; in January £3 18s. 6d., and 59¼d. in December. Substitution for the ratio of 1 to 15.5 in Holland, established by a rather confusing coinage of the ratio of 1 to 15⅞.

1816. First fire-office in France.

1819. Abolition of forced currency in England. Price of gold, £3 17s. 10½d., and of silver, 62d. per ounce in October, against £4 1s. 6d. and 67d. in February.

1820. Prussia. The tax of 1811 developed into a classified poll tax.

1825. Great commercial panic in England, following which a law was passed permitting country banks, outside of a radius of 65 miles from London, to organize joint stock companies, with the right to issue bank notes.

1827. First fire-office in Russia.

1832. Introduction of the monetary system of France in Belgium, with a decree providing for the coinage of pieces of 20 and 40 francs, which, however, were not stamped. Silver, 59¾d.

1834. Substitution of the ratio of 1 to 16 for that of 1 to 15 in the United States by reducing the weight of the eagle, ten-dollar gold piece, from 270 grains to 258 grains.

1834. Establishment of joint-stock banks in England.

1835. Introduction of the company rupee, a piece of silver weighing 165 grains fine, in India, in place of the sicca rupee. Creation of a trade coin—the mohur, or piece of 15 rupees—containing 165 grains of fine gold. Silver, 59-11/16d.

1837. The fineness of the United States gold coins was raised from .899,225 to .900 and the silver coins from .892 4 to .900, giving a ratio of 1 to 15.988, and fixing the standard weight of the silver dollar at 412½ grains. Silver, 59-15/16d.

1844. Peel's bank charter act in England.

1844. Introduction of the double standard in Turkey, with the ratio of 1 to 15.10. Silver 59½d.

1847. Discovery of the gold mines of California.

1847. Abolition of the double standard in Holland by the introduction of the silver standard on the basis of a one-florin piece 0.945 grams fine, the coinage of which had already been decreed in 1839. Silver, 59-11/16d.

1847. Commercial panic in England.

1848. Replacing the ratio of 1 to 16 in Spain, which had been in force since 1786, by that of 1 to 15.77.

1848. Coinage in Belgium of pieces of 10 and 25 francs in gold, a shade too light. These pieces were demonetized and withdrawn from circulation in 1884. Silver, 59½d.

1850. Introduction of the French monetary system in Switzerland without any actual coinage of gold pieces. Silver, 60-1/16d.

1851. Discovery of the gold mines of Australia.

1851. Prussia. Introduction of an income tax placed on all persons having an income of over 1,000 thalers.

1851. There were 574 savings banks in Great Britain.

1852. England. Gold bullion in the bank (resulting from the discovery of gold in Australia), £21,845,390.

1853. Lowering of the weight of silver pieces of less value than $1 to the extent of about 7 per cent. in the United States, and limitation of their legal tender power to $5. Silver, 61½d.

1853. Maximum of the production of gold reached in California when it amounted to $65,000,000.

1854. Modification of the ratio of 1 to 15.77 in Spain by raising it to 1 to 15.48, and by lowering the piaster from 23.49 grams to 23.36 grams fine.

1854. Introduction of the silver standard, as it existed in the mother country, in Java, in place of the ideal Javanese money, and coinage of colonial silver pieces.

1854. Introduction of the gold standard in Portugal. Before this period the country had the silver standard, with a rather large circulation of gold coins stamped, on the basis of 1 to 15½ in 1835 and 1 to 16½ in 1847. Silver, 61½d.

1854. Founding of the New York Clearing House.

1857. Conclusion of a monetary treaty between Austria and the German states, in accordance with which 1 pound of fine silver (one-half a kilogram) was stamped into 30 thalers, or 52½ florins of South Germany, or 45 Austrian florins, resulting in 1 thaler equaling 1¾ German florins or 1½ Austrian florins. Silver, 61¾d.

1861. Law decreeing the coinage of gold pieces of 10 and 20 francs exactly equal to French coins of the same denominations is passed in Belgium. Silver, 61¾d.

1861. Reform of the land tax in Prussia; building tax was separated from it, all old taxes of a similar sort were merged in the new one; in the cities this tax is assessed according to the rental of the buildings, and in the country according to the size of the lands connected with the houses.

1861. Post office savings bank established by the British parliament; interest at 2½ per cent.

1862. Adoption of the French monetary system by Italy. Silver, 61-7/16d.

1863. First accident insurance company established in United States was the Traveler's, of Hartford, Ct.

1863. United States enacted a law authorizing the formation of a system of National banks. This act was recast on June 3, 1864.

1865. Formation of the Latin Union including France, Belgium, Switzerland, and Italy on the basis of a ratio of 1 to 15½. Silver, 61-1/16d.

1865. First appearance of assessment system of life insurance in the United States.

1865. Founding of the Bank of Italy.

1866. Failure of the banking house of Overend, Durney & Co., London, for £19,000,000.

1867. An international monetary conference held at Paris; adoption of the gold standard.

1867. Failure of the Crédit Mobilier, and disappearance of the capital.

1868. Adoption of the French monetary system by Roumania, with the exclusion of the 5-franc silver piece, which was, however, stamped in 1881 and 1883. Silver, 60½d.

1868. Admission of Greece into the Latin Union. The definite and universal introduction of the French monetary system into the country was effected only in 1883.

1868. Adoption of the French monetary system, with the peseta or franc as the unit, by Spain. The coinage of gold alphonses d'or of 25 pesetas was made only in 1876.

1870. Alaskan gold mining successfully commenced.

1871. Establishment of the double standard in Japan with the ratio of 1 to 16.17 by the coinage of the gold yen of 1.667 grams and of the silver yen of 26.956 grams, both with a fineness of .900.

1871. Replacing of the silver standard in Germany by the gold standard. Coinage in 1873 of gold pieces of 5, 10, and 20 mark pieces, the latter weighing 7.168 grams fine. Silver, 60½d.

1873. Increase of the intrinsic value of the subsidiary coins of the United States. Replacing of the double standard by the gold standard. Reduction of the cost of coinage of gold to one fifth per cent., the total abolition of which charge was decreed in 1875. Creation of a trade dollar of 420 grains with a fineness of .900. Silver, 59¼d.

1873. Suspension of the coinage of 5 franc pieces in Belgium.

1873. Limitation of the coinage of 5 francs on individual account in France.

1873. Suspension of the coinage of silver in Holland.

1873. Formation of the Scandinavian Monetary Union. Replacing of the silver standard in Denmark, Sweden, and Norway by that of gold on the basis of the krone. Coinage of pieces of 10 and 20 kroner, the latter weighing 8.961 grams, with a fineness of .900.

1873. Check bank in aid of persons not having a banker, opened in Pall Mall, England.

1873. The unrestricted coinage of silver suspended in the countries termed the Latin Union.

1874. Introduction of the system of contingents for the coinage of 5-franc silver pieces in the Latin Union. Silver, 58-5/16d.

1875. Suspension of the coinage of silver on individual account in Italy. Silver, 56⅞d.

1875. Introduction of the double standard in Holland on the basis of the ratio of 1 to 15.62 by the creation of a gold piece of 10 florins, weighing 6.048 grams fine, with the maintenance of the suspension of the coinage of silver.

1875. The Imperial Bank (Reichsbank) of Germany was established with the right to issue notes not covered by bullion in the vaults, to the amount of $62,500,000.

1876. Great fluctuations in the price of silver, which declined to 46¾d., representing the ratio of 1 to 20.172 in July. Recovery, in December, to 58½d. Average price, 52¾d.

1877. Coinage of 5 franc silver pieces by Spain continued later, notwithstanding the decline of silver in the market. Silver, 54¾d.

1877. Replacing of the double standard in Finland by that of gold on the basis of the mark or franc.
1878. The first international monetary congress meets.
1878. Act of United States Congress providing for the purchase, from time to time, of silver bullion, at the market price thereof, of not less than $2,000,000 worth per month as a minimum, nor more than $4,000,000 worth per month as a maximum, and its coinage as fast as purchased into silver dollars of 412½ grains. The coinage of silver on private account prohibited. Silver, 52-9/16d.
1878. Meeting of the first international monetary conference in Paris. Prolongation of the Latin Union to January 1, 1886.
1879. Suspension of the sales of silver by Germany. Silver, 51¼ d.
1881. Second international monetary conference in Paris. Silver, 51-11/16d.
1882. International monetary conferences opened at Cologne.
1884. Stockbrokers' rents to the city of London abolished; took effect, 1886.
1885. Introduction of the double standard in Egypt. Silver, 48⅜d.
1885. Great commercial depression in France; attributed to government prodigality.
1885. Prolongation of the Latin Union to January 1, 1891.
1885. International monetary conference opens at Paris.
1886. Great decline in the price of silver, which falls in August to 42d., representing a ratio of 1 to 22.5, and recovery in December to 46d. Modification of the coinage of gold and silver pieces in Russia. Silver, 45⅝d.
1887. Retirement of the trade dollars by the government of the United States in February. Demonetization of the Spanish piasters, known as Ferdinand Carolus, whose reimbursement at the rate of 5 pesetas ended on March 11. New decline of silver in March to 44d., representing the ratio of 1 to 21.43. Silver, 44⅝d.
1888. The bimetallic league hold a conference at Manchester.
1888. France. Panama Canal shareholders resolve to issue bonds for 340,000,000 francs to complete the canal.
1889. France. The Banque Parisienne assumes the entire cost of the issue of the bonds and construction of the new Panama Canal shares.
1889. The Comptoir d'Escompte, supported by Messrs. Rothschild and other bankers, is organized.
1889. March 8. France. A financial panic occurs; the Bank of France advances 100,000,000 francs to the Comptoir d'Escompte to meet the withdrawal of deposits; 75,000,000 francs are taken out of the bank.
1889. France. The Société des Métaux stops payment; copper drops heavily in Paris, London, and New York.
1889. France. The Tribunal of Commerce decides the Panama Canal Company to be a commercial company.
1889. France. A fall occurs in the shares of the Comptoir d'Escompte through speculations in copper.
1889. A monetary congress held at Paris.
1890. United States. Repeal of the act of February 28, 1878, commonly known as Bland-Allison law, and substitution of authority for purchase of 4,500,000 fine ounces of silver each month, to be paid for by issue of treasury notes payable in coin (Act of July 14, 1890). Demonetization of 25,000,000 lei in pieces of 5 lei in Roumania in consequence of the introduction of the gold standard by the law of October 27. Silver, 47-11/16d.
1891. Introduction of the French monetary system in Tunis on the basis of the gold standard. Coinage of national gold coins and bullion. Silver 45-1/16d.
1891. Reform of the "Industry" and "Income" taxes in Prussia.
1891. The impending failure of Baring Brothers of London, and the consequent financial disaster, was averted by the timely help of the Bank of England.
1892. Replacing of the silver standard in Austria-Hungary by that of gold by the law of August 2. Coinage of pieces of 20 crowns, containing 6,098 grams fine. The crown equals one half florin. Meeting of the third international monetary conference at Brussels. Production of gold reaches its maximum, varying between 675,000,000 and 734,000,000 francs. Silver, 39-13/16d.
1892. Annual meeting of the bimetallic league.
1893. Huge demand for gold forces United States to sell bonds valued at about $300,000,000. Silver coinage halted in British India, and the French trade dollars on individual accounts. Price of silver in London falls to 30.5d. In the United States the silver purchase clause of the Act of July, 1890, is repealed. The English Commons rejects bimetallism.
1894. In France new Panama Canal shares are issued to the value of about 30,000,000 francs.
1895. A bimetallic league formed in Paris.
1895. Chile adopts gold standard, and Russia decides to coin 100,000,000 gold rubles in 1896.
1896. Costa Rica adopts gold standard.
1896. Russia decides to resume specie payments.
1896. Both England and the United States propose an international conference on bimetallism.
1897. Russia and Japan adopt the gold standard.
1897. Peru suspends coinage of silver and prohibits its importation.
1898. Ecuador limits the tender of silver coins to 10 sucres in total value.
1899. India established gold standard at rate of 15 rupees to an English pound sterling.
1900. United States and Ecuador adopt gold standard.
1901. San Domingo adopts United States gold standard.
1902. Siam adopts gold standard.
1903. Colombia and the Philippines adopt the gold standard.
1905. Mexico adopts the gold standard.
1907. Financial distress began in March and culminated in a panic on October 22 in New York.
1908. Political disturbance in Spain due to shortage of money and offers from America for gold.
1908. German financial reform bill estimates the annual revenue of $119,000,000.
1908. Deficit of Great Britain for 1909 estimated as $100,000,000.
1909. Tax increases in Buenos Aires cause strikes.
1913. United States Federal Reserve Act passes.
1914. United States levies new taxes of $100,000,000 to cover deficit due to loss of revenue in Europe.
1916. Federal income tax law becomes effective.
1917. First and Second Liberty Loans.
1918. War and excess profits taxes of 1917 consolidated into single war excess profits tax.
1918. Third and Fourth Liberty Loans.
1919. Victory Loan.
1920. Congress passes Transportation Act.
1924. United States loans Germany, Japan, and France large sums of money.
1925. Reserve banks give to Great Britain credit for $200,000,000 to help maintain gold standard.
1926. Money situation in Belgium, France, and Italy improves.
1927. Unusual movements of gold and "easy" money.
1928. Money rates show unprecedented fluctuations.
1929. Sudden slump in stocks in October causes huge selling and billions of losses.
1930. Money rates at Federal Reserve banks in January were from 4½ to 5; December 2½ to 3.
1931. Gold withdrawal causes great alarm. Great Britain and France in financial troubles. France and United States agree on shipments of gold abroad.
1932. United States within about half billion of end of gold reserve through shipments abroad.
1933. On day of inauguration, Pres. Roosevelt closes all banks, after which many were liquidated. New legislation establishing the N. R. A., Reconstruction Finance Corporation, Securities Act, and other measures hastily passed by Congress.
1934. Gold withdrawn from circulation as money. Content of the dollar reduced from 25.8 grains fixed in 1900 to 15.5/21 grains, or 59.06% of its value from March 4, 1900 to Jan. 31, 1934. Value of silver $1.29 an ounce, weight of dollar unchanged.
1936. Stocks and business show considerable recovery, only to drop into a new depression in 1937.
1938. Railroads given freight rate increase. Spending of huge sums in government "pump priming" had some temporary effect.
1939. Government stores of gold reached new all-time high of over 16 billions.
1940. Employment and business increase under stimulation of munitions and airplane manufacture.

DICTIONARY OF BUSINESS AND FINANCIAL TERMS.

Comprising Those Used in Stock and Trade Transactions.

ACCEPTANCE. When a person against whom a time draft is drawn is presented therewith before due it is given to him for "acceptance." This he does by writing across the face of the draft the word "Accepted," followed by his signature. The draft is then said to have been honored, and has become a proof of indebtedness against him, in much the same way as a promissory note. Similarly, the person drawing the draft has become the indorser. Therefore, if the "drawer" has been granted use of the money by his bank, which is to collect the draft, or if it is negotiated in the interim, and the "acceptor" fails to pay, the "drawer" must make it good. Usually, when a draft is "accepted," it is dated, and a place of payment named. If that is not done, the draft is payable at the "acceptor's" place of business.

ACCOMMODATION PAPER. Instruments which the maker, drawer, acceptor, or indorser signs as an accommodation to another, with no financial consideration, unless, as is sometimes the case, a commission is paid. That is, a person signs such an instrument for the purpose of loaning his credit to another, without expectation of return. Corporations cannot legally give "accommodation paper."

ACCOUNT SALES. A statement of an account given to a customer by a broker, agent, or commission merchant.

ACCOUNTS PAYABLE. Open accounts, showing the sums due to others, but not proved by notes or acceptance, or other written obligation.

ACCOUNTS RECEIVABLE. Open accounts against customers, which are on the books of a firm, corporation, etc., but which are not shown by written forms of indebtedness.

ACCRUED DIVIDEND. Sold only in case of "guaranteed stocks" or stocks where the dividend is certain and fixed. Bears the same relation to a stock as "accrued interest" does to a bond.

ACCRUED INTEREST. If a bond is sold by the person holding it before the date when interest is due, the buyer gives the value of the bond, together with the amount of interest then due. This is made up to him when the interest is paid by the issuant of the bond. Terms used in the same sense as "accrued interest" are "with interest," "and interest," or "interest added." The legal rate of interest in the state where the note is made payable is understood if no rate is mentioned in a note drawn payable "with interest."

ACKNOWLEDGMENT. A certificate given by the proper officer, showing that the maker of a written instrument has declared before him that such instrument is his willful act and deed.

ACTIVE ACCOUNT. Brokerage accounts which show many transactions; bank deposits against which checks are frequently drawn.

ACTIVE PARTNER. Distinguished from "silent partner" and "special partner" as one who is actively engaged in the business, and who incurs full liability.

ACTIVE STOCKS or BONDS. Securities which frequently change hands.

ACTUARY. One skilled in the theories and mathematical calculations on which life insurance is founded and conducted. His most important work is the study of death rates and the measuring of probabilities based on these calculations. He also computes mathematically the reserve upon policies, premiums, surplus, and dividends.

ADMINISTRATOR or ADMINISTRATRIX. One who takes charge of the goods and estate of a person dying without a will. Appointed by the Probate Court or other proper authority.

ADMITTED TO QUOTATION. When a security is admitted to quotation, it is allowed to be dealt in upon the Unlisted Department of the Stock Exchange. The term "listed" is used in place of "admitted to quotation" when a security is placed upon the regular list by the Governing Committee.

ADVANCE. A rise in prices is signified in the expressions, "the market has advanced," "rent has been advanced." The word is also used to indicate that a payment has been made or that money has been loaned.

ADVICE. If a check is sent to some bank, with a letter containing the words "for the credit and advice of Anthony Thompson," the bank is directed to credit the amount to Anthony Thompson and notify him (send him "advice") that it has done so.

AGENT. A person who represents, acts for, or in behalf of another, who is called his "principal." A "special agent" is one whose duties and authority are restricted to a single transaction. A "general agent" is "one appointed to do acts of a class" (definition given by United States Supreme Court); for instance, one employed to purchase writing paper at wholesale, without restriction as to where or of whom he should buy. To avoid personal liability on the part of the agent, he should sign any negotiable instrument or contract under seal with the name of his principal, by himself as agent. For instance, "Edward Willis, by Oscar Larned, Agent"; not "Oscar Larned, Agent, for Edward Willis."

AGIO (spelled in various ways). The rate of exchange between the moneys of two countries. In the same country, the percentage of difference in values between two different moneys. For example, in some countries a paper currency may not be accepted at its face value in exchange for metallic currency, and the percentage by which the latter exceeds the former in value is called "agio." "Disagio" is the percentage in value at which the paper currency is accepted below the metallic currency; the premium upon a better currency being represented by "agio," and a discount upon a depreciated currency, by "disagio." The latter term is used also for the wear and tear or "abrasion" of a metallic currency.

ALLONGE. A slip of paper attached to negotiable instruments, such as checks or promissory notes, to receive further indorsements when the back of the original paper is entirely covered with indorsements.

ALL OR NONE. A condition imposed by the bidder for an issue of securities, recognizing that, if his bid is accepted, he is to take the entire issue—no lesser amount. Or the seller may impose the same condition upon the successful bidder.

ANCILLARY RECEIVER. When property is situated in some other state than that in which the "receiver" (principal one) gets his authority, it may be managed by a second or assistant receiver, called "ancillary receiver."

ANNUAL INTEREST. Interest payable once a year. Interest payable semiannually or quarterly is considered more desirable.

ANTI-STOCK WATERING LAWS. That a dollar shall be invested for every dollar of stock issued is required by these laws.

APPRAISED VALUE. Value an appraiser sets upon a property.

APPRAISEMENT. The value set upon a property or the placing of a value upon it.

APPRAISER. A person appointed by law or named by an individual to estimate values.

ARBITRAGE. Purchasing a security in one market and selling for a better price in another. When advantage of the difference in current quotations of two markets is taken by purchasing a security in one and selling the same in the other, the difference, less certain expenses, is called the "arbitrageur's" profit. At times the sale is made in one market before the purchase in the other. "Arbitrage" business is carried on between London and New York, chiefly by "international banking houses"; between different American markets; and between New York Stock exchanges.

ARBITRARY. On the theory that a branch road delivering freight to a main line is entitled to more than its mileage proportion of the through rate, a fixed sum, or "arbitrary," is paid for by a main line of railway to a branch or connecting line, for freight originating on the latter, without regard to its proportion of the through rate on such freight.

ASKED PRICE. The price asked for a security or commodity—the price at which it may be purchased.

ASSAY OFFICE. A branch of the United States Mint next to the Sub-Treasury on Wall street, New York City. (Assay offices are found also in other parts of the country.) Here gold or silver, presented in any form, is assayed, parted, refined, and gold and silver bars are manufactured. The government stamp certifying to weight and fineness is given to all such

that pass through the "assay office." Work for others than the government must be paid for.

ASSAY OFFICE BAR. A bar of fine gold or silver manufactured at a government "assay office" for the United States government; so named to distinguish it from a "commercial bar," i. e., one made without government regulation.

ASSENTED STOCKS or BONDS. When a corporation is reorganized and the security holders are asked to give "assent" to a certain plan; if stock is "assessed"; or in like cases where the consent of each share or bondholder is desired, it is customary to choose some banking house or trust company to receive the securities and to stamp on each the fact that the holder has "assented" to the plan or paid the "assessment." Should more than one assessment be required, "first assessment paid," "second assessment paid," etc., will be stamped on the security. The above are briefly referred to in financial columns and stock exchange sheets as "ass't pd.," "1st ass't pd.," etc.

ASSESSED VALUATION. Value fixed for taxation upon the property of a municipality by authorized officials. Rules for fixing the assessment vary in different states. In Massachusetts, property is assessed for nearly its marketable or real value; but in many Western states the assessment is based upon about one third, or even less, of the real value.

ASSETS. Cash and debts receivable, property, real estate, patent rights, trade-marks, machinery, merchandise, material, and stock being manufactured—everything of any supposed value belonging to a person, business, or corporation—are called "assets."

ASSETS CURRENCY. A proposed issue of bank notes secured by the general assets of the issuing bank instead of by government bonds.

ASSIGN. To convey in writing any right or interest. Term commonly used when a merchant, unable to pay his debts, transfers his property to another for apportionment among his creditors.

ASSIGNAT. Paper currency issued in France during the Revolution of 1789, the security being confiscated church land, all the national domains, and other property. Over 45,000,000,000 francs were issued.

ASSIGNEE. Person to whom some right or interest is transferred by writing. When a merchant voluntarily conveys his property to another for changing into cash and apportionment among his creditors, that other is called an "assignee for the benefit of creditors." When a state court under the state insolvency law, appoints a person to take possession of the property of an insolvent debtor, sell it for cash, and distribute it among the creditors, that person is called an "assignee in insolvency."

ASSUMED BONDS. When a corporation passes into the control or ownership of another company the bonds that have been issued by the first are assumed by the second, which becomes responsible for the payment of the principal and interest of these bonds now called "assumed bonds." "Divisional issues" is the term used of such securities in railroad finance. When referred to as "guaranteed bonds," the guarantee appears upon the bonds themselves.

AT THE MARKET. An order to buy or sell at the best market price offered, without actual price limit.

AT THE OPENING. An order to buy or sell, without actual price limit, at the best market price offered immediately after the opening of the exchange.

ATTORNEY IN FACT. Person who acts under the authority conveyed by power of attorney.

ATTORNEY'S OPINION. Written statement or approval given by a lawyer in regard to bonds which have been examined by him before their issue. All bonds should be so attested, the attorney thoroughly describing the bonds and stating clearly that he has not only examined and approved all the papers necessary to establish the legality of the issue, but one of the executed bonds as well.

AU BESOIN. Frequently appears in bills of exchange where a person is named who may be referred to for payment if the original person (drawee) refuses. Literal meaning, "in case of need."

AUCTION SALES. Auction sales of securities, having no connection whatever with the stock exchange, are held in auction salesrooms of private banking firms, when any one may be present. There is no restriction as to securities which may be offered for sale in this way, and many securities not listed upon the stock exchanges are sold, in addition to those which the law provides must be sold at auction.

AUDITOR. A person whose profession is to audit or examine and report upon the accounts of a firm, corporation, etc., to compare charges with the vouchers, prepare a balance sheet, and certify whether the financial condition is, or is not, as represented.

AVAILABLE ASSETS. Property not previously given as security for an indebtedness, which is available for sale or use.

AVERAGING DOWN. To buy at a lower price than the previous purchases in order to lower the average cost to the stockholder.

AVERAGING UP. To buy or sell more of a certain stock as the market advances and so increase the average price of the whole.

AWARD. The acceptance of a proposition to buy. A term customarily used in reference to some issue of bonds for whose purchase bids have previously been submitted.

BAD DELIVERY. A security not complying with the regulations of the stock exchanges regarding "good delivery."

BALANCE. Difference between the debits and the credits of an account. The sum due from one party to another after settling accounts.

BALANCE OF TRADE. When we have sold to the merchants of Great Britain merchandise of more value than they have sold to us, the "balance of trade" is in favor of the United States. If the condition is a temporary one, the natural result is the selling in the United States of "exchange" on Great Britain at a discount, or the shipment of gold to adjust the balance. As other factors, such as interest and principal due on account of securities of one country held in the other, are to be considered, the "balance of trade" does not always determine the debtor country.

BALANCE SHEET. A statement showing the balances of the open accounts of a business. On one side of the account are the assets; on the other, the liabilities and capital invested. The two sides should foot up equally, in other words, should balance.

BANK ACCOUNT. Having chosen your bank, find out the smallest sum of money which it will receive on deposit. Obtain an introduction to one of the bank's officers. Tell him, or the person to whom he may assign you, the amount you will probably keep on deposit, whether you will wish to borrow from the bank at intervals, and the kinds of loans. As a rule, large banks do not wish small accounts. Next present your deposit to the receiving teller, together with a "deposit slip" or "ticket," which is furnished by the bank. Be sure the blanks are filled out, showing the character, amount, date, etc., of the deposit, and that your name is written at the top. The teller will give you a "pass book," showing on the debit side the sum deposited. Before you leave his window notice if this is correct. The pass book should be returned to the bank the first of every month. When given back to you with the canceled checks be very sure to check it up yourself to see if the amount of your deposit is equaled by the addition of the total amount of the checks paid, the balance reported by the banks to your credit, and the sum of the checks drawn and not yet presented to the bank for payment. Canceled checks should be saved. A check book is generally furnished at the bank's expense. That your checks may be identified, you will sign in a book or on a signature card, kept for the purpose. If acting as agent, trustee, or attorney for some other person or persons, do not open a bank account in your own name for their benefit unless you have formal proof of the relationship.

BANK BALANCE. The sum of one's credit in a banking institution; also a bank's debit or credit at "clearing."

BANK BOOK or PASS BOOK. This book is proof of the bank's indebtedness to a depositor. In it is made by the bank a written entry of each sum deposited by a customer. It should be returned to a savings bank once or twice a year; to a national bank, "bank of deposit," or trust company, once a month. All changes or additions must be made by the bank, none by the depositor. Formerly a list of all checks paid during the month was entered on the credit, or right-hand page of the book. Now it is customary to write the list on a separate sheet of paper, entering on the credit page only the total amount. The deposits are entered on the left-hand or debit page. These are added, the total amount of the checks paid deducted, and the remainder, or balance, entered upon the credit page. This gives the sum of money to the credit of the depositor at that time, and is carried

forward to the left-hand page, and added in with the next period's deposits. The total amount of deposits should be equaled by the sum of the checks paid and the amount still to the credit of the depositor, who, when the book is returned to him, should satisfy himself that no mistake has been made by the bank. To do this he checks off what has been paid during the period, a process facilitated by a comparison of check numbers with the stubs. In this way may be easily noted the checks drawn by the depositor but not yet presented to the bank; and their total amount added to the sum total of the checks paid as given by the bank. When these are added to the balance still to the depositor's credit, all together should equal the sum of the deposits for the period; due allowance being made for interest (if any) and for collection charges.

BANK COMMISSIONER. A person appointed by the state to examine into the affairs of chartered banks and to have certain supervision over them. The duty of the bank commissioner and his assistants, which is to see that the savings banks and trust companies within the state are complying with the laws that regulate them, is accomplished by examinations into the affairs of each institution, at stated intervals. Questions, such as whether a particular investment may be legally bought, may be submitted by banks and trust companies to this board of commissioners, whose broad powers include the authority to pass upon and decide such difficulties.

BANK DISCOUNT. Simple interest, reckoned upon the face value of a note or other obligation, paid to one who loans money, in advance.

BANK DRAFT or **BANKER'S DRAFT.** A "draft" which one bank or banker draws against another.

BANKER. A custodian of the funds of others. Term should not be used in regard to those whose exclusive business is note broking, stock broking, etc., nor in cases where custodianship of money is not involved.

BANKER'S BILLS or **BILLS OF EXCHANGE.** Drawn by a banker in one country against one in another, with whom he has credit. Distinguished from "commercial bills" or "bills of exchange," which are drawn by shippers of merchandise.

BANKER'S CHECK. A check which one banker draws upon another.

BANKER'S NOTE. A promissory note of a banking firm not incorporated, or of a private banker.

BANKER'S STERLING. "Exchange" on Great Britain bought at some bank or banking house. To be distinguished from regular "bills of exchange" held, with bills of lading, by sellers or exporters to show the sum due them.

BANK NOTE. A substitute for real money. A promissory note issued by a bank payable in lawful money to bearer on demand.

BANK OF DEPOSIT. By this term bankers understand an institution which receives deposits subject to check, but allows no interest on the account, in contrast to trust companies, savings banks, and similar institutions, which do allow interest on deposits. The former class is represented by state and national banks.

BANK OF DISCOUNT. A bank whose deposits and other funds are, to a great extent, used to discount bills of exchange, notes, etc. Of this kind are national banks, but not savings banks.

BANK OF ISSUE. Money of its own in the form of "bank notes"—paper money which circulates as currency—may be issued by those banks given authority under the law to do so. Such a bank is called a Bank of Issue. Of this kind are national banks. Until 1865 "State Bank Notes" were issued by state banks, but at that time an act taxing such notes 10 per cent. was passed by Congress, with the result that they were quickly retired.

BANKRUPT. One who according to the laws of bankruptcy has been judicially declared unable to meet his liabilities. When advantage is taken of the National Bankruptcy Law, the debtor gives up all his property to be divided among his creditors, thus compelling them to make a settlement. When this is done he is given a legal discharge, absolving him from further liability. If it is afterwards discovered that the "insolvent" person has concealed property, thus defrauding his creditors, the law as a rule allows the latter to take possession. The forcing of an insolvent person into bankruptcy by creditors is called "involuntary bankruptcy." But a "wage-earner" or a "person engaged chiefly in farming or the tillage of the soil" cannot be so forced. Also, the insolvent person cannot be declared a bankrupt in an involuntary proceeding unless he owes debts amounting to at least one thousand dollars, has committed an act of bankruptcy, and the fair valuation of all his property is less than the sum of his debts. The action of "voluntary bankruptcy" is brought about by the debtor or the "insolvent," who may, unless a corporation, take advantage of the present Federal law to be adjudged a bankrupt.

BANK STATEMENT. A tabulated statement of their condition made usually once a week by banks in the larger cities belonging to the Clearing House Association. The New York Bank Statement, awaited with great interest by financial men, is issued to the public each week. A statement is tabulated by each national and state bank in the city belonging to the Clearing House Association, showing the average of each item for the period covering all the preceding business days of that week and the last business day of the previous week. These averages are received by the Clearing House manager, who obtains in like manner the average of each item for the combined statement. The "bank statement" never gives the actual conditions at the date of issue, since only the averages for the time covered are given. "Non-member banks," that is, banks which, although not members of the Association, "clear" through those which are, issue a separate statement. Since trust companies and their resources are not directly included in the "bank statement," its value is greatly lessened, and the true condition of the banking institutions is not obtainable. At times sudden withdrawals, or deposits, by the trust companies—large moneyed firms and institutions carrying accounts with the Clearing House banks—are made on purpose to render the statement misleading, in order to influence the loaning rates of money, and to affect the prices of stocks through a change in loaning rates.

BARGAIN. In England a term signifying a transaction between two members of the London stock exchange.

BAR GOLD. Gold in the form of bars of the British standard is 11-12 fine. The mint value of gold per ounce is 77s. 10½d., and the Bank of England is compelled by law to pay 77s. 9d. per oz. for all gold offered. It obtained, on September 20, 1906, the record price of 78s. 1d. for £200,000 bar gold. Gold imports are favored by the difference when the market price of "bar gold" falls below 77s. 10½d. in London. To make gold imports permissible in America, the fall of "sterling exchange" here must be greater the more the price of gold advances in London.

BARING PANIC. When, after a period of riotous speculation on the London Stock Exchange during the fall of 1830, the banking house of Baring Bros. was on the verge of collapse, dismay spread throughout the entire financial world; for untold misery would be caused by the failure of this great firm, with the many other moneyed institutions which would be carried down therewith. Such a world panic was averted by the wise and prompt action of Mr. Lidderdale, then Governor of the Bank of England, who obtained a loan of gold from St. Petersburg and the Bank of France. Against this the Bank of England, to temporarily accommodate the public, made an issue of paper money. Many leading bankers of London were persuaded by the Governor to write and subscribe a large guarantee fund, taking over the total assets of Baring Bros. The Bank of England liquidated, and ultimately a large surplus was returned to Baring Bros.

BAROMETER STOCKS. Daily, except on Sundays and stock exchange holidays, the average price of certain stocks is taken, and the rise and fall is a good indication of the trend of the market.

BAR SILVER. Silver that has not been and may never be minted into coin, but which comes from the smelter in the form of bars. The commercial value of the 371¼ grains of fine silver in a silver dollar was 72½ cents in 1907. "Bar silver" is bought and sold in London as a hedge against business transactions. The lowest price of silver in the world's history was 21 11-16 pence (about 43 cents) per oz., when it dropped to that in London on November 27, 1902. In New York, on September 3, 1890, the price was $1.21.

BEAR. One who sells stocks or securities for future delivery in anticipation of a fall in the market. A person is a "bear" on the particular security whose price he believes is about to fall, but is not necessarily so on others. The "bear," while naturally a seller, may be so for the purpose of buying at a lower price later on.

BEAR CLIQUE. A combination formed to depress market prices in general or the price of one security in particular.

BEARING THE MARKET. A forcing down, or depressing, of prices by artificial means.

BEAR MARKET. A "bear market," or general fall of prices, is the result of a predominating influence of the "bears."

BEAR PANIC. "Bears" on a certain stock and those who have gone "short" of it, when its price suddenly and rapidly advances, try frantically to "cover" or buy in what is needed to fill their contracts.

BEAR RAID. If there is much "long" interest at the same time that those who are "short" of the market wish to "cover," advantage may be taken by the "bears" to "sell short," and so force prices down that those who are "long" will of necessity sell. This will permit the "shorts" to "cover," or buy in, at a profit.

BELOW PAR. Below the face value.

BELT LINES. Short, connecting lines of railroad between one railway terminal and another. To connect railroads approaching a city from different directions, it has usually been necessary to follow a circular or belt course around a certain section of the city, and so the name "belt line" originated. If one belt system encircles another, they are often distinguished by the terms "inner belt" and "outer belt."

BERLIN DISCOUNTS. The discounting rates of good "commercial paper" at Berlin.

BETTERMENT or IMPROVEMENT. The cost of additional rail or other improvements on a road is as a rule charged first to a "betterment account" or "improvement account." It depends much upon the financial condition of the company, how it is treated at the end of the fiscal year. By a prosperous one it would probably be charged directly to "operating expenses," while by a company of limited financial resources it might be charged to "capital account" or "construction account." That the capitalization of a "betterment" should be only in proportion to the increased earning ability which the "betterment" has conferred upon the property is the opinion of many experts.

BIDDING UP. Bidding each time a little more than the previous actual sale, so as to create an advance in prices.

BID PRICE. The price bid or offered for any security.

BIDS AND OFFERS. A modern name for "puts" and "calls." In the New York Stock Exchange all offers to buy or sell securities are, unless otherwise stated, for 100 shares of stock or for $10,000 par value of bonds. Rules for the making of bids and offers are as follows: for delivery upon the day of contract, "Cash"; for delivery upon the business day following the contract, "Regular way"; for delivery upon the third day following the contract, "At three days"; not less than four nor more than sixty days is the limit for "buyer's" or "seller's options." If made without stated conditions, bids and offers are considered to be in the "regular way." A smaller variation than one eighth of one per cent. is not permitted in making bids and offers. If the par value of the securities is ten dollars or less per share, the bid and offer shall be in dollars or fractions thereof; if higher, bids and offers shall be made on the basis of a percentage of the par value of the securities dealt in. That the purchase money be paid on delivery may be rightfully required by the party delivering. Payment may be required at the time and place of transfer, if the deliveries are made that way. Under the Illinois statutes, transactions of "bids and offers" are prohibited.

BIG FOUR. Cleveland, Cincinnati, Chicago, and St. Louis Railway Company.

BIG KATY or KITTY. Missouri, Kansas, and Texas Railway Company preferred stock.

BIG NPR. (NIPPER). Preferred stock of the Northern Pacific Railway Company.

BIG STEEL. United States Steel Corporation preferred stock.

BIG THREE. The New York Life Insurance Co., The Equitable Life Assurance Society, and The Mutual Life Insurance Co., of New York—the three largest life insurance companies of New York City.

BIG UNION. Preferred stock of the Union Pacific Railway Company.

BILL. "Bill of Exchange." Bank bills or government notes are referred to by "bill" in the language of the clearing house. The expression is used also of promissory notes, the ordinary statement of a creditor's claim, as a butcher's bill, etc., or of any paper requiring money settlement.

BILL AT SIGHT. Same as "Draft" or "Sight Draft."

BILL-BOOK. Record of drafts, notes, etc., by a bank.

BILL BROKER. Sometimes called "bill merchant." In England, one whose business is to handle "bills of (inland) exchange," promissory notes, etc.

BILL OF CREDIT. Paper money issued by authority of the Government, and designed to circulate as money. As provided by the Constitution of the United States only the United States legislature, and none of the constituent states shall have the power to borrow money and "limit" bills of credit.

BILL OF EXCHANGE. Said to have been invented by Jews or Lombards in the fourteenth century in order to withdraw their property from the countries from which they were expelled. A written order from one person to another, requiring the latter to pay on demand or at a stated time, a certain sum of money "to order" or "to bearer," and charge to the account of the drawer. The order generally expresses that it is drawn for value. A bill of exchange is commonly termed a "draft."

BILL OF LADING. A written receipt for goods accepted for shipment by land or water transportation companies.

BILL OF SALE. A paper conveying from one party to another interest or right in personal property.

BILLS PAYABLE. Unpaid evidences of a person's indebtedness such as acceptance, notes, etc., held by others against him. From his standpoint they are bills "payable"; from the standpoint of those to whom they are due, they are "bills receivable." When, instead of a cash payment for a sum due, a promissory note, or some such instrument is given, they become "notes payable," or "notes receivable."

BIT. Used upon the Pacific Coast to indicate 12½ cents, the common term for a "quarter" or 25c. being "two bits."

BLACK FRIDAY. On September 24, 1869, Wall Street had one of the greatest upheavals it has known. A "corner" in gold, manipulated by Jay Gould and his partner, James Fisk, till it reached 162½, was suddenly broken by the Government purchasing with gold $4,000,000 of its own bonds. May 11, 1866, is also known as "Black Friday," because of the failure of the large London banking house of Overend & Gurney, and the disaster which followed.

BLANKET MORTGAGE. A rather vague term usually meaning a mortgage covering several different properties or a collection of properties, given to secure a single debt. It may also be given to secure indebtedness previously created in different forms. An underlying lien (indebtedness having prior claim) is usually implied by such a mortgage. This term is sometimes improperly used as synonymous with "general mortgage."

BLIND POOL. A name sometimes given to a corporation whose operations are known only to its own officials, and withheld from the stockholders and the public. Also, a "blind pool" is formed when, for a definite time, a group of corporations, or individuals, place certain specific interests in the control of one person, usually one of the group, and it is agreed that their interests shall be conducted by that one with no instructions from the others except those set forth at the beginning.

BLOCK. A large number of shares in a stock company bought or sold in a lump is called a "block of shares" or a "block of stock."

BLOTTER. First or temporary transactions are recorded in the "blotter," or book of original entry, and later "posted"—transferred—into books of more permanent record.

BONDED DEBT. Bonds comprising the fixed indebtedness of a municipality or an incorporated company. What bonded indebtedness may be placed upon a property with fairness to both shareholders and bondholders is a question worthy of serious consideration. That the property of a corporation should only be mortgaged to the extent of the minimum value placed thereon in a time of public adversity—its "unchangeable value"—is the general opinion. With such exceptions as those of some communities in the

Far and Middle West, where the assessed valuation in proportion to the marketable value of the property is very much less than in the East, no municipality should ever have a net indebtedness of more than 5 per cent. of its assessed valuation.

BOND OF INDEMNITY. When a corporation has issued a new security in place of one lost, it is protected against the finding and presentation of the first security at some future date by a "bond of indemnity." It is the business of "guaranty and indemnity" companies to furnish such bonds, at a reasonable price, when the loss of the security has been satisfactorily proved. This bond is really a form of insurance. A bond of indemnity is used to protect an employer against loss from the handling of funds, securities, etc., by an employee—as the cashier or treasurer of a bank.

BOND RESERVE. As bonds are supposed to be quickly convertible into cash in case of necessity, banks have, of late years, invested some portion of their funds in such securities. "Bond reserve" is the term used for an investment of this kind.

BONUS. This term is most generally used of stock thrown in with the sale of bonds or other stock. It is also used of a premium given for a loan or a charter or other privilege granted to a corporation; or an extra dividend to the shareholders out of accumulated profits.

BOOM. A strong advance in the market price of any security or commodity, accompanied by much excitement.

BOTTOMRY. The mortgage of a vessel as security for the repayment of a loan negotiated for the use of the ship.

BOURSE. In continental Europe, a market or exchange for a specific kind of merchandise, such as cotton, grains, etc.; or for securities generally. The Paris Bourse, or Stock Exchange, was established in 1726.

BREAK. "Break in the market," a decline in prices both great and unexpected.

BREAK EVEN. To come out just even. A transaction completed without profit or loss.

BROKER. A middleman who negotiates purchases, sales and contracts for others and receives a fixed fee or "brokerage." He generally contracts in the name of his principals instead of his own. There are various kinds of brokers—stock, real estate, oil, etc.

BROKERAGE. The "commission" or "fees" paid to a broker.

BUCKET SHOP. An office or place where facilities are given for gambling small amounts in "margins" (q. v.) and run by unreliable brokers, not permitted to be members of a stock exchange. However, the stock itself is rarely purchased or sold for the customer. Should the order be actually executed upon a bona fide exchange, an order for the same amount is put in by the bucket shop. For instance, the bucket shop would buy an amount equivalent to the customer's sale, or would sell an amount equivalent to his purchase. In other words, the customer wagers his money upon a given stock going up or down, and the bucket shop accepting the wager gambles the other way; and, as is almost invariably true, the gambling establishment—in this case the bucket shop—wins in the long run. As it is natural for the average person to buy with the expectation that stocks will go up, the bucket shop thrives best on a declining market. The daily transactions of this unwholesome business, centering in New York, are sometimes almost as large as those of the New York Stock Exchange itself; it is surmised that a few unscrupulous financiers control a large percentage of this business, and that under their management orders are received at a common center from branch offices throughout the country.

BULL. A person operating in anticipation of a rise in prices, or with a view to bring about such a rise.

BULL CLIQUE. Persons who unite in mutual efforts to advance market prices in general or the price of one or more securities.

BULLION. In discussions relating to currency, this term signifies both coined and uncoined metal when reckoned by weight. For export purposes and in general use, uncoined gold or silver usually in bars or ingots is understood.

BULLION VALUE. Should a gold five-dollar piece be worn so that its weight has been reduced to $4.75 worth of fine gold, the latter is its bullion value, the term signifying the commercial value of the precious metals as distinguished from the face value of coined money.

BULL MARKET. A "bull market" exists when the influence of the "bulls" is predominant in the market.

BUSINESS PAPER. "Commercial paper" or "paper" are terms used of all classes of acceptances, notes, bills of exchange, etc., no matter for what purpose given. Several other terms used to designate particular kinds of "promises to pay" have come into general use. "Business paper" signifies the notes, acceptances, etc., taken in exchange for goods delivered, in distinction from notes given in exchange for money to use in business. "Business receivables" and "trade paper" are terms often used in reference to "business paper."

BUY AT THE OPENING. An order to purchase at the lowest possible price as soon as the stock exchange opens.

BUYER'S OPTION. Under such a contract the buyer of a security has, by giving the seller one day's notice, the right to demand delivery any time within the period covered by the contract, but need not receive delivery until the end of the specified time. "Buyer 5," "buyer 18," etc., briefly express the understanding, the number of days provided for in the agreement being indicated by the figures. The time must not be less than four nor more than sixty days, according to the rules of the New York Stock Exchange.

BUYING ORDER. An order to buy certain securities, with or without price limit, given to a broker and good only for the date for which it is given unless specified differently.

CALL. A notice that the amount of a bond will be paid; a demand for the payment of money, or for subscriptions to stocks or bonds. By this kind of contract, its possessor may at a fixed price and within a stated time, demand from the signer thereof a certain amount of stock (grain or other commodity). In New York, this privilege may be exercised any time within the life of the "call"; in London, only upon the last day of the time limit. Calls are dealt in much more extensively in London than in America. If the rights of the call are exercised, the stock is accompanied by all dividends paid upon the stock in the meantime.

CAPITAL ACCOUNT. If expenditures upon a property result in the increased earning capacity of the corporation, they may be paid for from increased capitalization; if not, they should be paid for from the earnings of the company, and charged to operating expense." For instance, should a stone building replace a wooden one, but the business of the corporation be not increased thereby, the expenditure should be charged against the earnings of the property, as it represents a "replacement." But if additional buildings are erected and the earning capacity of the corporation is increased by their use, the expenditure may be properly met by further capitalization, as it is an "improvement."

CASH DIVIDEND. Money or its representative given in payment of a dividend.

CASHIER'S CHECK. A check, signed usually by the cashier, which is drawn by a bank against itself and payable when presented at the bank drawing the same. One would use a cashier's check when for the case in hand the check of a known bank would be accepted more readily than his own. Or a person unable to draw a check because without a bank account of his own may obtain a cashier's check by paying the amount in cash, plus, perhaps, a small sum charged by the bank for the accommodation. By the bank itself this check is used in payment for supplies, expenses, in discounting notes, paying for securities, bills of exchange, etc., and also for dividends to stockholders, but a special form may be used for this purpose.

CERTIFICATE OF DEPOSIT. The written acknowledgment of a bank that the person named therein has placed with them a stated amount of money on deposit. It may be made payable either at a specified time or on demand, and usually draws interest. Declared by the courts of California to be a negotiable instrument in substance and effect the same as a promissory note. The money so deposited cannot be withdrawn by check, but the "certificate of deposit" must be presented by the holder thereof or by some one to whom it has been properly indorsed. Like a money order or cashier's check, this certificate may be used to transfer funds from one point to another.

CERTIFIED CHECK. That the person who draws a check has sufficient funds on deposit in the bank to pay it when presented is certified when an expression such as "Accepted," "Good when properly indorsed," or "Good through the Clearing House," followed by his official signature and the date, is written across the check by some competent bank officer. When a check is so certified, the amount of the check is deducted from the sum to the credit of the depositor. If not used, a certified check may be returned to the bank and canceled. The bank is under no obligation to certify checks, but does so merely to accommodate. Except in the case of a "raised check," a bank may be held for payment after certification. National banks are prohibited from "over-certifying" checks; that is, certifying, as an accommodation, that a depositor has to his credit more money than is the case, with the expectation that the depositor will make good the deficit sometime during the day.

CHATTEL MORTGAGE. A mortgage given and recorded in much the same way as a mortgage on real estate, but distinguished therefrom as being a mortgage on live stock, movable goods, or personal property.

CLEARING HOUSE BALANCES. The amount needed to settle the differences between all banks "clearing" through a certain association. The transaction between the clearing house and one bank is referred to as "balances."

COLLATERAL or **COLLATERAL SECURITY.** Something deposited with the evidence of debt to satisfy the claim of the lender should the borrower fail to meet the indebtedness when due. A security for the payment of money or for the performance of agreements. The collateral is usually about 20 per cent. more in value than the amount of the loan, such additional value being termed the margin. If the value of the collateral decreases to the amount of the loan, and the debtor is unable to pay off part of the loan or deposit additional security, or if the debtor is unable to make payment when the loan matures, the lender has the right to sell the collateral and deduct from the proceeds the amount due for principal and interest, the borrower receiving the balance, if any.

COLLATERAL LOAN. When a corporation or individual has deposited with the holder of a note certain securities which may be sold by the latter if the note is not paid when due, a "collateral loan" is made. If the securities are sold, the creditor retains sufficient to liquidate the debt, and the balance, if any, is handed to the debtor.

COLLATERAL NOTE. When mortgages, stocks, bonds, or other securities are given to secure a promissory note, it becomes a "collateral note." Such may be given by corporations, firms, or individuals, and among many railroad companies they are a common form of borrowing.

COMMERCIAL AGENCIES. Bradstreet's and Dun's, the two principal "commercial agencies" of this country, have their main offices in New York. Books giving the credit standing or rating of practically all the business men, firms, etc., who might possibly need credit throughout the United States and also in other parts of the world, are furnished to subscribers by these agencies. Special information in regard to any person in any part of the territory covered will be supplied to subscribers. In addition to all this, they give the public general information in regard to crop and business conditions, the number of failures during a certain period, etc. The first mercantile agency was established in New York in 1841.

COMMERCIAL PAPER. Many kinds of acceptances, notes, bills of exchange, etc., are covered by this very general term. Note brokers further distinguish the various kinds of "commercial paper" as "business paper," "mercantile paper," "corporation paper," etc.

COMMISSION. The brokerage or compensation given to an agent for his services as a middleman. The New York Stock Exchange has fixed rules for commission charges: (1) All commissions must be reckoned on a par value of securities; (2) transactions for parties or partners not members of the Exchange, or for firms of which the Exchange member or members are special partners only, not less than one eighth of one per cent. commission shall be charged; (3) on business for members of the Exchange, if a principal is given up, the commission must be not less than one fiftieth of one per cent., otherwise, not less than one thirty-second of one per cent. The committee on commissions, with the approval of the governing committee, fixes, from time to time, the rates on mining shares and subscription rights charged to both members and non-members. The foregoing rules do not apply to government or municipal securities.

COMMISSION HOUSE. A firm which does not speculate on its own account but transacts business wholly on a commission basis.

COMMON CARRIER. One who, for hire or reward, transports from place to place the goods of those who wish to employ him. The term includes all transportation companies engaged in the passenger, freight, or express business. Pipe lines for the transportation of oil or other commodity except water or gas also come under this heading in the "Rate Bill" passed by Congress.

COMMON STOCK. That portion of the capitalization of a corporation on which dividends may be paid after the requirements of the bonds, floating debt, and "preferred stock," if any, have been met. It is the equivalent of the English "ordinary stock." Common stock generally carries voting power.

COMPTROLLER OF THE CURRENCY. The chief officer of that bureau of the Treasury to which is intrusted the execution of all the laws passed by Congress relating to the issue and regulation of a national currency secured by United States bonds, and who really has control of all national banks.

CONSOL CERTIFICATES. Ownerships in the "Consols" of Great Britain and Ireland are represented by these certificates, issued by the National City Bank of New York, and traded in in America in place of the original "consols," thus greatly simplifying such transactions.

CONSOLIDATED EXCHANGE. A distinct association from the New York Stock Exchange, although situated in the same city. Its proper title is "The Consolidated Stock and Petroleum Exchange of New York" and the membership is about 1500. Two thousand dollars is approximately the price of a seat. The rate of commission is one half that of the New York Stock Exchange, that is, 1-16 per cent. instead of 1-8 per cent. and the transactions amount to probably not much more than 10 per cent. of those on the larger exchange.

CONSOLIDATED FIRST MORTGAGE. The same as "first and consolidated mortgage," in its common use in relation to bond issues.

CONSOLIDATED MORTGAGE BONDS. A corporation bond whose security is a mortgage on the entire property formed by the consolidation of several smaller properties. This mortgage may be a first mortgage upon the property so consolidated. If previous mortgages have been issued by one or more of the companies, it would be a general mortgage bond as well as a consolidated mortgage bond. In the case of a railway company, consolidated mortgage bonds are to be distinguished from divisional bonds—mortgages upon the separate properties consolidated. The term is commonly used for an issue which is to refund (take the place of) other issues not yet due, but having a prior lien, it being expected that the funded indebtedness of the company will be finally consolidated by the new debt. In such a case, the new issue is not only large enough, as a rule, to retire the prior indebtedness, but also to furnish money for necessary improvements.

CONSOLS. A contraction of *consol*idated annuities; the name given to the leading Government securities of Great Britain known as "Consolidated Threes" or "Three Per Cent. Consolidated Annuities." The right to pay the principal at its pleasure is reserved by the Government. The fund dates from 1757, and the account is kept at the Bank of England. The stocks are transferable and their market value constantly fluctuates, the price being regarded as a criterion of national prosperity and public confidence. "Two Per Cent. Consols" is the name given to the United States Government 2 per cent. bonds redeemable after 1930.

CONSTRUCTIVE MILEAGE. A relatively greater mileage allowance granted by a main line to a branch connecting line of railway in connection with freight originating on the latter and destined to some through point on the main railroad.

CONVERTIBLE BOND. A bond which is, under certain conditions, convertible at the will of the holder into other securities—usually stocks—and which is generally issued by the same corporation. The annual interest charge becomes contingent instead of fixed if the stock is "converted."

CONVERTIBLE PAPER MONEY. Paper money which the holder has the right at any time to present for redemption at its equivalent in metallic money.

CO-OPERATIVE BANKS. The one great difference between "building and loan associations" and "co-operative banks" is that from the latter a member has the right, by giving due notice—perhaps thirty days—and upon certain other conditions, of withdrawing the accumulations upon his unpledged shares.

COPPER or **COPPERS.** The product of the mine is called "copper." Shares of stock in the various copper companies are referred to as "coppers." These are also distinguished by the expressions "copper the metal" and "copper the stock." The copper industry of the world is dominated by the entire production, including what we have from adjoining countries. The average price is 15.70 cents per pound, and for 1906 our estimated production was about 413,834 tons. "Coppers" is a name often given to our pennies.

CORN. The commission for corn is the same as on other grains, but its margin is about three cents a bushel, and 5,000 bushel lots is its trading unit for future delivery.

CORNER. A buying up of the whole, or the available part of any stock or commodity, so as to control the selling price, as a "corner" in cotton.

CORPORATION. An association of persons for the purpose of carrying on some business or enterprise, who are exempt by law from personal liability beyond the amount already invested. The different ownerships are represented by shares of stock. Semi-public enterprises such as electric lighting, gas, street railways, etc., must be conducted lawfully by incorporated companies in order that the state may have some control. To form a corporation, a charter must be obtained from the legislature of a state, or from such officers as may be authorized to grant charters or even, under certain conditions, from Congress. With some exceptions companies may incorporate under the laws of a state other than the one in which the business is conducted. Many states have enacted laws conveying great privileges in the charters, and receive a large revenue from them, since corporations, as a rule, select that state which grants the most privileges. The three "charter bartering states" most liberal in the range of the charters granted, conveying upon corporations rights to do things in other states often prohibited by the laws of those states, are New Jersey, West Virginia, and Maine. It is necessary to name a resident "attorney in fact," given the usual powers of such attorneys, when companies organize under a different state than the one in which their business is conducted. That the principal office, containing the stock and transfer books, etc., of any company incorporated therein shall be located within its confines is required by some states. A "certificate of incorporation," following the form used by the state where the corporation is organized, and usually accompanied by a copy of the constitution and by-laws, must be filed with the secretary of state or some other properly designated person.

COTTON. Five hundred pounds is the average weight of a contract bale, the buying and selling unit being 100 bales, or 5,000 pounds. "Points" is the term used to record fluctuations, there being 100 "points" in a cent. If it declines fifty "points," it means one half cent per pound, or $2.50 on each bale, and $250 on the 100 bales. Members of the New York Cotton Exchange are charged a commission of $7.50 per 100 bales for the "round turn," i. e., buying and selling; non-members are charged $15. The usual margin charged by brokers is one half cent per pound, or $250 on each 100 bales. But this varies according to circumstances.

COUNTRY BANKS. Not located in a "reserve" or "central reserve" city, and not allowed to hold the "reserve" of any other national bank. Their reserve need be only 15 per cent. of their net deposits, two fifths of which must be kept in their own vaults. With the approval of the comptroller of the currency, the balance may be deposited with a bank in either a "reserve" or "central reserve" city.

COUPON. The small certificate attached to the part of the bond which represents the principal sum, the interest upon the bond for a certain period being represented by each coupon. Enough coupons are attached to represent the interest for the entire length of time before the bond matures. As the coupons, or certificates, severally become due, they are cut off and presented at the place named for payment.

COUPON BONDS. Those which have attached interest coupons or notes made payable to the bearer, to be presented for payment at stated intervals as the interest becomes due.

COUPONS, COLLECTION OF. Care should be taken in transmitting coupons from one point to another, for, like a five dollar bill, good in the hands of any one, they are usually made payable to "bearer." As banks have the safest and most thorough systems for coupon collecting, the best thing for an individual to do is take the coupon to his local bank about a week before it matures, and request them to collect it for him.

CREDIT. Transfer of property or goods in expectation of future payment; also the time allowed for such deferred payment, as a short credit, or a long credit. In bookkeeping, credit for money received or its equivalent is entered on the credit or right hand side of the account.

CREDIT CURRENCY. Called so when the general assets of a bank are the only security for the currency which it issues, as is true of the Bank of France. As against all additional notes above a certain fixed amount issued by the Bank of England there is a deposit of gold coin and bullion, such notes are substantially "gold certificates." The nearest approach to real money that is not actual money are the United States "gold" and "silver certificates," as each one is represented by an equal sum of gold or silver deposited to secure it.

CUMULATIVE. Generally used in reference to preferred shares of stock. Common or other stocks can receive nothing until the unpaid dividends on the preferred, which have accumulated from year to year, are paid. The chances of dividends upon common shares is naturally lessened by a "cumulative issue."

CURB. A market in the open (on the curb) where are handled new securities not yet listed upon the large exchange, or securities not traded in there; although any security may be dealt in upon the "curb." Many regular stock exchange houses in New York conduct a "curb" department. Marginal transactions in only the very best "curb" securities are permitted by most houses. There is no fixed rate for commissions on "curb transactions."

CURB BROKER or **CURBSTONE BROKER.** One who transacts business upon the "curb" or by going from office to office, and who is usually not a member of the stock exchange.

CURTAILING A NOTE. This is done by making a partial payment upon a note when due, or by giving a new note for the lesser amount after such a payment has been made. The same effect would be gained by making partial payments from time to time upon a "demand note."

DAILY BALANCES. Deposits of a certain amount are encouraged by this method. Depositors whose "daily balances" are over a certain amount—perhaps $300 or more—are allowed interest on them by most trust companies and occasionally by other banking institutions. That is, if it is found at the close of a business day that the total amount which a depositor has had to his credit unchanged for the preceding 24 hours equals $300, or whatever the amount agreed upon may be, interest for the day is allowed upon such an amount on sums evenly divisible by $100, but not for the fractional amounts above the even hundreds. No interest is allowed for the day if the deposit is less than the agreed amount.

DEBENTURE. Although the security ordinarily understood by this term is "debenture bond," it is used of municipal issues such as we call "bonds" throughout Great Britain and her colonial possessions in general. Where there is no "trust deed" securing the issues of railroads in Great Britain they are called "debenture issues." In Canada "debenture" is used of a municipal issue, "bond" of a corporation security.

DEBENTURE MORTGAGE. Comparatively few of these investments are dealt in at present. Formerly, if a "farm mortgage company" wished to issue "debentures," it would place with some trust company, perhaps $110,000 par value of mortgages upon real estate, and then issue "debentures" (or "debenture mortgages") worth $100,000, with a rate of interest smaller than that upon the original mortgages. In buying one of these, the investor was supposed to run less risk than in purchasing any specific mortgage.

DEED. In law, any instrument bearing a seal. In common usage, a sealed document (ordinarily a printed form filled out in writing) whereby the title of real estate is transferred from one to another. There are two kinds of deeds generally used in conveying real

estate. By a "quitclaim deed," the one giving it transfers only his own right and interest in the property, and in no way holds himself responsible for any defects in the title. By a "warranty deed" the property conveyed is guaranteed by the party giving the deed to be free from any defects of title, and if any such are found, the one accepting the deed is entitled to recover.

DEFERRED DIVIDEND. One not payable until the end of a certain time or until some definitely named event has occurred. Used by life insurance companies of the dividends kept by the company and paid to the policyholders at intervals of perhaps twenty years.

DELIVERIES. Upon the New York Stock Exchange, securities sold for "cash" must be delivered before 2.15 P. M. on the day sold, except on the half holidays observed by the Exchange, when the time limit is 11.30 A. M. They must be delivered before 2.15 P. M. on the following business day, if sold in the "regular way." Should the securities or any portion thereof not be delivered before the time specified, they may be brought "under the rule." If the buyer refuses until the following day a delivery offered after hours, interest for the extended time may not be demanded by the seller.

DEMAND LOAN or **CALL LOAN.** With this form of note or promise to pay, the lender has the right to demand payment at any time, and the borrower has equal right in making payment. In each case Sundays and legal holidays are excepted and payment will presumably not be made nor required on the same day the note is given. In New York notice that payment is to be made or demanded is usually given before 1 P. M. and payment made before 2.15 P. M. on the same day. Friday loans generally hold over until Monday. A "demand note" is payable without "grace," and bears legal interest after payment has been demanded, unless otherwise stated in the note.

DEMURRAGE. The per diem charge made when a car, vessel, or any such vehicle of transportation is delayed beyond the time allowed, for either loading or unloading.

DEPOSIT. Made when a person gives into the safekeeping of an individual, bank, or other corporation, securities, money, titles to money, or anything of value. "Pay to the order of the Third National Bank of Springfield, Mass.," followed by the signature of the depositor, is the simplest form of indorsing checks for deposit. Those who carry a deposit "subject to check" should beware of an "overdraft." Banks usually credit checks to the depositor at once, even though not able to collect them for several days, but sometimes they are unable to collect them at all, and then the checks are returned and charged against the depositor's account.

DEPOSITS ("BANK STATEMENT"). Money itself is not necessarily understood by "deposits" as referred to under "Bank Statement." The increase in deposits following an expansion of loans is explained by the fact that the amount a depositor wishes to borrow from his bank is accredited to his account, instead of being paid to him in cash. Credit is the base of such proceedings, and its importance in connection with financial and business affairs should be kept continually in mind. The amount to the credit of the government, itemized as "United States Deposits," is shown separately by the statement of the associated banks of New York, enabling the "reserve" required to be estimated. When not so divided, everything to the credit of others which may be withdrawn is included in "deposits."

DEPRECIATION. The falling off in the value of property, on account of wear and tear, or through machinery becoming antiquated, or in the case of a mine, etc., reduction in the life of a property. Some manufacturing concerns set aside from their profits each year 10 per cent. of the cost value of all the machinery and 6 per cent. of the cost value of the buildings to cover depreciation. The location, etc., of real estate regulates the amount written off for depreciation. Unless the depreciation of the property is counterbalanced by some way of setting aside each year a definite amount for that purpose, it will be found by the share and bond holders of the corporation that their dividends and interest have not been the actual profits of the corporation, but a payment, bit by bit, of their principal sum.

DISCOUNT. A deduction made for interest in purchasing a security not yet due; the difference between the price given and the par or face value. When it is necessary to give for one dollar in gold more than that sum in paper money, the latter is said to be "at a discount." The face value of a note less the "discount," is termed the "proceeds" or "net avails." The term "discount" is used in Great Britain and continental Europe in much the same way as our "time money."

DIVIDEND. A distinctive sum of money, share, or percentage. The term is used in many ways. The profits received by the owners of stock in a corporation, that is, the proportion of its earnings which they receive, are called dividends, and are distributed in proportion to the par value of the stock. The payments received by the creditors of a bankrupt are known as dividends, as are also payments made from time to time to the depositors or shareholders of a bank in liquidation. A certain amount of "undivided profits" is usually held as a reserve or "surplus fund," which is virtually equal to an increase in the capital stock. Corporations generally declare dividends at stated intervals, say the first of January and the first of July of each year. A company is said to have "passed its dividend" if none is declared at an appointed time.

DRAFT. A written order from one person to another to pay to the order of a third person, a stated sum of money; or bill of exchange. The writer of the order is called the "drawer"; the one who is to pay the money, the "drawee," and the bank or other party to whom the promise to pay is made, the "payee." Drafts are often made payable to the drawer, when the word "myself" is used. If that is done the drawer must indorse it in order to render it negotiable. By indorsement a draft may pass from hand to hand like a note. There are two kinds of drafts, "time" and "sight" (or demand). If the former, they are presented to the party against whom they are drawn for "acceptance." If "grace" is allowed for a "sight" draft, it must be presented for acceptance; but an ordinary "sight" draft is payable on presentation. The laws of the state where the draft is payable regulate its payment.

EARMARKED. A term used in England to denote gold deposited with the Bank of England for safe custody, but which the Bank may not employ for any purpose of its own. "Earmarked" gold is held on behalf of the government of India, as well as of the National Bank of Egypt, and notes are issued both in India and Egypt against this security.

EXCHANGE. A method of settling accounts or making payments between parties residing at a distance from each other. When the instrument is drawn in one country and payable in another, it is called "foreign exchange"; when drawn and payable in the same country it is termed "domestic exchange." In England the latter is known as "inland exchange." In the State of Michigan the term "foreign exchange" applies to all bills drawn or payable in any other state of the Union, as well as in any foreign country. A in New York owes B in London $1,000. B in London draws a "bill of exchange" on A in New York and deposits it with his London banker. Suppose on the other hand, C in London wishes to remit $1,000 to D in New York; by purchasing in effect the order drawn on A, the transaction is simplified, one debt being made to offset the other. In practice the London banker would forward the bill drawn by B to his New York agent for collection, the agent holding the sum at the London banker's disposal. C therefore would be given an order against the New York agent for $1,000, so there would be no necessity for any actual money being shipped at all. The price of "exchange" is determined by supply; if there is too much, "exchange" is at a discount; if too little it is at a premium. The final adjustment of "exchange" is made by gold; that is, when more money is to be remitted than is covered by available bills of exchange, bullion is shipped to make up the difference. London is the chief financial center for international business, and if, for instance, a merchant in New York wished to make a payment to a firm in China or Brazil, he would purchase a bill of exchange on London. "Exchange" quotations are recorded in the newspapers: e. g. "Sterling 4.87¾" signifying that $4.87¾ must be given in order to purchase "exchange" on London for one pound sterling. "Domestic" business is conducted in much the same manner, New York being the common financial center for "domestic exchange."

EXPRESS MONEY ORDERS. This method of remitting money by mail differs from "postal money orders" in several ways, no written application is

needed. They may pass from one person to another by continual indorsement, as they are unlimited in number, and if not presented within one year are still valid. Without the necessity of a duplicate being forwarded by the issuing office, they are payable upon presentation and at all offices of the company—not as by government method, at some special office. The rates are practically the same as those of the United States Post Office and sums up to $100 may be sent by one money order.

FACE VALUE. The principal. The value of a security as it appears in the security itself, without regard to any coupons.

FEE SIMPLE. Term used of a landed estate which belongs to the owner, his heirs, and assigns forever.

FIAT MONEY. Money issued by a government having the supposed power of forcing its acceptance in payment of debts within its own dominions, or which it declares shall be accepted as legal tender at its face value. "Fiat money" as commonly understood has no real value, or at the most is not worth its face value, in which case the "fiat money" is the difference between the real and the face value.

FIDUCIARY. Involving trust or confidence, especially of a financial nature. Banks, trust companies, etc., are "fiduciary institutions."

FINANCE. To furnish the funds required for an enterprise is to finance it.

FINANCIAL BILL. Called also the "Currency Act" and the "Gold Standard Act." This Act of Congress, approved March 14, 1900, included in its purposes the refunding of the public debt; maintaining the parity of all forms of money coined or issued by the United States; the defining and fixing of a standard of value, which last was declared to be the dollar, consisting of twenty-five and eight tenths grains of gold, nine tenths fine, all other forms of money coined or issued by the United States to be maintained at a parity of value with this standard under the jurisdiction of the secretary of the treasury.

FINE GOLD. That free from impurities. The United States Mint price of an ounce of fine gold is $20.672, which equals its value in England of 84s. 11.45d.

FIRST AND GENERAL MORTGAGE BONDS. An issue secured by a "first mortgage" on part of the property and a "general mortgage" on all of it.

FIRST MORTGAGE. A mortgage having prior claim or preference over others that may be placed upon the same property.

FIRST MORTGAGE BOND. A bond secured by a first mortgage and having first claim upon the earnings of a corporation.

FIRST MORTGAGE TRUST BOND. Under certain conditions this form of "collateral trust bond" may be indirectly a first mortgage; for it is one whose security is a deposit of other bonds, they, in turn, being secured by a first mortgage.

FIRST UNITED STATES BANK. In 1791, Congress granted a charter authorizing a United States Bank, its object being to take public money on deposit, regulate the currency, and act as official agent of the government. Its capital was $10,00,000, and at one time its circulation was about $4,500,000 and its deposits about $8,500,000. The government held one fifth of the capital, the public at home and abroad, the balance. The foreign holders were not allowed to vote by proxy, and so, although in the majority, could not obtain control. The right of inspection was held by the secretary of the treasury. So long as notes were kept repayable in coin, they could be received for public dues. The main office was in Philadelphia, branches being established in most of the important cities. The charter, obtained through the efforts of the first secretary of the treasury, Alexander Hamilton, was for only twenty years, and although the bank was a very successful institution, its constitutionality had been questioned, political opposition to its return was excited, and the renewal defeated. The bank, liquidating, returned to the shareholders $434 for each $400 share.

FIVE TWENTIES. Bonds subject, at the pleasure of the issuer, to redemption after five years from date of issue, but not due until twenty years therefrom.

FIXED CHARGES. As generally understood, the "fixed charges" of a corporation include rentals, taxes, insurance, interest upon its bonds and floating debt, and sinking fund, if any, although this last may be shown under a separate heading. Occasionally the first three items are given under a separate heading, but unless they are included in "operating expenses" this should not be done. Insurance is placed by railroad companies under "general expenses." By some prominent accountants only "bond interest, taxes, and rentals" are considered as "fixed charges"; but on permanent property at least, fire insurance and "sinking fund" should be included.

FLOOR. Where trading is done; used in connection with an exchange.

F. O. B. Stands for "free on board," meaning that no extra charge will be made for packing or for delivery on board a vessel or car.

FORCED LIQUIDATION. Used on the stock exchange when, to obtain necessary funds, owners of stock are compelled to convert the same into cash.

FORCED SALE. The compulsory sale of a debtor's property by a creditor, or mortgagee; the amount received being its "forced sale value."

FORECLOSURE. If the interest or principal of a debt secured by a mortgage is not paid by the "mortgagor," or if some other condition set out in the mortgage is not fulfilled by him, the property so secured may be taken and sold to cover the debt. After the foreclosure expenses, the indebtedness secured by the mortgage, and other liens have been satisfied, the "mortgagor" receives the balance if any. The power to sell is contained in the mortgage itself in most states, but in a few such a sale is prohibited, and an order from the court must be obtained.

FOR THE ACCOUNT. In England securities purchased for delivery on "account day," as the "fortnightly settling-days." "For money" is the term used of a security bought for immediate delivery.

FULLY PAID or FULL PAID. Further payment may not be legally demanded; there is no more due. When a stock has been issued in exchange for its face value in cash, property, or other equivalent, it is fully paid.

FUNDING. Providing a fund for the payment of the interest or principal of a debt—usually of the unbonded debt of some public body. For instance, if a city cannot pay its outstanding debts, which are in the form of notes due at different times, it must either renew or extend them, which is expensive, or else it may issue bonds, and pay off the notes by this method of "funding." A saving to the city will be made, as the money is usually obtained at a lower rate of interest.

GARNISHMENT (GARNISHEE). Called in Massachusetts "trusteeing." This term is used when property or credits of a debtor held for or owed him by some one else are attached for payment. If Smith has been unable to collect a sum owed him by Grant, by a legal process he attaches the latter's bank account for the amount due; in other words, he "garnishees" the account.

GOLD BANKS. None of these are in existence today, owing to the Act of February 14, 1880, which authorized the conversion of "gold banks" into "currency banks." But under the National Banking Act, associations called "Gold Banks" or "National Gold Banks," to issue bank notes payable in gold, may be and have been formed. Following the rule for taking out ordinary circulation, such banks must deposit with the treasurer of the United States interest-bearing bonds, *payable in gold*, but not more than 80 per cent. of the par value of the bonds deposited. These notes are redeemable in gold coin of the United States and are payable in the same upon presentation at the bank of issue.

GOLD BASIS. In a country that is on a "gold basis," the monetary standard is gold, and values are measured in the same way.

GOLD BONDS. This term is used in America of bonds that may be paid in United States gold coin of the fineness and weight of the present standard.

GOLD CERTIFICATES. The secretary of the treasury has been authorized by the United States government to receive deposits of gold coin or bullion of $20 or over, for which he issues certificates, or receipts, each equal to not less than $10, and which the treasurer and all assistant treasurers of the United States may redeem in gold. If the amount of gold coin and gold bullion in the treasury reserved for the redemption of United States notes falls below one hundred million dollars, the issue of gold certificates must be suspended by the secretary of the treasury, who may also suspend such issue when and for as long as the aggregate amount of United States

notes and silver certificates in the general fund of the treasury is greater than $60,000,000. To take care that at least one fourth of all outstanding certificates are in denominations of $50 or less is also the duty of the secretary of the treasury. The gold certificates in circulation amounted to $7,963,900 in 1880, $200,733,019 in 1900, and $802,754,199 in 1910. These may be used as a part of a national bank's reserve; are receivable for taxes, customs, and all public dues, but are not legal tender.

GOLD COIN OF THE UNITED STATES. Redeems Gold Certificates, Treasury Notes of 1890, and United States Notes. Issued by the treasurer of the United States and all assistant treasurers. If not below the standard weight and limit of tolerance prescribed by law, it is legal tender at its face or nominal value for all public and private debts. It is legal tender in proportion to its weight, if below the standard and limit of tolerance.

GOLD COINAGE. No charge is made for the coinage at any of the United States mints, for the benefit of the depositor, of gold bullion of standard equality. If it is not standard, a charge for refining, parting, copper alloy, etc., is made. Gold bullion of practically any amount is received for coinage by the mints, although legally they may refuse less than $100 worth.

GOLD EXCHANGE. Organized in 1864 as a result of speculation in gold during the Civil War. The memorable collapse known as "Black Friday," caused by a bull movement in gold, took place in the "Gold Room" as it was called.

GOLD PRODUCT OF THE UNITED STATES

1900	3,829,879	troy	ounces	worth $79,171,000
1905	4,265,742	"	"	" 88,180,700
1910	4,657,018	"	"	" 96,269,100
1915	4,888,000	"	"	" 101,036,000
1920	2,476,000	"	"	" 51,187,000
1925	2,412,000	"	"	" 49,860,000
1930	2,286,000	"	"	" 47,248,000
1938	5,089,811	"	"	" 178,143,400

GOLD PRODUCT OF THE WORLD since 1492, as estimated by the United States Mint, is as follows:

Years.	Gold.	Years.	Gold.
1492–1520	$107,931,000	1901–1910	$3,780,803,900
1521–1560	204,697,000	1911–1920	4,268,982,398
1561–1600	189,012,000	1921–1930	3,791,705,192
1601–1640	223,572,000	1931	560,650,527
1641–1680	239,655,000	1932	498,163,970
1681–1720	313,491,000	1933	525,070,547
1721–1760	580,727,000	1934	958,033,090
1761–1800	511,675,000	1935	1,049,973,580
1801–1810	118,152,000	1936	1,152,569,390
1811–1820	76,063,000	1937	1,229,140,430
1821–1830	94,479,000	1938	1,316,112,455
1831–1840	134,841,000		
1841–1850	363,928,000		
1851–1860	1,332,981,000		
1861–1870	1,263,015,000		
1871–1880	1,150,814,000		
1881–1890	1,060,056,000		
1891–1900	2,101,241,400		

GOLD RESERVE. With a view to preserving the equality of all forms of governmental money, and being in a position to redeem all the government legal tender notes at par on presentation, a "gold reserve" of $150,000,000 is kept by the secretary of the treasury in accordance with an Act of Congress, 1900. United States Government Bonds would be issued to replenish the reserve should it fall below $100,000,000.

GOOD WILL. The prospective material value of a business as a profit-producing enterprise, the future turnover being gauged by the results to date and the likelihood of their continuance. Defined by some as the benefit or advantage, beyond the mere value of capital, funds, or property used, acquired by an establishment. The bonded debt of a plant less its valuation at forced sale is another definition.

HEAVY. The market is heavy when owing to a steady advance too many securities are offered and so cause a fall in price.

HEDGE. To lessen a risk by speculating or wagering on two opposite chances; to reduce anticipated loss by selling or buying.

HIGH FINANCE. Extensive jugglery with other people's money.

HOLDING COMPANY. A financial combination "holding" or owning the shares of another company or companies, in order that through the ownership of their stock it may control the "sub-companies," each of which keeps its individual existence, but with managing officials appointed by the "holding company." Maine, New Jersey, and West Virginia have enacted laws especially to attract such companies, and they are generally incorporated in one of these states. The object, as a rule, is to practically consolidate two or more companies where it would not be possible to bring about actual consolidation by acquiring all the outstanding stock, or where a direct consolidation would be illegal.

IMPROVEMENT MORTGAGE BONDS. Commonly understood to refer to a "junior mortgage." An issue of bonds to provide funds for additions, betterments, improvements, etc., is secured by an "improvement mortgage." The issue is usually large enough to replace earlier mortgage bonds and also to provide for future improvements. The term "improvement bonds" is often used of "street improvement" and "public improvement" bonds among municipal issues.

INACTIVE ACCOUNT. A bank account not often credited with deposits, and against which checks are drawn at long intervals. Also used of a broker's account showing that the customer's purchases and sales are infrequent.

INACTIVE STOCKS OR BONDS. Securities difficult for the public to find the market value of, as they are bought and sold very irregularly, and are hardly ever quoted.

INCOME. In finance, the term is usually restricted to the yearly monetary return from investment; and interest return from real estate, mortgages, stocks, bonds, or from any money invested outside of one's own business.

INDORSE. The "payee" is the person to whom a draft, note, or check is made payable. To make any one of these of value to some other person, the "payee" indorses it by writing his name on the back exactly as it is written on the face. If the check is made payable to "J. Stanley Bridge," the back must be signed that way, and not "James S. Bridge" nor "J. S. Bridge." Should the face of the note give the wrong initial or otherwise be in error, and a new check issued in the right form be not easily obtainable, the "payee" may sign his correct name in addition to the one as given on the face of check. A check drawn to "Mrs. Frank Allen" should be similarly indorsed by her and her own name "Bertha Allen" written underneath. Should the holder of a check that has passed through the hands of several people, having been indorsed by each in turn, find upon presentation at the bank for payment that there is no deposit to meet it, he may fall back upon any one of the previous indorsers, not necessarily upon the one immediately preceding. For it must be remembered that the indorser of a check, draft, etc., may be held liable for its amount, unless he has added the words "without recourse," which may sometimes, but not always, be done.

INDORSEMENT IN BLANK. Only the name of the indorser is written upon the back of such an instrument, making it good in the hands of any legitimate holder. By writing the name directly above the indorsement the holder may make it payable to himself or to any one he wishes.

INDORSEMENT IN FULL. On the back of this instrument is written the name of the party to whom it is indorsed for payment, followed by the name of the indorser.

INDORSER. A person who becomes liable for the payment of a note, check, etc., by writing his name across the back, thus indorsing it.

INHERITANCE TAX. A state tax upon property imposed on inheritance. Upon assuming the duties of their offices, executors and administrators should at once, in states where an inheritance tax has been established, examine the laws in regard thereto, or take competent legal advice concerning them. The two kinds of such taxes are "direct inheritance" and "collateral inheritance." Property descending directly to a child or other lineal descendant, or to very near relatives such as father, mother, brother, husband, or wife, is subject to "direct inheritance tax," while all other inheritances come under the "collateral inheritance tax." The latter is in force in most of our

states, while the former is in force in England and is being rapidly adopted here. As a rule, the tax increases with the distance in relationship and with the amount of property inherited. Legacies to educational, charitable, and religious institutions within the state which imposes the tax are usually exempted.

INSTALLMENT. The payment made upon a security at regular intervals until the full amount is satisfied.

INTEREST. Premium paid for the use of money is called the "interest," and is generally expressed in percentage, based upon a year. If the use of $100 for six months brings $2.50 interest, that is the same as $5 for one year, and is expressed as "5 per cent." or "5%." The New York method of computing interest is as follows: the actual number of days elapsed is taken in reckoning the time. An interest table based on 365 days in the year is used; that is, the rate for one day is found by dividing the yearly interest rate by 365. By the Boston method, as it is called in that city, an interest table based on there being 360 days in the year is used, the time elapsed being computed as so many months and so many days,—30 days reckoned to each month; the rate for one month is 1-12 the yearly rate. The employment of both methods of calculation often leads to confusion on the part of the two parties to a transaction. The legal day terminates at midnight, hence any loan of money through the midnight hour calls for one day's interest. A loan at 4 P. M. repaid early the next morning would be reckoned as one day. Because seven midnights have passed between September 22 and September 29, the time is reckoned as seven days. This explains why the day on which the loan is made is not included in computing the number of days for which interest runs. The taking of interest for the use of money was not made legal in England until 1546, the rate being fixed at 10 per cent. "Interest" is used for the speculative side of the market, e. g. "long" interest, meaning those long of stock. It is also used in connection with one's ownership in a property.

INTERIM CERTIFICATE. Until the properly printed, lithographed, or engraved certificate for a given security is ready for the purchaser, a temporary or "interim" certificate is issued to him, sometimes by the corporation itself, but more often by some trust company.

INVENTORY. An itemized list or schedule of goods or property owned with their estimated market value; the annual account of stock on hand, furniture, and fixtures, etc.

INVESTMENT. The purchase of some species of property for the purpose of obtaining interest return upon money. It differs from speculation in that the safety of the principal is the first consideration, and any increase in the value thereof only secondary. Investment may be strictly defined as giving the possession and control of one's assets to another.

IRREDEEMABLE DEBENTURES. Those which, differing from bond issues, have no fixed dates of maturity, but, more like a stock, are perpetual and "irredeemable." In Great Britain railroads suffer from the disadvantage of "irredeemable debentures," their high interest rate being a perpetual charge upon the companies, the irredeemable feature preventing the "refunding" of the issue into lower interest-bearing securities.

JOINT AND SEVERAL NOTE. A note reading "We jointly and severally promise to pay," and signed by each of the parties or by a firm, as "Richards & Co.," is a "joint and several note," as is also an ordinary promissory note beginning "I promise to pay," if signed as above. Each signer is liable not only for his own share of the payment, but for the entire amount in the event of the other signer or signers being unable to pay.

JOINT NOTE. In such a note the words "joint and several" must not be inserted in the wording, "We promise to pay." It is signed by two or more persons or by a firm, as Clark & Somer. The holder must get judgment against all the signers if the note is not paid at maturity, taking out a "joint" execution against them all. He can then satisfy the judgment from the property of any one of the signers.

JOINT STOCK COMPANY. A term used more often in Great Britain than in America. The ownership in such a company is usually represented by shares of stock. These companies are of two kinds. One includes all corporations where the stockholders own the shares into which the joint stock or capital is divided. The other kind is an exaggerated form of partnership. Shares of stock are not owned, but a certificate showing his joint interest in the establishment is given to each participant, all of whom are, as in a partnership, personally liable for the debts of the company—not having the limited liability of a shareholder in an ordinary corporation. But unlike a partnership, each certificate owner has not the right to transact business for the company and the death of a member does not end the partnership. Some of our large express companies—Adams, United States, etc.—organized with the right to issue transferable shares representing beneficial interests in the company, are good examples of this second class.

JUDGMENT DEBT. A debt legalized by decree of a court.

JUDGMENT NOTE. An ordinary promissory note containing a power of attorney to appear and confess judgment for a debtor, given by him when he wishes to avoid having a lawsuit brought against him.

KITING, KITE FLYING, or KITING CHECKS. Accommodation paper used to sustain an imaginative balance in a bank, the custom which banks have of at once giving a depositor credit for uncollected checks of other people, being responsible for this practice. Two persons exchange checks for the same amount, which are properly deposited in the respective banks. But each has immediate use for a part or all of the money, expecting that the checks will not be collected before the following day, and planning to make good the amount before that time. If a man has two bank accounts, he may follow the same method by depositing in one bank a check against the other, thinking to make it good at the latter bank the next day.

LATIN UNION. The franc is adopted as a common monetary unit by France, Italy, Switzerland, Belgium, and Greece, which form the Latin Union. The unit in Italy has the same value as the franc, but is called the "lira"; the "drachma" is the term used in Greece. The gold franc equals 19.3 cents United States money.

LAWFUL MONEY. Money declared by the government to be legal tender in payment of obligations, and which cannot be refused in payment of a debt unless expressly stipulated otherwise in the contract. "Every form of money which is endowed by law with the legal tender quality." Under the revised statutes of the United States, national bank notes, silver certificates, and gold certificates are not so endowed. "Lawful money" includes gold coin, silver dollars, United States notes and Treasury notes.

LEGAL RATE OF INTEREST. States have established a fixed rate of interest, and any higher charge may be penalized by the courts as "usury." By charging borrowers a commission in addition to the interest, the legal rate is often evaded. The legal rate in some states is designed merely that creditors be not allowed to exact unfair rates from debtors, and the borrower and lender may agree upon any rate of interest without interference. On a "collateral call loan" of $5,000 or more, in New York State any rate of interest is permitted by law. Interest greater than the legal rate of the state wherein it is located cannot be charged by any national bank, and it may not charge more than 7 per cent. if there is no state limitation. All interest above 10 per cent. was declared unlawful during the reign of Henry VIII., this being reduced to 8 per cent. during the reign of James I., and to 5 per cent. during the time of Queen Anne.

LEGAL TENDER. Money which the government declares lawful in payment of a debt, and which must be accepted by a creditor. The legal tender qualities of all forms of money in the United States are stated by law as follows: "Gold coins, standard silver dollars, subsidiary silver, minor coins, United States notes, and Treasury notes of 1890 have the legal tender quality as follows: Gold coin is legal tender for its nominal value when not below the limit of tolerance in weight; when below that limit it is legal tender in proportion to its weight; standard silver dollars and Treasury notes of 1890 are legal tender for all debts, public and private, except where otherwise expressly stipulated in the contract; subsidiary silver is legal tender to the extent of $10, minor coins to the extent of 25 cents, and United States notes for all debts, public and private, except duties on imports and interest on the public debt. Gold certificates, silver certificates, and national bank notes are non-legal tender money. Both kinds of certificates, however, are receivable for all public dues;

and national bank notes are receivable for all public dues except duties on imports, and may be paid out for all salaries, demands, etc., owing by the government within the United States, except interest on the public debt and in the redemption of the national currency.'' Only gold and silver coins were here recognized as legal tender before the Civil War. When money became scarce in Massachusetts during Colonial days, wampum was made legal tender. In Virginia, tobacco was so used, and in Maryland, tobacco and Indian corn.

LETTER OF CREDIT. It is unnecessary for persons traveling to carry with them large sums of money, for by a letter of credit (issued in favor of more than one person if so desired) they may obtain money at any of the important points throughout the world, and in the coin of the country where desired for use. Certain banks and banking houses make a practice of issuing such letters. Approved securities or money equal to the amount of credit desired are deposited, and a small sum paid for the accommodation. The customer is then given a written order which, when presented at certain banks or banking houses in the cities where the traveler expects to go, entitles him to receive sums of money whose total shall not exceed the face value of the letter of credit. The signature of the holder is the means of **identification.** ''Circular'' or ''foreign traveler's letter of credit'' are the terms for those issued for use outside of the country. ''Domestic traveler's letter of credit'' for those within. ''Commercial letters of credit'' ''foreign,'' or ''domestic,'' are also issued; for example: a merchant in New York purchases merchandise in Hongkong. Procuring a ''commercial letter of credit,'' he forwards it to the seller in Cairo, who, upon presentation in his city to the banking house named in the ''letter'' may, if properly identified and presenting documents showing the actual shipment of the goods, obtain the money.

LIEN. A mortgage or other claim against property held by the possessor until his demand or debt is discharged. The ''first lien'' is equal to a first mortgage; that is, no one has a prior claim. The ''second lien'' equals a second mortgage, etc.

LIMITED or LIMITED COMPANY. Limited liability, the shareholders being free from personal liability beyond the sum invested.

LIMITED PARTNERSHIP. The partner who manages the business of such a firm must be fully liable for all its debts. The others are ''special partners,'' liable for the indebtedness of the firm only so far as the amount contributed by them to the capital, taking no active part in the management of the business. The idea of such a partnership was borrowed from the French. In 1822, it was first introduced in this country by the legislature of New York.

LIQUIDATION. The converting of one's assets and accounts into cash to pay off one's indebtedness as far as possible; the winding up of a business. On the Stock Exchange it is used when stockholders sell out their stock for money. In either case, the liquidation may be either ''voluntary'' or ''forced.'' ''Liquidation on speculative accounts'' means the closing out of such accounts.

LONDON QUOTATIONS. Only the bid and asked prices are given in London, while with us the number of shares, etc., traded in and the prices realized are given. The following shows how the stock exchange quotations are given in fractions of one pound:

1-32	equals	0 shillings	7½	pence
1-16	equals	1	3	
3-32	equals	1	10½	
5-8	equals	12	6	etc.

LONG. If a person owns more of a security than he has contracts to deliver, he is ''long'' on that security. In reference to ownership, the word is used simply as the opposite of ''short.'' An advance in price was anticipated by those who are ''long.'' If plenty of stock was offered for sale and profits were taken by the holders, the expression ''Much long stock came out'' is used.

MAINTENANCE OF WAY AND STRUCTURE. This heading is included under the general classification of ''Operating Expenses'' as laid down by the Interstate Commerce Commission. It comprises: repairs and renewals of bridges, buildings and fixtures, cattle guards, culverts, docks, fences, railroad crossings, signs, telegraph and wharves; renewals of rails and ties, repairs of roadway; printing and stationery in connection with these; also minor expenses (''Other Expenses'') for keeping the line in good condition.

MARGIN. The difference between the cost and the selling price of a given security. ''Marginal'' transactions are prohibited on the London Stock Exchange, as the custom lends itself to much abuse. Instead of buying the stock outright, the investor deposits so much money, possibly at the rate of $10 a share, with a special broker, and the latter ''carries'' the stock on commission, crediting his customer with any advance and debiting him with any fall in the market price. It is understood that in the event of a decline in price, the client will supply more cash to prevent his margin from being ''wiped out.'' More shares of stock can be bought in this way than if purchased outright, affording a greater profit if stock advances, but, accordingly, a greater loss if it declines. Many stock exchange failures have been caused by ''marginal dealings.'' For to handle such quantities of stock as are required by this business, the broker is probably obliged to borrow large sums. In a panic, he may be called upon for more ''margin,'' and calling in turn upon his clients, who are unable to give it, the failure of the broker results. The average rate charged by brokers for carrying marginal accounts is perhaps 4½ per cent. to 5 per cent., but it varies largely according to circumstances.

MARKET. The demand as indicated by price offered or obtainable. The term is of constant occurrence in financial parlance. The price or rate of purchase is referred to by ''the market is high'' or ''low''; to ''sell at the market'' means to sell at the best price obtainable. The place of sale, without reference to price or rate, is indicated by ''sell in the market.'' The prevailing rates at which money can be borrowed is implied by the ''money market.'' When prices are low and purchasers difficult to find, the ''market is bad.''

MATCHED ORDERS. Orders to buy and sell the same stock at the same price, with a view to ''manipulating'' the market, by giving an artificial activity.

MECHANIC'S LIEN. A lien on real property allowed by law to the suppliers of material and to workmen engaged in the construction or alteration of buildings. A claim by the contractor would take precedence over such a lien in some states, while in others the contrary is true.

MIDDLEMAN. An intermediary who negotiates between a buyer and a seller, receiving a remuneration for his services. Factors, agents, and brokers are three classes of ''middlemen.''

MONETARY STOCK OF THE UNITED STATES. Below are shown tables of money stock in various years, and total coinages of gold and silver.

Year June 30.	Total Money.	Money in Treasury.	Money in Banks.	Federal Reserve.	General Circulation.	Per Capita.
1914	$3,797.8	$338.4	$1,630.0	.....	$1,829.4	$18.44
1918	6,906.2	363.5	882.7	$2,061.0	3,599.0	33.96
1920	9,158.5	490.7	1,047.3	2,200.2	4,420.3	41.50
1925	8,299.4	363.9	990.8	3,637.8	3,876.9	33.58
1929	8,538.8	373.1	799.1	3,419.4	3,930.1	32.47
1930	8,306.6	247.2	853.8	3,537.3	3,668.2	29.76
1935	15,114.0	2,865.9	760.0	6,680.0	4,808.1	37.79
1936	17,402.5	2,496.4	987.7	8,664.9	5,253.5	40.89
1937	19,376.8	3,444.5	920.8	9,485.1	5,626.3	42.71
1938	20,096.9	2,302.6	991.5	11,333.4	5,469.4	42.02

(All but figures in last column in millions).

COINAGE OF THE MINTS FROM THEIR ORGANIZATION TO DECEMBER 31, 1938.

Denomination.	First Authorized.	Act Discontinuing Coinage.	Pieces.[1]	Amount.[1]
GOLD COINS				
Panama-Pacific ($50)	Jan. 16, 1915		3,019	$150,950.00
Double eagle ($20)	Mar. 3, 1849		174,105,606	3,482,112,120.00
Eagle ($10)	Apr. 2, 1792		57,683,485	576,834,850.00
Half-eagle ($5)	Apr. 2, 1792		78,911,869	394,559,345.00
Quarter eagle ($2.50)	Apr. 2, 1792	Apr. 11, 1930	20,216,590	50,541,475.00
Panama-Pacific ($2.50)	Jan. 16, 1915		10,017	25,042.50
Philadelphia ($2.50)	Mar. 3, 1925		200,226	500,565.00
Three dollar piece	Feb. 21, 1853	Sept. 26, 1890	539,792	1,619,376.00
One dollar	Mar. 3, 1849	Sept. 26, 1890	19,499,337	19,499,337.00
Louisiana Purchase ($1)	June 28, 1902		250,258	250,258.00
Lewis-Clark ($1)	Apr. 13, 1904		60,069	60,069.00
Panama-Pacific ($1)	Jan. 16, 1915		25,034	25,034.00
McKinley ($1)	Feb. 23, 1916		30,040	30,040.00
Grant ($1)	Feb. 2, 1922		10,016	10,016.00
Total gold			351,545,358	$4,526,218,477.50
SILVER COINS				
Dollar ($1)	Apr. 2, 1792	Feb. 12, 1873	855,611,127	855,611,127.00
Trade dollar	Feb. 12, 1873	Mar. 3, 1887	35,965,924	35,965,924.00
Lafayette dollar	Mar. 3, 1899		50,026	50,026.00
Half dollar	Apr. 2, 1792		522,271,493	261,135,746.50
Half dollars:				
Columbian	Aug. 5, 1892		5,002,105	2,501,052.50
Panama-Pacific	Jan. 16, 1915		60,030	30,015.00
Illinois Centennial	June 1, 1918		100,058	50,029.00
Maine Centennial	May 10, 1920		50,028	25,014.00
Pilgrim Tercentennial	May 12, 1920		300,165	150,082.50
Alabama Centennial	May 10, 1920		70,044	35,022.00
Missouri Centennial	Mar. 4, 1921		50,028	25,014.00
Grant	Feb. 2, 1922		100,061	50,030.50
Monroe Doctrine Centennial	Jan. 24, 1923		274,077	137,038.50
Huguenot-Walloon	Feb. 26, 1923		142,080	71,040.00
Stone Mountain	Mar. 17, 1924		2,314,709	1,157,354.50
Lexington-Concord	Jan. 14, 1925		162,099	81,049.50
California Jubilee	Feb. 24, 1925		150,200	75,100.00
Fort Vancouver	Feb. 24, 1925		50,028	25,014.00
Sesquicentennial	Mar. 3, 1925		1,000,528	500,264.00
Oregon Trail	May 17, 1926		255,406	127,703.00
Bennington Battle	Feb. 25, 1925		40,034	20,017.00
Hawaiian Discovery	Mar. 7, 1928		10,008	5,004.00
Texas Centennial	June 15, 1933		304,193	152,096.50
Other commemorative issues			433,155	716,577.50
Quarter dollar	Apr. 2, 1792		830,053,417	207,513,354.25
Columbian quarter	Mar. 3, 1893		40,023	10,005.75
Twenty cent piece	Mar. 3, 1875	May 2, 1878	1,355,000	271,000.00
Dime	Apr. 2, 1792		1,742,416,411	174,241,641.10
Half dime	Apr. 2, 1792	Feb. 12, 1873	97,604,388	4,880,219.40
Three cent piece	Mar. 3, 1851	Feb. 12, 1873	42,736,240	1,282,087.20
Total silver			4,139,973,085	$1,546,895,649.20
MINOR COINS				
Five cents (nickel)	May 16, 1866		1,972,038,319	$98,601,915.95
Three cents (nickel)	Mar. 3, 1865	Sept. 26, 1890	31,378,316	941,349.48
Two cents (bronze)	Apr. 22, 1864		45,601,000	912,020.00
Cent (copper)	Apr. 2, 1792		175,850,744	1,758,507.44
Cent (nickel)	Feb. 21, 1857	Apr. 22, 1864	200,772,000	2,007,720.00
Cent (bronze)	Apr. 22, 1864		7,291,971,306	72,919,713.06
Half cent	Apr. 2, 1792	Feb. 21, 1857	7,985,222	39,926.11
Total minor coins			9,725,596,907	$ 177,181,152.04
Total coinage			14,217,115,530	$6,250,295,278.74

[1] All data from Annual Report, Director of the Mint, Dec. 31, 1938, p. 60–65.

TOTAL STOCK OF MONEY IN CERTAIN YEARS.

(In thousands: add 000)

On June 30.	Gold.	Silver and Minor.	U.S. Notes.	Federal Notes.	National Bank Notes.	Totals.
1913	$1,870,762 [1]	$700,421 [1]	$346,681		$759,158	$3,777,021
1918	3,162,808	809,519	346,681	$1,847,580 [1]	724,205	6,906,237
1920	2,865,482	620,191	346,681	3,405,877	719,277	8,174,528
1925	4,360,382	909,537	346,681	1,942,240	733,366	8,299,382
1930	4,534,866	976,939	346,681	1,746,501	698,317	8,306,564
1933	4,317,554	965,387	346,681	3,028,397	970,601	10,078,417
1935	9,115,643	1,323,414	346,681	3,492,854	769,096	15,113,035
1939	16,110,079	2,318,624	346,681	4,763,989	189,292	23,754,736

[1] Gold includes both gold and gold certificates; in the silver are included minor coins, $56,951 in 1913 and $127,711, for example, in 1934 in value; in federal notes are included Federal Reserve notes and Federal Reserve bank notes.

The fineness of United States gold coins is .900 to .916 2-3, silver coins .900; five-cent piece, 75 per cent. copper and 25 per cent. nickel; one-cent piece, 95 per cent. copper and 5 per cent. tin and zinc. Troy weights are used, and while metric weights are by law assigned to the half and quarter dollar and dime, troy weights still continue to be employed, 15.432 grains being considered the equivalent of a gram, agreeable to the act of July 28, 1866. The weight of $1,000 in United States gold coin is 53.75 troy ounces, equivalent to 3.68 pounds avoirdupois. The weight of $1,000 in standard silver dollars is 859,375 troy ounces, equivalent to 58.92 pounds avoirdupois, and the weight of $1,000 in subsidiary silver is 803.75 troy ounces, equivalent to 55.11 pounds avoirdupois. The space required for the storage of 1,000,000 standard silver dollars is 250 cubic feet. The standard silver dollars in the vaults of the treasury and the several subtreasuries, June 30, 1904, amounting to about $462,000,000, required 115,500 cubic feet of space. The commercial value of an ounce of fine silver June 30, 1910, was $0.54077, and the commercial value of the silver in the silver dollar on that date was 41.825 cents.

MORTGAGE. Used of both the instrument by which the mortgage is effected (called the "mortgage-deed"), and of the act of mortgaging. The mortgage duly signed and sealed is given by the "mortgagor"—more correctly spelled "mortgageor" (the borrower)—to the "mortgagee" (the lender) or to a third party who holds it as trustee for the lender. It confers to the latter the right, after following certain formalities, of possessing the property described therein should the borrower fail to meet his indebtedness, in case the mortgagor fails in his obligations.

NARROW MARKET. Used when there are very few transactions in stock or other commodities.

NATIONAL BANK EXAMINER. A person (or persons) appointed by the comptroller of the currency, with the approval of the secretary of the treasury, who is given power to thoroughly examine all the affairs of every national bank, and who must give to the comptroller a full and detailed report of the condition of each bank examined.

NEGOTIABLE. Negotiable paper, from the financial standpoint, should be in writing and signed, containing an unconditional order or promise to pay a certain sum of money at a determinable time to order or to bearer; the drawer should always be named or indicated in a bill of exchange (including check). A "negotiable" instrument, such as a check, draft, or note, payable to the order of a person, etc., can be transferred from one person to another by indorsement; a "non-negotiable" instrument or security is one which is good only in the hands of the one to whom it was originally issued, except where the corporation or person issuing the same agrees otherwise. If the words "or order" are omitted in a note made payable to Charles Willis, it is "non-negotiable," since only to Charles Willis was the note made payable, and he would not have the privilege of transferring his rights to any one else.

NEGOTIABLE SECURITIES. Any investment security possessing the essentials of negotiability, including all forms of commercial paper; drafts, bill of exchange, corporation, municipal, and government bonds.

NEW YORK COTTON EXCHANGE. Founded 1870. The largest exchange in the United States for trading and speculating in cotton.

NEW YORK EXCHANGE FUNDS or MONEY. Since New York is the great financial center of this country, payments are constantly being made through that center, causing incessant transmissions of funds between that point and all other points of the country. Therefore New York Exchange is rarely at a discount, and a check on New York is acceptable at all points.

NEW YORK PRODUCE EXCHANGE. Transactions here take place in pork, lard, grain, etc., and since April 15,1907, trading in certain industrial, mining, and miscellaneous securities. But in its "list" is not included any security listed upon the New York Stock Exchange. It is similar to the Chicago Board of Trade.

NON-ASSESSABLE. In case of the failure of the corporation, or for any other reason owners of "non-assessable" stock are not legally obliged to make additional payments upon the same. National bank notes being "assessable," their owners can be compelled to make further payments, should failure occur. If the stock is "non-assessable" that fact is generally stated on the certificate. Assessability or non-assessability is largely regulated by the laws of the state under which the corporation is chartered. "Double liability" is all that any stock may carry. If the laws demand the issuance of "fully paid" stock, and it can be proved that a stock was not "fully paid" when originally issued, showing that fraud exists, assessments may be made.

NO PROTEST. Written on a note or draft to signify "no protest" if the instrument be dishonored.

ON CALL. "Subject to call." Referring to money, etc., which may be demanded for immediate payment.

OPTION. A stipulated privilege in time contract of demanding its fulfillment within specified limit.

OUTSTANDING ISSUE. That which a company has already placed upon the market—stocks, bonds, or any other security.

OVER THE COUNTER. Used when sales of securities (particularly bonds) are made without the medium of the stock exchange, directly by bankers. Sales of all descriptions outside the stock exchange.

PAR. Of equal nominal and actual value; the actual face value of any security regardless of its denomination. Par often signifies a value of $100, but not necessarily so; mining stocks, for instance, are often issued in shares of low denomination, that the subsequent manipulations may pass unnoticed. Be sure therefore to find out the actual par value in dollars and cents before purchasing a security, and then, on the basis of a par value of $100 reckon its selling price. The difference in rules between different stock exchanges must also be considered. On the New York Stock Exchange stocks are usually quoted on the basis that either the par value is 100, or else shares sufficient to equal 100 have been put together. On the Boston Stock Exchange quotations are based upon the par value regardless of whether it is more or less than $100.

PARITY OF SILVER. $1.2929, since to be at a par with gold according to the present standard United States ratio of gold to silver (1 to 15.988) pure silver must be worth commercially $1.2929 per fine ounce.

PAR OF EXCHANGE. The coin or standard of value in the country expressed in the coin or standard of another. Gold bullion of an agreed fineness is taken as a basis of calculation. $4.866+ is taken as the "par of exchange" between this country and Great Britain, that is, the English "pound sterling" is equal to $4.866+ in United States gold coin.

PASS A DIVIDEND. Not to make payment of a dividend at the regular time.

PAYABLE IN GOLD. Bonds and securities on which the borrower undertakes to pay the interest or principal, or both, "in gold." The following wording is generally used in this matter: "Payable in gold coin of the United States of the present standard of weight and fineness"—thus affording protection should less conservative coining laws be passed during the life of the investment.

PAYABLE ONLY THROUGH THE CLEARING HOUSE. In times of financial distress, it is necessary for banks to retain some actual cash. Therefore, in place of cash, checks stamped "Through the clearing house," "Payable only through the clearing house," or with a similar expression, are sometimes accepted. While a person satisfies the law in regard to legal tender in accepting such a check, he does so as a matter of accommodation, since banks are legally required on demand to pay checks in money which is legal tender. To meet such demands banks must keep some money in their vaults. But by postponing the payment of a check until "clearing house hour" of the following business day, possibly no money would be needed, as through the machinery of the clearing house the differences between the banks in time adjust themselves.

PAYABLE TO BEARER. Checks or other negotiable instruments drawn in this way may be passed from hand to hand without indorsement, as they are good in the hands of any bona fide holder.

PAYABLE TO ORDER. "Pay to the order of Richard Booth," "Pay to Richard Booth or order," are the forms used in checks or other negotiable instruments of this kind. To make it good in the hands of any other than Richard Booth, it first must be indorsed by him. Unless the words "to order" or "to bearer" are specified, the instrument is payable only to the person mentioned therein and to no other; in other words it is not negotiable.

PERSONAL CHECK. One drawn by a depositor, not by a bank.

PERSONAL PROPERTY. Distinguished from "real property." Securities, household furniture, live stock, chattels, all movable property, and harvested crops are included.

PIT. The equivalent of the New York Stock Exchange's "Post." Four portions—called the "Pits"—of the building of the Chicago Board of Trade are set aside for exclusive dealing in grain, wheat, oats, and provisions, respectively.

POINT. The term for one per cent. If a security advances five per cent., it rises five points. One twentieth per cent. per pound equals one "point" in coffee trading, fluctuations being recorded on that basis. A decline of ¼ of a cent per pound of cotton is equal to 25 "points" or $1.25 on each bale, as a cent is divided into 100 "points" in cotton.

POOL. (1) A combination of persons agreeing to buy or sell, increase or depress the price of one or more securities, and to divide the loss or profit. By a decision in the suit of Franklin, Scott & Co., stock brokers, versus certain others, any member of a pool may be held liable for the full extent of its losses. (2) The term is used also of a movement to prevent competition and to insure mutual profit by division of business and territory, and the fixing of a monopolistic price. (3) An agreement as to a division of earnings between competing railways so that the temptations of the big shippers may be resisted, and a stable rate maintained. "Traffic pools" are arrangements for the division of business; "money pools" for the distribution of receipts.

POSTAL MONEY ORDER. A government order for the payment of money, issued at one post office and payable at another. In the United States, a money order for any amount up to $100 may be drawn. International money orders, payable in almost any part of the world, may also be procured. The person desiring to cash a money order must be able to prove his indentity. If wrong payment is made through no fault of the remitter, payee, or indorser, the department will see that the amount is made good to the sender. The law forbids more than one indorsement on a money order; but to identify a payee or guarantee the payee's or indorser's signature, one or more additional names may be written upon the back.

POWER OF ATTORNEY. Written or printed authority given by one person to another empowering him to sign a paper or document, etc., or to otherwise act in his name and stead, the same force and value to be attached as though made by the person delegating the authority. The instrument must be signed and witnessed or acknowledged before a justice of the peace, or commissioner for oaths. The power may be "general" which means that the attorney is empowered to act without restriction, or it may be a "special" power to do some particular act.

POWER OF SALE. If a debt secured by property is not paid, the lender has the right to sell the property, if such a clause has been stipulated. "Power of sale" is occasionally given by will to executors that cash may be realized from the sale of the testator's property.

PREFERRED CREDITOR. Such a creditor is legally entitled to receive payment in full before anything is paid to other creditors not preferred.

PREFERRED SHARES or STOCK. The equivalent of American "preferred stock" in England is "preference shares," and the equivalent of our "common stock" is "ordinary stock." But when this last is divided into two parts, "preferred" is applied to the first part, "deferred" to the second; also referred to as "B" and "A" stocks respectively. They share equally if the company is wound up, but in regard to dividends, the former ranks ahead. A dividend is usually declared upon the "ordinary stock," then the relative amounts for the two classes are stated. These stocks are rarely cumulative, such being referred to as "non-contingent preference stocks."

PREFERRED STOCK. Stock which takes a dividend and has a claim prior to other capital stock. Such comes after the bonds and floating debt, if any, but ranks ahead of "common stock" before which it is issued, and, as the name denotes, over which it has preference. Usually the preferred stockholders have the right to be paid out of the assets of a corporation which is winding up its affairs before the common shareholders receive anything, although in various corporations the form of preference differs, as do also the conditions governing the payment of dividends on "preferred stock." Common stocks generally sell at a lower price than the preferred, although sometimes the earnings of a corporation are so extensive that the former receives a higher rate of dividend and sells at a greater price. Sometimes "class A" and "class B" or "first preferred" and "second preferred" stocks are issued, both ranking ahead of the common shares, but differing from each other somewhat in the nature of their preference.

PREMIUM. The price or percentage of a security above its face or par value. A share of stock selling at 106 would be selling at 6 per cent. or $6.00 per share premium, if its face value were $100; but if the face value were more than $106, the stock would be selling at a discount. If it is necessary to give more than one dollar in some other money for a dollar in gold, the latter is at a premium in relation to that particular money. Currency was at a premium of 4 per cent. in 1893, when it was so scarce that certified checks were given at the rate of $104 for $100 in currency. "Premium" is also used of the price paid for an option; of the payments upon insurance policies; and is understood by "Agio" and "Bonus."

PRINCIPAL. (1) The face value of a bond or any other security on which the interest or premium is calculated. (2) One who commissions another to act for him, as distinguished from an agent.

PRODUCTION OF GOLD AND SILVER IN THE U. S. IN 1938

State or Territory	Gold Ounces	Gold Value [1]	Silver Ounces	Silver Value [2]
Alabama....	37	$ 1,300	3	$ 2
Alaska.....	659,831	23,094,100	563,806	364,481
Arizona.....	307,646	10,767,600	7,483,213	4,837,633
California...	1,317,549	46,114,200	2,694,270	1,741,750
Colorado ...	375,317	13,136,100	7,805,543	5,046,008
Georgia.....	780	27,300	63	41
Idaho.....	98,003	3,430,100	18,397,204	11,893,142
Illinois.....	.....	.....	92	59
Maryland...	857	30,000	24	15
Michigan....	.....	.....	106,468	68,828
Missouri....	.....	.....	169,223	109,397
Montana...	188,360	6,592,600	6,761,582	4,371,124
Nevada.....	280,009	9,800,300	4,114,601	2,659,944
New Mexico.	41,800	1,463,000	1,261,996	815,836
New York..	.....	.....	40,834	26,398
N. Carolina.	1,977	69,200	4,985	3,223
Oregon.....	80,397	2,813,900	91,761	59,320
Pennsylvania	1,406	49,200	10,625	6,869
S. Carolina..	11,414	399,500	2,444	1,580
S. Dakota...	591,757	20,711,500	158,164	102,247
Tennessee ..	380	13,300	38,918	25,159
Texas.....	431	15,100	1,381,110	892,839
Utah.....	215,414	7,539,500	10,288,613	6,651,224
Virginia....	3,040	106,400	1,484	959
Washington.	68,103	2,383,600	311,345	201,273
Wyoming...	860	30,100	462	299
Philippine Is.	844,434	29,555,200	976,501	631,273
Puerto Rico.	9	300	1	1
Totals.....	5,089,811	178,143,400	62,665,335	40,510,924

[1] Prior to 1934, the U. S. legal value of gold was $20.67 per fine ounce; since 1934, $35 per fine ounce.

[2] In 1934, the value of silver per fine ounce was $0.64; in 1938, it was $0.6464.

1774 = $110 +

U. S. PRODUCTION OF GOLD AND SILVER 1493–1938

(Figures from Director of the Mint: add 000)

Years	Gold Ounces	Gold Value	Silver Ounces	Silver Value
1493–1800 ..	114,386	$2,370,760	3,764,871	$5,199,722
1801–1865 ..	132,325	2,735,388	1,516,989	2,010,538
1866–1914 ..	490,771	10,145,140	6,040,016	4,769,862
1915–1933 ..	396,609	8,198,720	4,177,486	2,680,675
1933–1938 ..	20,952	733,328	277,070	178,629
Totals.....	1,155,043	$24,183,336	15,776,432	$14,839,426

PROFIT AND LOSS. Sometimes abbreviated to "P. & L.". The profits and losses of a concern are given under this heading in bookkeeping, and entered on the credit and debit side of the account as required.

PROMISSORY NOTE. By this the payment by one person to another of a stated sum of money at some future time is promised in writing; frequently called a "note of hand."

PROMOTER. One who plans the organization of a corporation or industry; defined by the New York legislature as "every person by whatever name, who brings together the persons to become interested in the enterprise, aids in securing subscriptions, and sets in motion machinery which leads to the promotion of a corporation." Really the intermediary or middleman between the corporation which needs funds and those having money to invest in securities.

PROTEST. (1) A formal declaration in writing made by a notary public that a negotiable instrument has been dishonored, either by non-acceptance or non-payment. In case of legal action, protesting is good evidence. State laws differ in regard to the necessity for protesting, some holding that the mere fact of presenting is in itself sufficient evidence. To protest an instrument, a notary public again presents it to the one responsible for its payment, on the same day making a note on the paper itself to the effect that it has been dishonored. A certificate of protest is then made out by the notary, who attaching the dishonored paper, writes the fact that he has presented it, the time and place of presentation, and the reasons for protesting. If payment is refused upon presentation by the notary, "notice of protest" should be sent to the last indorser, and through him to any previous indorser. The indorser or maker of the instrument should pay the fee charges of the notary. If it is utterly impossible to make collection, the fees are charged to the holder of the note. If there are no indorsements, it may not be desirable to "protest," in which case the words "waive protest," or a similar expression, may be written on a separate slip of paper and presented with the instrument. A notice of protest mailed at the general post office at the proper time is usually considered by law sufficient notice to the makers or indorsers. (2) A solemn declaration in writing made by the master of a vessel before a consul, or other authorized official to the effect that any damage or loss sustained by a disaster was not the fault of her ship, or any of her officers and crew, but was solely owing to the perils of the sea or to other unavoidable causes. (3) A declaration made by a person that a certain tax or duty which he is called upon to pay is unjustly and illegally demanded, and that its payment, if made at all, was not voluntary.

PROXY. A person formally authorized and deputed to act or vote for another. At a meeting held by the various stockholders of a corporation, officers are elected to whom is delegated the business of the corporation. A stockholder is entitled to one vote for each share, and if he is unable to be present at the meeting, he may authorize a "proxy," to vote his stock for him.

PUT. A privilege which one person buys of another to "put" or deliver to him a certain amount of stock, grain, etc., at a specified price and date. The "put" may be exercised any time during its life in New York, but only on the last day of the time limit, in London. A "put" as executed in New York reads somewhat as follows: "For value received, the bearer may deliver me on one day's notice, except the last day when notice is not required, 500 shares of the capital stock of the ..... Mining Co., at $150 per share any time within 30 days from date." This is followed by the signature, time of expiration, and an agreement that if the rights of "put" are exercised, the stock shall be accompanied by all the dividends paid thereon in the meantime. A "put" and "call" may be combined in one contract, giving the holder the option of either buying or selling at the fixed price.

QUOTATIONS. The current prices of stocks, bonds, or commodities. The "bid" or "asked" prices of the securities, or the prices at which they are sold, is the meaning on the stock exchange. Unless otherwise designated quotations refer to "common stocks."

RATE OF EXCHANGE. The price of one country's money reckoned in that of another.

RATING. The financial credit or standing of a corporation, firm, or person.

REAL PROPERTY. This includes all crops not considered of annual planting,—trees, grass, etc.; land and buildings; air or space above the surface; and everything, such as minerals, etc., below. The term also signifies the right to use other land, as by a right of way.

REBATE. A deduction, for example, a "rebate" of interest for immediate payment.

REFUNDING. Issuing of new bonds to supersede the ones falling due, and which the company or municipality is unable to pay off in cash.

REGISTERED BOND. The name of the owner is filled out on the face of a registered bond, and to be transferred from one person to another the bond must be indorsed by the person in whose name it is registered, and sent for transfer to some specified office or municipality, when a new bond will be made out to the holder. The bond may be passed from hand to hand by the use of a "transfer in blank," and any holder may fill in his or her name, on the back of such a transfer, sending it when convenient to be transferred. There are two forms of registered bonds, the first having both principal and interest registered, the second only the principal. No interest coupons are attached to the first kind, but as it matures the interest in the form of a check is mailed directly to the holder; to collect the principal sum the instrument must be correctly indorsed and presented to the proper authority. To a bond of the second kind coupons payable to bearer are attached and collected as with the ordinary coupon bond; but the principal sum of the bond itself is registered, and must be indorsed and forwarded to the proper authority for collection.

RESERVE. Lawful money of the United States equal in amount to at least 25 per cent. of the sum of their deposits in all respects must be kept on hand at all times by national banks in the "central reserve cities"—New York, Chicago, and St. Louis. Thirty-nine other prominent cities are known as "reserve cities," and while the national banks therein must maintain this 25 per cent., one half of the amount may be deposited with national banks in the "central reserve cities." Fifteen per cent. of their deposits must be maintained by those known as "country banks"—national banks not located in the "central reserve" or "reserve" cities. But three fifths of this amount may be kept in national banks in the cities mentioned. According to a ruling made by the secretary of the treasury on September 29, 1902, a 25 per cent. "reserve" maintained against deposits of public money secured by government bonds is no longer necessary. Nevertheless the banks still maintain such a reserve. Because of this ruling the 25 per cent. is now figured both ways in the weekly statement of the New York Clearing House Association banks; the public money being considered as any other deposit, and secondly in accordance with the ruling of the department.

RESUMPTON OF SPECIE PAYMENT. The Resumption Act, approved January 14, 1875, authorized the secretary of the treasury to provide for the redemption in coin of United States notes, or "greenbacks," commencing January 1, 1879, and for that purpose to use surplus revenues and to sell bonds at not less than par in coin.

SCALPING. Making a quick and small profit. The expression "scalping points off the deal" refers to those who, taking advantage of the rise in prices, buy and sell accordingly, making small profits, although not understanding just what the deal is that occasions the rise.

SECOND MORTGAGE. That placed upon property on which there is already an existing mortgage. If the owner of the property cannot pay the interest on the second mortgage, the holder thereof may foreclose the property under his own mortgage, paying what is due to the holder of the first mortgage.

SECURITIES. Written or printed papers which are an evidence of debt or property; e. g., all kinds of mortgages, stocks, bonds; in fact, all forms of investment.

SEIGNIORAGE. The profit resulting from the difference between the commercial value of the metal contained in a coin and its face value. There is no seigniorage on the coinage of gold bullion, since that is not purchased by the government, which coins it for private account, the face value of the coins equaling the commercial value of the bullion. But on the coinage of silver dollars on a ratio of 16 to 1, the commercial value of silver being far below the coinage value, a profit, or seigniorage, results.

SELLER'S OPTION. Under such a contract the seller of a security may deliver the same to the buyer

on one day's notice any time within the period specified in the agreement, but need not deliver the same until the end of the time indicated. This must be not less than four nor more than sixty days on the New York Stock Exchange. "Seller 6," seller 15," etc., indicate such a transaction, the numbers referring to the number of days agreed upon in the contract.

SELLING ORDER. An order to a broker to sell a certain security—the price of which may or may not be limited,—good for the day it is given, unless otherwise stated.

SELLING SHORT. Selling for future delivery something not yet owned, in the belief that the market price of the security or commodity will decline so that it can be bought at a less price in time to fill the order.

SHAVING A NOTE. Said of a promissory note that is discounted at a greater rate than the "legal interest."

SHORT COVERING. One makes a "short covering" or "covers his sale" when, having "sold short" on a security, he buys it at what he considers the proper time, that he may deliver according to a former agreement.

SILVER CERTIFICATES. Any person possessing standard silver dollars may in accordance with the act of February 28, 1878, deposit the same in sums of $10 and upwards at the United States Treasury, and receive for them certificates which, though not legal tender, are receivable for all public dues. The issue of denominations smaller than $10, viz., $1, $2, and $5, was authorized by the act of August 4, 1886. The circulation of these silver certificates has almost superseded that of the standard silver dollars which they represent. The silver certificates in circulation were $5,789,569 in 1880, $408,465,574 in 1900, and $465,581,977 in 1908. At his discretion, the treasurer of the Philippine Islands may receive deposits of standard silver coins of one "peso" (two silver pesos equal to one United States gold dollar) not less in amount than twenty pesos, issuing in turn "silver certificates" in denominations not less than two nor more than 10 "pesos," these certificates being receivable for taxes, customs, and all public dues in the Philippine Islands, and when so received may be reissued. They may also be counted as part of its "lawful reserve" when held by any banking association in the islands. The coin deposited for certificates must be kept in the treasury and held only for the payment on demand of such certificates.

SILVER COINAGE. United States coinage of silver since 1873, from report of Director of the Mint.

Years Calendar	Ounces Used	Dollars Coined	Subsidiary Coinage
1873–1880	114,151,137	$100,674,788	$49,466,089
1881–1890	240,813,081	305,694,752	6,055,768
1891–1900	145,499,899	129,119,775	62,943,239
1901–1910	124,567,811	71,776,395	95,459,617
1911–1920	84,587,998	.....	116,935,193
1921–1930	262,293,498	270,232,722	73,648,362
1931–1935	27,627,724	5,635,557	32,167,235
1936	20,031,262	1,439,000	26,152,805
1937	23,844,080	.....	32,962,267
1938	14,362,568	.....	19,854,941
1939	7,978,145	.....	11,029,058
Totals	1,065,757,153	884,572,989	526,674,574

SILVER IMPORTS AND EXPORTS. Ore, base bullion, and refined bullion exchange since 1873.

Years	Total Exports	Total Imports
1873–80	$199,901,158	$ 92,487,371
1881–90	274,443,806	155,672,202
1891–1900	507,669,920	256,332,873
1901–10	542,543,911	367,980,603
1911–20	1,065,814,628	522,908,141
1921–30	788,698,233	646,531,027
1931–38	116,818,732	1,071,019,284
Totals	$3,495,890,388	$3,112,931,501

SILVER PRODUCT OF THE WORLD. The production of silver since the discovery of America is estimated as follows:—

Years	Fine Ounces	Commercial Value
1493–1520	42,309,400	$58,386,972
1521–1560	229,885,360	317,241,797
1561–1600	461,931,200	637,465,056
1601–1640	525,009,500	724,513,110
1641–1680	452,221,900	624,066,222
1681–1720	448,492,500	614,049,388
1721–1760	620,073,835	860,422,249
1761–1800	984,947,400	1,363,577,063
1801–1810	287,469,225	380,709,861
1811–1820	173,857,555	232,047,679
1821–1830	149,070,040	193,737,801
1831–1840	191,758,675	251,606,557
1841–1850	250,903,422	327,554,443
1851–1860	287,920,128	387,440,494
1861–1870	392,267,776	523,561,847
1871–1880	710,463,078	865,432,040
1881–1890	1,004,576,877	1,043,927,353
1891–1900	1,616,373,178	1,131,299,109
1901–1910	1,826,234,623	1,052,194,838
1911–1920	1,935,607,379	1,430,510,377
1921–1925	1,111,809,220	789,365,989
1925–1930	1,275,379,860	691,900,105
1931	195,919,987	56,842,265
1932	164,892,802	46,506,363
1933	169,159,054	59,200,666
1934	190,398,156	91,929,942
1935	220,704,231	142,535,205
1936	253,695,856	115,175,382
1937	274,573,873	124,077,392
1938	267,913,031	116,641,296
Totals	16,714,819,121	$15,254,018,861

SINGLE STANDARD. A monometallic standard (usually gold) by which values are measured, in contradistinction to a "bimetallic standard."

SINGLE TAX, THE. A tax levied upon a single object of taxation, instead of upon several objects, for the support of government, especially the entire rent of land. This theory was made prominent by the Physiocrats about 1750, and was popularized by Henry George, who advocated the abolition of all taxes upon industry and its products, and the assumption of the annual rental value of all the land irrespective of the improvements in or upon it.

SINKING FUND. A process of wiping out or sinking a debt by setting aside from time to time sums to be used in payment of the whole or part of the principal. The money may be used to buy in, or pay off, from time to time, according to agreement, some of the debt itself; or may be invested in other securities to increase in amount, and applied to the payment of the debt at its maturity.

SIXTEEN TO ONE. Sixteen ounces of silver and one ounce of gold shall, according to the ratio of "16 to 1," be each coinable into an equal number of standard dollars, the mint values of sixteen ounces of silver and one ounce of gold being considered equal. In reality, the standard ratio of the United States is 15.988 to 1.

SPECIE. "Metallic money" is the generally accepted dictionary meaning. Coin of any denomination and of any metal, as distinguished from notes and bills, is understood by the United States Mint. The word is also applied to gold and silver bullion in the term "specie payment." Gold and silver coin, gold and silver certificates, and gold clearing-house certificates, are included in the "specie" of the lawful money reserve of a national bank.

STERLING. The common term for any English coin of standard value. In such phrases as 2¼ million sterling, "pounds sterling" is understood.

STERLING EXCHANGE. Exchange on Great Britain, "Sterling at Paris 25.21" signifies that at the time of the quotation twenty-five francs and twenty-one centimes, French money, was equal in value to the "pound sterling," English money; and that twenty-five francs and twenty-one centimes per pound sterling would be paid by the purchaser in Paris of a "bill of exchange" on London.

STOCK. The parts or shares into which the property of a corporation is divided. In Great Britain "shares" are dealt in according to their specific denominations, but a "stock" can be dealt in and transferred in multiples of one pound, and sometimes less. Most British railway issues are in the form of "stocks" and not "shares."

STOCK CERTIFICATE. An engraved, lithographed, or printed form, correctly filled in, sealed and signed by the proper officers, and giving the owner's name, with the number of shares of stock it represents. Blank stock certificates are usually engraved, since a security must be engraved if dealt in on the principal stock exchanges of the world.

STOCK DIVIDEND. This term is used when the profits of a corporation are retained as additional capital, instead of being paid to stockholders as a cash dividend, new stock being issued pro rata to those already holding stock of the same company. Although the market quotations may apparently show that the receiver of a stock dividend is richer than before, this is not true, since his proportionate interest in the entire capital is the same as before the stock dividend was declared.

STOCK JOBBER. In the United States a speculator who forces the prices of securities up or down for his own gain. In England, a jobber is an intermediary between other members, and is distinguished from a broker who, although a member, deals directly with the public. The term "stock jobber" in England dates back to 1688.

STOP LOSS ORDERS. Or "stop orders," given to a broker in the possibility that there may be a sudden decline in the price of the security owned. If the price of the security drops to that named in the customer's stop order, the broker offers the same for sale, obtaining for them the best price possible.

STOP PAYMENT. If a check is lost, notify the bank against which it is drawn, giving the number it bears, the date, the sum for which drawn, and to whom payable, with the request that if the same is presented no payment be made.

SURPLUS. The amount of profits which may be carried forward into the next business period.

SUSPENSION OF SPECIE PAYMENT. From January 1, 1862, to January 1, 1879, when this occurred, practically all gold and silver disappeared from circulation except on the Pacific Coast, where about twenty-five million specie, it is estimated, was generally in circulation. There was so little small change that Congress authorized the use of postage stamps, then "postal currency"—a modified form of the first, and finally paper money in fractional amounts of a dollar.

TICKER. Reliable information concerning the prices of securities and commodities dealt in upon the principal exchanges of the world is furnished by this small printing machine, operated by telegraph. On a narrow strip of ribbon called the "tape," which unwinds automatically as needed, and passing between the type-bearing wheels, runs out into a basket set for the purpose, are printed the quotations, the name of each security being greatly abbreviated. The ticker was introduced in 1867.

TIME DEPOSIT. Money deposited in a banking institution with the understanding that it shall remain for a definite time. Such deposits usually carry a higher rate of interest than current accounts.

TIME DRAFT. In a time draft, a certain day is named for payment; or it may be payable at the end of a stated length of time after sight—that is, after its presentation for acceptance.

TIME PAPER. Such notes, drafts, etc., as are payable at certain future dates.

TRADE DISCOUNT. That allowed by the wholesaler or manufacturer on goods purchased by retailers or others in the trade.

TRANSFER OF STOCK. The transference from one person to another of ownership in a corporation. The holder of the certificate fills in a blank found upon the back thereof, giving the name and address of the next owner, then signing his or her name. The certificate is then sent to the transfer agent, and, the old certificate being canceled, a new one is issued in the name of the new owner, and delivered according to instructions sent with the old certificate. Husband and wife should always transfer to one another through the medium of a third person, unless authority for direct transfer is given by state law. A certificate in the name of a married woman, properly signed and witnessed by her, is acceptable for delivery on the New York Stock Exchange, unless the transfer books of the particular company are closed, when they require a joint execution of the assignment by both husband and wife before a notary. "Charles Smith, minor, under guardianship of Horace Warren," is an example of the wording of a certificate to a person under guardianship. "Incompetent" in place of "minor" is written if the person is insane.

TRUST. As popularly understood, this signifies a combination of competing businesses or industries, that monopolistic control can be obtained. "Legal trust" denotes that a number of concerns have united, the stocks of each individual company being exchanged for certificates of the newly formed trust, issued by the trustees. These also place a manager over each constituent company.

TRUSTEE. One who has the legal custody of money or property—"holding it in trust." Used most frequently of an individual, bank, banking-house, trust company, etc., who acts as "trustee" of a mortgage.

UNDERWRITING. Guaranteeing insurance (especially marine insurance), or an issue of securities, in consideration of receiving a certain premium per cent.

UNITED STATES DEPOSITORY. Any national bank may be authorized by the secretary of the treasury as a "depository" for the moneys of the United States government. This is done that a part at least of the large sums of money which the government often accumulates may get into use; for if such should go into its hands and so out of circulation, there would be a scarcity of money for actual use, and it is to prevent this that the plan has been adopted. National banks are employed as depositories by the government for other reasons than the above. In places where sales of public lands occur, "permanent depositories" are located to receive the proceeds of such collections or sales; and also where the principal offices of internal revenue collectors are stationed. Post office money orders and United States Court funds are kept in "special depositories." Any bank accepting the above appointment must deposit adequate security with the treasury department of the United States government.

UPSET PRICE. The bottom price at which a security, etc., will be sold.

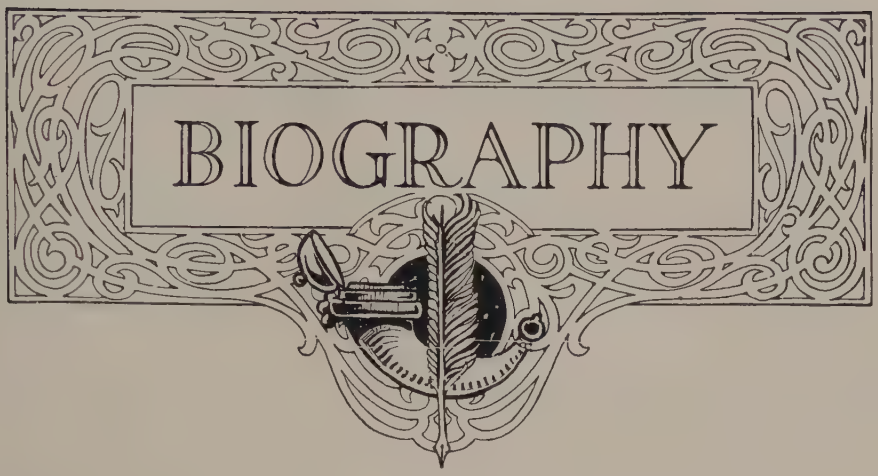
WAREHOUSE RECEIPT. When commodities are stored with a warehouse company, it issues a receipt in written evidence thereof. A merchant importing a quantity of dutiable goods may for a certain length of time keep the same in a "bonded warehouse" without paying duty; or for a limited time goods subject to internal revenue taxes may be stored therein awaiting payment of taxes.

WASH SALES. These are against the rules of the exchanges. One broker orders another to sell at a fixed price a certain quantity of stock, but buys it back when sold on the stock exchange. The sale is reported on the ticker, giving a false impression of the activity of the stock, since it did not actually change hands.

WATERED STOCK. The face value of such an issue of stock is greater than the value of the property represented thereby at the time of the issue. An increase of stock will not increase the property value of a corporation unless it is exchanged for real value.

WITHOUT RECOURSE. Without liability or responsibility. If the original signer of a check or note fails to pay the same, every indorser thereof is responsible for its payment except under certain conditions when responsibility may be avoided by the indorser's prefixing the words "without recourse" to his signature.

WOMAN'S SIGNATURE. Women are often careless in signing their names, not making it clear whether married or single. To business letters the best way for a married woman to sign her name is for example—Janet E. Clark (Mrs. Andrew B. Clark), or, Janet E. Clark, wife of Andrew B. Clark. An unmarried woman should prefix (Miss) before her signature. In checks, etc., and all legal documents, a woman must, of course, use her legal signature, which in the above instance would be Janet E. Clark. But when a married woman executes papers transferring title to something which she acquired under her maiden name, it is customary to put in the instrument she signs a clear statement of the fact.



AUTHORS

CAPTAINS OF INDUSTRY

EDUCATORS AND SCHOLARS

FINANCIERS

FINE ARTS

INVENTORS

JURISTS

PHILOSOPHERS, THEOLOGIANS AND REFORMERS

RULERS AND STATESMEN

SCIENTISTS

NOTE: When an individual is active in more than one field of endeavor—to illustrate, Woodrow Wilson was an educator, also a statesman—he will be classified in his most prominent field. Always use INDEX.

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PROMINENT AMERICANS

Hon. A. B. Houghton
Hon. Frank B. Kellogg
Owen D. Young

George F. Baker
Senator W. E. Borah
Gen. John J. Pershing

James B. Duke
Col. George W. Goethals
George Eastman

BOOK XIV.

BIOGRAPHY.

RELIGION.
Mural Decoration in Congressional Library, Washington.
BY CHARLES SPRAGUE PEARCE.

BIOGRAPHICAL DICTIONARY:—AUTHORS, POETS, HUMORISTS, CRITICS; BUILDERS OF THE WORLD'S GREAT INDUSTRIES; LEADING EDUCATORS AND SCHOLARS OF ALL TIMES; THE WORLD'S LEADING FINANCIERS. BIOGRAPHICAL DICTIONARY: FINE ARTS, INCLUDING ACTORS, PAINTERS, COMPOSERS, MUSICIANS, SCULPTORS; LEADING INVENTORS; JURISTS; PHILOSOPHERS, THEOLOGIANS, REFORMERS; RULERS AND STATESMEN; SCIENTISTS.

BIOGRAPHICAL DICTIONARY OF AUTHORS

ABBOTT, JACOB (1803–1879). Author of more than 200 books that enjoyed great popularity among the young. Educated at Bowdoin College and Andover Theological Seminary. Taught and preached in Maine, Massachusetts, and New York for many years. After 1848 wrote exclusively. Best known for the Rollo series of books for boys, interesting didactic tales of heroism, also ten volumes of *Franconia Stories*, and 22 biographies, and the *Young Christian*. Born at Hallowell and died at Farmington, Maine, where he lived mostly after 1839. His brother, John S. C. Abbott (1805–1877), also wrote a series of historical biographies. His *Mother at Home* was long popular in many lands; his *Napoleon Bonaparte* is readable but unscholarly.

A'BECKETT, GILBERT ABBOTT (1811–1856), founded *Figaro* in London, similar to *Punch*, to which he contributed all his life. Best known for his three score of plays, notably dramatizations of the shorter stories of Charles Dickens in collaboration with Mark Lemon.

ABENEZRA (1093–1167). Very learned Jewish commentator on grammar and the Hebrew Scriptures, and translator from Arabic to Hebrew. Browning's *Rabbi Ben Ezra* is an attempt to interpret in poetry the optimism of a man like Abenezra.

ABOUT, EDMOND F. V. (1828–1885), French journalist and novelist; member of French Academy. Educated in Athens. One of brilliant but "undisciplined" school of writers. Liberal and after 1870 a republican, and the *Nineteenth Century*, his paper, became a power. Several dramatic light pieces or farces now famous.

ABU NUWAS (c. 756–810), greatest Arab poet of his age, wrote realistic descriptions of the aristocrats of Bagdad with their lightness and love of wine. One collection of his poems contains nearly 5,000 verses. He ridiculed the popular *casida* or elegy form.

ACCOLTI, BERNARDO (1465–1536). Immense throngs of learned people gathered to hear him recite improvised verses. His works, entitled *Virginia*, first published at Florence in 1513, have several times since been edited and translated. Known as the "Unique Aretine" from his birthplace, Arezzo. His father, Benedetto, wrote a Latin history of the first crusade, which gave Tasso much material for the *Jerusalem Delivered*.

ADAM DE LA HALE (LA HALLE) (c. 1238–1288), French troubadour, wrote *Jeu de Robin et Marion*, often called the first French musical play with secular material, precursor of comic opera. It is a

dramatic pastoral with music at intervals and popular refrains. His *Le jeu Adan* (Adam) introduced himself, his father, and others of Arras, his native town, in a comic satire. He made a satirical farewell to Arras, and an unfinished poem in honor of Charles of Anjou.

ADAM, GRAEME MERCER (1839–1912). Canadian author of Scotch birth. Known for his *Outline History of Canadian Literature, The Canadian Northwest.* Founded the *Canadian Bookseller* and *Canadian Monthly* and *National Review*, which flourished for a time. After 1892 lived mainly in New York City and Chicago.

ADAMS, CHARLES FOLLEN (1842–1918). An American poet whose German dialect pieces are known for their simple humor and pathos. Served in Union army and was wounded at Gettysburg. His best poems are found in the volume with the title, *Leedle Yawcob Strauss*, and in *Dialect Ballads*.

ADAMS, FRANKLIN P. ("F. P. A."), (1881–). Columnist and humorist. His column "Conning Tower" in the *New York World* gained celebrity. Wrote a musical skit with O. Henry, called *Lo*. Best known for *Tobogganing on Parnassus*, 1910; *By and Large*, 1914; *So Much Velvet*, 1924.

ADAMS, HANNAH (1755–1832). Claimed as first woman in United States to become a professional author, though her books brought her more fame and friends than money. Mastered much learning by herself, including a fair knowledge of classic languages. Wrote *Views of Religious Opinions, History of New England, Evidences of Christianity*, an *Autobiography*, and other treatises.

ADAMS, HENRY (1838–1918). Historian, essayist and scholar, became best known for his *Education of Henry Adams*, in which he attempted to show how imperfectly the literature and education of the eighteenth century adapted the man of our age to his environment. His *Mont Saint Michel and Chartres* is a valuable study of the life and temperament of the Middle Ages. His nine-volume history of the period from 1801 to 1817 takes high rank, expressly for its study of early diplomacy in America. He wrote several scholarly biographies, and a novel, *Democracy*, anonymous till after his death.

ADAMS, SAMUEL HOPKINS (1871–). American journalist, graduate of Hamilton College, became connected with the New York *Sun*, the McClure publications, and *Collier's Weekly*, for which in 1905 he wrote a sensational exposure of quack medicines, and in 1915–1916, a similar series on advertising for the New York *Tribune*.

ADAMS, SARAH FLOWER (1805–1848). The author of *Nearer, My God to Thee* and many other celebrated poems, chiefly religious, also wrote *Viva Perpetua*, a long dramatic piece based on the life of the early Christians, some of which is truly noble in conception and inspiration.

ADAMS, WILLIAM TAYLOR. See OLIVER OPTIC.

ADDISON, JOSEPH (1672–1719). English poet and essayist. Some of his earliest poems were occasional and complimentary addresses, and he was asked to commemorate the battle of Blenheim. The resulting poem made him famous; it was entitled *The Campaign*. He also received several government offices and grants. In 1709 Steele started the *Tatler*, and Addison became a contributor almost at once. On March 1, 1711, the first number of the *Spectator* appeared, and the last on December 20, 1714, but for a year and a half meanwhile the *Guardian* took its place. This paper, at first a daily, contained an essay, at times comment on foreign affairs, some notices of books, and a few advertisements. It was a broadside of small dimensions, but almost every householder welcomed its morning appearance. Addison's style was urbane and clear, free from great prejudice, but touched with occasional satire and humor. His later life was saddened by an uncongenial marriage with the Dowager Countess of Warwick, whose son gave him much annoyance.

ADE, GEORGE (1866–). For 13 years after his graduation from Purdue University, Ade was a journalist, mainly in Chicago, where he acquired a knowledge of life and manners reflected in his light, humorous, and sophisticated stories, sketches, and operettas. *Doc Horne*, his early story now famous, his *Fables in Slang*, probably his most popular treatment of the American vernacular, and his light pieces like *The College Widow* and *The County Chairman* won him, with many others of similar style, an established fame and fortune.

"A. E." See RUSSELL, G. W.

AESCHINES (*ĕs'ki-nēz*) (389–314 B. C.). Opponent of Demosthenes, his fellow orator, he was accused of betraying the Phocians, whom both had agreed to support. Barely acquitted of charges of wrong in 343, he stirred up a sacred war in 339, when he secured favorable terms with Philip on the latter's entry into Athens. Demosthenes again attacked him in 337, when it was proposed to crown the former with laurel for his services to Greece, and finally, in 330 secured a condemnation, and Aeschines withdrew to Rhodes. His three great orations, *Against Timarchus*, who supported Demosthenes; *On the False Embassy*, in which he defended himself against the charge of deceit, and *Against Ctesiphon*, who proposed the laurel crown, are his best, they being examples of fiery invective and argument.

AESCHYLUS (*ĕs'ki-lŭs*) (525–456 B. C.). Greek tragic dramatist, precursor of Sophocles and Euripides. See GREEK LITERATURE.

AESOP (*ē'sop*) (c. 620–c. 560 B. C.). A real or mythical author of *Fables*, from which the modern type has derived. Many legends concerning him were current in the Middle Ages, and a life was composed in the fourteenth century, but an earlier manuscript has been found in Florence. Records of his reciting fables at various points have survived. It is said, for instance, that he persuaded the men of Athens not to overthrow their ruler Peisistratus when he recited his fable of *The Frogs Asking for a King*, which shows the danger of changing one ruler for another untried. Early manuscripts of his *Fables*, if any existed, have been lost. Phaedrus about the fourth century adapted 42 of the stories. Finally, Maximus Planudes collected versions which have come down to us. Doubtless many stories were added to the original store of Aesop. Modern literature owes a tremendous debt to these and similar fables. (See under Fable, pages 32 and 879.)

AIDE, CHARLES HAMILTON (1830–1906). After serving in the English army, he settled in the New Forest, and there wrote a series of novels of polite society, the best remembered being *Rita, The Marstons, Passages in the Life of a Lady*. His poems include *Eleanore* and *Songs without Music*.

AINSWORTH, WILLIAM HARRISON (1805–1882). Next to Walter Scott he was the most popular novelist of his period in England. His first story attracted Scott, who encouraged him to proceed, and his next, *Rookwood*, with its vivid account of the ride of Dick Turpin, was long a great favorite. Among forty or more fictions, his best known now are *Jack Sheppard, The Tower of London*, and *Windsor Castle*. Early in life he was first interested in law, then in publishing, and later in editing *Ainsworth's* and the *New Monthly Magazine*.

AIRD, THOMAS (1802–1876). Carlyle said that his collected poems, published in 1848, had in them "a healthy breath as of mountain breezes." His *Devil's Dream* and his sketches of nature have won a great fame among the simple folk of Scotland.

AKENSIDE (*ā'ken-sīd*), **MARK** (1721–1770). Studied theology, but became a doctor, and finally was appointed physician to the queen. Through his friends Dyson and Dodsley, the publisher, contributed to the *Museum, or Literary and Historical Register*. His *Pleasures of Imagination* drew for ideas on Addison and other essayists of the age. At first an independent in politics, he is caricatured as the republican physician in Smollett's *Peregrine Pickle;* but finally both Dyson and he became Tories.

AKSAKOV, SERGEI T. (1791–1859). Leader of the greater Russian coterie, he was influenced to write by Gogol. Aksakov pictures Russian life before the liberation of the serfs with unerring fidelity and great literary charm. His works became classics among his own people. Among them are *Chronicles of a Russian Family, Recollections, Recollections of Gogol*. Two of his sons became authors and patriots in the Panrussian cause.

ALARCON (*ä'lär-kōn*), **JUAN RUIZ DE** (c. 1581–1639). Spanish dramatist, born in Mexico, but educated in Spain. His most famous play *Verdad Sospechosa* or *Truth Suspected*, in English, formed the basis of *Corneille's Menteur*. *El Teiedor de Segovia*, or in English, *The Weaver of Segovia*, is an intimate picture of Spanish life, manner, and sentiment. Though intent on didactic aims, his work is full of brilliant and natural dialogue.

ALAS, LEOPOLDO (1852–1901). Spanish novelist, critic, and professor of law at Oveido, where the scene of his chief novel, *La Regenta*, is laid with remarkable

fidelity. Through ruthless analysis this story gained a place among the best of the age.

ALCMAN (flourished in 7th cent. B. C.). As founder of Doric poetry, regarded as first among nine lyric poets of Greece in early times. Wrote songs in various measures, the chief being hymns, processionals, and love-songs, the invention of which was attributed to him, and the maiden songs of *Parthenion*, fragments of which were discovered in an Egyptian papyrus in 1852. Very little of his now remains.

ALCOTT, LOUISA MAY (1832–1888). Early she resolved to make money to relieve the poverty of her family, which suffered from too much musing and philosophy of her father, A. Bronson Alcott. She began as a doll's dressmaker, taught school for a time, and once went out at domestic service. After writing some sketches and essays for periodicals, she entered the Union service as a nurse for a time in 1862–1863 at Georgetown, D. C., out of which experience her letters home were revised as *Hospital Sketches*, and at once established her fame. Much of her work was based on her own experience and those of relatives and friends. She is the "Jo" of her own *Little Women*, the most perennially popular book for girls yet written in America. *An Old-Fashioned Girl, Little Men, Jack and Jill, Eight Cousins* are favorites still, though her own choice, a novel called *Moods*, is no longer much read. Wholesome everyday life, common joys, and the inevitable pathetic form the staple of her work.

ALDEN, HENRY MILLS (1836–1919). Scholar, author, and editor of *Harper's Magazine* from 1869 till his death. His deep philosophical essays, *God in His World* and *A Study of Death* have been widely read. Profoundly influenced the literature of his time because of his high editorial standards.

ALDEN, ISABELLA MACDONALD (1841–1930). Under name "Pansy" wrote 75 books for the young, editing also the juvenile paper called *Pansy*, 1873–1896. Her stories translated into various languages enjoyed immense popularity. *The Prince of Peace*, her life of Christ, gained many favorable notices.

ALDEN, RAYMOND MACDONALD (1873–1924), son of the preceding and Rev. G. R. Alden, was a professor of English at Leland Stanford University for many years, and wrote numerous critical and informative books in his field.

ALDRICH, BESS STREETER (1881–). Representative author of stories of the Middle West, including *Mother Mason, The Rim of the Prairie, A Lantern in Her Hand.*

ALDRICH, THOMAS BAILEY (1836–1907). American journalist, editor, and author, born at Portsmouth, N. H. His first success, *Story of a Bad Boy*, partly autobiographical, revives some of his early impressions of New Orleans and Portsmouth. From about 1855 to 1890 connected with various periodicals, including the editorship of the *Atlantic Monthly*, in which he was eminently successful. As a graceful and artistic poet, descriptive and emotional, he ranks very high in our literature. His short stories like *Marjorie Daw* (1873), *Quite So* (1872), and *Goliath* (1893) illustrate his graceful and humorous style, together with the surprise ending characteristic of much of his lighter work, and this became a vogue in later short narratives.

ALEARDI, ALEARDO (1812–1878). Italian patriot and descriptive poet, who among other works, published a fine ode to the maritime cities of Italy (1856), and two years later one on his own misfortunes after his imprisonment for part in a political uprising. Eventually became a professor of art at Verona and later a senator.

ALEMAN, MATEO (1547–1609?). Spanish novelist whose picaresque *Guzman de Alfaracha* went through 16 editions in five years and set the fashion for a time along with *Don Quixote* of Cervantes. Came to Mexico City about 1608, issued there a work on reform of Spanish spelling, and then dropped from notice. May have lived till 1617.

ALFIERI (*ahl'fe-ay're*), **VITTORIO, COUNT** (1749–1803). Of his 19 patriotic dramas, *Saul* is still regarded as his masterpiece. His work is marred as artistic drama by his special pleading against tyranny, but he inspired many young men to seek for an independent and united Italy. See ITALIAN LITERATURE.

ALGER, HORATIO (1834–1899). An American Unitarian clergyman, who moved from New England to New York City in 1866 and tried to improve the conditions among newsboys and others. Many of his more than 100 stories reflect his experiences. His Luck and Pluck, Ragged Dick, and Tattered Tom series have been read by countless boys, and hundreds of thousands of copies have been sold. Noted for sturdy ideals and strict notions of honor though they are, sometimes the stories might lead boys to expect too much material reward from doing what is right.

ALISON, SIR ARCHIBALD (1792–1867). Voluminous but careful historian, who spent 15 years in collecting material for his *History of Europe*, which was soon translated into most of the languages of Europe and into Arabic and Hindustani. The first 10 volumes, completed in 1842, went through 10 editions, but the last 4, covering the period from 1815 to 1856, were not so popular. His *Principles of Population* replied to the arguments of Malthus.

ALLEN, GRANT (CHARLES GRANT BLAIR-FINDIE) (1848–1899). Of Irish descent, born in Canada, taught for a time in Jamaica, and then lived in England. His specialty was scientific works in popular style, such as *The Evolution of the Idea of God*, and, in novel form, *The Devil's Die* and *The Woman Who Did*. The last of these treated in 1895 the problems of sex, receiving within the next few years the generous flattery of many imitations.

ALLEN, ELIZABETH AKERS (1832–1911). American author now largely known for her *Rock Me to Sleep, Mother*, issued in 1860.

ALLEN, JAMES LANE (1849–1925). For years he taught Latin and English, mainly at Bethany College in West Virginia. His short stories in the volume entitled *Flute and Violin* (1891) still take high rank for delicacy of thought and sentiment. Most of his writing has the blue-grass region of Kentucky as a rich background. His *Kentucky Cardinal* tells with great imagination and force the story of a bird, to which *The Choir Invisible* is the sequel. Of his later works, *The Reign of Law* relates the account of a youth who found a newer insight into science at odds with his old-fashioned faith. Allen reminds one somewhat of Hawthorne.

ALLIBONE, SAMUEL AUSTIN (1816–1889). American merchant who later became a librarian and bibliographer. Characterized by an accurate and wide learning, for years his *Critical Dictionary of English Literature, Prose Quotations*, and *Poetical Quotations* were recognized as standard works.

AMICIS, EDMONDO DE (1846–1908). Though his account of army life, *La Vita Militaire*, was long famous, his reputation now rests quite largely on his travel descriptions of visits to London, Spain, Holland, Turkey, and Morocco.

AMIEL, HENRI FREDERIC (1821–1881). Having become an appointee of the democrat party as a professor of philosophy at Geneva, he felt somewhat isolated from literary and artistic groups, who were aristocratic, and so he composed his elaborate *Journal Intime*. This has consoled many lonely people in various lands. Mrs. Humphrey Ward made the English translation.

AMMIANUS MARCELLINUS (c. 330–c. 400 A. D.). A noble Greek of army training, settled in Rome. Late in life wrote a history of Rome from about 96 to 378, but only 18 of 31 books remain, covering from 353 to 378, and continuing the history from Tacitus. Fine pictures of life and society, predicting the fall of Rome 20 years later.

ANACREON (*a-năk'rê-ŏn*) (c. 560–c. 476 B. C.). Early Greek lyric poet of love lyrics and possibly hymns. Later authors mention five books of his works, but only brief quotations now remain. Was a soldier and seeker of court society. The English Cowley wrote what he called "anacreontiques," and Tom Moore in 1800 imitated the style of the fragments attributed to Anacreon.

ANDERSEN, HANS CHRISTIAN (1805–1875). Though he tried at times to be actor and dramatist, Andersen achieved his great success as writer of delightful *Fairy Tales*, several volumes of which appeared between 1835 and 1872. All translated by Mary Howitt into English and by many others into nearly every modern language. He also wrote poems, books of travel, and novels with some success.

ANDREEV, LEONID N. (1871–1919). Russian author, at first a law student, and then a journalist. From 1901 to 1917 he issued a large number of works of great merit. The *Red Laugh*, founded on the Russo-Japanese War, is an indictment of all warfare; *To the Stars* is a four-act poetic drama; *Silence and other Stories* contains some of his best narratives;

and *The Sorrows of Belgium*, written during the World War, is an eloquent tribute to courage of the Belgians. Works known in America because of excellent translations are the *Life of Man*, a mystery play, and *He Who Gets Slapped*, a morality.

ANEURIN (c. 600). Welsh bard who described the battle of Cattraeth (called Degston in the *Saxon Chronicle* according to Stephens) in which the English suffered defeat. He named it *Gododin* from the name of his own clan near the Firth of Forth. Some seek to identify him with the historian Gildas.

ANNUNZIO (*ăn-nōōn'dzē-ō*), **GABRIELE D'** (1863–1938). Italian patriot, poet, and dramatist, who held Fiume under his command for 15 months after the World War, defying Italy and all Europe. Wrote many bitter articles claiming Italy entitled to extend her frontiers toward the east. Ardent Fascist. His early novels before 1900 are greatly admired, but his dramas are probably his best work, such as *Francesca da Rimini*, giving the medieval setting and atmosphere in perfection; *La Gioconda*, in which Eleanora Duse attained great popularity; *La Nave*, one of his attempts at historical drama, this one portraying the early glory of Venice as a naval power.

ANSTEY, F. (1856–1934). Pen name for Thomas Anstey Guthrie, English attorney and author of droll, clever, and immensely entertaining short stories. He wrote, among others, *Topsy-Turvy*, *The Black Poodle*, and *The Tinted Venus*.

ANTIMACHUS (fl. c. 400 B. C.). Developed the learned type of epic, prepared an edition of Homer, founded the Alexandrine school of Greek literature. His main work is the *Thebais*, an elaborate epic narrating the expedition of the Seven against Thebes.

ANTIN, MARY (1881–). Born in Russia, but lived in the United States after 1904; married Professor A. W. Grabau in 1901. Her books, notably *The Promised Land* and *They Who Knock at Our Gates*, tell the story of first impressions the immigrants get of American life.

ANZENGRUBER, LUDWIG (1839–1889). Popular Austrian author of plays of peasant life, some gloomy and some comic, short tales of the village called *Wolken und Sonn'schein*, and *Das vierte Gebot*, a problem play not unlike Ibsen's *Doll's House*.

APION (fl. first cent. A. D.). One of embassy from Alexandria that complained to Caligula at Rome against the Jews; answered by the learned Josephus in his *Contra Apionem*. Taught rhetoric and grammar at Rome. The story of Androclus and the lion, a favorite in romance and drama, used again recently by Bernard Shaw in his play, comes from Apion's writings.

APULEIUS (*ăp'ū-lee'yŭs*), **LUCIUS** (fl. 160 A. D.). Philosopher and moralist; wrote the *Metamorphoses*, now called the *Golden Ass*, the story of the adventures of a young man turned into an ass and restored later to human form by aid of Isis. Contains an original allegory, fragments of old literature, rapid narrative of all sorts of transformations and changes of fortune. The beautiful story of Cupid and Psyche comes from Apuleius; so do some of the episodes used by Cervantes, by the author of *Gil Blas*, Boccaccio, and more modern story tellers. Great favorite in the Middle Ages and since.

ARANY (*o'ro-ny*), **JANOS** (1817–1882). Great Hungarian epic poet who made literature popular but dignified and artistic. Won several prizes. His *Lost Constitution* is a satirical poem treating of contemporary politics, but his great trilogy, *Toldi*, *The Love of Toldi*, and *Toldi's Evening* gave him lasting fame and international appreciation. Translated Aristophanes and edited some plays of Shakespeare.

ARATUS (*ă-rē'tus*), **OF SOLI** (b. c. 315 B. C.). Known now only in a few fragments, was a Greek poet quoted by St. Paul in *Acts* 17.28. Influenced both Cicero and Virgil.

ARBUTHNOT, JOHN (1667–1735). Fashionable Scotch doctor, friend of Pope and his circle. Popularized the idea of John Bull in his *Miscellanies*, a series of prose essays and sketches, including five papers devoted to *History of John Bull*. Pope's *Epistle to Dr. Arbuthnot* forms the prolog to his own satires.

ARGENSOLA, LUPERCIO LEONARDO DE (1559–1613). Spanish official historian of Aragon, translator of Latin poets, with some original satires, and three tragedies imitated from Seneca, which Cervantes said delighted all who heard them.

ARIOSTO (*ă'rē-ōs'tō*), **LUDOVICO** (1474–1533). Forced to study law against his will and for much of his life to follow a courtly patron to get a living, Ariosto found time to compose his noble epic *Orlando Furioso*, or the *Mad Orlando*. In 46 cantos, revised again and again, Ariosto traced through many adventures the love of Ruggero and Bradamante, together with the events leading to the madness of Orlando. Noted for its vividness, pathos, and artistic charm. See ITALIAN LITERATURE.

ARISTOPHANES (*ăr'ĭs-tŏf'ă-nēs*) (c. 450–c. 380 B. C.). Greek earlier poetic author of more than 40 comedies. Among the best known are *The Wasps*, a satire on the love of litigation among the Greeks; *The Birds*, variously interpreted as allegory or satire on caprice as to laws or a protest against religious cults; *The Frogs*, an attempt to calm the minds of men during troublous times; *The Babylonians*, an attack on the system of choosing officials by lot in Athens. Though he scorned innovations and intellectual attainments, as a poet and artist he is almost beyond reproach for his combination of subtle and broad comedy. See GREEK LITERATURE.

ARNDT, ERNST MORITZ (1769–1860). German patriotic poet, called often "the most German of all Germans." Did much to arouse the people against Napoleon. Songs like *Was ist das deutsche Vaterland?* and *Was blasen die Trompeten?* were known in every home. Wrote some beautiful religious poems and many scholarly works.

ARNOLD, SIR EDWIN (1832–1904). Though Arnold spent 40 years as a journalist, he is now known only for his translations of Sanskrit works; *The Light of Asia*, a poem in which the spirit and teachings of Buddha were glorified; and *The Light of the World*. The last was written to meet the criticism that Arnold exalted a non-christian religion too highly, and so Christ is the center of this great epic poem. Yet the other work contains his best descriptions and most delicate touches of color and imagination. Arnold also wrote two works on Japan, where he lived several years late in life.

ARNOLD, MATTHEW (1822–1888). English inspector of schools, poet, critic, and essayist, Arnold represents the highly intellectual man of culture. *Dover Beach* and other poems have a haunting melancholy; his *Essays*, a classical and highly polished manner; and his tempered controversial writings in *Culture and Anarchy*, *Literature and Dogma*, and *Discourses in America* brought forth wide interest and no little dissent. Narrative poems like *Balder Dead* and *Sohrab and Rustum* have long been favorites in the schools because of their finish, reserve of feeling, and beauty that reminds one of a Greek statue.

ATHENAEUS (c. 160–c. 210). Now known for his account of learning, banqueting, etiquette, and various subjects discussed in 15 books, not all of which have survived. By quoting from 800 authors, most of whom perished, he shows the extent of ancient literature.

ATHERTON, GERTRUDE FRANKLIN (1857–). Lived much of her life in California and abroad. Wrote novels of social life, including *The Californians*, *Senator North*, *The Conqueror*, and *The Living Present*.

ATTERBOM, PER DANIEL AMADEUS (1790–1855). Swedish romantic poet, whose studies of authors, and attempts to found a literary journal, had a profound influence on his age. Of his own works, *The Fortunate Island*, a drama, *The Flowers*, a cycle of lyrics, and a dramatized fairy tale, *The Blue Bird*, extant now only in a beautiful fragment, were his noblest, most delicate, and popular.

AUERBACH (*ou'ĕr-bäk*), **BERTHOLD** (1812–1882). Through his study of Spinoza he was turned away from his intention to become a rabbi, and then devoted his life to writing stories and novels of life in the Black Forest, which he depicted with charm and vividness. Because of his attractive view of the philosophy of life, he had an immense vogue and numerous imitators.

AUGIER (*ō'zhē-ā'*), **GUILLAUME VICTOR EMILE** (1820–1889). Opponent of the sentimental and melancholy romanticism of his day, he wrote nine successful lyric dramas of great moral earnestness depicting bourgeois society at its best.

AUSTEN, JANE (1775–1817). Basing her novels on an acute and exact observation of English life of her period, Miss Austen came to be regarded as the leader of a new realistic school. Humor, refined sentiment, and good common sense characterize her writings. She opposed sham, conventions, and the foolish romanticism found in most of the novels of the time.

Pride and Prejudice and *Sense and Sensibility* still charm us in home and school. Her *Northanger Abbey* ridicules the bugaboo and maudlin sentiment of the novels now called Gothic romances. Walter Scott said that Miss Austen could do simple life to perfection, while all he could attain was the "big bowwow."

AUSTIN, ALFRED (1835–1913). After the death of Tennyson in 1892, no poet laureate was appointed in England for four years. Then Alfred Austin was chosen instead of several better known authors. His early satire, *The Seasons*, has knowledge of life and humor, and most of his volumes, like *Prince Lucifer* and *England's Garden* have delicate and sincere love of nature and some imagination.

AYTOUN, WILLIAM EDMONSTOUNE (1813–1865). In his own words he "followed the law but could not overtake it," and then turned to journalism. Professor at Edinburgh for a time. Great parodist, imitating Tennyson, Tom Moore, Dobell, Alexander Smith, and others. *Montgomery, a Poem* and *The Massacre of Macpherson* are his best-known travesties. In serious works like *Bothwell* and his redactions of the ballads of Scotland he resembles Scott.

BACCHYLIDES (*bă-kĭl'ĭ-dēz*), (fl. 467 B. C.). Recognized by Alexandrian scholars among their favorite nine Greek lyric poets. Pindar considered him a rival. Only fragments of about 100 lines remained till in 1897 a mutilated papyrus of his works was acquired in Egypt and restored by the British Museum. Much given to picturesque touches and use of epithets. In an ode celebrating a horse race, Pindar gives two lines and Bacchylides ten to the details themselves.

BACHELLER, IRVING (1859–). An American author of novels of local color and vivid characterization as in *Eben Holden* and *Dri and I*, stories of northern New York.

BACON, FRANCIS. See INDEX.

BACSANYI (*bō'chàn-yē*), **JANOS** (1763–1845). Influential patriotic Hungarian poet, whose *Valor of the Magyars* (1785) was followed by many other lyrics. He founded the *Magyar Museum*, suppressed in 1792, and he was imprisoned two years later on a charge of conspiracy against the government. After translating the manifesto of Napoleon in 1809, he fled to Paris, but in 1814 was seized and allowed to live in Linz. Collected poems published at Budapest in 1827.

BAGEHOT (*bāj-ŏt*), **WALTER** (1826–1877). British economist whose papers and essays as editor of *The Economist* and in his books like *The English Constitution* and *Lombard Street* have remarkable freshness and likewise scientific accuracy. These and *Physics* and *Politics* had profound influence on statecraft of the age, the latter notably on the continent.

BAGGESEN, JENS (1764–1826). Danish author of *Comical Tales*, which at 21 made him the talk of Copenhagen. Though he had a profound influence in fixing and polishing Danish style in literature, he quarreled with his contemporaries and lived many years abroad, especially in Paris. His simple little poem, "There was a time when I was very young," translated into English by Longfellow, is known in every Danish household today. *Labyrinth*, a fine descriptive lyric and *Perthenais*, an epic in hexameters, are best known of his poems.

BAIF, JEAN ANTOINE DE (1532–1589). French translator of Greek and Latin poets, especially elegies; author of numerous amatory and occasional poems; tried to fix relation between music and verse.

BAILLIE (*bā'lĭ*), **JOHANNA** (1762–1851). Now best known as author of poems, but she aspired to be a playwright, and had the assistance of Walter Scott in arranging her *Family Legend* for the stage of Edinburgh. Her tragedy, *De Montford* attained ephemeral fame, largely through the acting of John Kemble and Mrs. Siddons in London. Miss Baillie sought to "delineate the strange passions of the mind," making both a comedy and tragedy for each chief emotion. Lack of real theatrical technique prevented any large success.

BAIRD, HENRY MARTYN (1832–1906). An American historian; published a three-volume account of the Huguenots, now a model of thoroughness and impartiality. His brother Charles Washington (1828–1887) left an unfinished work dealing with the Huguenot emigration to America, 2 volumes.

BAKER, ERNEST A. (1869–). English librarian and editor. Best works are *Guide to the Best Fiction*, revised 1913, *History in Fiction*, *The Public Library*, all useful to students; edited Cassell's English and French dictionaries.

BAKER, RAY STANNARD (1870–). American journalist and author of many books, including *What Wilson Did at Paris*, *Woodrow Wilson and World Settlement;* edited with Prof. W. E. Dodd, *The Public Papers of President Wilson.* Under pseudonym of David Grayson wrote *Adventures in Friendship*, *Great Possessions*, and other optimistic essays.

BALLANTINE, WILLIAM (1825–1894). Scotch writer of stories who spent six years with the Hudson Bay Company in Canada. Wrote *Hudson Bay, or, Life in the Wilds of America*, and a series of fine adventure books for boys, including *The Young Fur-Traders*, *The World of Ice*, *The Dog Canoe*, in all about 100 books.

BALMONT, CONSTANTIN (1867–). Russian poet. Among his works are a translation of Shelley, *Under Northern Sky*, *In Boundless Space, Only Love*, *The Liturgy of Beauty*, and *The Bird of Flame.*

BALZAC (*bāl'zăk'*), **HONORE DE** (1799–1850). French novelist of tremendous output, 85 titles, and a dozen other prose works. Intended for the law, he acted for a time as clerk to a notary, and there learned much of the tricks which he exposed in his works. He planned a great Comedy of Humanity (*La Comédié Humaine*), but no man, even as accurate and indefatigable as Balzac with twice the length of life, could have completed this on the original scale. His knowledge is prodigious and fairly accurate, but his books are cluttered with too many details. For many of them he visited scenes of battles and other points for local color. Credited with a profound knowledge of the hearts and ways of women. He courted at intervals Mme. Hanska for 15 years, and their marriage three months before his death freed him from the load of debt which had always oppressed him. *Father Goriot*, *Eugene Grandet*, *Lost Illusions*, *Séraphita*, the last an attempt at poetic prose and rhapsody, *Le Médicin de Campagne*, and the very droll *L'Illustre Gaudissart* are among his best-known fictions.

BANCROFT, GEORGE. See under EDUCATORS.

BANGS, JOHN KENDRICK (1862–1922). American humorist, editor, and lecturer. Now known chiefly for his clever and funny *House Boat on the Styx*, *Ghosts I have Met*, *Hours with the Idiot.*

BANIM, JOHN (1798–1842). Called the Scott of Ireland. With his brother Michael (1796–1874), he wrote of the Irish peasants in a series called *Tales of the O'Hara Family.* Other novels are *The Nowlans*, *The Croppy*, *The Denounced*, *The Ghost Murder.* Michael Banim wrote *Father Connell*, *Clough Fionn*, and *The Town of the Cascades.*

BARBAULD, ANNA LETITIA (1743–1825). For a school kept by herself and husband, she wrote *Hymns in Prose*, a beautiful collection of simple studies. She collected in 50 volumes and edited *The British Novelists;* also wrote many popular verses.

BARBOUR, JOHN (c. 1316–1395). Scots poet, known for his *Brus* or *Bruce*, a narrative, historical poem in 13,500 rimed lines of four stresses each. Other works attributed to him are *Legends of the Saints*, and, more doubtfully still, the *Buik of Alexander*, containing old fragments. Barbour has been called the "father of Scotch poetry."

BARCLAY, ALEXANDER (c. 1476–1552). Scotch or English poet and satirist, whose *Ship of Fools* set a new vogue; written in stanzas like Chaucer's poems, but in more modern language. His *Eclogs* describe the rustic sports like football in the village, the struggle of the poor, and some abuses of the time.

BARHAM, RICHARD HARRIS (1788–1845). Under the name of Thomas Ingoldsby he compiled a series of metrical tales or *Legends*, which are rich in accurate and curious lore of past ages.

BARING-GOULD, SABINE (1834–1924). English clergyman and author of books on various subjects. Notable for books on folklore such as *Book of Werewolves*, *Curious Myths of the Middle Ages*, and stories of the west country of England. Wrote the hymn, *Onward, Christian Soldiers.*

BARLOW, JOEL (1754–1812). Known as one of the Hartford Wits, wrote an elaborate poem called *The Vision of Columbus*, a satire in mock-heroic form known as *Hasty Pudding*, and certain liberal republican treatises while living in France. Died in Poland while acting as minister to France, and trying to negotiate with Napoleon to conserve American rights.

BARRIE, JAMES MATTHEW (1860–1937). Scotch story writer and dramatist. Intensely popular in native land and England. His *Auld Licht Idylls*, a volume of sketches, *A Widow in Thrums*, stories of a poor Scots milling town with its humor and pathos, *The Little Minister*, a story of the parson's romance, *Peter Pan*, a poetic dramatic sketch dear to the heart of children as played by Maude Adams and others, *What Every Woman Knows*, replete with humor and satire on the "intuition" of the sex, *The Twelve Pound Look*, and several others. In his later works for a nice balance of the droll and the pathetic, Barrie has no superior in recent English.

BARTLETT, JOHN (1820–1905). American publisher and bibliographer whose *Familiar Quotations* and *Shakespeare Concordance*, on which he lavished years of labor, have long been standard works.

BARTON, WILLIAM E. (1861–1930). American clergyman and author of numerous books on religious topics, stories, and accounts of Lincoln. Some of them are *The Psalms and their Story, Faith as Related to Health, The Fine Art of Forgetting, Wit and Wisdom of Safed the Sage, Life of Clara Barton, Influence of Chicago on Abraham Lincoln.*

BATES, KATHARINE LEE (1859–1929). Long a professor of literature at Wellesley College; author of numerous books, some of which are *The Story of Chaucer's Canterbury Pilgrims Retold for Children, College Beautiful*, a book of poems, *English History Told by English Poets*. Best known for her inspiring national hymn, *America the Beautiful*, long a chief favorite in our schools.

BAZIN, RENE (1853–1932). French novelist, known best for his *Une Tache d'encre, Autumn Glory, By Faith Alone*, and a volume of short stories.

BEATTIE, JAMES (1735–1803). Scotch poet and professor of moral philosophy at Marischal College, Aberdeen. Besides his great essay on the *Nature and Immutability of Truth*, his works include *Original Poems and Translations, Judgment of Paris*, and *Verses on the Death of Churchill*, a violent attack afterward recalled by Beattie.

BEAUMONT (*bō'mōnt*), **FRANCIS** (1584–1616). With John Fletcher (1579–1626) wrote over fifty romantic plays; was intensely popular in the Shakespeare age. They specialized in serious plays, turning from tragedy to comedy toward the close, or as sometimes called, tragi-comedies. *Philaster, The Maid's Tragedy, The Faithful Shepherdess* are typical examples of their work.

BECKFORD, WILLIAM (1760–1844). Lived for a time abroad, built a magnificent house in Wiltshire, England, at tremendous cost, and famed for its peculiar architecture. Best known for *Vathek*, a picturesque and horrible tale of an Arabian who gave himself to the cruel and bloody rites of the religion of Eblis, and, after a life of crime, found himself in the hall of inner mysteries, only to be tormented with a burning heart. For oriental splendor and its grim and awful close, this "Gothic" romance had no equal, but many imitators in the next generation. It was written in French, but the English translation by Rev. Samuel Henly appeared before the original edition.

BEDDOES, THOMAS LOVELL (1803–1849). English dramatist and poet. Early recognized genius of poet Shelley. Tried to revive the manner of later Elizabethans. His *Death's Jest Book*, first issued in 1825, was often revised and finally published after his death.

BEDE (*bēd*) (672 or 673–735). Called Venerable Bede, but little is known of him outside what he says in his *Ecclesiastical History of the English Nation* in Latin, our chief source for early events to 731. Other works are *History of the Abbots*, a life of St. Cuthbert, and perhaps a lost vernacular translation of the *Gospel of John*. King Alfred apparently had the *History* translated into Old English. Most distinguished scholar of his age. See ENGLISH LITERATURE.

BELLMAN, KARL MIKAEL (1740–1795). Swedish patriotic poet known at every hearth for his *Fredmans Epistlar*, and *Fredmans Sanger*. Used old ballad music for his odes, many of which have a delicate and entrancing pathos. Often improvised music and words for his friends when he was "inspired by God."

BELLO, ANDRES (1781–1865). Born in Venezuela, he spent 19 years as a diplomatist in London, later settling in Chili, where he helped found the national university, of which he was rector. Wrote on law, philosophy, criticism, and philology. His best scholarly work is *Gramatica castellana* (1857); his most picturesque and artistic, the *Silvas Americanas*, a fine account of landscape of his native country, written while he was abroad.

BELLOC, HILAIRE (1870–). Born in France, naturalized English subject, 1902. Author of books on varied subjects,—poetry, French history, politics. *Verses and Sonnets, Bad Child's Book of Beasts, Path to Rome, Party System, Europe and the Faith, How the Reformation Happened* are some of his chief writings. Known for independence, clear style, and versatility.

BEMBO, PIETRO (1470–1547). Italian scholar, bishop, and restorer of classic Latin style of writing. Edited Petrarch's poems, wrote a treatise on Italian prose, a discussion of platonic affection, and a *History of Venice.*

BENET (*ben-ā'*), **STEPHEN VINCENT** (1898–). American poet, educated at Yale. Author of *John Brown's Body*, an attempt at American epic treatment, 1928, *Young Adventure, Heavens and Earth, Beginning of Wisdom.*

BENNETT, ENOCH ARNOLD (1867–1931). English novelist and dramatist. Editor 1893–1900. Makes everyday life seem romantic and very unusual. *Old Wives' Tale, Clayhanger, The Matador of Five Towns, The Card*, are among his best novels and stories. *The Great Adventure*, founded on his novel, *Buried Alive*, is a notable drama.

BENNETT, JAMES GORDON (1795–1872). Founder and long editor of the New York *Herald*. Introduced more effective methods of international news gathering, was independent of politics, and popularized illustrations. His son, J. G. Bennett, Jr., carried on the paper till his own death in 1918. Established the *Telegram* and London and Paris editions of the *Herald*. Sent Henry M. Stanley to central Africa to find Dr. Livingstone.

BERANGER (*bāy-rōn-zāh'*), **PIERRE JEAN DE** (1780–1857). Patriotic writer of French songs. *Les Gueux, Le Senateur*, and *Le Roi d'Yvetot* ran like wildfire from one end of France to the other. Imprisoned twice for his revolutionary doctrines. Championed the common sorrows of mankind, having no respect for those poets who "forget beside their mistress those who labor before the Lord."

BERNARD OF CLAIRVAUX (1091–1153). Did much to humanize theology; canonized by the church, 1174. His arguments and eloquence promoted the Second Crusade. Fervid piety characterized all his works, which were varied and extensive, mainly 350 sermons, 400 letters, 12 theological treatises, and many hymns. Helped unite the divided church, his pupil becoming pope, and he next in influence. Several of his hymns now used in Protestant churches.

BERNARD OF CLUNY (1622–c. 1655). Benedictine monk of Brittany, but of English parentage. Known for his descriptions of paradise, and for several hymns, such as *Jerusalem the Golden, The World Is Very Evil*, and *For Thee, O, Dear, Dear Country.*

BERNI, FRANCESCO (c. 1497–1536). Italian poet of sparkling verses and wit. Best known for his revamping of Boiardo's celebrated *Orlando Innamorato*, which his contemporaries pronounced greatly superior to the original.

BESANT (*bē-sānt'*), **WALTER** (1836–1901). Instrumental in founding the Society of Authors, which has done much to protect the rights of writers inexperienced in business. His *All Sorts and Conditions of Men* turned sympathy toward the poor of the east end of London. His story, *The Children of Gibeon*, revealed some of the evils of the sweating system in industry. He also wrote on French literature, and proposed a work, partly executed, which was to describe and improve various sections of London.

BEYLE, HENRI MARIE. See STENDHAL.

BIERCE, AMBROSE (1842–1914†). American satirist and short story writer, known often as "Bitter Bierce," and yet he was a thinker of originality and power. Lived 25 years in San Francisco and afterward mainly in Washington, D. C. In 1891 he published his *Tales of Soldiers and Civilians*, for which his experience in the Civil War gave him material, and later *Can Such Things Be?* a series of tales of strange and unnatural happenings. His *Cynic's Word Book*

(later called *The Devil's Dictionary*), *Write it Right*, a book of literary directions, and *Black Beetles and Amber*, are his chief works, the last being poems. In 1913 he set out for Mexico, "with a pretty definite purpose, which, however, is not at present disclosable," and was never heard of later. Rumored killed in the revolution there.

BIGELOW, JOHN (1817–1911). American diplomatist, who helped to maintain neutrality of France during Civil War. Of his literary and historical works, he is now remembered chiefly for his edition of the works of Franklin, his biography of S. J. Tilden, and for his *Retrospections of an Active Life*.

BIGELOW, POULTNEY (1855–). American traveler, journalist, and historical writer of works on Germany, Africa, and Japan, including *History of the German Struggle for Liberty*, *White Man's Africa*, *Japan and her Colonies*, *Memoirs*.

BINYON, LAURENCE (1869–). Poet, scholar, and orientalist in British Museum. *England and other Poems*, *The Flight of the Dragon*, *Japanese Colour Prints*, *Oriental Art in the British Museum*, and *The Golden Treasury of Modern Lyrics* are some of his numerous books.

BION (fl. 100 B.C.). Greek lyric and pastoral poet; probably lived in Sicily. His work is less simple and sincere than that of Theocritus, father of the Greek pastoral, being also sentimental and too artistic for true poetry of the type. His *Lament for Adonis* is the best, a model for many modern elegiac poems like Shelley's *Adonais*, inspired by the death of John Keats.

BIRMINGHAM, GEORGE A. (1865–). Pen-name for Rev. James Owen Hannay, Irish clergyman and novelist. He was educated at Trinity College, Dublin, and wrote several novels of contemporary life and people. Notable stories are *The Seething Pot*, *The Lost Tribes*, *From Connaught to Chicago*, *Minnie's Bishop and other Stories*.

BJORNSON (*bē-yērn'sun*), **BJORNSTJERNE** (1832–1910). A Norwegian novelist and dramatist; tried to establish a new saga type in play form. *Sigurd the Bastard* (1862), and *Sigurd the Crusader* illustrate. *Mary Stuart of Scotland* is a romantic tragedy, *Bankruptcy*, *The Editor*, and *The Gauntlet* are social dramas; *Dust*, *Mother's Hands* and *Absalom's Hair* are short narratives. His amusing piece, *Geography and Love*, continues to be produced.

BLACK, WILLIAM (1841–1898). British author of 34 novels, the best of which have to do with the mountains of his native Scotland or the waters off the shore. *A Daughter of Heth*, *The Princess of Thule*, *Judith Shakespeare*, and *White Heather* are among his best.

BLACKMORE, RICHARD DODDRIDGE (1825–1900). Tried writing poetry at first. His first successful novel *Clara Vaughn* led him to make a series, the culmination of which was *Lorna Doone* (1869). This was immediately hailed as a welcome turn from the dull realistic works then in vogue. The vigor, charm of background, and simple but heroic and stirring love of John Ridd and the adopted daughter of the wild Doone tribe is a perennial favorite with young and old alike.

BLAKE, WILLIAM (1757–1827). English poet and artist of mystic and eccentric genius. His *Songs of Innocence* appeared in 1789 and *Songs of Experience* in 1794. Symbolism and obscurity mark many of his best lyrics, which are imbued with feeling and genuine inspiration. Blake illustrated these poems with about 60 original drawings. About 1795 he completed a magnificent series of highly colored prints of originality and beauty. These include *Nebuchadnezzar*, *The Elohim Creating Adam*, and *Newton*. Among much other artistic work he made 537 watercolors for Young's poem, *Night Thoughts*.

BLOOMFIELD, ROBERT (1766–1823). English poet who fled to London and while working for a shoemaker wrote in a garret his *Farmer's Boy*, of which 25,000 copies were sold in two years, and it was translated into continental languages. *Rural Tales*, *The Banks of the Wye*, and *Wild Flowers* also attained considerable repute.

BOCCACCIO (*bôk-kâ'chō*), **GIOVANNI** (1313–1375). Italian author of Naples and Florence whose stories in his *Decameron* are among immortal world literature. In earlier works, *Filocolo and Fiammetta*, he revived the charm of Naples, but all through his life he suffered from an unhappy affection for the married woman he named Fiammetta. His *Filostrato*, in the ottava rima verse form, gave Chaucer much of his *Troilus and Criseyde*, which eventually came to Shakespeare for his drama. The *Teseide* also served Chaucer for the tale of *Palamon and Arcite*. *The Decameron*, one of the type of "frame" stories, is a collection of many narratives supposedly told by some lords and ladies driven to the country from Florence during the Black Death. Each of the ten persons tells a number of tales, but we are not interested in the frame work. Here we have the realism of Florentine life and a gallery of many living persons of all classes.

BOETHIUS (*bō-ē'thi-us*), **ANICIUS MANLIUS SEVERINUS** (c. 480–524). Unjustly imprisoned, he spent his time writing the *Consolations of Philosophy* in Latin, a work which had profound influence on the Middle Ages. The object is to show that all fortune is really good. Alfred translated it into Old English and Chaucer into Middle English. This and some other translations and commentaries of Boethius remained as guides to thought till Aristotle became popular again in the thirteenth and fourteenth centuries. Boethius was finally executed.

MRS. BOGAN OF BOGAN. See NAIRNE, CAROLINA.

BOIARDO, MATTEO MARIA, COUNT (1434–1494). Italian poet and governor of Reggio; known mainly for his *Orlando Innamorato*, model for Ariosto's great epic of *Orlando Furioso* (The Mad Orlando). Though the characters are realistic and the story interesting, the style is too involved, and the work not fully completed. Revised and finished by Berni (q. v.).

BOILEAU (*bwä-lō'*), **DESPREAUX NICOLAS** (1636–1711). French satirist and literary critic In 1764 he issued his masterpieces, *L'Art Poetique* and *Le Lutrin*. In the first he discussed the methods and types of poetry; the latter is a mock heroic, in six cantos, which gave Pope his form for the *Rape of the Lock*. Boileau, called the "legislator of Parnassus," has profoundly influenced many English authors.

BOK, EDWARD WILLIAM (1863–1929). American editor and author born in Holland. Edited *Ladies' Home Journal* for 30 years, retiring in 1919. The account of himself in *The Americanization of Edward Bok* won the Pulitzer prize for the best biography of 1920, and also the gold medal of the Academy of Political and Social Science. Offered $100,000 for most practical plan for international coöperation in peace. The one-half share for the author of the plan went to the late Dr. C. H. Livermore of the New York Peace Society. Erected a great carillon, bird tower, and sanctuary in Florida, which was dedicated by President Coolidge, and which is the burial place of Bok.

BOND, CARRIE JACOBS. See under FINE ARTS.

BORROW, GEORGE (1803–1881). English linguist, traveler, and novelist. Best remembered for his *Lavengro* and *Romany Rye*, romantic account of his travels and of gypsy life. His *Bible in Spain* (1843) gave him an immense fame, but 8 years before he completed his *Metrical Translations from Thirty Languages*. *Zincali* describes the gypsies of Spain, whom he knew rather well.

BOSWELL, JAMES (1740–1795). Author of the *Life of Johnson* (1791), long recognized our finest biography in English. Unfortunate because of his own temperament and foibles, Boswell suffered eclipse by the ursa major he described so faithfully and vividly. Two other works, *A Tour of the Hebrides*, and the *Account of Corsica*, received some notice. With the discovery of new evidence regarding Boswell in recent years, he now stands more favorably than once when the world accepted Macaulay's dictum: "Servile and impertinent, shallow and pedantic, a bigot and a sot." He was a Scotsman who tried to practice law in England with only indifferent success.

BOTHA, COLIN GRAHAM (1883–). Born in Cape Colony; archivist of Union of South Africa. Numerous publications include *Guide to the Documents in the Cape Archives*, *French Refugees at the Cape*, *Social Life in the Cape Colony in the 18th Century*.

BOURGET (*bōōr'zhā'*). **PAUL CHARLES JOSEPH** (1852–1935). French author of romantic novels of both exact description of life and great literary charm. Some of his popular titles are, *Le Disciple*, *Coeur de femme*, *Cosmopolis*, *Un Divorce*, which last he dramatized,

BOURINOT (*bōō-rĭ-nō'*), **JOHN GEORGE** (1837–1902). Born in Nova Scotia, he covered the entire field of Canada in various histories. Clerk of the Canadian House of Commons. His *Parliamentary Practice and Procedure* (1884) long a standard work; *Canada* in the Story of the Nations Series; *Builders of Nova Scotia;* and *Constitutional History* and other popular works.

BOWLES, SAMUEL (1826–1878). Editor for more than 30 years of the *Springfield Republican,* founded as a weekly by his father in 1824. After 1844 it became a daily. Nationally known for incisive and independent style and effective typographical arrangement; long a model and training school for young journalists, along with the *Sun, Tribune,* and *Herald* in New York. Bowles always advised them to "put it in the first paragraph."

BOWLES, WILLIAM LISLE (1762–1850). Revived the older manner of simplicity in sonnet form; his nature poetry highly praised by Coleridge. He said that images drawn from nature are preferable to those drawn from thought or art, and the permanent and elemental emotions to those of transient or even of personal sort. Byron, Campbell, and others differed with him in the ensuing controversy. Among his longer poems *The Spirit of Discovery* was ridiculed by Byron.

BOYENSEN (*boi'ĕ-sĕn*), **HJALMAR HJORTH** (1848–1895). Popular novelist born in Norway. After 1869 lived in America, where he was professor at Illinois, Cornell, and Columbia universities. His works in English include *Gunnar, Boyhood in Norway,* and *Idylls of Norway,* poems.

BRADDON, MARY ELIZABETH (1837–1915). Immensely popular English novelist. Her *Lady Audley's Secret* (1862) was translated several times, staged, and filmed, and passed through countless editions. All her 50 novels were highly melodramatic, sensational, and full of spirited descriptions. Others are *Dead Men's Shoes, London Pride, Eleanor's Victory,* and *Beyond these Voices* (1910).

BRADY, CYRUS TOWNSEND (1861–1920). Born in Pennsylvania; graduate U. S. Naval Academy, but became a clergyman and author of numerous books, chiefly stories of sea adventure for boys. For several years in railroad service. Some of his books are *For Love of Country, Stephen Decatur, Recollections of a Missionary in the Great West, Woven with the Ship, Border Fights and Fighters, A Midshipman in the Pacific.*

BRANDES, GEORG MORRIS COHEN (1842–1927). Danish critic of Jewish birth, known for independence and acuteness of thought. His *Main Currents in Nineteenth Century Thought* ably traces the tendencies of literature in Europe. The *Shakespeare,* which aroused much controversy, now highly regarded. Professor of aesthetics at Copenhagen from 1902. Wrote lives of Goethe, Nietzsche, Voltaire, Heine, and *Creative Spirits of the Nineteenth Century.* The *Jesus Myth* (1925) stirred up a great discussion.

BREMER, FREDRIKA (1801–1865). Swedish novelist, later interested in the emancipation of women and various reforms. Traveled widely. Some of her greatest works are *The H. Family, Homes in the New World,* and the social novels *Hertha,* and *Father and Daughter.*

BRIDGES, ROBERT (1844–1930). Appointed English poet laureate by Premier Asquith in 1913. Was greatly interested in various experiments in meters and in poetic dramas. The *Shorter Poems* (1890) show that he had restrained but deep and beautiful feeling. His anthology *The Spirit of Man* (1916) gained great fame, and *The Testament of Beauty* is growing in favor. Wrote prose criticisms in *Milton's Prosody, John Keats,* and *The Necessity of Poetry.*

BRIEUX (*brē'ĕ'*), **EUGENE** (1858–1932). French dramatist of social evils and customs. *Blanchette,* attacking faults in education of girls of the poorer classes, *The Three Daughters of M. Dupont,* the miseries of the dowry system in the middle class, *The Result of the Race,* the evils of betting among workmen, are illustrations of his didactic and problem plays.

BRONTE (*brŭn-ta'*) **SISTERS. CHARLOTTE** (1816–1855), **EMILY** (1818–1848), and **ANNE** (1820–1849). English novelists of Irish parentage, the name being modified from Brunty. Left somewhat to themselves by the death of their mother and the studious habits of their father, a country rector, the sisters early turned to reading and writing for amusement. All sent to school for one year to finish their education. There Charlotte got many impressions which appear in her masterpiece, *Jane Eyre,* a wonderfully fine study of the development of the soul and emotions of a young lady. In 1846 the sisters published poems jointly under the names of Currer, Ellis, and Acton Bell. Emily's great work is *Wuthering Heights,* which though a sombre and morbid novel, is one of haunting genius and tremendous power of character study. Anne Brontë is best remembered by her *Agnes Grey.* Charlotte wrote two other great novels, *Shirley,* a tale of a factory town, and *Villette.* Charlotte, after two similar proposals, married her father's curate, Mr. Nicholls, in 1854, but died about a year later after the birth of a child. Mrs. Gaskell's tragic account of the Brontë family reads like her own history of Cranford town.

BROOKE, RUPERT (1887–1915). Young English poet of great promise who died of disease in the Dardanelles expedition. Educated at Cambridge. *Poems* (1911), his *Letters* after a visit to America, his beautiful poem *Grantchester* (1912), and his sonnets entitled *1914,* his best work probably, promise to be long remembered.

BROOKE, STOPFORD AUGUSTUS (1832–1916). English minister and literary essayist, first in Church of England and later as a nonconformist, but always a powerful religious thinker. His best criticisms are his very readable books on early English Literature, Tennyson, Browning, and Shakespeare.

BROUGHTON, RHODA (1840–1920). English novelist of distinction. *Cometh up as a Flower, Not Wisely but too Well, Red as a Rose is She* stand high among her writings.

BROWN, ALICE (1857–). Born in New Hampshire; lived in Boston. Best known for novels and stories of New England life. Drama *Children of the Earth* received the Ames prize of $10,000 for most distinctive American play.

BROWN, CHARLES BROCKDEN (1771–1810). First American novelist of note. Influenced by English Gothic romance, transferred in America from old castles to caves and grottos, and made more rational. The mystery of his *Wieland* (1798) is finally explained as a case of biloqual ventriloquism, but not before the deluded hero has slain two of his family under a misapprehension; *Arthur Mervyn* vividly describes the yellow fever epidemic in Philadelphia (Brown was a physician); and *Edgar Huntley* introduces a somnambulist. Thus Brown tried to make reasonable endings to a type of novel left unsolved in many English tales.

BROWNE, CHARLES FARRAR (1834–1867). American humorist and lecturer known as Artemus Ward. Imitated the methods of the traveling showmen, and often had real or imaginary exhibits to illustrate his lectures, full of puns and satirical byplay. For instance, after visiting Utah, he said in a lecture that he found the Mormon religion singular, but the wives plural.

BROWNE, SIR THOMAS (1605–1682). English physician and author of curious learning, wide breadth of view usually free from bias, and delightful spirit of mind. He aims to be reasonable, not superstitious, and orthodox but, failure in some respects is probably due to the influence of the age in which he lived. His evidence, in a witch trial, for example, helped convict two poor women at Norfolk, his home city, in 1664. His *Religio Medici,* published without his consent, was a year later issued by him in correct form (1642). The *Pseudoxi Epidemica* is a wonderful storehouse of curious popular superstitions with attempts to explain or refute them. His *Urne-Burial* (*Hydrotaphia*) aims to explain certain remains dug up in Norfolk and to justify cremation and burial in urns. It contains, especially toward the close, some of his most imaginative musical prose. Browne has deeply influenced liberal thought.

BROWNING, ELIZABETH BARRETT (1806–1861). Though married secretly to the poet Browning in 1846, and never forgiven by her father. Mr. Barrett, a wealthy English merchant, Mrs. Browning was supremely happy till her death in Florence. They had corresponded some time before, having admired each other's works, though very different in temperament and scope. Mrs. Browning constantly complained of the stupid lack of appreciation of Browning by the average Englishman. Her chief works are *Sonnets from the Portuguese,* not a translation at all, but a very fervid and deep commemoration of her love for her husband. She never designed them for the

world, but Browning thought them so good he had them printed in 1847. Her other great work, *Aurora Leigh*, a long fiction in verse, attained an immediate vogue for its descriptive and imaginative power. The married life of the Brownings was spent mainly in Italy. Their one son, Robert W. Barrett Browning, became a notable artist.

BROWNING, ROBERT (1812–1889). Supreme author of the dramatic lyrics and character studies in poetry in the nineteenth century. Young students should begin to read the short poems like *Soliloquy in a Spanish Cloister, How they Brought the Good News, Fra Lippo Lippi* and the other art poems, *Hervé Riel, Evelyn Hope, Cristina, My Last Duchess*, to get the point of view of Browning. One must always ask several questions: Who is speaking? To whom? Under what circumstances or conditions? These questions answered, a careful reading will usually lead to real appreciation, for the obscurity and "high-brow" character of his poems have been exaggerated. *Paracelsus, Pauline*, and *Sordello* are among the most difficult of his earlier works. *The Return of the Druses* is a drama that reveals considerable power of analysis and characterization. *Rabbi ben Ezra, Saul, Pippa Passes*, a beautiful lyric drama, and many poems in the volume entitled *Men and Women* are now favorites among lovers of Browning. His masterpiece, *The Ring and the Book*, built out of conflicting and sordid testimony of a Roman murder trial, shows his superb genius, knowledge of life and character, and skill in handling many points of view. Though it may be rather too long, most is not difficult reading. An optimist, genial gentleman, and student of human nature, Browning is well known as a man. Died in Italy; buried in Westminster Abbey. See ENGLISH LITERATURE.

BRUCE, H. ADDINGTON (1874–). A Canadian now living in the United States. Journalist and author of works on social subjects. Among his books are *The Riddle of Personality, Scientific Mental Healing, Psychology and Parenthood, Nerve Control and How to Gain It, Your Growing Child.*

BRUNETIERE (*brün'tyâr*), **FERDINAND** (1849–1906). French critic of great learning, penetration, and courage. Wrote much on evolution of various types of literature in France, on Balzac, and various questions in controversy. Conservative in politics, but original and independent in literary appreciation.

BRYANT, WILLIAM CULLEN (1794–1878). American journalist, chief editor of New York *Evening Post*, 1830 to his death. Did much to create and foster an original American literature and honest criticism. Some assert that real American poetry begins with Bryant's *Thanatopsis* in 1817, written when he was 17. In moral earnestness it sets a high tone. More artistic possibly are his *To a Water-fowl* and *Robert of Lincoln*. His emotions were restrained, orderly, and cultured.

BUCHANAN, ROBERT WILLIAM (1841–1901). As a novelist he is best known for the *Wandering Jew;* as a poet for *Undertones;* and as a critic for his article *The Fleshly School of Poetry*, an attack on certain amorous poetry of the day. Both Rossetti and Swinburne replied. Afterward Buchanan tempered his views so far as to dedicate his own *God and the Man* to Rossetti.

BULFINCH, THOMAS (1796–1867). American author, born in Boston, who wrote the *Age of Chivalry* and the *Age of Fable*, the latter of which was revised in 1881 by Edward Everett Hale.

BULWER-LYTTON, EDWARD GEORGE EARLE LYTTON, BARON BULWER-LYTTON (1803–1873). Wrote over 60 different novels and plays. Member of Parliament. His first novel, *Pelham*, set forth a dandy such as one could see in Paris or London. *Paul Clifford* and *Eugene Aram* show how criminals may regenerate themselves through development of the best in their own characters. *The Last Days of Pompeii, The Last of the Barons*, and *Harold* sought to revive the historical novel and became as popular as Scott's fictions. His plays, *The Lady of Lyons* and *Money* long held the stage as studies of society. All his work is vivid, energetic, and serious.

BUNIN, IVAN ALEXEYEVICH (1870–). Russian translator, poet, and novelist. Both his own poems and his translation of Longfellow's *Hiawatha* were awarded the Pushkin prize, highest literary award in Russia. Translated also Byron's *Manfred*, Tennyson's *Lady Godiva*, and other poems from the English. His own poetry is descriptive, vivid in color, and correct in form. Best known of his prose are *The Village, A Gentleman from San Francisco, Suchodol, An Evening in Spring, Dreams of Chang and other Stories*, the last in English translation being best known.

BUNNER, HENRY CUYLER (1855–1896). American author of short stories and graceful poems. *Short Sixes* and *More Short Sixes* contain clever, witty, and captivating tales, many of them of the surprise variety.

BUNYAN, JOHN (1628–1688). English reformer, preacher, and allegorist. His *Grace Abounding*, an autobiography, contains realistic writing worthy of a Defoe, with intense religious and moral convictions as well. His *Holy War* has been called the most perfect or most elaborate allegory in our English prose; his *Pilgrim's Progress*, a great work of English puritanism, appeals to all for its vivid conception of types of persons, its vivid allegory, and moral earnestness. For refusing to stop preaching contrary to law, he was imprisoned for twelve years, and wrote much of his work while in jail at Bedford, England.

BURGER, GOTTFRIED AUGUST (1747–1794). German poet whose *Lenore* (1773) revived interest in the ballad and set a new vogue, widely imitated in England and elsewhere. Translated by Walter Scott.

BURKE, EDMUND (1729–1797). Irish orator, philosopher, and patriot. His analysis of political conditions was fair and keen. Sympathized for a time with the Revolution in France, and with the American colonists as Englishmen endowed with love of freedom. His *Essay on the Sublime and Beautiful*, long a model for such works, especially in Germany, is now considered of little real value. His *Conciliation with the American Colonies* is still regarded as a type of argument at its best. Being a Whig in politics, and a member of the minority, Burke never attained to an office commensurate with his great talents; and yet his influence was profound, especially that of his printed essays, speeches, and treatises.

BURNETT, FRANCES HODGSON (1849–1924). Though once a prolific and famous author of books for children, Mrs. Burnett is now remembered regretfully by some victims for having set the style of good manners for children in the drawing room in her model character, *Little Lord Fauntleroy*. Born in England, lived in Tennessee for a time, and married an English surgeon, Stephen Townsend, for her second husband.

BURNS, ROBERT (1759–1796). National poet and idol of the Scots, in spite of his faults of training and life. Born near Ayr, Scotland; died at Dumfries. Worn down in youth by hard toil on the farm, disheartened because of his failure to wrest a living from the soil, erratic but fervent, honest, and independent in genius, Burns has been rather pitied than censured. His songs and poems breathe the air of his native land. *The Cotter's Saturday Night* represents the home life at his best; *Scots wha Hae*, stirring national ideals; *Highland Mary* and *To Mary in Heaven*, Burns himself as a true lover; *Auld Lang Syne, My Heart's in the Highlands, Sweet Afton, Highland Laddie* show him as a song writer; *To a Mouse* and *The Wounded Hare* show him as kind to animals; the *Address to the Unco Guid*, and *Holy Fair* show him as a foe to false religion; and at last his *A Man's a Man for a' That*, the disheartened poet as honest, independent, and trying hard not to envy the rich. Of his genius, genuine poetic inspiration, and natural kindness no doubt remains; the only puzzle is how to explain the man, torn by so many conflicting emotions and experiences,—his own worst foe. See ENGLISH LITERATURE.

BURROUGHS, JOHN (1837–1921). American naturalist and essayist of great originality and penetration. *Birds and Poets, Indoor Studies, Bird and Bough* are among his best volumes. Always a champion of sincere and honest observation of animals, he precipitated a controversy in 1904 by an attack on certain "nature fakers."

BURTON, ROBERT (1577–1640). English author of *The Anatomy of Melancholy*, a voluminous work peppered with hundreds of quotations from foreign authors, mainly the classics. Style has been called "literary smallpox." Discussed the sources, causes, and remedies for all types of melancholy; remarks on "Love Melancholy" curious and intriguing.

BUTLER, SAMUEL (1612–1680). Author of *Hudibras*, a satirical poem in loose rimed verses, 20,000 lines in length, ridiculing the Puritans, full of

ridiculous situations, curious allusions, bad rimes, and a thread of story which is the least merit of the whole. Butler excels in making characters render themselves grotesque, ridiculous, and despicable. Scores of familiar quotations come from this poem.

BYRON, GEORGE GORDON BYRON, 6th BARON (1788–1824). Long regarded as a foremost poet for the resolute and independent character of his own heroes, most of whom were reflections of himself. Posed as the man mistaken and baited by a cruel and bigoted public; in reality he was selfish and ungrateful, treating even his best friends at times with shameful thoughtlessness. *The Prisoner of Chillon* charmed by its picture of the despair of a condemned man for years held prisoner in a dungeon having but one single ray of light. *Childe Harold*, a rambling account of a tour in Europe, contains many noble descriptive passages. His dramas show a titan struggling always against the gods of custom and restraint. Goethe said, "When Byron reasons he is a child," and this is probably true; and yet he was for years the idol of the literary world. See ENGLISH LITERATURE.

CABELL, JAMES BRANCH (1879–). Author of a series of biographical novels showing generations of characters with irony, beautiful description and sentiment, and literary charm. Part of the series are *Beyond Life, Chivalry, The Line of Love, The Cream of the Jest.*

CABLE, GEORGE WASHINGTON (1844–1925). American author of stories of creole life in old New Orleans. Lived for many years there and after 1886 at Northhampton, Mass. *Old Creole Days* (1879) was his first and some think his best collection of tales. Local color, romance, the older régime are rendered most alluring. *Strange True Stories of Louisiana* have also great vividness and charm. His novel *The Grandissimes* (1880) is darkened by the memory of customs and prejudices incident to the struggle against slavery. Pathos and heroism of simple folks are rendered fascinatingly.

CADMON (*kăd'mŏn*) (fl. 670). Mentioned by Bede in his *History* as author of a hymn, fragments of which are extant. *Genesis, Exodus, Daniel*, and other Old English poems are attributed to him, but scholars are still debating whether they are his or works by his pupils and successors. Called "father of English song." Bede's legend states that Cadmon, an unlettered cowherd, at Whitby who left the feast because he lacked skill in improvising according to custom, was visited by an angel in the stable who commanded him to sing and inspired him. Afterward he became a learned monk.

CAINE, THOMAS HENRY HALL (1853–1931). Went from Cheshire to London to live with the poet Rossetti, and his first work in 1882 was *Recollections of Rossetti*. Three years later began a series of stirring tales, some dealing with the Isle of Man. *The Deemster, The Manxman, The Christian, The Eternal City* are important. All these were dramatized, the last of them with considerable success in 1902 by Beerbohm Tree.

CALDERON DE LA BARCA, PEDRO (1600–1681). Eminent Spanish dramatist of 120 regular plays and 60 religious sketches. Served in the army, and became a churchman, canon of Toledo. Master of stagecraft, but philosophy blurs some of his art. *El mayor monstroso los celos* (No Monster Like Jealousy), *La dame duende* (The Fairy Lady), *El Alcalde de Zalamea* (The Mayor of Zalamea) have received great praise.

CAMDEN, WILLIAM (1551–1623). English historian, whose two Latin works *Britannia* and *Annals of the Reign of Elizabeth* are valuable sources of our knowledge of the past.

CAMOENS (*kăm'ô-ĕns*), **LUIS DE** (1524–1580). Great epic poet of Portugal, author of the *Lusiad*. His love sonnets, some perhaps autobiographical, are noble and delightful. After service in the army, including a turn in India, and some years at Macao, was shipwrecked on his return, saving his epic as he swam to shore at Cambodia, and finally died of the plague at Lisbon. His *Lusiad* (narrative of the Portuguese people) is original, details contemporary rather than past events, is shorter than most epics and more perfect in structure than modern ones, unless it be Milton's, and majestic and fluent in style and diction.

CAMPBELL, THOMAS (1777–1844). Scotch poet whose *Pleasures of Hope* (1799) pleased because devoted to common affairs of men of the day. Spent years collecting his *Specimens of English Poets*, finally issued in 1819, with biographical and critical notes, an admirable undertaking. His *Gertrude of Wyoming*, a narrative in Spenserian stanzas, celebrated emigration and events of settlers in the Wyoming Valley, Pennsylvania. Some of the most stirring patriotic songs in English are his *Battle of the Baltic, Hohenlinden, Ye Mariners of England*, and *The Soldier's Dream.*

CAMPBELL, WILLIAM WILFRID (1861–1919). Canadian poet of nature and patriotic lyrics. Was successively a minister and civil employee. Wrote *Beyond the Hills of Dream* and *Collected Poems* (1905) and *Poetic Tragedies* (1908). Compiled *Oxford Book of Canadian Poetry.*

CAMPOAMOR Y CAMPOOSORIO, RAMON DE (1819–1901). Spanish artistic and philosophical poet known for creating a species called *doloras* from the title of a collection in 1846. Wrote some dramas without special merit, some exquisite early lyrics, and several books of philosophy. See SPANISH LITERATURE.

CANFIELD, DOROTHY. See FISHER, DOROTHY CANFIELD.

CANTU, CESARE (1804–1895). Italian prose author, whose novel, *Margherita Pusterla* was written in an Austrian prison by using a toothpick for pen and candle smoke for ink. His *Storia Universale* (1838–1846) in 35 volumes attempts world history with some success.

CARDUCCI (*kär-dōōt'chē*), **GIOSUE** (1836–1907). Italian poet who imitated old Roman forms, but dealt with modern Italian subjects. His best are *Decennali, Nuove Poesie*, and *Odi barbare.*

CARLYLE, THOMAS (1795–1881). Scotch philosophic prose author and historian; original in style and thought, but often biased and capricious. *Life of Cromwell, The French Revolution*, lively and picturesque, and *Frederick the Great*, his most laborious series of volumes, are his chief historical works. *Sartor Resartus* shows his interest in German philosophy; it contains many notable passages of argument, keen thinking, and comment on life as a struggle. *Past and Present* and *Work* illustrate his doctrine of labor as an everyday gospel. His married life with Jane Welch, as to whether it was really happy or not, has aroused much comment. After her death he felt deeply grieved, lonely, and some claim remorseful because he had not been more sympathetic. See ENGLISH LITERATURE.

CARMAN, BLISS (1861–1929). Canadian poet; lived in United States after 1892. Influenced by Browning and Matthew Arnold, he wrote many beautiful nature lyrics, some of which are *Low Tide at Grand Pré, Pipes of Pan, Daughters of Dawn, April Airs, Later Poems.*

CARROLL, LEWIS (1832–1898). Pen name of Prof. Charles Lutwidge Dodgson, lecturer in mathematics at Oxford. Under his own name he published works in geometry, calculus, and other higher mathematics. As Lewis Carroll he wrote *Alice in Wonderland* (1861), an English masterpiece of peculiar humor which has pleased three generations of children, followed by *Through the Looking-Glass* (taken literally), *The Hunting of the Snark*, and *A Tangled Tale.*

CARY, ALICE (1820–1871), and **PHOEBE** (1824–1871). Wrote jointly a volume of *Poems*, long popular in America. Alice wrote many prose works also. Poe praised her poem, *Pictures of Memory.* Phoebe wrote the hymn beginning, "One sweetly solemn thought," and also two volumes in 1854 and 1868.

CASTIGLIONE (*kās'tē-lyō'nē*), **BALDASSARE** (1478–1529). Italian gentleman and bishop. *Il Cortegiano* (translated as *The Courtier*) was written in 1514, but not published till 1528; rendered into English about 1561. This work in form of a discussion in the drawing room of a duchess explains the views of various speakers as to the qualities and education of a perfect courtier. It throws much light on the customs and ideals of the Renaissance, but in some respects seems remarkably modern. Samuel Johnson pronounced it "the best book that was ever written upon good breeding."

CATHER, WILLA SIBERT (1876–). American novelist of pioneer life. Style beautiful, somewhat restrained, but her inspiration is even and effective. *One of Ours* (1922) tells the story of a Western boy in the World War. *A Lost Lady* (1923) penetrates

into the secret of a woman's charm and tragedy. *Death Comes to the Archbishop* (1927) is a vivid story of the arid Southwest. *Youth and the Bright Medusa* (1920), a collection of short stories, has no little originality and force.

CATLIN, GEORGE (1796–1872). Artist and author of books on Indian and pioneer subjects in America. Spent several years learning Indian languages in North and South America. His *Manners of the North American Indians* contains 300 engravings to illustrate the text. *The North American Portfolio* has 25 plates of hunting and other scenes of the West.

CATO, DIONYSIUS (3rd or 4th century). *Disticha*, a small collection of moral sayings, attributed now to him, was extremely popular in the Middle Ages. Translated into many languages; often mentioned by Chaucer; printed by Caxton in 1483 in translation.

CATS, JAKOB (1577–1660). Immensely popular Dutch poet and humorist. His *Emblems* set a new style of writing. Other works are *Maiden Duty, Marriage, Fidelity, Age and Country Life*. Twice visited England, once to seek medical advice regarding a fever, which was finally cured in Holland by a wandering quack, and once on a diplomatic mission.

CATULLUS (*kă-tŭl'ŭs*), **GAIUS VALERIUS** (84?–54 B. C.). Great Roman lyric poet whose numerous tributes to his beloved Lesbia attain a high rank for sincerity and depth of emotion. His disillusionment, on finding her unworthy of his affection, is touching even to a modern. Also translated or adapted several older authors in parts.

CAVALCANTI, GUIDO (c. 1250–1300). Florentine author of love sonnets in honor of a French lady, Mandetta. Friend of Dante, and by marriage became head of Ghibellines. Best poems translated by Rossetti in his *Dante and His Circle*.

CAVENDISH, GEORGE (1500–1562?). Confidant and biographer of Cardinal Wolsey. His work was written finally about 1557, but was not published in its authentic form till 1810, though a garbled version appeared in 1641. One of our first and best biographies, the source of much information about the period, not otherwise obtainable.

CAXTON, WILLIAM (c. 1422–1491). First English printer, edited and translated several works; wrote a few original ones. Translation of the French version of the *Recuyell of the Historyes of Troye* printed at Bruges in 1474 or 1475. The second printed book in English was *The Game and Playe of Chesse*, 1476. Established his press at Westminster (London) in same year. Printed Chaucer's *Canterbury Tales, Troïlus and Creseide, House of Fame*, and the translation of Boethius, Gower's *Confessio Amatis*, and several poems by Lydgate, as well as Malory's *Morte d'Arthur*. Printed 18,000 pages, much of which was his own translation, 96 separate works, with little skilled help. See ENGLISH LITERATURE.

CAZAMIAN, LOUIS (1877–). French critic and professor of English at the Sorbonne, Paris. His works include *A History of Civilization in England, Modern England, Carlyle*, and (with M. Emile Legouis), *History of English Literature*.

CERVANTES (*sĕr-văn'tēz*) **SAAVEDRA, MIGUEL DE** (1547–1616). Spanish author educated at Salamanca and Madrid. Lost use of left hand in military service for Romans. On return to Spain in 1575, captured by Moors and held captive at Algiers for five years, until ransomed by payment of 500 gold ducats. After this gave himself to literature. *Galatea* (1585) is a pastoral novel in the older manner of Sannazaro. Several plays were coldly received. His immortal work, *Don Quixote*, long in process of writing, in part was issued in 1605 and ran through four editions the first year. No book of his time save Aleman's *Guzman de Alfarache* was more celebrated and imitated. Translated into English in 1612, into French 1614. The second part was issued in 1615. Several spurious imitations appeared at different times. His *Moral Tales* (1613) are artistic and truthful to life and character of his day. These 12 stories alone would have made his name immortal. Cervantes in *Don Quixote* ridiculed by burlesque example the fanciful and exaggerated romances of chivalry. As a travesty its success was total, for works he found unreal beyond all semblance to actual life or character were laughed off the stage by his realistic treatment of old romance. The crack-brained knight and his simple squire have taken highest rank among the world's literary entertainers. Cervantes set a new style in both fiction and drama.

CHAMBERS, ROBERT (1802–1871). Scotch antiquarian, publisher, and author. Journals, cyclopedias, and biographical dictionaries bearing his name were long standard works. *Domestic Annals, Book of Days*, and *Vestiges of the Natural History of Creation*, which some claim antedated a few of Darwin's theories, are his chief original contributions. Assisted by his brother William (1814–1883).

CHAMBERS, ROBERT WILLIAM (1865–1933). American author and artist. Gave up illustrating for humorous journals to write novels, some of which are *Ashes of Empire, The Firing Line, The Tree of Heaven*, and *Slayer of Souls*, and also two dramas, one based on Scott's *Guy Mannering*.

CHAMISSO (*shä-mĭ'sō*), **ADELBERT VON** (1781–1838). German author and botanist. Besides interesting scientific works, his narrative of *Peter Schlemihl*, the story of the man who lost his shadow, found its way into most European languages. His lyric poems have great felicity of expression and deep feeling.

CHAPMAN, GEORGE (c. 1559–1634). English translator and dramatist. His rendering of Homer, though in some points too ornate and romantic, still remains a noble monument to the revival of interest in the classics in the age of Elizabeth. It inspired one of John Keats's best sonnets. *Eastwarde Hoe* (1605), to which Jonson and Marston contributed, is a fine play of London life. Chapman's best single work is the tragedy of *Bussy D'Amboïs*.

CHAPMAN, JOHN JAY (1862–1933). American essayist and critic of great originality and independence. Known for *Emerson and other Essays, William Lloyd Garrison, Greek Genius, A Glance Toward Shakespeare, Letters and Religion*.

CHATEAUBRIAND (*shă-tō-brē-ōn*), **FRANCOIS RENE** (1768–1848). French romantic author in transition from old to new type of writing. His works are all picturesque, sometimes poetic, and usually incisive. *Natchez* describes the American Indians after he lived in America for 7 months in 1791. *Paul and Virginia* has been much read in the schools for its style and coloring. *Atala* and *René* set the fashion in description form. He translated *Paradise Lost*, and wrote at last his *Memoires*, now his most read work.

CHATFIELD-TAYLOR, HOBART C. (1865–). American man of letters, educated in France. Decorated by various countries. Wrote *The Land of the Castanet, The Idle Born, Molière, Chicago, Cities of Many Men*.

CHATTERTON, THOMAS (1752–1770). Eccentric lad of Bristol, England, who forged a series of manuscripts, went to London to make his way in literature, and, after living in a garret for about two months, took his life by poison. His forgeries he attributed to a wholly imaginary monk called Rowley. Certain poems by Chatterton show that he was a powerful genius and might have become a great name in our literature. Long a puzzle to critics, he perhaps should be judged in the light of his own dictum on the monument erected later in Bristol—"To the Memory of Thomas Chatterton. Reader! Judge not. If thou art a Christian, believe that he shall be judged by a Superior Power. To that Power only is he now answerable."

CHATRIAN, ALEXANDRE. See ERCKMANN-CHATRIAN.

CHAUCER (*chô'sĕr*), **GEOFFREY** (c. 1340–1400). English poet. Acted as agent of the crown on various occasions and received several pensions. His works divide into three periods. First, is a translation of the *Romance of the Rose* from the French, and the *Book of the Duchess*, one of his best poems. Second, *Troïlus and Criseyde, Palamon and Arcite*, both taken from Boccaccio and embellished as only Chaucer could. Third, *Canterbury Tales*, his masterpiece. These are only a few of his compositions. The *Tales* give us the living persons, color of the time, humor and gentle satire, together with some homely philosophy of the author himself. The stories of the so-called "frame" type were told by a group of about 30 pilgrims from London to the shrine of St. Thomas at Canterbury. Each traveler was to tell two stories going and two on the return journey, but only 20 and 4 fragments were composed. Chaucer improved the language, established a native style of writing, popularized much of the best of other literatures, drew characters true in every detail, and looked at life so shrewdly but without cynicism that he is one of the great story tellers of all time.

CHEKHOV (*chĕ'kôf*), **ANTON PAVLOVICH** (1860–1904). Russian dramatist and writer of short

narratives. Plays like *Uncle Vanya, The Three Sisters,* and *The Cherry Orchard* are well known, but he is better remembered by his psychological stories *The Chorus Girl,* a fine masterpiece, *A Dreary Story, The Teacher of Literature, Peasants, The Lady with the Dog,* and *The Bishop.*

CHENIER, ANDRE DE (1762–1794). Adapted French poems to the classic manner; wrote some political pieces; died by the guillotine during the Revolution. *La jeune Tarentine* is a charming poem; so is the *Jeu de Paume,* a moral ode addressed to the painter David; but his best, *Jeune Captive* and the *Iambes,* belong to the 141 days of his imprisonment before execution. His brother, Marie-Joseph (1764–1811), is an inferior genius, though rather prolific. His *Henry VIII,* a drama, a history of French literature, some hymns and songs are still recalled.

CHESTERFIELD, PHILIP DORMER STANHOPE, EARL OF (1694–1773). His *Letters to his Son,* established a vogue for politeness and the art of getting on, for two generations. They are of the worldly-wise type, with sturdy conventional advice on morals and etiquette.

CHESTERTON, GILBERT KEITH (1874–1936). English author, keen in penetration and clever in criticism; called a "master of paradox." Wrote on many subjects. Some of his best works: *Charles Dickens, Hereticks, What's Wrong with the World; The Man Who Was Thursday, The Man Who Knew Too Much, Victorian Age in Literature.*

CHURCHILL, WINSTON (1871–). American author, born in St. Louis; lived later in New Hampshire. His novel, *Richard Carvel* (1899), a story of Maryland in the Revolution, sold nearly a million copies altogether. Other successes were *The Crisis, A Modern Chronicle, The Inside of the Cup,* the last two novels of problems in American life.

CIBBER, COLLEY (1671–1757). English actor and dramatist; engaged in numerous controversies in literature. Attacked by Pope in the *Dunciad* as the prince of dunces, but he was everything but that. Poet laureate. His *Apology* tells of his own life and defends the stage against Collier's charge of immorality.

CICERO, MARCUS TULLIUS (106–43 B. C.) Roman orator and statesman. Put to death by the Triumvirate—Octavius, Antony, and Lepidus. For putting down the conspiracy of Cataline, he was called "father of the country." Best known for his Philippics against Antony, Cataline, and others. As orator was given to puns, pathos in excess ("tear-drops" they said of him), sharp invective, and great polish of style. In his work on oratory he favored rhythm and musical effects. Late in life, after holding several military and civic offices, he tried to retire to his studies. He wrote essays on the gods, the supreme good, and notably on old age (*De Senectute*).

CLARK, CHARLES COWDEN (1787–1877). Editor and lecturer; friend of literary men like Shelley, Hunt, the Lambs. Married Mary Victoria Novello, sister of his partner. His lectures on Shakespeare made him celebrated. She is best known for the *Concordance to Shakespeare,* a valuable work still. Together they compiled several books, such as *Shakespeare's Characters, Molière's Characters, The Shakespeare Key.*

CLEMENS, SAMUEL LANGHORNE. See TWAIN, MARK.

CLOUGH (*kluf*), **ARTHUR HUGH** (1819–1891). Scholarly and reflective English poet. Experimented with hexameters or six-stress lines in *Toberna-Vuolich* (1848); wrote *Ambervalia* (with Thomas Burbidge), short lyrics, one novel, and a satire. *Thyrsis* was written by Matthew Arnold to commemorate Clough.

COBBETT, WILLIAM (1763–1835). Radical and English author. Wrote many controversial pamphlets, *Life of Peter Porcupine,* his own defense against those who made light of his early environment, *Grammar of the English Language,* for young uneducated workmen, *Rural Rides,* observations on the country and life there, *Advice to Young Men,* and many others. Carlyle called Cobbett "the pattern John Bull of his century." Did some practical gardening and farming.

COLERIDGE, SAMUEL TAYLOR (1772-1834). English philosopher and poet. With Wordsworth, Shelley, and Keats, leader of the Romantic Revival. Classical scholar at Cambridge, but did not graduate; enlisted under assumed name, but his brother got his honorable discharge after four months. He and poet Southey married sisters named Fricker. Coleridge settled near Wordsworth, and in 1798 they issued the *Lyrical Ballads,* at Bristol, England. His *Ancient Mariner,* best known poem of the volume, is one of the great works in our language for vividness of imagination, beauty and music of diction, power of concrete details, and romantic mystery, with moral sentiment. His *Kubla Khan* is pure music, a glorious fragment, mystical and vigorous. As a conversationalist Coleridge was well-nigh marvelous. Coleridge's last years were spent in the home of Dr. Gillman at Highgate, who treated him successfully for the opium habit.

Of three surviving children of Coleridge, Sara (1802–1852) became an author of note, known principally as a translator; Hartley (1796–1849) wrote many fine sonnets and edited the plays of Massinger and Ford; and Derwent (1800–1883) became a noted educator, leaving two children who in turn entered literature.

COLLIER, JEREMY (1650–1726). Clergyman whose *Short View of the Immorality and Profaneness of the English Stage* drew replies from several dramatists, but Dryden admitted that he was partly justified, though he greatly exaggerated.

COLLINS, WILLIAM (1721–1759). English poet known for his odes on *Popular Superstitions of the Highlands, The Passions, Music,* and *Simplicity.* His poem *To Evening* is a noble instance of unrimed verse made musical by delicate arrangements of words. Helped introduce the new romantic poetry.

COLLINS, WILLIAM WILKIE (1824–1889). Once very popular English novelist, now somewhat superseded, except possibly for his *Woman in White* and *The Moonstone,* which rank among the great mystery stories. Count Fosco, his detective character, is interesting, human, and more attractive than many such today in detective literature.

COLONNA, VITTORIA (1490–1547). Italian marchioness; wrote many *Rime spirituali* and several elegies. Friend of Tasso, Michelangelo, who addressed her in sonnets, Castiglioni, Cardinal Pole, and other churchmen.

CONGREVE, WILLIAM (1670–1729). Called by many the greatest English comic dramatist. His *Way of the World,* though not appreciated for its true worth at first, still retains its vogue as a clever, true, and facile picture of the age (1700). Two years earlier he tried rather lamely to reply to Jeremy Collier (q. v.), who charged the English stage with gross immorality. Yet his own play refutes the charge. Other works are *The Old Bachelor* and *Mourning Bride.*

CONNOLLY, JAMES BRENDAN (1868–). American author of sea tales; lived in Boston. Won first Olympic championship in modern times at Athens. Followed the sea. Among his books are *Out of Gloucester, Crested Seas, Sonny Boy's People, Book of Gloucester Fishermen.*

CONNOR, RALPH; pseudonym for Rev. Charles W. Gordon (1860–1937). Clergyman in Canada; has served on several imperial commissions. Author of interesting religious books, such as *Black Rock, Sky Pilot, The Major, The Sky Pilot in No Man's Land.* Chaplain in World War.

CONRAD, JOSEPH (1857–1924). Born in Poland, became a master in English merchant marine; learned the language by himself through his love for Shakespeare, Dickens, Cooper, and Marryat first read in Polish. Finally became a British subject. *Almayer's Folly* was written between 1889 and 1894. Then followed a remarkable series of tales of the sea, grim, terrible, the foe of man—25 stories in all. His *Youth* (1902) contains three short narratives of compelling genius and perfect technique. *Typhoon* describes the fury of the storm at sea. *Lord Jim* is the story of a man who heroically saved his soul but lost his own life. *Chance* (1914) brought him great fame. It answers those who say his work is too fatalistic. Others are *Victory, The Arrow of Gold, The Rescue,* and *The Rover,* all more like other novels in style and form, and yet still distinctively Conradian. His English is faultless almost, his manner reserved and dignified, his power to picture, and to arouse emotions is of high order.

COOKE, ROSE TERRY (1827–1892). New England author of realistic and droll stories and descriptions of village life. *Root-bound, Somebody's Neighbors, Huckleberries Gathered from New England Hills* are among her best volumes.

COOPER, JAMES FENIMORE (1789–1851). American novelist, born in New Jersey, died at Cooperstown,

N. Y. Served six years at sea. *The Pilot* is a romanticised account of some adventures of John Paul Jones; it is true to sea-life, character, and events in the main—a new type in America. The legend is that Cooper was displeased with Scott's knowledge of seacraft as shown in his *Pirate*, and sought to better his methods. His *Leatherstocking Tales* include such works as *The Pioneers, Last of the Mohicans*—his most popular book now—*The Pathfinder, Prairie* and *Deerslayer*. Critics assert that his Indians are either too good or too bad, that he has wax dolls instead of women in his books, and that his knowledge of lore of the forest even might be questioned. Yet his stories stir the young and probably give as interesting a picture as we have of the pioneer life in New York and adjacent territory. His *History of the Navy* brought him fame and criticism both, but it is still a standard work.

COPPEE, FRANCOIS (1842–1908). French poet of the peasant life and type. Wrote many volumes, including *Le Reliquaire, Les Intimités, Les Humbles, Olivier*. His dramas *Severo Torelli* and *Pour la couronne*, the latter produced in English in 1896 by John Davidson, were once very famous. Took prominent part against Dreyfus.

CORELLI, MARIE (1864–1924). Adopted daughter of Charles Mackay, English song-writer and dramatist. *Romance of Two Worlds*, a fantastic descriptive story, which with other novels gave her tremendous vogue for many years. Many of her writings were controversial, and some were in bad taste and grotesquely melodramatic. Yet she was sincere and capable. *The Sorrows of Satan, The Master Christian*, and *Barabbas* are some of her stirring romances. Interested in music.

CORNEILLE (*kŏr-nāy'*), **PIERRE** (1606–1684). Greatest of French dramatic poets, educated at Rouen, practiced law for a brief time, and entered literature by dramatising an incident of his own life. His *Cid*, another play, acted with tremendous success in 1636, aroused a storm of jealousy and protest. Finally, in his *Discours* and *Examens* Corneille explained his principles of composition and tried to defend himself. These are able works of criticism. *Oedipe, Horace, Pompée, Andromède* are some of his dramas.

COUPERUS, LOUIS (1863–1923). Dutch novelist; lived in East Indies as a boy, where his father was an official. At first influenced by Tolstoy. Wrote many prose poems, and the "Books of the Small Souls" or, in English, *The Small Souls, The Later Life, The Twilight of the Soul. Old People and the Things that Pass, Dionyzos, Herakles*, the last two based on classical researches, placed him among the great novelists of the century.

COWLEY, ABRAHAM (1618–1667). Regarded once as greatest English poet of his age; now hardly read. His essays contain some noble passages; but his verse now seems artificial and insipid. Wrote a form he called *Pindarique Odes*, but they are not like those of Pindar. Among his love verses, *The Mistress* gained high fame, as an amorous poem of the customary type. A royalist, he spent about fifteen years of exile in France.

COWPER, WILLIAM. English didactic poet; wrote several hymns still sung; also great letter writer; and made a noble translation of Homer. His *John Gilpin* is one of our great humorous pieces. *The Task* introduces us to humble life of the age, with a fine philosophy and great powers of concrete and interesting description. His ballad *The Loss of the Royal George* is known to every Englishman as a sincere and pathetic lyric. See ENGLISH LITERATURE.

CRABBE, GEORGE (1754–1832). First tried surgery and at last became a clergyman. Knew the conditions of the daily laborer. His poem *The Village* shows the hard life of real toil without any romantic flourishes such as we read in Goldsmith's *Deserted Village*. He was an unflinching realist, and as such gives us much insight into common life of the period.

CRADDOCK, CHARLES EGBERT (1850–1922). Pen name of Miss Mary N. Murfree of Tennessee. In her stories we have the romance, superstition, independence, and sturdy honor of the mountaineers. A master of dialect; knew her people thoroughly. Best works are *In the Tennessee Mountains, The Prophet of the Great Smoky Mountains, Phantoms of the Footridge, Mystery of White Face Mountain*.

CRAIK, DINAH MULOCK (1826–1887). Besides her delightful poems for children, Mrs. Craik wrote one novel, *John Halifax, Gentleman*, a tale of sturdy honesty which still places her in the front rank of women authors. Her husband was G. L. Craik of the Macmillan Company.

CRANE, STEPHEN (1870–1900). American journalist and writer. His *Red Badge of Courage* is a fine picture of heroism during the Civil War. *The Open Boat*, a vivid account of his own shipwreck and perils at sea, has been called by H. G. Wells "the finest short story in the English language." Wrote some free verse. War correspondent and adventurer; died early as result of privations and shipwreck.

CRASHAW, RICHARD (1613?–1649). English religious poet and mystic. Admired by Milton. *Steps to the Temple* is his greatest effort.

CRAWFORD, FRANCIS MARION (1854–1909). American author; son of Thomas Crawford the sculptor; nephew of Julia Ward Howe. Educated at Cambridge, Heidelberg, and Rome; lived in Rome after 1883. Treated Italian life and scenery romantically. Among his picturesque and vivid stories touched with some mysticism are *Mr. Isaacs*, the story of an oriental who loved an English lady, *Saracinesca, Via Crucis, In the Palace of the King*.

CREASY, EDWARD SHEPHERD (1812–1878). Historian and judge; born in Kent, England; chief justice of Ceylon. His best known work today is the *Fifteen Decisive Battles of the World*.

CREVECOEUR (*krēv"kūr'*), **MICHEL-GUILLAUME JEAN DE** (commonly called Hector St. John) (1735–1813). Born in France; became American citizen and wrote a rosy picture of life and opportunities in the new world, *Letters of an American Farmer*. Lived in New York; later consul. Assisted in Revolution, and in securing French immigration.

CROCKETT, SAMUEL RUTHERFORD (1860–1914). Scotch story writer, known for his humor, pathos, and good descriptions of young life. *The Sticket Minister* (1893) is one of his best; and his accounts of Gibby the Eel, as his classmates called an interesting student and minister, are very droll.

CROSBY, FANNY J. (1820–1915). Born in Putnam County, N. Y., lived in New York City, and Bridgeport, Conn. Wrote eight thousand hymns. Blind from six weeks of age; had most remarkable memory for names and events. Educated at New York Institution for the Blind, where she also taught for 11 years, till her marriage to Alexander Van Alstyne in 1868 (d. 1902). After publishing three books of verses, she turned to hymn writing in 1864, and continued to be associated with men like William B. Bradbury, W. H. Doane, Ira D. Sankey, H. P. Main, George C. Stebbins, and William J. Kirkpatrick all her life. Used more than 100 pseudonyms. For years addressed religious audiences in eastern states. *Memories of Eighty Years* published in 1907. Some hymns are *Rescue the Perishing, Safe in the Arms of Jesus, Blessed Assurance, Saved by Grace*.

CROTHERS, SAMUEL McCHORD (1857–1927). Unitarian clergyman and author of Cambridge, Mass. Author of many genial essays published in books entitled, *The Gentle Reader, The Pardoner's Wallet*, and *The Endless Life*.

CURTIS, GEORGE WILLIAM (1824–1892). American editor, essayist, and reformer. Wrote for various magazines, including the "Easy Chair" department of *Harper's Monthly*, and as political editor of *Harper's Weekly*. Offered many political appointments, but declined all. Leader in civil service reform movement. *Potiphar Papers* are humorous satires on fashions; *Prue and I*, a tender, humorous, and delightful collection of essays.

CYNEWULF (*kin'i-wulf*), **CYNWULF** (fl. 9th cent.). Only Old English vernacular poet known surely by name. Four poems are found in the *Exeter Book* and *Vercelli Book*, written in 11th century. They are signed by the runes or letters which make up his name. His undoubted works include *Juliana*, on the martyrdom of an early saint; *Elene*, on the discovery of the true cross by Empress Helena—based in part on a Latin original—*Fates of the Apostles*, and the *Ascension*. Several others assigned to him, but belong to pupils or imitators.

DA COSTA, ISAAK (1798–1860). Dutch poet and writer on theology. Earliest leader of romanticism among poets of his time. His chief works are *Poezy, Alphonsus I*, a tragedy, *Hagar*. He translated *The*

Persians and *Prometheus* of Aeschylus; edited works of Bilderdijk, greatest contemporary poet of Holland.

DALIN, OLOF VON (1708–1763). Greatest Swedish poet of his period. Born in Holland; acted as tutor to crown prince, afterwards Gustavus III. His satiric allegory, *Story of a Horse*, inspired many imitations. Wrote six volumes of criticisms and comments on literature, a didactic poem called *Swedish Liberty*, and his great work, *History of the Swedish Kingdom*.

DANA, CHARLES ANDERSON (1819–1897). Managing editor of the New York *Tribune*, served in War Department during Civil War, and moulded the policy and style of the *Sun* from 1868 to his death. His paper came to be known as the "Newspaper-man's paper," because of its journalistic terseness and sense of news values. Dana also wrote *The Art of Newspaper Making*, with George Ripley made *The American Cyclopedia*, and edited *Household Book of Poetry*.

DANA, RICHARD HENRY (1815–1888). His father was Richard Henry Dana (1787–1879), one of the editors of the *North American Review* and author of volumes of poems. His grandfather was an American statesman. R. H. Dana, Jr., to repair his health, shipped before the mast to California around Cape Horn, 1834–1836. Growing out of his experiences, his *Two Years Before the Mast*, became a classic of its type, still widely read in America and Europe. It led to some reforms in the Navy. He prepared a valuable edition of Wheaton's *International Law*, but became involved in lawsuits over this for 13 years. Other activities mainly political.

D'ANNUNZIO, GABRIELE. Listed under ANNUNZIO.

DANTE (*dăn'tē*) (or **DURANTE), ALIGHIERI** (1265–1321). Among the half-dozen supreme poets of all the ages. Born and lived in Florence till driven in 1302 to Siena. Took part in political and military affairs of the war between Guelphs and Ghibellines; expelled finally for resisting outside influences in Florence. Dante's *Vita Nuova* or *New Life* contains poetry with prose interpretations and comments; celebrates his love for one Beatrice, now supposed to be of the Portinari family. Though conventional in form, the situation and emotion may be real and sincere in the main. Later married one of the famous Donati family, which at last joined the opposing party in Florence. Left two sons and one daughter. Visited various places, possibly France, and lived last years in Ravenna. His *Divine Comedy*, as it came to be called, is epic in form, but lyric in many respects—a unique work of superb genius, imagination, and moral power. It details a vision of Dante's visit to Hell, where in different stages or circles he beholds some great men of the past, and punishment for all according to their deserts. Popes, warriors, politicians, rivals, emperors all appear in vivid and terrible pictures. He reserved honor for a few and mild punishment for the nobles and poets who lived before the Christian era. Virgil acts as his guide and instructor. Finally, Beatrice herself leads him to the supreme Heaven and God Himself. *Paradiso* is a concluding or sequel portion. The *Convivio* or *Banquet* and the Latin treatise *Monarchia* expound Dante's political ideas and glorify Rome as center of the world. Pope and emperor are supreme, but must obey the laws of God. In his love poetry he was influenced by Petrarch (q. v.). See also ITALIAN LITERATURE.

D'ARBLAY, FRANCES BURNEY (1752–1840). Wrote *Evelina*, the story of a young English girl's introduction to society; a fruitful source of knowledge of etiquette and customs of the period (1778). Miss Burney moved in the Johnson circle; married Alexandre D'Arblay, a French military exile. Her *Diaries* and *Letters*, next to Boswell's Johnson, throw much light on literary persons and some others.

DAUDET (*dō-dāy'*), **ALPHONSE** (1840–1897). Called by some the Dickens of modern French literature. *Le petit chose* tells with pathos and delicacy of his early struggles. His series of stories of *Tartarin de Tarascon*, showing his hero in the mountains, as a hunter, and as a colonist, take highest rank. Like Dickens a master of both joy and tears, but also urged by a sense of moral values. Some of his stories for children—notably *La Belle Nivernaise*, the tale of an old boat—are charming and still very much read. His wife, Julia Allard (with whom he was singularly happy) also wrote *Impressions of Nature and Art* and *Youth of a Girl of Paris*. Their son Leon (1867–) was known as a royalist and novelist, author of *The Voyage of Shakespeare* and *The Stupid Nineteenth Century*.

DAVENANT, WILLIAM (1606–1668). Succeeded Ben Jonson as poet laureate; wrote plays; managed Drury Lane theatre. His *Siege of Rhodes* is an early form of operatic drama, which he fostered and developed. His epic *Gondibert* was once widely admired.

DAVIS, RICHARD HARDING (1864–1916). Son of Rebecca Harding Davis (1831–1910) who wrote various stories, including *Life in the Iron Mills*, a realistic description, which Pattee calls "a glimpse into the hell of the Pittsburgh roller mills in the unrecorded days." Richard was correspondent in every major conflict from the Greco-Turkish (1897) to the World War. *Gallegher*, a local color newspaper story, *Van Bibber and Others*, accounts of a New York clubman who finds diversion in learning "how the other half lives," are among his best tales. *Notes of a War Correspondent* (1910), and *Somewhere in France* (1915) show the results of his many hazardous exploits in gathering news.

DAY, THOMAS (1748–1780). English leader of the "back to nature" movement in the period just before the Romantic Age of Burns, Coleridge, and Byron. *Sanford and Merlin* gave directions and examples for education of the young. His poem, *The Dying Negro* (1773) was an early outcry against slavery. Sympathized with America in the Revolution.

DEFOE, DANIEL (1661–1731). English pamphleteer and novelist. Engaged in several controversies, writing anonymously. His *True-Born Englishman* vindicated William III. against the prejudice that he was a foreigner; *Essay on Projects* contains many modern suggestions for civic improvements; *Shortest Way with Dissenters* is a satirical work which many took seriously, and he was pilloried in punishment, but his friends made his detention a holiday, and he afterward wrote his *Hymn to the Pillory*, to recall the occasion. Defoe wrote three books on phases of magic, and his wonderful *Apparition of one Mrs. Veal*, a realistic and "veracious" account of a ghost, is good reading today. The masterpiece *Robinson Crusoe* seems so probable and true that even adults find it easier to believe than many contemporary events. This reveals in greatest detail what Defoe called his facility of forging a tale and making it seem real,—his greatest quality, which had a profound and far-reaching influence on modern fiction. His *Journal of the Plague Year*, though largely fictitious, is still taken by many as a true account, and some libraries erroneously classify it as history.

DEKKER, THOMAS (c. 1572–c. 1632). Called by Ben Jonson a "dresser of plays"; compiled many dramas, including his most popular *The Shoemaker's Holiday*, based on Deloney's *Gentle Craft*, a series of sketches in honor of shoemaking. His *Gull's Hornbook* (primer) shows the life of a man of fashion in London day by day. *The Wonderful Year* describes the city during a plague.

DELAND, MARGARET WADE (1857–). Born Margaret Wade Campbell at Allegheny, Pa.; married L. F. Deland of Boston. Specialized in lively and delightful stories of village characters in *Old Chester Tales*, *Dr. Lavendar's People*, *New Friends in Old Chester*, and also her novels, *The Awakening of Helena Ritchie*, and *John Ward, Preacher*, tracing the soul struggles of young persons, all of which have been greatly appreciated.

DELAVIGNE (*dā-lā"vĭn'yā*), **JEAN FRANCOIS CASIMIR** (1793–1843). French patriotic poet and dramatist. *Messeniennes*, a collection of lyrics, and his song *La Parisienne*, with music by Auber, rivaled the *Marseillaise* in celebrity. *Louis XI.* and *Charles VI.* are his celebrated dramatic compositions.

DE MORGAN, WILLIAM FREND (1839–1917). Retired from the tile business at 65, and before his death at 78 wrote six novels, noted for simplicity, accurate observation, and character analysis. *Joseph Vance*, party autobiographical, *Alice-for-Short*, and *It Never can Happen Again* are highly praised by lovers of Dickens and the discursive novel of manners.

DEMOSTHENES (*dē-mŏs'thē-nēz*), (348 ?–322 B. C.). Greatest orator of ancient times. Ridiculed at first in public, he shut himself away from men and went through an elaborate discipline, during which he spoke with pebbles in his mouth (possibly to overcome an impediment in speech), against the sound of the waves of the sea, in an enclosed space, and under other adverse conditions. Then became known as greatest of his day in Athens. Prepared speeches and briefs in many law cases. Spent much

of his life vainly trying to rouse his countrymen against Philip of Macedon; hence his speeches are called *Philippics*, a name now applied generally to similar efforts. Banished for a time. For genuine patriotic fervor, unselfishness, love of Athens and of freedom, he has been cited through the ages as a world example. Of 60 orations, those of greatest influence were speeches *On the Peace, On Affairs in the Chersonese, On the Embassy*, and *On the Crown*, the last a noble and faultless defense of his own conduct, called by many critics the world's greatest oration.

DENHAM, JOHN (1615–1669). English royalist and poet. His paraphrase of part of the *Aeneid*, a tragedy called *Sophy*, and his *Cooper's Hill* are his chief works. Dryden called the last of these "the exact standard of good writing," and Pope imitated its descriptions in his *Windsor Forest*.

DE QUINCEY, THOMAS (1785–1859). Born in Manchester; educated at Oxford, tried law, and finally settled in the Lake District near Wordsworth. Wrote three types of works: first, like *Narratives* and sketches, designed to amuse; second, various scholarly and literary essays for magazines, to which he became a large contributor; third, his *Confessions* and *Suspira de Profundis*. He fought against the opium habit for many years, at times with success. The *Confessions* give an imaginative account of his struggles against the drug. This pathetic outpouring shows but one side of De Quincey. He could be satirical as in his *Murder Considered as one of the Fine Arts*, which might have been written in one of our own modern cities, he could be intensely imaginative as in *The English Mail Coach*, or dramatic and intense as in the *Joan of Arc*.

DESCHAMPS, EUSTACHE (1346?–1406?). Noted for historical and patriotic poems, his implacable hatred of England, and his *Miroir de mariage*, a satire in 13,000 lines of railing against women. He did much to give form to French poetry after the age of the troubadours.

DEUS, JOAO DE (1830–1896). Stands next to Camoens and Garrett in the esteem of the people of Portugal. Indifferent to fame and to politics, he wrote some satirical verses of great power, but his *Flores de campo, Ramo de flores*, and *Folhas soltas* are supremely artistic, beautiful, and refined. He also wrote much on education.

DIBDIN, CHARLES (1745–1814). British dramatic and lyric author, known best now for many popular songs, such as *Tom Bowling, Jock Ratlin, The Bells of Aberdovey, Saturday Night at Sea*, found in his musical plays *Liberty Hall* and *The Oddities*. His son, Thomas John (1771–1841) attained fame and fortune by his dramatic adaptations, pantomimes, and stage versions of the novels of Walter Scott. Of his 70 productions, not more than a half dozen were flat failures, and many were inordinate successes.

DICKENS, CHARLES (1812–1870). Eminent novelist, born at Portsmouth, England, son of a poor naval clerk. When hardly more than 11, while his father went to prison for debt, and the mother to try to earn a little by teaching (there were 8 children), Charles became apprenticed to a firm that made blacking. These years are brought into some prominence in his autobiographic *David Copperfield*, but even in adult life he recalled them with tears. From them arose his zeal to defend the young, the unfortunate, and the outcast. Early he learned to observe minutely, to see everything, and to remember scenes, faces, and unusual events. Learned much also as shorthand reporter and journalist. No modern author has a greater command of the grave and the gay alike. Though Dickens is accused of distorting out of all semblance, one at least recalls something like life and people in his books. The *Pickwick Papers*, finished in 1837, established him solidly in public regard. What child does not know Little Nell of the *Old Curiosity Shop*, the corner of London where she lived, and the fields where she went forth to wander and die! What red-blooded youth does not know about the historical romance of the *Tale of Two Cities*, and the horrors of the French Revolution! Or the boy and man Oliver Twist? Or that terrible house of shortcomings pictured in *Nicholas Nickleby*, the school of Squiers and his gang! Or Tiny Tim of the *Christmas Carol!* Though through these and many others, Dickens is known well as a novelist, he is not so well known as he should be for his short stories.

DICKINSON, EMILY (1830–1886). American poet; lived most of her life in Amherst, Mass. Became somewhat of a recluse possibly because of an unhappy love affair. Only after her death were the poems published through T. W. Higginson. In 1924 both poems and her letters were again issued. They show her a mystical, inspired, and sweet-tempered genius, with profound knowledge of nature and life.

DIDEROT (*dēd'rō*), **DENIS** (1713–1784). After making some translations, he was engaged to turn into French Chambers' *Cyclopedia*, but the work was much enlarged and grew into an immense storehouse of all knowledge in 36 volumes. Thus France profited by his incessant toil for ten years, which brought him little money and much danger and ostracism. Catherine of Russia finally acted as a patron.

DIODORUS (*dai"o-dō'rus*), **SICULUS** (fl. 60–20 B. C.). Wrote a *Library of History* in 40 volumes; material gathered from various sources. Only 5 books are now extant, but they are valuable.

DISRAELI (*diz-rā'li*), **BENJAMIN** (1804–1881), Earl of Beaconsfield (see RULERS AND STATESMEN under Beaconsfield. English statesman of great influence in the nineteenth century, but equally well known as an author of novels and some plays. *Vivian Grey* (1826) began a career that ended with *Endymion* (1880). *Venetia, Henrietta Temple, Coningsby* were widely admired. His father, Isaac (1766–1848), wrote several fine books, including *Curiosities of Literature* and *Amenities of Literature*.

DIXON, THOMAS (1864–). Novelist and playwright. Stories of the South aroused considerable interest and controversy, such as *Leopard's Spots, The Clansman, The Sins of the Fathers*. His photoplay, *Birth of a Nation*, very elaborately set, attained a tremendous vogue.

DIXON, WILLIAM HEPWORTH (1821–1901). English traveler and historian. Of his numerous volumes, notable ones are *John Howard and the Prison World of Europe, Life of William Penn*, in answer to Macaulay's attack; *Personal History of Lord Bacon, New America, Free Russia*.

DOBSON, HENRY AUSTIN (1840–1921). Introduced French verse forms into English poetry in his volume, *Proverbs in Porcelain*. An early collection of poems is *Vignettes in Rhyme* (1873). His best prose consists of *At the Sign of the Lyre, Eighteenth-Century Vignettes*, and biographies of Fielding, Steele, Goldsmith, Walpole, Richardson, and Fanny Burney

DODGSON, REV. C. L. See CARROLL, LEWIS.

DOLE, NATHAN HASKELL (1852–1935). American critic, poet, and translator. *Famous Composers, Joseph Jefferson, Omar, the Tent-Maker, Six Italian Essays, Life of Tolstoi, The Hawthorn Tree and other Poems, Building of the Organ;* translations of Tolstoi, Daudet, Verga, are some of his works. Also edited numerous volumes. Lived in New York and near Boston.

DONNE, JOHN (1573–1631). Leader of English metaphysical or fantastic poets. Intensely popular preacher as dean of St. Paul's. Six collections of his poems published between 1633 and 1669. Given to conceits, elaborate figures, analogies, and other turns of style. Had a great but not always salutary influence on later poets. Many sermons and essays of his are also extant.

DONNELLY, IGNATIUS (1831–1901). Known mainly as an American who wrote *The Great Cryptogram*, an elaborate and ingenious effort to prove by mathematical and other methods that Bacon wrote the Shakespeare dramas. His *Lost Atlantis* is a romance based on the legend of a lost continent in the Atlantic. Donnelly has had several followers.

DORAN, JOHN (1807–1878). English author of Irish descent, whose *Their Majesties' Servants* still remains an authoritative work on the stage from Betterton to Kean, supplemented by *In and Out of Drury Lane*.

DOSTOIEVSKI (*dŏs'tō-yĕv'skĭ*), **THEODORE M.** (1821–1881). A Russian novelist at first influenced by Gogol and Balzac, and later by Dickens. An exile in Siberia for seven years. Last novels are his best, for they incarnate in his characters his profound sympathy for the oppressed, an outgrowth of his own hard life and lack of self-control. *The House of Death, Crime and Punishment, The Gambler* (he was one at times), and the *Brothers Karamazov* are outstanding realistic pictures. For imaginative analysis, power to construct and handle his own ideas, and sheer lifelikeness of his people he has seldom been excelled in fiction.

Both his method and his ideas have intensely influenced several writers since 1895 in France, Germany, and England.

DOUGALL, LILY (1858–1923). A Canadian author. Her successful novels are *Beggars All, What Necessity Knows, The Mormon Prophet.*

DOUGLAS, GAVIN (1474?–1522). Scottish poet, bishop of Dunkeld. Died in London. His four chief works are: *Palice of Honour*, in 2,000 lines in type of dream-allegory, like *The Romance of the Rose; King Hart*, of King Heart in his castle served by courtiers (the five senses), an elaborate allegory, in 900 lines; *Conscience;* and his translation of Virgil's *Aeneid*, the first rendering of any important Latin poem in any English dialect.

DOWDEN, EDWARD (1843–1913). Irish critic and poet, best known by admirable studies in *Shakespeare, his Mind and Art, Shakespeare Primer, Studies in Literature, Life of Shelley.* His books are readable and authoritative.

DOYLE, ARTHUR CONAN (1859–1930). Creator of the famous detective Sherlock Holmes. Practiced several years as a physician; in late years interested in spiritualism. His tales were so popular that he had to bring Holmes back from the dead to satisfy the public demand for more. The series includes *A Study in Scarlet* (1887), *Adventures of Sherlock Holmes, The Memoirs of Sherlock Holmes, The Return of Sherlock Holmes.* His *Cause and Conduct of the World War* appeared in various languages besides English. Wrote *History of Spiritualism* (1926).

DOZY, REINHART PIETER ANNE (1820–1883). Dutch Arabic scholar of Huguenot parentage. The *History of the Mussulmans in Spain* (Eng. trans. 1913), *Supplement to the Dictionary of the Arabs* are two of a number of learned and standard works. Professor of history at Leyden for 30 years.

DRAKE, JOSEPH RODMAN (1795–1820). American poet; lived in New York. His greatest lyrics are *The American Flag, The Culprit Fay*, and an elegy remembering Fitz-Greene Halleck, with whom he wrote *The Croakers.*

DRAYTON, MICHAEL (1563–1631). Voluminous English poet, now remembered only by his sonnets, *Heroical Epistles*, the noble *Battle of Agincourt*, and *Polyolbion*, a "Herculean toil" not completed, but containing some 30,000 lines descriptive of the waters and natural divisions of England.

DRUMMOND, WILLIAM (of Hawthornden) (1585–1649). Scotch poet who lived near Edinburgh. Known for his sonnets, religious, and nature poems; friend of Jonson and Drayton. *Forth Feasting*, his earlier *Poems, Flowers of Sion*, and a beautiful prose discussion of the foolishness of the fear of death, adjoined to the *Flowers*, are his chief works. Wrote some political essays.

DRUMMOND, WILLIAM HENRY (1854–1907). Canadian "habitant" or dialect poet of French-Canadian humble life. Besides *The Habitant, Johnny Courtneau* is highly praised. Drummond practiced medicine in Montreal. See CANADIAN LITERATURE.

DRYDEN, JOHN (1631–1700). English dramatist, poet, critic, born at Aldwinkle, Northamptonshire. Graduated at Cambridge and entered upon a literary career succeeding Sir William Davenant as poet laureate in 1670. He became the foremost writer of the Restoration, exercising a great influence upon English literature in the eighteenth century. For complete review of works, see ENGLISH LITERATURE page 800.

Du BELLAY, JOACHIM (c. 1522–1560). French poet and critic. *Regrets*, 191 sonnets, is his chief work; an earlier group of 47 was translated by Edmund Spenser as *The Ruins of Rome.*

DUDEVANT, MADAME A. L. D. See SAND, GEORGE.

DUMAS (*dū-mäh'*), **ALEXANDRE** (1802–1870). Romantic French novelist and playwright. *His Henry III, Antony*, somewhat autobiographical, and *Richard Darlington*, related to Scott's *Chronicles of the Canongate*, are among his very successful plays. Collaborated in many of his works, having some connection with about 300 books. His great novels are *The Three Musketeers, The Count of Monte Cristo, Joseph Balsamo*, and *The Viscount of Bragelonne.* The first of these is probably the world's most read novel. For conception on an epic scale, swiftness and vividness of narrative, and genuine dramatic interest, his stories are equal to any. Some of his characters like D'Artagnan, the three musketeers—Athos, Porthos, and Aramis—Milady, Chicot, for dash, bravery and human interest are never forgotten.

DUMAS, ALEXANDRE (1824–1895). Natural son of the preceding and a French dressmaker; recognized by his father and now generally known as "Dumas Fils" or the Younger Dumas. Celebrated dramatist and moralist. The facts of his ancestry made a deep impression on many of his works, many of them concerned with the "eternal feminine." His *La Dame aux camélias*, as both novel and play, has remained a favorite; it is a picture of his early associations. Others are *Le Demi-Monde, La Femme de Claude, L'Etrangère.* His great industry and good management paid off the family debts, made him happy, and gave him a place his father never could attain, including election to the French Academy. For humor, serious purpose, and delightful facility in both novel and drama, the younger Dumas has few peers.

DU MAURIER (*dū mō'rē-āy*), **GEORGE** (1834–1896). Known as celebrated artist of *Punch*, humorous journal of London, and for his *Trilby*, a magnificent success as illustrated story and drama.

DUNBAR, PAUL LAURENCE (1872–1906). Celebrated American negro poet; lived in Dayton, Ohio; introduced to public by W. D. Howells. His *Lyrics of Lowly Life* and the collected *Poems*, the best of which are in negro dialect, have been greatly appreciated. Some of his short stories rival his verses.

DUNBAR, WILLIAM (c. 1460–c. 1520). Laureate of the Scotch court. Two allegorical poems, *The Goldyn Targe* and *The Thissil and the Rois, The Ballad of Kynd Kittok*, humorous and formless, the vision of the *Dance of the Sevin Deidlie Synnis* are his best known compositions. His satire is biting, his contentious work, notably scurrilous, especially for a priest as he was, his humor of a type better known in later authors like Burns.

DUNNE, FINLEY PETER, or "MR. DOOLEY" (1867–1936). For droll and caustic comment on things and men, Mr. Dooley became a national figure, in the various books printed with his name in the title, such as *Mr. Dooley in Peace and War, Mr. Dooley's Philosophy.*

EARLE, ALICE MORSE (1853–1911). Like Samuel A. Drake and more recently Wallace Nutting, did much to preserve interest in old New England, its history, and customs. Some well-known books are *The Sabbath in Puritan New England, Customs and Fashions in Old New England, Stage Coach and Tavern Days, Two Centuries of Costume in America.* Most of these books are illustrated with pictures.

EATON, WALTER PRICHARD (1878–). Dramatic critic and novelist. Lived in New York and Massachusetts. *Plays and Players*, various books in a Boy Scout series, including *Boy Scouts of Berkshire, Boy Scouts at Glacier Park, Boy Scouts on Katahdin*, are some of his volumes.

EBERS (*ā'y'bērs*), **GEORG MORITZ** (1837–1898). A German scholar who popularized ancient Egyptian lore in novel form, including *Uarda, Homo Sum, Kleopatra.*

ECHEGARAY (*ā'chā-gā-rī'*), **JOSE** (1832–1916). Spanish mathematician, dramatist, and poet, once very popular. *El gran Galeoto* (1881), often produced in other countries, *El Hijo de Don Juan, El Loco Dois*, resembling Ibsen somewhat, are among his works.

EDGEWORTH, MARIA (1767–1849). Novelist of Irish life and manners. With her father, Richard, she wrote some early critical works, including the celebrated *Essay on Irish Bulls.* Her fame was firmly established by *Castle Rackrent*, the history of an Irish estate and its owners as told by the old steward of the family. Her *Absentee* shows other evils of the landlord system. *Belinda* is a novel of society. Her various series of *Moral, Popular* and *Fashionable Tales* are characterized by insight, lightness of touch, and reflection of the age to a remarkable degree. She was among the first to declare that Scott was the author of the Waverley Novels.

EDGREN-LEFFLER, ANNE CHARLOTTE (1849–1892). Swedish story writer and dramatist. Her short narratives, *From Life* (1882 and 1889) describe actual life with great power; her plays, *True Women, How Men Do Good, The Struggle for Happiness* (assisted by Sophie Kovalevsky, whose biography she wrote), were greatly in favor.

EGGLESTON, EDWARD (1837–1902). American realistic novelist, born in Indiana, died in New York. Sought to give a veracious account of early pioneer life. He succeeded, with some pardonable exaggeration, in his *Hoosier Schoolmaster, The Mystery of Metropolisville, The Circuit Rider, The Graysons*, the last of which shows Abraham Lincoln as a lawyer in Illinois. His histories of social customs and his juveniles are also valuable records, especially of primitive and Indian life.

EGILL SKALLAGRIMSSON (c. 900–983). An early Icelandic skald or bard; served under the English king Athelstan for a time while in exile, but later was in favor in Iceland. Best known for *Sonatorrek*, composed after the death of a favorite son, and a poem in honor of his friend Arinbjörn, and the *Egill's Saga*, part or all of which some attribute to Snorri Sturluson (q. v.).

ELIOT, GEORGE (1819–1880). Literary name of Mary Ann (Marian) Evans, later the wife of G. H. Lewes, and after his death, of J. W. Cross, who wrote a biography of her. Mainly self-educated, she became a great scholar, philosopher, and critic. Her first notable work was a translation from the German of Strauss's *Leben Jesu* or *Life of Jesus*. Became sub-editor of the *Westminster Review* and wrote for it many notable papers and essays. Encouraged by Mr. Lewes, she turned to fiction. Her *Scenes of Clerical Life*, three short tales, contains some of her best work. *Adam Bede*, the story of two young people and their environment, *The Mill on the Floss*, a powerful study of the romantic but erratic Maggie Tulliver and her stolid and commonplace brother, suffused with tragic atmosphere from beginning to end, *Silas Marner*, the convincing account of how a miser regains his soul and a new interest in life through the coming to his hearth of a little waif, who became the stay of his old age, *Middlemarch*, an unerring analysis of middle class life, *Romola*, a story of the past in Florence, *Felix Holt*, a study of radicalism, and several others,—all show her varied talents, her philosophic mind, her gift of reality and fact, and in the background the tragic undertow of her own soul. She wrote mainly for an educated and adult reading public, though *Silas Marner* has been found a spiritual tonic by countless young men and maidens in our schools.

ELIOT, JOHN (1604–1690). Called Apostle to the Indians, among whom in New England he established several missions. His work in every way was far-sighted and did much to maintain peace. The *Catechism, Indian Grammar, Dialogs*, and *Logic Primer* are some of his translations, the first being the earliest book turned from English into an American Indian tongue.

ELIZABETH, QUEEN OF ROUMANIA (1843–1916). Under name of Carmen Sylva wrote many folk tales which were translated into several languages. Knew English, French, German, and Roumanian well. Born in Germany, married Prince Charles in 1869, who became Carol I in 1881. Her *Thoughts of a Queen* also popular.

EMERSON, RALPH WALDO (1803–1882). New England transcendental philosopher, essayist, and poet. Was Unitarian pastor for several years, then retired to Concord, where he lived quietly, going on lecture tours now and then. His printed *Essays*, for the most part, grew out of the lectures. Oliver Wendell Holmes called Emerson's address *The American Scholar* "our literary Declaration of Independence." Originality and freedom from slavish imitation of English letters were the slogans of the address. Yet the poet himself was influenced by Wordsworth, Carlyle, Swedenborg, and by all the German mystic philosophers. Some of his essays like *Friendship, Compensation, The Over-Soul, Manners, Genius*, and *Truth* are illuminating and authoritative. The *Representative Men* discusses famous leaders in all walks of human endeavor. Some now believe that Emerson's poems may outlive his prose, notably those like *Rhodora, Terminus, Days*, and the *Concord Ode*. No American has had a more pervasive and more profound influence on independent thinkers than Emerson has had.

ENGLISH, THOMAS DUNN (1819–1902). Philadelphia physician who wrote many poems. Best known for his *American Ballads, Boy's Book of Battle Lyrics*, and his sentimental song, *Ben Bolt*.

ENNIUS, QUINTUS (239–170 B. C.). Born in Calabria, served as a soldier, and became a Roman citizen. Titles of 25 of his tragedies are extant, his *Annales* of which 600 lines remain, and some other fragments. Imitated by Virgil, Ennius began Roman satire and attempted for the first time a kind of shorthand in Latin.

EPINAY (*āy-pĕ-nāy*), **LOUISE** (1726–1783). French lady friend of Rousseau and other literary figures. In an autobiographical romance called *Mémoires*, events connected with herself and friends were described. Her *Conversations*, written for the schooling of her granddaughter, received the crown of the French Academy in 1783.

ERCILLA Y ZUNIGA (*er-thī'lya ĭ thū-nyi-ga*), **ALONSO DE** (1533–1594). After a number of years as a soldier, published *La Araucana*, an epic poem, completed in 1590. In spite of digressions, and too much mythology, this remains about the best of its type in Spain.

ERCKMANN-CHATRIAN. Composite literary name of Émile Erckmann (1822–1899) and Alexandre Chatrian (1826–1890), novelists of Lorraine, France. Noted for clear descriptions of rustic scenes, peasant life, and the futility of war. *Madame Thérèse, History of a Conscript, Waterloo*, are some of their best works.

ERSKINE, JOHN (1879–). University professor, critic, and author. Graduate and professor at Columbia. Author: *The Elizabethan Lyric, Leading American Novelists, Democracy and Ideals, The Literary Discipline, Collected Poems, Sonata and other Poems*.

ERVINE, ST. JOHN (1883–). Playwright and novelist. *John Ferguson, Mary, Mary, Quite Contrary, The Wonderful Visit*, plays, *Alice and a Family, The Foolish Lovers, The Wayward Man*, novels, constitute his chief writings.

ESPRONCEDA (*es"pron-thē'da*), **JOSE DE** (1810–1842). Spanish soldier, adventurer, and lyric poet, greatest of his age. Influenced deeply by Byron. *El Estudiante de Salamanca, El Diablo Mundo, El Mendigo, El Verdugo* are among his famous poems.

EURIPIDES (*ū-rĭp'ĭ-dēz*) (c. 484–407 B. C.). Last of three great tragic poets of Greece; also athlete and painter. Won the tragic prize 5 out of 22 possible times. Ridiculed by some contemporary comedians, but his active vogue lasted for 600 years. Gave the chorus greater significance as interpreter of the action. Many of his plays are lost. Of the 18 now extant, the noted tragedies are: *Alcestis*, freely translated by Browning in *Balaustion, Medea, Ion, Electra, Hecuba*, and the *Suppliants*. See GREEK LITERATURE.

EUSTATHIUS (c. 1125–c. 1193). Byzantine scholar, bishop of Thessalonica, who wrote an elaborate commentary on Homer, which gives much information from authors otherwise lost. Part of his commentary on Pindar is also preserved. Original works include a history of the Norman conquests of Thessalonica and *The Reform of Monastic Life*.

EVANS, AUGUSTA. See WILSON, AUGUSTA E.

EVELYN, JOHN (1620–1706). English author of various works. Only his *Sylva* and the *Diary* are read today. The former is an early work on reforestation, long standard; the latter, one of the most celebrated intimate accounts that we possess. It covers (in great detail, at times) the years from 1641 to within three weeks of Evelyn's death.

EWALD, JOHANNES (1743–1781). In spite of neglect by his family and friends late in life, while Ewald was an invalid, he was recognized soon after his death as a Danish lyric poet without a peer. An elegy on the death of Frederick V. is a work of art. His *Adam and Eve*, a dramatic poem, was coldly received, but is now regarded as the highwater mark of the age. The *Brutal Clappers* satirizes a theatre dispute; *Harlequin Patriot* satirizes political scribblers; *Balder Dead* is a heroic opera; and his *Fishers* contains the Danish National Song, "King Christian stood by the High Mast."

EWING, JULIANA HORATIA ORR (1841–1885). Celebrated English author of children's books, daughter of Rev. Alfred Gatty; married Maj. Alexander Ewing, composer of the hymn, *Jerusalem the Golden*. For simplicity, earnestness, truth to nature, and good descriptions, Mrs. Ewing's stories take very high rank. Some of them are *The Brownies, Lob-lie-by the Fire, The Story of a Short Life*, and *Jackanapes*.

FABYAN, ROBERT (d. 1513). London tradesman who compiled a chronicle of England from early times to 1509; later extended by unknown persons to 1559. Gives information used later by Hall and Holinshed, not then accessible in other forms.

FAGUET (*fă-gā'*), **EMILE** (1847–1916). French professor of poetry and critic. Valuable monographs on *Flaubert, Zola, Balzac,* a fine *History of French Literature* from the seventeenth century, and other critical and political essays.

FARINA, SALVATORE (1846–1918). Born in Sardinia, settled in Milan. His sentimental stories gave him the name of the Italian Dickens. *Il Signor Io* (1880), his best known tale, was followed by several others, among them being *Il Tesoro di Donnina, Della spuma del mare,* and *Il Numero 13.*

FAWCETT, EDGAR (1847–1904). American novelist, who wrote of social life, including *A Romance of Old New York, An Heir to Millions, Purple and Fine Linen.* He also wrote poems, such as *Short Poems for Short People* and *Songs of Doubt and Dream.*

FAY (*fi*), **ANDRAS** (1786–1864). His *Fables* gave him the name of the Hungarian Aesop. Fay also composed plays, romances, and tales, and for a time led the opposition in the Hungarian diet. He called two collections of poems *Nosegays.*

FENELON (*fayn'lon*), **FRANCOIS DE SALIGNAC DE LA MOTHE** (1651–1715). French archbishop, theorist, and author. *Fables, Dialogues of the Dead, Télémaque,* a political novel of utopian nature, *Maxims of the Saints,* condemned by the Pope—and so Fénelon was virtually exiled to the archbishopric of Cambrai, —and the celebrated *Letter to the French Academy* (1714) make up his chief writings. His *Letter* describes the literary movements of the age.

FERBER, EDNA (1887–). From journalism in Wisconsin, she went to New York, and became a writer of stories. *Dawn O'Hara, Butter Side Down, Personality Plus, Show Boat, Mother Knows Best* and *So-Big* are among her narratives.

FERGUSON, SAMUEL (1810–1886). Irish antiquary and poet, whose two great poems, *The Forging of the Anchor* and *Father Tom and the Pope* appeared in *Blackwood's Magazine.* His *Lays of Western Gael* and other stories attempted to interest the modern readers in an Irish epic of past ages.

FERREIRA (*fĕr-rĕ'ê-rā*), **ANTONIO** (1528–1569). A Portuguese poet; lived in Lisbon. Wrote some delicate and artistic sonnets. Horace was greatly admired by him, and his *Poemas Lusitanos* shows the influence of his classical studies. *Bristo,* a comedy similar to those of the Latin of Terence, and *Cioso,* one of character, are well known; but his greatest work in the *Castro,* earliest tragedy in Portuguese, and apparently second oldest in Europe of modern times.

FEUILLET (*feh-yay'*), **OCTAVE** (1821–1890). Lived at Saint-Lo, France. *Dalilah, The Romance of a Poor Young Man,* both dramatised, and *The Little Countess,* are his best novels; *La Crise* and *The Portraits of the Marquis* are good dramas. Empress Eugenie herself acted in the latter play.

FIELD, EUGENE (1850–1895). American journalist, columnist, and poet. For 12 years wrote or collected paragraphs and bits for his column in the Chicago *Daily News.* His best poem is *Little Boy Blue,* but many of his poems for children still retain their vogue. His other works are *Little Book of Western Verse, Little Book of Profitable Tales, Love Songs of Childhood.*

FIELDING, HENRY (1707–1754). English playwright, judge, and novelist. Father of English realistic novel, as Richardson is of romantic novel. After several comedies and farces, he thought it best to counteract the influence of Richardson. His three long fictions, *Tom Jones, Joseph Andrews,* and *Amelia,* are all works of art in their own way. *Tom Jones* probably has been read by more persons than any other story of the period. It has had numerous imitators. *Joseph Andrews,* at first designed to ridicule Richardson's *Pamela*—the heroine was Pamela Andrews—turned into a genuine story of its own, full of incident and humors. *Amelia* is a realistic account of the heroism of a young wife of a spendthrift and dissolute retired army officer. It is one of our first great pictures of the unwholesome side of life.

FIELDS, JAMES THOMAS (1817–1881). American publisher who encouraged the most talented authors of his day. He also wrote several volumes and edited the *Atlantic Monthly* from 1862 to 1870. *Yesterdays with Authors* is now read for its information of the great writers of the day. His wife, Annie Adams Fields, also wrote several books of delightful reminiscences.

FIRDOUSI (*fĕr-dōō'sē*) (c. 941–1020). Name adopted by Abu Mansur, great epic poet of Persia, whose *Shanama* or *Book of Kings,* in 60,000 lines, was completed in 1001, after 35 years of labor. The reward of one silver piece for each line, which the sultan sent by a favorite, was distributed in three parts at once by Firdousi, who returned word that it was not for money he wrote. Though greatly in favor with both monarch and subjects, he was allowed to live in privation, and in his last year went forth to wander, having sent the sultan one of the bitterest satires ever written on ingratitude. The poem existed in manuscript up to 1831, when the French government began to pay for a translation, completed in 1868. This Persian bard is mentioned more than once by Emerson.

FISCHART, JOHANN (c. 1545–1591). German satirist, reformer, and scholar. In a violent but sincere manner he aimed his satire against common abuses of the time—pride of birth, astrology, undue love of learning, haughtiness of monarchs. His best-known work is a satire in imitation of Rabelais. Some poems are picturesque, full of symbolism, and intensely vigorous.

FISHER, DOROTHY CANFIELD (1879–). American author, born in Kansas, educated at Ohio State and Columbia Universities; married John Redwood Fisher, and lived in Vermont. Translated Papini's *Life of Christ.* Author of numerous stories and novels, including *The Squirrel Cage, The Bent Twig, Understood Betsy, Home-Fires in France, Made-to-Order Stories, Why Stop Learning?*

FISKE, JOHN (1842–1901). Born in Connecticut; educated at Harvard; lived most of life in Cambridge, Mass. Philosophical historian and scientist. Read widely and wrote with great care and precision. Though his scientific books like *Darwinism, Outlines of Cosmic Philosophy,* and *The Idea of God* were widely read, he is known now mainly for his histories of various periods in America, including *The Discovery of America, Old Virginia and her Neighbors, The Critical Period in American History* (1783–1789).

FITCH, CLYDE (1865–1909). American author of 36 plays and 24 adaptations. His work all shows cleverness, knowledge of stage business, and lightness of dialog. *Beau Brummel,* produced by Mansfield in 1890, is one of his best; but now *The Girl with the Green Eyes,* an admirable study of jealousy, is better known. *Captain Jinks of the Horse Marines,* made famous by Ethel Barrymore, is a fine light comedy.

FITZGERALD, EDWARD (1809–1883). Mother's name adopted by father, Edward Purcell. Knew the literary men of his day. Translated freely *Six Dramas of Calderon,* the great Spanish author, but his own best work is the translation of *The Rubaiyat of Omar Khayyam,* which made both the poem and FitzGerald famous among English-speaking peoples.

FLAUBERT (*flō-bâyr'*), **GUSTAVE** (1821–1880). French novelist and stylist; lived at Rouen. He polished to the last item, sometimes spending a whole week on a page, and nothing escaped his penetrating analysis. *Madame Bovary* (1857) began a new type of fiction, the intimate recital of concrete and truthful details, a real picturing of people and life. Yet he was also a man of vision and heart, so that some of his work is remarkable for its clever joining of fact and fancy. Influenced later men like Daudet, E. de Goncourt, and Zola. Faithfully studied *Don Quixote.*

FLERS, ROBERT DE LA MOTTE-ANGO, MARQUIS DE (1872–1927). French dramatist of lively fancy, but somewhat lacking in acute observation. His best of several seem to be *Le Roi, L'Habit Vert,* satires of contemporary life and letters. Elected to the Academy, and was president of the Society of Dramatic Authors.

FLETCHER, GILES (c. 1584–1623), and **PHINEAS** (c. 1582–1650). Sons of Giles Fletcher, who wrote an interesting account of Russia. Giles is best known for *Christ's Victorie,* a deeply religious poem, which influenced Milton's *Paradise Regained;* and Phineas for *The Purple Island,* a curious and laborded, but interesting allegory of the human body and mind. Both brothers were disciples of Spenser. *Piscatory Eclogs* by Phineas Fletcher are interesting pastorals, but marred by conceits.

FLETCHER, JOHN (1579–1625). Wrote with Beaumont (q. v.) some 50 or more dramas. *The Two Noble Kinsmen* by some is identified as partly Shake-

speare's, and *Henry VIII.*, partly Fletcher's. See ENGLISH LITERATURE.

FOGAZZARO, ANTONIO (1842–1911). Thoughtful and spiritual poet and novelist of Italy. *Valsolda* is his best-known poem at present. Malombra (1882), somewhat connected with the life of its author, and *Daniele Cortis*, became intensely popular after being admired by French critics. *Piccolo Mondo antico* has been hailed as the greatest novel of Italy since Manzoni's *I Promessi Sposi* (*The Betrothed*). The *Piccolo* (trans. as *The Sinner*) was nearly matched by his *Il Santo* (*The Saint*) though many condemned the latter as being unorthodox.

FONTANE, THEODOR (1819–1898). He ranks as a great writer of ballads, for which he gained material from foreign as well as native sources. He followed an historical romance, *Vor dem Sturm*, with various accounts of real life of his age. Influenced somewhat by French realists.

FONTENELLE (*fônt'nĕl'*), **BERNARD LE BOVIER DE** (1657–1757). *Conversations on the Plurality of Worlds* sought to make known the work of Descartes to Frenchmen. In the *History of Oracles* he sought to show that ancient revelations did not necessarily come from demons and that they did not cease in former times. Secretary Academy of Sciences for more than forty years.

FORSTER, JOHN (1812–1896). Voluminous English author, whose *Life of Dickens* is one of our classic biographies. He also wrote lives of Goldsmith, Sir John Eliot, Landor, and Swift.

FOSCOLO, UGO (1778–1827). Italian, who lived many years and died in England. Fought in French army, hoping Napoleon would free his beloved Italy. His *Carme sui sepolcri* (1807) summons the learned and patriotic dead from their tombs to fight the battles of their native land, especially of Florence which Foscolo dearly loved. He also made a great tragedy and in England composed many essays for the magazines.

FOSS, SAM WALTER (1858–1911). American editor, librarian from 1898 to 1911 at Somerville, Mass., wrote on homely topics, in volumes like *Dreams in Homespun* and *Songs of the Average Man*. His poem, *The House by the Side of the Road*, has become a classic of sentiment.

FOUQUE (*fōō-kā'*), **FRIEDRICH HEINRICH KARL DE LA MOTTE, BARON** (1777–1843). Though this German author wrote fiction, plays, and epics, he is now known only by a few works, such as his *Sigurd*, a dramatization of the Nibelungen stories, and a mystery, *Undine* (1811), which inspired many similar works in various languages.

FOX, JOHN (1863–1919). Kentucky novelist and short story writer. His *Little Shepherd of Kingdom Come*, a vivid picture of mountaineer life, and his *The Purple Rhododendron*, the latter a tragic story of love and heroism, are best known.

FOXE, JOHN (1516–1587). English clergyman, who lived abroad during much of the reign of Mary, and later wrote the long *History of the Acts and Monuments of the Church*, better known as *Foxe's Book of Martyrs*, a most vivid account of the times in England, which has had a profound influence on puritan life and thought.

FRANCE, ANATOLE (1844–1924). Adopted name of Jacques Anatole Thibault. French author and philosopher, largely influenced by Voltaire; above all a consummate prose artist. His work varies from the lightest to the most profound—a thorough student of mankind. *La vie litteraire*, *Thaïs*, a novel of Alexandria, *Le Lys rouge*, a study of Florence and of jealousy, a biography of Joan of Arc, and two books of reminiscences make up his chief works, but at present opinion is divided as to which are most significant.

FRANCIS, PHILLIP (1740–1818). Born in Dublin; English government official; opponent of policy of Warren Hastings, who wounded him in a duel. Best known now as the reputed author of a series of 69 violent and at times brutal attacks on the ministry of Lord Grafton. Under the name of Junius, they were sent to the printer of the *Public Advertiser*, and to various individuals. They are shameless almost in invective, bold in argument, and virulent in condemnation of many, including George III. himself. Though Junius admitted that he was beaten even when the ministry of Grafton gave way to the long one of Lord North, the *Letters of Junius* were the sensation of the years between January, 1769, and January, 1772. Of various persons suspected of the authorship, including Burke and Johnson, it is almost agreed now to assign them to Francis. He wrote some pamphlets and other prose works.

FRECHETTE, LOUIS HONORE (1839–1908). Poet of Quebec; for some years warm advocate of union of Canada and the United States. Translated the *Chance Acquaintance* of W. D. Howells and *Creole Days* of Cable into the dialect of French-Canadians. His own *Christmas in Canada*, *Voice of an Exile* (while he lived several years in Chicago), and *The Legend of a People* have long been popular in Canada.

FREEMAN, EDWARD AUGUSTUS (1832–1892). Professor of history at Oxford. Insisted on the continuity of history and always on the use of original sources. The *History of the Norman Conquest*, a masterpiece of narrative, is also singularly accurate and complete.

FREEMAN, MARY WILKINS (1862–1930). Born at Randolph, Mass., was secretary to Dr. Oliver Wendell Holmes; married Dr. Charles M. Freeman of Metuchen, N. J., in 1902. Regarded by some as best author of local color short stories America has produced. Celebrated volumes are *A New England Nun*, *The Wind in the Rose Bush*—mystery and ghost stories—*Humble Romance*. Besides the title stories mentioned, some notable single stories are *On the Walpole Road*, *Evelina's Garden*, *Shadows on the Wall*, and *The Revolt of Mother*. All these are true to life and spirit of New England.

FRENCH, ALICE (1850–1934). Born in New England, she has lived for many years in Arkansas and Iowa. Local story writer of the settlement of the middle states. *Knitters in the Sun*, *Stories of a Western Town*, *A Slave to Duty* and *Other Women* are among her collections; some individual stories are *Otto the Knight*, *Half a Curse*, *The Loaf of Peace*, *The Day of the Cyclone*, *The Besetment of Kurt Lieders*.

FRENEAU (*frē-nō'*), **PHILIP** (1752–1832). American poet and sea-captain; described the *Beauties of Santa Cruz*, *The House of Night* (an early romantic poem before Poe), and *The Wild Honeysuckle*. *The Indian Burying Ground* and *Eutaw Springs* have also been highly praised.

FREY, ADOLF (1855–1920). Swiss poet, critic, and novelist. Professor of German at Zurich. *Poems* collected in 1922 from earlier works, monographs of Haller, Keller, Meyer, Koller, Hodler, and other authors, and two historical novels make up his popular works.

FREYTAG (*frī'tähg*), **GUSTAV** (1816–1895). German author known widely for his *Soll und Haben*, a novel of the counting house, which is a prime favorite in Europe, a popular history of Germany, and his autobiography. His *Die Journalisten*, from material drawn out of his own life, is one of the best German comedies of the century. For a long time his *Technique of the Drama* was highly regarded, but now many critics assert its rules and descriptions are too rigid.

FROISSART (*frwä-sär'*), **JEAN** (1338–1410?). French chronicler of his own times. Visited England, Holland, and Italy, taking notes and shrewdly observing. His work is vivid, accurate, full of details, but some have said insensitive and lacking in vision. It throws a flood of light on men and manners of the fourteenth century.

FROST, ROBERT (1875–). American poet; professor of English at Amherst. "Poet in residence," University of Michigan, 1921–1923; Pulitzer prize for poetry, 1924. Author of *A Boy's Will*, *North of Boston*, *Mountain Interval*, *New Hampshire*.

FROUDE (*frood*), **JAMES ANTHONY** (1818–1894). Belonged to High Church part in England for several years till influenced by Carlyle. His *Nemesis of Faith* in 1848, reveals the break with his past. From 1856 to 1870, he worked on his *History of England from the Fall of Wolsey to the Defeat of the Spanish Armada*, and this work, though at times biased and inaccurate, remains a power of dramatic narrative, full of concrete and decisive incidents.

FULLER, THOMAS (1608–1661). English divine, royalist, and author. Of his various works, those of importance are *History of the Holy War*.

Good Thoughts in Bad Times (to cheer up the royalist soldiers), *Church History*, and *Worthies of England*.

FUNK, ISAAC KAUFMAN (1839–1912). Lutheran clergyman, who founded a publishing house, edited the *Standard Dictionary*, *Homiletic Review*, and wrote, among other works, *The Psychic Riddle*.

FURNESS, HORACE HOWARD (1833–1912). Shakespearean scholar, educated at Harvard, who edited 15 plays in the Variorum edition, which contains important collations, notes, and criticism from all previous authors. Standard in this subject of criticism. Editions were continued by H. H. Furness, Jr. (d. 1930).

FURNIVAL, FREDERICK JAMES (1825–1910). English scholar, one of the founders of the Workingmen's College, in which he taught several years, founder of the Early English Text Society, and for a time chief editor of the *New English* or *Oxford Dictionary*. Wrote on Shakespeare and brought out a "six-text" edition of Chaucer's *Canterbury Tales*.

FUST or **FAUST** (*foust*), **JOHANN** (c. 1400–1466). Lent money to Gutenberg to establish printing. He and his son-in-law printed first book to be completely dated in modern times. Psalter (1457), a very beautiful first Latin work (Cicero's *De Officiis*), together with Greek characters and many others.

GABORIAU (*ga"bō"ri-ō'*), **EMILE** (1833–1873). Classic author of detective novels and stories. His Monsieur Lecoq is the Sherlock Holmes of earlier days. *The Lerouge Affair* (1866), *La Vie Infernale*, *File Number 113* are his chief works, in addition to *Monsieur Lecoq*, which introduced the detective in 1869.

GALDOS, BENITO PEREZ. See PÉREZ GALDÓS, BENITO.

GALE, ZONA (1874–1938). American short story writer and dramatist; journalist for 14 years. Her volumes of delightful realistic stories of humble life include *Friendship Village*, *Friendship Village Love Stories*, *Heart's Kindred*, and *Neighborhood Stories*; her own dramatization of her novel *Miss Lulu Bett* won the Pulitzer prize, 1920.

GALSWORTHY, JOHN (1867–1933). English playwright and novelist; educated at Oxford. Between 1906 and 1921 wrote five novels in a series called the Forsyte Saga. These novels picture sympathetically middle-class life in the Victorian age and later. *Fraternity*, *The Patrician*, and others continued the same vein, while in 1924 he began with *The White Monkey* a set of three designed to do for London after the War what he did so well for the previous periods. His plays are good in stage-craft, dialog, and fine style. Some of them have to do with problems, such as *Joy*, *Strife*, *Justice*, and *The Skin Game*.

GALT, JOHN (1779–1839). Scotch novelist, whose *Annals of the Parish* are droll and picturesque stories of country life. Unpublished they antedate Scott's first novel, *Waverley*. As head of a land company he laid out a road between Lake Erie and Huron in Canada; founded Guelph, Canada.

GARDINER, SAMUEL RAWSON (1829–1902). Unbiased, thorough, and prolific historian. Educated at Oxford, professor at London. His work covers in three volumes events from 1603 to 1660. The *Students' History of England*, *What Gunpowder Plot Was*, *Cromwell* are separate books of great insight. Gardiner covered social as well as political events and ideas, including religious toleration.

GARLAND, HAMLIN (1860–1940). Notable interpreter of life in the American middle states. Born in Wisconsin. Among his books of short narratives are *Main Travelled Roads* (2 vols.), *Prairie Folks*; his biographical studies include *A Son of the Middle Border*, embodying much of his boyhood experience, and *Trail-Makers*, both fine accounts of pioneer life and struggles.

GARNETT, RICHARD (1835–1906). Librarian, critic, and author. Besides works on the Near East, he wrote biographies of Carlyle, Emerson, Milton, and others; some highly interesting tales, *Twilight of the Gods*, *A Short History of Italian Literature*, and other miscellaneous works of distinction.

GARRETT, JOAO, VISCOUNT (1799–1854). Great Portuguese poet, born in Oporto, but lived for some years in the Azores. An early tragedy *Lucrecia* (1819) is in the classic manner, but his poem *Camoens* turned to the new romanticism and set the vogue among his countrymen. Twice driven into exile, he spent much time in England and France, became a great liberal leader, and in his own country did much for reform, holding some minor political offices. His influence helped establish a national theatre, a school for dramatists and actors, and a new form of copyright law. Among his other works are volumes of poetry, some tragedies, and historical dramas, and an historical fiction influenced by Scott.

GASKELL, ELIZABETH CLEGHORN (1810–1865). Known in many lands for her simple, pathetic, and veracious *Cranford*, the biography of a small English town like Knutsford where Mrs. Gaskell lived as a child. Her other realistic stories are *Ruth*, also a study of early environment, *North and South*, with its background of the industrial revolution, and the earlier *Mary Barton*, which gained her the friendship of Dickens, Landor, and Carlyle. Her *Life of Charlotte Brontë* takes rank among the great English biographies.

GAUTIER (*go-te-ay'*), **THEOPHILE** (1811–1872). French poet, novelist, and critic of romantic school. His poems *Albertus*, *Comédie de la Mort*, *Amaux et camées*, all works of superior merit; his short narratives like the mystery story *La Morte amoureuse* rival those of the great Mérimée; and many general works, make up his chief claims to be remembered.

GAY, JOHN (1685–1732). An English poet known for his *Fables*, the ballad, *Black-ey'd Susan*, and *The Beggar's Opera*, often called the forerunner of the modern comic opera, or ballad opera, as it was once named.

GAYLEY, CHARLES MILLS (1858–1932). Professor of English, University of California, critic. Author of *Classic Myths*, *Plays of Our Forefathers*, *Shakespeare and the Founders of Liberty in America*, *Poetry of the People*, and others.

GELLERT, CHRISTIAN FURCHTEGOTT (1715–1760). Beloved German poet of *Fables and Tales* and many beautiful hymns.

GEOFFREY OF MONMOUTH (c. 1100–c. 1154). Welsh bishop and historical romancer. The *Historia Britonum*, claimed to be from old records, may be almost wholly fictional; but many chroniclers, such as Hardyng, Fabyan, Holinshed, took it for fact, and so did authors like Warner for his *Albion's England*, Drayton for his *Polyolbion*, and even Milton. Three of his 12 books deal with King Arthur.

GERHARDT, PAUL (1607–1676). German hymn author, whose *O Sacred Head Once Wounded*, *Commit Thou All Thy Griefs*, and *Jesus, Thy Boundless Love*, appear in most modern hymnals. He was a sturdy Lutheran.

GERVINUS (*gĕr-vē'nōōs*), **GEORG GOTTFRIED** (1805–1871). Of several histories, political and literary, his best known is that of German poetry and that of the nineteenth century. As a critic his *Shakespeare* is preëminent.

GESTA ROMANORUM (c. 1300) is a collection of stories, anonymous, which furnished Chaucer, Gower, Shakespeare, and many other English writers with plots and material. This *Deeds of the Romans* is loose and admirably adapted to revision, and to addition of new material, by any author.

GIBBON, EDWARD (1737–1794). English historian; his *Decline and Fall of the Roman Empire* (1776–1788) is picturesque and detailed, but accurate, one of the most gorgeous panoramas of peoples and civilization yet written. See ENGLISH LITERATURE.

GILBERT, WILLIAM SCHWENK (1836–1911). *Bab Ballads* are replete with fun; the *Palace of Truth*, good fairy drama; *Engaged* and *Sweethearts*, interesting social dramas, and above all his *H. M. S. Pinafore*, *The Mikado*, and *The Pirates of Penzance*, extremely vivid and clever light operas, are among his works that retain their vogue.

GILDER, RICHARD WATSON (1844–1909). American poet and editor of the *Century Magazine*. Wrote *Lyrics* and *Five Books of Song*, and the complete poems appeared in 1908.

GISSING, GEORGE (1857–1903). Realistic novelist of London streets. His chief works like *A Life's Morning*, *New Grub Street*, and *The Whirlpool* attract more and more readers.

GLASGOW, ELLEN (1874–). Novelist, born and lived in Virginia. Author of *The Freeman and*

Other Poems, The Battleground, The Romance of a Plain Man, The Miller of Old Church, Life and Gabriella, and *One Man in His Time.*

GODWIN, MARY WOLLSTONECRAFT (1759–1797). English novelist and reformer, now known solely by her *Vindication of the Rights of Women.* Married William Godwin, the socialist, and mother of Mary Godwin, wife of the poet Shelley.

GOETHE (*gû'tĕ*), **JOHANN WOLFGANG VON** (1749–1832). Greatest German poet and author of world note; leader of *Sturm und Drang* (Storm and Stress) as the reaction toward Romanticism was called. Studied at Leipzig for the law, but favored literature and read English and French zealously. Life at Wetzlar gave rise to his *Sorrows of Werther,* a study of a young man adrift in the world; this greatly influenced the sentimental novels of later days. Later Goethe lived at Court of Weimar with other great intellectuals. His visit to Italy (1786) gave suggestions for the *Iphigenia at Taurus,* his tribute to the ancient Greek philosophy and life. Including two other novels concerning Wilhelm Meister, the delightful idyllic *Hermann and Dorothea;* the superb but puzzling *Faust,* a great philosophic, scientific, and artistic creation of genius, and his *Metamorphosis of Plants,* a forerunner of Darwinism, all show the depth, considerable range and fertility of his mind and soul. See GERMAN LITERATURE.

GOGOL (*gō'gôl*), **NIKOLAI VASILIEVITCH** (1809–1852). Russian social novelist and dramatist. *Evenings on a Farm* and *Cossack Tales,* his short narratives; *The Cloak,* the pathetic story of a poorly-paid government clerk; the *Revizor,* greatest Russian comedy; and the epic *Dead Souls,* are the chief claims to the distinction now his. Gogol is the Russian Dickens; his last years were saddened by attempts to find emotional and spiritual peace.

GOLDONI, CARLO (1707–1793). Italian writer of 150 comedies, still greatly admired. Tried law and finally enjoyed royal favor in France. He once wrote 16 good plays in a single year, among them being *La Pamela,* one of his best. *One of the Last Nights of the Carnival,* played as his farewell to Italy, was so well received that Goldoni wept like a child. Died broken-hearted in France during the Revolution. *La Donna di Garbo, I Rusteghi, La Casa nova,* and *La Locandiera* are only a few of his great successes.

GOLDSMITH, OLIVER (1728–1774). English man of letters, born in Ireland, either at Pallas or at Roscommon. *The Deserted Village,* his pathetic and reminiscent poem, probably has many touches of his old home in it, as does the prose sentimental romance, *The Vicar of Wakefield.* Both are full of fine descriptions, homely philosophy, and good nature. Some see in the vicar the improvident Goldsmith himself, who never could keep anything when somebody near him was in need. His two comedies, *The Good-Natured Man,* and *She Stoops to Conquer,* are replete with sentiment, clever situation, and knowledge of human nature, even though somewhat improbable in plot.

GOLLANCZ, ISRAEL. See under EDUCATORS.

GORDON, CHARLES WILLIAM. See under his pseudonym CONNOR, RALPH.

GORKI, MAXIM (1868–1936). Real name is Alexy Maximovich Peshkov. Russian author. *Chelkash,* his first story, placed him beside Tolstoi in public favor, while his play *The Lower Depths* ran two years in Berlin. Persecuted because of strong democratic sympathies. *My Fellow-Traveller* and *Twenty-six Men and a Girl,* though not now so highly regarded, are real masterpieces. Yet his best work perhaps falls in his latest period, including the *Recollections of Tolstoi,* a very unusual record, and *Fragments from My Diary.* Since 1922 lived mainly abroad.

GOSSE, EDMUND (1849–1928). English author of many books of poetry, criticism, and biography; assistant in British Museum, 1867–1875; translator for Board of Trade, 1875 on; librarian House of Lords, 1904–1914. Translated or criticised works of Holland and Scandinavia; wrote several books of verse; lives of Congreve, Donne, Jeremy Taylor, Thomas Browne, Gray, and others. His *Histories of Eighteenth Century* and *Modern English Literature,* together with a highly-illustrated *Record of English Literature,* are his chief productions.

GOWER, JOHN (c. 1330–1408). That he wrote in French, Latin, and English shows that authors had some doubts whether the vernacular tongue would become an established literary medium; it shows also three different publics—the French of courts, the Latin of the Church, and the English of common folks. The *Speculum Meditantis* is the French work, long supposed lost, till discovered in 1895 under the title *Mirour de l'omme,* describing the seven deadly sins and opposite virtues. *Vox Clamantis* is a Latin poem treating of the faults of mankind, and vividly describing the peasants' revolt of 1381. The *Confessio amantis,* his English poem, again treats of the seven deadly sins, in divisions illustrated by narratives, and in the whole the story of a lover making confession to Genius, priest of Venus.

GRAND, SARAH (1862–). English novelist; four times mayoress of Bath. Widow of Lieut. Col. McFall. After 5 years in Orient wrote *Ideals;* interested in suffrage. Some other works are *The Heavenly Twins, The Beth Book, Babs the Impossible, The Winged Victory.*

GRANT, GEORGE MONRO (1835–1902). Born in Nova Scotia, his speeches turned Nova Scotia in favor of entering the Dominion of Canada. Later principal of Queen's University, Kingston. His best known works are *Ocean to Ocean,* an account of the value of Canada, and *Advantages of Imperial Federation.*

GRANT, ROBERT (1852–1940). American judge and author; lived in Boston. *Unleavened Bread, The Art of Living, Law and the Family, The Convictions of a Grandfather,* and *Their Spirit* are some of his notable stories.

GRAY, THOMAS (1716–1771). English poet and scholar. His *Ode on a Distant Prospect of Eton College* is a fine account of English scholastic life and sports. His *Elegy in a Country Church-yard,* the pre-eminent example of elegiac or "graveyard" poetry in modern English, is a noble specimen of classic influence, graceful imagery, pathetic sentiment, and chaste diction. Late in life Gray turned to romantic modes in *The Bard* and *Superstitions of the Scotch Highlands,* which in theme and form are freer and anticipate the new age in English poetry, of which Coleridge and Wordsworth are leaders.

GREEN, JOHN RICHARD (1837–1883). English historian; educated at Oxford. The *Short History of the English People,* a picturesque and colorful narrative of the progress of the people, was tremendously popular; and later it was expanded into four volumes. Afterward two volumes, *The Making of England* and *The Conquest of England* contributed much to solid making of history. Mrs. Humphrey Ward, according to some, had Green in mind in her novel *Robert Elsmere.* Green married (1877) Miss Alice Stopford, herself a notable historian, chiefly of Ireland. She became a member of the Irish Senate in 1922, and in 1927 completed her third book on Ireland, *Studies in Irish History.*

GREENE, ROBERT (1558–1592). London writer of stories and plays. Of his 35 prose tracts, some possibly spurious, the *Groatsworth of Wit,* and *Never Too Late,* realistic tales, show much of the seamy side of London. Of his prose romantic stories, *Pandosto* gave Shakespeare most of the plot for his *A Winter's Tale.* His *Friar Bacon and Friar Bungay* is a curious and lively picture of contemporary life.

GREGORY, ISABELLA AUGUSTA, LADY (1852–1932). Leader in the Irish revival; dramatist and translator. *Seven Short Plays, Irish Folk History Plays, The Kiltartan Molière,* translations, *The Kiltartan History Book* and *Poetry Book,* and a history of the theatre of Synge and the rest, entitled *Our Irish Theatre* (1914) are her chief writings. Her comedies are humorous and true to life; her other work full of romance and wonder.

GREY, ZANE (1875–1939). Born at Zanesville, Ohio. Prolific author of tales of western United States. *The Last of the Plainsmen, Riders of the Purple Sage, The Light of Western Stars, Tales of Lonely Trails, Tales of Swordfish and Tuna* are only a few of his popular hits.

GRIFFIS, WILLIAM ELLIOT (1843–1928). Educated in Japan, pastor in America, 1877–1903; author of many books, mostly of Japan, Holland, and the United States. *The Mikado's Empire, Sir William*

Johnson and the Six Nations, Influence of the Netherlands, The Pilgrims in Their Three Homes, The Religion of Japan, The Unmannerly Tiger and Other Korean Tales, fairy tales of several nations, and *Bonnie Scotland* are some interesting books by Dr. Griffis.

GRILLPARZER, FRANZ (1791–1872). Great Austrian dramatist and lyric poet. Temperamental, brooding and fatalistic. Some of his early political tragedies were notably successful, but later dramas like *Des Meeres und der Liebe Wellen,* in which he used the romantic story of Hero and Leander, his *Sappho,* a masterpiece of romantic love-tragedy of prime technical excellence, and a single great short story, *Der arme Spielmann,* are some of his best. He refused to marry the girl he loved, lived a life of uncertainty of will-power, often came in contact with the censor, but in time proved a national hero.

GRIMM, JAKOB LUDWIG KARL (1785–1863) and **WILHELM KARL** (1786–1859). Their *Dictionary* is a vast collection of philological and other learning, but they are popularly known for the *Fairy Tales.* Jakob also made a *Grammar,* expressed certain findings as to transfer of forms in words which is now known as Grimm's Law, and a work on *German Mythology,* complete and scholarly like the rest.

GROTE (*grōt*), **GEORGE** (1794–1871). An English historian whose *History of Greece* appeared at intervals in 12 volumes between 1846 and 1856. This contains a tremendous mass of facts told in simple but very interesting form. Among other works his studies of Plato and an incomplete work on Aristotle are famous.

GRUNDTVIG, NIKOLAI FREDERIK SEVERIN (1783–1872). Danish theologian, scholar, and poet. *Rhyme of Roskilde, Decline of the Heroic Life in the North,* an elaborate epic, *Songs for the Danish Church,* a fine collection of hymns, are his chief poems. Engaging in a theological controversy, he issued a pamphlet, *The Church's Reply,* and in consequence he was forbidden to preach for seven years. During this interval he studied Old English, and in 1840 edited the *Phoenix,* with Danish translation of this poem.

GUEST, EDGAR A. (1881–), Conductor of column in *Detroit Free Press.* Author of sentimental and humorous poems, including the volumes: *A Heap o' Livin', Just Folks, The Passing Throng, The Light of Faith.*

GUICCIARDINI (*gwī-char-dī'nī*), **FRANCESCO** (1483–1540). The famous works of this Italian politician are *Storia d'Italia, Ricordi politici,* the latter containing about 400 political maxims, brilliant but lacking idealism. See ITALIAN LITERATURE.

GUINEY, LOUISE IMOGEN (1861–1920). American poet and critic of penetrating and gracious idealism. *Songs at the Start, The Martyr's Idyl, Goose-Quill Papers, A Little English Gallery* are some of her chief compositions.

GUIZOT (*gee-zo'*), **FRANCOIS PIERRE GUILLAUME** (1787–1874). French statesman and historian. After an early work (1809) on French synonyms, he held various offices until 1851. Among many admirable volumes may be named *History of Civilization in France, History of the Origin of Representative Government,* and *Life, Correspondence, and Writings of Washington.*

GUTHRIE, THOMAS ANSTEY (1856–). See ANSTEY, F.

GUTSKOW, KARL FERDINAND (1811–1878). His novels and dramas mark the swing of the pendulum in Germany from romanticism back toward realism. *Richard Savage,* his well-known drama, and several stories like *Blazedow and his Son,* a satire on education of the period, *Die Ritter vom Geist,* are some that have survived their day.

HAFIZ (*hä'fiz*) (c. 1300–1388). Real name was Sham-ud-din Mohammed. Great Persian poet and philosopher. His lyrics are full of life, color, and noble idealism. *Diwan,* a collection of brief odes, and a large number of sonnets, make up his principal writings.

HAGGARD, HENRY RIDER (1856–1925). Having spent some time in Africa, he produced a number of novels with picturesque scenery of that continent as a background. Some of them are *The Witch's Head, King Solomon's Mines,* and *She.* Later became a practical farmer in Norfolk, England, and wrote *The Poor and the Land* and other works suggesting methods of solving the land question at home and abroad.

HAKLUYT (*hāk'lōot*), **RICHARD** (c. 1553–1616). British geographer, whose *Principal Navigations, Voyages, and Discoveries of the English Nation* was issued finally in 1600 in three volumes. It is a glorious account of the attempts of England to settle various corners of the world, or to gather treasure from the wilds of unexplored lands. Some one called it the "prose epic of the modern English nation."

HALE, EDWARD EVERETT (1822–1909). American clergyman, author, and historian. Graduated at Harvard; pastor Worcester and Boston, 1846 to 1902. Chaplain, U. S. Senate, 1903. His humorous story *My Double and How He Undid Me* is now well known, and his *Man Without a Country* stands high in our literature of partriotism. *If, Yes, and Perhaps, Philip Nolan's Friends, Ralph Waldo Emerson* and *A New England Boyhood* have been widely admired.

HALEVY, LUDOVIC (1834–1908). With Henri Meilhac (1831–1897) he produced many dramatic successes, including *La Belle Hélène, Barbe Bleue, La Grande Duchesse,* and various pieces for the music of Offenbach. They excelled in light comedy of Parisian types. Two novels by Halévy, *Monsieur et Madame Cardinal* and *Les Petites Cardinal,* take high place among faithful but not offensive pictures of the lower classes. His *L'Abbé Constantin* was immensely celebrated at a time when taste turned from the ultra-realism of Zola to something more humane and kindly.

HALIBURTON, THOMAS CHANDLER (1796–1865). Canadian judge and writer of sketches under name of Sam Slick. Lived in Nova Scotia, became judge of supreme court in 1842, but after 1856 he lived in England till his death. *The Clockmaker, or Sayings and Doings of Sam Slick of Slickville* (1837) was followed by two similar books.

HALL, JOSEPH (1574–1676). English clergyman and satirist, whose collections of "Toothless" and "Biting" poems are among our first of the kind. Professed to be first English satirist, but John Marston and John Donne both have some claims to this distinction.

HALLAM, HENRY (1777–1859). English philosophical historian known chiefly for three great works: *The View of the State of Europe in the Middle Ages: Constitutional History of England,* and *Introduction to the Literature of Europe in the 15th, 16th, and 17th Centuries.* His son Arthur Henry Hallam inspired Tennyson's *In Memoriam,* one of our noblest tributes to friendship.

HALLECK, FITZ-GREENE (1790–1867). Lived at Guilford, Conn. Known for his elegy on the death of Drake, and for *Marco Bozzaris,* declaimed by thousands of school boys.

HANNAY, JAMES OWEN (1865–). See BIRMINGHAM, GEORGE A.

HAPGOOD, NORMAN (1868–1937). American editor and biographer; at various times connected with *Bookman, Collier's Weekly,* and *Harper's Weekly.* Minister to Denmark, 1919. Wrote *Literary Statesmen,* biographies of Webster, Lincoln, and Washington, *The Stage in America.*

HARDY, ARTHUR SHERBURNE (1847–1930). Diplomatist and author. Represented the United States in Persia, Greece, Switzerland, and Spain. Professor of engineering and mathematics, Dartmouth, 1874–1893. Besides several mathematical books, his novels include *But yet a Woman, Wind of Destiny, His Daughter First, No. 13, Rue du Bon Diable.*

HARDY, THOMAS (1840–1928). English novelist, critic, and poet. Last of great Victorian prose writers, who strove to interpret the life of man in accordance with the ruling principles of the world. Fate is strong in his writings. Of his early novels, *The Return of the Native* and *Tess of the D'Urbervilles* are perhaps best known. *Jude the Obscure* has been called too philosophical. In his middle life *The Dynasts* is the chief work, taking the form of a great epic in prose of the age of Napoleon. In later life he specialized in poetry, with volumes like *Wessex Poems, Late Lyrics,* and *Winter Words* being among the more penetrating as time went on. To the end almost he retained his keen vision and sincere views of life and man.

HARNACK, ADOLPH VON (1851–1930). Church historian born in Esthonia; professor at German uni-

versities from 1876 to 1924. He took the views that much of Greek thought got into early Christianity, and so the individual is somewhat free to think for himself in matters of dogma. His chief works, rather numerous, are *History of Dogma* and *What Is Christianity?* and other books on early church doctrine and progress.

HARRIS, JOEL CHANDLER (1848–1908). Creator of the kindly and shrewd old negro story-teller, Uncle Remus, lived most of his life in Georgia, becoming eventually editor of the Atlanta *Constitution*. Between *Uncle Remus; His Songs and Sayings* (1880) and 1900 he issued several similar volumes to satisfy the demand of readers. Some are *Nights with Uncle Remus, Uncle Remus and His Friends, Short Stories Told after Dark. Mingo, Free Joe, Little Mr. Thimblefinger* are some of his children's books of stories. Harris laid no claims to literary distinction, always insisting that he was merely a reporter of "cornfield" sketches and stories of negro life and its humors. Yet he has thrown much light upon the superstitions, rude philosophy, and shrewd common sense of Uncle Remus.

HARRISON, CONSTANCE CARY (1846–1920). Married Burton Harrison, once secretary to Jefferson Davis; lived in New York and abroad. A writer of many novels, those now recalled being *A Daughter of the Old Dominion, Good Americans, The Anglomaniacs.*

HARRISON, MARY ST. LEGER. See MALET, LUCAS.

HARRY THE MINSTREL or **BLIND HARRY** (fl. 1475–1500). Author of poem on William Wallace in Scots dialect; said to have been a wandering minstrel. The unique manuscript, of nearly 12,000 lines of heroic couplets, dated 1588, may be a more literary version edited by a scholar.

HART, ALBERT BUSHNELL (1854–). American historian, born in New Jersey; professor at Harvard. *Practical Essays on American Government, Foundations of American Foreign Policy, Monroe Doctrine, Source Readers in American History* are among his critical works. Edited the American Nation series.

HARTE, FRANCIS BRET (1839–1902). American writer, born in Albany, N. Y., and lived for some years in far West. His *Condensed Novels* parody well known authors of the age. Became editor of *Overland Monthly* in 1868. From 1885 till his death lived in England. *Luck of Roaring Camp, Outcasts of Poker Flat, Two Saints of the Foothills, Tennessee's Partner, M'liss, Baby Sylvester* are but a few of his many titles. *The Heathen Chinee*, his poem, was widely admired and copied.

HAUPTMANN (*houpt'män*), **GERHART** (1862–). Eminent German author of the "naturalistic" school. He specialized in plays of the working people and their ideals, such as *Einsame Menschen, Gabriel Schillings Flucht, Die Weber*, the last a plot of a small revolution. Some fairy pieces, two or three good stories, and *Atlantis*, a rather famous German novel make up the rest of his work.

HAVERGAL, FRANCES RIDLEY (1836–1879). English author of many hymns, *Take my life and let it be* being perhaps most well known. *The Ministry of Song, Loyal Responses*, and *Red Letter Days* are other works.

HAWEIS (*haws*), **HUGH REGINALD** (1838–1901). Popular English preacher. Now recalled chiefly for his *Music and Morals, Old Violins*, and a book on church bells.

HAWKINS, ANTHONY HOPE (1863–). See HOPE, ANTHONY.

HAWTHORNE, NATHANIEL (1804–1864). American romancer and leader in the short story. Born in Salem, Mass., and lived many years at Concord, and from 1853 to 1860 abroad, first five years as American consul at Liverpool. *Twice Told Tales*, 18 stories and sketches, resulted after several years of seclusion and meditation at Salem. They still remain among the great short stories for which America is famous. Hawthorne shares with Poe the honor of making a new type of literature on this side of the Atlantic. Longer in form, *The Scarlet Letter* remains to this day the most typical and most inspired of stories of Puritan New England, with its gloom, its devotion to single ideals, and its submerged human nature. Though the theme is repellent, Hawthorne handles the story with great sincerity, dignity, and power to portray human emotions and conflicting personages. *The Blithedale Romance* recalls in some details the Brook Farm experiment near Boston, where Hawthorne visited for a few months; and *The House of the Seven Gables*, the name taken from a curious old house still at Salem near Hawthorne's own birthplace, is another story of old New England and its curious people, together with a wholesome romance contrasted with a sombre background. *The Marble Faun*, written after a visit to Italy, gives us much of the atmosphere of artistic Rome, with the study of a mysterious and romantic heroine. Some of the short stories which every person should know are: *The Gray Champion, Wakefield, The Ambitious Guest, The Minister's Black Veil, The Artist of the Beautiful, The Great Stone Face, The Birthmark*, and *Rappaccini's Daughter*. In these as in the novels, Hawthorne brings out often the inherent contradictions in human personality. *Nathaniel Hawthorne and his Wife*, by their son Julian, also a romancer of some note, is an admirable biography.

HAY, JOHN (1838–1905). Statesman and author; served United States as ambassador and as secretary of state from 1898 to 1905. Fostered idea of open door in China. Best known in literature for his *Pike County Ballads* (1871), with John G. Nicolay the valuable and elaborate *Life of Abraham Lincoln*, admirable letters and speeches, and *Complete Poetical Works* (1916).

HAYNE, PAUL HAMILTON (1831–1886). American attorney and later a journalist; lived in Charleston, S. C. *Complete Poetical Works* published in 1882. His verse is graceful and loyal.

HAZLITT, WILLIAM (1778–1830). British essayist and critic; for a time early in life a painter. His fame now rests on his appreciations of Shakespeare as an artist, on his *View of the English Stage, Lectures on the English Poets*, and *Table Talk*. Personally erratic, unhappy in his domestic relations, and often estranged from Hunt, Lamb, and other friends. His grandson William Carew Hazlitt (1834–1913) wrote a valuable *Handbook of English Literature* and many excellent bibliographical notices.

HEARN, LAFCADIO (1850–1904). Born in Ionian Isles of Irish-Greek parentage, was a journalist in New Orleans, and in 1891 settled in Japan, married a native wife, and became a naturalized subject, also a Buddhist. Wrote many charming books on Japan, some of which are *In Ghostly Japan, Japanese Fairy Tales, Japan*, and *Attempt at Interpretation*.

HEINE (*hī'nĕ*), **HEINRICH** (1797–1856). Great lyric poet, born in Germany of Jewish descent; after 1831 lived in France. Of a very romantic temperament, though he refused to ally himself with the Romantic movement, so called, his poems struck a new note in Europe, with their bold nature symbolism, sad but still hopeful note with the zeal also of a lover of man, and a true reformer. His best poems are contained in volumes at different times called *Reisebüder* and *Buch der Lieder*. As a prose writer he is only a little less distinguished, for his *The Romantic School* and *Der Salon*, collections of prose essays and papers of great penetration and clarity of style. Heine married an uneducated Paris shop-girl, but they were uncommonly happy. The last few years, because of a spinal disease, were of great suffering, but he bore it with resolution. The collected works fill 21 volumes.

HELPS, ARTHUR (1813–1875). Edited for Queen Victoria the speeches of Prince Albert and her own *Highland Journals*. His other works include *Friends in Council, The Conquerors of the New World*, and other less important papers.

HEMANS (*hem'anz*), **FELICIA DOROTHEA** (1793–1835). Born as Felicia D. Browne at Liverpool; married Capt. Alfred Hemans; in childhood lived in Wales, and later in Liverpool. Wrote many volumes of sentimental but serious poetry. Capt. Hemans went to Italy in 1818 and never returned. She knew Scott and Wordsworth. Single poems still remembered are *The Treasures of the Deep, The Better Land, The Palm Tree, The Wreck, The Lost Pleiad, Casabianca* (The boy stood on the burning deck) and *The Landing of the Pilgrims* (The breaking waves dashed high).

HENLEY, WILLIAM ERNEST (1849–1903). British critic and poet. Collaborated with R. L. Stevenson. Collected *Poems* in 1898 and *Hawthorn and Lavender* in 1901 make up his best poems. He edited several journals, lastly the *National Observer*,

in which Kipling's *Barrack Room Ballads* were published.

HENRYSON, ROBERT (fl. 1470–1500). Scotch poet. Best known for his poems founded on older works, such as *Morall Fabillis of Esope*, the *Testament of Cressid*, which takes up the story of Troilus and Cressida where other poets stop, and *Orpheus and Eurydice*, drawn from Boethius. Though he used much old material, he adds life, color, the Scotch point of view and many delightful single touches. Henryson had a profound influence on later poets.

HENTY, GEORGE ALFRED (1832–1902). English journalist and author of books for boys. Acted as correspondent in many campaigns, and in middle life commenced his series of adventure stories, which finally grew to 80 different titles. *Out on the Pampas* (1868) was his first and *With the Allies to Pekin* (1904) his last story, issued after his death. Others are *With Roberts at Pretoria*, *With Clive in India*, and *The Treasure of the Incas*.

HERBERT, GEORGE (1593–1633). English religious poet of deep inspiration, though at some times fantastic. All the common incidents of life, the parts of the church, even the stones and mortar, are given significance. His collection, entitled *The Temple*, was published after his death. Isaac Walton wrote a fine life of Herbert, and George Herbert Palmer, professor of philosophy at Harvard, edited the poems (1905).

HERDER, JOHANN GOTTFRIED VON (1744–1803). German poet and philosopher. Turned to romantic themes after reading Percy's *Reliques*, and became one of the leaders in the new movement in Germany.

HEREDIA Y CAMPUZANO, JOSE MARIA DE (1803–1839). Cuban poet and translator. His *Epistle to Emilia*, and *Ode to Niagara* abound in imagination and noble sentiment. Being banished in 1823, he spent the rest of his life in the United States and Mexico.

HERFORD, CHARLES HAROLD (1853–1931). English scholar and writer. *The Age of Wordsworth*, *Spenser's Shepherd's Calendar*, *Goethe*, *Shakespeare, Treatment of Love and Marriage*, *Is There a Poetic View of the World? The Mind of Post-War Germany*, *The Romantic and the Classic Styles* are some of his critical or descriptive works.

HERGESHEIMER, JOSEPH (1880–). American novelist, author of *Java Head*, *The Bright Shawl*, *The Presbyterian Child*, and *Tampico*.

HERODOTUS (c. 484–425 B. C.). Often called the father of history. His work concerns mainly the Persian invasion of Greece, written in an expansive and imaginative manner, without slavish attention to fact or event. Close knowledge of the classics of Greece and several years of travel prepared him for his great work.

HERRERA, FERNANDO DE (c. 1534–1597). Spanish lyric poet; lived in Seville. Noted for his sonnets, his ode on the battle of Lepanto, on Don John of Austria, and the elegy on King Sebastian of Portugal.

HERRICK, ROBERT (1591–1674). Greatest pastoral lyric poet of the English people. He left 1,300 short poems, most of them small diamonds, clear in thought or sentiment, celebrating the simple joys of country life. Rector at Dean Prior, Devon, 1629–1648. In the latter year he published his *Hesperides*, and his religious poems *Noble Numbers* already in 1647. In 1662 he became rector again at Dean Prior, where he is buried.

HERRICK, ROBERT (1868–1938). Professor of English, University of Chicago, 1905–1923. Some of his novels are *The Common Lot*, *The Memoirs of an American Citizen*, *The Healer*, *The Conscript Mother*, and *Chimes*.

HERTZ, HENRIK (1797?–1870). Danish poet and dramatist. *King René's Daughter*, a lyrical drama translated into most languages of Europe, *Svend Dyring's House*, a national drama, and several volumes of lyrics constitute his claim to be remembered.

HERVIEU (*ĕr-vyû'*), **PAUL** (1857–1915). French dramatist. Now remembered largely for his *Nippers*, *The Passing of the Torch*, *The Law of Man*, and *The Enigma*. His plays are carefully built up.

HEWLETT, MAURICE HENRY (1861–1923). English novelist; spent much time in Italy. His *Forest Lovers*, *Richard Yea-and-Nay*, a story of Richard the Lion-Hearted, *The Queen's Quair*, a story of Mary of Scotland, and *New Canterbury Tales*, show his profound knowledge of medieval life in England; *Little Novels of Italy*, short narratives, show the middle age also, together with several others.

HEYSE (*hī'zĕ*), **PAUL JOHANN** (1830–1914). Wrote over 150 short stories and about 60 dramas. Of the former *L'Arrabbiata* (The Cross-Patch) has been read often in the schools. Novels called *Children of the World*, *In Paradise*, and *Merlin* counteract the realistic tendencies of the age, notably the last. Successful plays are *Hans Lange Kolberg*, and *Mary of Magdala*.

HICHENS (*hĭch'ĕnz*), **ROBERT SMYTHE** (1864–). English novelist, whose *The Green Carnation* (1894) raised a great stir; yet his later works, with rich oriental setting, excel in real merit. Some are *The Garden of Allah*, *The Call of the Blood*, and *Bella Donna*. The first and last were dramatized most successfully.

HIGGINSON, THOMAS WENTWORTH (1823–1911). American soldier and author. Fought in Civil War, his *Army Life in a Black Regiment* being the result of his experience as colonel of a regiment of colored troops. Wrote many books of charm and insight, such as *Outdoor Papers*, *The Afternoon Landscape*, *Cheerful Yesterdays*, *Old Cambridge*, and lives of both Longfellow and Whittier.

HILL, DAVID JAYNE (1850–1932). American college president, ambassador to Holland and Germany, and author. His best books are *History of Diplomacy*, *The Struggle for Universal Empire*, *World Organization*, and *The Problem of a World Court* (1927). His adaptation of Jevons' *Logic* for Americans was long a standard college text. See DICTIONARY OF STATESMEN.

HOGG, JAMES (1770–1835). Known as the Ettrick shepherd. While engaged as a shepherd came under notice of Walter Scott, whose publisher issued *The Mountain Bard* (1807). Also wrote several other volumes of verses, including *The Queen's Wake*, with its fine ballad of Kilmeny. *When the Kye Come Hame* and *Flora Macdonald's Farewell* are familiar pieces by Hogg.

HOLBERG, LUDWIG (1684–1754). Danish author; professor at Copenhagen. His main works are *Introduction to Natural and Popular Law*, *Peder Paars*, a mock-heroic epic, which was a wonderful success, *The Pewterer Turned Politician* and *The Weaver* and two of several great comedies, *Henrik and Pernille*, probably his best. Later he wrote some histories, satires, and other works. Altogether he deserves much credit for making the Danish language respected.

HOLLAND, JOSIAH GILBERT (1819–1881). Editor and novelist; for many years connected with *Springfield Republican*. Best known for his graceful poems as *Bitter Sweet*, *Katrina*, and *Garnered Sheaves*, and for a few good histories.

HOLMES, OLIVER WENDELL (1809–1894). Celebrated American surgeon and author; professor of anatomy at Harvard, 1847–1882. Combined pathos, sentiment, and humor admirably in his *Autocrat of the Breakfast Table*, followed later by books in which a professor and a poet take the place of the autocrat. These show Holmes at his best as a genial, brilliant, and witty talker. *Elsie Venner* was his best known novel, and memoirs of Motley and Emerson are now his best known essays.

HOMER (fl. about 1100 B. C.). Name of the author assumed for the *Iliad* and *Odyssey*, the greatest epic poems of Greece and of the world. These works certainly record the traditions of an early mythology and literature, whether collected by Homer or others remains unproved. See GREEK LITERATURE for description of the poems.

HOOD, THOMAS (1799–1845). For a time Hood helped edit *The London Magazine* and came to know the literary men of the period. He became famous through his *Comic Annual*, in which for years he commented in a witty and clever way on contemporary events. Late in life his best works were produced,—*Song of the Shirt*, *Bridge of Sighs*, and *Song of a Labourer*, all of which show his sympathy for those who live a life of toil.

HOPE, ANTHONY (1863–1933). Literary name of Anthony Hope Hawkins. Won great fame in 1894 by his *Prisoner of Zenda*, now a classic adventure novel, followed by *Rupert of Hentzau* the sequel.

Tristram of Blent, Double Harness, and *Second String* are other novels. His *Dolly Dialogue* also set a fashion for clever, witty talk of the drawing-room.

HORACE (65–8 B. C.). Latin name is Quintus Horatius Flaccus. He wrote *Carmina* (odes in four books), *Sermones* (two books of satires), two of epistles, one of epodes, and some letters. Most polished author of antiquity. Visited Athens, and fought with Roman legions in Asia. Knew Virgil and was befriended by Augustus and Maecenas, patron of letters, who gave him the Sabine farm mentioned frequently in his poems. He is master of poetic form, good diction, and genial manners.

HORNUNG, ERNEST WILLIAM (1866–1921). An English writer of adventure stories, such as *Dead Men Tell No Tales, Mr. Justice Raffles, Witching Hill,* and *The Crime Doctor.*

HOUGH, EMERSON (1857–1923). Naturalist and novelist, born in Iowa. Some of his works are *The Singing Mouse Stories, The Mississippi Bubble, Young Alaskans on the Trail,* and *The Sagebrusher.*

HOUSEMAN, ALFRED EDWARD (1859–1936). Professor of Latin at London and Cambridge Universities. Besides scholarly works, his lyrics entitled *A Shropshire Lad* and *Last Poems* (1922) have been widely appreciated.

HOWARD, BRONSON (1842–1895). American dramatist, clever in stage effect and artistic composition of plays. *Aristocracy,* a satire on running after titles, *Old Love Letters,* sentimental comedy, and *The Henrietta.*

HOWARD, HENRY, EARL OF SURREY (1518?–1547). After a visit to Italy, introduced some new forms into England, including some short poems and the form of the sonnet, but in rugged and halting style, not true to the strict Italian. His rendering of the second and fourth books of Virgil is the first attempt at blank verse in our language.

HOWE, JULIA WARD (1819–1910). American humanitarian and reformer, who wrote voluminously. *Poems Old and New* (1908) preserve some of her best work, but her fame now rests almost wholly on the *Battle Hymn of the Republic* (1862).

HOWE, MARK ANTHONY DEWOLF (1864–). Editor and author; lived in Boston. Wrote many biographies, some of which are those of George Bancroft, Bishop Hare, Bishop Brooks, Charles Eliot Norton, Barret Wendell (received Pulitzer prize), *Memoirs of the Harvard Dead in World War,* and *The Atlantic Monthly and Its Makers, Boston Common,* and *The Boston Symphony Orchestra.*

HOWELLS, WILLIAM DEAN (1837–1920). Prince of American realistic authors. Consul at Venice, 1861–1865; editor *Atlantic Monthly,* 1871–1881; afterward lived in New York. Best known for his *Rise of Silas Lapham,* a great—some say greatest—New England novel of its type, *A Modern Instance, Poems, Literature and Life,* and some clever short dramatic skits.

HUBBARD, FRANK McKINNEY (KIM HUBBARD) (1868–1930). Journalist on *Indianapolis News* since 1891. Author of *Abe Martin's Sayings,* in syndicate form weekly, and in volumes annually.

HUBBARD, ELBERT (1859–1915). Born in Indiana; established the Roycroft shops at East Aurora, N. Y., where fine printing, illuminating, and other arts flourished. Influenced by William Morris (q. v.). Went down on the *Lusitania,* May 9, 1915. Wrote *Little Journeys* and several books; but is probably now best remembered for his *Message to Garcia,* a classic call to efficiency in life, of which millions of copies were distributed.

HUDSON, WILLIAM HENRY (1841–1922). British naturalist and writer of nature books, full of human interest and literary charm. Born near Buenos Aires; lived many years in London, known only to a few till his great work became known. Author of *Green Mansions, Far Away and Long Ago* (accounts of life in Argentine), *Afoot in England,* and scientific works like *British Birds* and *Birds of the La Plata.*

HUGHES, THOMAS (1823–1896). Sociologist, lawyer, and author. *Tom Brown's School Days* (1857) widely affected English schools, and *Tom Brown at Oxford* was nearly as famous.

HUGHES, RUPERT (1872–). Among his works are *American Composers, Love Affairs of Great Musicians, Long Ever Ago* (Irish stories), and numerous plays and motion pictures, including *Tess of the Storm Country, Dangerous Curve Ahead, The Old Home Town,* and *The Lovely Ducklings.*

HUGO, VICTOR MARIE (1802–1885). Eminent French author, son of a general in army of Napoleon. His *Odes* (1822) attracted even the notice of the king, and a liberal pension followed. Later some *Ballades* were added, and then the *Cromwell,* which in a preface declared that "The object of modern art is not beauty but life." *Hernani,* a great melodrama, brought him fortune as well as fame (1830). *Notre Dame de Paris,* his first grand novel, gained a wider hearing, where his poems and first play had not been known. In exile in Jersey and Guernsey from 1851 to 1870, when the republic again became a reality. His biting satire, *Napoleon the Little,* printed at Brussels in 1852, was vigorously suppressed in France. It has little real merit. His prose masterpiece, *Les Misérables,* appeared in 1862. In its sympathies it favors the French common man in the Revolution, and it is a gorgeous series of pictures, people, and actions. His best poetry is found in *The Terrible Year,* that of the Franco-Prussian War (1870–1871). Though his work was somewhat overrated at first, Hugo influenced profoundly all movements and thought of his generation. See FRENCH LITERATURE.

HUME, DAVID (1711–1776). Scotch historian. Chief works are *Essays on Human Understanding, Enquiry Concerning the Principles of Morals,* and *History of England,* 5 volumes (1754–1762). Hume was a philosopher, but biased, and the last volumes of his great *History* are distorted by prejudice and hatred of the English and everything south of the Tweed, though his work netted him a comfortable fortune.

HUNT, HELEN. See JACKSON, HELEN HUNT.

HUNT, LEIGH (1784–1859). Essayist and poet; friend of Keats, Shelley, Byron, Lamb, and Coleridge. The *Story of Rimini* is possibly the best of his poems; *Table Talk,* some of his essays in the *Examiner,* which he and Hazlitt edited, and his *Lord Byron* are his chief literary remains. Hunt was an able and generous critic, a man of sympathy, and of democratic or Whig principles; so the Tory reviewers had little praise for him and sometimes wrote terrible diatribes against all connected with him in any way.

HURST, FANNY (1889–). Married Jacques S. Danielson. Made many concrete studies of shop girls, waitresses, and working people generally. Her chief stories are *Every Soul Hath its Song, Gaslight Sonatas, Humoresque, Lummox, Mannequin* ($50,000 prize given by Famous Players-Lasky Corporation) and *Song of Life.*

IBANEZ (*ē-bän'nyäth*), **VINCENT BLASCO** (1867–1928). Spanish novelist, journalist, and politician. He is best known in America for his *Four Horsemen of the Apocalypse.* Early abandoning the law for writing, he took up republican principles, for which he suffered imprisonment. He was opposed to suffrage of women. Not enjoying a large popularity in Spain, he at last settled in France and died there. Other works are *The Shadow of the Cathedral, Blood and Sand,* and *Our Sea.*

IBSEN (*ĭb'sĕn*), **HENRIK** (1828–1906). Born at Skien, Norway, he spent some time at medicine and as a druggist's assistant, and then directed the Ole Bull theatre at Bergen. At Christiania he produced *The Warriors of Helgeland, The Pretenders,* and *Love's Comedy,* which gave him a reputation. Became leader of the social drama of modern times. From 1864 to 1891 lived abroad. His plays that have been popular in English-speaking countries are *The Pillars of Society, A Doll's House, Ghosts, Hedda Gabler,* and *When We Dead Awaken.* His intensely real works usually show the conflict between man and society.

IK MARVEL. See MITCHELL, D. G.

INGELOW (*ĭn'jĕ-lō*), **JEAN** (1820–1897). Lived at Boston, Lincolnshire, England. Known widely for her poem *High Tide on the Coast of Lincolnshire, The Story of Doom, Mopsa,* a fairy story, and some fine children's books.

IRELAND, WILLIAM HENRY (1777–1835). Forged many documents purporting to be connected with Shakespeare, first to deceive his own father, a London engraver and author, and finally to fool the public. Among other documents was *Vortigern,* a Shakespeare play, which Sheridan attempted to have

produced at Drury Lane Theatre on April 2, 1796, but the audience laughed it off the stage. During the year Ireland admitted some frauds, and in 1805 his fuller confession freed his father from blame, but some assert the disgrace had hastened the elder Ireland's death in 1800.

IRVING, WASHINGTON (1783–1859). American man of letters, of British ancestry. After a visit to Europe, he wrote with his brother and J. K. Paulding a series of *Salmagundi Papers*, full of quaint drollery and humor. His *Knickerbocker History of New York* is in his best vein, though not as finished as the later *Sketch Book*, on which Irving's fame mainly rests now. Irving has been rightly called the American Addison, for his geniality, love of life and the people about him, and his ability to make interest out of commonplace is surely Addisonian. After an absence of 17 years abroad, he returned to New York and published *The Alhambra* in 1832, a series of delightful tales and sketches of the Moors in Spain. Biographies of Mahomet, Goldsmith, and Washington take high rank in our language. Though many of his short narratives lack a certain form, his *Legend of Sleepy Hollow* and *Rip Van Winkle* led the newer type of writing in America.

IRWIN, WALLACE (1876–). Born at Oneida, N. Y., brother of Will Irwin. Humorist and character author. Best known for his *Mr. Togo, Maid of All Work*, and *Letters of a Japanese Schoolboy*, which created a new vogue, though they may lack verisimilitude to a real Japanese servant in this country. Other works are *Love Sonnets of a Hoodlum, Fairy Tales Up to Now, The Blooming Angel.*

IRWIN, WILLIAM HENRY (WILL IRWIN) (1874–). Brother of preceding. Journalist in San Francisco and New York; war correspondent. Wrote *Stanford Stories* (with J. K. Field), *The Confessions of a Con Man, The House of Mystery, A Reporter in Armageddon, Christ or Mars, Youth Rides West.*

ISOCRATES (*ī-sŏk'rȧ-tēz*) (436–338 B. C.). Attic orator and statesman. His extant works consist of letters, several works like the *Encomium on Helen*, which has a famous description of beauty, two essays on education, and the *Areopagiticus*, a treatise on political affairs.

JACKS, LAWRENCE PEARSALL (1860–): British preacher and author, editor of the *Hibbert Journal;* principal of Manchester College. Chief works are *Life of Stopford Brooke, All Men Are Ghosts, Legends of Smokeover, The Faith of a Worker.*

JACKSON, HELEN HUNT (1831–1885). American poet and novelist. Daughter of Prof. N. W. Fiske, Amherst, Mass., commenced to write after death of her first husband, Capt. E. B. Hunt, and two sons. In 1875 married W. S. Jackson, a banker, of Colorado Springs, Colo., and is buried on a neighboring mountain at her request. Noted as champion of kinder treatment for the Indians, as in *A Century of Dishonor* (1881), and three years later *Ramona*, the romance of old days in California.

JAMES, GEORGE PAYNE RAINSFORD (1799–1860). Prolific novelist whose *Richelieu* was admired by Scott. *Henry Masterton, Mary of Burgundy, Darnley*, and *The Smuggler* are among his best.

JAMES, HENRY (1843–1916). Born in New York, lived in Boston and after 1868 mainly in England. Son of Henry James, the author; brother of William James, the philosopher; father of Henry James III. Perfected the international novel, showing, for example, the life of an American in Europe in *The American* and of others in New England, *The Europeans.* Applied principles of psychology to novels, writing from the point of view of the characters, not that of the author or the reader. *Daisy Miller* and *The Portrait of a Lady* are fine character studies. James wrote many good short stories, like *The Liar, Passionate Pilgrim, Madonna of the Future*, and *The Real Thing.* Called the Browning of prose.

JAMI (1414–1492). Name adopted by Nur-Ed-Din Abdur Rahman, last great classic Persian poet. Wrote lyrics and odes, a prose *Spring Garden*, and a collection of romantic pieces called *Seven Thrones.*

JEBB, RICHARD CLAVERHOUSE (1841–1905). Professor of Greek at Cambridge University, England. Edited or translated many classic works,—Attic orators, Theophrastus, Homer, and Sophocles.

JEFFREY, FRANCIS (1773–1850). Scottish judge and editor of *Edinburgh Review* for about 26 years, during which he wrote 200 critical articles. His criticisms were able, fearless, but often biased, especially in case of younger poets or those who developed new types of writing. Tom Moore, the poet, challenged him to a duel, which the police stopped, and a warm friendship started between them.

JEROME, JEROME KLAPKA (1859–1927). English humorist, whose *Idle Thoughts of an Idle Fellow* and *Three Men in a Boat* established him in public favor. *The Passing of the Third Floor Back*, a short narrative, is among his best works.

JERROLD, DOUGLAS WILLIAM (1803–1857). After following the sea, he moved to London from Kent, and became popular as a playwright. *Black-Eyed Susan*, of his 40 plays, was the greatest hit. Later he wrote much for *Punch.*

JEVONS, WILLIAM STANLEY (1835–1882). Professor at Owens College and London University; wrote economic and scientific articles and books. His best are *The Principles of Science, The Gold Question, Primer of Political Economy*, and *Pure Logic.*

JEWETT, SARAH ORNE (1849–1909). Author of short stories of New England life; lived at South Berwick, Me., and Boston. Some very interesting stories are found in *Deephaven*, the biography of an old seaport, *The Country of the Pointed Firs*, and *Old Friends and New. A Country Doctor* largely describes the life of her father in Maine.

JOHNSON, OWEN (1878–). Son of R. U. Johnson (q. v.). Graduate of Yale. Wrote *Arrows of the Almighty, The Varmint, Stover of Yale*, the latter two fine school stories, *Murder in any Degree, Children of Divorce*, and other books.

JOHNSON, ROBERT UNDERWOOD (1853–1937). American editor, poet, and publicist. Has fostered many movements in reform and civic progress. Ambassador to Italy, 1920–1921; received decorations from several countries. Chief books are *Songs of Liberty, Saint Gaudens*, an ode, *Poems of War and Peace, Collected Poems*, and *Remembered Yesterdays*, a volume of reminiscences.

JOHNSON, SAMUEL (1709–1784). Dictator of English literary taste. *Rasselas* is an attempt to propose a stoic philosophy as the true source of happiness; it is the story of an African prince who went abroad in search of happiness, but found it at last in his home land. The poem, *Vanity of Human Wishes*, has a similar theme. His monumental *Dictionary* (1755) sought to fix the language and establish correct forms once for all. Edited the *Rambler*, a periodical similar to the *Spectator*, and wrote *Lives of the English Poets*, a fine series of biography and criticism.

JOHNSTON, MARY (1870–1936). Virginia novelist. *To Have and To Hold, Audrey, The Goddess of Reason, Pioneers of the Old South, Michael Forth, The Slave Ship* and *The Great Valley* are stories known for the romance and chivalry of the older régime.

JOKAI (*yō'kō-ē*), **MAURUS** (1825–1904). Hungarian romantic author and patriot. His best romances are *Working Days, A Hungarian Nabob, The Golden Age of Transylvania, Sad Days;* his best dramas are *The Jew Boy* and *Milton;* his best stories, *Tales of Jokai.*

JONES, HENRY ARTHUR (1851–1929). Great English social dramatist, noted for fine technique and close study of human nature. *Saints and Sinners* (1884), tale of life and faith in a small town, ran for 200 nights, followed at intervals by many dramas. His characteristic plays are *The Case of Rebellious Susan, The Liars, Mrs. Dane's Defense, Whitewashing Julia*, and *Mary Goes First.*

JONSON, BEN (1573–1637). Helped his stepfather lay bricks in London, became a soldier in the Netherlands, and finally a great classic dramatist, though his education probably had been limited. Tried to revive manner and material of Latin plays. *Every Man in his Humour* accentuated the peculiarities of type characters and founded the so-called "humour drama." His *Alchemist*, which follows the unities of time, place, and character, shows the clever schemes of a gang of sharpers in a gentleman's house in London while he is absent, the plan being frustrated by a sudden return. *Sejanus*, a tragedy, gives much

attention to Roman life. *The Sad Shepherd* is a pastoral drama. Besides other works, Jonson made many masks for noble persons and court occasions. His poem *Drink to me only with thine eyes* is still sung.

JOSEPHUS (*jō-sē'fus*), **FLAVIUS** (37–c.95). Jewish soldier and historian; active in great rebellion in 66 A. D. against Rome. Imprisoned but freed by Vespasian and became a Roman citizen. Chief works are *Jewish War, Jewish Antiquities*, his own *Life*. Knowledge of the times of Christ is found in his histories.

J. S. OF DALE. See STIMSON, F. J.

JUSSERAND (*zhüs-răn'*), **JEAN A. A. JULES** (1855–1932). French author and minister from France at Washington from 1902 to 1925. Of many distinguished works, the best known in English perhaps are *English Wayfaring Life in the Middle Ages, Literary History of the English People, The Theater from the Beginnings to the Time of Shakespeare, The School for Ambassadors.*

JUVENAL (c. 60–128). Roman lawyer whose satires, 16 in all, flay his countrymen for their loose manners and vices, giving us of today much insight into social and political conditions of the first century.

KAHN, GUSTAVE (1859–1936). French journalist and poet who claimed to be the first user of *vers libre* or free verse. He refused to use the conventional six-stress line or Alexandrine, and sought effects from the thought, and not from the rhythm, which is irregular in his poems. In the preface to *Premiers poèmes* (1897) he explains his artistic methods.

KEATS, JOHN (1795–1821). Born and lived in London; died of consumption in Rome. Trained as a surgeon, but gave up practice for literature at once. Died before his powers fully developed, but left poems of great beauty, musical effect, and romantic atmosphere. Some of his chief works are *Endymion, Eve of St. Agnes, Ode on a Grecian Urn, To a Nightingale*, and many fine sonnets, such as the one on Chapman's *Homer* and *When I have fears that I may cease to be*, a pathetic expression of his idea that he might die early, as it proved. Keats had the soul of a Greek and the temperament of an Elizabethan. He gained much from Spenser, and succeeding poets drew upon his own inspiration in many ways. Shelley's *Adonais* is a noble tribute to Keats, with indignant words for the reviewers, whose harsh criticisms may have hastened the poet's decline.

KELLER, HELEN ADAMS (1880–). Born in Alabama; through illness, deaf and blind at 19 months; educated by Miss Anne Sullivan (now Mrs. John A. Macy). Graduated at Radcliffe College. Wrote *The Story of My Life*, an essay on *Optimism, Out of the Dark, My Religion.*

KEMPIS, THOMAS A. (1380–1471). Ascetic of the Augustinian convent near Utrecht; a German by birth, born at Kempen,—hence his name Thomas of Kempen, his real one being Hemerken. His *Imitation of Christ* furnish spiritual food for thousands of people.

KENNAN, GEORGE (1845–1923). American author, correspondent, and authority on Russia, particularly Siberia. Studied Russian exile system, eruption of Mt. Pelee, the war in Cuba, the Russo-Japanese war at first hand. Lectured and wrote, among other works, *Tent Life in Siberia, Folk Tales of Napoleon, A Russian Comedy of Errors, The Salton Sea.*

KENNEDY, CHARLES RANN (1871–). Born in England, married Edith Wynne Matthison, eminent actress, lived in New York. Among his best works are his plays, some being *The Servant in the House, The Winterfest, The Terrible Meek, The Necessary Evil, The Army with Banners, The Chastening*, and *The Admiral.*

KEY (*kā*), **ELLEN** (1849–1926). Swedish teacher and author; wrote on rights of women and children. The *Century of the Child, Ideas, Lines of Life*, and two biographies are her principal writings.

KEY, FRANCIS SCOTT (1779–1843). American lawyer and author of *The Star-Spangled Banner.* Educated at St. John's College, Annapolis, lived at Frederick, Md., and Washington D. C. While trying to secure the release of a friend held captive on the British fleet in 1814 in the Chesapeake, he watched the shelling of Fort McHenry, defending Baltimore, and was inspired to write his lyric, which the Army and Navy later adopted as an official anthem.

KILMER, JOYCE (1886–1918). Young American poet killed in U. S. army at the Ourc in France; journalist and miscellaneous author. Known best, however, for his beautiful and mature lyrics, in volumes entitled *Summer Love* and *Main Street.*

KING, CHARLES (1844–1933). Graduate of West Point, and in army, 1866–1879, when retired because of wounds; returned to service as general of volunteers for the Philippine campaign in 1898. Lived afterward in Wisconsin. Of his many books, *The Colonel's Daughter, Captain Blake, Medal of Honor*, and *Famous and Decisive Battles* are representative.

KINGLAKE, ALEXANDER WILLIAM. See under EDUCATORS.

KINGSFORD, WILLIAM (1819–1898). English engineer who settled in Canada, and wrote *History of Canada, Canadian Archaeology*, and *Early Bibliography of Ontario.*

KINGSLEY, CHARLES (1819–1875). English minister and author, born in Devon. Became a Christian socialist, and as such wrote *Yeast* and *Alton Locke*, which show wretched conditions of workers. His great powers lay in description and eloquence, as shown in his *Westward Ho*, a very stirring tale of voyages to the Spanish Main, in *Hypatia*, a novel of Egypt, and in descriptions of his own beloved Devonshire. *Water Babies* is an interesting book for young folks.

KIPLING, (JOSEPH) RUDYARD (1865–1936). Born in India and became a journalist at Lahore, after being educated in Devon, England. *Departmental Ditties, Barrack Room Ballads, The Seven Seas*, are among his best volumes of poems, which have an easy grace and much characterization. *Kim* and *The Light that Failed* are his longer stories of note, full of subtle description and interpretation of life. Of his numerous volumes of short stories, we may mention *Plain Tales from the Hills, Soldiers Three, In Black and White, The Phantom 'Rickshaw* (ghost stories), *Wee Willie Winkie*, and *The Day's Work* (collection). Single stories one should read are *The Man Who Was, The Man Who would be King, The Brushwood Boy, The Drums of the Fore and Aft, They.*

KLEIST (*klīst*), **HEINRICH WILHELM VON** (1777–1811). Many consider *Der Zerbrochene Krug* (The Broken Pitcher) the best short comedy in Germany. His life and death were tragic.

KLOPSTOCK, GOTTLIEB FRIEDRICH (1724–1803). Inspired by Virgil and Milton, attempted a great religious epic called *Messias* (The Messiah), translated into 17 languages. Some other sacred poems have been admired.

KOKOSCHKA, OSKAR (1886–). German poet and painter combining in his dramas a beautiful scenery, the best of which are *The Burning Thornbush, Orpheus and Eurydice*, and the *Hiob.*

KOROLENKO (*kŏ-rŏ-lĕng'kō*), **VLADIMIR GALAKTINOVICH** (1853–1921). Russian journalist and socialist; spent six years in exile in Siberia (1879–1885). Among his works are *Siberian Tales, The Murmuring Forest, The Blind Musician*, and an interesting autobiography.

KOTZEBUE (*kōt'sĕ-bō*), **AUGUST FRIEDRICH FERDINAND VON** (1761–1819). German novelist and dramatist; lived for years in Russia. Many of his 200 odd plays were translated into other languages and often imitated or adapted. *The Stranger* and *The Spaniards in Peru*, adapted as *Pizarro* by Sheridan, melodramatic tragedies, are not now as famous as some of his comedies.

KRASZEWSKI (*kra-shev'skī*), **JOSEPH IGNATIUS** (1812–1887). Polish author of several political romances like *Countess Cosel*, other stories like *Morituri* and *Resurrecturi*, and an epic *Anafielas* on the history of Lithuania.

KUPRIN (*kŏ-prēn'*), **ALEXANDER IVANOVICH** (1870–). Novelist and short story author, served in Russian army, lived afterward in France. His novel, *The Duel*, is a realistic picture of garrison life, and several others have been translated into English.

KYD, THOMAS (1558–1594). Elizabethan dramatist, whose *Spanish Tragedy* set the fashion for the

plays of blood for a generation. They left no device and no cruelty unemployed.

LA FONTAINE, JEAN DE (1621–1695). French author who lived at Château Thierry and Paris. Though his stories are well known only in France, his *Fables* are read throughout the world. They are fresh, vivid, and artistic, pleasing young and old alike to a remarkable degree.

LAGERLOF (*lä'gĕr-lûf*), **SELMA** (1858–1940). Swedish teacher, who devoted herself to writing after 1895. As early as 1890 her *Gosta Berling Saga* won a prize, and in 1909 she was granted the Nobel prize for literature. She excels in simple, home-like tales, and psychological novels; some of her best work being *From a Swedish Homestead, Legends of Christ, The Adventure of Nils*, the last being written for the schools.

LAMARTINE, ALPHONSE DE (1790–1869). Voluminous French author of early romantic school. His *Meditations, Harmonies*, and *Jocelyn* are facile and original poems; *The Stone Mason* is a masterly short narrative; and *La Presse*, his reminiscent accounts of his experiences, are now thought the best of his 41 volumes.

LAMB, CHARLES (1775–1834). Delightful English essayist and romanticist; employed in the accountant's office of the East India House for 33 years. Wrote out of hours. Tried and failed at drama but in 1807 the *Tales from Shakespeare* by Charles and Mary Lamb attracted immediate attention. *Poetry for Children* and some stories followed, then some journalistic work and essays, till in 1823 the first of his volumes of *Essays of Elia* appeared. These and his remaining works take high rank for quaintness, good humor, delicate pathos as in his *Dream Children*, and as mirrors of the best in literature of a bygone day.

LANDON, LETITIA ELIZABETH (1802–1838). Under initials "L. E. L." wrote many sentimental and melancholy verses, which suited the taste of the age. Married George Maclean, but survived only a few months. Born at Chelsea, English; died at Cape Coast, Africa, where her husband was governor. *The Fate of Adelaïde* and *Poetical Works* are still remembered.

LANDOR, WALTER SAVAGE (1775–1864). English poet, educated at Oxford, and lived in Italy for several years. Besides some poems that are noble in diction, fertile in imagination, and sensitive in metrical effects, he wrote *Imaginary Conversations, Citation and Examination of William Shakespeare, Hellenics*, poems in Latin model, *Antony and Octavius*, twelve poetic dialogs, and other prose works.

LANG, ANDREW (1844–1912). Scotch scholar and man of letters. In Scotch history he wrote two books about Mary Stuart, one about John Knox, an elaborate *History of Scotland;* in narrative, the *Blue Fairy Tale Book*, followed by a *Red*, a *Green*, and a *Yellow;* several volumes of poems; translations from the Greek, and a fine account of *The World of Homer;* and in folklore, *Custom and Myth, Myth, Literature, and Religion*, and *The Making of Religion*. These are but a few of his valuable works.

LANGLAND, WILLIAM (c. 1332–c. 1400). Reputed English poet, author of *Piers Plowman*, a satire on the abuses of nobles and the helpless state of the people. Has been called the Divine Comedy of the poor. It belongs to vision literature, advancing the claims of a true reformer who is to save the people. Professor J. M. Manly and others believe this work a collection of older poems, or else Langland is merely a name, and not the single author.

LANIER, SIDNEY (1842–1881). Born in Macon, Ga., lived in the South and in Baltimore, where he lectured at Johns Hopkins. His *Science of English Verse* traces the relations between poetry and music. Lanier played the flute professionally. Another prose work highly appreciated is the *English Novel*. He is now best known, however, as author of delightful lyrics like *Corn, The Song of the Chattahoochie*, and *The Marshes of Glynn*.

LARDNER, RING W. (1885–1933). American writer on sports and of humorous sketches; born in Michigan, lives near New York City. His best known works are *You Know Me, Al, Gullible's Travels, Symptoms of Being 35*, and *What of It?*

LAVEDAN, HENRI LEON EMILE (1859–1940). French witty author, playwright, and journalist. He has described life in Paris with cleverness, insight, and kindliness, but looks on the human stage as a moralist. *The Descendants* is a satire on the nobility. His short stories and sketches *Catherine, The New Spirit*, and *The Marquis of Priola* are well known.

LAWRENCE, DAVID HERBERT (1885–1930). British novelist of originality and insight of social conditions. Influenced by travels in many lands. Later novels, especially those with scenes laid in Mexico, treat problems of sex. *Women in Love, Kangaroo, Ladybird, The Plumed Serpent* are among his fictions; *Sea and Sardinia, Psychoanalysis and the Unconscious, Studies in Classic American Literature*, are among his other prose; *Mornings in Mexico*, a volume of essays; and *Movements in European History*, a study of great trends.

LAYAMON (*lä'yä-mŏn*) (11 cent.). English author of an elaborate chronicle called *The Brut*, of which two manuscripts exist, but they seem to be copies of the original, or at least not the first copy. There are more than 32,000 lines. Probably a paraphrase of an older poem by Robert Wace, a little over half its length. Source of later chronicles.

LEACOCK, STEPHEN BUTLER (1869–). Canadian novelist and economist; professor at McGill University, Montreal. Besides *The Unsolved Riddle of Social Justice*, his writings consist mainly of stories and novels like *Nonsense Novels, Arcadian Adventures with the Idle Rich, Moonbeams from the Larger Lunacy, My Discovery of England*, and *The Garden of Folly*. He writes with a pleasant witty touch and kindly view of life.

LECKY, WILLIAM EDWARD HARTPOLE (1838–1903). Irish historian who tried to study the relations between morals, religion, and history. His chief works are *History of Rationalism*, incorporating his earlier *Declining Sense of the Miraculous, Leaders of Public Opinion, History of European Morals*, and *History of England*. Though his work lacks system and compression, Lecky had a fine sense of fact and relationship.

LECONTE DE LISLE, CHARLES MARIE (1818–1894). Leader of the Parnassian movement in French poetry. His verse is cold, clear, rhythmical, correct, and realistic, with some color and romance. Translations of the Greek poets and of Horace are among his best. His own *Poèmes antiques, Poèmes barbares* and *Poèmes tragiques* are still renowned.

LEE, SIR SIDNEY (1859–1926). English author of Jewish parentage. Shortly after graduation from Oxford, became connected with *The Dictionary of National Biography*, but he is best known now as author of the definitive *Life of Shakespeare*, which has passed through several editions. Also edited Shakespeare, wrote biographies of Queen Victoria and King Edward (unfinished), and other works, chief of which are *Shakespeare and the Modern Stage, Principles of Biography, The French Renaissance in England*.

LEE, VERNON (Pen-name for Violet Paget) (1856–1935). Of English birth and training, long a resident and interpreter of Italy. Some notable works by her are *Studies of the Eighteenth Century in Italy, Euphorion, Essays on the Renaissance, Gospels of Anarchy*, and *Satan the Waster*, a war tragedy and indictment of all international and civil strife. Her stories and novels also created no little comment.

LE GALLIENNE (*lē-gāl'ĭ-ĕn'*), **RICHARD** (1866–). English critic and poet; lived in United States after 1898. Wrote, among many other works, *George Meredith, The Religion of a Literary Man, The Life Romantic, Omar Repentant, Painted Shadows*, and *The Junk Man and Other Poems*.

LEGOUIS, EMILE (1861–1937). French scholar, lecturer at Sorbonne, Paris. With L. Cazamian (q. v.) wrote the *History of English Literature*, and alone *The Youth of Wordsworth, Shakespeare, Chaucer*, and *Spenser*, collaborating also on a translation of the *Canterbury Tales*, which was crowned by the French Academy. Lectured in the United States.

LELAND, CHARLES GODFREY (1824–1903). American poet of humorous verses included in the *Hans Breitmann's Ballads* (1871), and several critical works, *The English Gypsies, Gypsy Sorcery and Fortune-Telling, Poetry of Mystery and Dream, Algonquin Legends* being among his best.

LEMAITRE (*lĕ-mā'tr*), **JULES** (1858–1914). French dramatist, critic, and author of short narratives. *Myrrha*, stories, *The Kings, The Pardon*, and *The Difficult Age*, and *Bertrade*, plays, are still high

praised. Two of his plays were produced in New York, *The Pardon* and *The Studio Assistant.*

LEMOINE, JAMES MacPHERSON (1825–1911). Canadian scientist and author. *Birds of Quebec, Lore of the Lower St. Lawrence, The Scot in New France, Maple Leaves,* and *The Tourist's Note Book* represent his range and interests.

LEMON, MARK (1809–1870). More than 60 of his dramatic pieces were produced in London. He founded and edited *Field,* and, with Henry Mayhew, the humorous weekly *Punch* (1841), which still remains a national asset, besides many lyrics, a hundred songs, and some fairy tales.

LERMONTOV, MIKHAIL YUREVICH (1814–1841). Russian poet of Scotch ancestry. For writing *On the Death of the Poet* (1837) after the death of Pushkin, he was exiled for a year to the Caucasus to a line regiment. In 1841 he was killed in a duel with an old schoolmate for the affections of a lady. *A Hero of our Times,* and some posthumous poems make up his work, some of which C. T. Wilson translated in 1887 into English.

LE SAGE, ALAIN RENE (1668–1747). French novelist and playwright. Two plays of considerable merit are *Crispin* and *Turcaret,* quite in the manner of the time; but his prose *Gil Blas* set a new vogue in France, the successor of the Spanish picaresque novel.

LESSING, GOTTHOLD EPHRAIM (1729–1781). German author who did much to establish the literary language and style of modern times. Son of the chief pastor at Kamenz, who sent him to Leipzig to study theology, but he became interested in literature instead. Translated from the English and French, and his first great play *Miss Sarah Sampson* was founded on French models. Finally he sought to establish a real German style and manner of writing plays. *Minna von Barnhelm,* his greatest comedy, gives us a German soldier who is a man of honor, but the heroine is one of the greatest figures in European drama. *Emilia Galotti* (1772), a great tragedy, embodies the foundation of the story of the Roman Virginia, but really is a play of the common lot of man. Lessing's *Laokoon* is a classic study, showing the relation of poetry to the plastic arts. His *Hamburgische Dramaturgie* is a valuable work on play construction and staging. Lessing's last years were involved in theological controversy, which his drama *Nathan der Weise* did not diminish.

LEVER, CHARLES JAMES (1806–1872). Irish physician and novelist; author of many droll and picturesque stories, such as *Charles O'Malley,* somewhat shadowing forth his experiences at Trinity College, Dublin, *Harry Lorrequer, Jack Hinton,* and *The Dodd Family Abroad.*

LEWES, GEORGE HENRY (1817–1878). English philosopher and literary critic; husband of George Eliot (q. v.). His *Life of Goethe* is a standard work. Other criticism is *The Spanish Drama, Actors and Acting,* and *Biographical History of Philosophy;* scientific books, *Studies in Animal Life, Seaside Studies, Problems of Life,* the last being perhaps his supreme accomplishment.

LEWIS, MATTHEW GREGORY (1775–1818). One of the leaders of the Gothic Romance, or the novel of horror in England, wrote *Ambrosio, the Monk,* earned the nickname "Monk" Lewis, and set the literary fashion for a time.

LEWIS, SINCLAIR (1885–). Born in Minnesota; journalist and author. Of his works, those portraying the common lot of man excel, such as *Main Street, Babbitt, Elmer Gantry,* each one also attacking some contemporary abuse.

LIE, JONAS LAURITZ EDEMIL (1833–1908). Norwegian novelist, failing at journalism, produced *The Visionary* (1894) which won him a reputation. Other well-known stories are *The Pilot and His Wife, The Commodore's Daughters, Niobe,* and *Trold* (Weird Tales), a collection of short stories.

LILIENCRON (*lĭl'i-en-krōn*), **DETLEV VON** (1844–1909). German author, best known for his lyric poems, as in his *New Songs,* for his powerful short stories in *Der Mäcen, Krieg und Frieden,* and his humorous poem, *Poggfred.*

LINDSAY, NICHOLAS VACHEL (1879–1931). American poet known for richly colored and musical verses. *General William Booth Enters into Heaven, The Chinese Nightingale,* a delightful fantasy, *The Golden Whales of California* are among his noted lyrics.

LIPPMANN, WALTER (1889–). Journalist and author of *A Preface to Politics, Liberty and the News, Public Opinion, The Phantom Public,* and *Men of Destiny.* Lives in New York City.

LIVY (59 B. C.–A. D. 17). In Latin Titus Livius wrote his history in 142 books, 35 being now preserved. This work gives in fine language much information of early ages, ending in 9 B. C.

LOCKE, WILLIAM JOHN (1863–1930). Novelist and playwright, born in Barbados; lived in England. Some of his fictions are *The Beloved Vagabond, Simon the Jester, The Fortunate Youth, The Wonderful Year, Stories Near and Far;* several of his dramas are based on his own novels.

LOCKHART, JOHN GIBSON (1794–1854). Scotch editor and author; son-in-law of Walter Scott, whose *Life* he wrote as a *magnum opus.* Other works are papers in *Blackwood's Magazine,* four novels, and some translations. Next to Boswell's *Johnson,* the *Life of Scott* takes highest rank as an English biography. Lockhart gave up the profits to help pay obligations voluntarily assumed by Scott after his publishing firm failed.

LONGFELLOW, HENRY WADSWORTH (1807–1882). American poet of graceful, melodious verses, loved by the young especially. Was a graduate of Bowdoin in the famous class of 1825, taught languages at Bowdoin, and after 1836 at Harvard. Some of his favorite poems are *Evangeline, The Courtship of Miles Standish,* stories in verse of old colonial life, *Hiawatha,* a beautiful Indian legend, *Tales of a Wayside Inn,* a collection of delightful stories, *The Psalm of Life*—about as well known as any modern English poem, sonnets, and translations. Though not a great thinker, Longfellow is a true and inspiring poet.

LONGINUS, DIONYSIUS CASSIUS (c. 213–273). Athenian philosopher whose works on rhetoric were greatly admired in ancient times and whose *On the Sublime* is standard even now.

LOTHROP, HARRIETT MULFORD (STONE) (1844–1924). Born in New Haven, Conn., married Daniel Lothrop of Boston, a publisher. Under name of Margaret Sidney, wrote the Little Pepper series of delightful children's stories, including *Five Little Peppers and How They Grew, What the Seven Did,* and *Dilley and the Captain.*

LOTI, PIERRE (1850–1923). Pen name for Louis Marie Julien Viaud. French intimate writer of vivid and intriguing stories such as *Pecheur d'Islande, Le Mariage de Loti, Madame Chrysanthème, Ramuntcho, Le Livre de la pitié et de la Mort.*

LOUNSBURY, THOMAS RAYNESFORD (1838–1915). American professor and critic of English; taught at Yale. His *Life of Fenimore Cooper,* one of our fine biographies, *Studies in Chaucer,* his master work, and various works on Shakespeare, *English Spelling and Spelling Reform,* and *The Standard of Usage in English* are his chief works.

LOVELACE, RICHARD (1618–1658). Royalist and poet in Jacobean age. While in prison he wrote *To Althea from Prison,* which with his *Going to the Wars,* and *The Scrutiny* make up his best lyrics, full of dash and vividness. "Strong walls do not a prison make nor iron bars a cage," a familiar quotation, comes from Lovelace.

LOVER, SAMUEL (1797–1868). Irish man of letters and musician. Known first by his songs, he became popular at London, and later published his *Songs and Ballads,* and *Rory O'More* and *Handy Andy,* two inordinately popular fictions.

LOWELL, AMY (1874–1925). American poet, known for freedom and independence in writing. Championed modern free verse. Besides several volumes of poetry, some of which are *Sword Blades and Poppy Seeds, Pictures of the Floating World, Fir-Flower Tablets* (from the Chinese), and *A Critical Fable,* her *John Keats* and *Six French Poets* were highly praised.

LOWELL, JAMES RUSSELL (1819–1891). Professor at Harvard, ambassador to Spain and England, essayist, and poet, Lowell was a busy man. *Among My Books* and *My Study Windows* give us the best of his literary criticism, which was penetrating, generous, and admirable in literary style. *My Garden Acquaintance, On a Certain Condescension in Foreigners, A Good Word for Winter* are well-known papers.

As first editor of the *Atlantic Monthly* (1857–1861), Lowell did no little to establish and fix high literary standards in America. Among his poems, the *Harvard Commemoration Ode*, *The Biglow Papers*, delightful dialect poems of quaint Yankee humor and philosophy, *A Fable for Critics*, *The Vision of Sir Launfal*, and many short lyrics are familiar friends.

LUDWIG, EMIL (1881–). German playwright, novelist, and biographer. Some of his plays are *Ein Untergang*, *Napoleon*, *Die Borgia*, *Tristan and Isolde*, *Atalanta*, and *Ariadne*; novels *Manfred und Helena*, *Diana*; biographies in a florid style of Goethe, Wagner, Bismarck, Napoleon, and Christ.

LUND, TROELS FREDERICK (1840–1921) Danish historian of social, personal, and family life, for which he read numerous documents. Besides his history of Denmark, he wrote a volume of gifted historical tales.

LYLY, JOHN (1553?–1606). English author, known for his *Latin Grammar* which was used for several generations, his *Euphues*, which set the vogue for both literary style and politeness in the Elizabethan age, and for *Endymion* and other imaginative and literary dramas. Euphuism, named for the chief prose work of Lyly, is a style of antithetical sentences, with puns, allusions especially to nature, and other artificial elements. Shakespeare, who may have been a pupil or at least a friend of Lyly, shows this style in *Much Ado* and other dramas.

LYTTON, EDWARD ROBERT. See MEREDITH, OWEN.

McCARTHY, JUSTIN (1830–1912). English politician and author, born in Ireland, and lived in United States from 1868 to 1871. Member of the House of Commons and vice-president of the Irish National League (1886); leader of Home-Rule Party after Parnell. Of his numerous writings, *History of the Four Georges and William IV*, *Epoch of Reform*, *A History of Our Own Times*, *The Story of Gladstone's Life*, and *The Story of an Irishman* are well known.

MACAULAY (*mă-kô'lĭ*), **THOMAS BABINGTON** (1824–1905). English essayist and politician. Noted for his wonderful memory, his precocity, and command of great masses of historical details, though he was often biased and lacked a broad philosophical view. Graduated at Cambridge, and practiced law for a time. When he was 25, his *Essay on Milton* established his fame, and is still one of our best critical biographies. While one of the Supreme Council for India, he drafted a bill which became the criminal code for that country. After 1847 he gave himself wholly to writing, and the following year two volumes of the *History of England* appeared. Late in 1855 two more volumes were ready. In England alone within about 30 years, 140,000 copies were sold, and the *History* was translated into nine European languages. Besides several volumes of later essays, he wrote the *Lays of Ancient Rome*, energetic and picturesque, if not great poetry. No modern author had a better command of material, a stronger way of emphasizing, or more confidence in the truth of his narrative, but he often runs to excess, overstatement, and too great detail.

MacDONALD, GEORGE (1824–1905). Scotch novelist and poet. Graduate of Aberdeen University and preached for several years. Besides stories for the young, some sermons, his chief works are *Within and Without*, a dramatic lyric, and his imaginative romance, *Phantastes*, and several novels, *Annals of a Quiet Neighborhood*, *Robert Falconer*, *Malcolm*, *The Marquis of Lossie*, and *Donald Grant*.

MACHAR, JAN SVATOPLUK (1864–). Czech poet, from early verses of sentiment, finally turned to satire, in which he used many of the persons known in history. *Magdalene*, *Warriors of God*, *In the Glow of the Hellenic Sun*, and *The Jail* are his chief writings, the last being a vivid account of his own imprisonment during the World War in Austria.

MACKAY, CHARLES (1814–1889). Scotch writer of songs like *Cheer, Boys, Cheer*, for which Henry Russell and Sir Henry Bishop made the music, a prose *Voices of the Crowd* (1846), which has some extraordinary descriptions of people, and critical works like *Memoirs of Public Delusions*, and he edited a collection of English poetry that long held the public interest. His son, Eric Mackay (1851–1899) wrote the interesting *Love Letters of a Musician*. Miss Marie Corelli (q. v.) was an adopted daughter.

MACKAYE (*mă-kī'*), **PERCY** (1875–). American poet and dramatic author, son of Steele Mackaye, noted just below. Graduate of Harvard. Imagination, dignity, wealth of diction, and clever technique characterize all his compositions. *Dogtown Common* and *Poems* are lyrics, *The Canterbury Pilgrims*, a fine modern rendering of Chaucer's immortal *Prolog*, *Sappho and Phaon* and *The Scarecrow* are dramatic poems, *Saint Louis* and *Caliban* are masks, and *Kentucky Mountain Fantasies* are short narratives of folklore.

MACKAYE, STEELE (1842–1894). American author of 30 plays, *Hazel Kirke* being performed countless times; acted in 17 different characters himself; and did much to raise the standards of acting and speaking by his lectures on dramatic art and elocution.

MACLAREN, IAN (1850–1907). Better known pseudonym of Dr. John Watson, a Scotch clergyman and author. He was born in Essex, educated at Edinburgh and Tübingen, became a minister of the Free Church and held pastorates in Glasgow and Liverpool. From 1894 he was known as the author of sketches and sentimental stories of Scotch life and manners, as in *Beside the Bonnie Brier Bush*, *The Days of Auld Lang Syne*, and *A Doctor of the Old School*. Some of his religious books are *The Mind of the Master*, *The Potter's Wheel*, and *The Cure of Souls*.

MACLEOD, NORMAN (1812–1872). Scotch clergyman, editor, and voluminous writer. One of the founders of the Evangelical Alliance, edited the *Christian Instructor*, and helped the poor in many ways. He is recalled now mainly through his fascinating *Reminiscences of a Highland Parish* and *Peeps at the Far East*.

McMASTER, JOHN BACH (1852–1932). Educated in New York City, became an instructor in civil engineering at Princeton, and professor of history at the University of Pennsylvania. Known for his scholarly and readable *History of the People of the United States from the Revolution to the Civil War*, *History of the People of the United States During Lincoln's Administration*, and *With the Fathers*.

MACPHERSON, JAMES (1736–1796). Scotch poet and schoolmaster, who for several years made a study of Gaelic, after which in 1760 he issued *Fragments of Ancient Poetry Collected in the Highlands of Scotland*. One year later, after further travel, he produced a poem claimed as a modern equivalent of some fragments written by Ossian or Oisin, a bard of the very early days. He followed this with *Temora*, and in 1765 with *The Collected Works of Ossian*. At once a debate arose. Dr. Johnson said they were spurious, but Macpherson claimed that he had some originals, but neither he nor his literary executor produced enough to convince the skeptics. The modern view favors the theory that Macpherson may have had a basis for his work, but it was rather slight, the most being his own rhythmic prose and odd diction.

MAETERLINCK (*mā'tĕr-lĭnk*), **MAURICE** (1862–). Belgian dramatist and poet, known for his study, defense, and use of mysticism in his works, especially in the earlier ones. *The Seven Princesses*, *Pelléas and Mélisande*, several delightful pieces for the marionettes, *La Mort de Tintagiles*, a translation or two, a study of Novalis, a book on the ethics of mysticism are among his first successes. Since the World War he has written four volumes of essays, *The Buried Temple*, *The Double Garden*, *Life and Flowers*, and *Death*. These turn away somewhat from his earlier mysticism. Probably Maeterlinck is best known in English countries by his fascinating *Blue Bird*, a play of fantasy and great charm of technique. Received the Nobel Prize for literature in 1911.

MAISTRE (*mĕs'tr*), **XAVIER DE** (1763–1852). French author, who saw military service in Russia, and lived there as a painter for a time before gaining the rank of major general in the Caucasus campaign. His delightful *Journey Round My Chamber* was written while he was temporarily in prison. Other works are *The Prisoners of the Caucasus*, *The Young Siberian Girl*, and *Nocturnal Expedition*.

MAJOR, CHARLES (1856–1913). Novelist who lived in Indiana and wrote popular works, of which the most noted are *When Knighthood Was in Flower*, *The Bears of Blue River*, and *Dorothy Vernon of Haddon Hall*.

MALET, LUCAS (1852–). Pen name of Mary St. Leger Harrison. She was the daughter of Charles Kingsley; married William Harrison, rector at Clovelly, Devon. After her husband's death in 1897 lived in London. *The Wages of Sin* and *History of Sir Richard Calmady* are her earliest great successes, followed

by *A Counsel of Perfection, On the Far Horizon, The Tall Villa,* and *The Days of Want.*

MALLOCK, WILLIAM HURRELL (1849–1923). English author of stories having controversial and sociological basis, including *The New Republic* in which he introduced several famous contemporaries, *The New Paul and Virginia, The Reconstruction of Belief,* a study of dogma and *The Old Order Changes,* an anti-socialist story.

MALORY, THOMAS (d. 1471). English knight and member of Parliament, who compiled or copied a version of several romantic stories in his *Morte d' Arthur.* Caxton printed this in 1485. It contains parts of five different cycles or legends, including the *Merlin, Tristan, Lancelot, Queste,* and *Morte Artus;* parts omitted were the *Joseph of Arimathea,* the *Grand S. Graal,* and a portion of an early *Graal.* Though some of the joints show and many things need to be explained, Malory made a fairly unified and entertaining series of rapid narratives of the early days of chivalry. Arthur in his hands becomes a reality, and no longer a mere ideal or an historical myth.

MANZONI, ALESSANDRO (1785–1873). Italian poet, patriot, and novelist. His *Il Conte di Carmagnola* broke from all classical traditions of drama. This was followed by some poems not immediately published and finally (1825–1827) by his great romantic masterpiece *I Promessi sposi* (The Betrothal), an historical picture of the seventeenth century, ranked by some the greatest European novel. The *Il Cinque Maggio* is an ode written on the death of Napoleon.

MARDEN, ORISON SWEET (1850–1924). American editor and exponent of success in life. Founded the *Success Magazine,* which he edited from 1897 to 1912, and wrote *Pushing to the Front, The Secret of Achievement, Training for Efficiency,* and *Masterful Personality.*

MARKHAM, EDWIN (1852–1940). Born in Oregon, lived for some years as a teacher in California, and then settled in New York. His *Man with a Hoe,* showing the downtrodden nature of some workers, was more widely copied, discussed, and combated than almost any other poem of the generation. It was inspired by seeing the picture by Millet. *Lincoln* was almost as famous. Later books, *Shoes of Happiness* and *Gates of Paradise,* contained no great works, but many poems high above the average.

MARLOWE, CHRISTOPHER (1564–1594). Father of English single-hero drama and perfector of blank verse for tragedy. Graduate of Cambridge. The *Hero and Leander,* a colorful and romantic poem, belongs to the love poetry of the age. Between 1587 and 1593 he produced five great tragedies in wonderful lines of firmness and artistic finish. *Tamburlaine the Great,* a heroic drama in two parts, is founded on legends of the mighty monarch of the east; it contains many noble passages; *Dr. Faustus,* a philosophic, romantic tragedy, is founded on the legend of a man who sold himself to the devil in return for 24 years of pleasure and success; and *The Jew of Malta* is a cruel and vindictive tragedy of blood, of the type then current, but written in a way to command some respect for the *Jew* himself. Other plays are noble in parts, but probably suffer from corruption of the texts that have come down to us. On the whole, Marlowe is the greatest dramatist in the Elizabethan age next to Shakespeare himself.

MARRYAT (*măr'ĭ-ăt*), **FREDERICK** (1792–1848). Served for 25 years in the English navy with great distinction. After 1829 gave himself to writing tales of heroism at sea. He stands between Smollett and Fenimore Cooper as the greatest novelist in English of his type. Marryat created many vivid and droll pictures in *Mr. Midshipman Easy, Peter Simple,* and *Snarley-yow, or the Dog Fiend.* Later he wrote many books for boys, including *Masterman Ready, Percival Keene, Children of the New Forest.* Visited Canada and the United States. His daughter, Florence Marryat (1837–1899), wrote his *Life* and many stories of her own.

MARTIAL (MARCUS VALERIUS MARTIALIS) (c. 39–104). Roman writer of epigrams; born in Spain. Gave the form point and dash, with everything that interests man as subjects of his jests.

MARTINEAU (*mär'tĭ-nō*), **HARRIET** (1802–1876). English author of various types of works; traveled much, including a visit to the United States, when she took the part of the abolitionists (1834). Lived after 1845 at Ambleside, England. *Society in America, The Hour and the Man* (a novel), some tales for children, including *Settlers at Home, Feasts on the Fiord,* and *The Peasant and the Prince,* and *Eastern Life, Past and Present,* tracing the religions of mankind. Her brother, James Martineau, wrote various theological works, the best known of which, *Endeavours after the Christian Life,* is a collection of sermons.

MASEFIELD, JOHN (1875–). English poet and novelist, traveled much, lived in America for time, followed the sea. *Salt-Water Ballads, The Everlasting Mercy,* and *The Daffodil Fields,* are some of his best poetry, noted for action and fine description; *Jim Davis* and *Multitude and Solitude* are novels; *The Tragedy of Nan, Pompey the Great* are some of his dramas; and *Gallipoli* contains sketches of the World War in Turkey.

MASTERS, EDGAR LEE (1869–). Born in Kansas, educated at Knox College, and practiced law in Chicago. Became famous through his *Spoon River Anthology,* an attempt to represent rustic characters in their own language and environment in a free verse style of poetry. *Starved Rock, Mitch Miller, Doomsday Book, The New Spoon River Anthology, Selected Poems* (1925) are some of his other volumes.

MATTHEWS, BRANDER (1852–1929). Graduate of Columbia and professor of English there from 1892 to 1924. His *Vignettes of Manhattan* contain some fine stories of city life; his *Molière, French Dramatists of the 19th Century, Aspects of Fiction,* and *Development of the Drama,* show his keen critical faculties.

MATURIN, CHARLES ROBERT (1782–1824). English author, whose tragedy of *Bertram* was recommended to Drury Lane Theatre by Scott and Byron and made some stir, and whose story *Melmoth,* giving the account of a kind of "Wandering Jew," was long a favorite.

MAUPASSANT (*mō-pà-sän'*), **GUY DE** (1850–1893). One of the greatest French authors of short stories, numbering about 200, some of which like *The Necklace, The Coward,* and *The Piece of String* being known in many lands. Though now not so well known as a novelist, some famous longer stories like *A Life,* with its exact, truthful, and brutal realism, *Pierre and Jean, Bel-Ami,* the story of a scoundrel, and *The Little Rogue,* are characteristic of his great but very erratic mind. *Le Horla,* a series of tales of a distorted imagination, predict the derangement which deepened in his last four or five years till total eclipse came toward the end.

MAUROIS, ANDRE (1885–). French author of several delightful and idyllic biographies of Englishmen, among which are his *Ariel, or the Life of Shelley* (1923), and similar treatments of Disraeli and Byron.

MAURRAS, CHARLES (1868–). French writer and politician, known for his royalist sentiments. Wrote many articles during the World War. His *L'Action Française,* not so highly regarded at home, took deep root in some foreign lands.

MEDINA, JOSE TORIBO (1852–1930). Chilean bibliographer, legation secretary, and author. Visited the United States and Europe to study documents bearing on Chili; set up his own printing press in 1886. Issued many volumes, including the masterpiece, *The Aborigines of Chili, History of Colonial Literature in Chili,* 30 volumes of historical documents, and *Hispano-American Library.*

MELVILLE, HERMAN (1819–1891). American author, born in New York City, sailed on a whaling ship at 18, but left the boat because of the cruelty of the captain, was captured by cannibals and lived among them unharmed for four months, until finally rescued. From 1866 to 1885 he held a post in the New York Custom House. Melville was a close friend of Nathaniel Hawthorne. Of various works, the greatest are those that deal with adventures on sea and land, growing out of his own experiences, such as *Typee,* the account of his experiences among the cannibals of the Marquesas; *Omoo,* other adventures in the South Seas, and *Moby Dick, or The Whale.* For a time the works of Melville were almost forgotten, but after 1910 there was a great revival of interest in his stirring tales.

MENANDER (c. 342–291 B. C.). One of the leaders in the new comedy, so called, of Greece. Though he wrote many plays, only certain fragments remain, about 850 single lines of his works. The Roman authors of comedy, Plautus and Terence, drew on Menander for some of their plays.

MENDES, CATULLE (1841–1909). French poet of great metrical grace; of Jewish ancestry; born in Bordeaux, died in Paris. Wrote *Philomela*, various editions of his *Poems*, and novels, *Le Roi Vierge*, *La Maison de Vieille*, and *Gog*.

MEREDITH, GEORGE (1828–1909). Novelist and poet; born in Hants and died in Surrey, England. *Shaving of Shagpat*, his first novel, catches the atmosphere of the *Arabian Nights*, with their vividness and magic. *The Ordeal of Richard Feverel*, considered a masterpiece of analysis and characterization, tells how a father attempts to bring up his son according to a fixed "system" which does not always work. *The Egoist* traces the character of a self-centered man, until he loses friends and sweetheart, but *Diana of the Crossways* was more popular with the general readers. Of his several volumes of poems, the best single pieces perhaps are those like *The Woods of Westermain*, *Love in a Valley*, *Seed-time*, *Hard Weather*, and *The South-Wester*. The reality and sacredness of nature greatly impress Meredith.

MEREDITH, OWEN (1831–1891). Pen-name for Edward Robert Bulwer-Lytton, first Earl of Lytton. He was a son of E. G. E. L. Bulwer-Lytton (q. v.), author of *The Last Days of Pompeii* and many other novels. Owen Meredith became a diplomatist, holding various posts, and a poet of unusual grace and descriptive power. Some of his chief works are *Lucile*, *National Songs of Servia*, *Fables in Song*, and *Legends of Exile*.

MEREZHKOVSKY, DMITRI SERGEIEVICH (1865–). Russian man of letters, noted for novels and poems. *Christ and Antichrist* is a trilogy of historical significance and likewise the novels *Alexander I*, *December 14*, and *The Birth of the Gods*, based in part on the discovery of the tomb of King Tutankhamen. He also published studies of Tolstoy and Dostoievsky. After the Russian revolution he lived in Paris.

MERIMEE, PROSPER (1803–1870). French romantic author, noted principally for his colorful novels. *Colomba*, a picturesque and masterly story of Corsica; followed by *Mateo Falcone*, in which the Southern precision as to honor is brought forth; *Arsène Guillot*, satirizing false morality and faith; and *The Capture of the Redoubt*, a clever and detailed piece of description, are some of his celebrated works.

MEYNELL, ALICE (1849–1922). Gifted English poet; born as Alice Thompson, married Wilfred Meynell in 1877, to whom she had been introduced after he had read her sonnet *My Heart shall be thy Garden*. Much interested in journalism and relief of the poor. Of her various volumes of poetry, most was collected for the *Poems* (1923). Some of her books appeared in volumes like *The Rhythms of Life*, *The Second Person Singular*, followed at last by collected *Essays* (1914).

MICHELET (*mĭch-lē*), **JULES** (1798–1874). French historian and professor. Through opposition to the restoration of the empire, he lost a place held in the Record Office and finally his professorship at the Collège de France. From his *Introduction to Universal History* to his last volume of the incomplete *History of France*, his works are varied and numerous. As a romantic and picturesque historian he is at times less reliable than the plodding, scientific writers. *History of the French Revolution*, *Women of the Revolution*, *Woman*, *The Bible of Humanity*, and *Montagne*, are his chief volumes. The *History of France*, now published in about 20 volumes, takes the story to the French Revolution.

MICKIEWICZ (*mik-ē'ā-vits*), **ADAM** (1798–1855). Great Polish poet, born in Russian territory; spent many years in wandering after 1830. *Konrad Wallenrod* is a veiled account of the wars between Poland and Russia; *Dziady* (Forefathers' Eve) is a fantastic piece describing ancient national religious rites, including an account of his own unhappy love-affair; and the epic *Pan Tadeusz*, describes home life in his country of Lithuania. Because of the vivid reminiscences, touched with the sadness known to an exile from his native land, the poetry of Mickiewicz has been inordinately popular among Polish folk. For a time he was a professor in France.

MILLAY, EDNA ST. VINCENT (1892–). Born in Rockland, Maine; graduate of Vassar College. Married in 1923 Eugen Jan Boissevain. She won the Pulitzer prize in 1923 with her *Harp-Weaver*. Some of her other volumes are *Renascence and Other Poems*, *A Few Figs from Thistles*, *The Lamp and the Bell*, and *The Buck in the Snow*. With Deems Taylor as composer of the music in 1925 she collaborated in *The King's Henchman*, an American opera enthusiastically received at the Metropolitan Opera House in New York.

MILLER, JOAQUIN (1841–1913). Adopted name of Cincinnatus Heine Miller. Called the Poet of the Sierras. Born in Indiana; was a judge in Oregon; lived in Washington as a journalist and later settled in California. *Songs of the Sierras*, *Songs of the Sunlands*, and *Collected Poems* are his main volumes, noted for love of nature, for freedom from restraints of conventional society, and for lyric sincerity. For a time he mined gold in California.

MILTON, JOHN (1608–1674). Born in London. His father, a notary, gave him all advantages of the time, including a course at Cambridge, where he became an M. A. in 1631. During this period and shortly afterward he wrote several poems, the best being the *Hymn on the Morning of Christ's Nativity*, one of our great lyric poems. During a retirement at his father's country estate, he composed several of the shorter poems, such a *L'Allegro*, *Il Penseroso*, and the *Masque of Comus*, produced at Ludlow Castle in 1634. After a trip to the continent, he engaged in public affairs and remained in close touch with the Puritan Commonwealth for almost twenty years. Meanwhile, he wrote many prose tracts and essays, chief of which are *Of Education*, a rather modern plan for a school, and *Areopagitica*, which he called a "Speech for the Liberty of Unlicensed Printing." During the time of Cromwell and his son, Milton held the office of Latin Secretary, an important government post. In 1652 he became blind from his many labors in the cause of liberty as he himself believed, but he never complained. After 1660 he retired to a quiet spot in London, to finish his masterpiece, completed about 1665, and one of our immortal epics,—*Paradise Lost*. For sublimity, sheer intellectual power, wonderfully sustained description, and moral earnestness Milton takes rank among world master artists. Later he wrote *Paradise Regained*, founded on the life of Christ, as a companion to his great epic, but this fell short in conception and execution. *Samson Agonistes*, a dramatic account of the life and death of the blind Samson, and *Lycidas*, in memory of his friend Edward King, one of our great elegies, complete the list of Milton's major works. Even though powerful for the time and trenchant in argument and real wisdom, most of his prose works are now seldom read.

MISTRAL, FREDERIC (1830–1914). Provençal poet. His great poem, *Mireio*, founded on the conventional situation of lover, lady, and forbidding parents, is a masterpiece of description and life of the poet's early home near the River Rhone. Again, in his *Lis Isclo d'Or*, he gives beautiful pictures of humble life, with much of legend and homely philosophy. In another great epic of the Rhone he narrates the legends of the country along the banks and weaves in a romantic story. Mistral raised his native Provençal to the level almost of a distinct language. In 1904 he was awarded the Nobel prize for literature.

MITCHELL, DONALD GRANT (1822–1908). Used pen name Ik Marvel. Born at Norwich, Conn., educated at Yale, lived many years at New Haven. *Reveries of a Bachelor* (1850), *Dream Life*, *My Farm at Edgewood*, *English Lands*, *Letters*, *and Kings*, *Seven Stories with Attic and Basement* are his principal prose compositions.

MITCHELL, SILAS WEIR (1829–1914). Celebrated nerve specialist of Philadelphia, Pa. *The Case of George Dedlow*, a medical story (1863), began his literary career. Besides over 100 articles and monographs on professional subjects, he is best known for his *Hugh Wynne*, *Free Quaker*, a realistic and vivid account of early colonial life, and for *The Red City*. His *Wear and Tear*, *or Hints for the Overworked*, was a best seller, and *Fat and Blood* was translated into a number of languages.

MITFORD, MARY RUSSELL (1787–1855). An English lady who spent her time for many years trying to care for an eccentric father and writing to keep the family out of debt. *Our Village* (1824–1832) is a wonderfully fresh, interesting, and simple account of life in a small town. A close friend of Mrs. Browning. Her poems are in the manner of Coleridge, and some plays had a temporary vogue. Her *Recollections of a Literary Life* is still much read. Miss Mitford was a witty, entertaining, and brilliant talker.

MOLIERE, JEAN BAPTISTE POQUELIN (1622–1673). Prëminent comedy dramatist of France. Carefully educated for the law, but gave this up for the playhouse. Organized a small troupe, which failed in Paris, but succeeded in the provinces for 13 years. Began to write with farces, some of which later were expanded into real comedies. With the favor of the king's brother and Louis XIV himself at times, Molière gained an everlasting reputation at Paris in 1659, with his *Les Précieuses Ridicules*, a satire on fictitious gentility. Some of his other admired productions are: *Tartufe*, a satire on false religion closely akin to hypocrisy; *Don Juan*, a similar attempt; *Le Malade Imaginaire*, a drive against quackery in medicine; *Bourgeois Gentilhomme*, a picture of a man of the middle class who finds himself out of place among gentlemen; *Georges Dandin*, the sad state of a man who marries into a class above him; *L'Avare*, the idea that a miser is a man of distrust. Molière was kind, gentle, companionable, and sympathetic. He established the real man in drama, replacing the ideal or conventional model of the past; and his influence on drama since his time has been beyond estimate.

MOMMSEN, THEODOR (1817–1903). Eminent German historian, whose best works are *History of Rome, History of Roman Coinage, Chronology down to Cæsar*. Immense learning characterizes all his books.

MONTAGU (*mŏn'tà-gū*), **MARY WORTLEY** (1689–1762). While her husband was ambassador at Constantinople, she wrote *Letters* to Pope and other literary men of the age. These rank her first among English letter writers, according to some, or certainly first among lady writers of letters. She brought back from Turkey the custom of inoculation for smallpox. Later a coldness sprang up between her and Pope, and he mentioned her very bitterly in several passages of his satires. The reason of his venom is not surely known. From 1739 to 1762 she lived abroad, mainly in southern France and Italy, dying in England not many months after her return.

MONTAIGNE (*mŏn-tān'*), **MICHEL DE** (1533–1592). Father of the modern essay; family name was Eyquem. Magistrate and member of parliament of Bordeaux. Retired in 1571 to Montaigne, became known as the Lord of Montaigne, and gave his life to writing and thinking.

MONTESQUIEU (*mŏn-tĕs-kū'*), **CHARLES LOUIS DE SECONDAT** (1689–1755). French baron, essayist, and satirist. President of the parliament of Bordeaux for 12 years. His *Lettres Persanes* (1721) satirized life, society, and manners of the age. Though the elders were scandalized, the younger generation was amused and friendly. His two other works, *Considerations of the Causes of the Grandeur and the Decadence of the Romans*, and *Spirit of Laws*, on which he worked almost 20 years, gave him a substantial reputation for serious writing, though it took some time to counteract the impressions of his early book.

MOORE, THOMAS (1779–1852). Irish poet, satirist, and biographer. Known now chiefly for his *Lalla Rookh*—an oriental poem for which Moore read very carefully—intensely popular, as was likewise his *Loves of the Angels*. His *National Airs*, containing favorite melodies of many nations, and his own songs long held the public interest. He wrote also biographies of Sheridan, Lord Edward Fitzgerald, and Lord Byron, the latter of which replaced Byron's own *Memoirs*, entrusted to Moore, and burned at the insistence of Byron's relatives.

MORE, HANNAH (1745–1833). English writer of religious stories and tracts. In early life some of her simple and pastoral dramas held the stage for a time. *Coelebs in Search of a Wife* enjoyed a tremendous vogue and an enormous circulation. Her *Village Politics* sought to counteract the teachings of Tom Paine. Then followed her series of "Cheap Repository Tracts," of which *The Shepherd of Salisbury Plain* sold several hundred thousand copies, her series altogether running into more than two millions. For simplicity, knowledge of life, and lessons of contentment in humble circumstances, her works were admired in many lands.

MORE, PAUL ELMER (1864–1937). American critic, who did much to raise and maintain classical standards of writing. Born in St. Louis, educated at Harvard, and taught classics for a few years. His *Shelburne Essays*, 11 volumes. *Life of Benjamin Franklin, Religion of Plato*, and *Hellenistic Philosophies* are well known.

MORE, THOMAS (1478–1535). Author of *Utopia*, the account of a model political community, lived in London, and was lord chancellor. His great work, one of many books, is an account of an island where goods are held in common, education is national, everybody is obliged to work, and the common good is above that of the single person. More got his idea from Plato's *Republic*, and his work in turn has been often imitated in many lands. Published in Latin, 1516, it was rendered into English in 1551.

MORLEY, JOHN (1838–1923). English statesman, editor of the Men of Letters series of biographies, wrote an admirable *Life of Edmund Burke*, a masterly *Life of Gladstone*, a defense of Cobden in the *Life* of that statesman, and a careful, critical *Life of Cromwell*. During much of his life he engaged in politics as a Liberal, holding several offices of trust, such as secretary of state for India and secretary in the cabinet for Ireland, and as Lord President of the council. His career terminated at the start of the World War.

MORRIS, WILLIAM (1834–1896). Artist and poet, lived in and near London. His *Defense of Guinevere* (1858) is a fine poem, different from Tennyson's account of the wife of King Arthur, in that she defends her own conduct. *Life and Death of Jason* and *The Earthly Paradise*, his best work, translations from Virgil and from the Norse, make up his important literary ventures. He worked many years in designing wall paper, furniture—from which morris chair takes its name—and stained glass windows. He set up the Kelmscott press, from which many fine books were issued, including a costly edition of Chaucer.

MORRISON, ARTHUR (1863–). Author who gives us the realism, meanness, and lack of idealism of people in certain parts of London. *Tales of Mean Streets, A Child of the Jago, Martin Hewitt*, and *The Hole in the Wall* are his chief volumes.

MOTLEY, JOHN LOTHROP (1814–1877). Historian, also served as U. S. minister to Austria and to Great Britain. After years of careful research in America and Europe, he published his *Rise of the Dutch Republic*, to which he added later the *History of the United Netherlands*.

MOULTON, LOUISE CHANDLER (1835–1908). Born in Connecticut, educated in Troy, N. Y., lived in Boston and London; wife of W. U. Moulton, publisher. Her *Bed-time Stories* have been very popular with children. Published also several volumes of poems, fiction, and travel.

MOULTON, RICHARD GREEN (1849–1924). Professor at University of Chicago; educated in London. He did much to develop appreciation of literature among those both in and without our colleges, especially in the study of the *Bible* as literature. Some of his works are *The Ancient Classic Drama, The Modern Study of Literature*, and *The Modern Reader's Bible*, in 21 volumes. Died in England.

MUKERJI, DHAN GOPAL (1890–1936). Born near Calcutta, India, of the priest or Brahmin class. Life near the jungle greatly impressed him, as did what he saw in the temple, where he began to minister at eleven years of age, becoming a priest at 14. Then he set out on three years of travel. Eventually, he came to America, was graduated from Stanford in 1914, lived in New York for a time, and returned to India in 1921, after being here for 12 years. His books have made a profound impression in the world, —*Kari, the Elephant, Hari, the Jungle Lad*, and *Jungle Beasts and Men, Gay-Neck*, which won the Newbery medal for 1927, *A Son of Mother India Answers*, and *My Brother's Face*.

MULLER, MAX (1823–1900). Of German birth, he lived many years in England, and tried to popularize the study of language. Some of his scholarly books are *History of Ancient Sanskrit Literature, The Sacred Books of the East, Introduction to the Study of Religion, Chips from a German Workshop*.

MUNCHAUSEN (*mŭn-chō'zĕn*), **BARON VON** (1720–1797). Stories told by this retired German officer who had served in Russia became proverbial for exaggeration. Greatly enlarged and magnified, they were collected by Rudolph Eric Raspe and published in 1785, and many times afterward in extended forms. At the end they were hardly more than a mass of fabulous tales collected from all possible sources, ancient and modern, and palmed off on a credulous

public. Raspe himself had nothing to do with many of them in later editions.

MURFREE, MARY NOAILLES. See CRADDOCK, CHARLES EGBERT.

MURRAY, LINDLEY (1745–1826). Born in Pennsylvania, lived and made a fortune in New York during the Revolution, and afterward in England. His *Grammar of the English Language*, with other texts, was inordinately famous for many years, passing through edition after edition.

MURRAY, WILLIAM HENRY HARRISON (1840–1904). Often called Adirondack Murray. Born in Connecticut, preached in Boston, and lived for a time in the northern part of New York. Many of his stories became well known, including *Adirondack Tales*, 6 volumes, *Daylight Land*, *How John Norton Kept His Christmas*, and *The Story of Mamelons*.

MUSSET (*moo-sáy*), **ALFRED DE** (1810–1857). French poet of great originality, power, and imagination. Two of his plays, *André del Sarto* and *Les Caprices de Marianna* held the stage for a time. *October Night*, *December Night*, *Rolla*, and his *Confessions* made a deep impression on the France of his generation. Musset was a romantic and lovable man; but his intimacy with George Sand and the termination of it left him greatly disturbed.

NAIRNE, CAROLINA OLIPHANT (1766–1845). Scotch baroness and song writer. Stands only second to Burns in the affections of most Scotchmen as a song writer. Her *Scottish Minstrel* contains a collection of familiar airs set to her own words. She signed the initials "B. B." (representing "Mrs. Bogan of Bogan") to her work, and the real authorship was not known till near her death. R. A. Smith revised the music for her songs, among which are *The Laird o' Cockpen*, *John Tod*, *Charlie is my darling*, *Caller Herring*, *Land of the Leal*, and the *Auld Hoose*— where she was born.

NAPIER, WILLIAM FRANCIS PATRICK (1785–1860). Great English military historian and soldier. His *History of the Peninsular War*, for vividness and sheer descriptive power, perhaps has not been equaled in a similar work in English. Acted as governor of Guernsey for five years, and finally became a general.

NEIHARDT, JOHN GNEISENAU (1881–). Born in Illinois; lived in Nebraska and St. Louis, Mo. Literary editor of the *St. Louis Post-Dispatch*. Some of his best poems are *Song of Hugh Glass*, *The Song of the Three Friends*, *The Song of the Indian Wars*, *The River and I*, and *The Quest*. He attempted to reproduce in epic form some of the fading traditions of the old West.

NEWBOLD, HENRY JOHN (1862–1938). English poet, educated at Oxford, and acted as barrister for 12 years. *Admirals All*, a book of ballads, was followed by many volumes of energetic lyrics, such as *Songs of the Sea*, *The Island Race*, *Drake's Drum*, *St. George's Day*. He also wrote *Naval History of the Great War*, *Tales of the Great War*, and, besides other prose works, *New Paths to Helicon*.

NICHOLSON, MEREDITH (1866–1929). Lived in Indiana and wrote several novels and some poems. Stories like *The House of a Thousand Candles*, *The Port of Missing Men*, *The Lords of High Decision*, and *A Hoosier Chronicle* attracted wide attention.

NICOLAY, JOHN GEORGE (1832–1901). Author with John Hay of the monumental *Abraham Lincoln; A History* which throws much illumination on the period of the Civil War in the United States. Lived in Bavaria till he was six years old.

NIETZSCHE (*nē'chĕ*), **FRIEDRICH WILHELM** (1844–1900). German philosopher and iconoclast; rebelled against the orthodox of almost every type. Glorified power as really back of all motives of the good, the true, and the beautiful. His main works are the *Poems* and *Also Spoke Zarathustra*. He looked for a new race of supermen to arise and rule the world.

NORDAU (*nôr'dou*), **MAX** (1849–1923). Real name was Südfeld. Born in Budapest of Jewish parentage; was a physician for a time. Best known for *Degeneration*, *The Conventional Lies of Society*, *Biology of Ethics*, and some dramas. An ardent Zionist, he advocated with Herzl acceptance of the British offer of land for a Jewish colony in East Africa.

NORRIS, FRANK (1870–1902). Lived for years in Chicago, but studied at Stanford, Harvard, and Paris. Became interested in the story of wheat and completed two volumes of a trilogy on the influence of that grain. *The Octopus* shows the raising of wheat and the hold of the railways on the ranchmen, and *The Pit* shows the conditions of board of trade speculation in wheat. Shorter stories are *A Deal in Wheat*, *McTeague*, a tale of the San Francisco slums, *The Third Circle*, and some critical works.

NORTH, CHRISTOPHER. See WILSON, JOHN.

NORTON, CHARLES ELIOT (1827–1908). American author and art critic; lived in Cambridge, Mass., except for 10 years residence abroad. Translated the works of Dante, still a standard rendering; and wrote noble biographies of the great literary men who had been his intimate friends, including Carlyle, Emerson, John Ruskin, George William Curtis, Longfellow, and Lowell. Did much to improve taste for art and poetry in America. Professor of the history of art at Harvard, 1874–1898.

NOYES, ALFRED (1880–). English poet, educated at Oxford, and acted as professor at Princeton University from 1914 to 1923. *The Loom of Years* in 1902 was his first poem, followed by numerous others, of which famous examples are *Forty Singing Seamen*, *Drake*, *A Salute to the Fleet*, *Robin Hood*, a poetic drama. Noted for fine sentiment and delicate technique.

NYE, EDGAR WILSON (1850–1896). Called himself Bill Nye. For years a famous American humorist and lecturer to immense crowds. His writings were noted for bad spelling, puns, and homely philosophy, among them being *Bill Nye and the Boomerang*, *The Forty Liars*, *Baled Hay*, and *Bill Nye's History of the United States*. He toured for a time with James Whitcomb Riley. Born in Maine, lived in Wisconsin, Wyoming, and New York.

O'BRIEN, FITZJAMES (c. 1828–1862). Irish-American author, educated at Dublin University; came to New York in 1852, and became a leader in the brilliant set of young authors, including Bayard Taylor, Aldrich, Stedman, Winter, and Stoddard. Killed in Union army in Civil War. His best-known short stories are *What Was It*, a mystery, which set the fashion for tales of this sort, *The Wondersmith*, the story of some vindictive manikins, *The Diamond Lens*, the story of a man who fell in love with a beautiful animalcule discovered under a powerful lens in a drop of water, and other fanciful but clever and fascinating stories.

OEHLENSCHLAGER (*ûʻlĕn-shlâ-gĕr*), **ADAM GOTTLOB** (1779–1850). Leading poet of Denmark. His early tragedies are *Haakon Jarl*, *Correggio*, and *Digte*, which began a new age in Danish letters; while *Dina* is the most popular of his later poetic tragedies. Professor of aesthetics at Copenhagen University.

O. HENRY, pen-name for **WILLIAM SIDNEY PORTER** (1867–1910). Born in North Carolina, sent to Texas and then to Central America, where he got much local color for his first stories. After some experiences in journalism in New Orleans and elsewhere, he settled in New York and wrote 12 volumes of short stories, which are models of clever technique of plot construction, humor, surprise endings, and interesting philosophy. Some of the best volumes are *Cabbages and Kings*, *The Gentle Grafter*, *The Trimmed Lamp*, and *Whirligigs*.

OLIPHANT (*ŏlʻi-fănt*), **LAURENCE** (1829–1888). Born in Cape Town, lived for a time in Ceylon, England, Russia, United States, and elsewhere, finally settling in Palestine. Wrote notable books of travel and a very entertaining novel called *Piccadilly*, after he lived in England long enough to serve in Parliament. For years followed Thomas Harris, an American religious leader. His *Scientific Religion*, written after the death of his wife, Alice La Strange, expresses the idea that he was nearer to her after her death than before.

OLIPHANT, MARGARET WILSON (1828–1897). Married her cousin, Frank Wilson Oliphant. Life saddened by loss of husband and three children, but she wrote more than a hundred books. Her novels, *Adam Graeme*, *Miss Marjoribanks*, her stories, *Chronicles of England*, and her *Autobiography* won a notable reputation, second only to her fame after writing accounts of the *Makers of Florence*, *Venice*, *Modern Rome*, and her lives of Dante and Cervantes.

OLIVER OPTIC, pen-name of **WILLIAM TAYLOR ADAMS** (1822–1897). Known to three generations for more than 100 boys' books. Many were republished from his magazine, such as *The Boat Club Woodville Stories, Army and Navy, Starry Flag,* and *Young America Abroad.*

OLMEDO, JOSE JOAQUIN DE (1780–1847). Celebrated Spanish-American poet, born in Ecuador. Served in diplomatic service and was a candidate for presidency. His ode to General Bolivar, the liberator of Peru, and his ode to General Flores made him popular.

OMAR KHAYYAM (*o'mar khi-yahm'*) (d. 1123). Omar the Tent-maker. Wrote a great work on algebra, reformed the Persian calendar, and achieved great fame as a scientist. In modern times he is known for his *Rubaiyat,* or quatrains, about 500 in number, in praise of liberality of thought and the joys of life. Edward FitzGerald (q. v.) made the definite English translation.

O'NEILL, EUGENE GLADSTONE (1888–). American dramatist; educated at Princeton and Harvard. Came in contact with Provincetown, Mass. players, who produced many of his dramas. Three times won the Pulitzer prize for drama: In 1920, for *Beyond the Horizon;* in 1922 for *Anna Christie;* and in 1928 for the *Strange Interlude.* Other successes are *Emperor Jones,* and *The Great God Brown.*

O'SHAUGHNESSY, ARTHUR WILLIAM EDGAR (1844–1880). English scientist and poet; noted for fine sense of rhythm. Some of his works are *Epic of Women, Lays of France* (a free translation of the *Lais* of Marie de France), and *Music and Moonlight.*

OSSIAN. See MACPHERSON, JAMES.

OUIDA (*wē'dȧ*), or **LOUISE DE LA RAMEE** (1840–1908). Born in England of English-French parentage. Her pen name Ouida represents her own early attempt to say "Louise." Died in Italy. Wrote many novels and some admirable short stories. Of the first *Under Two Flags, Held in Bondage,* and *Strathmore* are her best; of the latter, *Bimbi: Stories for Children, A Leaf in the Storm,* a terrible indictment of war, and *A Dog of Flanders,* a charming story of a dog, and *Two Wooden Shoes* are well known. Though much of her work is melodramatic and hysterical, she was an author of no little genius.

OVERBURY, THOMAS (1581–1613). English author, known now almost entirely for his poem, *The Wife,* and for his *Characters,* witty paragraphs describing the disposition and actions of various persons and types. These and similar works by John Earle set the fashion for several years. Died in prison by poison.

OVID (*ŏv'ĭd*) **(PUBLIUS OVIDIUS NASO)** (43 B. C.–A. D. 17). Roman poet of the golden or Augustan period; known now mainly for his *Metamorphoses,* in 15 books, giving stories of changes or transformations of all sorts, and this has been a mine for dramatists and story tellers of a later day.

PAGE, THOMAS NELSON (1853–1923). Born in Virginia, he won a great reputation for short stories with his *In Old Virginia* in 1887. *Marse Chan'* in this is a typical and as fine a story of the days before the Civil War as we have yet produced. Other volumes of good stories are *Elsket* and *Pastime Stories.* His great novel is *Red Rock.* From 1913 to 1919 Page represented the United States as ambassador to Italy.

PAGET, VIOLET (1856–1935). See LEE, VERNON.

PAINE, THOMAS (1737–1809). Born in England, served for a number of years in the excise, but being financially embarrassed he gave up position, country, and wife, and settled in America, where his *Common Sense* (1776), aided tremendously the cause of the Colonists in their struggle for freedom. Later he returned to England, attacked Burke's ideas of the French Revolution with his *Rights of Man,* served in the French Convention, narrowly escaped the guillotine, and finally returned to America, having published his *Age of Reason.* This was coldly received, and Paine never came again into public favor. His work attacks revealed religion, but defends natural religion of mankind; at times he is eloquent in defense of real morality. Died somewhat neglected in New York in 1809; buried now in England.

PALACIO VALDES, ARMANDO (1853–1938). Spanish novelist and critic. After some clever essays, he wrote his first great novel, *The Senorita Octavio,* followed by *Martha and Mary,* showing the struggles between two types of persons, and later by *Riverita* and many others. He is powerful in description and a keen observer of life and character.

PALAMAS, KOSTES (1859–). Greek poet of the popular school as opposed to the classical or purist. *The Songs of My Country, Hymn to Athena,* and *The Twelve Lays of a Gipsy* are among his famous lyrics.

PALFREY, JOHN GORHAM (1796–1881). American historian and politician; professor at Harvard, 1830–1839; political offices 1844–1849, 1861–1867. Editor of *North American Review,* 1835–1843. *Evidences of Christianity* and *History of New England to 1775* are his chief works.

PALGRAVE, FRANCIS TURNER (1824–1897). English anthologist and poet. Son of Sir Francis Palgrave (original name Cohen), who wrote *History of Normandy, Rise and Progress of the English Commonwealth,* and other works. F. T. Palgrave was a graduate and professor of poetry at Oxford. Known now for his own *Idylls and Songs,* including some hymns; but more especially for his *Golden Treasury of English Songs and Lyrics* (1861), which for delicacy of taste and genuine critical judgment have never been excelled by similar works. He made another collection of *Sacred Song* and a second *Golden Treasury,* and wrote a discriminating essay on *Landscape in Poetry.*

PANSY. See ALDEN, ISABELLA M.

PAPINI, GIOVANNI (1881–). Italian critic and author of essays, novels, and poems. *Stroncature* is an original and telling criticism of famous characters, but he is known best for his *Storia di Cristo* (1921), which in English as Papini's *Life of Christ* gained immense fame.

PARDO BAZAN, EMILIA (1851–1921). Celebrated Spanish author, who introduced the French realism of Zola and others into the novel of her country. *La Tribuna, Los Pazos de Ulloa,* the story of a decadent family, but also well known for its fine pictures of country life, and *La Madre naturaleza* gained her a permanent reputation.

PARINI, GIUSEPPE (1729–1799). Poet and official of Italy, known for his scorn of the aristocracy. *Il Giorno* gives ironical advice to a young nobleman as to how to spend his morning, and the poem includes three earlier ones descriptive of various parts of the day.

PARKER, (HORATIO) GILBERT (1862–1932). Novelist born in Canada; educated at Trinity College, Toronto; from 1886 to about 1890 traveled and wrote in Australia and Canada, and then settled in England. M. P. 1900–1918. His knowledge of French Canadian life is accurate, romantic, and intensely sympathetic as shown in *Pierre and his People,* a fine volume of short stories, followed by others, and by several great novels, best known of which in America are *Seats of the Mighty,* a vivid account of the battles between the French and English in Quebec, and his romance, *The Right of Way,* the life of a fine fellow who went to the bad through dissipation.

PARKER, LOUIS NAPOLEON (1852–). Born in France of English parents; educated in music. Known for many cantatas, pageants, and dramas. *The Twenty-third Psalm* and *Belle Margaret* are cantatas; *Cyrano de Bergerac, The Cardinal, The Monkey's Paw,* pageants for Dover, Colchester, and York, *The Mask of War and Peace, Joseph and his Brethren,* a biblical spectacle, and *David Copperfield,* are some of his pageants and dramas.

PARKMAN, FRANCIS (1823–1893). American historian; lived in Boston; worked many years under great handicap of virtual blindness. Concentrated on the history of America and Canada during the French régime; noted for his knowledge of Indian life and character, and for his keen literary sense. His histories, though learned and accurate, read almost like fiction—*The Conspiracy of Pontiac, Pioneers of France in the New World, The Jesuits in North America, La Salle and the Discovery of the Great West, The Old Régime in Canada, Montcalm and Wolfe,* and *A Half-Century of Conflict.* Improved his health by gardening and originated several varieties of plants.

PARTON, JAMES (1822–1891). American author born in England; after his fifth year lived in New

York and after 1875 in Newburyport, Mass. Wrote notable lives of Horace Greeley, Aaron Burr, Andrew Jackson, Benjamin Franklin, and *Captains of Industry*.

PATER, WALTER HORATIO (1839–1894). English critic and essayist; educated at Cambridge and Oxford, taught at Oxford. Acted as an interpreter of the Renaissance in art and literature, notably in *Studies in the History of the Renaissance* and in his narrative of *Marius the Epicurean*, an exposition of the devotion of Pater to the beautiful.

PATMORE, COVENTRY KERSEY DIGHTON (1823–1896). English poet and critic; from 1846 to 1868 acted as assistant in the British Museum. His first book of *Poems* (1844) was harshly reviewed by the critics, and Patmore destroyed all of the edition he could obtain. He is best known for his *The Angel in the House*, divided into four parts: *The Betrothal, The Espousal, Faithful Forever*, and *The Victories of Love*.

PAULDING, JAMES KIRKE (1778–1860). American author and politician, secretary of the navy from 1838 to 1841. Wrote some satirical poems with Irving, including *Salmagundi; The Lay of the Scotch Fiddle*, a parody on Scott; *Westward Ho*, a tale of migration westward, and *The Life of Washington*.

PAYN, JAMES (1830–1898). English editor and author of 100 novels. Edited very successfully *Chambers' Magazine*, and the *Cornhill* after Leslie Stephen. *Carlyon's Year, Glowworm Tales, Literary Recollections*, and *Not Wooed but Won* are some of his works.

PAYNE, JOHN HOWARD (1791–1852). American playwright; lived among the Cherokee Indians for a time and collected their myths; was consul at Tunis, Africa, 1842–1845, 1851–1852, when he died there. His successful plays made him the first American dramatist to be well known in England, where his *Brutus* ran for fifty nights in 1818, with the great Edmund Kean as hero. His opera, *Clari, Maid of Milan*, produced at Covent Garden, London, in May 1823 contains the celebrated *Home, Sweet Home*. For 40 years of his life Payne had no real home he could call his.

PEABODY, JOSEPHINE PRESTON (1874–1922). Born in Brooklyn, N. Y., educated at Radcliffe, and married Prof. L. S. Marks of Harvard. Some of her volumes of poems are *The Singing Man, Harvest Moon*, and *The Chameleon;* her poetic plays are *Marlowe, The Wolf of Gubbio*, and *The Piper*, which won the prize and was produced (1910) at Stratford-on-Avon, Shakespeare's birthplace, England.

PEELE, GEORGE (1558?–1597?). British dramatist; educated at Oxford; led a precarious life in London. Wrote several plays, best known now for *Arraignment of Paris*, a pastoral comedy, *The Old Wives' Tale*, containing within it another drama and much rustic lore, and *Chronicle of King Edward the First*.

PEMBERTON, MAX (1863–). Born in Birmingham, England; author of mystery stories mainly, some of which are *The Iron Pirate, Jewel Mysteries I Have Known, The House under the Sea, The Diamond Ship*, and *The White Walls*.

PEPYS (*pēps*), **SAMUEL** (1633–1703). English public official and diarist. His *Diary* runs from Jan. 1, 1660, to May 31, 1669, and it records all the thoughts, acts, and feelings of the author, evidently for his own eye alone, in a modified form of shorthand complicated by shrewd original devices. His work is a living human document, hardly like anything else we have.

PEREDA, JOSE MARIA DE (1833–1906). Spanish novelist, best in describing provincial life and the toilers of the sea. His *Don Gonzala Gonzalez de la Gonzalera* ridicules the persons of fortune who claim to be liberal in politics, *Pedro Sanchez* shows the disillusionment of a person who has become a politician in the capital, *Sotileza* shows the heroism of fishermen.

PEREZ GALDOS (*pā'rāth gäl-dōs'*), (1845–1920). Gifted Spanish novelist and dramatist. Under the title *Episodios nacionales* (National Episodes) he wrote 46 volumes of historical fiction. In addition he described the life of his own day, its religious and social problem, in romances like *Doña Perfecta, Gloria, Angel Guerra*.

PERRY, BLISS (1860–). Professor and critic, born at Williamstown, Mass., and educated at Williams and abroad. Edited the *Atlantic Monthly* and taught at Williams, Princeton, and Harvard. His books include *A Study of Prose Fiction, The Powers at Play, The Amateur Spirit, Walt Whitman, Whittier, Carlyle, The American Mind*, and *A Study of Poetry*.

PERSIUS (AULUS PERSIUS FLACCUS) (34–62). Roman satirist and poet. His brief work condemns many common practices of the day. During the middle ages he was rather popular.

PETRARCH (*pē'trärk*), **FRANCESCO** (1304–1374). Celebrated Italian poet, born at Arezzo, lived at Avignon and Vaucluse. At Avignon he became interested in Laura, a lady of golden hair and great beauty, and he wrote sonnets expressing his affection. Scholars have been divided as to whether the sonnets are entirely autobiographical or only so to some degree. Petrarch prided himself on his Latin, yet this is not true ciceronian, but influenced by the forms of the late Latin ages. He is considered the father of the modern sonnet and of humanism.

PHAEDRUS (*fē'drus*), Latin author of fables, in time of Augustus; born in Macedonia, but lived mainly at Rome. His 100 fables, according to one modern version, were drawn mainly from Aesop, without great originality; influenced medieval fable writers, "Romulus" being a version of his work.

PHELPS, ELIZABETH STUART (1844–1911). Married Rev. H. D. Ward in 1888. Prominent in suffrage and other movements. Some of her many books are *Gates Ajar*, an attempt to imagine the life beyond this world, *An Old Maid's Paradise*, and *Men, Women, and Ghosts*, the last a collection of remarkable short stories.

PHELPS, WILLIAM LYON (1865–). Writer on literature; professor at Yale; educated at Yale and Harvard. Besides editing many books and the complete novels of Jane Austen and Richardson, he has written many critical estimates, such as *Beginnings of the English Romantic Movement, Teaching in School and College, How to Know Browning, Reading the Bible*, and *Human Nature in the Bible*.

PHILLIPS, STEPHEN (1868–1915). British poet and dramatist; born near Oxford, and studied at Cambridge till he joined a troupe of traveling actors. Introduced to the public by his *Poems* (1897), he turned to dramas, mostly in blank verse, including *Paolo and Francesca, Herod, Ulysses, The Sin of David*, and *Nero*. All his works are beautiful in thought and style.

PHILLPOTTS, EDEN (1862–). Born in India, lived for some years at Plymouth, Devonshire, and wrote novels of that region similar to those of Blackmore, with a touch of Hardy. *Lying Prophets* and *Children of the Mist, Sons of the Morning, Tales of the Tenements, The Joy of Youth*, and *Brunel's Tower*, are some well-known stories.

PINDAR (c. 522–443 B. C.). Greek lyric poet of great piety, dignity, and charm of manner. His odes are full of original imaginative touches, delicate music, and kindly feeling. Tradition says he was a practiced player of the flute. *Odes of Victory*, 44 in all, celebrate the contests of the Olympic games every four years; besides we have fragments of songs, dirges, dance pieces, and hymns to the gods attributed to Pindar.

PINERO, ARTHUR WING (1855–1934). Dramatist born in London; played at Edinburgh and London for about six years. Some of his typical plays, distinguished by clear technique, earnestness, and fine characterization, are *Sweet Lavender*, which has been often revived, *The Second Mrs. Tanqueray, The Notorious Mrs. Ebbsmith, Trelawney of the Wells, His House in Order*, and *The Big Drum*.

PLATO. See under PHILOSOPHERS.

PLAUTUS, TITUS MACCIUS (c. 252–184 B. C.). Roman comic dramatist who borrowed much from earlier Greek models. Of his many compositions, but 20 now survive intact. Many type characters exist in his remaining plays, among which the *Captivi* is an account of self-sacrifice of a slave, the *Amphitruo* is a travesty, the *Menaechmi* is a farce of mistaken identity, of which Shakespeare's *Comedy of Errors* is

an adaptation, and the *Pseudolus*, *Bacchides*, and *Mostellaria* are all comedies of society or manners.

PLIEKSANS, JAN (1865–). Poet and dramatist of Latvia. Edited a paper for a time, but was exiled for several years, after which he turned to writing democratic plays. He translated Shakespeare, Schiller, and Goethe, and wrote several historical tragedies, of which the best remembered are *Fire and Night*, *Blow Breeze*, and *The Dvina*.

PLINY THE ELDER (c. 23–79). He is known best now for his *Natural History* in 37 books, in which he quotes 147 Latin and 327 foreign authors. Though entirely fabulous in certain details, this work until modern times was taken as a veracious scientific authority. Even in the drama of Shakespeare and his contemporaries are many echoes from Pliny and his successors,—like the allusions to "crocodile tears," mermaids, unicorns, gryfons, and many others.

PLUTARCH (c. 46–120). Now known in modern times as a Greek who wrote the 46 *Parallel Lives* of Greeks and Romans, one from each people in a set of two. He also wrote 60 moral essays, some subjects being *On Having Many Friends*, *How a Flatterer may be Distinguished from a Friend*, *On Superstition*, and *On Exile*. Shakespeare used parts of Sir Thomas North's translation of the French version of the *Lives* in his Roman history plays.

POE, EDGAR ALLAN (1809–1849). American poet, leader in the short story, and eminent critic; with Hawthorne he shares the honor of establishing short narrative on an artistic and scientific basis. Born of actor parents in Boston, he was left an orphan, and adopted early by John Allan of Richmond, Va., and sent to the University of Virginia in 1826, but had to leave after a term. He then joined the regular army for a time, published *Al Araaf and Tamerlane* in 1827, and in 1831 was courtmartialed from West Point. In 1833 he won a prize for *The Manuscript Found in a Bottle*, after which his output of short narratives was fairly consistent, though at times intermittent. After 1834, when Mr. Allan died, Poe was largely on his own resources. In 1839 he became editor of the *Gentleman's Magazine*, in which his *Tales of the Grotesque and Arabesque* appeared. In these stories he attempts to unite the strange and horrible with the artistic and the adorned. Poe was influenced by the German and by the Gothic romance, or the tale of horror. His object was to revive interest in tales for men, as a counterpart to the sentimental fictions of the day. At different times he was also connected with the *Southern Literary Messenger*, which he made a real literary force, and with the *Quarterly Review* in New York. Though he was conscientious and able, his temperament was erratic, restless, and melancholy, and his habits were uncertain, though he was not the drunkard that some have imagined. Drink at times, especially late in life, however, got the best of him. After the death of his child-wife, Virginia Clemm, his first cousin, in 1847, he became more and more irrational and unreliable. Poe, in fact, was always haunted by the specter of himself, against which his great pride, genius, and literary fame contended in vain. At times he and Mrs. Clemm, who did the best she could to keep the family intact, lived in abject poverty, if not in actual need, during the fatal illness of consumption of Virginia Poe. His death in Baltimore in 1849 has never been quite explained. Poe found the short story formless, rambling, and sentimental, and he left it unified, certain in technique, and free of undue subjective influence. Much of his scientific temperament, in stories like *The Descent into the Maelstrom* and *The Gold Bug*, made him peculiarly fitted to write this type. His romantic and brilliant, though morbid, imagination is shown best in *The Fall of the House of Usher*, *The Pit and the Pendulum*, and *The Cask of Amontillado*. The haunting inspiration of a mysterious beautiful lady is shown in *Ligeia*, *Morella*, and in the horrible *Berenice*, and the sense of loss in *Annabel Lee* and *Ulalume*, two of his best poems. For music, powers of concrete description, and genuine inspiration, his *Raven* and *The Bells* are poems of great charm and dignity. Poe as a critic in three or four papers showed he had very definite ideals and literary methods in both prose and verse. His short narratives, *The Gold Bug*, *The Purloined Letter*, and *The Murders in the Rue Morgue*, are the prototypes of many of our modern detective stories and tales. Poe the artistic author is explainable, and in some measure Poe the scientist, but his personal character is a jumble and enigma.

PONTOPPIDAN (*pĕn-tôp'ĕ-thăn*), **HENDRIK** (1857–). Danish novelist of peasant life and character. Some of his stories are the trilogy, *Soil*, *The Promised Land*, and *Dooms Day*, an account of a minister who marries a peasant lady, *Skyer*, and *Lykke Per*, all noted for fine descriptive and analytical powers.

POOLE, WILLIAM FREDERICK (1821-1894). American librarian who started the *Index to Periodical Literature* while a student at Yale. Afterward as librarian at Amherst College he issued new revisions. He was the author of several books on literary or scholastic subjects.

POPE, ALEXANDER (1688–1744). English author and critic, born in London, and educated there and by his own efforts. His delicate constitution made him somewhat morbid and querulous. Beginning with his *Essay on Criticism*, he composed several great works in heroic couplets of polished elegance. This first poem gives the ideas of writing which characterized Pope. His *Rape of the Lock* is a mock-heroic poem, written to patch up a quarrel that resulted when a gallant clipped a lock of hair from a lady's coiffure without getting her permission. It has many fine imaginative passages. From his translations, the *Iliad* and *Odyssey*, the latter his only in part, he made a handsome sum. In satire his best work is the merciless *Dunciad*, which excoriated petty authors and all who aspired to rival the great genius. Pope quarreled with most of his friends at one time or another, especially any who might rival or dispute his claim as literary dictator of the age. The *Essay on Man* and *Moral Essays* sought to interpret man according to the philosophy of Bolingbroke and others of Pope's coterie. Though he was a clever meterist and a dangerous antagonist, he was not a philosopher and not even a deep thinker.

PORTER, GENE STRATTON (1868–1924). Born in northern Indiana; married Charles D. Porter. Greatly interested in nature, especially in birds, plants, and forests. Wrote her novels largely to create a love for nature, alternating them with her scientific works, like *Birds of the Bible*, *Moths of the Limberlost*, *Music of the Wild*, and *Friends in Feathers*. Her novels include *Freckles*, *A Girl of the Limberlost*, and *Michael O'Halloran*. For several years earlier she was in the camera department of *Recreation* and on the staff of *Outing*, and she illustrated her own nature books.

PORTER, JANE (1776–1850). Born in Durham, England, she commenced to write stories early in life, profiting by her friendship with Sir Walter Scott. *Thaddeus of Warsaw* (1803), giving the story of some dramatic episodes in the history of Poland, gained her tremendous fame in all Europe. *Scottish Chiefs*, issued in 1810 four years before Scott's first novel, is a picturesque account of the heroes of the Scots clans—one of the few early historical novels still read with interest. Her sister, Anna Maria Porter (1780–1832) wrote some works of merit, including *The Lakes of Killarney* and *The Hungarian Brothers*.

PORTER, NOAH (1811–1892). Known best for his edition of *Webster's Dictionary*. Graduate, professor, and president (1871–1886) of Yale University. Some of his other works are *The Human Intellect*, *American Colleges and the American Public*, and *Science and Sentiment*.

PORTER, WILLIAM SIDNEY. See O. HENRY.

POST, MELVILLE DAVISSON (1871–1930). Lived in West Virginia. Wrote many mystery and detective stories, some of which attained great currency. *The Strange Schemes of Randolph Mason*, *The Corrector of Destinies*, *The Nameless Thing*, *The Mystery of the Blue Villa*, and *Walker of the Secret Service* are among his best tales.

PRESCOTT, WILLIAM HICKLING (1796–1859). Born at Boston, graduate of Harvard. Because of the loss of an eye by an accident in college, he had to employ readers for his researches in Spanish history. His great works are *Conquest of Peru* and *Conquest of Mexico*.

PREVOST, EUGENE MARCEL (1862–). French author of novels relating to the education of women. His *Lettres des femmes*, *Les Demivierges*, *Lea*, *Les Vierges fortes*, created no little interest, and the

second of them a real sensation because of its implied criticisms of the French manner of educating young girls. Later novels treat also of other subjects.

PRIBRAM, ALFRED FRANCIS (1859–). Historian of Austria, best known for his *Secret Treaties of Austria-Hungary* 1879–1914, *Austria-Hungary's Foreign Policy*, 1908–1918, and *Secret Treaties* (1929). Most of his work is founded on careful examination of numerous documents.

PRIOR, MATTHEW (1664–1721). English satirical and humorous poet. With Charles Montagu, later earl of Halifax, he wrote *City Mouse and Country Mouse*, a parody on Dryden's *Hind and Panther*. Employed by the Tory government, but later imprisoned (1715–17) by the Whigs. During these two years he composed an elaborate humorous poem *Alma; or, the Progress of the Mind*, followed by his greatest, *Solomon*, and *Poems on Several Occasions*.

PROCTER, ADELAIDE ANNE (1825–1864). Daughter of Bryan W. Procter, noted just below. Contributed many poems, at first under name of "Mary Berwick," to *Household Words* edited by Dickens. *Legends and Lyrics* (1858) for seven years averaged over an edition a year.

PROCTER, BRYAN WALLER (1787–1874). English public official and poet; knew all the literary men of note from Wordsworth to Tennyson. His chief claim to remembrance are his songs, 300 in number, including *The Sea, Life, Song to My Wife*, but his dramatic *Mirandola* was produced at Covent Garden with Macready, Charles Kemble, and Miss Foote as principals in the cast.

PULCI, LUIGI (1432–1484). Italian poet patronized by the Medicis. He delighted in travesties of the long poetic romances of chivalry as then current. His best semi-serious poem is *Morgante* (1482), which is largely a burlesque of an epic of Charlemagne.

PUSHKIN, ALEXANDER (1799–1837). Russian poet influenced largely by the lyrics of Lord Byron. For speaking too freely in his *Ode to Liberty*, circulated in Moscow, his birthplace, in manuscript form, he was banished to some minor office in Southern Russia. Having visited the Caucasus for his health, he gained experiences which he used in several poems, notably in *A Captive in the Caucasus*, the story of the love of a native girl for a Russian, *Fountain of Bakhchisarai*, an account of the experience of a Polish youth in the Crimea, and in the *Gipsies*. In 1825 he was recalled to Moscow, where the emperor is said to have pronounced him "the most intelligent man in Russia." *Poltava*, a lively poem on an historical subject, *A Voyage to Arzrum*, after another visit to the Caucasus, which is very fine in every respect, and some prose make up his later works. He was killed in a duel with the husband of his wife's sister, Baron D'Anthes, who was in consequence expelled from Russia. Pushkin is the greatest poet of Russia.

QUARLES, FRANCIS (1592–1644). English symbolist poet, whose *Emblems* is a curious mingling of Scripture passages, quotations from fathers of the church, and an epigram at the end. They once immensely appealed to many persons.

QUENTAL, ANTHERO DE (1842–1891). Portuguese author of numerous fine sonnets, some of which are among the best of modern times, though a lack of faith and a prevailing melancholy chill much of his better work.

QUEVEDO Y VILLEGAS (*kē-vē'do*), **FRANCISCO DE** (1580–1645). Spanish poet and satirist; lived for some years at court. Gifted in style, knowledge of human frailty, and biting sarcasm and wit. He wrote a picaresque romance, a noted work on politics at the worst, and a dissertation on *The Patience of Job*, besides thousands of verses, letters, and scholarly treatises.

QUILLER-COUCH (*kōōch*), **ARTHUR THOMAS** (1863–). Educated at Oxford, was a journalist in London, lived for years in Cornwall, and in 1912 became professor of English literature at Cambridge. Some of his Cornish tales are *The Blue Pavilions*, *The Ship of Stars*, and *The Shining Ferry;* some volumes of criticism are *On the Art of Writing*, *Studies in Literature*, *Shakespeare's Workmanship;* he completed R. L. Stevenson's unfinished *St. Ives*, and compiled several noble anthologies of English prose and verse notably *The Golden Pomp* and *The Oxford Book of English Verse*.

RABELAIS (*rȧb'lē*), **FRANCOIS** (1495–1553). French humorist and satirist, who acted as physician for a time at Lyons. *Gargantua* and *Pantagruel* are puzzling combinations of farce, wit, slashing satire, much license of language, and some believe a modified moral zeal. They satirize the customs of education, war, nobility, and daily life of the age.

RACINE (*rȧ-sēn'*), **JEAN** (1639–1699). French dramatist noted for the beauty, sentiment, and high literary art of all his works. With Boileau, La Fontaine, and Molière, he formed what was called "the society of four." From his first great success *Alexander the Great*, through *Mithridate*, *Britannicus*, *Bajazet*, *Andromaque*, *Iphigénie*, to *Phèdre* and *Athalie* his work increased in popularity and power. Against the *Phèdre* a cabal was formed, and a rival play was produced a week afterward. For almost 20 years Racine wrote no plays, returning at last with *Esther* for the girls of St. Cyr to act, followed by *Athalie*. *Les Plaideurs*, his one comedy, at first a failure, became popular after the king approved it.

RADCLIFFE, MRS. ANN (1764–1823). Chief exponent of the Gothic romance in England. Her tales are full of mysterious happenings, with heroes deprived of their rights and often imprisoned in some part of the castle, from which they are rescued, to the general accompaniment of clanking chains in cellars, mysterious music, strange voices, and other unexplained events. The vogue became great, but later novelists tried to explain away all the mysteries. Mrs. Radcliffe wrote four successful works, chief of which is *The Mysteries of Udolpho*. In prose the Gothic novel corresponded to the poems of Byron. C. B. Brown (q.v.) modified the type to suit conditions here in America.

RAMEE, LOUISE DE LA. Noted under her pseudonym, OUIDA.

RAMSAY, ALLAN (1686–1758). Scotch poet, first a wig-maker, and later established first circulating library in Scotland. From collecting old poems and ballads, he began to write songs of his own, included finally in *Scots Songs* (1719). *The Gentle Shepherd*, a drama pastoral, for many years was known at every fireside, and still in parts is read through Scotland. He sought to revive interest in older literature by collecting poems written before 1600, and also in contemporary literature by publishing his *Tea Table Miscellany*, composed of poems by himself, his friends and others.

RANDALL, JAMES RYDER (1839–1908). Journalist and song writer, born at Baltimore. While teaching in a college in Louisiana, he heard of disturbances in his native town at the outbreak of the Civil War, the result of which was the celebrated song *Maryland, My Maryland*, which with *Dixie* became the favorite of the South. Other songs are, *There's Life in the Old Land Yet*, *The Battle Cry of the South*. Later edited the Georgia *Constitutionalist* and then acted as Washington correspondent for several Southern journals.

RANKE, LEOPOLD VON (1795–1886). German scientific historian, born in Thuringia; professor for 5 years at Berlin. Granted a fund by the government to study archives abroad, after his *History of the Roman and Teutonic Peoples, 1494–1535*, appeared. His other great works are *History of Southern Europe in the 16 and 17 Centuries*, *History of the Popes*, very valuable work, and *German History in the Time of the Reformation*. In his seminar at Berlin he trained many modern historians.

RASK, RASMUS CHRISTIAN (1787–1832). Danish scholar and professor at the University of Copenhagen. His great services to the history of northern languages is found in his *Introduction to the Grammar of the Icelandic and other Ancient Northern Languages*, *Anglo-Saxon Grammar*, *Essay on the Origin of the Ancient Scandinavian or Icelandic Tongue*, tracing the connection with the Latin and Greek, and his translations of two ancient *Eddas*.

RASPE, RUDOLPH ERICH (1737–1794). See MUNCHAUSEN.

RAYMOND, HENRY JARVIS (1820–1869). Born at Lima, N. Y., served on the N. Y. *Tribune* with Greeley, and established the *Times* on Sept. 18, 1851. Helped form the Republican Party, and the famous *Address to the People*, written by him, was adopted

by the Convention at Pittsburgh in 1856. Member House of Representatives, 1865–67. Of his books, biographies of Webster and Lincoln are standard works.

READ, OPIE (1852–1939). Journalist and author, born in Tennessee. Edited *Arkansas Traveler*, humorous paper, for 8 years, and then (1891) engaged in literature in Chicago. Lectured extensively. Some of his works are *A Kentucky Colonel, An Arkansas Planter, A Tennessee Judge, On the Suwanee River, A Yankee from the West*, and *In the Alamo*.

READ, THOMAS BUCHANAN (1822–1872). Born in Pennsylvania. He devoted his time mainly to painting, but wrote several volumes of poems, of which his best-known single piece is *Sheridan's Ride*. Painted portraits of Mrs. Browning, Longfellow, and others.

READE, CHARLES (1814–1884). English dramatist and novelist; educated at Oxford; lived in London. His first great success was *Masks and Faces* (written with Tom Taylor), a comedy, which he later made into the story of *Peg Woffington*. He produced many purpose novels, including *It's Never Too Late to Mend*, aimed to reform discipline in jails; the noble historical fiction, *The Cloister and the Hearth*, of which the hero is the father of Erasmus, *Hard Cash*, having to do with treatment of the insane, and *Put Yourself in His Place*, having to do with trades-unionism.

REDLICH, JOSEPH (1869–1936). Austrian historian and professor at Vienna University. His works deal largely with English peoples, such as *Local Government in England, The Procedure of the House of Commons, The Common Law and the Case Method in American University Law Schools*.

REGNIER (*rā-nyē'*), **HENRI FRANCOIS JOSEPH DE** (1864–1936). French poet and novelist. *Les Medailles d'argile, La Cité des eaux* are two of his best volumes of verse, *La Canne de jaspe* and *Les Amants singuliers*, two of his realistic novels.

RENAN, ERNEST (1823–1892). French biblical scholar and translator whose *Life of Jesus* raised a storm because of its skepticism. His translations of *The Book of Job, Song of Songs*, and *Ecclesiastes* contain some of his best scholarship. *The Future of Science* is a voluminous work, *Origins of Christianity*, though at times showing a disillusioned man, and the *History of Israel* were works of great learning and painstaking.

REPPLIER (*rĕp'lēr*), **AGNES** (1858–). Born in Philadelphia of French ancestry; lived largely in Paris in later life. Her stimulating essays were popular and authoritative. *Essays in Idleness, Compromises, In Our Convent Days, Americans and Others, A Happy Half Century*, and *Points of Friction* are some of her volumes.

REUTER, FRITZ (1810–1874). Lived in Mecklenburg and Neubrandenburg; made the Plattdeutsch a literary language in his poems and stories. *Anecdotes and Rhymes, Kein Hüsung*, a fine epic, *Old Stories of Bygone Days*, are three of his best works.

REYMONT, LADISLAS STANISLAS (1867–1925). Polish novelist whose studies of the life of peasants gave him world-wide fame. Three early novels described the life of strolling players; *The Promised Land* depicted certain forms of industrialism; *The Peasants*, in four volumes, pi ture the seasonal occupations of the people and gained for him the Nobel prize for literature in 1924. He also wrote some historical fictions.

RHODES, JAMES FORD (1848–1927). Celebrated American author of the *History of the United States from 1850 to 1877*, seven volumes, and *History of the Civil War, History of the United States from Hayes to McKinley*, eight volumes. For these and other works he was awarded many honors, including the Loubat prize, Berlin Academy of Science, a gold medal of the National Institute of Arts and Letters, and the Pulitzer prize at Columbia for literary work in history. *The McKinley and Roosevelt Administrations*, 1922, brings his work down to recent days.

RICE, ALICE CALDWELL HEGAN (1870–). Born in Kentucky; married Cale Young Rice, noted below. Wrote several popular realistic stories like *Mrs. Wiggs of the Cabbage Patch, Lovey Mary, Sandy, Miss Mink's Soldier and other Stories*, and *Turn About Tales* (with Mr. Rice). Helped found Cabbage Patch Settlement House in Louisville, Ky.

RICE, CALE YOUNG (1872–). Poet, born and lived in Kentucky. A few of his volumes are *From Dusk to Dusk, Many Gods, Far Quests, Wraiths and Realities*, and several poetic dramas, including *David, Yolanda of Cyprus, The Immortal Lure*, and *Porzia*.

RICE, JAMES (1843–1882). English novelist and literary partner of Walter Besant, with whom he wrote *Readymoney Mortiboy*, later dramatized by them, *My Little Girl, This Son of Vulcan, The Golden Butterfly, The Monks of Thelema*, and others.

RICHARDSON, SAMUEL (1689–1761). Father of the modern English novel. Born in Derbyshire and was a printer till 1739. At the suggestions of two publishers, he wove a series of letters into a fiction called *Pamela* (1740), the story of a servant girl who gained the respect of her employer and finally married him, after many vicissitudes. This was instantly received as a great document of humanity. It was parodied, imitated, ridiculed, but still remained a noble instance of the purity and cleverness of a girl in the modest class of society. *Clarissa Harlowe* (1748), his masterpiece, and one of the world's best studies of human motive, conduct, and intimate analysis, tells the tragedy of a girl of the middle class, born for better things, who rejected her country suitors, all of whom were much below her in attainments, but fell into the hands of a scheming man of fashion named Lovelace, and finally died in a respectable lodging house, forsaken by her lover and rejected by her own people. Her nobility, purity of heart, and steadfastness of purpose have charmed countless thousands of readers. No novel is more intense, more heart-searching, and more dramatic, but the story winds back and forth ceaselessly through a mass of letters in three large volumes. *Sir Charles Grandison* is the author's attempt to show society in the highest class, completing his trilogy of the three social strata. The hero is too faultless to be real, and the story too improbable to be regarded as anything equal to the other two novels. Richardson moved in the best society, surrounded by many ladies who called themselves his literary daughters, some of whom turned to writing fiction, notably Sara Fielding, sister of Henry Fielding, Richardson's opponent in novel writing.

RICHEPIN, JEAN (1849–1926). French author of many volumes. His *Chanson des gueux* (1876) won him fame and a term in prison because of their revolutionary tendencies; his novels were morbid and realistic; but his dramas gave him greatest fame, especially *Nana Sahib*, in which he played with Bernhardt, as well as two or three musical pieces.

RICHTER (*rich'tar*), **JOHANN PAUL FRIEDRICH** (1763–1825). Better known as Jean Paul Richter. Born in Bavaria, educated at the gymnasium, and for a time at the University of Leipzig, but left because of lack of money. *Hesperus, Quintus Fixlein, Titan* and *Flegel*—which he regarded as his best—are some of his fictions. He also wrote works on art criticism, education, politics, and his own biography. Though his works are formless and very digressive at times, he has a wealth of ideas and fertility of imagination which made him immensely famous in his time.

RIDPATH, JOHN CLARK (1840–1900). American historian, born in Indiana. Besides a very popular school history, he wrote a *History of the United States* in 8 volumes, and *The Great Races of Mankind*, a work of considerable merit. He was professor at DePauw University for a time.

RIGGS, MRS. GEORGE C. See WIGGIN, KATE DOUGLAS.

RILEY, JAMES WHITCOMB (1853–1916). Born and lived most of his life in Indiana, except for a number of years spent as a wandering sign-painter and assistant to strolling entertainers. Became known as the "poet of the common people" and "Indiana's most distinguished citizen." His poems are full of humor, sentiment, quaint philosophy, and all the plain ideas that appeal to the masses. His early dialect poems were issued under the pen-name of Benjamin F. Johnson of Boone. Beginning with 1883 and *The Old Swimmin' Hole and 'Leven More Poems*, he issued many volumes, collected finally in the Holmstead edition of 16 volumes. *Out to Old Aunt Mary's, The Raggedy Man, Knee Deep in June, An Old Sweetheart of Mine* are single poems known far and wide.

RINEHART, MARY ROBERTS (1876–). Born at Pittsburgh, Pa., author of *The Circular Staircase, The Man in Lower Ten, The Amazing Interlude, Love Stories*, and many others, besides *The Bat, The Breaking Point*, and other dramas.

RIPLEY, GEORGE (1802–1880). Best known as an American scholar and social reformer, one of the founders of Brook Farm, a community where artists proposed to combine writing, painting, and so on with working on the soil. The *Discourses on Philosophy and Religion* and *Letters on the Latest Forms of Infidelity* attracted wide comment. He edited with others *Appleton's Cyclopedia* and introduced many European authors to an American public.

RIVES (*rēvz*), **AMELIE** (1863–1917). Born in Virginia; in 1896 married Prince Pierre Troubetzkoy, a Russian nobleman. Among her successes are *A Brother to Dragons*, short stories, *The Quick or the Dead*, which raised a considerable stir, *Virginia of Virginia*, *World's End*, *Shadows of Flames*, and a play version of Mark Twain's *The Prince and the Pauper*.

ROBERTS, CHARLES GEORGE DOUGLAS (1860–). Born in New Brunswick, Canada; professor in King's College, Nova Scotia; lived in New York for a time. Some of his many books are, in verse, *In Divers Tones*, *Songs of the Common Day*, *Collected Poems* (1900), *New Poems* (1919); in prose, *Around the Camp Fire*, *A History of Canada*, *The Heart of the Ancient Wood*, *Haunters of the Silences*, and *The Secret Trail*.

ROBINSON, EDWIN ARLINGTON (1869–1935). American poet, born in Maine; educated at Harvard; lived mainly in New York. Won Pulitzer prize for poetry in 1921 and 1925. Some of his books of poems are *The Man Against the Sky*, *The Three Taverns*, *Collected Poems* (1921), *The Man Who Died Twice* (1925), and *Tristram*.

ROBINSON, HENRY CRABBE (1775–1867). British lawyer and literary man; knew all the great authors of the day. Left many volumes of *Diaries*, *Journals*, and *Letters*, part of which were printed in 1869, and the *Correspondence with Wordsworth* in 1927.

ROBINSON, JAMES HARVEY (1863–1936). Born in Illinois; educated at Harvard; professor of history, Columbia, (1895–1919). An advocate of the newer way of writing history, with less attention to kings and politics and much more to the progress of arts, science, and thought. His chief histories are *Introduction to the History of Western Europe*, *Readings in European History*, *The New History*, *Medieval and Modern Times*, *The Mind in the Making*, *The Ordeal of Civilization*.

ROD, EDOUARD (1857–1910). Born in Switzerland; lived many years in Paris, and adopted realistic manner of his friend Zola, being particularly good in character analysis. *La Course à la mort*, *Le sens de la vie*, and *The Private Life of an Eminent Politician* (*La Vie privée de Michel Tessier*, translated in 1893), are his great novels.

ROE, EDWARD PAYSON (1838–1888). Famous American novelist; lived in New York. Of his numerous works, the best recalled are *Barriers Burned Away*, *From Jest to Earnest*, *Driven Back to Eden*, and *The Earth Trembled*.

ROGERS, SAMUEL (1763–1855). English banker, poet, literary dictator, and friend of authors. An invitation to his breakfasts in London assured one's fame as a literary person. He befriended Tom Moore, Cary, the translator of Dante, Wordsworth, and other authors. His own *Pleasures of Memory*, written in the style of the age of Gray, and *Italy* are notable poems. Rogers was a prince of conversationalists, and Alexander Dyce published from notes *Recollections of the Table Talk of Samuel Rogers*.

ROLLAND, ROMAINE (1866–). French man of letters; winner of the Nobel prize for literature in 1915. Known for his works on the history of the arts and for his political essays and plays. *History of the Opera*, *Causes of the Decadence of Italian Painting*, *The Theatre of the People*, *Millet*, *Beethoven*, *Michelangelo*, *Jean-Christophe*—an elaborate biography of a musician—and an eloquent defense of the Indian leader in *Mahatma Gandhi* are his chief writings.

ROMAINS, JULES (1885–). French author, known for his lively style and knowledge of humanity. His *La Vie Unanime* is a study of the life of the spirit in various social groups, *Mort de Quelqu'un* shows how a dead man gradually fades from memory; *Knock*, a farce, some prose poems, and tragedies make up his principal books.

ROOSEVELT, THEODORE (1858–1919). Besides his many public services, Mr. Roosevelt found time to write a large number of books, some of which are *Naval War of 1812*, *Ranch Life and the Hunting Trail*, *American Ideals*, *History as Literature*, *African Game Trails*, *Fear God and Take Your Own Part*, *Theodore Roosevelt's Letters to his Children*. (For his administration as President, see page 360.)

ROSSETTI (*rō-sĕt'ē*), **CHRISTINA GEORGINA** (1830–1894). Daughter of an Italian refugee, Gabriele Rossetti, professor of Italian literature at King's College, London, 1831, till he became blind in 1845; sister of Dante Gabriel (q. v.) and of William M. (q. v.). She twice refused suitors because of difference in religious views, Miss Rossetti being a high-church Anglican. Her life and poetry are colored and saddened by her experience and by illness. *Goblin Market*, *Sing-Song*, a collection of poems for children, *The Face of the Deep*, an attempt to interpret *Revelations*, *Seek and Find*, and many theological tracts make up her output of literature. Her poem *When I am dead, my dearest* takes rank among our best.

ROSSETTI, DANTE GABRIEL (1828–1882). English painter and poet, who sought, so far as possible, to fuse the two arts. Contributed to *The Germ*, a magazine founded by his brother, *The Blessed Damozel* and some sonnets in 1850. This poem is preëminent in its coloring, pictures, and musical interpretation of the longing of a girl in heaven for her lover still on the earth. Rossetti wrote many poems, including a noble series of sonnets, *The House of Life*; he also translated the Italian poets. When Robert Buchanan (q. v.) published his attack, entitled *The Fleshly School of Poets*, Rossetti replied in his *The Stealthy School of Criticism*. His last years were saddened by the death of his beautiful wife and by his own failure to control his use of drugs. (For Rossetti as a painter, see the Dictionary of the Fine Arts in this volume.)

ROSSETTI, WILLIAM MICHAEL (1829–1919). English author and critic; brother of Christina and Dante Gabriel, noted above. He founded the Pre-Raphaelite Brotherhood, a group of artists including his brother, Burne-Jones, Holman Hunt and several others, and edited their official magazine *The Germ*. Besides fine biographies of his father and his brother, he is noted for his editions of Shelley, Blake, and Walt Whitman, a blank verse translation of Dante's *Inferno*, *Democratic Sonnets*, and many papers on art.

ROSTAND, EDMOND (1868–1920). Dramatist born at Marseilles, France. *Les Romanesques*, a travesty, *La Princesse Lointaine*, *La Samaritaine*, *Cyrano de Bergerac*, his great heroic comedy, which was acclaimed more loudly than any drama since Victor Hugo's time, *L'Aiglon*, in which Sarah Bernhardt played at her own theater, and *Chantecler* are his chief productions. His late work consisted mainly of patriotic poems. Great artistic finish and beauty characterize nearly all his plays, especially the *L'Aiglon*, which was in verse.

RUNEBERG, JOHAN LUDVIG (1804–1877). Though he lived all his life in Finland, Runeberg is, with an exception or two, the most popular poet who wrote in Swedish. He was a professor of Latin at Borga College for many years. *The Grave in Perrho*, for which the Academy gave him a gold medal, *Hanna*, *The Elk-Hunters*, and *King Fjalar*—a group of romances in blank verse—are his chief poetic compositions. In spite of Greek influence, he remains a great patriotic and most original poet.

RUSKIN, JOHN (1819–1900). English author of notable books on art and on labor and workingmen. Born in London, he had the advantage of a pious mother, who taught him the Bible and thus formed his simple and beautiful style of writing. Graduate of King's College, London, and Christ Church College, Oxford. His first great work, *Modern Painters*, (1843–1860), in five volumes sought to defend the artists like J. M. W. Turner who lived in modern times. Though many artists disagree with Ruskin, his defense is an eloquent and sincere one. *Modern Painters* did much to encourage English art. In the *Seven Lamps of Architecture*, perhaps somewhat fancifully, he sought to show that all good building has seven great principles or "lamps,"—sacrifice, truth, power, beauty, life, memory, and obedience. After 1860 he wrote mainly on work. *Sesame and Lilies*, some addresses for the young, have had countless admirers of their homely sense and dignified beauty. *The Crown of Wild Olive* is a plea for beauty in every-day life. *Three Lectures on Work*, *Fors Clavigera* (letters to workingmen), *Traffic and War* are some notable writings after 1860. Several earlier books deal with the

technique of art. Though Ruskin often exaggerated, and sometimes outran himself in zeal, his purpose was noble and the results of his work tremendous for a generation or more. He spent much of his private fortune building modest but artistic homes for workmen. In his later life he lived at Coniston in the Lake District. At two different times, 15 years in all, he was Slade professor of art at Oxford. Vigorously defended the Pre-Raphaelite artists.

RUSSELL, GEORGE WILLIAM (1867–1935). Familiarly known by his pseudonym "AE". Irish author and painter. Edited, 1904 to 1923, *The Irish Homestead*, an organ of coöperative farming, and then took charge of *The Irish Statesman*. Some of his best-known work are in *Collected Poems* (1913). *Gods of War*, *The Hero in Man*, and *Voices of the Stones*. He also wrote essays, a drama or two, *The Interpreters*, an interesting Platonic dialog, and *The Candle of Vision*, in the last of which he sought to discover some elements of mysticism.

RUSSELL, WILLIAM CLARK (1844–1911). Son of Henry Russell, writer of songs, noted in Dictionary of Fine Arts in this volume. After eight years in the merchant service on the seas, he wrote biographies of Collingwood and Nelson, but Russell is best recalled through his interesting novels of the sea, such as *John Holdsworth, Chief Mate*, *The Wreck of the Grosvenor*, *A Sailor's Sweetheart*, *Marooned*, and *The Good Ship Mohock*.

RYAN, ABRAM JOSEPH (1839–1886). Affectionately known as Father Ryan, a Roman Catholic priest and poet, who once enjoyed great popularity. Lived in Alabama and Virginia, where he was born. Of his numerous poems, the tenderest is *Their Story Runneth Thus*, supposed to be largely autobiographical.

RYDBERG, ABRAHAM VIKTOR (1828–1895). Swedish journalist and romantic novelist, greatest of his age. *The Freebooter of the Baltic*, *The Last of the Athenians*, are his leading imaginative works; he also wrote *The Bible's Teachings about Christ*, an immensely popular study, and *Roman Days*, a series of papers on conditions of old Rome.

SACHS (*zäks*), **HANS** (1494–1576). German meistersinger of Nuremberg, except for 5 years spent in travel. Worked as a shoemaker and composed over 6,000 pieces out of hours. These consist mainly of brief songs, short fables—at which he was best—and 200 dramatic pieces on Biblical and secular subjects. An edition of his works in 23 volumes was completed at Stuttgart in 1896.

SA DE MIRANDA, FRANCISCO DE (1485?–1558). Portuguese poet who introduced the Renaissance into his country. He produced both the first classic comedy and the first great tragedy in Portugal. A visit to Italy and studies in Greek, Latin, and Italian aided him materially. Dialogs, eclogs, letters, and shorter poems form the bulk of his other compositions. He wrote also in Castilian.

SADI (c. 1184–1291). Greatest philosophical poet of Persia, born in Shiraz. Spent thirty years of his life in travel and wandering, but achieved fame in Delhi, Damascus, and endured countless hardships as a slave in Tripoli, till rescued and ransomed by an old friend. At 70 he settled at Shiraz under a favorable monarch and gave to the world, in many types of verse, a large number of beautiful, dignified, and polished lyrics. *Fruit Garden* (*Bustan*), *Rose Garden* (*Gulistan*), lyrics, elegies, odes, and epigrams make up his large output, most of which are deep in thought and clever in expression.

SAINTE-BEUVE (*sänt'bûv'*), **CHARLES AUGUSTIN** (1804–1869). Distinguished French critic. Except for three volumes of poems, one drama, and a work on Port-Royal, his writings were composed of a Monday article in different Paris dailies. His comments are always sensible, restrained, precise, and expressed in delicate and tactful language. These criticisms now fill 28 volumes.

SAINTSBURY, GEORGE EDWARD BATEMAN (1845–1933). English critic; professor of rhetoric and English literature at Edinburgh University, (1895–1915). Of his voluminous and learned works, the most useful to students are *Short History of French Literature*, *A Short History of English Literature*, *History of English Prosody*, *History of English Criticism*, and a *History of the French Novel*.

SAND, GEORGE (1804–1876). Pen-name of Madame Armandine Lucile Aurore Dupin, wife of Casimir Dudevant. She wrote a great number of romantic and pastoral novels—her collected works totaling 109 volumes. *Spiridon*, *Les Sept cordes de la lyre*, *Le Péché de M. Antoine*, *La Comtesse de Rudolstadt*, and *Lucrezia Floriani* are well known. As an intense human document her *Story of My Life*, amazing in its self-revelation of various love affairs, has attracted wide attention.

SANDBURG, CARL (1878–). Born in Galesburg, Illinois; studied at Lombard College. Gained great experience as a newspaper man, as a soldier in the War with Spain in Porto Rico, and as a student of mankind. Sandburg is a master of words, contrasted effects, keen insight into both prairie and city where he lived. *Chicago Poems*, *Corn Huskers*, *Smoke and Steel*, and *Slabs of the Sunburnt West*, are his chief volumes of verse. *Rootabaga Stories*, much liked by young folks, two discriminating books about Lincoln, and *Good Morning, America*, show Sandburg as a trenchant prose writer.

SARDOU (*sär'dōō'*), **VICTORIEN** (1831–1908). Great French playwright, who, after initial failure and a narrow escape from death, gained a tremendous success in Paris by his *Monsieur Garat*, *A Scrap of Paper* (written for Sarah Bernhardt), and a series of satirical dramas ridiculing various classes of society, succeeded by many great romantic plays, in which Sardou turned to account the history of various countries. From Italy he took *La Haine* and *Dante*, from Greece *La Duchesse d'Athènes*, *Patrie* from Holland, *Robespierre* from the French Revolution, and *La Sorcière* from Spain.

SAROLEA, CHARLES (1870–). Born in Belgium, educated at Liége University; professor of French literature in University of Edinburgh. He has written numerous monographs and essays, including *H. Ibsen*, *Cardinal Newman and his Influence on Religious Thought*, *How Belgium Saved Europe*, *Europe and the League of Nations*, *President Masaryk and Abraham Lincoln*, *R. L. Stevenson and France*, and *Impressions of Soviet Russia*, which was translated into nine languages.

SAXE, JOHN GODFREY (1816–1887). American editor and humorous poet. Edited Burlington, Vt., *Sentinel* from 1850 to 1856, and the Albany, N. Y., *Evening Journal* after 1872. Of his three volumes of poems, single pieces still recalled are *The Proud Miss McBride*, *Rhyme of the Rail*, *Progress*, and *The Money King*.

SCHAFF, PHILIP (1819–1893). Born in Switzerland, educated in German universities, he was called to the Reformed Theological Seminary of Bethlehem, Pa., and in 1870 became a professor at Union Seminary, New York City. Besides editing many learned works, such as the Schaff-Herzog *Encyclopedia of Religious Knowledge* and *The Creeds of Christendom*, he wrote *History of the Apostolic Church* and *History of the Christian Church*, two valuable works still standard.

SCHEFFEL, JOSEPH VIKTOR VON (1826–1886). German poet and novelist of extraordinary fame. His romantic and humorous poem, *The Trumpeter of Säckingen* went through 250 editions, and his historical romance *Ekkehard* was almost as popular.

SCHILLER, JOHANN CHRISTOPH FRIEDRICH (1759–1805). German poet, born at Marbach, Wurtemberg; studied to be a lawyer and then became a surgeon in a regiment under appointment of the Duke. In 1781 his tragedy *The Robbers* turned him definitely toward literature, and he expressed in poems the unrest of the age. Absent without leave twice to see his dramas produced, he was commanded by the Duke to communicate with nobody outside his province. Schiller escaped, wandered for several years, became interested in history, and then in philosophy through friends. After two unimportant dramas, his *Don Carlos* appeared in 1787, and two years later he became professor of history at Jena. *Revolt of the Netherlands* and *History of the Thirty Years' War* followed, two picturesque but accurate works. Ill-health followed, but he continued to labor on his dramas, while he was forced to give up his teaching. From 1799 to his death he lived at Weimar, in the society of Goethe and other great authors. The trilogy of *Wallenstein*, in which he gave a picture of the Thirty Years' War, in 1799 placed him at the head of European dramatists. Then followed his *Maria Stuart*, a great tragedy, *The Maid of Orleans*, a beautiful story of Joan of Arc, *The Bride of Messina*, a tragedy similar to the ancient Greek model, and at last *Wilhelm Tell*, the national story of Switzerland. For singleness of purpose, devotion to ideals, and optimism, Schiller

stands among the world's great, the leader of German tragedy, and next to Goethe the favorite author of the German people.

SCHNITZLER, ARTHUR (1862–1931). Austrian novelist and playwright; practiced at first as a physician. His chief dramas are *Anatol*, the love story of a Viennese, *Liebelei* and *Reigen*, in all of which he shows the careless, happy, romantic life of the Austrian capital. Schnitzler is a master of characterization and of the management of realistic details. Some of his stories are *Sterben*, *Lieutenant Gustl*, *Casanovas Heimfahrt*, and *Fräulein Else*.

SCHOOLCRAFT, HENRY ROWE (1793–1864). Born in Albany County, N. Y., became a geologist, explorer, member of the legislature of Michigan, and authority on Indians. Of his numerous works, the *Information respecting the Indian Tribes of the United States*, in six volumes, *Algic Researches*, and *The Legend of Hiawatha* are standard sources of our information. Longfellow used the last of these for certain information for his own *Hiawatha*. He married a cultured Indian girl, granddaughter of a chief, and she aided him greatly in his studies.

SCHREINER, OLIVE (1862–1920). After some years of residence in South Africa, where her father was a German missionary, she published in England *The Story of an African Farm*, *Trooper Peter Halkett*, and *An English South African's View of the Situation* (1899). These give intimate pictures of life in South Africa.

SCOLLARD, CLINTON (1860–1932). American poet; professor of English literature at Hamilton College for some years. Some of his volumes are *Songs of Sunrise Lands*, *A Boy's Book of Rhyme*, *Lyrics of Dawn*, *Odes and Elegies*, *The Vale of Shadows*, and *Songs of Summer*, all of which are characterized by lyric and metrical grace.

SCOTT, DUNCAN CAMPBELL (1862–). Canadian author; official of Civil Service. Some of his publications are *The Magic House*, *Labor and the Angel*, *New World Lyrics*, and *Lundy's Lane and other Poems*, all volumes of poetry; *In the Village of Viger*, and *The Witching of Elspie*, short stories.

SCOTT, WALTER (1771–1832). British poet, novelist, and historian. Born in Edinburgh, became a lawyer, but later decreased his practice in part to give his time to literature. For 25 years he acted as clerk of the session in Edinburgh, devoting several hours a day to this for at least six months every year, while court was in session. His remarkable memory, interest in the past, and romantic imagination gave us his great poems and novels. Beginning with *Minstrelsy of the Scottish Border*, an edition of old songs and ballads collected by him, he worked incessantly at his writing. In succession the metrical ballads appeared,—*Lay of the Last Minstrel*, a wonderful success, *Marmion*, a revival of the old atmosphere of chivalry, and *The Lady of the Lake*, an idyllic account of the northern clans and their chiefs, with a delightful romance as additional interest, and at least two other poems now disregarded. Feeling that fiction was to be more popular, and knowing that Byron was the great idol then, and also to provide money to help a publishing firm in which he had become a silent partner, Scott turned to novels. In the meantime he had edited Dryden, Swift, and other works. *Waverley*, 1814, instantly caught the fancy of thousands, who called for more from the Great Unknown, as Scott was called by those who suspected his authorship. He aimed eventually to cover most of the periods of history in his fictions, without being scrupulously accurate in all details. To read Scott's novels is to obtain vivid and usually accurate pictures of life and people in past centuries. *Rob Roy* gives much insight into highland life and customs; *The Heart of Midlothian* reveals the tragedy and heroism of a simple Scotch family in Midlothian; *The Abbott* introduces Mary Queen of Scots; *Kenilworth* brings upon a magnificent stage Queen Elizabeth, Raleigh, the Earl of Leicester, and some unhistorical characters, with the tragedy of Amy Robsart; *The Bride of Lammermoor*, one of the great tragedies of family pride and thwarted lovers; and *Ivanhoe* takes us back to the days of Richard the Lion Heart. These are only typical of Scott's many romantic fictions, with their color, interest in all classes of persons in all ages, and dramatic characterizations. Through the failure of the publishing firm in 1826, Scott became involved in tremendous debt, all of which he assumed that he might "owe no man a penny." His chagrin, superhuman labors to write enough to gain the needed money, and other events hastened his end by several years. By 1847, fifteen years after his death, all debts had been paid by his estate, in all nearly $600,000.

SERAO, MATILDE (1856–1927). Italian journalist and novelist; born in Greece of Italian-Greek parentage. With her husband, Eduardo Scarfoglio, she established a paper in Rome, and finally at Naples, *Il Mattino*, which became a great favorite in south Italy. All her stories show an intimate knowledge of common life. *Cuore Infermo*, *Fior di Passione*, *La Conquista di Roma*, and *Ventre di Napoli* are some of her fictions.

SERVICE, ROBERT W. (1875–). Born in England, went to the Canadian northwest and the Klondike, and finally settled in Paris. Wrote several volumes of poems known for dash, independence, and picturesque descriptions of life in the wilds. Experiences in the gold rush are recorded in *Ballads of a Sourdough*, *Rhymes of a Cheechako*, and *Rhymes of the Trail*, and as an ambulance driver in the World War in *Rhymes of a Red Cross Man*.

SHAKESPEARE, WILLIAM (1564–1616). English player, poet, and dramatist; acknowledged by most critics as the greatest dramatist of all time. Tradition has it that Shakespeare died on his birthday, for we know three things: That he died on April 23, 1616; that he was baptized on April 26, 1564; and that at his death he had entered upon his 53rd year. So his birthday could hardly have been earlier than April 23. Though we should like to know much more of his life, we have much information in fact, and no few reasonable conjectures. The poet's father was a burgess of Stratford-on-Avon, Warwickshire, a glover probably by occupation, and perhaps also a contractor in produce. Of his several children, all died except William by 1613. One son Richard was also an actor. John Shakespeare, after holding several village offices, fell into monetary difficulties by 1577, and by 1586 he was dropped as alderman of Stratford. Ben Jonson, himself a great classical scholar, asserted that William Shakespeare had "small Latin and less Greek." Yet he may have had all the town school afforded,—a considerable amount measured by modern high school standards. According to evidence not wholly conclusive, he married at 18 Ann Hathaway of a neighboring town of Shottery, and she evidently was 8 years his senior. Of their three children—Susanna and twins, Hamnet and Judith, the boy died early, and the line through the daughters became extinct in 1670, though his sister Joan's descendants could be traced as late as 1865.

Shakespeare may have left Stratford for London as early as 1584, but until about 1591 or 1592, nothing very positive is known of his occupations. Some think he left Stratford with the players of the Earl of Leicester about 1586–87, and after Leicester's death in 1588 passed with the company under the patronage in turn of Lord Strange, the Earl of Derby, and at last Lord Hunsdon, or that he was allied with the men of Pembroke or Sussex. Strong tradition indicates he acted as a man of all work about the playhouse, then became a regular actor, and finally the chief dramatist of the age of great dramas. His non-dramatic poems, *Venus and Adonis*, his own contribution to the erotic verse of the time, *Lucrece*, and possibly the *Sonnets* were written by 1593. Yet the last of these was not published in full till 1609. These were dedicated to the Earl of Southampton, a young man then not of age, and in connection with this possible alliance with a nobleman, some of the baffling problems of the story of the *Sonnets* have arisen.

When the theaters were opened in 1594 after an interval or two of plague in London, Shakespeare was with the Lord Chamberlain's men, later the King's men, when James I became their patron, and this company appeared at court more often than others. Shakespeare is said to have played old Adam in *As You Like It* and the Ghost in *Hamlet*, neither a chief part. Yet as a playwright he must have contributed to the company not less than two plays in the average year. By 1596 Shakespeare began a series of transactions which eventually restored his father to peace till his death in 1601, and which finally left him a prosperous landowner and money-lender of his native town. From the interest he owned in the Globe Theatre in London, amounting to an income of perhaps 200 or 300 pounds a year, he purchased a home in Stratford, to which he came in 1610 as a more or less settled tenant. Whether his health was poor during the last years is not established, but his will was made hastily on March

25, 1616, a month before his death. Much has been made of the fact that Shakespeare left his wife only the "second best bed with the furniture," but it must be recalled that the widow would have her dower interest in the property, not mentioned in the will.

Some of Shakespeare's plays were published in quartos or editions of single plays during his lifetime, and some variant versions give rise to many problems for the scholars. In 1623 two old friends—Heminge and Condell—issued the first *Folio*, reprinted in 1632 and twice later. Of 37 plays 18 appeared in the *Folio* for the first time, and several in a form somewhat differing from other texts.

For a description of Shakespeare dramas, see page 875, and for a synopsis of individual plays, see at intervals pages 858 to 878.

SHAW, ALBERT (1857–). Economist and editor. Educated at Grinnell College; editor of *Minneapolis Tribune*, 6 years, and of the *American Review of Reviews* after 1891. Awarded the John Marshall prize by Johns Hopkins for books on municipal government, such as *Municipal Government in Great Britain, Municipal Government in Continental Europe.* Among his other books are *The Business Career* and *The Outlook for the Average Man.*

SHAW, GEORGE BERNARD (1856–). British dramatist and socialist. Born in Dublin. After attempting five novels, he turned to single tax theories of Henry George, but stopped only when he had become a Fabian socialist. The novels at last were printed in propaganda magazines. Finally he wrote many plays, most of which had some idea he desired to promote. In 1898 he published *Plays Pleasant and Unpleasant* in two volumes. Later successes were *Candida, Man and Superman, John Bull's Other Island, Androcles and the Lion,* and others, besides some essays on art, Ibsen, Wagner, and other topics.

SHELLEY, PERCY BYSSHE (1792–1822). Acknowledged by most critics the greatest lyric poet of the English race. Son of Sir Timothy Shelley, and born near Horsham, England. Educated at Eton College and Oxford, from which latter he was dismissed for issuing a pamphlet, *The Necessity of Atheism.* Following differences with his father, he married Harriet Westbrook, daughter of an inn-keeper, who drowned herself five years later in 1816. Having become interested in Mary, daughter of William Godwin, a socialist and free-thinker, Shelley legally married her after the death of his first wife. This marriage was a happy one. In 1816 he was with Byron in Switzerland, afterward spending some time near him in Italy. He also became intimate with Leigh Hunt, the poet and critic. From 1818 till the summer of 1822, the Shelleys lived in various places in Italy, at last on the Gulf of Spezia. He and a friend named Williams were drowned on July 8 by the overturning of their sailboat in the Gulf. The bodies were burned, but Shelley's ashes were interred in the Protestant Cemetery at Rome, not far from the grave of his old friend, John Keats, whom he had commemorated in *Adonais.* Of Shelley's numerous lyrics, some of the greatest are *The Ode to the West Wind, To a Skylark, Hymn to Intellectual Beauty, Monte Blanc, Arethusa, Alastor, Epipsychidion,* the dramatic poems, *Prometheus Unbound,* which shows his revolt against conventional restraints, *The Witch of Atlas;* and the tragedies, *The Cenci* and *Oedipus Tyrannus.* His sonnet *Ozymandias* is one of our best.

SHENSTONE, WILLIAM (1714–1763). Born in Shropshire, England; later made his estate a showplace of England. His long poem in Spenserian stanzas is *The Schoolmistress,* which is notable for its humor and fine realistic descriptions. The *Pastoral Ballads* take high rank in their class.

SHERIDAN, RICHARD BRINSLEY (1751–1816). British dramatist and parliamentary orator, born in Dublin and educated at Harrow school. Three fine comedies established his fame,—*The Rivals, The School for Scandal,* and *The Critic,* all of them clever revelations of the manners of the age. Sheridan is noted for his ingenious handling of plot, his tense situations, vivid characterizations, and humor. In Parliament he was a chief spokesman for the Whig party, best recalled today for his telling speech against Warren Hastings in the trial for impeachment. He held several minor offices in the government. *Pizarro,* his last play, is a fine melodrama with patriotic motive.

SHERMAN, FRANK DEMPSTER (1860–1916). American poet and journalist, born in New York. Some of his graceful and musical verses are found in *Madrigals and Catches, Lyrics for the Lute, Little-Folk Lyrics,* and, in collaboration with J. K. Bangs, *New Waggings of Old Tales.*

SHILLABER, BENJAMIN PENHALLOW (1814–1890). Under the name of "Mrs. Partington," he wrote several humorous sketches and collections of sayings, among which are *Life and Sayings of Mrs. Partington,* which gave him fame, *Knitting Work, Mrs. Partington's New Gripsack Filled with Fresh Things, Rhymes with Reason and Without.*

SHORTHOUSE, JOSEPH HENRY (1834–1903). British novelist, who, at 50, wrote *John Inglesant,* laid it aside, published 100 copies three years later, and rose suddenly to great fame when it was praised by Gladstone. His later works were not up to his original standards.

SIDNEY, MARGARET. See LOTHROP, HARRIET M.

SIDNEY, PHILIP (1554–1586). English courtier, poet, romancer, and soldier. His father was deputy in Ireland, where Sidney visited him in 1576, and later wrote a defense of the elder Sidney's administration; next went on a mission to the continent. While engaged in the wars in the Low Countries in 1586 he died of a wound in the thigh. *Astrophel and Stella,* his sonnet series, contains many fine poems, most of which are thought to be autobiographical; and his *Defense of Poesy* refuted the charges of Gosson and others that English was not a fit language for poetry and modern poetry was inferior to the ancient. While rusticated from court by the Queen for advising her too freely as to her plans for marriage, he wrote at the country place of his sister, Penshurst, a beautiful prose romance, *Arcadia,* though it is rather formless and wandering. This also contains poems interspersed at intervals. Tradition represents Sidney as the ideal courtier and gentleman of a glorious age.

SIENKIEWICZ (*syen-kyā'vich*), **HENRYK** (1846–1916). Born in Russian Poland, educated at Warsaw, traveled much in various countries, including the United States in 1876, and received the Nobel prize for literature in 1905. Died in Switzerland while engaged in organized relief for Polish refugees; buried in Cracow, Poland, 1924. His novel of the times of the Roman emperor Nero, entitled *Quo Vadis,* was translated into 30 languages, dramatized, and filmed many times. *With Fire and Sword, The Deluge,* and *Pan Michael,* in technique, are better works, though not so famous. *Yanko the Musician and other Stories* also have been translated into English.

SIGOURNEY (*sĭg'ür-nē*), **LYDIA HUNTLEY** (1791–1865). Lived in Connecticut; married in 1819, Charles Sigourney, a Hartford merchant. Like the English poet, Mrs. Hemans, with whom she has been compared, she wrote numerous books of verse and prose, besides hundreds of articles to many journals and papers. *Traits of the Aborigines of America* (1822) is an elaborate poem in blank verse.

SILL, EDWARD ROWLAND (1841–1887). Born in Connecticut, educated at Yale, studied theology at Harvard, but could not conform to doctrines, acted briefly as a journalist, taught school, and was professor of English, University of California, from 1874 to 1882. Of a retiring disposition, Sill did not seek fame as an author, but his volumes *Hermitage and other Poems, The Venus of Milo and other Poems* have many fine pieces, among which *The Fool's Prayer* and *Venus of Milo* are still recalled.

SIMMS, WILLIAM GILMORE (1806–1870). Lived in South Carolina and became best known author of the South, excepting Poe. His verse is not notable, but his short stories, *The Wigwam and the Cabin,* afford a fine series of pictures of pioneer life. Simms wrote several novels, somewhat resembling Cooper's, including *The Yemassee,* his best, *The Partisan, The Forayers, Border Beagles,* and *Beauchampe* have been favorites. His *History of South Carolina* is still an accepted text, and his *Life of Francis Marion* has been often reprinted.

SIMONDS, FRANK HERBERT (1878–1936). Journalist in Albany and New York City. His stories in the *Review of Reviews* during the World War gave him an enviable reputation for keen analysis and accuracy in reporting. His books include the story of Verdun in *They Shall Not Pass, History of the World War,* and *How Europe Made Peace without America.*

SINCLAIR, UPTON (1878–). Born in Baltimore, studied in New York, and later lived in California. Founded several societies and experiments.

Sinclair gained a wide reputation in 1906 with his *Jungle*, a study of the stock yards region in Chicago. *Oil*, *King Coal*, *The Brass Check*, *The Goose Step*, and *The Goslings* continue his attacks, the first two on industry, in *The Brass Check* on certain phases of journalism, and in the last two, dangers and tendencies in education.

SISMONDI, JEAN CHARLES LEONARD DE (1773–1842). His real name was Simonde. Eminent Swiss historian; lived in Geneva and for a time in early life in Italy. In his *New Principles of Political Economy* he advocated the idea that more attention should be paid to the use of wealth and less to acquiring it in books on economy. *History of the Italian Republics in the Middle Ages*, 16 volumes, and *History of the French*, 29 volumes, are among the great scholarly histories of the world.

SKEAT, WILLIAM WALTER (1835–1912). English philologist who contributed more than any other man in recent times to our knowledge of English words. He was educated at Cambridge, where he became a professor of Old English. *Etymological Dictionary*, *Principles of English Etymology*, and a fine edition of Chaucer in six volumes are Dr. Skeat's major works.

SKELTON, JOHN (1460?–1529). English satirist of the clergy and court. His chief works *Why Come Ye not to Court* and *Colin Clout* had hosts of imitators; they were written largely in a short, tumbling, rimed meter. *The Death of Philip Sparrow* is a fine lament by a young lady for the death of her pet killed by a cat.

SMILES, SAMUEL (1812–1904). Scotch author of many biographies of leaders in industry, such as George Stephenson, an immensely popular work, Wedgwood, and *The Huguenots*. His inspirational work, *Self-Help*, was translated into many languages, and was followed by similar works on *Character*, *Thrift*, and *Duty*.

SMITH, ADAM. See under EDUCATORS.

SMITH, FRANCIS HOPKINSON (1838–1915). American engineer, artist, and author. Lived mainly in Baltimore. Besides many life-saving stations he built for the government a lighthouse off New London, Conn., the stone breakwater at Bridgeport, Conn., and the foundations for the Statue of Liberty on an island in New York harbor. His delightful romantic stories are *Colonel Carter of Cartersville*, *Caleb West, Master Diver*, and the *Romance of an Old Fashioned Gentleman*. See DICTIONARY OF FINE ARTS for his work as a painter.

SMITH, GOLDWIN (1823–1910). Born in England, educated at Oxford, where he was a professor of history from 1858 to 1866. Championed the North in the Civil War, and came to America to live as professor at Cornell, 1868 to 1871, after which he lived in Toronto, Canada, edited at times three journals, and wrote many books, including political histories of both the United Kingdom and the United States. *Canada and the Canadian Question* (1891) stresses his idea that Canada and the United States have much in common.

SMITH, SAMUEL FRANCIS (1808–1895). Author of *My Country 'Tis of Thee*, which in time became a national hymn, according to the author, "without my planning or seeking for such a distinction." Smith was a clergyman at Andover, Mass., and Boston. He wrote the hymn at Andover in 1831 or 1832, and it was first sung by the children of the Park Street church, Boston, on July 4, 1832.

SMITH, SYDNEY (1771–1845). English clergyman, wit, and one of the founders of the *Edinburgh Review* in 1802. As Peter Plymley he favored Catholic emancipation and also championed other causes later. He became known throughout England as a genial and witty conversationalist. Acted as rector in Yorkshire for 20 years, then at Bristol, and finally canon of St. Paul's, London, 1831–1845.

SMOLLETT, TOBIAS GEORGE (1721–1771). Born in Scotland, became a doctor, and finally an author of sea stories and satirical tales of life of his day. His best-known works are *Peregrine Pickle*, *Roderick Random*, containing some fine local color of the sea, and *Humphrey Clinker*, the account of the travels and comments of a choleric invalid doctor through England.

SNORRI, STURLASON (1179–1241). Icelandic historian; lawyer, president of supreme court of Iceland. Lived in Norway for a time, being forbidden by order of the king to return to Iceland, and put to death for disobeying. Snorri wrote the great prose *Edda*, the *Sagas of the Norwegian Kings*, and also a briefer form, *History of St. Olaf*.

SOPHOCLES (*sof'o-klēz*) (495–406 B. C.). Tragic poet of Greece, born near Athens. Served as a general in the Samian War. Wrote his plays for particular actors in many cases, and contributed to improvement of stage effects. Of his hundred or more dramas, these seven survive: *Antigone*, *Electra*, *Trachinian Maidens*, *Oedipus the King*, *Ajax*, *Philoctetes*, and *Oedipus Coloneus*. No early plays are extant nor any that show a decline of his powers.

SORABJI, CORNELIA (1866–). Indian author, graduate in law from Oxford; legal adviser in India. Her chief works are *Love and Life beyond the Purdah*, *Sun-Babies*, two series, *Tales of the Great Ones*, *Between the Twilights*, and *Therefore*.

SOUTHEY, ROBERT (1774–1843). English poet and biographer, born in Bristol and educated at Oxford. Became interested with Coleridge in a scheme for a democratic settlement in America, never carried into maturity. He and Coleridge married sisters. He traveled in Spain and Portugal, and in 1803 settled as a literary man at Keswick. Ambitious epics by Southey like the *Thalaba* and *Kehama*, his own favorites, are now seldom read. Besides he wrote many articles for the *Quarterly Review* and lives of Nelson and John Wesley which are still standard works. Some of his poems like *The Battle of Blenheim* and *The Holly-Tree* have survived in public regard.

SPARGO, JOHN (1876–). Born in England; lived in United States since 1901. Identified with numerous socialistic enterprises and plans for betterment of unfortunates; founded Prospect House Social Settlement, Yonkers, N. Y., member of the N. Y. Milk Commission; formerly member Socialist Party. Among his books are *The Bitter Cry of the Children*, *Socialists—Who They Are and What They Stand For*, *Karl Marx, his Life and Work*, *Social Democracy*, *Bolshevism*, *The Enemy of Political and Industrial Democracy*, *Ethan Allen at Ticonderoga*, *History of Potters and Pottery of Bennington*.

SPARKS, JARED (1789–1866). Historian born in Connecticut; Unitarian pastor in Baltimore; first professor of American history at Harvard, and president from 1849 to 1853. Sparks founded the *Unitarian Miscellany*, which became a literary power in New England. After 1826 he gave most of his time to historical research and writing, the voluminous results of which appear in his *The Life and Writings of George Washington* (12 vols.), *The Works of Benjamin Franklin, with Life and Notes* (10 vols.), *Library of American Biography* (first series, 10 vols., second 15 vols.).

SPENSER, EDMUND (c. 1552–1598). Greatest poet of the Elizabethan age in England, not including Shakespeare. Probably connected with the Spensers of Lancashire. Educated at Merchant Taylors' School, London, and Pembroke College, Cambridge; friend of the chief literary men of the day. Attached to the retinue of the Earl of Leicester; served later as chief secretary to Earl Grey de Wilton, the Lord Deputy of Ireland. Here a large estate was given to him, not far from Raleigh's, at Kilcolman; but his castle was burned in the Rebellion of 1598, and Spenser died soon after his return to England. Buried in Westminster Abbey. While still at Cambridge he became interested in the Puritan controversy, taking the side of the Puritans in his first work *The Shepherd's Calendar*, a series of 12 poems of varying meters and forms, in which both the ancient manner and contemporary material were combined. His exact relationships to Leicester, to some of the other members of the Court, and to some questions of the day are somewhat in dispute. In his great epic poem, *The Faerie Queene*, he sought to revive the best principles and ideals of the older chivalry, for the benefit of the youth of England; thus his moral purpose is strongly marked, as he admits in his prefatory letter to Raleigh. It is a poem of about 35,000 lines in six books, full of classical learning, picturesque incidents, and countless details; but the original design called for twelve books. Spenser's series of sonnets, the *Amoretti*, contains undoubted autobiographical elements; his *Epithalamion* is probably the best marriage hymn in English; his *Colin Clout*, *Mother Hubbard's Tale*, as well as the *Calendar* contain contemporary allusions, many of which are dark or obscure to modern scholars. Spenser was strong in moral, political, and ecclesiastical allegory, and so his works furnish problems for investigation, scholarly study, but also plenty of

causes for variant opinions. His *Four Hymns*, especially those on *Heavenly Love* and *Heavenly Beauty*, expound Spenser's notions of the ideal or Platonic philosophy. In devotion to his sense of right and duty, wealth of descriptive powers, and inventive genius as a poet, though lacking somewhat in restraint, Spenser is one of our greatest bards. He drew much of his inspiration from older sources, mainly from Chaucer, and in turn has influenced so many poets since his time that he has been called "The poet's poet."

SPIELHAGEN, FRIEDRICH VON (1829–1911). German novelist, educated at Berlin, Bonn, and Greifswald. Specialized in stories of his own age, some of which are *Problematische Naturen* and *Sturmflut*.

SPITTELER, CARL (1845–1924). Swiss novelist and poet; for many years a teacher, and for several a journalist. Among his great works are *Prometheus and Epimetheus*, an epic in simple but wonderfully effective language; *Extramundana*, moral stories in verse; *Schmetterlinge*, some short poems; *Olympische Frühling*, a long epic for which mainly he was awarded the Nobel prize for literature; *Die Mädchenfeinde*, reminiscent of his own youth, a story, and the delightful *Meine frühesten Erlebnisse*, an account largely of his childhood.

SPOFFORD, HARRIET PRESCOTT (1835–1921). Born in Maine, educated in Massachusetts and New Hampshire. Wrote romantic stories of life in New England, but with almost a French atmosphere of beauty and interest. *The Amber Gods and other Stories* (1863) contains some of her best work in narrative, much of which was printed in the *Atlantic* and in *Scribner's*. *New England Legends*, *Thief in the Night*, *Ballads about Authors*, and *In Titian's Garden* are among her numerous contributions. *In a Cellar*, *Knitting Sale-Socks*, *Circumstance*, *The Mount of Sorrow*, and *The Strange Passengers* are among her best single stories.

STAEL, MADAME DE (1766–1817). Born Anne Louise Germaine Necker, daughter of a celebrated financier, and married Baron de Staël-Holstein, Swedish ambassador at Paris, but separated from him by mutual agreement after 11 years. Known as a brilliant and entertaining hostess. Distrusted by Napoleon and finally ordered not to reside within forty leagues of Paris. The year before, 1802, her husband, having been recalled to Sweden, died with the wife in faithful attendance in his last days; they had three children. Madame de Staël finally settled at Coppet, France. *Delphine* (1802), *Corinne*, an account of travels in fiction form, but delightful reading, and *D'Allemagne*, are her chief stories. Spent some time in Germany, Russia, England, and Italy, where she met many great literary men, such as Goethe and Schiller, Sismondi, Byron, and the chief men of England.

STEDMAN, EDMUND CLARENCE (1833–1908). American poet and banker; born in Connecticut; lived mainly in New York. Known chiefly for his imaginative studies in Poe, *Victorian Poets*, *Nature and Elements of Poetry*, a *Victorian Anthology*, and an *American Anthology*. With George E. Woodbury he edited the works of Poe. The *Nature and Elements of Poetry*, written from the standpoint of a poet, is delightful and inspirational to a remarkable degree.

STEED, HENRY WICKHAM (1871–). British journalist and authority on foreign affairs. Became foreign editor of *The Times* in 1914, discussed the chance of an European war as early as 1913 in his *Habsburg Monarchy*, went on important missions to Italy for the government during the World War, edited *The Times* from 1919 to 1922, when he came into control and editor of *The Review of Reviews*.

STEELE, RICHARD (1672–1729). Born in Dublin, educated in London and at Oxford, which he left without a degree, rose to the rank of captain in the Horse Guards. Long a friend and schoolmate of Addison, he edited with him the *Spectator*, after he had conducted the *Tatler*, a small essay journal, into which were introduced some reports of news and papers on manners and morals. *The Funeral*, *The Lying Lover*, *The Tender Husband*, and *The Conscious Lovers*, his comedies, attained considerable fame as acting dramas. Steele was a favorite among his fellows, though impetuous and always in debt. The Sir Roger de Coverley papers in the *Spectator*, mainly Steele's conception, were largely composed by Addison.

STEELE, WILBUR DANIEL (1886–). American author of short narratives, many of which are mystery stories. Born in North Carolina; educated in art in Boston; lived in Massachusetts. Some of his best works are *Land's End*, *Isles of the Blest*, *The Terrible Woman*, *Taboo*. Won various prizes—second in O. Henry Award for the story *For They Know not What they Do;* tied with Julian Street for first for *The Man Who Saw through Heaven;* first in Harper's contest for *When Hell Froze;* first in O. Henry Award for *Bubbles;* and special O. Henry Award (1921) for maintaining the highest level of merit for three years in American short story writing.

STENDHAL (1783–1842). Pen-name of Henri-Marie Beyle, taken from the name of a town in Germany. Born at Grenoble; accompanied Napoleon on the Russian campaign, in the commissariat; took up his home in Milan after the fall of Napoleon. From 1821 to 1830 lived in Paris, then became consul in Italy and died there. His varied works are characterized by egotism and straining for effect, but they show great insight into character. *History of Painting in Italy*, *Racine and Shakespeare*, *Memoires of a Tourist*, *Journal*, and the novels—*Armace* and *The Red and the Black*—contain his best work.

STEPHEN, LESLIE (1832–1904). English man of letters; one of founders of the *Pall Mall Gazette*, and contributed to *Cornhill Magazine* and others. Celebrated mountain-climber. Married the younger daughter (died 1875) of the novelist Thackeray. Some of his best works are *Hours in a Library*, *History of Thought in the Eighteenth Century*, *Social Rights and Duties*, but he is equally well known as editor of the *Dictionary of National Biography*, the standard work in England, from 1882 to 1891. He continued to contribute articles to this till 1901.

STERNE, LAURENCE (1713–1768). Born in Ireland, educated at Cambridge, held a living at Sutton near York for 20 years, and then at Coxwold. Suddenly rose to fame as a droll and grotesque humorist with his *Tristram Shandy*, lengthened finally by 1767 to 9 volumes. This contains a great variety of scraps, stopping and starting of the story, puns, witty remarks, burlesque descriptions, and sentimental narrative. Somebody said Sterne did everything but print the text upside down, and evidently that did not occur to him. In the *Sentimental Journey* he narrated a tour across France to Italy. Some sermons and other works are not important. Sterne is one of our great original writers, though he sometimes mistook the coarse for the funny.

STEVENSON, ROBERT LOUIS (1850–1894). British essayist, novelist, and writer of short stories; came of a family of civil engineers and builders of lighthouses. Turned to literature with essays in the *Cornhill Magazine*, and described trips he made in *An Inland Voyage* and *Travels with a Donkey*. He met a Mrs. Osbourne of California in France in 1876, and two years later came to the United States, on learning of her illness. They married in 1880 and returned to Edinburgh, but Stevenson's health was always poor. They finally settled in Samoa in the south Pacific, on Christmas Day in 1889; and here he died and is buried. Of Stevenson's many volumes, *Virginibus Puerisque* is a series of fruitful essays for young people; *Treasure Island*, one of the best adventure stories, a glorified specimen of the blood-and-thunder type; *The Strange Case of Dr. Jekyll and Mr. Hyde*, the awful tale of a man who changed not only his form but his character, and this suggests the good and the bad in the same human being; *New Arabian Nights*, a collection of great short stories; *Kidnapped* and *The Master of Ballantrae*, two powerful novels.

STIMSON, FREDERIC JESUP (1855–). Lawyer and author; lived in Massachusetts, and often wrote under pen-name of "J. S. of Dale." Held several political offices, including ambassadorship to the Argentine, 1914–1921; professor at Harvard, 1903–1914. Besides valuable law books, he wrote delightful stories and novels. Among them are *Guerndale*, *The Sentimental Calendar*, *Pirate Gold*, and *In Cure of her Soul*. *Mrs. Knollys and other Stories* (1894) besides the fine title story, contains several others of no little human interest.

STOCKTON, FRANK RICHARD (1834–1902). American journalist and author of novels and stories, was born in Philadelphia; trained to be an engraver, but turned to editorial work in 1873 and finally to literature in 1880. *Rudder Grange*, a delightful and humorous novel, pleased grown-ups as his droll *Ting-a-Ling Stories* charmed the children. Stockton's great fame rests, however, on his numerous and clever short

stories found in such volumes as *The Lady or the Tiger and other Tales, The Bee Man of Orne,* and the novelet *The Casting away of Mrs. Lecks and Mrs. Aleshine,* in general plan not unlike *Robinson Crusoe.* Of his individual stories, some great ones are *The Lady or the Tiger,* a trick story of unsolved ending. *The Transferred Ghost,* a droll and highly original ghost story, *A Piece of Red Calico,* the trying experience of a man who tried to match a piece of cloth for his wife, *A Tale of Negative Gravity,* and *The Remarkable Wreck of the Thomas Hyke.*

STOWE, HARRIET BEECHER (1811–1896). Born in Litchfield, Conn., daughter of Lyman Beecher, and sister of Henry Ward and Thomas Beecher; married Prof. C. E. Stowe. Lived 18 years in Cincinnati and then at Brunswick, Maine, and Andover, Mass., where her husband was a professor. Mrs. Stowe wrote an account of the descendants of the Pilgrims, many magazine articles, *The Minister's Wooing* and *Pearl of Orr's Island,* which greatly influenced Sarah Orne Jewett, and her most influential story, *Uncle Tom's Cabin.*

STRACHEY (*strā'chĭ*), **LYTTON** (1880–1932). English biographer, educated at Cambridge. *Landmarks of French Literature* and *Eminent Victorians* gained attention by their trenchant and caustic wit and description. His *Queen Victoria* (1921), an attempt to portray a character without personal enthusiasm or undue bias, has set the fashion for writing biography in recent years. The object is for the author to detach himself from the influence of the subject, and to present all that is significant, be it favorable or not to the subject's reputation.

STRINDBERG, JOHAN AUGUST (1849–1912). Swedish author. Much of his work is colored by disillusionment following two very unhappy marriages. Yet he wrote many masterly works in drama, fiction, and poetry. Some of the best dramas are, in English titles, *Master Olof, The Father, Lady Julia, To Damascus* (allegorical drama in three parts), *Gustavus Vasa,* and *Gustavus Adolphus,* historical plays, *Easter* and *The Dance of Death,* the last his greatest diatribe against marriage. Some of his best stories are, *Swedish Fates and Adventures, Married,* for which he was prosecuted but acquitted, and the novels, *The Red Room,* influenced by Dickens, *The People of Hemso,* and *The Outer Skerries.* Despite his pessimism and personal bias, he exerted a profound influence on realistic European literature.

SUDERMANN, HERMANN (1857–1928). German author, first a journalist, and later a playwright and novelist. Some of his stories are *Frau Sorge, Es War, Das Hohe Lied,* and his plays, *Magda, Sodom's End, The Joy of Life.*

SUE, EUGENE (MARIE JOSEPH) (1804–1857). French novelist; in early life a surgeon in the Spanish Campaign and at the battle of Navarino. His two great works are *The Mysteries of Paris* and *The Jew,* which show both historical and socialist influences. He sat as a radical for a year in the Constituent Assembly, but with the régime of Napoleon III retired to Savoy.

SUETONIUS (*swē-tō'nĭ-us*) (1st and 2d cent. A. D.). Roman historian whose account of the *Lives of the Caesars* is interesting for its gossip and personal comment, more than as sober narrative. Parts of his *On Illustrious Men* are still extant.

SULLY-PRUDHOMME, RENE FRANCOIS ARMAND (1839–1907). French poet and in later life a philosopher; born in Paris; received Nobel prize in 1907. *Stanzas and Poems,* a collection of sonnets, *Justice, Goodfortune* are some of his verses, and many critical reviews make up his main writings.

SULTE, BENJAMIN (1841–1923). Canadian poet and historian. *Les Laurentinnes* and *Les chants nouveaux* are his main volumes of poetry; his histories of the French-Canadians and of Saint Francis of the Lake were popular.

SWIFT, JONATHAN (1667–1745). Born in Ireland of English parentage; educated at Trinity College, Dublin, where he became a D. D. in 1701. Much of his work is fiercely satirical, showing the spirit of an embittered man. Besides political writings and controversial works, Swift's best prose consists of *The Battle of the Books,* an imaginative and satirical account of the quarrel as to whether the ancient authors or the modern ones were greater; *The Journal to Stella,* the letters to a young lady to whom some argue he was finally married, but no proof exists; and his great work *Gulliver's Travels,* a merciless satire on the smallness and meanness of the men of our world. His *Modest Proposal* suggested that the Irish might find relief from the burdens of large families, and food for themselves, by fattening and eating their numerous children.

SWINBURNE, ALGERNON CHARLES (1837–1909). English poet who did much to introduce new metrical effects into verse, though he has often been criticized for sacrificing thought to language and music in poetry. Some of his greatest works are *Atalanta in Calydon,* a lyrical tragedy, *Poems and Ballads* (1866), *Song of Italy, Songs before Sunrise, A Century of Roundells,* and *Tristram of Lyonesse.* Two of his dramatic productions, *Bothwell* and *Mary Stuart,* attained some fame, as did his prose *Note on Charlotte Brontë* and *Study in Shakespeare.*

SYMONDS, JOHN ADDINGTON (1840–1893). English critic and poet, born in England; educated at Oxford; lived in Switzerland for his health during the last part of his life. Known as the interpreter of Greek and Italian literature, biographer of Shelley (near whom he is buried at Rome), Sir Philip Sidney, Ben Jonson, and Michelangelo. He made an accurate translation of the *Autobiography of Benvenuto Cellini, Sonnets of Michelangelo* in verse, a critical *Introduction to the Study of Dante, Studies in the Greek Poets,* and *Renaissance in Italy* (7 vols.), which today is considered his noblest work. Symonds combined accuracy and good style in writing.

SYMONS, ARTHUR (1865–). English poet and critic, born of Cornish parents in Wales. Besides critical works, he has published several volumes of poems, notably *Silhouettes, London Nights, A Book of Twenty Songs.* He also translated two novels of d'Annunzio and one of Emile Verhaeren. Some of his essays are *The Symbolist School in Literature, Cities, Spiritual Adventures, Studies in Seven Arts, A Study of Thomas Hardy, Studies in Strange Souls* (Rossetti and Swinburne).

SYNGE, JOHN MILLINGTON (1871–1909). Irish dramatist, born near Dublin, and educated at Trinity College. In 1907 he published *The Aran Islands,* a series of sketches, and later he became deeply impressed by the legends and poetic lore of old Ireland. In 1904 he became director of the Abbey Theatre, Dublin, but already two single act plays, *The Shadow of the Glen* and *Riders to the Sea,* had been composed. His other dramas are *The Well of the Saints, The Playboy of the Western World,* at first violently opposed by many of the Irish, now considered his masterpiece, and *Deirdre of the Sorrows.* Synge is considered a leader in the revival of interest in Gaelic lore.

TACITUS (*tăs'ĭ-tŭs*), **PUBLIUS CORNELIUS** (c. 55–120). Roman author of *History,* an account of the northern tribes in his *Germania,* a short but admirable biography of Agricola, and a *Dialog on Orators,* in which he quotes from early impressions of life and character of Romans in public life. Originally the *Histories* were in 12 books, but only 4 and a fragment or two remain, covering but the early year or two of the period of the whole, 69 to 97; the *Annals* cover a period of 40 of the 54 years from 14 to 68.

TAGORE (*ta-gor'*), **RABINDRANATH** (1861–). Hindu poet and critic, who at 17 was taken to England to complete his education, adding a perfect command of English to his native Bengali. His influence on thought of India and the whole world has been profound. After 1900 he spent much time teaching and meditating with his followers at a school founded by him. Tagore won the Nobel prize for literature in 1913, shortly after he visited England and made translations of several of his works from Bengali. Of these now available in our language, *The Gardener, Fruit Gathering, The Crescent Moon, The Post Office* (a play), *Nationalism, Glimpses of Bengal,* and the novel, *Gari,* are highly appreciated.

TAINE (*tān*), **HIPPOLYTE ADOLPHE** (1828–1893). French literary critic and professor of the history of art at the Ecole des Beaux-Arts. Studied science to perfect himself for a thorough and rational criticism. *Philosophy in Art, Ideal in Art, Notes on England,* and *La Fontaine and his Fables* are some of his critical productions; but he achieved a world-wide fame through his brilliant *History of English Literature* and his *Origins of Contemporary France.* In the latter he sought to prove that the French Revolution did not secure liberty for the individual, for in fact it did not confirm liberty but tended to destroy it instead.

TARBELL, IDA MINERVA (1857–). Born in Pennsylvania, and educated at Allegheny College, she was on the staff successively of the *Chautauquan*, *McClure's* and the *American* magazines, 1891–1915. Besides several works on Abraham Lincoln, and a *History of the Standard Oil Company*, she wrote *The Business of Being a Woman*, *The Tariff in our Times*, *New Ideals in Business*, and *The Rising of the Tide*.

TARKINGTON, NEWTON BOOTH (1869–). Born in Indiana, educated at Purdue and Princeton, he distinguished himself first by *The Gentleman from Indiana*, followed by *Monsieur Beaucaire* (later filmed and dramatized), *Penrod* and *Seventeen*, stories of young life that are clever and full of human interest, *The Magnificent Ambersons*, *Alice Adams*, and other novels, stories, and plays. Each of the novels named last won a Pulitzer prize award. Tarkington is a conscientious, finished, and discriminating writer.

TASSO, TORQUATO (1544–1595). One of the world's great epic poets, was born at Sorrento, educated in Naples, and lived mainly in Ferrara, where he enjoyed great honors, though the last half of his life was obscured at times by illness and mental fatigue, next to madness. He first won fame as an author by the pastoral drama *Aminta*, a brief work but charming and exquisite in plot and workmanship. *Gerusalemme Liberata*, modeled according to Virgil, centers in the attempt to free Jerusalem from the Turks. Godfrey of Bouillon is the hero, but later other persons of the story absorb much of the interest. Amida, a beautiful witch, is finally converted to the Christian faith through the hero's efforts. Clorinda and Arminia, two pagan women, are made beautiful, learned, and valorous, the objects of deep tragic regard. Tasso gave the world an epic which is magnificent and sincere as a work of art.

TAYLOR, JAMES BAYARD (1825–1878). Born in Pennsylvania, he became a great traveler, newspaper correspondent, poet, and novelist. Yet his best work is probably the translation of Goethe's *Faust*. *Views Afoot* gives interesting reports of his journeys in Europe: *Hannah Thurston* and *The Story of Kenneth* are his best novels; and *Home Pastorals* are among his best poetry. He died in Berlin not long after he had taken up his duties as United States ambassador.

TAYLOR, JEREMY (1613–1667). English divine and author, renowned far and wide for his eloquence and learning; served as chaplain to various nobles, but for 13 years lived in Wales. During this period, 1647–1660, he produced his great literary works, *The Liberty of Prophesying* (that is, preaching), a noble plea for toleration of the non-conformists, *Life of Christ*, *Holy Living* and *Holy Dying*. For music, eloquence, genuine piety, wealth of language and illustration, these works are still loved by many.

TCHEKHOV, ANTON. See spelling CHEKHOV.

TEGNER, ESAIAS (1782–1846). Swedish author, who won a great prize of the Swedish Academy in 1811 for his patriotic poem *Svea*. He became leader of the Gothic Club, the aim of which was to revive interest in old Icelandic literature. *The First Communion*, his romance *Axel*, and a romantic modern rendering of the old *Frithjofs saga* are his best works, the latter of which made his name known throughout Europe and made him bishop of Vexiö, a post he held for 22 years.

TENNYSON, ALFRED (1809–1892). English poet, who was born at Somersby, educated at Cambridge, became poet laureate in 1850, and lived to see his work the most popular poetry of his age. In 1827 he and his brother Charles published *Poems by Two Brothers*, followed by Alfred's own volumes in 1830, 1833, 1842, by which time his fame was established. The two early volumes were harshly received by most of the critics, but they contained some of his finest work like *The Lady of Shalott*, *The Lotus Eaters*, *The Palace of Art*, *Ulysses*, and *The Miller's Daughter*, a great collection for a young man of less than twenty-four. *The Princess*, a study in the conflict of the "heart and the head," was published in 1847, and his masterpiece, *In Memoriam*, in 1850, in which year he also married, after a long engagement, and was appointed Poet Laureate in succession to Wordsworth. *In Memoriam*, called forth by the poet's sorrow because of the death of his dear friend, Arthur Henry Hallam, in 1833, occupied much of his attention for fifteen years. It is one of the noblest tributes to friendship in all literature. In the last half of his life, the great masterpiece was *The Idylls of the King*, which took shape after he had become deeply interested in Arthurian romance. He chose the blank-verse epic form for the various idylls, but much of his lyric manner still persisted in the poems. For artistic finish, fine descriptions of nature in little details, and moral qualities Tennyson is unsurpassed among the poets of his age. Some of the shorter lyrics, like the songs of *The Princess*, *Crossing the Bar*, *Ode on the Death of the Duke of Wellington*, *Charge of the Light Brigade*, and *Locksley Hall*—the recital of the names show his great versatility—seem destined for a permanent place in our lyric poetry. Though Tennyson's dramas, on which he lavished great care and thought, are fine reading as literature, they lack the theatrical elements of successful stage plays. In 1884 he accepted a baronetcy.

TERENCE (c. 190–159 B. C.). Roman comic dramatist, said to have been originally a slave. His plays are clever in execution, full of interesting situations, and at times decidedly funny. Only six dramas are extant, of which the *Phormio*, *Andria*, and *Eunuchus* are perhaps the best. At last he went to Greece, where he studied and translated the dramas of Menander.

THACKERAY, WILLIAM MAKEPEACE (1811–1863). English realistic novelist, who was born at Calcutta, India, while his father was a civil officer there. He left Cambridge without a degree, visited Goethe at Weimar, studied art in Paris, and finally, having lost his money and having given up the law also, he settled down to write about 1837. After considerable journalistic writing and the publication of *The Yellowplush Papers*, *The History of Mr. Samuel Titmarsh*, distinguished for humor, pathos, satire, and good characterization, he turned to the *Book of Snobs* and *Punch's Prize Novelists*, both of them supreme in their way. In the latter, his *Rebecca and Rowena*, suggested by Scott's *Ivanhoe*, is as perfect a travesty as we have. *Vanity Fair* is his great gallery of life-like portraits, chief of which is that of Becky Sharp, adventuress *par excellence*, and that of her husband, Rawdon Crawley, who, despite his vices and weakness, rises once or twice to full manhood that is both heroic and pathetic. In the sequel, *The Virginians*, the same Becky has become a fat, world-weary, and not too cynical dowager, wife of a baron. *Henry Esmond* is a fine account of an orphan, and of another Becky Sharp in Beatrix Esmond, who refuses to marry her cousin whom she likes, and seeks fame and fortune instead, and at last the odd, but very convincing, situation of a love-marriage between Henry himself and his foster mother, the parent of Beatrix. *Pendennis*, the history mainly of a young man, who goes through the usual run of the time, and *The Newcomes*, thought by some the most tender and pathetic work of the great novelist, are his other novels of merit. Among other non-fiction, his *English Humourists of the Eighteenth Century*, has been greatly admired.

THAXTER, CELIA (1836–1894). American poet; lived in New Hampshire where her father was a light-house keeper. For knowledge of the sea in its lighter moods, her verses stand high, for many of them are exquisite marine paintings as well as sincere expressions of lyric emotions. *Drift-weed*, *Poems for Children*, *The Cruise of the Mystery*, *Idyls*, and *Pastorals* are her chief volumes of verse. *Among the Isles of Shoals* is a volume of delightful sketches in prose.

THIERRY, JACQUES NICOLAS AUGUSTIN (1795–1856). Eminent French historian, influenced by both Châteaubriand and Sir Walter Scott, and so he wrote good history which is as readable as a novel. *History of the Conquest of England by the Normans*, his greatest work, cost him his eyesight. Later he became partly paralyzed and had to labor through others, of whom his young wife, herself an author, gave material aid. The French Academy awarded him the *Prix Gobert* for fifteen years in succession. His other notable works are *Ten Years of Historical Studies*, *Narrative of the Times of the Merovingians*, and *Essay on the Formation and Progress of the Third Estate*.

THOMPSON, FRANCIS (1859–1907). English poet who abandoned the study of medicine at Owens College, Manchester, went to London, and lived in great destitution, until finally his poems were published through the kindness of Wilfred Meynell. *Sister Songs* (1895) were dedicated to the children of Mrs. Meynell. These with *New Poems* make up his small but exquisite output. Thompson was under the influence of older religious poets, expressly Crashaw. His *Hound of Heaven* and *The Daisy*, single poems, have been highly praised by the critics.

THOMPSON, JAMES MAURICE (1844–1901). Born in Indiana, served as state geologist for four years, and wrote nature studies. Now known only for his novels, chief of which *Alice of Old Vincennes* presents a fine picture of the early days in southern Indiana.

THOMSON, JAMES (1700–1748). Scotch poet, author of *The Seasons*, a poem which contains some fine nature pictures. His other long poem, *The Castle of Indolence*, is written in the form originated by Spenser, called the Spenserian stanza; is not equal to *The Seasons*, but both are prophetic of the romantic age of Wordsworth and Coleridge. Thomson was joint author of the *Masque of Alfred*, which contains the celebrated *Rule, Britannia*, for which Arne wrote the music.

THOREAU (*thō'rō*), **HENRY DAVID** (1817–1862). American naturalist and author, who lived most of his life at Concord, Mass., except for his course at Harvard, a trip to Canada, one to the west, and a few short journeys. Conceiving the idea that man could live very cheaply, if he would but adjust himself to simple wants, he built a hut on the shores of Walden Pond at Concord, and there he lived for two years, earning just enough to supply his needs and doing much meditating and writing. The result is *Walden; or, Life in the Woods*, one of our priceless nature books. The birds and animals knew him as their best friend; they would come to him freely, and the fish even in the water would allow him to take them into his hands. Thoreau knew Emerson and other great men of the day; for, though he was a recluse, he was not a misanthrope. After his death, several other works were published, and in his lifetime, *A Week on the Concord and Merrimac Rivers*.

THUCYDIDES (*thū-sĭd'ĭ-dēz*) (c. 460—c. 400 B. C.). Athenian historian of the Peloponnesian War. Much of the material was gleaned, tested, and confirmed by his own observations; thus he is an accurate and finished writer. For failure to bring up his ships while acting as admiral for Athens against Sparta, until just in time to help beat off the enemy, Thucydides was banished in 424, and he remained away for about 20 years. Tradition says his history was preserved and edited by another after his sudden death by violence in Thrace. Much of the interest lies in seven speeches or orations introduced by the author who informs us plainly that he is giving in his own language the substance reported to him. For carefulness, thoroughness, and literary interest, Thucydides is the prince of ancient historians.

TICKNOR, GEORGE (1791–1871). Born in Boston, educated at Dartmouth, and for four years in Europe, after which he was a professor of modern languages at Harvard from 1819 to 1835. His great literary work is the *History of Spanish Literature* (3 vols.), recognized as the best work of its type. Besides translations from the Spanish, he wrote accounts of Lafayette, W. H. Prescott, and *Lecture on the Best Method of Teaching the Living Languages*.

TIMROD, HENRY (1829–1867). American poet of German descent, born in South Carolina, ruined by the Civil War, and died in penury. Some of his great poems are *Katie*, *The Cotton Boll*, *Charleston*, and *Ode* on the Confederate dead of Charleston.

TOCQUEVILLE (*tŏk'vĭl*), **ALEXIS HENRI CHARLES MAURICE CLEREL, COUNT OF** (1805–1859). After an official visit for France to America, he wrote his *On Democracy in America*, which established his fame among the liberal party men of England. He sat in the French chamber of deputies and for a time acted as vice-president. One other book, *The Ancient Régime*, gained him as much fame as the first one, but his early death left much work unfinished.

TOLSTOY, LYOV NIKOLAYEVITCH, COUNT (1828–1910). Russian nobleman, writer, and philosopher. Lived most of his life at the family seat, Yasnaya Polyana, in Tula, after serving in the Crimean War and some time in travel. In the first period of his life, he was influenced by his disgust because of the materialism of most men, and by his attitude that one should not try to be wiser than nature. *War and Peace* and *Anna Karenina*, his great novels, express views on these and many allied topics. After 1876 he tried to carry out some new ideals of life, based largely on the natural religion within every heart, and freed from all supernatural elements. *A Confession* and *Master and Men* show his spiritual struggles, followed by *What I Believe In* and *A Short Exposition of the Gospels*. He adopted the dress of a peasant, and, except for his family, would have renounced all his estate. All his last works reflect the tragic struggles of mankind in the desire for both freedom and spiritual peace. Of his dramatic compositions, *The Power of Darkness* is a gripping study of peasant life; *The Fruits of Enlightenment* is a satire on polite society; and *The Living Corpse*, published after his death, reveals the mellowness of old age and kindliness toward the world.

TOLSTOY, ALEXEI KONSTANTINOVICH, COUNT (1817–1875). Distantly related to Leo Tolstoy. With two cousins he wrote much humorous poetry, and by himself some great lyrics, including a version of the lament for the dead in the Russian church service. His prose consists of the well-known historical romance, *Prince Serebrany*, and a dramatic trilogy.

TOTTEL, RICHARD (c. 1525–1594). Compiler and publisher of a *Miscellany*, now bearing his name, issued in 1557, which contains 211 poems by Wyatt, Surrey, and other authors. It is the gateway to the great Elizabethan age of poetry and drama, foretelling the influence that Italian was to have on English literature. Though many of the poems in this work are crude according to modern esthetic standards, they are notable as beginning a new style and new inspiration, a looking toward the future.

TRENCH, RICHARD CHENEVIX (1807–1886). British poet and scholar; archbishop of Dublin. Besides his poems, he is known for *English Past and Present*, *The Study of Words*, for many years a standard work, but now somewhat outgrown, and *Notes on the Miracles* and *Notes on the Parables*, two works of learning and practical value. An essay *On Some Deficiencies of our Dictionaries* was largely responsible for the impetus resulting in the *New English Dictionary*.

TREVELYAN (*trē-vĕl'yăn*), **GEORGE OTTO** (1838–1928). English historian, graduate of Cambridge. He held many political offices, but is now known largely for his admirable biography of his uncle, Lord T. B. Macaulay. Other works are *Early History of Charles James Fox* and *The American Revolution*.

TROLLOPE (*trŏl'ŭp*), **ANTHONY** (1815–1882). English novelist, born in London, and educated at Winchester and Harrow, but his youth was most unpleasant as his *Autobiography* reveals. He served seven years in the London Post Office as a clerk, and several more in Ireland as a surveyor's clerk in the postal service, but he gained much experience which is given us in his early novels like *The Warden*, *Barchester Towers*, and others of the "Barsetshire Chronicles," as the series came to be called. On official visits to the West Indies, Australia, and South Africa, he gathered material for tales and other books. Of his later novels, some of the best are *The Eustace Diamonds*, *The American Senator*, *He Knew He was Right*, and *Mr. Scarborough's Family*. Trollope is known for his skill in realistic details, his humor, and kindly view of life.

TRUMBULL, JOHN (1750–1831). Connecticut lawyer and judge, author of considerable poetry. His most famous works are *The Progress of Dulness*, and *McFingal*, a satire in support of the American Revolution, much in the manner of Butler's *Hudibras*.

TUPPER, MARTIN FARQUHAR (1810–1889). Born in London, and educated at Oxford, he was called to the bar, but never practiced. Instead he published many volumes of both prose and poetry, all of which was not notable, except his *Proverbial Philosophy*, a series of moral maxims in verse, which attained a prodigious vogue.

TURGENEV (*tōor-gĕn'yĕf*), **IVAN SERGEYEVICH** (1818–1883). Russian author, in turn a poet, dramatist, and finally a novelist. Much of his work shows the influence of his stay in Berlin, while at the University, and of French authors; lived abroad after 1855, after 1870 in Paris. Among his short narratives are *Sportsman's Sketches*, in which he sympathizes with the Russian peasants, *The Backwater*, *First Love*, *A Lear of the Steppes*; among his novels are *A Nest of Gentlefolk*, *Fathers and Sons*, *Smoke* and *Virgin Soil*. Though somewhat of a psychologist, he excels in throwing a poetic glamor over his realistic studies of common life; and for this he was censured by Tolstoy and other Russians and praised by the French and English. Much of his life was saddened by an unreturned affection for Pauline Garcia, the great singer.

TURNER, FREDERICK JACKSON (1861–1932). Born in Wisconsin, educated and a professor at the

University of his native state, and from 1910 to 1924 was professor of history at Harvard, after which he became director of research in *Americana* at the Huntington library at San Gabriel, Calif. *The Frontier in American Life* set forth his view that the frontier is all important in the historical development of any nation. *Rise of the New West* is another important work by Dr. Turner.

TWAIN, MARK (1835–1910). Pen-name of Samuel Langhorne Clemens. Born in Missouri, self-educated, became a printer, a pilot on the Mississippi, a miner in Nevada, a journalist in San Francisco, and lived at Hartford, Conn., from 1870 to 1900, and at last at Redding, Conn. *Life on the Mississippi* is a picturesque and accurate account of the old days of the river trade before the Civil War; *The Innocents Abroad* describes a trip to Europe, and *A Tramp Abroad* a second visit in 1880; *Roughing It* narrates his life as a gold miner; *Tom Sawyer, Pudd'nhead Wilson,* and *Huckleberry Finn,* the latter often called his best work, sublimate some of his experiences as a boy in the Middle West. Some other works are *The Prince and the Pauper,* a long story for children; *Personal Recollections of Joan of Arc,* a more serious work than his average, published under a pseudonym, for he said people would never take him seriously; *Adam's Diary, Captain Stormfield's Visit to Heaven,* and *How to Tell a Story.* His shorter sketches and narratives are not as well known now as they should be, including *The Celebrated Jumping Frog* and *The Double Barrelled Detective Story.*

TYNDALE, WILLIAM (c. 1490–1536). For a time he was a chaplain in Gloucestershire, but went to Hamburg and finally to Cologne, where he began issuing his translations of parts of the Bible—The New Testament, Pentateuch, and Jonah. His *Parable of the Wicked Mammon* (1528) was followed by the King's favor, which he lost after he issued the *Practice of Prelates.* He was eventually imprisoned, strangled, and burnt.

UDAL, NICHOLAS (1505–1556). English schoolmaster, translator, and author of the first extant English comedy, in regular five-act form, the *Ralph Roister Doister,* printed in 1566, but probably written about 1553. Udal evidently knew the Latin dramatists, Plautus and Terence.

UHLAND (*ōō'länt*), **JOHANN LUDWIG** (1787–1862). German poet, born and educated at Tübingen, after which he practiced law for a brief time. Became known after 1807 for his fine romantic ballads, artistic in form and beautiful in sentiment and in patriotic fervor. They were all collected with other lyrics in his *Gedichte* in 1815. He was also an able member of the Württemberg assembly and the Frankfurt parliament, wrote two dramatic works, and published scholarly works on the old French epic, northern myths, German folksongs, and other critical studies.

UNDSET, SIGRID (1882–). Norwegian author, educated in the Christiania mercantile college, and acted as a clerk from 1899 to 1909. From this experience she learned much of the uneventful and dull life of many working girls, as shown in her first story, *Fru Maria Oulie. Jenny* treats the love problem in an effective manner, *Kristin Lavransdatter* is a reliable picture of the fourteenth century, and *Olav Audunsson,* one of the thirteenth century. Mme. Unset was awarded the Nobel prize in 1928.

VAN BEERS, JAN (1821–1888). Belgian poet and teacher, known best for his historical poem *Jakob Van Maerlant,* and especially for his songs like *Blind, Young and Doomed,* and *At the Church Porch,* which in general sentiment and style resemble Longfellow's lyrics.

VAN DYKE, HENRY (1852–1933). American clergyman, author, and professor of English at Princeton; minister to Holland and Luxembourg, 1913–1917. He is known for his nature essays in *Little Rivers, Fisherman's Luck,* and *Days Off;* for several books of poems; and a group of fine short stories, such as *The Other Wise Man, The Blue Flower,* and *The Ruling Passion.*

VAN LOON, HENRIK WILLEM (1882–). Historian, born in Holland, educated at Cornell, Harvard, and Munich. Taught at Cornell, acted as correspondent in Belgium, being expelled finally by the Germans, and later was a professor of history at Antioch College, after which he joined the staff of the *Baltimore Sun.* Besides histories of Holland, he wrote widely-read books like the *Story of Mankind* and *Story of the Bible.*

VEGA CARPIO (*vā'gä kär'pyō*), **LOPE FELIX DE** (1562–1635). Voluminous Spanish author of romances, poems, and dramatic compositions, only the latter being especially important. His early compositions like the *Arcadia,* a pastoral romance, *La Dragontea,* a verse narrative of the last voyage and death of Francis Drake, and imitations of Tasso and Ariosto, show his ability to turn everything to account. He was not a very careful writer, but he left the Spanish drama an entity for the first time. Of his 500 dramas, the best are comedies of intrigué and every-day life, intended mainly to amuse.

VERLAINE, PAUL (1844–1896). French lyric poet, one of the Parnassian school. During much of his life he wandered about, sometimes in obscurity and sometimes in poverty, though after 1874 he lived mainly in Paris. *Sagesse* (1881), a volume of religious poems, reveals him at his best, converted from a bold pagan to a faithful Catholic. *Romances sans paroles, Amour, Bonheur,* and *Chansons pour elle,* are some of his numerous volumes.

VERNE, JULES (1828–1905). French novelist whose works predicted some of the scientific marvels of our own age. *Twenty Thousand Leagues under the Sea, Across Africa in a Balloon, Around the World in Eighty Days,* and *From the Earth to the Moon* are some of his best stories of adventure.

VERWEY, ALBERT (1865–). Dutch author and professor of Dutch literature at Leyden. Besides doing much to revive interest in native authors by his *Dutch Poets since Vondel,* he translated Shelley's *A Defense of Poetry,* Sidney's *An Apology for Poetry* and Shelley's *Alastor,* and wrote on Shakespeare's *Sonnets.*

VIAUD (*vyō*), **LOUIS M. J.** See LOTI, PIERRE.

VIGNY (*vēn'yē'*), **ALFRED DE** (1787–1863). French poet and soldier for 12 years. *Poems* and *Poems Ancient and Modern,* a rendering of *Othello* with modifications into French, *Stello,* a book concerning unlucky poets, out of which grew his drama *Chatterton, Les Destines,* and *Cinq-Mars,* a famous prose romance, make up his chief output.

VILLANI, GIOVANNI (c. 1275–1348). Italian who traveled much, read, investigated, and held various important offices in his native Florence after 1316. His *Historie Fiorentine,* begins with ancient times and ends with his death of the plague in 1348.

VILLARI, PASQUALE (1827–1917). Italian professor, statesman, and historian. His writings include studies in Savonarola, Machiavelli, *The First Two Centuries of Florentine History, The Barbarian Invasion of Italy, Art, History, and Philosophy,* and several works of criticism.

VILLON, FRANCOIS (1431–c. 1463). French poet and vagabond, graduate of the University of Paris, banished permanently from Paris about 1458. Villon afterward wandered about a great deal and was in trouble several times, being released by Louis XI from the prison of the bishop of Meung. His chief works are the *Petit* (*Small*) and the *Grand* (*Great*) *Testament,* of which his ballads, rondeaux, colloquial poems, and realistic verses are the best. Of several editions in French, that of Clément Marot, the poet is definitive (1533). R. L. Stevenson's story, *A Lodging for the Night,* is founded on incidents of Villon's life.

VIRGIL (70–19 B. C.). Greatest Roman poet, born near Mantua, educated at Cremona, Milan, and Rome. Later became a friend of Augustus, the emperor; of the great patron of letters, Maecenas; and of the authors, Horace and Gallus, the latter of whom he often mentions with great affection. From 37 to 30 B. C. he composed his *Georgics,* four books of poetry, dignifying the life of the countryman,—tilling the fields, tending the trees, rearing animals, and keeping bees, each of which is the subject of a book. His *Eclogs,* 10 in number, composed by 37 B. C., imitate the form made celebrated by Theocritus, with some contemporary material and events interwoven. The last eleven or twelve years, of his life were spent on his masterpiece, the *Aeneid,* which he left unfinished when he died suddenly at Brundisium on his travels. Though he commanded orally and in his will that this noble epic be destroyed because he lacked time to polish and complete it, Virgil's wish was overruled by Augustus, and the world was to profit by one of the great literary masterpieces.

VIZETELLY (*vĭz'ĕ-tĕl'lĭ*), **FRANK HORACE** (1864–1938). Anglo-American editor, linguist, and

scholar, editor of the *Standard Dictionary* and of numerous other gazetteers and biographical works. Among his own books are *The Preparation of Manuscripts for the Printer, Dictionary of Simplified Spelling, Idioms and Idiomatic Phrases, Prefixes, Bases, Suffixes, and Stems,* and several abridgments of the *Standard Dictionary.* Educated in France, he came to America in 1891, and connected himself with the Funk and Wagnalls Company.

VOLTAIRE (*vôl-târ'*), **FRANCOIS MARIE AROUET DE.** (1694–1778). The name Voltaire was an addition in 1718 to the original Arouet. He was educated under the influence of his mother, godmother, the abbé de Châteauneuf, and at the College of Louis the Great, where he received definite training in drama and acting. He early came under the influence of deism, and during an exile in England, came into contact with the free-thinking of Bolingbroke and others. On returning to Paris, he published his poem on Henry IV, which was censored, his *Charles XII,* was imprisoned for the second time for offending court circles, and then retired with Madame du Chatelet to his chalet at Cirey, where they lived till her death, 15 years later (1749). There he wrote his *Alzire, Mérope,* and *Mahomet;* his *La Pucelle,* a satire in verse, a work on metaphysics of little value, *The Manners and Customs of Nations, Zadig* and other oriental tales. Having become a correspondent of Frederick the Great, Voltaire spent three years at the court in Berlin, acting as literary adviser to the Emperor. From 1755 he lived at Geneva, where he began his anti-Christian works in 1762, among which is the *Treatise on Toleration.* Of his numerous works on philosophy, his plays, criticisms, letters, and tales, only the dramas and the tales now are greatly admired, *Candide* being one of the best.

WALLACE, LEW (1827–1905). American general of the Civil War, lawyer, and author; lived in Indiana. Served on military courts of inquiry and the court that tried those accused of conspiring against President Lincoln; was governor of the territory of New Mexico for three years, and Minister to Turkey (1881–1885). He is known now for three powerful historical romances, *The Fair God,* an account of the settlement of Mexico; *The Prince of India,* a tale of the Wandering Jew and empires in the East, and the classic, *Ben Hur,* a story of the days of Christ, which is dramatic, picturesque, and noble in its style and material, the subject of several spectacular dramas and motion pictures—the center of interest being the chariot race, so well known.

WALLER, EDMUND (1606–1687). English lyric poet, once said to be greatest of his age, who was a graduate of Cambridge, was banished from 1643 to 1651 for a part in a royalist plot, sat for years in Parliament, and was known as a commonwealth man and royalist in turn. Some of his best poems are *St. James Park, Divine Poems, Instructions to a Painter, To a Girdle,* and *Go, Lovely Rose,* the last two being about all that live today.

WALPOLE, HORACE (1717–1797). Afterward late in life Earl of Orford. Held important places in the government, but now is known for his Strawberry Hill, where he enlarged an old mansion into a Gothic castle, set up a printing press for fine editions, and became an enthusiastic antiquarian. His literary works are now forgotten save for *The Castle of Otranto,* one of the first Gothic romances of wonder and terror, the *Journal,* an attempt to rescue Richard III from ill-fame of the historians, and his *Letters,* which are among the best we have in English.

WALTON, IZAAK (1593–1683). English naturalist, author of *The Compleat Angler; or, Contemplative Man's Recreation,* which at the same time became a treatise on fishing and a work of literary art, full of quaint, shrewd, and religious lore. He also wrote biographies of George Herbert and Richard Hooker. Walton was greatly beloved by the clergy, among whom he lived for many years, making his home finally with the Bishop of Winchester.

WARD, MRS. HUMPHREY (1851–1920). She was born Mary Augusta Arnold, daughter of the great educator, Thomas Arnold, and married Thomas Humphrey Ward (1845–1926). Though some of her later novels like *The Marriage of William Ashe, Lady Rose's Daughter,* and *Canadian Born* were famous as novels of society and the times, her fame rests mainly now on her fine translation of the *Journal of Amiel* and her first great success in novel, *Robert Elsmere,* which was the story of a clergyman who finally surrendered his own original faith in favor of the "higher criticism."

WARNER, CHARLES DUDLEY (1829–1900). American author, born in Massachusetts, educated at Cazenovia Seminary and Hamilton College, and became a journalist chiefly in Hartford, Connecticut. He published a series of delightful and intimate talks known as *Saunterings, Backlog Studies, On Horseback;* wrote histories of Washington Irving and Captain John Smith; and edited the *Library of the World's Best Literature.*

WATSON, DR. JOHN. See MACLAREN, IAN.

WATSON, WILLIAM (1858–1935). English contemplative poet, first influenced by Keats and Tennyson, and later more profoundly by Wordsworth. *Collected Poems* (1902), *For England, Selected Poems, New Poems* (1909), and *A Hundred Poems* (1922) contain his mature work.

WATTERSON, HENRY (1840–1921). Born in Washington, D. C., and devoted his entire life to journalism, for several years in New York, Washington, and Chattanooga. Then he became attached to the Louisville *Courier,* which he later with W. N. Haldeman consolidated with the *Journal* and the *Democrat.* This new venture became a great power, especially in the South. He wrote a *History of the Spanish-American War, Compromises of Life,* and his autobiography, *"Marse Henry."*

WEBSTER, NOAH (1758–1843). American journalist and lexicographer; lived most of his life in Connecticut, mainly at Hartford and New Haven. Among his linguistic works are *A Grammatical Institute of the English Language,* in three parts devoted to spelling, grammar, and reading, and this was extremely popular for many years, the sales at one time being a million copies a year. His *American Dictionary* (1828) contained 20,000 words and about 35,000 definitions more than any previous work of this type; it engaged him for 20 years, and was brought down to date in 1840, with an appendix just before his death three years later. Many revisions and editions have since been issued. Other works are a *Philosophical and Practical Grammar, Dissertations on the English Language, The Rights of Neutral Nations in Time of War,* and John Winthrop's *Journal.*

WELLS, HERBERT GEORGE (1866–). English literary man, who received his education at the Royal College of Science, where he took honors in zoölogy. Wells is a voluminous author of books of criticism, fiction, short stories, novels and history. Those most frequently mentioned are *The Stolen Bacillus and other Stories, The Wheels of Chance, Tales of Space and Time, Kipps,* a novel of life of today, *Socialism and Marriage,* a Fabian document, *Mr. Britling Sees It Through,* a glimpse of the World War, *The Lost World,* an earlier romantic fantasy, and *Outline of History,* an attempt to give the spirit and essentials of the story of the world.

WEYMAN, STANLEY JOHN (1855–1928). Born in Shropshire, educated at Shrewsbury School and Oxford, he was called to the bar on the Oxford circuit, but turned largely to literature, his best works dealing with French history, such as *The House of the Wolf, A Gentleman of France, Under the Red Robe.* Later works are *Shrewsbury, The Long Night, The Wild Geese,* and *The Traveller in the Fur Cloak.*

WHARTON, EDITH NEWBOLD (1862–1937). Born in New York, the daughter of George and Lucretia Jones, she married Edward Wharton, a Boston banker. Her work is divided among grim stories something like the work of Hawthorne, such as *Ethan Frome,* and *Crucial Instances,* and her short stories; social novels of life in New York City, like *Fruit of the Tree,* and *The Age of Innocence;* and travel books like *Italian Villas and their Gardens,* and criticism such as *The Writing of Fiction.* For penetration, irony, and a fine sense of technique, Mrs. Wharton stands well toward the head of modern American novelists.

WHATELEY, RICHARD (1787–1863). English political economist, archbishop of Dublin, and writer, known for his vigorous opinions and strong views, but equally well for honesty and devotion to truth. Of his extensive list of titles, those longest recalled were his books on *Logic, Rhetoric,* for years used in our colleges, *Christian Evidences, Historic Doubts Relative to Napoleon Bonaparte,* a reply to Hume, and an admirable annotation of Bacon's *Essays.*

WHITE, GILBERT (1720–1793). English clergyman and naturalist who observed and recorded his impressions of birds and animals for many years. As early as 1771 he wrote to Thomas Pennant that he planned a work on his native Selborne, but this did not appear till 1789. He called it *Natural History and Antiquities of Selborne*, which still remains a favorite book. White had the interest of a poet, the kindness of an Audubon, and the keenness of a Darwin. Like Walton's *Compleat Angler*, this scientific book raised interest in nature to the level of interest in literature.

WHITE, WILLIAM ALLEN (1868–). Newspaper man and journalist of Emporia, Kansas, where he edited the *Gazette* from 1895. *What's the Matter with Kansas*, an editorial in his paper during the campaign in 1896, won him a national reputation. Twice later he won the Pulitzer prize for best editorials in given years. He was independent anti-Klan candidate for governor in Kansas in 1924, and from 1912 to 1916 a member of the Progressive National Committee. His *A Certain Rich Man* is a great novel of American manners; *The Court of Boyville*, humorous but striking pictures of boy-life; and *The Martial Adventures of Henry and Me*, an interesting account of his experience in Europe during the World War, in company with Henry J. Allen, later governor of Kansas and United States Senator.

WHITLOCK, BRAND (1869–1934). Journalist, author, and diplomatist, was born in Ohio. He served four terms as mayor of Toledo, declining to run a fifth time. During the World War he was minister to Belgium, becoming ambassador there in 1919, and he remained to February, 1922. Varied honors were awarded him, including thanks by a special session of the Belgian parliament. Some of his writings include *The Happy Average*, *The Turn of the Balance*, fictions, *Abraham Lincoln* (trans. into French by the author in 1918), *Forty Years of It*, *Memoirs of Belgium under the German Occupation* (1918), which was translated into several European languages.

WHITMAN, WALT (1819–1892). American poet of great originality and independence; lived in New York, in Washington, D. C., and for the last 19 years of his life at Camden, N. J. For a time he edited the Brooklyn *Eagle*, but had to leave because of his opposition to the extension of slavery, being put in charge of the Brooklyn *Freeman* shortly afterward. From 1863 to 1873 he was a clerk in a government office in Washington, but till the Civil War ended spent much time ministering to wounded soldiers. In 1873 he became partly paralyzed, and retired to Camden, where he lived in quiet. His less-known works today are *The Wound-Dresser*, a series of letters to his mother during his hospital experiences; *Drum-Taps*, a small volume, but it contains the tender and noble *When Lilacs Last in the Dooryard Bloomed*, an elegy on the death of Lincoln, *Democratic Vistas*, an essay, and two or three other short works. Whitman's great masterpiece, *Leaves of Grass*, appeared first in 1855 and was augmented from time to time. Though opinion has been divided, this work is certainly extraordinary, sincere, simple, but full of flashes of genuine inspiration and undoubted genius.

WHITTIER, JOHN GREENLEAF (1807–1892). American poet; lived much of his life at Amesbury and Haverhill, Mass. Engaged for a time in journalism, then in farming, and later lived in town, became deeply interested in the anti-slavery movement, acting as political organizer and lecturer on occasion. Disappointed of a college education and unhappy in love, Whittier tried to make up for his natural lack of advantages, yet his poetry is colored by a pensive though not a morbid melancholy. He was influenced by Burns, by his surroundings, friends, and devotion to noble causes to an uncommon degree. Much of his poetry was not intended for more than immediate use. Some of his volumes are *Voices of Freedom*, *Songs of Labour*, *Home Ballads*, *Snow Bound*, *Tent on the Beach*, and *Ballads of New England*. Possibly his best work occurs in ballads like *Maud Muller*, *Barbara Frietchie*, *Skipper Ireson's Ride*, and *Massachusetts to Virginia*. Yet his personal and religious poems take high rank, including *Ichabod*, *My Playmate*, *The Changeling*, *My Psalm*, *Trinitas*, *The Eternal Goodness*, and *In School-Days*. For years he was an associate of William Lloyd Garrison, supplying in his verse the complement of Garrison's oratory. Whittier in faith was a Quaker and had a profound influence on thought of that religious body. Whittier's *Snow Bound* remains the classic description of a good old New England winter.

WIELAND, CHRISTOPH MARTIN (1733–1813). German poet and novelist of the classic period or school. His early works were pietistic, his later ones lighter and more imaginative. *Hermann*, an epic poem, *Oberon*, an heroic poem, *Lady Joanna Gray* and *Clementina von Porretta*, the second founded on Richardson's *Clarissa*, *Idris*, *Combabus*, *The New Amadis*, all three poems, *Das Wintermärchen*, *Das Sommermärchen*, delightful poetic stories, and translations of 22 of Shakespeare's dramas make up his chief output. On later poets he had a profound influence.

WIGGIN, KATE DOUGLAS (1856–1923). Born in Philadelphia, educated in New England and California, she established the first free kindergarten of the western coast in San Francisco (1880). Her family name was Smith, of which her sister, Nora Archibald Smith, is well known; she married S. B. Wiggin, and after his death, George C. Riggs. Besides books on the education of children, Mrs. Wiggin gave to young life a series of interesting sketches, stories, and novels. *The Birds' Christmas Carol*, the Penelope Series, and *Rebecca of Sunnybrook Farm* are among her best stories.

WILDE, OSCAR FINGALL O'FLAHERTIE WILLS (1856–1900). British poet, apostle of art for art's sake, and dramatist. His early poems and stories are now hardly recalled, but some of his dramas are still occasionally revived, such as *Lady Windemere's Fan*, his first great success, *A Woman of No Importance*, and *The Importance of Being Earnest*. In 1895 he was sentenced to imprisonment for two years for offenses under the criminal law, and after his release he lived mainly on the continent, at times at least under an assumed name. His *Ballad of Reading Gaol*, written in prison, has been greatly admired, and his *De Profundis*, an apology for his life, has been called a great human document.

WILCOX, ELLA WHEELER (1855–1919). At one time a popular American poet of sentiment, born in Wisconsin, educated at the University of Wisconsin, but lived most of her life in New York and New England. *Drops of Water*, *Poems of Passion*, *Poems of Pleasure*, and *Song of a Sandwich*, humorous verse, are her main collections. *Laugh and the World Laughs with You* is a poem that gained no little attention. She wrote some prose stories and advice to married people under the title *Men, Women, and Emotion*.

WILKINS, MARY E. See WILKINS-FREEMAN, MARY.

WILSON, AUGUSTA EVANS (1835–1909). American author, born Augusta Evans at Columbus, Georgia; married L. M. Wilson of Mobile, Alabama. Of her many works which attained a great vogue, some now recalled are *Inez*, *Beulah*, *St. Elmo*, *At the Mercy of Tiberius*, and *A Speckled Bird*.

WILSON, JOHN (1785–1854). Better known as "Christopher North" in his own day, a Scotch author and professor of philosophy at Edinburgh University. He wrote voluminously for *Blackwood* after 1817, and after 1825 contributed much of the work under the title of *Noctes Ambrosianae*. As a critic he was harsh though honest. Tennyson, disliking his criticism, replied in a humorous poem in which he called him "musty" and "crusty" Christopher, and said the critic could be forgiven for the blame, but not for any little praise he grudgingly gave. Wilson was a type of the critic who measures all new work according to the moral and artistic standards of similar past performances. His own *Lights and Shadows of Scottish Life* are full of humor and pathos.

WISTER, OWEN (1860–1938). American author, educated at Harvard for the law, but practiced only two years in Philadelphia, his home city. He had previously spent some time in Arizona and New Mexico. *The Virginians* gives a vivid picture of the old life of the plains; while *Red Men and White* and *Lin McLean* added to our notions of the good Indian and the old-time horse thief. *Lady Baltimore* and *Philosophy 4* gained wide fame. Wister also wrote biographies of Grant, Washington, and Holmes, and some other critical works.

WOOD, MRS. HENRY (1814–1887). English lady, born at Worcester as Ellen Price, married Henry Wood, a business man and ship owner, and lived largely in France till 1866, when Mr. Wood died. In 1860 she published a temperance story, followed the next year by her *East Lynn*, and this attained a tremendous vogue, especially in melodramatic form. For

years the play was the most acted drama of its type. In all she wrote nearly 30 stories, most of which were well received.

WOODBERRY, GEORGE EDWARD (1855–1930). American poet, professor at Columbia, and critic. Educated at Harvard, professor at University of Nebraska three years, and at Columbia, 1891–1904. Of his many books, the biographies of Poe, Hawthorne, and Emerson attained a wide reading. Others are *The Makers of Literature, Ideal Passion, The Appreciation of Literature, Poems, The Torch,* and *The Inspiration of Poetry.*

WORCESTER, JOSEPH EMERSON (1784–1865). Eminent American student of language. His *Dictionary* (1860) was the first illustrated work of the type in English.

WORDSWORTH, WILLIAM (1770–1850). English poet, born at Cockermouth, educated at Cambridge by relatives after the death of both parents. After hesitation as to a career, having rejected the church, he traveled in Europe, published an account of his journey, and in 1795 met Coleridge, settled near him, and in 1798, they published jointly the *Lyrical Ballads.* This was a collection of romantic and nature poems, to which Wordsworth contributed most, especially the meditative pieces, and Coleridge mostly the romantic like *The Ancient Mariner.* This little volume ushered in a new age in British poetry. After a year of residence with his sister in Germany, Wordsworth settled at Grasmere, where he lived practically all his life. In 1804 on a tour in Scotland he began his friendship with Scott, whom he visited last in 1831. Having received a government post as distributor of stamps, some money owed his father's estate, and some income from his poems, he married his cousin, settled down, and lived an uneventful life, except that he became poet laureate in 1843. Wordsworth wrote many wonderfully fine nature and philosophical poems, but his last work especially was below his earlier lyrics. Among his best are *The Tinturn Abbey Ode, Solitary Reaper, Intimations of Immortality, The Happy Warrior, Prelude,* and some of the early lyrics and sonnets.

WRIGHT, HAROLD BELL (1872–). Clergyman and then a novelist, born in New York, lived in the middle West, and finally in Arizona. Most of his books, which were very popular, deal with problems of life, with strong social and sociological drift. *The Winning of Barbara Worth, That Printer of Udell's, The Eyes of the World,* and *When a Man's a Man* are some of his novels.

YONGE (*yŭng*), **CHARLOTTE MARY** (1823–1901). English lady who wrote about a hundred works, mostly novels, the profits of which were given to charity. She was a high church Episcopalian. Among her best known stories are *The Heir of Redclyffe, Heartsease, The Daisy Chain,* and several biographies.

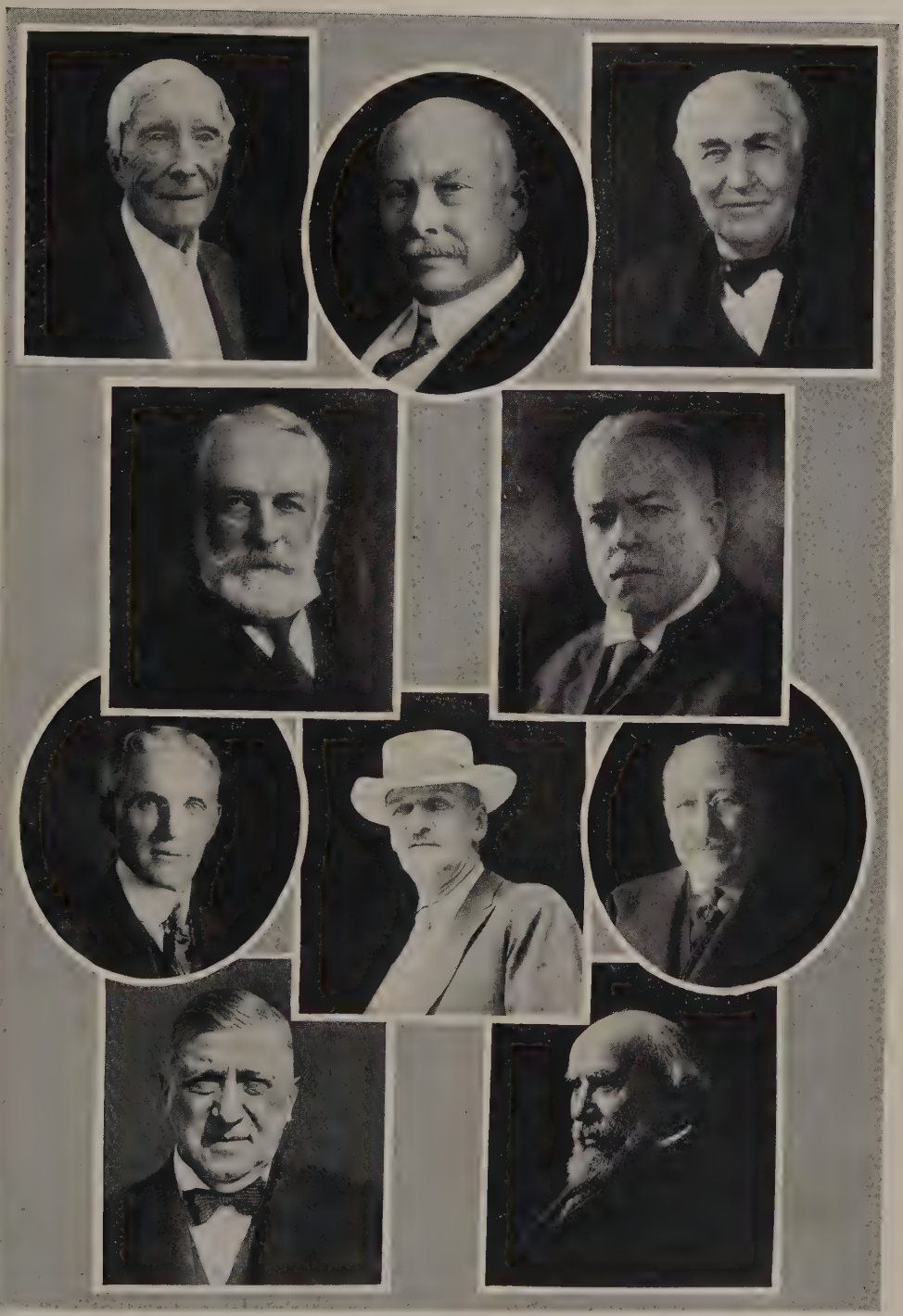
YOUNG, EDWARD (1683–1765). English poet and clergyman after 1728, now known for his *Night Thoughts,* a series of poems on life, death, and philosophy. Other works are *The Universal Passion* and a tragedy called *The Brothers,* acted with some success.

ZANGWILL (*săng'wĭl*), **ISRAEL** (1864–1926). English man of letters of Jewish birth, and late in life a leader in the Zionist movement for the colonization of Palestine. Much of his life was spent as a teacher and then as a journalist and author of books on life in the congested districts of London. He is best remembered for his realistic stories in *Ghetto Comedies, Ghetto Tragedies, Dreamers of the Ghetto,* and for his admirable dramas like *Merely Mary Ann, The Melting Pot, The War God,* and *The Next Religion.*

ZOLA, EMILE (1840–1902). Born in Paris of part Italian and Greek and French ancestry. Known as an extreme realist. In an early series of dramas, he traced the ancestry and environment of a family, six volumes in all, but his great fame came when *L'Assommoir,* his story of drink, appeared. *Dr. Pascal, Germinal, La Terre* are powerful later fictions, followed by some idyllic works, criticisms, and a series of novels having to do with population. He was a strong advocate for Captain Dreyfus, and his *J'accuse* caused a prosecution—which was his object that the case might be reopened—but before the final judgment he took refuge in England, where he remained till the case was opened again. Zola suffered an accidental death from gas escaping from a defective flue, and Dreyfus was present at his funeral, he having been pardoned and recalled from Devil's Island where he had been confined.

ZORRILLA, JOSE (1817–1893). Spanish dramatist and poet, whose *Cantos del trovador* (1841) gave him great fame as a national poet. Later he adapted many older plays from Spanish and French authors, but always contributed some vital new element. From 1855 to 1866 he lived in Mexico, returning to find himself forgotten. Then he lived for years in poverty, but in 1889 was publicly crowned at Granada as the laureate of Spain.

ZSCHOKKE (*chō'kă*), **JOHANN HEINRICH** (1771–1848). German author who lived for 40 years in Switzerland. *Hours of Devotion* still remains popular among his 40 selected works.



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AGASSIZ (*ag'a-see*), **ALEXANDER.** See under DICTIONARY OF SCIENTISTS.

ALBEE, EDWARD F. (1857–1930). Born at Machias, Me., of Revolutionary ancestry; he had a scant education and started in life as a helper in a circus. Going to Boston, he joined B. F. Keith in the vaudeville entertainment business. They adopted the slogan, "Cleanliness, Courtesy, and Comfort." Albee became president of the largest theatrical organization of its kind in the world, the B. F. Keith vaudeville circuit, and subsequently the Keith-Albee-Orpheum Corporation, controlling 700 theaters in the United States and Canada. Outside of his business interests, he found time to devote to many charities and worthy causes.

ALEXANDER, DOUGLAS (1864–). Sewing machine manufacturer. Born in Yorkshire, England; came to Canada at an early age. Admitted to the bar in 1886; after a short practice, he entered the Singer Company, became director, and in 1905, president. The Singer Manufacturing Company makes 80% of the world's sewing machines, turning out from its 9 factories, 1,500,000 sewing machines each year. It has 10,000 stores and 60,000 salesmen and sells machines in every corner of the world. Its largest factory is at Singer, near Glasgow, Scotland. The title of baronet was conferred upon Mr. Alexander by the King of England in recognition of services during the World War.

ALTMAN, BENJAMIN (1840–1913). Merchant. Born in New York City; attended the public schools, but did not advance beyond the grammar grades; received his first business training as a salesman in his father's small store; later he added to his experience in Newark and New York dry goods stores. In 1865 he opened a small store of his own on Third Street in New York City; an increase in business warranted a removal to Sixth Avenue in 1870; there he remained for 30 years, when he moved his store to Fifth Avenue, where it finally occupied an entire city block. John Wanamaker placed Altman first among the retail merchants of New York. His success was attributed to "a lot of ability and a lot of hard work." He took a constant interest in the welfare of his employees, was among the first to establish lunch rooms, rest rooms and medical service for them; he also established the Altman Fund to promote their welfare and to aid other New York philanthropic enterprises. He acquired extensive art collections which he bequeathed to the Metropolitan Museum, N. Y. Appraised at $20,000,000, they constituted up to that time the largest single gift to the institution.

AMES (*ēmz*), **EDGAR** (1868–). Shipbuilder. Born at St. Louis, Mo.; a graduate of Yale University. For twenty years he was engaged in harbor improvements at Seattle, Washington; since 1916 has been president of the Ames Shipping and Dry Dock Company. During the World War he built 25 steel ships for the United States government.

ARBUCKLE, JOHN (1838–1912). Coffee manufacturer. Educated in Allegheny, Pa. In 1871, with his brother, he established the New York coffee firm of Arbuckle Bros., and an independent sugar company, among the largest in the country. He built up a seagoing fleet, a lighterage business in New York harbor, a towing company between New York and Albany, and a wrecking concern which was his pet hobby.

ARCHBOLD, JOHN DUSTIN (1848–1916). Oil merchant and capitalist. Born at Leesburg, O.; went to Pennsylvania in 1864, where he became interested in the oil industry. President Acme Oil Company; officer or director in several enterprises; vice-president Standard Oil Company. He also acted as president and director in two educational and charitable organizations.

ARKWRIGHT, SIR RICHARD. See under LEADING INVENTORS.

ARMOUR, JONATHAN OGDEN (1863–1927). Capitalist, packer; born at Milwaukee, Wis. Before completing the course at Yale he was called to Chicago to assist his father; president of Armour & Company, packers, and Fort Worth Stock Yards Company; director several packing houses, banks, insurance companies, and car lines; American trustee of Insurance Company of Stettin.

ARMOUR, PHILIP DANFORTH (1832–1901). Merchant and philanthropist; born in Stockbridge, N. Y.; began a grain and warehouse business in Milwaukee in 1856. Seven years later he became head of Armour, Plankinton & Company, pork packers. In 1870 the main office was transferred to Chicago, and the firm name became Armour & Company. The business increased rapidly and at the time of Armour's death the company owned more grain elevators than any other firm in the world, employed 50,000 men, and sent goods to every civilized country.

ASTOR, JOHN JACOB (1763–1848). Fur trader and capitalist. Born in the village of Waldorf, Germany. At 17 with an elementary knowledge of the three R's and a little money in his pocket, he left home and made his way, first to London, then, a few years later, to America, arriving in New York in 1784. Beginning at first in a small way, by hard work, sharp bargaining, "giving the least and getting the most," he gradually built up a vast fur trade with the Indians, extending his business to the Pacific coast where in 1811 he founded the trading station of Astoria. The wealth thus acquired he invested in New York City real estate, which, later enormously increased in value, formed the bulk of the Astor fortune. At his death he was, by far, the richest man in America, having accumulated a fortune conservatively estimated at $20,000,000. The greater part of this he left to his son, William, the only notably public bequest being $400,000 for the founding of a library. This, developed by his descendants, became the well-known Astor Library.

ATTERBURY, WILLIAM WALLACE (1866–1935). Railroad president. Born in New Albany, Ind. At 20 he graduated from Yale; four months after his graduation, he began as an apprentice in the Altoona shops of the Pennsylvania Railroad, with wages five cents an hour. He advanced by successive steps until in 1910 he had become a vice-president. He was sent to France by the government during the War, in response to a telegram from General Pershing stating that he wanted the best railroad man available in the United States, to direct railroad transportation in France. By reason of his services with the A.E.F., General Atterbury received the D. S. M. from the United States, the Legion of Honor from France, and equivalent honors from Great Britain and Belgium. Upon the termination of the Federal control of the Pennsylvania, General Atterbury reassumed his duties as vice-president, and in 1925 was elected president. He has shown himself a master in his profession not only in the operation of a great railroad in the times of peace, but in the construction and ordering of transportation facilities in a foreign country to meet the sudden requirements of war.

AYER (*ār*), **FRANCIS WAYLAND** (1848–1923). Advertising king. Born in Lee, Mass., the son of a schoolmaster; attended district schools and was for one year at the University of Rochester. At 21 he went to Philadelphia where his father had opened a girls' school; there he found employment as an advertising solicitor for a religious paper; a few months later, he started in business for himself under the firm name of N. W. Ayer & Son, the firm consisting of himself and his father. During the remaining 54 years of his life, the business grew steadily until at his death it had become one of the largest, if not the largest, advertising agencies in the United States. He developed trade-marks, slogans, pictorial displays, and all the other methods by which the modern advertising business is conducted. Himself a man of unimpeachable honor, he did much to raise ethical standards among advertising men.

BABST, EARL D. (1870–). Sugar manufacturer. Born in Crestline, Ohio; attended Kenyon Military Academy and took the first part of his college course at Kenyon College; transferred to the University of Michigan, graduating in 1893 and from the Law School in 1894. Began the practice of law in Detroit; later moved to Chicago and then to New York. He has been identified with the National Biscuit Company and with the American Radiator Company; also with the American Sugar Refining Company of which he was president for some years and is now chairman of the Board of Directors. In his report for the year 1929, Mr. Babst states that during that year the company refined 1,257,842 tons of raw sugar and delivered over 800,000,000 pounds of Domino and Franklin

package sugars and about an equal quantity of sugar in bulk, for sale in different parts of the world. Mr. Babst is director in many industrial and banking corporations; during the World War, he was a member of the International Sugar Commission, representing the United States in the allocation of sugar supplies to the Allies. He is a trustee of Kenyon College and much interested in educational matters.

BALDWIN, MATTHIAS WILLIAM (1795–1866). Locomotive manufacturer. Born at Elizabethtown N. J. Was, for some years, a manufacturer of jewelry but gave up the business, declaring he "could not spend his life making gewgaws." In 1827 he began to build stationary engines; five years later he constructed for the Philadelphia & Germantown Railroad one of the first American locomotives used in actual transportation; it was christened "Old Ironsides," was built partly of iron, partly of wood, ran 28 miles an hour, weighed 6 tons and drew 30 tons. It ran between Philadelphia and Germantown on fair days, advertising that "On rainy days horses will be attached." After that Mr. Baldwin made only locomotives many of which he sold to the Federal Government during the Civil War. Outside of his business, he was interested in many benevolent projects. In 1824 he aided in the formation of Franklin Institute for the betterment of labor and in 1835 founded a school for colored children.

BALL, FRANK CLAYTON (1857–). Glass manufacturer. Born in Greensburg, Ohio. In partnership with four brothers he began the manufacture of glass at Buffalo, N. Y. in 1875; thirteen years later moved to Muncie, Indiana, and is the president of the Ball Brothers Glass Manufacturing Company, the largest in the world. With his brothers he has given over a million dollars to educational institutions and social uplift work.

BARNUM, PHINEAS TAYLOR (1810–1891). "The Great American Showman." Born in Connecticut; as a lad he kept store, tended bar, sold theater tickets, and did all sorts of odd jobs. He began in the show business when about 25 years of age by exhibiting a negress who was claimed to be 161 years old and to have been the nurse of George Washington. When at her death it was found that she could not have been over 80, Barnum advertised himself widely in a series of newspaper articles by protesting that he had himself been deceived. In 1842 he acquired the American Museum in New York, where he exhibited many monstrosities and freaks and provided a variety of amusements. There, for many years, the chief attraction was the famous dwarf, Gen. Tom Thumb, with whom Mr. Barnum toured the United States and Europe. In 1849–52 he brought Jennie Lind, "The Swedish Nightingale," to the United States for an extensive tour. Barnum's "Greatest Show on Earth" opened at Brooklyn in 1871 with a fully developed circus which soon had three rings. With this he toured the whole country, going to Europe also. Later he united forces with one of his keenest competitors forming Barnum and Bailey's Big Circus. He bought from the Royal Zoological Gardens in London, the huge elephant, Jumbo, which for some years formed the chief attraction of the menagerie connected with the circus. When Jumbo was run down by a railroad locomotive, the remnants were sent to the natural history museum of Tufts College, where, mounted, they may still be seen.

BEHN (*ben*), **SOSTHENES** (1882–). Born in St. Thomas, Virgin Islands, then under Danish control; educated in France and in Corsica. He served with credit in the World War, was with the A.E.F. in France until February 1919; was awarded D.M.S., and decorated by France. Early in life, Mr. Behn and his brother, Hernand, became interested in telephone operations; they acquired and modernized the Porto Rico telephone system, gained control of the Cuban telephone lines, the Mexican Telephone and Telegraph Co., the Chile Telephone Company, and many similar organizations. The great work of Mr. Behn's life has been the building up of the International Telephone and Telegraph Company, of which he is president, and his brother vice-president. It is now one of the largest organizations of its kind in the world. Its present activities, through associated branches, include furnishing telephone service in the Argentine, Brazil, Chile, Uruguay, Mexico, Porto Rico, Cuba, and Spain; it operates three cables between Florida and Havana; it controls the All American Cables, Inc. which provides cable service for practically all Latin America; it controls the Postal Telegraph and Cable Corporation (the Mackay System) which owns and operates a complete network of telegraph lines throughout the United States, with cables connecting the east coast of America with Europe and the west coast with the Hawaiian Islands, the Philippines, and China; it also controls a manufacturing branch with factories in many countries.

BENNETT, JAMES GORDON (1841–1918). Publisher. Born in New York City; educated chiefly in Europe where he attended the Ecole Polyteehnique in Paris. In 1861 at the outbreak of the Civil War, he returned to America and enlisted in the navy receiving a commission as lieutenant. At the close of the war, he began a thorough training in all parts of his father's paper, the New York *Herald*. In 1866 he became managing editor and six years later, on his father's death, assumed control. In 1869 he sent Henry M. Stanley to Africa to search for the missionary, David Livingstone. The result was an outstanding journalistic feat. Stanley found Livingstone in November, 1871. The detailed account of the achievement published in the *Herald* greatly increased its reputation and circulation. A scandal having arisen which made life in America distasteful to him, Mr. Bennett took up his residence abroad, but still, mostly by cable, remained in active control of the *Herald*. In 1883 in company with John W. Mackay, he established the Commercial Cables Company which broke the grip of the existing cable monopoly. Under Mr. Bennett's direction, the New York *Herald* was for many years the outstanding paper in the New World, especially noted for its news from all parts of the earth. To obtain this news no expense was spared. A separate issue of the *Herald* was published in Paris.

BLISS, CORNELIUS NEWTON (1833–1911). Merchant; born at Fall River, Mass.; after completing his education entered his stepfather's countingroom in New Orleans; member J. S. & E. Wright & Company, Boston (1866); established in 1881 the firm of Bliss, Fabyan & Company, dry goods commission merchants, New York; trustee and director of other financial enterprises; secretary of interior (1897–1899); vice-president chamber of commerce; member executive committee National Civic Federation.

BLISS, ELMER JARED (1867–). Shoe manufacturer. Born in Wrentham, Mass., educated at Edgarstown High School. At 26 he founded the Regal Shoe Company of which he is president and which has retail stores in many cities both in the United States and Canada.

BLOCK (*blok*), **PAUL** (1877–). Publisher. Born in Elmira, N. Y. He is publisher of a chain of newspapers,—in Pittsburgh, Toledo, Newark, N. J., Duluth, Memphis, and Lancaster, Pa.

BORDEN, GAIL. See under LEADING INVENTORS.

BOUCICAUT (*bū'sē kō'*), **JACQUES ARISTIDE** (1809–1877). Merchant. Born in France; self-educated; he became a peddler's assistant and achieved great success; in 1852, he founded, in Paris, the Bon Marche, generally considered the first department store ever established. It became very successful. For ten years after M. Boucicaut's death, the business was conducted by his wife, a very able woman. Then at her death in 1887 the business was turned into a joint stock company, the stock of which had been bequeathed by M. and Mme. Boucicaut to the employees of the store. The affairs of the business are managed by a board of three directors, each elected by the employees for a period of three years. All employees after a period of three years become part owners. The direction of the store has been very keen and effective.

BRADY, ANTHONY N. (1843–1913). Utility organizer. Born in Ireland; came to this country at an early age and began his career as the owner of a tea store in Albany, N. Y. From this start, he gradually branched out into the gas, tobacco, electrical and, finally, the traction fields. He acquired control of the gas interests in Albany and Troy, was active in developing gas lighting in Chicago, became interested in traction in Washington, Philadelphia, and Paris, and later, founded the Brooklyn Rapid Transit Company. By the time of his death he had established "the Bradys" in the financial affairs of the nation and acquired a personal fortune of some seventy million dollars.

BRADY, NICHOLAS F. (1878–1930). Utility organizer. Born at Albany, N. Y.; graduated from Yale in 1899. After graduation, he became associated with his father's interests in the electric light industry, and soon began to advance ideas of his own regarding general management and welfare work; he occupied various positions and on the death of his father succeeded him as president of the New York Edison and other companies. During the last years

of his life he was especially active in utility mergers and was a controlling factor in the consolidation of the Consolidated Gas Company of New York with the Brooklyn Edison Company which gave the new combine practical control of the field in New York City, Westchester, and Long Island. Mr. Brady gave freely to many welfare and charitable enterprises.

BUCKNELL, WILLIAM (1811–1890). Business man and philanthropist. Born in Delaware County, Pa.; left school at an early age, and learned the trade of wood carver; when about 25 began investing in real estate; he bought the outlying land in several cities, built homes, and took contracts for constructing gas and water works, accepting stock in payment. He made a fortune; later in life he became a broker in Philadelphia, acquired large interests in real estate, in railroads, and coal and iron mines. He early began the practice of setting aside one-tenth of all his earnings for charitable and religious purposes; toward the end of his life, his gifts averaged $1,000 a week. He gave $140,000 to the University of Lewisburg, later renamed Bucknell; $250,000 to Baptist missions and churches, and made many other donations.

BUDD, RALPH (1879–). Railroad president. Born in Waterloo, Iowa; specialized in civil engineering at Highland Park College (Des Moines, Iowa), from which he was graduated at the age of 20. The same year, he entered the engineering department of the Chicago Great Western Railroad and in two years had been made assistant engineer. He served several railroads in various capacities until 1909 when he became connected with the Great Northern, of which, in 1919, he was made president. In 1930 he went to Russia at the request of the Soviet to reorganize the railroads of that country.

BURNETT, JOSEPH (1820–1894). Manufacturing chemist and philanthropist. Born in Southborough, Mass.; at 17 he established with Thomas Metcalf a perfumery and extract manufacturing business from which he made a fortune. In 1854 he sold out his interest in this business, and established one of his own, under the name of Joseph Burnett & Co., manufacturing chemists. This succeeded so well that Burnett's extracts became known all over the world. Burnett gave generously of the wealth he amassed; he contributed large sums to his church and his town, and was the founder of St. Mark's School at Southborough.

BURROUGHS, WILLIAM SEWARD. See under INVENTORS.

BUSH, IRVING T. (1869–). Born in Ridgeway, Mich.; after a preparatory school education, he traveled around the world in his father's yacht, *Coronet*. At 19 began his business career with the Bush and Denslow Mfg. Co., of which his father was president. He early conceived the idea of building docks and warehouses to relieve the congestion of business in New York. In 1895, under the title of the Bush Company, Ltd., he began building warehouses. In 1902 he founded the Bush Terminal Company. The plant of this company includes 8 piers, 123 warehouses, 10 industrial buildings, covers an area of about 30 city blocks, and affords every facility for receiving, shipping, storing, and selling goods. In 1929 Bush formed the Bush Service, Inc., U. S. A., which assumes responsibility for shipments from the point of origin to the point of distribution, taking care of all repacking, marking, routing, and import requirements that arise in transit. By using this service, a manufacturer in a midland town can put goods for export on the train and give them no further thought until he receives the money for them from the Bush Service which will collect his bills in Europe.

BUTTERICK, EBENEZER (1826–1903). Pioneer manufacturer of patterns for clothes. Born in Sterling, Mass. Became a tailor and shirt maker. In 1863 he placed on the market a graded set of shirt patterns made of stiff paper; the venture was an immediate success. To the shirt patterns was soon added a set for boys' suits. The demand increased so rapidly that Butterick hired a disused academy in Fitchburg as a factory, and opened a branch office in New York. Within a few years tissue paper was substituted for stiff paper, and patterns for women's clothes were added. In 1867, with two partners, Butterick formed the firm of E. Butterick & Co.; the factory was moved to Brooklyn, and a fashion magazine, which later became the *Delineator*, was started in order to increase the demand for patterns. In 1871 the company sold 6,000,000 patterns and by 1876 branches had been established in London, Paris, Berlin, and Vienna. In 1881 the company was reorganized as the Butterick Publishing Company, Ltd. of which Mr. Butterick became president. He retired from the business in 1894.

CANDLER, ASA GRIGGS (1851–1929). The Coca Cola Man. Born in Georgia; after leaving public school, he was for three years apprentice in the drugstore of Best and Kirkpatrick in Cartersville, Ga., for five years more a clerk in another drugstore. In 1878 he started a small store of his own where, about 1887, he began selling the beverage called Coca Cola. So great a success did he make of this venture that in 1919 he sold the business for $25,000,000. He has given generously of his wealth, more than $1,500,000 to Emory University, $75,000 to the Wesley Memorial Fund and smaller amounts to various worthy causes. He has often been styled the "Merchant Prince of the South."

CARLTON, NEWCOMB (1869–). President of the Western Union Telegraph Company. Born in Elizabeth, N. J. Received the degree of M. E. from Stevens Institute in 1900; practised as a mechanical engineer in Buffalo for a number of years, later was connected with both the Bell Telephone and the Western Electric companies. In 1910, he went to the Western Union of which he was made president in 1914; he was also president of the American Telegraph and Cable Co., International Ocean, Gold and Stock telegraph companies.

CARNEGIE (*kär-nĕg'ĭ*), **ANDREW** (1837–1919). Capitalist, manufacturer, philanthropist; born at Dunfermline, Scotland. He came to Pittsburgh in 1848, and began his remarkable career as a weaver's assistant in a factory. He studied telegraphy, and secured a position in an office of the Pennsylvania Railroad, advancing step by step until he became superintendent of the Pittsburg division. The beginning of his fortune was made as partner in the Woodruff Sleeping Car Company, and careful investments in oil lands increased his wealth. After the Civil War he turned his attention to the iron industry; introduced Bessemer process in 1868; and in a few years was chief owner of Homestead and Edgar Thomson Steel Works, and of other large plants. In 1899 all these were merged into the Carnegie Steel Company, and two years later consolidated in the United States Steel Corporation. In 1901 he retired from business. His donations have exceeded those of any other American philanthropist.

CHALMERS, WILLIAM JAMES (1852–). Manufacturer; born in Chicago; was vice-president and treasurer of Fraser & Chalmers (1889–1891), president (1891); vice-president of Allis-Chalmers Company since 1900; bank and trust company director; director Fraser & Chalmers, Ltd., London; has been member Chicago board of education; director World's Columbian Exposition, Chicago Athenaeum, and Commercial National Bank.

CHENEY, WARD (1813–1876). Pioneer silk manufacturer. Born at South Manchester, Conn. In the early 30's, many people became interested in the project of producing raw silk in this country. Mulberry trees were planted and cocooneries established. Mr. Cheney and his brothers entered enthusiastically into the scheme; they not only raised silk worms, but, when the boom was at its height, they organized the Mount Nebo Silk Manufacturing Company with a capital of $50,000, an organization that has had a longer history than any other similar enterprise in the country. When, in 1854, the organization was incorporated as the Cheney Bros. Silk Manufacturing Company, Ward became president and served until his death in 1876. He was not only a successful business man, but was noted for the active interest he took in promoting the welfare of his many employees.

CHESEBROUGH, ROBERT AUGUSTUS (1837–1933). Manufacturer. Born of American parents in London, England; early brought to this country; engaged in the manufacture of petroleum, in 1870 he discovered and patented the process of making what is now known as vaseline. He is trustee of the Chesebrough Manufacturing Co., makers of various vaseline products.

CLAFLIN, HORACE BRIGHAM (1811–1885). Merchant. Born in Milford, Mass.; was educated in the common schools and at the Milford Academy. With $1,000 loaned him by his father, he started a small store in Worcester and was so successful that in five years he had a trade of $200,000 a year. In 1843 he went to New York and with others engaged in the wholesale dry goods business which was soon selling to retail stores all over the country. At the outbreak of the Civil War, the debts of southern customers could not be collected, and the Claflin firm was obliged to

make an assignment, but within two years all debts had been paid in full. Before 1875 the business of the firm had grown so rapidly that it exceeded that of A. T. Stewart, commonly called New York's merchant prince. This great success was undoubtedly largely due to the business acumen and personal integrity of Mr. Claflin, the senior partner.

CLARK, WILLIAM ANDREWS (1839–1906). United States senator; born near Connellsville, Pa.; studied law, but never practised; taught school in Missouri, and in 1863 went to Montana, where he became successively merchant, banker, mine owner, and manufacturer; president United Verde Copper Company of Arizona; elected senator (1901–1907).

CLEWS, HENRY. See under DICTIONARY OF FINANCIERS.

COFFIN (*kof'in*), **CHARLES ALBERT** (1844–1926). General Electric man. Born in Somerset County, Me. In the 80's he became head of the Thompson-Houston Company, an electrical company, which in 1892 combined with the Edison General Electric Company. The new firm took the name of the General Electric Company, and Mr Coffin was made president, an office he held until 1913, when he became chairman of the board (1913–1922). The growth of the General Electric under the leadership of Mr. Coffin was remarkable. He supported every effort for the development of improved methods and machinery; he endorsed the movement for the establishment of the research laboratory which has contributed greatly to pure science as well as to electrical development. It has been stated he stood "supreme in contributing more to create the magnitude of the whole electrical industry than any one or many men, by his encouragement of invention along useful lines, by his financial powers, by his talent for organization, by his tireless energy, and by his course in introducing and his abilities in selling new apparatus." When, in 1922, Mr. Coffin retired from the General Electric, the company established in his honor a fund of $400,000, to be known as the Charles A. Coffin Foundation, the income of which was to be used to encourage the science and application of electricity. During the World War, Mr. Coffin was active in Red Cross work and for his services was the recipient of honors from several European nations.

COLGATE, WILLIAM (1783–1857). Manufacturer of soap and toilet preparations. Born at Hollingbourn, Kent, England; at the age of 12 went with his family to Baltimore where three years later he started working for a tallow chandler. On becoming of age, he went to New York, finding employment with a large firm of tallow chandlers of which he soon became business manager. Setting up for himself in 1806, he was from the first successful; he established one of the largest starch factories in America; made great quantities of soap, at first only the cheaper grades; later, the making of "fancy" soaps and a great variety of toilet preparations was begun on a large scale. In this line he was a pioneer in the country. Mr. Colgate gave a considerable share of his wealth to benevolent purposes. He was a liberal supporter of Madison University, (Hamilton, N. Y.) which in 1890 became Colgate University. In 1816 he organized the American Bible Society. On the death of Mr. Colgate, his son Samuel succeeded to the business.

COOK, THOMAS (1808–1892). Cook's Tours. Born in Melbourn in Derbyshire, Eng. Began work at ten; was in turn gardener's helper, turner, and printer. At 20 became a Bible reader and missionary. In 1836 became a total abstainer and was soon an ardent worker for the temperance cause, and printed at his own expense various publications in its interest. In the summer of 1841, a large meeting was to be held at Loughborough in connection with this movement; Cook induced the Midland Counties Railway Company to run a special train from Leicester to the meeting. On July 5, 1841, 570 passengers were carried from Leicester to Loughborough and back for a shilling apiece. This is believed to be the first publicly advertised excursion train ever run in England. The event created great excitement, and Cook received many requests to organize similar excursions. In 1845, he advertised a pleasure trip from Leicester to Liverpool and back with opportunities for visiting Dublin, the Isle of Man, and the Welsh Coast and supplied the passengers with a handbook describing the trip. A trip to Scotland followed, and there the excursioners were received with music and a salute of guns. In 1851 Cook helped 165,000 visitors to attend the Great Exhibition. In 1855 he arranged an excursion from Leicester to Calais and back for 10 shillings; the next year came the first grand tour of Europe; each year the tours became more numerous and extensive; in 1869 they were extended to Palestine. In 1872, the son, James M. Cook, went into partnership with his father under the firm name of Thomas Cook and Sons. This firm was employed to convey General Gordon to the Sudan and later all the men (18,000) and stores sent out to relieve him. In 1891, the year before the death of Thomas, the firm celebrated its jubilee.

CORD, ERRETT L. (1894–). Manufacturer. Born in Warrensburg, Mo.; attended the high school in Los Angeles. In 1924 he became president of the Auburn Automobile Co. which under his administration became a going concern.

COREY, WILLIAM ELLIS (1866–1934). Capitalist; born in Pennsylvania; entered chemical laboratory of Edgar Thomson Steel Works at 16; became superintendent of a plate mill at 21; invented Carnegie reforged armor; succeeded Charles M. Schwab, and has been president of the Carnegie Steel Company, and others; president of the United States Steel Corporation (1903–1911); director of many other corporations.

CORLISS, GEO. H. See under LEADING INVENTORS.

CORNELL, EZRA (1807–1874). Western Union Founder. Born at Westchester Landing, N. Y. When he was twelve years old the family removed to De Ruyter in Madison County, N. Y. There Ezra attended the village school and helped his father on the farm. When 21 he went to Ithaca where for 8 years he managed a flour mill. He became interested in Morse's electric telegraph and realized its great commercial possibilities. He assisted greatly in the work of demonstrating it, enlisting capital and building lines; helped to organize the Magnetic Telegraph Company to connect New York and Washington. In 1845 he built the line from the Hudson to Philadelphia, and in the next few years built many miles of telegraph line connecting the principal cities of the East and Middle West. Numerous competitors arose so that in some towns there were three or four rival telegraph offices. Realizing that some form of coöperation was necessary, Cornell and others formed the Western Union Telegraph Company, a consolidation of 7 major and several minor systems. This company within a few years extended its operations to most parts of the United States and Canada. In 1858, having accumulated a large fortune, Mr. Cornell settled on a farm in Ithaca. The remainder of his life was largely devoted to public service. He built a free public library in Ithaca; for two years he was a member of the State Senate and he was the chief mover in the founding of Cornell University to which he gave a half million dollars.

COUZENS, JAMES (1872–1936). Born in Chatham, Ont. At 18, went to Detroit where for several years he was employed as a car checker for the Michigan Central Railroad. In 1903 Mr. Couzens invested $2,500 with the Ford Motor Co. and assisted in organizing the firm, later becoming sales manager, vice-president, and treasurer. He resigned in 1915, selling for $30,000,000 all his holdings in both the American and Canadian firms. In 1918 he became mayor of Detroit. In 1922 he was appointed a member of the United States Senate to finish the unexpired term of Truman S. Newberry, and was elected Senator for the term 1925–31. Mr. Couzens gave of his great wealth to many public enterprises, among his gifts being $5,000,000 for a hospital for the treatment of crippled children.

CRAMP, CHARLES HENRY (1828–1913). American shipbuilder; president of the famous Cramp Shipbuilding Company; assisted in reconstructing the United States navy, and in the reëstablishment of the United States merchant marine; built the ill-fated battle ship *Maine;* the ship yards include 31 acres of land employing 6,000 operatives.

CRANE, RICHARD T. (1832–1912). Manufacturer; born in New Jersey. He worked as a machinist in Paterson, Brooklyn, and New York, but in 1855 went to Chicago. His uncle, Martin Ryerson, gave him a piece of land on which he built a brass foundry. Later he and his brother, Charles S., joined forces as R. T. Crane & Brother, and 1858 began making steam heaters. Reorganized as Crane Company they manufactured pipes and fittings, and later, as the Crane Elevator Company, passenger and freight elevators. The latter especially grew into a big business. Mr. Crane in 1907 practically retired from active work.

CRANE, WINTHROP MURRAY (1853–1915). Paper manufacturer and statesman. Born at Dalton, Mass.; received degree of A. M. from Williams (1897).

Entering political life, he became lieutenant governor of Massachusetts (1897–1899); governor (1900–1902); United States senator to fill the unexpired term of Senator Hoar (1904–1906), re-elected (1907), continued till 1913.

CROWLEY, PATRICK E. (1864–). President, New York Central Railroad. Born at Cattaraugus, N. Y. Without completing the grammar grades in school, he entered the employ of the Erie Railroad as messenger boy, later becoming telegraph operator, and then train dispatcher. In 1890 he went to the New York Central Railroad as train dispatcher. From that position, he advanced steadily step by step until in 1916 he was made vice-president in charge of operation, and, in 1924 was chosen president. Mr. Crowley's outstanding achievement has been the successful handling of large amounts of traffic by the New York Central since the war; this has contributed greatly to the success of the road.

CUDAHY (*kud'a-hi*), **MICHAEL** (1841–1910). Born in Callan, Ireland; came to the United States (1849); partner in Armour & Co. (1873–1890); head of Cudahy Packing Company of Omaha, Sioux City, and Los Angeles (1890–1910).

CUDAHY, PATRICK (1849–1919). Packer; born in Callan, Ireland; came to the United States (1849); at 12 became a delivery boy for a Milwaukee grocer; at 14 employed by Roddis Packing Company; became a partner with Plankinton & Armour (1876); with brother, John, bought Mr. Plankinton's interest (1888), firm becoming Cudahy Brothers; moved plant to Cudahy (1893), organizing Cudahy Brothers Company, now one of the largest packing houses in the United states, of which he acted as president and general manager; director Wisconsin National Bank.

CUNARD (*kū-närd'*), **SAMUEL** (1787–1865). Steamship king. Born in Halifax, N. S., he early became successful in the coasting trade, and owned vessels trading from Newfoundland and Boston to the Bermudas. He undertook for the British government, the project of substituting steamships for the slow-going sailing vessels then used in the mail service. In 1839 he formed the Cunard Company. The first voyage of a Cunard steamship was successfully made by the *Britannia* from Liverpool to Boston (July 4–19, 1840). In acknowledgment of his services, Cunard was created a baronet in 1859.

CUNLIFFE-OWEN, PHILIP FREDERICK (1855–1926). Publisher. Born in London, he was educated in England and at the University of Lausanne. He first visited the United States in 1876, to represent officially at the Centennial Exposition, his father, Sir Francis Cunliffe-Owen, director of the South Kensington Museum. After returning to England for a short period, he came back to America and settled in New York. There he soon became connected with the New York *Tribune* as a contributor on foreign topics; this position he retained until 1913. With his wife and Willis F. Johnson he formed a newspaper syndicate, which was carried on by himself and wife together after Mr. Johnson withdrew. Mr. Cunliffe-Owen was a voluminous writer of scholarly articles widely quoted in both American and English newspapers. His remarkable collection of newspaper clippings and magazine articles was given by his executors to New York University.

CURTIS, CYRUS H. K. (1850–1933). Publisher. Born in Portland, Me. At the age of 20 he went to Philadelphia where, in 1883, he established the *Ladies' Home Journal;* the first edition consisted of 8 pages; in 1928 it had a paid circulation of 2,500,000 copies; in 1897 Mr. Curtis bought the *Saturday Evening Post* which had been founded as the *Pennsylvania Gazette* in 1728 by Benjamin Franklin, and has been published continuously since then except for a few weeks during the British occupancy of Philadelphia. In 1928 this paper had a weekly circulation of about 2,750,000 copies. In 1911, Mr. Curtis purchased the *Country Gentleman,* the oldest agricultural journal in the country; in 1925 it was changed from a weekly to a monthly paper and three years later had a circulation of 1,500,000. Two hundred twenty-five large presses are kept running day and night to print these three publications. Mr. Curtis is president of the Curtis Publishing Company. In 1913 he bought the *Public Ledger* and in 1923, the New York *Evening Post.*

CUTTER (*kut'ar*), **VICTOR M.** (1881–). Banana king. Born in Dracut, Mass.; educated at Dartmouth College and Tuck School of Business Administration and Finance. After graduation in 1904 he entered the fruit business in Porto Rico with the United Fruit Company and after filling minor positions was elected president. This company is one of the largest producers and transporters of tropical products in the world; it deals largely in bananas, sugar, cacao, and coconuts; owns nearly two million acres of land in Porto Rico, Guatemala, Panama, and Colombia; owns and runs a large fleet of steamships for both passengers and for transportation of its own products; operates 1,600 miles of railroads; and is capitalized at $181,000,000 with no bonded indebtedness. Besides his interest in United Fruit, Mr. Cutter is a director in many other corporations.

DAVIS, HENRY GASSAWAY (1823–1916). Capitalist; born in Baltimore; was successively brakeman, conductor, and agent of the B. & O. Railroad at Piedmont, W. Va.; assisted in establishing the West Virginia Central & Pittsburg Railway; built the Coal and Coke Railway of West Virginia, of 200 miles, of which he became president; is president of Davis National Bank of Piedmont, Davis Trust Company of Elkins, and other corporations. Member House of Delegates, W. Va. (1865); state senator (1868–1871); United States senator (1871–1883); has been delegate to several conventions; member United States Intercontinental Railway Commission; was Democratic candidate for vice-president (1904).

DAVIS, GEORGE S. (1845–). Manufacturer. Born in Detroit; educated in the public schools of that city. After graduation from high school he entered the wholesale drug company and made a systematic study of the drug business. In 1867 he purchased an interest in the firm of Duffield, Parke & Co., manufacturing druggists. After the retirement of two partners, the firm became Parke, Davis & Co. It was largely due to Mr. Davis's untiring and persistent efforts and to his unusual executive ability that the firm of Parke, Davis & Co. developed into the largest concern of its kind in the country, if not in the world, and acquired an international reputation.

DAVIS, JAMES J. (1873–). Secretary of Labor, in cabinets of Harding and Coolidge, was born in Wales, but came with parents to America and entered the steel industry at eleven. Prominent in the Order of Moose, being founder of Mooseheart, and other enterprises of the society, as general since 1906. Held minor political offices before director, 1921, and was President of Bond and Mortgage Company of Pittsburgh. Elected United States Senator for Pennsylvania in 1930.

DETERDING, HENRI WILLIAM AUGUST. Oil king. Born in Java. In 1890 a Netherlander, Kessler, having accumulated a fortune, set up an organization in the Hague called the Royal Dutch Company for the Working of Petroleum Wells in the Netherlands-Indies; in the company, members of the Royal family are reported to have been interested. Kessler went to Batavia, and engaged there for his assistant, Henri Deterding, then a bank clerk. Within six years Kessler had died and Deterding, then in his late thirties, became managing director and the dominating figure in the company. He began by selling cheap Borneo oil in the interior of China and succeeded in driving the Standard Oil Company from some parts. In order to overcome the difficulties of transportation, a combine was formed with the British Shell Co., and the French Rothschilds interest, with Deterding at the head of the whole. In 1903, he began furnishing England oil for the navy; during the World War, he greatly assisted the Allied cause by providing oil for ships, autos, and tanks. For this service, Deterding was knighted by the English king. In a letter dated at the Hague, March 15, 1930, Sir Henri states that the total production of the group of companies controlled directly or indirectly by the Royal Dutch Company amounted in 1929 to an aggregate of approximately 163,000,000 barrels of crude oil, constituting more than one-tenth of the estimated world production for that year. He died in 1939.

DOHERTY, HENRY LATHAM (1870–1939). Utility organizer. Born in Columbus, Ohio. Began at 12 as office boy with the Columbus Gas Co. and remained with the firm until 1890; later was connected with public utility corporations in many cities. In 1905 he organized, and since then become manager of, Henry L. Doherty & Co. bankers and operators of public utilities. Five years later, he organized the Cities Service Co. of which he is president. This company is a holding company for more than a hundred public utility and petroleum properties with assets of $660,000,000.

DOLE, JAMES DRUMMOND (1877–). Pineapple king. Born in Boston, Mass. In his early

twenties, he went to Honolulu where he became interested in the raising of pineapples; he incorporated the Hawaiian Pineapple Co. Ltd., of which he is president and manager. The company has 30,000 acres, producing 3,000,000 cases of canned pineapple annually. He was an organizer of the Hawaiian Pineapple Growers Association which, in 1908, launched a national advertising campaign, claimed to be the first instance of associated advertising.

DOLLAR, ROBERT (1844–1933). Ship builder. Born in Falkirk, Scotland, went to Canada at an early age. He began at 13 as a chore boy to the cook in a lumber camp, later becoming foreman, then in 1872 going into business for himself, first in Canada, then in Michigan, and finally in 1888 in California. He was 47 before he owned his first ship, a small steam schooner. Within the following ten years, the gold rush to the Klondyke and the Spanish-American War had made an increased demand for ships; Mr. Dollar bought or built a number of vessels and established a prosperous shipping along the west coast. It was not until he was 57 that he entered the Oriental trade, in which he later became such an important factor. He then formed the Robert Dollar Co., with his sons for partners. During numerous trips to the Far East, he came in contact with important Chinese and Japanese merchants, built up a prosperous trade, and did much toward establishing more friendly relations between the United States and China and Japan. When Mr. Dollar was nearly 80 years of age, he turned his attention to passenger service. He bought from the United States Shipping Board a number of big passenger ships and added to his immense freighting business a highly successful tourist business. He is known as one of the largest operators of ocean vessels in the world; it has been said of him that he has done more to build up the foreign commerce of the United States than any other citizen and has done most of it after the time when men generally feel that their life is over.

DORRANCE, JOHN THOMPSON (1873–1930). Campbell's Soup. Born in Bristol, Pa.; received B. S. degree from the Massachusetts Institute of Technology in 1895, and Ph. D. degree from the University of Göttingen in 1897. After returning from Germany he began as a chemist in the Joseph Campbell Preserve Company at Camden, N. J. He originated the canned soup industry; placing on the market at first five kinds; within thirty years the business has grown to such proportions that there are now twenty-one varieties. In the plant at Camden nine and a half million pounds of tomatoes are used each year, besides vast quantities of other ingredients. Since 1914 Mr. Dorrance has been president of the Campbell Soup Company. He is director of the Pennsylvania Railroad, the Prudential Life Insurance and many other corporations.

DOUBLEDAY (*dub'l-dē*), **FRANK NELSON** (1862–1934). Publisher. Born in Brooklyn, N. Y.; educated at the Brooklyn Polytechnic Institute. At 15, he started as an office boy with the firm of Charles Scribner's Sons; he remained with the firm for 18 years; in 1886 when the *Scribner's Magazine* was established, he was made manager. In 1897 he became a member of the firm of Doubleday & McClure Company; publishers; 3 years later, McClure withdrew and was succeeded by Walter H. Page, afterwards famous as ambassador to England during the World War. The firm then became Doubleday, Page & Co. In 1927 this was consolidated with the George H. Doran Company. With a capital of five and a quarter million, it is claimed to be "the largest publishing house of English language books and periodicals in the world." Mr. Doubleday is described as being quiet, precise, and possessed of an exceptionally keen mind. From his initials F. N. D., he is often called Effendi which means Master and is a Turkish title of respect often applied to a man of learning.

DOUGLAS, WILLIAM LEWIS (1845–1924). Manufacturer and statesman; born at Plymouth, Mass. Owing to the death of his father in 1850, William was obliged to find employment, and for eight years worked for his uncle, pegging shoes. Learned boot making, and after spending a few years in Colorado, he returned to Massachusetts. In 1876 he was able to establish a small shop, from which his business has grown until to-day he controls two factories with an output of 15,000 pairs daily; and the well-known Douglas shoe is sold in 75 of his own stores. Member Massachusetts House of Representatives (1883–1884); State Senate (1886–1887); mayor of Brockton (1891); governor (1904).

DRAKE, EDWIN L. (1819–1880). Oil pioneer. As a young man he was in turn a clerk, an express agent, and a railway conductor. In 1854 the Pennsylvania Rock Oil Company was formed, the first oil company in the country. Its purpose was to obtain in commercial quantities the oil found in Northwestern Pennsylvania floating on the surface of rocks and streams. The company leased some land where oil was thus found; for four years little more was done; then the company, reorganized as the Seneca Oil Company, sent Edwin L. Drake, then about 40 years old, to dig for oil. It was long before he succeeded in getting together the necessary material; winter came and suspended the operations. The following spring work was resumed. After four months of digging a bed of rock was struck; a drilling engine was installed and in August 1859 oil was struck at the depth of 69 feet. The well yielded some 1,000 gallons daily, the value of this daily output being about $500. Drake's success created the wildest excitement. Hundreds of speculators rushed in, and soon the section was dotted with oil wells.

DRAPER, EBEN SUMNER (1858–1912). Manufacturer. Born in Hopedale, Mass.; educated in the public schools and at the Massachusetts Institute of Technology. He studied in machine shops and cotton mills; in 1880 became a member of the firm of George Draper & Sons; when this was incorporated as the Draper Company, he became selling agent. He was director in numerous corporations and for two years was Governor of Massachusetts.

DUKE, JAMES BUCHANAN (1857–1925). Tobacco king. He engaged with his family in the tobacco business at Durham, North Carolina, and then in New York organized the American Tobacco Company and other corporations. In 1912 he became chairman of the board of directors of the British-American Tobacco Company. Mr. Duke gave large sums to charitable enterprises, the most important gifts being to various educational bodies in North Carolina, including a fund of thirty-two millions, a considerable part of which went to Trinity College at Durham, which was renamed Duke University.

DU PONT (*dü"pōn'*), **ELEUTHERE IRENEE DE NEMOURS** (1771–1834). Manufacturer. Born in France; son of the famous economist and statesman, Pierre Samuel Du Pont de Nemours, who fled to America in 1800, returned to France for a time, then again found refuge in the United States. Eleuthere Irenée learned to make gunpowder in the French government factory under the famous chemist, Lavoisier; he came to America with his father in 1800 and in 1802 established a powder mill near Wilmington, Del. There he made in 1805, 22,000 pounds of powder for the American frigates sent to suppress the Barbary pirates. In the War of 1812, he supplied some 750,000 pounds to the American government, and the firm which he founded, now the E. I. Du Pont de Nemours Company, has been the chief source of military explosives in all the succeeding wars of the United States. In the World War it supplied 40% of the explosives used by the Allies.

DU PONT, PIERRE SAMUEL (1870–). Manufacturer. Born in Wilmington, Delaware; educated at the Penn Charter School, Philadelphia, and graduated from the Massachusetts Institute of Technology in 1890. He became connected with the family firm, the E. I. Du Pont de Nemours Company, of which he is now chairman of the board; holding the same office in the General Motors Corporation. Under his guidance, the Du Pont Company has expanded its activities, manufacturing not only explosives but artificial silk, motion picture films, paints, varnishes, and a variety of other products.

DU PONT, T. COLEMAN (1863–1930). Senator and capitalist, from 1893 became interested in coal mining in Kentucky and electric power there and elsewhere. President Du Pont Powder Company, 1902–1915. Senator from Delaware by appointment, 1921–22; elected for full term beginning in 1925. Known for benefactions, including a cement highway costing four millions given to Delaware.

DURANT (*diu-rant'*), **WILLIAM CRAPO** (1861–). Manufacturer. Born in Boston, Mass.; educated in the public schools of Flint, Michigan. In his middle twenties, he founded the Durant-Dort Carriage Co. in Flint and developed a large business. Later he became an outstanding figure in the automobile world; has organized and been connected with several companies, the Buick, General Motors, the Chevrolet and others. After 1920 he lost control of General Motors, but still retained interests in the Locomobile Company and the Durant Companies in various states. Mr. Durant made and lost several fortunes.

EDISON, CHARLES (1890–). Manufacturer. Born in West Orange, N. J.; son of Thomas Edison. Educated at the Massachusetts Institute of Technology. He is now president and chief operating executive of Thomas A. Edison, Inc., including Edison Phonograph Distributing Co., Edison Wood Products, Inc., Edison Storage Battery Co., and others.

ELLIOTT, HOWARD (1860–1928). Railway president. Born in New York City; in 1881 graduated from the Lawrence Scientific School with the degree of civil engineer. The fall after graduation he entered the service of the Chicago, Burlington, and Quincy Railway; within 10 years he had advanced to the position of general freight agent of the Missouri lines of the Burlington system. In 1903 he was elected president and director of the Northern Pacific Railroad, a position he held ten years. Under his administration the road grew and developed. In 1913 Mr. Elliott was called to the presidency of the New York, New Haven, and Hartford, then in a precarious condition, but within four years he resigned because of a threatened loss of health. Later he resumed his connection with the Northern Pacific, becoming chairman of the board, and he was actively identified with that road until his death. From 1917–1927 Mr. Elliott was a member of the Railroads' War Board. He was director of more than a score of large corporations; was at one time president of the Board of Overseers of Harvard, was a life member of the Corporation of the Massachusetts Institute of Technology and was a recipient of honorary degrees from several colleges.

ERSKINE (*ûr'skin*), **ALBERT R.** (1871–1933). Manufacturer. Born at Huntsville, Ala. After holding responsible positions in a number of corporations, he went to the Studebaker Corporation as treasurer in 1911, and in 1915 became president.

EVERITT, GEORGE BAIN (1885–). Merchant. Born in South Dakota. In 1921, became assistant to the president of Montgomery Ward and Company; later, general manager, and in 1926 president.

FABER (*fā'bĕr*), **JOHANN LOTHAIR VON** (1817–1896). German manufacturer. Born in Stein, Bavaria. About 1839 he inherited the business of manufacturing lead pencils which his great-grandfather had founded in 1760. When he assumed control, only about 20 persons were employed; he introduced improvements in machinery and methods, and brought his factory to such a high state of efficiency that it became a model for all other German and Austrian manufacturers. He established factories in New York, Paris, London, and Berlin; by contract, he gained control of the entire output of the graphite mines in eastern Siberia; he had his own cedar mills at Cedar Keyes in Florida; he extended the business to include the manufacture of slates, slate pencils, drawing instruments, and paints. For his services to German industry he received a patent of nobility.

FARGO, WILLIAM GEORGE (1818–1881). Pioneer express man. Born in Pompey, N. Y. In 1843 he became the Buffalo agent of the Pomeroy Express Company. The next year, in partnership with two others, he founded the first express company west of Buffalo. In 1868 Mr. Fargo was made president of the company which by this time had extended its lines to the Pacific Coast. Before he died the company had 2,700 offices and over 5,000 employees with a capital of $18,000,000. The city of Fargo, N. D., was named in his honor.

FARRELL, JAMES A. (1863–). President of the United States Steel Corporation. Born in New Haven, Conn., and educated in the public schools of that city. At 16 he went to work in a wire mill in New Haven; later, he went to Pittsburgh where he was connected with various mills in different capacities until 1903. He then became president of the United States Steel Products Exports Company, a subsidiary of the United States Steel Corporation, handling the export business; in 1911 he was made president of the United States Steel Corporation, not only the largest steel company in the United States, but also exporter of 60% of the American steel going abroad. Mr. Farrell was the first recipient of the new Elbert H. Gary Memorial Medal of the American Iron and Steel Institute for Distinguished Achievement.

FIELD, CYRUS WEST (1819–1892). American financier; born at Stockbridge, Mass. At 15 he went to New York and worked for A. T. Stewart & Company, but before he was of age he was in business for himself, manufacturing paper; and at the end of a dozen years he was at the head of a prosperous business. In 1854 he became interested in a scheme to lay a transatlantic cable and formed a company of five men, with Peter Cooper as president. Three fourths of the necessary capital was raised in England, there the cable was made, and the first great attempt came in 1857. It was a failure; and the next, in 1858, was successful for a short time only. The third attempt was made in 1865, with the help of the biggest ship then afloat, but it was a failure. The next year saw him afloat with yet another cable, and this time it was a success. During the succeeding years he did much toward promoting railroad development, until his resignation as president of two roads in 1880.

FIELD, MARSHALL (1835–1906). Merchant; born in Conway, Mass. He began by clerking in Pittsfield, Mass., and in Chicago from 1856 to 1860. In the latter year he was made junior partner, and in 1865 became one of the firm of Field, Palmer & Leiter, which was changed to Marshall Field & Company in 1881. Under his management the firm conducted the largest retail and wholesale dry goods business in the world, with immense headquarters in Chicago, and branches in France, Germany, and England. He founded the Field Columbian Museum with $1,000,000, as a permanent repository for valuable exhibits, especially from the Columbian Exposition of 1893.

FILENE, A. LINCOLN (1865–). Merchant. Born in Boston, Mass.; after receiving a common school education, he began work in his father's store, now known as William Filene Sons Company, of which he is now treasurer and general manager. With his brother (see below) he has been interested in improving the welfare of his own employees through the principle of coöperation and a sharing of the responsibilities of the business; vocational guidance has also been another of his interests.

FILENE, EDWARD A. See under DICTIONARY OF PHILOSOPHERS, THEOLOGIANS, AND REFORMERS.

FIRESTONE, HARVEY SAMUEL (1868–1938). Manufacturer. Born in Columbiana County, Ohio; attended high school and business college. In 1900 he organized at Akron, Ohio, the Firestone Tire and Rubber Company; at first employing about 17 men, the business of this company has increased enormously; the number of its employees now equal the population of a fair sized city; it has extensive rubber plantations in Liberia, and in the value of its output ranks fourth among the rubber companies of the United States. Mr. Firestone is a warm friend and a great admirer of Thomas A. Edison; he is the donor of a yearly scholarship providing the expenses of a complete college education to the high school student who writes the best essay on good roads.

FISH, STUYVESANT (1851–1923). Banker, railway official; born in New York; after leaving Columbia University he entered the office of the Illinois Central Railway as clerk (1871), secretary to president (1872); clerk Morton, Bliss & Company, New York, and Morton, Rose & Company, London (1872–1877); he acted as director and officer of many railroads; president Illinois Central Railroad (1887–1906); and also director and trustee in various insurance and trust companies; was president of American Railway Association for 1904–1906, and chairman of the seventh International Railway Congress, Washington, 1905.

FISKE (*fĭsk*), **HALEY** (1852–1929). Insurance official. Born at New Brunswick, N. J.; graduated from Rutgers University in 1871; studied law and practiced until 1891, when he became identified with the Metropolitan Life Insurance Company of New York, and was a leading mover in the great expansion of the business of that company; after serving in various other capacities, he was made president in 1919. He was especially interested in the dissemination of knowledge concerning matters of health and deemed it a duty of his company to its policy holders, not merely to pay them a death benefit, but also to give them the latest scientific knowledge of how to live rightly and long. It is safe to say that he was one of the leaders in the science of preventive medicine. Besides his business interests, he was a trustee of various educational and religious institutions.

FLAGLER (*flăg'lĕr*), **HENRY M.** (1830–1913). Capitalist; born at Canandaigua, N. Y.; began as clerk in a country store. After manufacturing salt at Saginaw, Mich., he went to Cleveland and became partner in Rockefeller, Andrews & Flagler, oil refiners, later the Standard Oil Company, of which he became vice-president and director (1870–1908); a director till 1911. He became interested in the de-

velopment of Florida in 1885; bought Jacksonville and St. Augustine Railroad (1888); constructed 10 hotels in the state connected by 600 miles of railroad, and two in the Bahamas. His crowning achievement was the Florida Keys Railroad, 156 miles from Miami to Key West. Director in many railroad companies and other corporations.

FLEISCHMANN, JULIUS (1872–1925). Yeast manufacturer. Born in Cincinnati, Ohio; son of Charles Fleischmann, who in 1868, with his brother Max, founded at Riverside, Ohio, the firm of Fleischmann & Co. for the manufacture of yeast. Julius attended the local schools, then entered his father's factory where he proved himself so efficient that at 23 he was made manager of the company, becoming president upon his father's death in 1897. In 1900 he was elected mayor of Cincinnati and three years later was again elected. He moved to New York in 1910. The Fleischmann Company makes nearly all the compressed yeast used in the United States; it has 11 factories, and in 1928 its net sales amounted to more than $64,000,000.

FLEMING, SANFORD (1827–1915). Born in Scotland; did important Canadian engineering work on Northern Railway, Intercolonial, Pacific Railway, etc. (1845–1871); surveyed road for St. John's to St. George's Bay Railway in Newfoundland. Retired to devote himself to politics, and special branches of science and literature (1880); did great work on "cosmic or universal time," making Greenwich the standard of the world; advocated Pacific Ocean cable, giving plans forming a Pan-Britannic service encircling the world (1879).

FLINT, CHARLES RANLETT (1850–1934). Merchant. Born at Thomaston, Me. Partner in important exporting firms; Chilean consul, New York (1877); consul general Nicaragua and Costa Rica to United States; established Flint & Company, shipowners (1885); formulated important reforms in customs, etc.; fitted out war fleet for Brazil (1895); bought cruiser for Japan (1894); sold submarine and torpedo boats to Russia during war with Japan, visiting Turkey and other countries in its interest.

FOKKER (*fok'ar*), **ANTHONY HERMAN GERARD** (1890–1939). Dutch airplane builder. Born at Kediri, Java. In 1912 he established an airplane factory at Johannesthal near Berlin, and the following year founded another factory at Schwerin in Mecklenburg. During the World War he built planes for the German army. After the war he returned to Holland and established the Fokker Aircraft Works there. In 1924 the Atlantic Aircraft Corporation, of which Mr. Fokker is director, was founded, with a factory at Hasbrouck Heights in New Jersey.

FORD, EDSEL BRYANT (1893–). Manufacturer. Born in Detroit, Mich., son of Henry Ford; educated in the Detroit schools; became connected with his father's automobile business at an early age; is now president and treasurer of the Ford Motor Company.

FORD, HENRY (1863–). Born in Greenfield, Mich.; educated in the district school and then learned the machinist's trade. By the time he was 30, after facing incredible hardships, he finally built an automobile that would run. In 1903 he organized, and became president of, the Ford Motor Company. By 1927 this company had manufactured 15,000,000 cars on the T model, was manufacturing the expensive Lincoln car, and turning out a large number of tractors and airplanes. That year Mr. Ford discontinued the T model and after much experiment and expense brought out a new model which was a great improvement over the old one. In the summer of 1929 the Ford Motor Co. was producing 9,000 cars a day and employing more than 200,000 men. By buying timber land and mines and by establishing factories for the production of the necessary upholstering material, Mr. Ford secured control of the supply of most of his raw materials. In 1928 the principal seat for the manufacture of the Fordson tractors was transferred to Ireland; in the spring of 1929 the Ford Company contracted to supply the Soviet government with $30,000,000 of cars and tractors. In a magazine article published in 1929, Mr. Edward Filene paid the following tribute to Mr. Ford: "I think of Henry Ford as the greatest business man, not merely of America, but of the world. . . . He has done more than any other living man to demonstrate that the prosperity of business depends upon the prosperity of the consumers, and that no nation can afford to have another nation exploited."

FRANCIS, DAVID ROWLAND (1850–1927). Grain merchant. Born in Richmond, Ky.; graduated from Washington University, St. Louis, in 1870. Starting as clerk in a commission house, he advanced to a partnership. In 1877, established the firm which became later D. R. Francis & Bros. Commission Co., grain merchants, of which he was president. He was elected president of the Louisiana Purchase Exposition; in 1905 was sent to Europe to thank rulers of various countries for their part in making the exposition a success; he was decorated by the German and Austrian emperors and by the Queen of the Netherlands. He was Secretary of the Interior under President Cleveland; was Ambassador to Russia during the period when Emperor Nicholas was dethroned and was the first diplomat of any country to recognize officially the Kerensky government.

FRICK, HENRY CLAY (1849–1919). Manufacturer; born at West Overton, Pa. He began as a clerk, then became a small dealer in coke, and later president of the H. C. Frick Coke Company, now largest in the world, producing 25,000 tons daily. Was shot and stabbed in famous Homestead strike (1892). Chairman board of managers of Carnegie Steel Company from 1892; and official in many large concerns.

FROHMAN (*frō'man*), **DANIEL** (1853–1941). Theatrical manager. Born in Sandusky, Ohio; educated in the public schools of Sandusky and New York City. He began his career with the New York *Tribune* as office boy and was in the newspaper business for five years. He then became manager of traveling theatrical companies throughout the country. He later was manager of the Fifth Avenue Theater and of the Madison Square Theater; also manager of Daly's Theater with the Daniel Frohman Stock Company; in 1885 he became manager of the Lyceum Theater; and was also vice-president of the Famous Players Film Co. and president of the Actors' Fund of America.

GARY, ELBERT HENRY (1846–1927). Financier; born at Wheaton, Ill. Graduate of University of Chicago; admitted to the bar in 1867. Was for five terms mayor of the village and (afterward) city of Wheaton; county judge, two terms; practised law for 25 years in Chicago; general counsel for important corporations connected with the Federal Steel Company, of which he has been president since 1898. Was prominent in organizing the United States Steel Corporation and as chairman of its board of directors; director in several banks and corporations in Chicago and New York; president Gary-Wheaton Bank; trustee of Northwestern University.

GATES, JOHN WARNE (1855–1911). Capitalist; born on farm near Turner Junction (now West Chicago), Illinois; began business life by conducting a small hardware store at his birthplace; built up large business in barbed wire while acting as salesman for I. L. Ellwood in Texas, and later established for himself in St. Louis; organized Southern Wire Company (1880), which became the Braddock Wire Company; absorbed other companies in Consolidated Steel and Wire Company, which was sold to Federal Steel Company in 1898; organized American Steel and Wire Company (now part of the United States Steel Corporation), (1897); director of numerous financial enterprises.

GIFFORD, WALTER SHERMAN (1885– President of American Telephone and Telegraph Co. Born in Salem, Mass.; graduated from Harvard University in 1905. After graduation, was for three years connected with the Western Electirc Co. In 1911 he went with the American Telephone and Telegraph Company of which in 1925 he was elected president. He was secretary of the United States Representation on the Inter-Allied Munitions Council, Paris 1918.

GILLETTE (*ji-let'*), **KING CAMP** (1855–1932). Safety razor king. Born in Fond du Lac, Wis.; educated in the Chicago public schools. He invented the Gillette Safety Razer, and in 1901 organized the Gillette Safety Razor Co. of which he was president for some years. He was the author of several books among them being *Human Drift, Gillette's Industrial Solution,* and the *People's Corporation.*

GLOVER, CHARLES CARROLL (1846– Financier, banker; born on farm in Macon County North Carolina; entered Riggs & Company, bankers as clerk; became partner in firm (1873); president of the Riggs National Bank since its organization (1896); instrumental in procuring for District of Columbia site for Fort Reno reservoir; aided in securing the establishment of Rock Creek and Potomac

parks; director, trustee, and officer of various organizations; ex-president Washington Stock Exchange; member Washington National Monument Society; vice-president and treasurer Corcoran Gallery of Art.

GOLDWYN, SAMUEL (1882–). Theatrical man. Born in Warsaw, Poland. Came to the United States at the age of 14; educated in night school. Became a naturalized citizen in 1902. In 1916 he organized the Goldwyn Pictures Corporation, and in 1919, the Eminent Authors Pictures, Inc. He was active in interesting American authors in the improvement of motion pictures.

GOMPERS, SAMUEL (1850–1924). Was president of the American Federation of Labor from 1886 to his death in 1924, with the exception of 1895. Mr. Gompers was born in England and after his fourteenth year advocated the rights of labor with zeal and fidelity. He was one of the sponsors of the Cigarmakers International Union, representing the trade to which he belonged. For years he also edited the *American Federationist*, official organ of most of the unions of America. He was honored during the World War by being made a member of the Advisory Committee on the Council of National Defense, and president of the international commission of labor at the Peace Conference, besides being appointed by the president of the United States to several important commissions, including the *Unemployment Conference*, 1921. Mr. Gompers openly opposed some of the later radical and communistic movements here and abroad.

GOULD, FRANK JAY (1877–). Capitalist; born in New York; entered the railroad service (1897); has been first vice-president of several railroads; president of Big Creek Lumber Company, Pacific Railway in Nebraska, Richmond & Chesapeake Bay Railway Company, and Old Dominion Iron & Nail Works Company; director in numerous companies.

GOULD, GEORGE JAY (1864–1923). Capitalist; born in New York; president (1893–1911) and director of Missouri Pacific Railway; St. Louis, Iron Mountain & Southern Railway Company; Texas & Pacific Railway Company; International and Great Northern Railway Company since 1893. Was also president of many other railroads, and director of railroads and corporations throughout the country.

GRACE, EUGENE GIFFORD (1876–). Bethlehem Steel man. Born in Goshen, N. J.; a graduate of Lehigh University in 1899; since then connected with the Bethlehem Steel Company, beginning in charge of an electric crane and advancing steadily until in 1913 he became president.

GRACE, WILLIAM RUSSEL (1832–1904). Merchant. Born in Queen's County, Ireland. At 14 he ran away from home and by working on a sailing vessel, made his way to New York. In 1850 he went to Callao, Peru, where he became a clerk in a firm of shippers and commission merchants; before long he was made a partner, and finally became the leading member of the firm. In 1865 he returned to New York and organized the firm W. R. Grace & Co. to trade with South and Central America; in 1891 he established the New York and Pacific Steamship Company. He was twice elected mayor of New York.

GRAY, CARL RAYMOND (1867–1939). Railroad president. Born in Princeton, Ark. When less than 16 years of age he became telegraph operator for the St. Louis and Sante Fe Railroad; he remained with that road until 1911, when he had advanced to the office of senior vice-president. Since then he has been president of the Great Northern, then president of the Western Maryland, and on January 1, 1920, president of the Union Pacific.

GREEN, WILLIAM (1873–). Labor leader. Born at Coshocton, O. Received only a common school education, going to work at an early age as a coal miner; he became interested in trade unionism and identified himself with the United Mine Workers, serving in district and state organizations of the union in Ohio; in 1913 he was elected secretary-treasurer of the United Mine Workers of America, serving until 1925. On the death of Samuel Gompers in 1924, Mr. Green was elected president of the American Federation of Labor and has been reëlected annually since that year. He was a member of the Ohio Senate for two terms and a delegate to several Democratic national conventions. He is the author of the Ohio Workmen's Compensation Law, and has written many articles and made many addresses on trade unionism and the advancement of labor.

GRIFFITH, DAVID W. (1880–). Theatrical man. Born at La Grange, Ky.; received a common school education. In 1908 he became identified with the motion picture industry. He brought into first practical use certain methods of pictorial emphasis, such as the "close-up," the "cut-back," the "fade-out," and the "dissolve." As an independent producer, he has produced a number of very popular and noteworthy pictures,—the *Birth of a Nation, Way Down East, Orphans of the Storm, America*, and others.

GUGGENHEIM, DANIEL (1856–1930). Copper king. Son of Meyer Guggenheim, founder of M. Guggenheim & Sons, one of the largest miners and smelters of copper in the world, and now doing business as Guggenheim Brothers. From 1873 to 1884 Daniel was buyer for a commercial house in Switzerland; in 1884 he became associated with his brothers in the mining business. In 1926 he donated $2,500,000 to the Daniel Guggenheim Fund for the promotion of aviation.

GUGGENHEIM, HARRY FRANK (1890–). Copper king and aviation promoter. Son of Daniel; he was a student at Yale, 1907; also at Pembroke College, Cambridge, Eng., where he received the B. A. degree in 1913 and M. A. in 1917. Began with an American smelting company in Mexico; was sent to develop the Chile Copper Company; he built in the desert a mining town with a population of 10,000 and made the Chile Copper Company the cheapest low grade copper producer in the world. Since 1926, president of the Daniel Guggenheim Fund for the Promotion of Aeronautics. In 1929 appointed by President Hoover ambassador to Cuba.

GUGGENHEIM, MURRY (1856–1939). Copper king. Born at Philadelphia, was educated in the public schools. He assisted his father and brothers in the formation of the firm of M. Guggenheim & Sons in 1881; the firm is now known as Guggenheim Brothers and includes Daniel, his son Harry F., Murry, Simon (see below), Solomon R., and William Guggenheim. The firm is interested in mines in Alaska, Colorado, Mexico, and Chile; it has a controlling interest in various mining and smelting companies such as the Chile Copper Company, the American Smelting and Refining Company, the Braden Copper Company, and others. The American Smelting and Refining Co., in which the Guggenheims are the leading factors, is the greatest refiner and marketer of non-ferrous metals in the world.

GUGGENHEIM, SIMON (1867–). Copper king and philanthropist. Born at Philadelphia; educated in the public schools and studied languages in Europe for two years. He began his mining career in Colorado and became a member of the Guggenheim firm; he served as United States senator from Colorado from 1907 to 1913. He was much interested in educational and philanthropic affairs; in 1925, jointly with his wife, in memory of a deceased son, he established the John Simon Guggenheim Memorial Foundation with a gift of $3,000,000. The fund is to be used "for scholarships for advanced study abroad, without regard to sex, race, creed, or color." In 1929 he gave $1,000,000 for exchange fellowships between Latin America and this country.

HAMMOND, JOHN HAYS (1855–1936). Mining engineer; born at San Francisco; graduated from Yale (1876); took mining course at Freiburg, Saxony. He has examined mining properties in all parts of the world; consulting engineer for Barnato Brothers, 1893, and later for Cecil Rhodes; for the Consolidated Gold Fields of South Africa; for the British South Africa Company; and for the Randfontein Estates Gold Mining Company. After Jameson's raid he was arrested and given death sentence, later commuted to prison for 15 years, finally released on payment of $125,000. Went to London; returned to United States; traveled extensively as a mine specialist for Venture Corporation of London and Guggenheim Exploration Company of New York. He has lectured at Columbia, Yale, Harvard, and Johns Hopkins; contributed largely to scientific magazines, and received many honorary titles; president American Institute Mining Engineers (1907–1908).

HARAHAN, JAMES THEODORE (1843–1912). Railway president; born at Lowell, Mass. Employed by Orange & Alexandria Railroad, Alexandria, Va. (1864–1865); held several responsible positions with other railroads; general manager Louisville & Nashville Railroad (1885–1888), Chesapeake & Ohio Railway, Louisville, New Orleans & Texas Railway; second vice-president Illinois Central Railroad (1890–1906); president same road (1906–1912).

HARMON, WILLIAM ELMER (1862–1928). Realtor and philantrophist. Born in Lebanon, Ohio; at-

tended the National Normal University at Lebanon, Ohio, and the Louisville School of Medicine. He became interested in real estate in Cincinnati where he began selling house lots for $1.00 down, the balance of the price to be paid in regular installments. This was the beginning of the partial payment plan now so widely used in the marketing of many products. He organized the firm of Wood, Harmon & Co. which at one time operated in the development of suburban estate in 26 cities but was later concentrated in New York. He was president of Wood, Harmon & Co., the Third United Realties Company and of a score of other corporations. In 1922 Mr. Harmon established the Harmon Foundation for humanitarian purposes, especially for the establishment of playgrounds and the financing of loans to college students. For some years before Mr. Harmon's death, many persons received checks enclosed in cordial, encouraging letters which were signed Jedidiah Tingle. These letters were sent to writers of good books, minor poets, doers of heroic deeds, and to many in trouble, "to comfort and cheer those who do exceptional things or suffer." It was not until after Mr. Harmon's death that the secret was disclosed that he was Jedidiah Tingle.

HART, HARRY (1850–1929). Clothier. Born in Eppelsheim, Germany; came to the United States at the age of 8; was educated in the public schools of Chicago. In 1879 he organized the clothing firm of Hart, Abt, & Marx, which, upon the withdrawal of Mr. Abt a few years later, became Hart, Schaffner & Marx, now one of the largest clothing firms in the world. Mr. Hart was president of the company from its foundation until his death; he survived both his partners. The firm worked out what is known as the Hart, Schaffner & Marx Agreement by which all labor questions are settled through equal participation of both employer and employees; it has also given prizes for economic studies.

HARTFORD, GEORGE HUNTINGTON (1833–1917). Chain stores. Founder of the A. & P. Born in Augusta, Me. Before the Civil War he went to New York, and there at first engaged in a small leather and hide business. In 1859 he went to work for a spice and tea merchant as manager; when the proprietor withdrew, Mr. Hartford carried on the business; he became prosperous and, in 1864, organized the Great American Tea Co. He soon opened neighborhood stores in various parts of New York and Brooklyn. In 1869, when the completion of the Union Pacific Railroad united the Atlantic with the Pacific coast by rail, Hartford renamed his company the Great Atlantic and Pacific Tea Company. He gradually established stores in many cities; in 1912 telephones were taken out of all the stores of the company, and no more deliveries were made. This enabled the firm to lower prices and caused a 65% increase in business. Mr. Hartford died in 1917, and the business is now managed by his two sons. The number of stores has increased enormously in recent years, and has been estimated at between 15,000 and 20,000. It is not, however, until very recently that the company has opened stores in the cities of the Pacific coast and thus become in fact the Great Atlantic and Pacific Tea Company.

HAVEMEYER, JOHN CRAIG (1833–1922). Merchant and sugar refiner; born in New York. Began by clerking in 1851–1852. After traveling in Europe, Syria, and Egypt, he clerked in a sugar refinery (1854–1856) in Brooklyn; partner in Havemeyer Brothers & Company (1871–1880). He was director in several railroads and corporations. Writer and speaker on political, moral, and religious subjects.

HAYS, WILL H. (1879–). Motion picture czar. Born in Sullivan, Ind. Graduated from Wabash College in 1900 and that same year was admitted to the bar. He became interested in politics and occupied several political positions in Indiana. In 1921 he was appointed postmaster general but, after serving one year, resigned to become president of the Motion Pictures Producers and Distributors of America, Inc.

HEARST (*hûrst*), **WILLIAM RANDOLPH.** See under RULERS AND STATESMEN.

HEINZ (*hīnz*), **HENRY J.** (1844–1919). 57 Varieties. Born in Pittsburgh; attended public schools and business college. At 25 he began in a small way in the packing of food products at Sharpsburg, Pa. In three years he moved to Pittsburgh (1872) where he carried on business for some time under the firm name of Heinz, Noble, and Co. which later became F. & J. Heinz, then in 1888 H. J. Heinz & Co., a partnership until 1905, then organized as a corporation with Mr. Heinz as president. The main plant in Pittsburgh covers 22 acres of floor space; there are 16 branch factories, and 30,000 acres of land under cultivation; there is a plant in Canada, one in England, and one in Spain and the "57 Varieties" are sold by agents in every part of the world. In 1908 Mr. Heinz succeeded John Wanamaker as president of the Pennsylvania Sabbath School Association, and retained that office until his death.

HERRESHOFF (*her'es-hof*), **NATHANIEL GREENE** (1848–1926). Superintendent Herreshoff Manufacturing Company; born in Bristol, R. I.; educated at Massachusetts Institute of Technology (1866–1869), and holds the Sc.M. of Brown University. Designer of yachts and torpedo boats. Member of the Institution of Naval Architects and Marine Engineers, New York; and of Institute of Naval Architects, England.

HERTZ, JOHN DANIEL (1879–). Yellow cab. Born in what is now Czecho-Slovakia; he founded the Yellow Cab Company of Chicago in 1915; the Chicago Motor Coach Company in 1922, and in 1924 the Omnibus Corporation of America.

HILL, JAMES J. (1838–1916). Railway official; born near Guelph, Ont. Worked in a steamboat office in St. Paul (1856–1865); agent of the Northwestern Packet Company (1865); and later engaged in fuel and transportation on his own account. In 1869–1875 he was at the head of Hill, Griggs & Company; established Red River Transportation Company (1870); organized Northwestern Fuel Company (1875), but later sold his interest to organize a syndicate to secure control of the St. Paul & Pacific Railroad. This was the nucleus of the Great Northern system which he projected from Lake Superior to Puget Sound, with northern and southern feeders, and direct steamship connection with China and Japan (1883–1893); president Great Northern system (1893). In 1907 he retired, retaining chairmanship board of directors. Now president Northern Securities Company, and director in Manhattan Trust Company, Chase National Bank, First National Bank of New York, First National Bank of Chicago, and many other corporations.

HOLMES, RALPH CLINTON (1874–). Texaco oil. Born in Sharon, Pa.; graduated from high school at Olean, N. Y. in 1895. He was with the Standard Oil Company at Olean for five years after graduation, with the Texas Company since 1902 and president since 1920. "Texaco" gasoline is the only brand sold in every state of the Union. There are (1930) 40,000 distributing stations in the United States alone.

HOYT, COLGATE (1849–1922). Banker, railway official; born at Cleveland, Ohio; became a banker; government director (1882–1884), company director (1884) of the Union Pacific Railroad; vice-president Oregon & Transcontinental and Oregon Railroad & Navigation Company (1889); vice-president North American Company until 1889; now first vice-president Missouri, Kansas & Texas Railway of Texas.

HUBERT, CONRAD (1854–1927). Flash-light king. Name originally Akiba Horowitz. Born in Minsk, Russia, of Jewish parents; educated in a Hebrew school. When 13 he went to Germany where he engaged in the distillery business; returning to Russia after 6 years, he became a partner in his father's firm and achieved success, but, finding his progress impeded by Czaristic persecution, he sold his business and in 1882 emigrated to the United States, later becoming an American citizen and changing his name to Conrad Hubert. The turning point in his career came when he bought the invention of the flash-light, patented it, and began its extensive manufacture. He organized the business under the name of the Eveready Battery Company of which he became president. The business prospered and Mr. Hubert amassed a fortune; about 1915 he sold the business to the National Carbon Company. Under the terms of his will, drawn up two months before his death, Mr. Hubert directed his executors to appoint three prominent men to divide three-fourths of his fortune of $8,000,000 among benevolences of their own choosing. The men selected were Calvin Coolidge, Alfred Smith, and Julius Rosenwald. They selected thirty-four institutions—educational, medical, social, religious, white, Negro, Jewish, Catholic, Protestant, undenominational—as beneficiaries under the will.

HUNTINGTON, COLLIS POTTER (1821–1900). Railway official. At 16 he secured $3,000 worth of clocks on credit in New York, and sold them in the South and West; started his fortune in the hardware business in California (1849); with Leland Stanford,

Charles Crocker, and Mark Hopkins he organized the Central Pacific (1860–1869). At his death he was president of the managing board of the Southern Pacific system, comprising 26 corporations, besides owning 9,000 miles of steamship lines. He gave liberally to worthy objects.

HUNTINGTON, HENRY E. See under DICTIONARY OF FINANCIERS.

HYDE, HENRY BALDWIN (1834–1899). Insurance. Born in Catskill, N. Y. Before he was 20, he entered the employ of the Mutual Life Insurance Company of New York; at 22 he was cashier. Three years later he founded the Equitable Life Assurance Society in competition with the Mutual Life, and until his death he was its master spirit and director. He aimed to make it the largest life insurance company in the world and this led to a fierce and bitter contest for business.

INGALLS, MELLVILLE EZRA (1842–1914). Railroad president. Born in Harrison, Maine; attended the district school in winter and worked on the farm in summer; at 16 he passed an examination for teaching, and taught for several winters in order to get money for a college education; he spent some time at Bowdoin, then went to the Harvard Law School, from which he graduated in 1863. He built up a successful practice in Boston, specializing along the laws of transportation. He was engaged as counsel for the Indianapolis, Cincinnati & Lafayette Railroad and gave such satisfaction that he was elected president. Later this road was reorganized as the Cincinnati, Indianapolis, St. Louis & Chicago Railroad and Mr. Ingalls became president. The popular name "Big Four" dates from this period. In 1889 this road was consolidated with another under the name of Cleveland, Cincinnati, Chicago, and St. Louis with Mr. Ingalls as president, a position he retained until 1905 when he became Chairman of the Board. His success as a railway manager was noteworthy even during that period of remarkable railroad expansion.

INSULL, SAMUEL (1859–1938). Corporation official; born in London; came to the United States in 1881, and was private secretary of Thomas A. Edison, having full charge of his business affairs for many years. He represented him in the organization and management of Electric Tube Company, Edison Machine Works, and Edison Lamp Company. In 1889 the different Edison concerns were consolidated into the Edison General Electric Company, with Mr. Insull as second vice-president. In 1892 there was further consolidation with the Thomson-Houston Company, into the General Electric Company, of which he became second vice-president. Since 1907 he has been president of the Commonwealth Edison Company, controlling all electric lighting in Chicago. He is president also of numerous other corporations—electric, gas, heat, power, and traction.

JEEJEEBHOY (*jē-ēēb-hēt'*), **JAMSETJEE** (1783–1859). Indian merchant. Born at Bombay of poor parents and early left an orphan. At 16 he began a series of business travels which eventuated so successfully that he was able to settle at Bombay and from there direct his widely expanding commercial enterprises. The fortune he acquired was largely expended in relieving the unfortunate in his own country. He founded and endowed hospitals, schools, homes for the poor, and pension funds; gave money for the building of bridges, reservoirs, and other public works in many parts of India. In recognition of his services he was knighted in 1842 and in 1858 was made a baronet.

KEITH (*kēth*), **BENJAMIN FRANKLIN** (1846–1914). Vaudeville king. Born in Hillsboro Bridge, N. H.; educated in the district school. He joined a circus and later became proprietor. He then became part owner of the Gayety Theater in Boston, and in 1885 began a continuous performance theater. With F. F. Proctor, he formed Keith and Proctor controlling vaudeville theaters throughout the United States.

KEITH, MINOR COOPER (1848–1929). Merchant and art collector. Born in Brooklyn, N. Y. After experience in the lumber business and in the cattle business, he went to Costa Rica in connection with the construction of a railroad there. In 1899 he organized the United Fruit Company. He became interested in the Maya ruins in Central America and at Mercedes, made a valuable collection of Maya sculptures and pottery. This collection is now in the American Museum of Natural History. Mr. Keith was made chairman of the board of the International Railway of Central America.

KENT, ARTHUR ATWATER (1873–). Radio manufacturer. Born in Burlington, Vt.; educated at the Worcester Polytechnic Institute. In 1902, he established in Philadelphia, the Atwater Kent Manufacturing Works, where at first he made telephones and meters. In 1922 he began the manufacture of radio receiving sets. He was an active promoter of the movement for broadcasting concerts by the world's foremost musicians.

KRAFT, JAMES LOUIS (1874–). Maker of Kraft's Cheese. Born in Canada; came to the United States in 1903, settling in Chicago where he began in cheese business about 1906 when he drove a horse called "Paddy" and sold cheese to Chicago stores. He is now president of the Kraft-Phenix Cheese Co., which has an annual sale volume around $85,000,000.

KRESGE, SEBASTIAN S. (1867–). Merchant. Born in Pennsylvania. In 1897 he started with J. G. McCrorey in a five and ten cent store in Memphis, Tenn. He later went to Detroit where he was a member of Kresge and Wilson. In 1912, when the S. S. Kresge Co. was incorporated, he became chairman of the board. The company has stores in over 100 cities in the United States.

KREUGER, IVAR (1880–1932). Match king. Born in Sweden. At 19 he graduated as a mechanical engineer from the Stockholm Technical College; the following year he came to the United States, going first to Chicago and later to New York where, as a member of the engineering staff, he worked on the Flatiron, Metropolitan Life, and other large buildings. In 1907 he returned to his native land; there he formed the construction firm of Kreuger and Toll which has built some of the finest buildings in Stockholm. In 1913 he entered the match industry by gaining control of all the independent match factories in Sweden and forming them into one corporation; in 1917 by merging his own with the only other match corporation in Sweden, he formed the Swedish Match Company, controlling the entire match production of Sweden. By the end of the World War his company owned vast tracts of forest land in Sweden and other countries, pulp and paper mills, power plants and laboratories for the production of the necessary chemical, thus gaining control of the supply of raw materials. It now holds a complete monopoly of the match industry in eight European and two South American countries, and in Japan and a partial monopoly in many other countries; it has 160 branch factories in foreign countries all under the direction of Swedes, and produces more than 75% of the world's matches.

KROGER, BERNARD H. (1860–). Chain stores. Born in Cincinnati, Ohio. In 1883 he started in the grocery business in Cincinnati, and gradually established stores in other places until there are now nearly 4,000 Kroger stores in various parts of the country. He has donated the grounds and buildings for Kroger Hill Camp, for anemic children.

KRUTTSCHNITT, JULIUS (1854–1925). Railway officer, was born in New Orleans and educated at William and Mary College, Virginia. After teaching a while, he entered the railway service and gradually rose through various positions to those of great responsibility in the Southern Pacific system. He was general manager of the S. P. in 1895–1904, one of the vice-presidents, 1898–1904, assistant to the president, 1904–1911, and eventually became chairman of the Board, besides being interested in other companies and banks.

KURN, JAMES M. (1870–). Railway president. Born at Mt. Clemens, Mich. At 14 he started his railroad career as messenger with the Michigan Central and worked his way up until in 1913 he was general superintendent. He then went to the Detroit, Toledo and Ironton Railroad as president. In March 1920, he was elected president of the St. Louis and Santa Fe.

LANDIS, KENESAW MOUNTAIN (1866–). Born in Ohio, educated at Logansport, Ind., and the Union College of Law, Chicago. Except for two years, when he was private secretary of J. Q. Gresham, U. S. Secretary of State, Mr. Landis practiced in Chicago from 1891 to 1905; and was U. S. Judge for Northern Ills. District, from 1905 to 1922, when he resigned to become Commissioner of the American and National Base Ball Leagues of America. Judge Landis became well known in 1907 by his handling of the Standard Oil rebate cases in Chicago. As arbitrator, in 1921, he fixed the wages of the building trades employees in Chicago.

LASKER, ALBERT DAVIS (1880–). Advertising. Born of American parents in Freiburg, Germany; at an early age was brought to America.

At 15 he was writing dramatic criticisms for a Galveston newspaper; at 18, having graduated from high school, he went to Chicago where he found employment in an advertising agency; within four years he owned the agency; at forty-one he was a multi-millionaire. For two years (1921–23) he was chairman of the United States Shipping Board. In 1926 he became chairman of the board of Lord & Thomas and Logan, one of the largest advertising agencies in the United States.

LASKY, JESSE L. (1880–). Paramount pictures. Born in San Francisco where he graduated from the high school. After graduation he tried a number of different occupations; he was a reporter, a band master, a vaudeville actor; he went to Alaska to find gold. Then in 1914 he organized the Jesse L. Lasky Feature Play Co., of which he was later president. He is also vice-president of the Paramount Famous Lasky Corporation.

LAWRENCE, AMOS (1786–1852). Merchant and manufacturer. Born at Groton, Mass. In 1814, with his brother Abbot Lawrence, he formed the firm of A. & A. Lawrence which became the foremost wholesale mercantile establishment in the country. The firm did much for the cotton textile industry of New England by financially aiding the mills of Lowell and by financing the building of mills at Lawrence. Besides other benefactions, Amos Lawrence made generous gifts to many educational institutions, to Williams, Bowdoin, Wabash, and Kenyon colleges, to Bangor Theological Seminary, and to Groton Academy which was renamed Lawrence, in honor of the family.

LEWIS, JOHN L. (1880–). Labor leader, recently has lived in Illinois. Has been connected with the United Mine Workers of American since 1917, as president since 1919, after serving as legislative agent and vice president, and for a time as legislative agent of the American Federation of Labor. Member of the Unemployment Conference in 1921 and of the advisory committee to the Arms Limitation Conference in 1921–22. Author of *Miners' Fight for American Standards.*

LEVER (*lē'vẽr*), **WILLIAM HESKETH** (1851–1925). English soap king. Born in Bolton, Lancashire, England. At the age of 19, entered his father's grocery store where he worked for a number of years. In 1885, with his brother, he began the making and selling of a soap made from vegetable oils instead of tallow as were the soaps then in general use. To this soap, the Lever Brothers gave the name, "Sunlight Soap"; within three years it became the most used soap in the United Kingdom. The brothers built a large plant on the Mersey River which they called Port Sunlight. It is still the main plant of the company, but a number of smaller plants have been built in different parts of the world. Sunlight Soap, although not so well-known in the United States as either the Levers' Pears Soap or Lifebouy Soap, is however, estimated to be the largest selling soap in the world. The company with its 200 associated companies, its chain stores, and controlling its sources of raw material is claimed to be the largest soap company in the world. In order to secure control of an adequate supply of palm oil, a chief constituent of their soap, the Lever Brothers in 1911, obtained from King Albert of Belgium, an immense concession, about 1,860,000 acres of land in the Belgium Congo, with authority to build roads, canals, railways, and telegraph systems. This concession has been successfully developed, and the firm of Lever Brothers is a dominating influence in West African trade.

LIGGETT, LOUIS KROH (1875–). Chain drug stores and patent medicines. Born in Detroit, Michigan, and educated in the public schools, he began his merchandising career as a traveling salesman for John Wanamaker. Later he went into the business of making and selling headache powders; he soon became interested in the marketing of proprietary medicines. In 1903 he formed the United Drug Company of which he has since been president. It controls 525 Liggett stores in various cities and through subsidiary corporations, controls Castoria, Bayer's Aspirin, the Rexall products, Cascarets, 3 in 1 Oil, and other well-known products.

LINCOLN, ROBERT TODD. See under RULERS AND STATESMEN.

LIPTON, THOMAS J. (1850–1931). Tea merchant and yachtsman. Born in Glasgow, Scotland, of Irish parents. At 15 he emigrated to America where he had a varied experience; he worked in a grocery store, was a street car driver, a traveling agent for a portrait firm, and worked on a plantation in South Carolina. Returning to Glasgow, he opened a sm provision store and in time established similar sto all over the United Kingdom. To supply his re shops, he acquired extensive tea, coffee, and co plantations in Ceylon and established fruit farms, j factories, and bakeries in England. In 1898 he w knighted and in 1912 made a baronet. He was keen yachtsman and several times attempted to captu America's cup.

LITCHFIELD (*lich'fēld*), **PAUL W.** (1875– Tires. Born in Boston and graduated from the Mas chusetts Institute of Technology in 1896; in 1900 became connected with the Goodyear Tire and Rubb Company of Akron, Ohio, in which he filled varic offices until 1926 when he became president; he w also president of the Goodyear-Zeppelin Corporati and other Goodyear subsidiaries; interested in aviati and its development, and in the peaceful solution labor difficulties concerning which he has written interesting booklet on *The Industrial Republic.* D ing Mr. Litchfield's administration, the company came the largest manufacturer of tires in the worl and is now taking the lead in the building of n super-Zeppelins.

LOEB, JAMES (1867–1933). Banker (retired born at New York; graduated from Harvard (1888 in banking business (1888–1901); member Engli Society for Promotion of Hellenic Studies.

LOVETT, ROBERT S. (1860–1932). Railro president. Born in San Jacinto, Texas; attended t high school in Houston; was admitted to the bar 1882. In 1892 he became attorney and general cou sel for all the Southern Pacific lines in Texas, th general counsel for the Harriman System. In 19 he was appointed president of the Union Pacific Ra road and in 1920 became chairman of the board.

LOWELL, FRANCIS CABOT (1775–1817). M chant and manufacturer. Born at Newburypo Mass.; graduated from Harvard in 1793. During t War of 1812, he had cotton looms constructed fr his own models and started some cotton mills, first Waltham, and then on the Merrimac River, at t place afterward named Lowell, in his honor.

MACAULEY, ALVIN (1872–). Packard au mobile. Born in Wheeling, W. Va., son of a Ci War veteran and West Virginia's first Secretary State; he attended Lehigh University and studied la at George Washington University; admitted to the b in 1897. He became patent attorney for the Nation Cash Register; general manager of the Burroug Adding Machine Company; general manager and, sin 1916, president of the Packard Motor Compan makers of fine cars and builders of the famous Liber Motor. The business of this company doubled in t two years (1927–1929).

MACKAY, (*ma-kē'*), **CLARENCE HUNGERFOR** (1874–1938). Capitalist; president Commercial Cab Company, Postal Telegraph-Cable Company, Paci Postal Telegraph-Cable Company, Commercial Paci Cable Company, Commercial Cable Building Compan etc.; trustee New York Life Insurance Compan director Canadian Pacific Railway Company, Americ Exchange National Bank, United States Mortgage a Trust Company, Federal Sugar Refining Company, et

MACKAY, J. W. See under DICTIONARY OF FA ANCIERS.

MACKENZIE, WILLIAM (1849–1923). Railro builder and financier. Born in Ontario, Canada; ed cated at the Military School in Toronto. Before b ginning his career as a railroad builder, he was f some time a teacher and then connected with t lumber business. He obtained a contract for buildi certain sections of the Grand Trunk line and co structed the Canadian Pacific through the mountai of British Columbia. His great work was the buil ing of the Canadian Northern Railway, completed 1915; it won for him the appellation of "Emperor the North." Sir William was the promoter of ma Canadian industries, the Canadian Lumber Co., t Canadian Mining Trust Co., and others. He served president of the Canadian Northern and numero other railroads. In 1911 he was knighted by Ki George.

MACVEAGH, FRANKLIN (1839–1934). Merchan born on farm in Chester County, Pa. A graduate Yale (1862), and Columbia Law School (1864). We to Chicago and established wholesale grocery bu ness, of which he is head; president Citizens' Associ tion (1874); president of Bureau of Charities a Municipal Art League; vice-president American Civ

Association (1905); secretary of the treasury in cabinet of President Taft (1909–1913).

McCLURE, SAMUEL SIDNEY (1857–). Editor; born County Antrim, Ireland; came to Indiana at the age of 9; was graduated at Knox College in 1882. In 1884 he started the first newspaper syndicate in the United States and made it a success; and in 1893 he united with others to publish *McClure's Magazine*, which he also made a success. Founded McClure, Phillips & Company, publishing house (1899); trustee Knox College since 1894; president S. S. McClure Company.

McCURDY, RICHARD ALDRICH (1835–1907). Capitalist; born in New York; practised law with Lucius Robinson, who became governor of New York; was attorney (1860), vice-president (1865), and president (1885–1906), of Mutual Life Insurance Company; resigned; president International Bell Telephone Company, Ltd.; director in several corporations.

McGILL, JAMES (1744–1813). Fur merchant and philanthropist. Born in Glasgow, Scotland; went to Canada in 1770 where he engaged in the fur trade and in business in Montreal, eventually amassing a fortune. In his will he left 10,000 pounds and certain lands for a college to bear his name. The institute founded on this bequest was chartered as a university in 1821.

MELLEN, CHARLES SANGER (1851–1927). Railway official; born in Lowell, Mass. Began as clerk in office of Northern New Hampshire Railroad; clerk Central Vermont Railroad (1872–1873); employed by Northern New Hampshire Railroad (1873–1880); Boston & Lowell Railroad (1880–1881); Boston & Lowell and Concord railroads (1881–1888); Union Pacific system (1888–1892); second vice-president New York, New Haven & Hartford Railroad (1892–1896); president (1903–1913); president Northern Pacific Railway Company (1896–1903).

MORRISON, FRANK (1859–). Labor leader, born in Canada, received his law degree at Lake Forest Law School in 1894. Previously he followed the trade of a printer. In 1896 he became Secretary of the American Federation of Labor. Recently he served on the executive committee of the Council of Churches, and the Board for Near East Relief.

MUNSEY, FRANK ANDREW (1854–1925). Publisher; born at Mercer, Me. Began in a country store; manager Western Union Telegraph office, Augusta, Me.; established the *Golden Argosy* (now *The Argosy*) in New York (1882); in 1889 he started *Munsey's Weekly*, converted into *Munsey's Magazine* two years later. Munsey also owned the *All-Story Magazine, Scrap Book, Ocean, Railroad Man's Magazine*, Washington *Times*, and New York *Mail and Express*.

MUNSON, FRANK C. (1876–1936). Born in Cuba and educated in Brooklyn, N. Y. Began business as office boy of Munson Line of steamships, rising to be manager of Cuban dept., treasurer, vice-president, and since 1916 president. Director in shipping corporations, Munson Building, Gold Dust, N. Y. Canal and Great Lakes Co., P. R. Mallory, and other companies. Member War Trade Board, Shipping Com. of Nat. Council of Defense, N. Y. Parks and Playgrounds Assoc., and President Brooklyn Y. M. C. A.

NEWMAN, WILLIAM H. (1847–1918). Railway official; born in Prince William County, Va. Began as station agent for the Texas & Pacific (1869–1872); from 1872 to 1883 he was general freight agent; traffic manager for the Southwestern system (1883–1885); traffic manager for the Missouri Pacific (1885–1887); vice-president (1887–1889). Since 1898 he has been president of the Lake Shore, since 1901 of the New York Central, since 1905 of the Michigan Central and of the Big Four.

NIXON, LEWIS (1861–1940). Ship builder. Born at Leesburg, Va.; graduated at the United States Naval Academy and studied at the Royal Naval College, Eng. In 1890 he designed the battleships *Oregon, Indiana*, and *Massachusetts*. Resigning from the Navy, he started the Crescent Shipyard at Elizabeth, N. J. where within 6 years he built 100 ships, 8 of this number being submarines, and one, the cruiser *Chattanooga*. Mr. Nixon was a staunch Democrat and succeeded Richard Croker as leader of Tammany Hall.

OCHS (*ŏks*), **ADOLPH SIMON** (1858–1935). Publisher. Born in Cincinnati, Ohio. At 14 he started his career as printer's devil in a newspaper office, later becoming a compositor. At 20 he gained control of the *Chattanoogo Times* and made it one of the outstanding newspapers of the South. For his energy in promoting the prosperity of Chattanooga he was called the "Founder of Chattanooga." In 1896 Mr. Ochs acquired control of the New York *Times*, which after many years of prosperity was at that time run down. Under his management the *Times* has become one of the most widely read papers in the country with, in 1929, a circulation of 425,000 week day and 750,000 Sunday copies. Taking as the motto of his paper "All the news that's fit to print," Mr. Ochs by maintaining a high standard of work, has been a beneficial influence in the newspaper world. He was a pioneer in introducing rotogravure printing of news pictures and in establishing a book review supplement. By printing on rag paper a special edition of the *Times* for libaries, he has made his paper "A newspaper of record." In 1918 the New York *Times* received the first Pulitzer Gold Medal in Journalism for Meritorious Public Service.

OGDEN, ROBERT CURTIS (1836–1913). Merchant. Born in Philadelphia; began work at 15; four years later, he went to New York where he became connected with the firm of Devlin & Co. His business ability was so evident that he soon became a member of the firm, remaining until 1885 when he returned to Philadelphia to take a responsible position in the Wanamaker store. When it was decided to open a branch in New York, Mr. Ogden was placed in charge of the enterprise. Under his management the New York store took a leading place in the retail trade and like Wanamakers in Philadelphia, became very successful. Mr. Ogden remained identified with it until 1907 when he retired. He was greatly interested in many philanthropic enterprises, especially in the promotion of education among all classes in the South. He coöperated with General Armstrong in the founding of Hampton Institute in Virginia, for the education of the negroes and the Indians, and he was a trustee of Tuskegee Institute.

OLIVER, GEORGE T. (1848–1919). Steel manufacturer and publisher. Born in Dungannon, Ireland, of American parents. He was educated at Bethany College, W. Va.; was admitted to the bar in 1871 and practiced for about ten years. He then withdrew from practice and became connected with the steel industry. Until 1899 he was vice-president and then president of the Oliver Wire Company. In 1901 he disposed of all his manufacturing interests, having the previous year purchased the *Pittsburgh Gazette* and the *Pittsburgh Chronicle-Telegraph*. Six years later he bought the *Times* and merged it with the *Gazette* under the name of the *Gazette-Times*. For eighteen years he directed the papers. In 1909 he was appointed a member of the United States Senate to complete the uncompleted term of Philander Chase Knox, and was later elected for the term 1911–1917.

OXNARD, BENJAMIN A. (1855–1924). Manufacturer; born in New Orleans, La.; graduate of Massachusetts Institute of Technology (1875) and influential in promoting beet sugar manufacture. Until 1889 he was engaged in sugar refining in Brooklyn; since that time he has been producing both cane and beet sugar. Now president of the Adeline Sugar Factory Company, Ltd.

OXNARD, HENRY THOMAS (1860–1922). Manufacturer; born in Marseilles, France; graduated at Harvard in 1882; has promoted the beet sugar industry of the United States. He is president of the American Beet Sugar Association, including all the factories in this country.

PABST, FREDERICK (1836–1904). Brewer; born in Saxony, and emigrated to the United States in 1848; educated himself, and married the daughter of Philip Best. For a time he acted as captain of the steamer *Comet* on the Great Lakes. In 1862 he took up brewing and advanced until he became president of the Pabst Brewing Company, owning one of the finest plants in the world.

PENNEY, JAMES CASH (1875–). Chain stores. Born in Hamilton, Mo.; graduated from the high school. When he was 8 years old, his father told him that he must, thereafter, provide his own clothes; by raising first pigs and then watermelons he not only made enough to clothe himself but also saved a considerable sum. At 18 he became a clerk in a store in Hamilton; three years later, he went to Denver where he finally found employment in a Golden Rule Store as a clerk and proved himself so efficient that he was made manager of a newly established store in Kemmerer, Wyoming. Some years after he bought out the store. Later he opened a store in Idaho and one in Utah putting in charge of each a man who had worked under him and to whom he gave the

privilege of buying a one-third interest in the new store. This was the beginning of the Penney chain stores now found in hundreds of cities in the United States. Mr. Penney is chairman of the board of directors of the J. C. Penney Company.

PHIPPS, HENRY (1839–1931). Manufacturer; born at Philadelphia, Pa. At 13 he was working in a store in Pittsburgh, and about 1856 he was promoted to be bookkeeper for Dilworth & Bidwell, spike manufacturers; partner in Bidwell & Phipps, powder agents, and also in Kloman & Phipps, running a small iron mill. Still later he was associated with the Carnegie Brothers in iron and steel manufacture. In the United States Steel Corporation he held the largest interest next to Andrew Carnegie; director United States Steel Corporation, Mellon National Bank, and Philadelphia Rapid Transit Company. Phipps Institute was added to the University of Pennsylvania as a result of his gift of $1,000,000. He contributed $1,000,000 to New York City to be used in the construction of tenement houses and he built a psychiatrical clinic for Johns Hopkins hospital at Baltimore.

PILLSBURY, CHARLES ALFRED (1842–1899). Flour miller; graduated from Dartmouth in 1863, and went into a Montreal house as a clerk, where he stayed until 1869; removed to Minneapolis, where he was employed as a clerk; later his uncle, John S. Pillsbury, who had come to the Falls of St. Anthony in 1855, took him into partnership in his flour mill; introduced the roller process, and extended the business until in 1872 the firm of Charles A. Pillsbury & Company began building the largest mills in the world. In 1889 the firm sold out to an English syndicate which combined all their purchases into the Pillsbury-Washburn Flour Mills Company, of which he was president; was president also of the Minneapolis and Northern Elevator Company, and was state senator (1877–1887).

PLANT, MORTON P. (1852–1922). Capitalist; railway official. He was educated at Russell College, Connecticut, and began his business career at the age of 16 with the Southern Express Company in Memphis. From 1884 to 1902 he was with the plant system of railroads, of which he was vice-president until 1902, when the system was absorbed by the Atlantic Coast Line Railroad, in which he is director; vice-president and director in the Peninsular and Occidental Steamship Company; chairman of board of directors of Southern Express Company; director in Casualty Company of America, Interborough Rapid Transit, Lincoln Trust Company, Union Gas and Electric, etc.; trustee American Surety Company.

POPE, ALBERT AUGUSTUS (1843–1909). Manufacturer; born in Boston, Mass. Began his business career as a shoe clerk. He served so well in the Union army for three years that he was brevetted lieutenant colonel for gallantry in several battles. After the war he went into shoe findings business (1865–1876); in 1877 started the Pope Manufacturing Company for making and selling small patented articles; and at the same time he began to sell imported bicycles; introduced the bicycle manufacturing industry in the United States (1878); founded *The Wheelman* (now absorbed in *Outing*) in the interests of cycling; leader in good roads movement; had large interests in numerous corporations.

PRATT, CHARLES (1830–1891). Merchant and and philanthropist. Born in Watertown, Mass. In 1851 he went to New York and later amassed a fortune in the oil and petroleum trade. In 1887 he founded Pratt Institute in Brooklyn for instruction in the industrial arts and home economics, also Pratt Institute Free Library and Pratt Institute of Library Science.

PROCTER, WILLIAM C. (1862–1984). Ivory soap. Born at Glendale, Ohio; graduated from Princeton in 1883. Immediately after graduation, he began work with Proctor and Gamble Company, soap manufacturers, and became president of the company in 1907; through original advertising methods he has made "Ivory soap—it floats" known the world over. The company under his initiative has introduced participation in the profits of the business by its employees and also a guaranty of fifty weeks of work a year. He has given large sums to Princeton and to various other educational and philanthropic institutions, including a gift of $2,500,000 to the Children's Hospital of Cincinnati for pediatric research.

PULITZER (*pū'lĭt-sĕr*), **JOSEPH** (1847–1911). Publisher and philanthropist. Born in Hungary; came to the United States in 1864 and enlisted in the Union army for a year. Afterwards he went to St. Louis where he became reporter and later proprietor of the *Westliche Post*. In 1878 he laid the foundation of his fortune by buying the run-down *St. Louis Dispatch* which he merged with the *Post* under the name of the *Post-Dispatch*. Under his management the paper became prosperous, the profits running from $40,000 to $85,000 annually. In 1883, he bought the New York *World* which under his guidance won immediate prosperity, bringing its owner wealth and fame. In 1893, Mr. Pulitzer gave $100,000 to Columbia University and in 1903 a $1,000,000 for a school of journalism with a conditional pledge of a million more. In his will be established a series of prizes, known as the Pulitzer prizes, to be awarded annually for letters, the drama, music, and newspaper work.

PULLMAN, GEO. See LEADING INVENTORS.

REA, SAMUEL (1855–1921). Railroad president. Born at Hollidaysburg, Pa.; at 15 he left school and became connected with the engineering department of the Pennsylvania Railroad; except for a short intermission he continued in the service of this road until his retirement. In 1897 he became assistant to the president and was steadily advanced in rank until in January, 1913, he was elected president; in 1925 he retired on a pension and was succeeded by General Atterbury. Two notable achievements stand to Mr. Rea's credit,—one, the building of the tunnel under the Hudson River and the erection of the magnificent Pennsylvania Railroad Station in New York; and, the other, the building of the New York Connecting Railroad including the Hell Gate Bridge over the East River. For his engineering feats he received honorary degrees from several colleges.

RHONDDA (*rŏnd'da*), **LORD.** See THOMAS, DAVID ALFRED.

RINGLING, JOHN (–1936). Circus owner The only one now living of seven brothers who in the late 70's organized a concert troupe, to which was later added acrobats and a menagerie, and which gradually developed into a circus troupe. In 1907 Mr. Ringling bought control of Barnum and Bailey. In 1929 by buying out the American Circus Corporation he became owner of every circus in the United States of any considerable size. He is interested in art; in his museum at Sarasota, Florida, he has an excellent collection of pictures including works of Gainsborough, Romney, Corot, Tintoretto, Rembrandt, and other classicists.

RIPLEY, EDWARD PAYSON (1845–1920). Railway official; born in Dorchester, Mass. After receiving a high school education he went into railroad work in 1869 as clerk in the Boston office of the Pennsylvania Railroad. By 1872 he had risen to be agent for New England and six years later he was Eastern agent, employed by the Chicago, Burlington & Quincy Railroad (1886–1890); third vice-president Chicago, Milwaukee & St. Paul Railway (1890–1895); president Atchison, Topeka & Santa Fe Railway Company since 1896.

ROCKEFELLER, JOHN DAVISON (1839–1937). An American oil magnate, born at Richford, N. Y. At 16 he left school in Cleveland, Ohio, and was a clerk and bookkeeper at $12.50 a month. Started in the oil business on borrowed capital with Samuel Andrews and by combinations had, in 1872, control of one fifth of the oil-refining business in the United States. Formed the Standard Oil Company in 1870 with a capital of a million dollars: the Standard Oil Trust in 1882; dissolved in 1892. His fortune is estimated at $700,000,000 and he is believed to be the richest man in the world. Among his many benefactions are millions to the church, $85,000,000 to education, science, and charity, including $35,000,000 to the New York Educational Board. Within the corporation he controls there are over 1,500,000 employees. In private life he is moral and blameless. His success is attributed to hard work and economy. Though his income exceeds that of any European monarch, his life is one of marked frugality—even approaching penuriousness.

ROCKEFELLER, JOHN DAVISON, JR. (1877–). Capitalist; born at Cleveland, O.; associated with his father in financial enterprises; member board of managers Delaware, Lackawanna & Western Railroad Company; director Standard Oil Company, United States Steel Corporation, American Linseed Company, trustee University of Chicago.

ROCKEFELLER, WILLIAM (1841–1922). Capitalist; born at Richford, N. Y.; was in produce commission trade, first as bookkeeper, then partner; associated with his brother, John D. Rockefeller, in the

oil business; president of the Standard Oil Company of New York; vice-president and director Standard Oil Company of New Jersey; trustee Anaconda Copper Mining Company, Consolidated Gas Company, United States Trust Company, director in several railroads, banks, etc.

ROEBLING, JOHN AUGUSTUS (1806–1869). A famous civil engineer, born in Prussia and educated in the Royal Polytechnic School in Berlin. Came to America and lived on a farm near Pittsburgh (1831); became engaged in many minor engineering works; appointed to survey the route across the Alleghanies adopted by the Pennsylvania Railroad; began manufacture of wire rope, and built a suspension aqueduct across Allegheny River (1844–1845); constructed suspension bridge at Pittsburgh, and four aqueducts on the Delaware & Hudson Canal (1848–1850); established works at Trenton, N. J., and began suspension bridge over the Niagara River in 1851; began Cincinnati suspension bridge (1867); his last task was the bridge over the East River, connecting Brooklyn and New York.

ROEBLING (*rō'lĭng*), **WASHINGTON AUGUSTUS** (1837–1921). Bridge builder. Born in Saxonburg, Pa., son of John Augustus Roebling; was a graduate of the Rensselaer Polytechnic Institute; served in the Union army during the Civil War, rising from a private to a brevet colonel. He aided his father in the building of the suspension bridge across the Allegheny River at Pittsburgh and of the suspension bridge between Cincinnati and Covington. The father had the contract and plans for the building of Brooklyn Bridge but died in 1869 before the actual work was begun; he left the entire construction in the hands of his son who directed it to completion. Mr. W. A. Roebling was for many years president and director of John A. Roebling Sons Co., manufacturers of iron and steel wire and wire rope.

ROSENWALD (*rō'zĕn-wäld*), **JULIUS** (1862–1932), since 1910 president and in 1925 chairman of the board of Sears, Roebuck and Company of Chicago. He has led in many philanthropies, including houses for negroes and the poor, for which he has given large sums.

SARNOFF, DAVID (1891–). Manufacturer and president of Radio Corporation. Born in Minsk, Russia, he was brought to the United States in 1900; he delivered meat, sold newspapers, and did various odd jobs while attending the public schools. In 1906, when his father died, he began as a messenger boy with the Commercial Cables Company at $5.00 a week; with money he saved he bought a telegraph instrument and soon entered the employ of the Marconi Wireless Telegraph Company; later he served as wireless operator on several steamships; was wireless operator at John Wanamaker's, 1910–11. Returning to the Marconi Company, he became by successive steps radio inspector, assistant chief engineer, contract manager, assistant traffic manager and commercial manager. When the Marconi Company was absorbed by the Radio Corporation of America in 1917, he retained his position. In 1922 he was made vice-president and general manager of the Radio Corporation.

SCHWAB, CHARLES M. (1862–1939). Capitalist; born at Williamsburg, Pa.; removed to Loretto, Pa.; drove stage from Loretto to Cresson; entered engineering corps of Edgar Thomson Steel Works; became superintendent Homestead Works; president Carnegie Steel Company, Ltd.; president United States Steel Corporation (1901–1903); president and chairman board Bethlehem Steel Corporation; is also director in important financial enterprises.

SCOTT, THOMAS ALEXANDER (1824–1881). Railway official; born at London, Pa. Employed in 1851 by the Pennsylvania Railroad, he advanced steadily until in 1859 he became vice-president. During the Civil War he was temporarily in the service of the government as assistant secretary of war, rendering invaluable assistance to the Union cause by reorganizing the whole system of transportation. Later returned to the railroad business; was president of various roads; president of Pennsylvania Railroad (1874–1880).

SCRIBNER, CHARLES (1821–1871). Publisher; born in New York City; graduated from Princeton in 1840. After a European trip he started in the publishing business in New York City as partner in Baker & Scribner. The works of many famous authors were published—N. P. Willis, J. T. Headley, Donald G. Mitchell, J. G. Holland, Noah Porter, Horace Bushnell, James McCosh, etc. In 1857 he started the importing house of Scribner & Welford, which published also many educational books. In 1870 *Scribner's Monthly* was established with Dr. J. G. Holland as editor.

SCRIPPS, EDWARD WYLLIS (1854–1926). Publisher. Born at Rushville, Ill. Having obtained some journalistic experience, Mr. Scripps founded the *Cleveland Penny Press* which under his management achieved immediate success. He gradually gained possession of other newspapers in Ohio and elsewhere which later became known as the Scripps-Howard group. In conjunction with Milton A. McRae, he formed the Scripps-McRae Press Association which some twelve years later was merged with another organization under the United Press Association, Mr. Scripps holding a controlling interest. Two years before his death, Mr. Scripps founded and endowed Science Service, a news bureau for the dissemination of scientific news. The Scripps papers form one of the two largest groups of chain newspapers in the country.

SEARS, RICHARD W. (1863–1914). Founder of Sears, Roebuck & Co. Born at Stewartsville, Minnesota; attended grammar school and high school. At 17 he began as a station agent at North Redwood, Minn. In 1886 he started a mail order watch and jewelry business in Minneapolis; three years later he took in Mr. C. A. Roebuck as his partner. Shortly after, the concern moved to Chicago; then in 1890, when he was 27 years of age, Mr. Sears sold the business for $100,000 on condition that he would not within five years establish another mail order business in Chicago under his own name. Mr. Sears returned to Minneapolis and in 1893 formed another company styled A. C. Roebuck & Co.; this soon was changed to Sears, Roebuck & Co. Its first catalog was issued in 1893. The next year other lines of merchandise besides watches and jewelry were added and a large catalog was issued, marked with the retail price of $1.00 a copy. Agents were sent out to sell the catalog from house to house. That same year Mr. Roebuck retired; in 1895 Mr. Sears moved to Chicago, when Mr. Roebuck's interest was purchased by Julius Rosenwald who became vice-president of the corporation then formed. This organization continued until 1906, when, assisted by his friends, Mr. Rosenwald bought out Mr. Sears' interest and Mr. Sears retired from the business, although he was retained on the board of directors and the old name, Sears, Roebuck & Company was kept. Since 1906 the business has had a remarkable growth. The company is now not only the greatest mail order house but one of the greatest retail mercantile institutions in the world.

SELFRIDGE, HARRY GORDON (1864–). English merchant. Born in Ripon, Wis.; began his career in the dry-goods business with a brother of Marshall Field in Jackson, Miss.; moved to Chicago and worked up with the Marshall Field Company until he became a partner and the manager of the retail store; retired in 1904 and established a business of his own in Chicago. In 1906 he went to London and organized the firm of Selfridge and Co., Ltd., wholesale and retail merchants, which opened in 1909. The firm has developed into one of the most successful business enterprises of its kind in the world. Mr. Selfridge wrote a book entitled the *Romance of Commerce* which depicts the development of commerce from earliest times to the present day.

SHAUGHNESSY (*shô'nĕ-sĭ*), **SIR THOMAS G.** (1853–1923). Born in Milwaukee. Went to railroading (1869); taken to Montreal by Sir W. C. Van Horne, when assuming management of Canadian Pacific; became purchasing manager, general assistant manager and vice-president; director in important companies; great worker, phenomenal memory; knighted (1901).

SHAW, HENRY (1800–1889). An English lad opening a store in St. Louis (1820); became wealthy and did great work in botanical gardening on a 276 acre park, having 20,000 trees, library, and museum buildings, etc. He duplicated the famous gardens of Chatsworth House, England, leaving as his monument Lower Grove Park, where he is buried.

SHONTS, THEODORE PERRY (1856–1919). Capitalist; born in Crawford County, Pa. At 20 he graduated from Monmouth College, Illinois, and went immediately into banking at Centerville, Iowa. Later he took up law, and was a member of Drake, Baker & Shonts, practising four years. In 1882 he engaged in railroad construction, built two short lines, and later finished the Indiana, Illinois & Iowa, of which he was chief owner. In 1905–1907 he was chairman Isthmian Canal Commission, resigning to become president of the Interborough-Metropolitan Company of New York.

He is president of the Toledo & Western Railroad, director in the Iowa Central Railroad, American Trust and Savings Bank, and Western Cold Storage Company.

SHOUP, PAUL (1874–). Railway president. Born in California, with a high school education, at 18 he was a ticket and freight agent of the Southern Pacific R. R.; later he became telegraph operator; at 31, assistant general freight agent. In 1912 he was made president of the Pacific Railway Company; in 1925 executive vice president of the Southern Pacific and in 1929, president.

SIEGEL, HENRY (1852–1915). Merchant; born at Eubigheim, Germany; came to the United States (1867); moved to Chicago (1876); established cloak manufacturing firm of Siegel, Hartsfeld & Company, later Siegel Brothers; established department store of Siegel, Cooper & Co.; established Siegel, Cooper Company, in New York (1896); purchased store of Simpson-Crawford Company (1902); manager of six large department stores.

SINGER, IRA MERRITT (1811–1875). Sewing machine manufacturer. Born in Connecticut. When a Yankee peddler, he saw one of Howe's first machines, imitated and improved it, and, in 1851 in a small shop in Boston made the first practical sewing machine. In 1853 he formed a partnership with Edward Clark under the name of I. M. Singer & Co., and opened a factory and office in New York. Ten years later the company was merged into a corporation, the Singer Manufacturing Company.

SLATER, SAMUEL (1768–1835). Often called the "father of American manufacturers," was born in Derbyshire, England. For more than six years he worked under the partner of Arkwright and acquired a thorough knowledge of cotton spinning. In 1789 he emigrated to the United States with the intention of establishing a cotton mill there. British law did not allow him to bring drawings of cotton machinery; he left England secretly lest attempts should be made to prevent him carrying his knowledge and skill to a foreign country. In 1790 he went to Pawtucket, R. I. where he built from memory spinning machinery modeled on the Arkwright system. In 1806, with his brother, Slater constructed extensive cotton mills at what is now Slatersville, R. I. In 1810 there were 100 mills in the United States all constructed after Slater models. In 1812 Slater erected mills at Oxford, Massachusetts, and in 1815–16, he built several woolen mills. In 1799 he established in his mills one of the first Sunday Schools in the United States.

SMITH, LYMAN CORNELIUS (1850–1910). Smith typewriters. Born at Torrington, Conn. After some experience in lumbering and manufacturing, he began the manufacture of typewriters; in 1890 he organized the Smith Premier Typewriter Co. which was afterwards sold out to the Union Typewriter Co., of which he was for a time chairman of the board. He resigned in 1903 and with his brothers, organized the L. C. Smith & Bros. Typewriter Co. He had large financial interests in many other corporations. In 1900 he gave Syracuse University the Lyman Cornelius Smith College of Applied Science.

SOLVAY (*sŏl'vā*), **ERNEST** (1838–1922). Chemical manufacturer and philanthropist. Born in Belgium, the son of a salt refiner of small means, at his death he was reputed to be the richest man in Belgium, and was frequently styled the "Carnegie of Belgium." His prominence and wealth came principally from his originating the Solvay process for the manufacture of soda. The first patent was taken out in 1861. In the beginning the invention was threatened with commercial failure; it was the inventor's great perseverance and energy which finally made it a success. In 1863 soda cost $55 a ton; due to the Solvay process, in 1913 it was but $20 a ton. The method was adopted in Europe and in America, especially at Solvay, N. Y. During the war he took a foremost part in war relief work in Belgium; in recognition of his services he received honors from France as well as from his own country. He left $100,000 to the Universities of Paris and an equal amount to the University of Nancy; he also gave $1,000,000 for educational and philanthropic work in Belgium and to the employees of his firm, the Solvay Society of Brussels.

SPRECKELS, CLAUS (1828–1909). Sugar refiner; born at Lamstedt, Hanover; came to the United States (1846); went to San Francisco (1856), where he conducted a store and later a brewery; established Bay Sugar Refinery (1863); bought sugar properties in Hawaii; invented new refining processes; established a factory at Watsonville, California, and had a beet sugar farm of 1500 acres there; was owner in Oceanic Steamship Company.

SPRECKELS, JOHN DIEDRICH (1853–1921). Merchant; born at Charleston, S. C.; in 1880 founded J. D. Spreckels & Brothers Company, $2,000,000 capital, shipping and commission merchants, owning large fleet of tugs and vessels trading with Hawaii; president of Western Sugar Refining Company, Oceanic Steamship Company, Beaver Hill Coal Company, and other financial enterprises.

STEWART, ALEXANDER TURNEY (1803–1876). Merchant; born at Lisburn, Ireland; came to America in 1823. He had taught school here for two years when a small legacy received enabled him to start in dry goods business. In 1848 he built a store at Broadway and Chambers streets, New York City; 14 years later he built the store at Broadway, Ninth, and Tenth streets for his retail business, keeping the old store for wholesale trade. The new store cost him $2,750,000. At the time of his death the business had branches and agencies in the chief cities of Europe and several mills and factories in the United States.

STINNES (*stĭn'ĕs*), **HUGO** (1870–1924), German financial baron, from a business in which only a few thousands were invested a generation ago, by the end of the World War, secured control of much of the industrial life of Rhenish-Westphalia and had arteries of commerce extending into various parts of the world. After the War he and his companions made much from the continual fall of the value of German money.

STRADIVARI (*strä-dē-vä'rē*), **ANTONIO.** See DICTIONARY OF FINE ARTS.

STRATHCONA (*strath-kō'na*), **DONALD.** See DICTIONARY OF HISTORY.

STRAUS, ISIDOR (1845–1912). Merchant; born in Rhenish Bavaria; in 1854 came to United States; sent abroad (1863), by Georgia Export and Import Company, to assist agents who were to purchase steamers and supplies for shipment to the Confederate States; in 1866 he and his father formed the firm of L. Straus & Sons, importers of pottery and glassware; in 1888 became partner with brother, Nathan, in R. H. Macy & Company; member of firm of Abraham & Straus, Brooklyn (1892); first president New York Crockery Board of Trade; represented New York City on New York and New Jersey Bridge Commission; president Educational Alliance; vice-president J. Hood Wright Memorial Hospital; member Chamber of Commerce; director of numerous financial enterprises; connected with various tariff reforms; as member 53d Congress advised the formation of the Wilson tariff; on board of trustees of many charitable and philanthropic institutions; with his wife perished in *Titanic* disaster.

STONE, CHARLES AUGUSTUS (1867–). Construction engineer. Born in Newton, Mass. In 1888, he received the S. B. degree from the Massachusetts Institute of Technology. The next year with his classmate, Edwin S. Webster, he organized the firm of Stone and Webster to do a general engineering business. The firm has constructed central plants which now supply light and power to one-sixth of all United States citizens; has aided in the revival of the Pacific Mail Steamship service, and has conducted extensive building operations in South America and elsewhere.

SWIFT, GUSTAVUS F. (1841–1903). Packer. Born on Cape Cod, Mass. At 16, with $25 given him by his father, he bought a heifer; he slaughtered it, packed the meat on a cart and sold it from door to door. The business thus begun, expanded until at 35, he was owner of a market in Clinton, Mass. and partner in two other well established meat firms. In 1875 he went to Chicago, where for a while he shipped cattle to his own firms in the East, but he soon conceived the idea of slaughtering the animals in Chicago and shipping the dressed meat. He began to make experimental refrigerator car shipments and after some failures, the project was successful. By hard work, elimination of waste, and an increased utilization of every part of the animal, Mr. Swift built up an immense business in Chicago, with smaller plants in Omaha, Kansas City, and St. Paul. By 1903, the year of his death, his company had become one of the two largest packing concerns in the United States. Because of his part in making the shipment of western dressed meat to the East a commercial success throughout the year, Mr. Swift is regarded as a real pioneer of the modern packing industry.

SWIFT, LOUIS (1861–1937). Packer. Born in Sagamore, Cape Cod, Mass. After the death of his father, Gustavus F. Swift, in 1903 he became president of Swift & Co. Under his administration the business has continued to expand. In his address to the stockholders in January 1930, Mr. Swift reported that during the preceding year, the company's total sales of meat, butter, eggs, cheese, poultry, and all by-products was more than a billion dollars, that there are now 39 local packing plants in the United States and Canada, 17 fertilizer plants, 7 cotton seed oil mills, and 13 shortening plants.

TAYLOR, FREDERICK W. (1856–1915). Production expert. Born at Germantown, Pa., and educated at Phillips Exeter Academy and abroad. He became an apprentice in a small Philadelphia machine shop and studied at evening schools. When a gang boss with the Midvale Steel Company, he began investigation in the field of management, and studies in what constitutes a day's work; thus he elaborated what is now known as scientific management. He also found a new method of tempering steel so as to allow metal cutting at a high speed. Much of his life was devoted to spreading the doctrine of scientific production which, by increasing production, would result in increased profits and higher wages in American industry.

TEAGLE (*tē'gl*), **WALTER CLARK** (1878–). President of the Standard Oil Co. of N. J. Born in Cleveland, Ohio; graduated from Cornell University in 1900; began his career in the oil business by driving a tank car for the firm in which his father was a partner. At 23 he became vice-president of the Republic Oil Co., and two years later entered the export department of the Standard Oil Company. In 1910 he was elected director, and in 1917 president of the Standard Oil Company of N. J., the largest of all the United States oil companies.

THOMAS, DAVID ALFRED, VISCOUNT RHONDDA (1856–1918). Welsh coal king. Born in Monmouthshire, Wales; graduated from Caius College, Cambridge, in 1880, and three years later received his master's degree. Having made a thorough study of the coal business, he entered his father's firm, Thomas and Davey, coal sales agents, and the same year entered Parliament for Cardiff. In 1910 he became the senior member of the firm; he became not only the largest coal operator in Great Britain, but the largest exporter of coal, controlling 20 depots in various parts of the world; in his collieries more than 50,000 men were employed and the output was more than one-fourth the production of South Wales. He was known as the "Welsh Coal King." In the World War, Mr. Thomas served his government in various capacities until 1917 when he was made Food Controller, and in this position rendered invaluable service. In 1916 he was elevated to the peerage as Lord Rhondda.

THOMAS, SETH (1785–1859). Clock maker. Born in Walcott, Conn.; he had few educational advantages, being at an early age apprenticed to a carpenter and joiner in New Haven. Later with two partners, he began the manufacture of clocks at what is now Thomaston, Conn. Finally he became the proprietor of an establishment which grew to be one of the largest and most famous clock factories in the world.

THORNTON, HENRY (1871–1933). Railroad president. Born in Indiana, he was graduated from the University of Pennsylvania in 1894. Immediately after graduation he began as a draftsman in one of the offices of the Pennsylvania Railroad; later became superintendent of several roads. In 1914 he was appointed manager of the Great Eastern Railroad, England; was a member of the executive commission of general managers which controlled and worked the English railways during the war; in 1918 was appointed inspector general of transportation with rank of major general. In 1919, he became a naturalized British subject. Has been president of the Canadian Railways since 1922. In 1930 he received the Guggenheim award given annually to the most famous alumnus of the University of Pennsylvania.

THYSSEN, AUGUST (1842–1926). German industrialist. Born in Eschweiler, Germany. With his brother, he founded at Duisburg, a firm for the manufacture of hoop iron. This became very prosperous during the Franco-Prussian War. After the war he established a factory at Mulheim and began the policy of grouping interdependent industries. He formed a metal "vertical trust" which had interests in the iron fields of Lorraine, in other raw materials for his products, and in shipping and electrical work. The power of this trust was strengthened by the World War, and Thyssen became an industrial autocrat. He conducted the business personally until within four years of his death.

TIFFANY, CHARLES LOUIS (1812–1902). Merchant. Born at Killingly, Conn. When a young man, he removed to New York where within ten years he developed a successful jewelry business. In 1848 when the price of diamonds had fallen 50%, he purchased as many as he could get. As a result he made an immense profit and became established as one of the principal diamond merchants of the world. He made a specialty of importing historic gems, jewelry, and art works. He established branches in London and Paris, and in Switzerland owned a watch factory. The sterling silver standard .925 fine adopted by him in 1851, has become the recognized standard throughout the world.

VAIL (*vāl*), **THEODORE N.** (1845–1920). Telephone. Born in Carroll County, Ohio; his parents moved to New Jersey where he was educated at Morristown Academy. In 1868 he went west as a telegraph operator of the Union Pacific in Wyoming; at 31 he had become general superintendent of the Railway Mail Service. That same year Bell invented the telephone and Mr. Vail became much interested in its great possibilities. Against the advice of his friends, he resigned his position in the mail service to head the first American Bell Telephone Company. He became especially interested in long distance telephony and established many intercity lines. In 1883 he resigned as head of the original company to take charge of the newly formed American Telephone and Telegraph Company which at first made a specialty of long distance, but later was the nucleus of a great telephone combine. In 1893, having severed his connection with the telephone business, he went to Buenos Aires where, with the aid of British capital, he purchased the existing street car lines, built a power house, electrified the lines, brought cars from the United States, and gave the city a modern traction service. Mr. Vail returned to the United States in 1904; three years later, he again became head of the American Telephone and Telegraph Co., a position he retained until his death. Because of his giant physical stature and the magnitude of his achievement, Mr. Vail was known as "the biggest man in the telephone world."

VANDERBILT, WILLIAM HENRY (1821–1885). Capitalist and financier; born at New Brunswick, N. J., son of Cornelius Vanderbilt and father of Cornelius II. Began as bank clerk in New York. As receiver for the Staten Island Railroad he cleared it from debt in two years and became its president. After that his father made him partner and manager in all his railroad and financial transactions, vice-president of the New York & Harlem, and of the New York & Hudson River Railroad. At his father's death in 1877 he became president, extended the system, and acquired the "Nickel Plate" and the West Shore Railroad.

VANDERBILT, WILLIAM KISSAM (1849–1920). Capitalist; born on Staten Island, son of William H. Began in the office of the treasurer of the Hudson River Railroad; second vice-president New York Central & Hudson River Railroad (1877–1883); chairman board directors Lake Shore & Michigan Southern Railway from 1883; president New York & Harlem Railroad, and president or director in numerous other corporations.

VAN HORNE, SIR WILLIAM CORNELIUS (1843–1915). Born near Joilet, Mich., of old patroon family. Began life as telegraph operator; rose to division superintendent of Chicago & Alton Railway (1867); general superintendent St. Louis, Kansas City & Northern Railway (1872); general manager Southern Minnesota Railway (1874); general manager Canadian Pacific Railway (1880) then projected. He established the 9,000 miles of road and outlined the steamship extension to China and Japan, becoming president (1888–1889). Created K.C.M.G. (honorary) (1894). Example of American and Canadian product.

VAUCLAIN, SAMUEL MATTHEW (1866–1940). President Baldwin Locomotive Works. Born in Philadelphia. As a mere lad, he became apprentice in a shop of the Pennsylvania Railroad at Altoona. He was with the Baldwin Locomotive Works for many years beginning as foreman. Since 1919 he has been president. He was the driving force for many years in various official capacities in making this company the largest manufacturers of locomotives in the world; received awards at the Paris Exposition in 1900; Buffalo Exposition, 1901; St. Louis Exposition, 1904; Seattle Exposition, 1908.

WANAMAKER, JOHN (1838–1922). Merchant; born at Philadelphia, Pa. At 14 he was errand boy

in a bookstore; a retail clothing salesman (1856–1861). In the latter year he united with Nathan Brown to start a clothing store in Philadelphia, which was enlarged to a department store in 1876. Twenty years later he succeeded to the business of A. T. Stewart with a New York department store, and his two stores were the largest in the United States. He declined nomination for 48th Congress, also candidacy for mayor of Philadelphia (1886); was presidential elector (1888); member National Republican Executive Committee (1889–1893); United States postmaster general (1889–1893). He was interested in religious work, and has done much to promote it.

WARD, AARON MONTGOMERY (1843–1913). Merchant. Born in Chatham, New Jersey; attended school until 11; was then employed at various odd jobs. Later when his family moved to St. Joseph, Mich., he entered a general merchandise store there, at a salary of $5 a month and board; within five years he had been placed in charge of the store with a salary of $100 a month and board. In 1865, Mr. Ward went to Chicago and was there employed in various capacities by several dry goods firms. In 1872 he began in the mail order business in a small way with a capital of $2,000, part of which was borrowed. At first, a one-page handbill, giving various items of goods and their prices, was sent out several times a year. In 1874 the first catalogue was issued, a small pamphlet of but eight pages. By 1876 the catalogue had increased in size to 150 pages and for the first time pictures of the merchandise were shown. That year the sales amounted to $300,000 and each succeeding year they rapidly increased. Soon after starting his business Mr. Ward took his brother-in-law, George R. Thorne, into partnership; these two men and their families carried on the business as a partnership until 1888 and then as a corporation until Mr. Ward's death in 1913; that year the value of the sales amounted to $40,000,000. Mr. Ward has often been called the "Father of the Mail Order Business."

WEDGEWOOD, JOSIAH (1730–1795). English manufacturer of pottery. Born in Staffordshire. When less than ten years of age, he was taken from school and set to learning the elements of pottery making. After acquiring a thorough knowledge of all details of the business, in 1762 he began manufacturing for himself. He devoted much attention to improving the Staffordshire ware then made; within a few years he succeeded in making the best pottery the world had seen. Having built up a flourishing business he opened the splendid works near Hanley which he named "Etruria." There he began making artistic pottery and produced some of the most beautiful examples of pottery ever made. He employed artists of ability to make his designs, the most famous of them being John Flaxman. Wedgewood has been pronounced "the most successful and original potter the world has ever seen."

WELCH, CHARLES EDGAR (1852–1926). Manufacturer. Born in Westfield, N. Y.; educated in the common schools. For twenty years he practised dentistry in Philadelphia, and was one of the organizers of the Welch Dental Company there. A staunch prohibitionist, in 1869 he began the manufacture of grape juice as a substitute for intoxicating beverages, and this product brought him national fame. In 1916 he ran for governor of New York on the prohibition ticket; he was mayor of Westfield for six terms; he was long a member of the Board of Foreign Missions of the Methodist Episcopal Church and was four times a delegate to its general conference.

WESTINGHOUSE, GEORGE (1846–1914). Inventor and manufacturer; born at Central Bridge, N. Y.; removed to Schenectady (1856). His inventiveness showed itself early, when he was a boy in his father's machine shop and invented a rotary engine. He served through the Civil War in the Union cavalry and as assistant engineer in the navy, and then went to college for a year. A very long list of valuable inventions stands to his credit, mostly railway, steam engine, and electrical improvements; but his greatest service to the public has been the invention of the Westinghouse air-brake and automatic railway signals. He has been at the head of many great engineering feats, especially the building of the huge electrical generators at Niagara Falls, and has received recognition by several foreign decorations. Thirty corporations of which he was president are capitalized at $120,000,000 and employ 50,000 persons. Elected trustee Equitable Life Assurance Society of United States (1905).

WHITNEY, HARRY PAYNE (1872–). Capitalist; born in New York; graduated Yale (1894); married Gertrude, daughter of the late Cornelius Vanderbilt; director Guaranty Trust Company, Guggenheim Exploration Company, National Bank of Commerce, Newport Trust Company, Plaza Bank, Raquette Lake Railway Company, member New York Zoölogical Society.

WILLARD, DANIEL (1861–). Railway president. Born in North Hartland, Vt.; received a high school education, and studied one year at the Massachusetts Agricultural College. In 1879 he entered railway service, and served several roads in many capacities, steadily advancing in rank, until in 1910 he became president of the Baltimore and Ohio, then in a run-down condition. In a magazine article published in 1929, Mr. Edward Filene ranked Mr. Willard among the ten greatest business men of America, and paid this tribute to him: "Mr. Willard has demonstrated his business leadership on every front. Under discouraging conditions, he has transformed the Baltimore and Ohio into a most progressive system, known throughout the country not merely for its excellent schedules, but for fine service of every kind. I doubt that even Mr. Willard could have done this, however, except for his far-sighted coöperation with the rank and file of his employees organized and trained in the school of trade unionism."

WILLYS, JOHN NORTH (1873–1935). Automobile manufacturer. Born in Canandaigua, New York; received a common school education; began in the bicycle business; later became interested in automobiles and started in a small way with $200 capital. In 1907 he bought the plant of the Overland Automobile Company and in 1909 that of the Pope Company in Toledo, combining both into the Willys-Overland Company of Toledo which turns out the Willys-Knight and Whippet cars. In July, 1929, he resigned the presidency of the company, and sold his shares for, it is said, $20,000,000; in 1930 he was appointed ambassador to Poland.

WOODRUFF, ROBERT W. (1889–). President Coca Cola Co. and White Motor Co. Born in Columbus, Ga. Educated at Georgia Military Academy and Emory University. Began as mechanic in a foundry; later became salesman; at 24 he went to the White Motor Co., where he remained ten years, working up to the position of vice-president. He left to become president of the Coca Cola Company. In 1929 was made president of the White Motors and is now president of both corporations.

WOOLWORTH, FRANK WINFIELD (1852–1919). Merchant. Born near Rodman, N. Y. In 1879 he opened in Utica, N. Y., the first "five cent store" but it did not succeed. The next year he opened a "five and ten cent store" at Lancaster, Pa. This was a success and was followed by the establishment of a similar store in Harrisburg, then in other cities. In 1911 the F. W. Woolworth Co. was incorporated and Mr. Woolworth became president. In 1928 there were 1724 stores, located in every state in the Union, in Canada, and in Cuba; the F. W. Woolworth Co. Ltd. of England started in 1910, had 330 stores, and the F. W. Woolworth Co. in Germany started in 1927, had 27 stores. In 1912 the famous Woolworth Building was erected in New York; up to that time the tallest building in the world, with the exception of the Eiffel Tower.

WRIGLEY, WILLIAM, JR. (1861–1932). Chewing gum king. Born in Philadelphia, Pa.; received a common school education. He at first worked for his father, then in 1891 removed to Chicago and began business for himself. Later his company absorbed several other concerns, and was incorporated under the name of the William Wrigley Jr. Company of which he is president. He originated the Spearmint chewing gum—the sign of the arrow, and became the largest manufacturer of chewing gum in the world.

ZUKOR, ADOLPH (1873–). Motion picture producer. Born in Reise, Hungary; came to New York at the age of 15 and attended public school there. After working at various occupations, he became connected with the theater in 1904, and later turned his attention to the motion picture business in which he was a pioneer producer. It was his idea to bring famous names to the screen in famous plays. The success of his exhibition of Sarah Bernhardt in Queen Elizabeth in 1912 indicated the merit of the idea. Mr. Zukor was founder of the Famous Players Film Co., and is now president of the Paramount Famous-Lasky Corporation. His influence has been felt throughout the entire motion picture industry.

EDUCATORS AND SCHOLARS

ABBOTT, EDWIN (1838–1926). A celebrated English Shakespearean scholar and theologian; assistant master in King Edward's School in Birmingham; head master of the City of London School, which he made one of the best day schools in London (1865–1880); his works include the well-known *Shakespearean Grammar*.

ABELARD (*ăb'ĕ-lärd*), **PIERRE** (1079–1142). The boldest thinker of the twelfth century; was born in France. He wandered about, seeking masters and opponents, and by this method of controversy did more than any one else to increase the love of study and intellectual pursuit in Paris. Everything he did then caused adverse criticism, but his example as an independent teacher led to the founding of schools and universities.

ACTON, JOHN EMERICH EDWARD DALBERG (1834–1902). Born in Naples of an English Roman Catholic family; the greater part of his education was obtained at Munich under the celebrated Dr. Döllinger, whose Old Catholic ideas he imbibed; he traveled widely and became master of the chief modern languages; when 25 he settled in England where he succeeded the famous Newman as editor of the Roman Catholic monthly, the *Rambler*, later merged in the *Home and Foreign Review*. Acton's independence of thought and liberality of criticism brought him into conflict with the Roman Catholic heirarchy, and rather than be disloyal either to his own honest opinions or to his church he discontinued the *Review*. In 1870 he zealously opposed the dogma of papal infallibility, but did not, however, join the seceding Old Catholic party. He became recognized as the leader of the Liberal Roman Catholics in England and acquired both at home and abroad a reputation for profound learning. In 1895 he was appointed Regius Professor of Modern History at Cambridge. His inaugural address on *The Study of History*, afterwards published, made a great impression, and is today his most widely known work. The great *Cambridge Modern History*, although he did not live to see it, was planned under his editorship. He was one of the most deeply learned men of his time, and while he himself wrote little, he exercised a far-reaching influence on others.

ADAMS, CHARLES FRANCIS (1835–1915). Educator, financier and historian; born in Boston, Mass., son of Charles Francis Adams (q. v.); educated at the Boston Latin School and at Harvard; served in the Civil War (1861–65) and was mustered out with the rank of brevet brigadier-general. His family letters during this period were published in 1920 under the title *A Cycle of Adams Letters 1861–65*. After the war, Mr. Adams became interested in railroad problems and wrote a number of articles exposing the criminal acts of those who were exploiting the railroads for their own personal gains. These articles attracted great attention; published in a volume entitled *Chapters of Erie and Other Essays*, they have held their place in the literature on railroads. In 1869 Mr. Adams was appointed one of the three members of the newly established Massachusetts Board of Railroad Commissioners; he proved himself most proficient and gained the confidence of both operators and the public. In 1878 he became chairman of the government directors of the Union Pacific Railroad and, in 1884, was made president of that road, but was ousted six years later by Jay Gould and his following. During his administration, from a road on the verge of bankruptcy, the Union Pacific was raised to a solvent and efficient system. Mr. Adams lived for many years in Quincy, Mass., the home of his paternal ancestors. There he took active part in the affairs of the town; he was almost wholly responsible for he introduction into the schools of the famous *Quincy System*, which practically revolutionized the methods of teaching reading and writing. Mr. Adams' book, *The New Departure in the Common Schools of Quincy*, did much to disseminate knowledge of the new methods which were widely studied and imitated throughout the whole country. Outside of the large business enterprises in which he was engaged and his interest in public welfare, Mr. Adams devoted the greater part of his later years to historical study and writing. He was for 24 years a member of the Board of Overseers of Harvard College; his ideas on college education were set forth in *A College Fetich* (1883), a protest against the compulsory study of dead languages; and in *Some Modern College Tendencies* in which he pointed out the complete separation of teacher and student and the lack of personal influence of instructors. Mr. Adams was also the author of many historical essays.

ADAMS, CHARLES KENDALL (1835–1902). Born in Derby, Vt. and attended the district school there. In 1857 with but a very poor preparation, he entered the University of Michigan. There he found an inspiring teacher and helpful friend in Andrew D. White, and by virtue of hard work was able to graduate successfully in the class of 1861. From 1863 to 1867 he was assistant professor of history at the University of Michigan; then, after a year and a half spent in study abroad, he was made full professor. He established an historical seminar which proved of great value in stimulating the study of history and political science. In 1885 Mr. Adams was called to Cornell University to succeed Andrew D. White as president; he occupied this position until 1892 when on the recommendation of Mr. White, he was chosen president of the University of Wisconsin, where his greatest work was done. He built up a strong faculty and was successful in obtaining liberal grants of money for the erection of new buildings. His educational outlook was broad and his leadership inspiring. A favorite saying of his was: "A university is chiefly an inspiration and an opportunity." On account of failing health Mr. Adams was obliged to resign his presidency in 1901.

ADAMS, HENRY CARTER (1852–1921). Born in Iowa; graduated at Iowa College; was lecturer at Cornell, University of Michigan, and Johns Hopkins, and from 1887, professor of political economy and finance at the University of Michigan; was statistican of the Interstate Commerce Commission, and president of the Economic Association.

ADLER, CYRUS (1863–1940). College president. Born in Van Buren, Ark.; at 19 graduated from the University of Pennsylvania; received the Ph. D. degree from Johns Hopkins in 1887, and for about 11 years taught Semitic languages at that institution; later he was connected with the Smithsonian Institution. In 1908 he became president of Dropsie College for Hebrew and Cognate Learning at Philadelphia; was acting president of the Jewish Theological Seminary of America, 1919–24, and in 1924 was made president. Author of many treatises on Semitic philology, Assyriology, Oriental archaeology, and comparative religion; also of the books, *International Catalogue of Scientific Literature*, *The Shofar*, and *Jews in the Diplomatic Correspondence of the United States*.

ADLER, FELIX (1851–1933). German-American educator and reformer; professor of Hebrew at Cornell University (1874), and in 1876 founded Society of Ethical Culture. His principal literary works are *Creed and Deed* and *The Education of Children*.

AGRICOLA (*ă-grĭk'ō-lă*), **RUDOLPH** (1443–1485). A distinguished Dutch humanist; educated at the Universities of Louvain and Paris, and studied in Italy. After 1482 he was very influential in promoting the popularity of Greek and Roman literature. He was a forerunner of Erasmus. His most important work is *De Inventione Dialectica*.

ALBERTUS (*ăl-bĕr'tŭs*), **MAGNUS, COUNT OF BOLLSTADT** (1193–1280). A Dominican friar; was a celebrated teacher of science, theology, and philosophy. He received a bishopric, but retired to a convent in Cologne to devote himself to literary pursuits. He wrote a number of works, principally on *Aristotle*, the best *Summa Theologiae* and *Summa de Creaturis*.

ALCOTT, AMOS BRONSON (1799–1888). An American lecturer. In 1828 he became an educational reformer, establishing a school in Boston which attracted much attention by the novelty of the methods used. His teaching was largely by the conversational method, but he met with so much opposition that he gave up the school and removed to Concord, where he promulgated his views on education, society, civics, and theology, through lectures in Boston and vicinity. He tried to found a community in Harvard, Mass. He published *Concord Days*, *Table Talk*, *Sonnets and Canzonets* and an *Essay on R. W. Emerson*.

ALCUIN (*ăl'kwĭn*) or **FLACCUS ALBINUS** (735–804). The most distinguished scholar of the eighth century, was an Englishman. Charlemagne made his

acquaintance, invited him to his court, himself became his pupil, and established the Palatine School at his court, committing its supervision to Alcuin. Alcuin retired to the abbey of St. Martin in Tours, in 796, teaching clerics and the laity alike, for the love of it. He left many copies of the new books of that time, besides numerous theological writings, works of his own. He was the educational light of the age of Charlemagne.

ALDERMAN, EDWIN ANDERSON (1861–1931). President of the University of Virginia; born in Wilmington, N. C.; superintendent of Goldsboro, N. C., schools; professor of English in the State Normal College; professor of pedagogy in, and later president of, the University of North Carolina; president of Tulane University; author of several historical books.

ALLEN, WILLIAM (1784–1868). An American author; born in Pittsfield, Mass. He prepared the *American Biographical and Historical Dictionary*, the first work of general biography written in the United States. The first edition contained but 700 names; the third, published in 1857, contained over 7,000. He was president of Dartmouth College (1817–1820), and of Bowdoin (1820–1850).

ALZOG (*älʹtsōk*), **JOHANN BAPTIST** (1808–1878). Born at Ohlau in Silesia; studied at Breslau and Bonn; ordained a priest of the Roman Catholic Church in 1834. In 1853 he became professor of church history at the University of Freiburg, a position he held until his death. His fame rests chiefly on his *Handbuch der Universal-Kirchengeschichte*, reprinted under various titles and translated into several languages. There is an English translation entitled *A Manual of Church History*. This work is accepted as the best exposition of Catholic views in opposition to the Protestant manual by Karl August von Hase.

AMES, JOSEPH SWEETMAN (1861–). College president. Born at Manchester, Vt.; received the degree of A. B. from Johns Hopkins University, 1886, and Ph. D., 1890; successively assistant, instructor, professor of physics and head of the department; director of the laboratory of physics 1901–1926; was made provost of the University in 1926, and elected president in 1929,—thus beginning as a student, and finally becoming head of his Alma Mater. Author of numerous works on physics, including *Theory of Physics, The Constitution of Matter, General Physics* and others. Served on various commissions during the World War; member of the Royal Institute, American Physical Society, Franklin Institute, and other societies.

ANDREWS, ELISHA BENJAMIN (1844–1919). A native of Hinsdale, N. H. He was successively pastor of a Baptist Church; president of Denison University; professor of homiletics in Newton, of history and political economy at Brown University and later at Cornell; was president of Brown University (1889–1898); was superintendent of the Chicago schools for two years. After that he was chancellor of Nebraska University until he resigned in 1908. He published several books, among them *Institutes of Constitutional History, An Honest Dollar, Wealth and Moral Law*, and *History of the United States in Our Own Time*.

ANGELL (*ānʹjĕl*), **JAMES BURRILL** (1829–1916). Born in Scituate, R. I.; professor of modern languages at Brown; editor of the Providence *Journal* for several years; president of the University of Vermont (1866–1871); president of Michigan University (1871–1910); twice had leave of absence to accept important diplomatic missions, first to China to procure a revision of treaties between that country and the United States, second to Turkey on a similar mission. He was appointed to help arrange a treaty with Great Britain upon the fisheries questions. Regent of Smithsonian Institution (1887–1912). He wrote *Progress in International Law* and *The Higher Education*.

ANGELL, JAMES ROLAND (1869–). College president. Was graduated from the University of Michigan, of which his father was president for many years, in 1890; became assistant professor, professor, senior dean, and dean of all the university faculties at the University of Chicago, from 1894 to 1919. In 1918–1919 he was acting president of the University, then did important work in connection with The National Research Council, and as president of the Carnegie Corporation, until he was elected president of Yale in 1921. Dr. Angell held various earned and honorary degrees and was the author of several important works on psychology.

ANTHON, CHARLES, LL.D. (1797–1867). Classical scholar and teacher; born in New York City. Served as tutor and professor of Greek and Latin for nearly fifty years in Columbia College. He was chiefly remembered by his annotated editions of numerous classical authors, long used here and in England as school and college text-books. He published also a new edition of Lemprière's *Classical Dictionary* and a dictionary of Greek and Roman antiquities.

APGAR, AUSTIN CRAIG (1838–1908). Born at Peapack, N. J., and was graduated at the New Jersey State Normal School, where he taught. Author of *Geographical Handbook, Geographical Drawing Book, Trees of the Northern United States*, and *Birds of the United States*.

AQUAVIVA (*ä-kwa-vīʹva*), **CLAUDIUS** (1543–1615). An Italian, became the head of the order of Jesuits at the age of 38, and was chiefly responsible for its organization. In 1584 he appointed a commission of six Jesuits to frame rules for regulating the studies of the order. The result, after revision and approval by Aquaviva, was *Ratio Atque Institutio Studiorum Societatis Jesu*, a famous pedagogical book.

ARBER, EDWARD (1836–1918). English scholar and educator. Born in London; largely self-educated; clerk in the admiralty from 1854 to 1878; lecturer on English at University College; professor of English at Mason College, Birmingham; received the honorary degree of D. Litt. at Oxford in 1905. He rendered remarkable service to English literature in a series of reprints of the works of many English authors, formerly only accessible in rare or expensive editions. Among others may be mentioned Ascham's *Toxophilus*; Gosson's *School of Abuse; English Garner*, which includes rare old tracts and poems; the *Works* of Captain John Smith of Virginia; and an invaluable bibliography, *A Transcript of the Registers of the Stationers Company from 1553 to 1640*.

ARNOLD, SARAH LOUISE (1859–). Born in Abington, Mass. She taught in several states, and then became successively principal of the training school in Saratoga, N. Y.; supervisor of schools in Minneapolis and Boston; dean of Simmons College after 1902; author of *Waymarks for Teachers, Stepping Stones to Literature, Reading—How to Teach It*, and *The Mother Tongue*.

ARNOLD, THOMAS (1795–1842). The celebrated head master of Rugby; born on the Isle of Wight. His success was due to his endeavor to apply the principles of Christianity to school life. His literary fame rests upon his *History of Rome*.

ASCHAM (*ās'kăm*), **ROGER** (1515–1568). Born in Yorkshire, Eng. Having pursued the study of the classics, especially Greek, with great ardor, he was appointed by the University to read Greek lectures. In 1548 became the tutor of the Princess Elizabeth in languages; was Queen Mary's Latin secretary, and Elizabeth retained him as tutor and secretary until his death. His treatise on classical education, *The Schoolmaster*, was published in 1570.

AVERY, ELROY McKENDREE (1844–). Educator; born in Michigan; principal of high and normal schools; author of a series of text-books on physics which are used in the public schools throughout the country; also author of *History of the United States and Its People* in 12 volumes.

AYDELOTTE, FRANK (1880–). College president. Born at Sullivan, Indiana; A. B. from Indiana University, and A. M. from Harvard; appointed Rhodes scholar from Indiana to Oxford University in 1905, and received the degree of Bachelor of Literature from Oxford in 1908; teacher of English at various institutions, including Indiana University, Massachusetts Institute of Technology, etc.; elected president of Swarthmore College in 1921. Identified with the movement for raising scholarly standards in American colleges, especially at Swarthmore where honor courses of study were introduced; author of *Elizabethan Rogues and Vagabonds; College English; The Oxford Stamp, Oxford of Today*, and various addresses and magazine articles.

AYRES, LEONARD PORTER (1879–). Born in Niantic, Conn.; a graduate of Boston University in 1902, and received his Ph. D. from the same institution in 1910; was connected with the schools in Porto Rico for six years; in 1908 he became director of the departments of education and statistics of the Russell Sage Foundation, a position he held for 12 years, when he went to the Cleveland Trust Company as vice president. During the World War, he was chief

statistician of the A. E. F.; author of many treatises on educational subjects, among them *Medical Inspection of Schools, Laggards in Our Schools, Open Air Schools, The Measurement of Spelling Ability, School Buildings and Equipment, Child Accounting in the Public Schools,* and *Index Number for State School Systems.*

BACON, BENJAMIN WISNER (1860–1932). Born at Litchfield, Conn.; received his preparatory education in Germany and Switzerland; graduated from Yale in 1881, and from the Yale Divinity School in 1884. That same year was ordained in the Congregational ministry, and was pastor of Congregational churches until 1896. In 1897, became professor of New Testament criticism and exegesis at Yale University. Recipient of honorary degrees from American and foreign universities; author of many standard works on Biblical criticism: *The Genesis of Genesis, Triple Tradition of the Exodus, The Story of St. Paul, Commentary on Galatians, The Fourth Gospel in Research and Debate, Is Mark a Roman Gospel?, Jesus and Paul,* and others.

BACON, FRANCIS (BARON VERULAM) (1561–1626). A celebrated English philosopher. He was the first of his time to make the method of induction the object of investigation, and began the reform of existing sciences and the harmonizing of all knowledge. By his *Essays, Advancement of Learning,* and *Novum Organum,* he directed the attention of learned men to the reform of school methods. He exerted a wonderful influence on the scientific thought and teaching of the European scholars who succeeded him. See INDEX for mention in other departments of this book.

BACON, ROGER. See under SCIENTISTS.

BAEDEKER, (*bē'da-kar*), **KARL** (1801–1859). German publisher of guide-books. Born at Essen. He established a printing business in Coblenz, where in 1839 he published a traveler's handbook for Belgium and Holland. This was succeeded by similar books for Germany and Austria, for Switzerland, and other countries until this famous series now includes guide-books for travel in practically every civilized country in the world. They are issued in German, French, and English. After the death of Karl, the business was carried on by his son, and in 1872, was moved to Leipzig.

BAILEY, HENRY TURNER (1865–). An American art teacher, lecturer, and author; born at Scituate, Mass. After being supervisor of drawing in Lowell, was agent of the Massachusetts State Board of Education, in the interest of Industrial Drawing; official representative for the United States to the International Congress of Public Art at Brussels in 1898. He is the author of *First Year in Drawing, The Blackboard in Sunday School, The Great Painters' Gospel,* and editor of *School Arts Book.*

BAILEY, NATHAN or **NATHANIEL** (? –1742). English educator and lexicographer. Was master of a school at Stepney, near London. His fame rests upon his *English Dictionary,* published about 1721; it was far better than any preceding work of the kind and was the basis of Johnson's famous *Dictionary.*

BAKER, GEORGE PIERCE (1866–1935). Received his A. B. from Harvard in 1887 and a doctorate in literature from Allegheny College in 1915. He was an instructor and after 1905 a professor of English and of Dramatic Literature at Harvard; called to Yale in 1925 to organize a department of dramatics in the School of Fine Arts and establish a university theatre. As a director of the "47 Workshop," a course in playwriting at Harvard, Mr. Baker trained some of the prominent younger dramatists of America; he also assisted in various movements looking toward the dignity and professional honor of dramatic composition. In 1921 he wrote *The Pilgrim Spirit* and directed the production of this pageant for the Tercentenary Celebration at Plymouth, Mass. Previously he had made notable contributions to the literature of argument in his book *The Principles of Argumentation,* for college courses in debating, and in his *Development of Shakespeare as a Dramatist* and *Dramatic Technique,* a discussion of fundamentals in play construction.

BALDWIN, JAMES MARK (1861–1934). Psychologist and author; was born in South Carolina, educated at Princeton, and received several honorary degrees, including the first honorary Sc. D. ever given by Oxford University. He was successively professor of philosophy at Lake Forest College, University of Toronto, Princeton, Johns Hopkins, and the National University of Mexico. From 1913 he devoted himself to lecturing and teaching abroad, being a member of many learned societies and receiving several decorations, including the Cross of the Legion of Honor, bestowed in person by the president of France. Besides being editor of the *Psychological Review* for fifteen years, he and assistants compiled the *Dictionary of Philosophy and Psychology,* completed in 1906. Some of his original works are *Handbook of Psychology, Story of the Mind, Darwin and the Humanities, History of Psychology, American Neutrality.*

BALLIET, THOMAS M. (1852–). Educated at Franklin and Marshall College, and at Yale; taught for several years, and then for a year devoted his time to lecturing on educational subjects in the West; was superintendent of schools in Reading, Pa., for two years, and in Springfield, Mass., for seventeen years. He wrote and lectured much with inspiration and wide influence. The manual training movement found him one of its earliest and most ardent supporters. He became dean of the School of Pedagogy in New York University, and associate editor of the *Pedagogical Seminary.*

BALLOU (*ba-loo*), **WILLIAM HOSEA** (1857–1937). Born in Hannibal, N. Y.; studied at Northwestern University and the University of Pennsylvania; specialized in the natural sciences, and was identified with several government surveys in the Far West; owner and editor of *Science News Service;* advocate of Louis Agassiz' theory of the multiple origin of man, and species of animal and plant life; discoverer of many new species of fungi, and recorded many samples of cancer in reptiles and fish. Ballou was also a leader in the Universalist denomination; pastor of the Second Universalist Church in Boston from 1817 to his death. He initiated and edited two periodicals and in *Examination of the Doctrine of a Future Retribution* did much to establish the tenets of his sect, which he freed from the influence of Calvinism. Member of various learned societies.

BANCROFT, GEORGE (1800–1891). Historian and diplomat. Born in Worcester, Mass.; educated at Phillips Exeter Academy, at Harvard College from which he was graduated at the age of 17, and in Germany where he received the Ph. D. degree from the University of Göttingen at the age of 20; one of the first Americans to obtain that degree from a German University. After a year spent in European travel, he returned to America; then followed ten years of teaching and one of preaching without success in either occupation. When about 30, Mr. Bancroft began the great work of his life, the *History of the United States,* published in 10 volumes, the first in 1834 and the last in 1874 when the author was 74; this work records the history of the United States from its colonization through the adoption of the Constitution; as a whole it has been outmoded, but reflects the spirit of the time and earned for its author the title of "Father of American History." In his early life, Mr. Bancroft was a strong Democrat; he served as Secretary of the Navy under Polk for 78 months, and was then appointed by that president minister to the Court of St. James. Later he became a Republican and a strong supporter of Lincoln. In 1867 he was appointed by President Johnson minister to Berlin and served there seven years with great success. Mr. Bancroft lived to be 91; the last years of his life were spent in Washington where he became a sort of an institution, second only to the President. See under AUTHORS.

BANCROFT, HUBERT HOWE (1832–1918). Historian and publisher. Born in Granville, Ohio; educated in the village school and began a preparatory school course. At 16 he entered business life as assistant to a bookseller. At 20 he went to California and six years later founded, in San Francisco, the publishing and mercantile house of H. H. Bancroft & Company. He became interested in the history of the Pacific Coast, collected from all parts books on that subject, and in 1868 installed as his librarian Mr. Herbert T. Oak, who for 19 years directed the great enterprise of Mr. Bancroft's life, the preparation of an exhaustive history of the Pacific Coast. As a foundation for this work, a library of some 60,000 volumes on the subject was assembled; a large force of assistants was hired to take notes; copyists were employed to search the Spanish archives; and reporters were sent out to receive dictation narratives of prominent pioneers. The first volume of the work appeared in 1875, the last, fifteen years later. The entire work is composed of 5 volumes on *Native Races,* 28 volumes of the history proper, followed by 6 volumes of essays. Mr. Bancroft planned the work and wrote some portions, but the greater part is the work of some 10 or

12 writers who worked in the Bancroft library under the direction of Mr. Oak. Mr. Bancroft, however, brought out the volumes all in his own name.

BARIZZA, GASPARINO (1370–1431). An Italian scholar; professor of Latin at Padua, coming from Milan. With Petrarch, he led in the movement for the revival of classical Latin, the recovery of the Latin text, and for the founding of libraries; he developed boarding schools for boys; wrote a manual of rhetoric for use in schools.

BARKER, GEORGE FREDERICK (1835–1910). Born at Charlestown, Mass.; professor of physiological chemistry and toxicology at Yale; professor of physics at the University of Pennsylvania from 1872 to 1900; became professor emeritus; expert in poisons in criminal cases, and in patent suits; wrote a text-book on chemistry.

BARNARD, FREDERICK AUGUSTUS PORTER (1809–1889). College president. Born in Sheffield, Mass.; was a graduate of Yale in the class of 1828. After more than a quarter of a century's teaching experience, mostly in colleges, he became president of the University of Mississippi, and was connected with this institution until the outbreak of the Civil War. In 1864 he was elected president of Columbia University, a position he held until his death. His administration was a progressive one, and he laid the foundation of collegiate instruction for women which finally resulted in Barnard College.

BARNARD, HENRY (1811–1900). Educator. Born in Hartford, Conn.; graduated from Yale at 19, and spent two years traveling in the United States and Europe. Returning from his travels, he was elected to the General Assembly of Connecticut. He became interested in improving the condition of the public schools of the state, which under the district system had fallen to a very low state; he was influential in the establishment of a state board of school commissioners of which he became the most active member. He visited schools in all the counties, and in a report to the legislature described the conditions he found; he started and edited *The Connecticut Common School Journal;* started teachers' institutes to improve the training of teachers, and succeeded in bringing about some improvement in the school laws. After 4 years of most strenuous work, he was legislated out of office. He was soon called to Rhode Island to improve the school system there and in a short time gained the sympathy and support of the people; was a dominant influence in the establishment of the Rhode Island Institute of Instruction; and put into successful operation a plan which Horace Mann declared would give Rhode Island "one of the best systems of public instruction in the world." His achievements brought him recognition throughout the country. Mr. Barnard received many offers from large cities to become superintendent of the schools, and was offered the presidencies of the state universities in Indiana and Michigan, but he declined them all to return to his native state in the dual position of principal of the newly established Normal School at New Britain and superintendent of the state schools. Later, he became the first United States Commissioner of Education. His monumental work is his *American Journal of Education,* consisting of 32 large volumes, a great encyclopedia of educational literature dealing with every aspect of its subject.

BARNES, MARY DOWNING SHELDON (1850–1898). Born in Oswego, N. Y.; educated in the Oswego Normal School of which her father, Edward A. Sheldon, was principal; was one of the first women to attend the University of Michigan, from which she was graduated in 1874. Two years later, she became professor of history at Wellesley College, a position she relinquished after four years, in order to travel and study in Europe. In 1884 she married Earl Barnes, professor of history at the University of Indiana. The seven years after her marriage were spent in study and writing; in 1891 both she and her husband accepted positions at Leland Stanford University, she to teach history and he to teach educational subjects. She was the first woman to be appointed a member of the faculty of Leland Stanford, and her signal success fully justified the innovation.

BARROWS, DAVID PRESCOTT (1878–). College president. Born in Chicago, Ill.; graduated from Pomona College, and received the Ph. D. degree in anthropology from the University of Chicago. From 1903 to 1909 he was general superintendent of education in the Philippine Islands; he then went to the University of California where, after 10 years as professor and dean, he became president, a position he held until 1923. During the World War Mr. Barrows was a member of the Commission for the Relief of Belgium in charge of food supply in Brussels, 1916; was made lieutenant colonel of the United States cavalry in 1918; saw active service in Siberia and the Philippines. Received decorations for services from Belgium, France, Italy, Poland, Japan, and Czecho-Slovakia.

BARTLETT, SAMUEL COLCORD (1817–1898). Born at Salisbury, N. H.; graduated from Dartmouth College and from Andover Theological Seminary; pastor of a number of important churches; aided in the establishment of the Chicago Theological Seminary, and was, for 19 years, professor of Biblical literature at that institution. In 1877, when Mr. Bartlett was 60 years of age, he became president of Dartmouth College, a position he held for 15 years. During his adminstration the college increased in enrollment, the endowed chairs increased from one to six, new buildings were constructed, and, although before the period of great donations by multimillionaires, $700,000 was added to the endowment. Mr. Bartlett was the author of *Life and Death Eternal, From Egypt to Palestine, Sources of History in the Pentateuch, The Veracity of the Hexateuch,* and other works.

BASCOM, JOHN (1827–1911). Born in Genoa, N. Y.; professsor of rhetoric in Williams, and for thirteen years president of Wisconsin University; returned to Williams to accept the chair of political science, remaining till 1901; he was prominent as a lecturer on sociology and economics, but is most widely known as an efficient teacher and scholarly writer on economics, philosophy, and sociology; author of a *Political Economy, Ethics, Evolution and Religion,* etc.

BASEDOW (*bä'zē-dō*), **JOHANN BERNARD** (1723–1790). Born at Hamburg, came under the influence of Rousseau's *Emile,* and proposed a general reform in education in Germany. His *Elementarwerk* appeared in 1774, combining the principles of Rousseau with the methods of Comenius. The *Philanthropinum* was established as a result, and exerted a wide influence.

BASSETT, JOHN SPENCER (1867–1928). Educator, historian. Born at Tarboro, N. C. Graduated from Trinity College (now Duke University) in 1888; Ph. D., Johns Hopkins University, 1894; was professor of history at Trinity College for 12 years; in 1906 was called to Smith College as professor of history, a position he held until his death. He was instrumental in the establishment of the *South Atlantic Quarterly* 1902) and was the first editor. At Smith College, he instituted the *Smith College Studies in History.* In 1919 he was elected president of the American Historical Society. Mr. Bassett was a voluminous writer on historical subjects; a few of his works are *Life of Andrew Jackson, A Short History of the United States, The Middle Group of American Historians, The Lost Fruits of Waterloo,* and *Makers of a New Nation.*

BAWERK, BOHM VON (1851–). Educator and publicist. Born in Brunn, Moravia; educated at the University of Vienna, and studied at Heidelburg, Jena, and Leipzig under Knies, Roscher, and Hildebrand; lectured on economics at the University of Vienna, and became full professor there; was Minister of Finance for several periods. He was an exponent of the Austrian school of value in economic theory, based upon psychological principles; his two chief works, on *The Positive Theory of Value* and *Capital and Interest,* have been translated and published in English.

BEDE (*bēd*), **THE VENERABLE.** See under AUTHORS.

BELL, ALEXANDER MELVILLE (1819–1905). Scotch-American educator, born in Edinburgh; lecturer and instructor at Edinburgh University, the University of London, and Queen's College, Kingston, Canada, successively; famous as the inventor of "visible speech" a system of phonetic notation, very successfully used in the instruction of deaf mutes. He has written *Visible Speech, Principles of Phonetics,* and *World-English.*

BELL, ANDREW (1753–1832). A Scotch educational reformer; born at St. Andrew's. He went to India as a chaplain, but became the principal of an orphan school at Madras founded by the East India Company. The scarcity of properly qualified assistants forced him to use pupils to instruct one another under his direction, thus beginning the "Monitorial System," sometimes called the "Madras System." In 1797 Bell published *An Experiment in Education Made at the Male Asylum of Madras,* which attracted little atten-

tion until 1803, when Joseph Lancaster in an educational treatise recommended Bell's Monitorial System, the forerunner of the public graded schools.

BENTON, GUY POTTER (1865–1927). College president. Born in Kenton, Ohio; graduated from Baker University, and studied in Germany. He was in succession, president of Upper Iowa University, 1899–1902; president of Miami University, 1902–1911; and president of the University of Vermont, 1911–1919. He rendered signal service during the World War in Y. M. C. A. work, and later was chief educational director of the American Army of Occupation. He was awarded the Distinguished Service Medal for his work with the American Army. From 1921 to 1924, Mr. Benton was educational advisor in the Philippines. He died from sleeping sickness contracted there.

BERGSON (*bĕrg'sôn'*), **HENRI.** See under PHILOSOPHERS.

BINET (*bē'nĕ'*), **ALFRED.** See under SCIENTISTS.

BIRGE, EDWARD ASAHEL (1851–). College president, zoölogist. Born at Troy, N. Y. Received A. B. from Williams, 1873; Ph. D. from Harvard, 1878; was professor of zoölogy at the University of Wisconsin for more than 30 years; dean of the College of Letters and Sciences from 1891 to 1918; acting president from 1900 to 1903; and president from 1918 to 1925, when he became president emeritus. Writer on zoölogical subjects; official of Phi Beta Kappa.

BLACKIE, JOHN STUART (1809–1895). Scottish educator. Born in Glasgow, Scotland; educated at the University of Aberdeen, and at German universities. In 1839 he was appointed to the chair of Humanity in Mareschal College. There his interesting and stimulating lectures gained him a favorable reputation, which was heightened by the publication of his translation of *Aeschylus* in 1850. In 1852 he was appointed professor of Greek at the University of Edinburgh, a position he held for 30 years, retiring in 1882. Besides his work in the classics, he was interested in the history and language of the Scottish Highlanders, and was instrumental in founding a Celtic chair at Edinburgh. Among his writings are a translation of Goethe's *Faust; Lays and Legends of Ancient Greece, Homer and the Iliad, The Wise Men of Greece, Horae Hellenicae,* and *The Language and Literature of the Scottish Highlanders.*

BLAIR, JAMES (1655–1743). Founder and first president of William and Mary College. Born in Scotland; educated at the University of Edinburgh where he received the Masters degree in 1673; was ordained in the Church of England, but finding little chance of advancement in his native country, he went to London; there he attracted the attention of the Bishop of London, who sent him as a missionary to Virginia which was at that time included in the diocese of London. In 1689 Blair was appointed by the Bishop of London his commissary or deputy with power to exercise supervision over the clergy, but without right to ordain or confirm. In the first convention of the clergy, which met in 1690, Blair urged them to take the initiative in the establishment of a college in Virginia. The next year the General Assembly approved the project and sent Blair to England to obtain a charter and funds for the college. There he was signally successful in interesting both William and Mary in the plan. The charter was granted in 1693; in this document Blair is named as the first president "during his natural life;" the funds granted for the support of the college made it the richest college in America before the Revolution. Blair was president for 50 years, until his death in 1743; during his administration, were erected the three substantial buildings which for more than 200 years comprised the entire plant of the college.

BLAISDELL, JAMES ARNOLD (1867–). College president. Born at Beloit, Wis.; a graduate of Beloit, 1889; attended the Hartford Theological Seminary, and was ordained as a Congregational minister in 1892. After 11 years of active ministry, he became professor of Biblical literature and Oriental languages at Beloit College; was president of Pomona College from 1910–1927; he then became president of Claremont Colleges.

BLOW, SUSAN E. (1843–1916). The foremost pioneer of the kindergarten training movement in the United States. With Superintendent William T. Harris, in 1873, she made her first experiment, gladly proffering her own services gratuitously to the St. Louis Board of Public Schools. Sixty children were assigned her, quickly dispelling the Froebelian notion that only 12 or 15 could be successfully taught. Miss Blow's success marked a new epoch in the history of elementary education. Her well-known book, *Symbolic Education,* has already become a classic, and her later book, *Letters to a Mother,* is a further welcome addition to kindergarten literature.

BODLEY, THOMAS (1545–1613). English scholar, founder of the Bodleian Library. Born at Exeter, England. Educated at Oxford, where he received his B. D. in 1563; he remained connected with Oxford as fellow and proctor until 1576. Later, he was sent on several diplomatic missions by Queen Elizabeth, to the courts of Denmark, France, and Holland. Preferring the quiet life of a scholar, in 1596 he gave up his public career and retired to Oxford. In 1598 his offer to restore the old library there was accepted by the university. Bodley spent the greater part of his own fortune in this enterprise, and succeeded in obtaining for it gifts of valuable books from others, thus building up what was practically the earliest public library in Europe.

BOGART, ERNEST LUDLOW (1870–). Educator, economist. Born at Yonkers, N. Y.; received A. B. and A. M. from Princeton; Ph. D. at Halle, Germany, 1897. Was professor of economics at Oberlin from 1900 to 1905; at Princeton from 1905 to 1909; in 1909 he went to the University of Illinois as professor of economics, and in 1920 became head of the department; in 1922–23 was financial adviser to the government of Persia. Author of numerous works on economic subjects: *Economic History of the United States, Direct and Indirect Costs of the Great World War, War Costs and Their Financing, Modern Industry,* and others.

BOWMAN, JOHN GABBART (1877–). College president. Born at Davenport, Ia.; a graduate of the State University of Iowa, and a graduate student at Columbia. In 1907 he became secretary of the Carnegie Foundation for the Advancement of Science; from 1911 to 1914 was president of the State University of Iowa; then for six years the director of the American College of Surgeons; in 1921 he became Chancellor of the University of Pittsburgh. He devoted much time to the raising of funds for a "Cathedral of Learning," a building forty stories high in which to house the university and its activities. The building was designed to typify the industrial spirit of Pittsburgh and was built by funds donated by its citizens. During President Bowman's administration, the university had a great numerical growth.

BOYNTON, FRANK DAVID (1843–1930). Superintendent of schools in Ithaca, N. Y.; born in Potsdam; became principal of the Ithaca High School, and director of the Ithaca Conservatory of Music; was chairman of the commission to revise the regents' academic syllabus in 1900 and 1905, and of the commission appointed by the University of the State of New York to arrange courses of study for the secondary schools of the state, and became a member of the state examining board. He wrote *School Civics, Manuel of Civics,* and *Plane and Solid Geometry.*

BRAILLE, LOUIS (1809–1852). French teacher of the blind. Born at Coupvray; became blind at three years of age; at seven went as a foundling to the Institution of the Blind in Paris. There he became a teacher in 1828, and in 1834 perfected his point system of writing for the blind, considered the greatest advance ever made in the education of the blind.

BRIDGMAN (*brij'man*), **LAURA DEWEY** (1829–1889). Born at Hanover, N. H. At two years of age, a severe attack of scarlet fever destroyed her sight, her hearing, impaired her sense of smell, and left her health completely shattered. When her strength returned she learned to walk, and showed herself to be, in spite of her afflictions, an active, intelligent, affectionate child, imitating her mother in all she did, and thus learning to sew and to knit. Dr. Samuel G. Howe (q. v.) heard of the case, and when Laura was eight years old, persuaded her parents to allow her to enter Perkins Institute, which was her home for the rest of her life. Dr. Howe personally undertook her education and the methods he used have been followed in all similar cases. Laura learned to converse fluently in the manual alphabet, to read easily by the use of raised letters, and to write well. She studied arithmetic, geography, history and elementary physiology. She was an expert needle woman, could sew on the sewing machine, and knit fine lace. As she grew older she became a teacher of sewing in the institution; doing perfect work herself, she required the same from her pupils.

BROCKHAUS (*brŏk'hous*), **FRIEDRICH ARNOLD** (1772–1823). German publisher. Born at Dartmund, Germany; studied two years at the University of Leipzig; in 1805, he began business as a publisher, and three years later purchased the copyright of the *Konversations-Lexikon*, which was started in 1796; in 1811, he completed the first edition of this encyclopedia. (The 17th edition was published just about a century later; and a new impression of that edition, in 1920.) Brockhaus's business increased rapidly; in 1818 he moved to Leipzig, where he established a large printing house. His business was continued for more than a hundred years by his sons and grandsons. His grandson Eduard was acknowledged as a leader in the book trade. After the death of Eduard in 1914, the business was carried on by members of the family.

BROOKS, SAMUEL PALMER (1863–). College president. Born at Milledgeville, Ga.; A. B. from Baylor University; A. B. and A. M. from Yale; did graduate work in history at the University of Chicago. Was elected president of Baylor University in 1902. Author of addresses and books on educational topics; especially identified with the peace movement.

BROWN, ELMER ELLSWORTH (1861–1934). Born at Kiantone, N. Y.; taught in high schools and universities; United States Commissioner of Education (1906–1911); chancellor of New York University; member International Congress of Arts and Sciences at St. Louis in 1904 and president National Council of Education; wrote *The Making of our Middle Schools, The Origin of American State Universities*, and a monograph entitled *Secondary Universities*.

BROWNE, WILLIAM HAND (1828–1912). Educator and author. Born in Baltimore, Md. Educated in private school and the University of Maryland; was engaged in the commission business until the outbreak of the Civil War. After the war, he founded the *Southern Review*, and was editor of the *Southern Magazine*, through these periodicals aiding in the revival of the cultural life of the South. In 1879 he became librarian and associate professor at Johns Hopkins University, and in 1891 was appointed professor of English literature. He was the editor of 32 volumes of the *Archives of Maryland;* editor of *Maryland Historical Magazine* for four years, and author of a number of works on Maryland history, *George Calvert and Cecilius Calvert, Barons Baltimore of Baltimore*, and others.

BRYAN, ELMER BURRITT (1865–1934). College president. Born at Van Wert, Ohio; graduated from Indiana University, and studied at Harvard and Clark universities. After a number of years teaching experience, mostly in secondary schools, he was connected with several colleges as professor of education. In 1905 he was chosen president of Franklin College, where he served four years; was president of Colgate University from 1909 to 1921; then, in 1921, became president of Ohio University. Author of works on educational subjects, among them *The Basis of Practical Teaching* and *Fundamental Facts for the Teacher*.

BRYAN, WILLIAM LOWE (1860–). Born near Bloomington, Indiana; instructor in Greek, professor of philosophy, and vice-president at the University of Indiana from 1885 to 1902, after which he became its president.

BUDDEUS, JOHANN FRANZ (1667–1729). Born at Anklam, in Pomerania; eucated in German universities, where he made a special study of languages, theology, and history. In 1693 he became professor of moral philosophy in the University of Halle; in 1705, was appointed professor of theology at Jena. He was held in high esteem, and became widely known as a profound scholar. He wrote a number of works on theology and philosophy.

BUISSON (*bwē-sôn'*), **FERDINAND** (1841–1932). Born in Paris. In 1867 began his lifetime work for peace at the first congress for peace and liberty, held in Italy, and all his life, tirelessly devoted a large part of his time and energy to the peace movement. He was professor of the Sorbonne from 1896 to 1902, and was for many years connected with the Parisian Educational Department. Writer of thousands of articles in furtherance of peace ideas. In 1927, with Ludwig Quiddle of Germany, he was awarded the Nobel Peace prize.

BURGESS, JOHN WILLIAM (1844–1931). Born at Cornersville, Tennessee; was professor of political science and history at Amherst, but, after 1876, became connected with Columbia University as professor of political science and constitutional law; appointed the first Roosevelt professor of American history and institutions at the University of Berlin; published important works on political science and history.

BURRITT, ELIHU (1810–1879). The Learned Blacksmith. Born at New Britain, Conn.; with but little more than a district school education; at 16, he was apprenticed to a blacksmith, but continued his own education, borrowing books wherever possible, and studying while at work at his forge and in spare hours. He mastered Latin, Greek, French, Spanish, Italian, and German, and at the age of 30 could read 50 languages. His remarkable aptitude for languages and his great learning brought him fame; he became a successful public lecturer. He was one of the few men of his time to think internationally, and became an ardent crusader in the cause of international peace and universal brotherhood. In 1846, with some British friends of peace, he formed The League of Christian Brotherhood, which within four years had 40,000 members pledged to work for peace. In 1848, almost singlehanded, he organized the Brussels Peace Congress, the first of a series of similar conferences held in ensuing years at Paris, Frankfort, London, Manchester, and Edinburgh.

BURTON, ERNEST DEWITT (1856–1925). Theologian and university president; taught in the Newton Theological Institution, but for many years was connected with the University of Chicago as professor in the department of New Testament interpretation and literature; director of the university libraries, and in 1923 became president. He was also notable as an editor, chairman of several religious commissions, and author of many books on biblical criticism. Some of his works are *Harmony of the Gospels* (with W. A. Stevens), *Handbook of the Life of Paul, Studies in the Gospel of Mark, Paul's Epistle to the Galatians*.

BURTON, MARION LEROY (1874–1925). College president. Born in Brooklyn, N. Y.; graduated from Carleton College in 1900. After some years spent in teaching, he went to Yale Divinity School where he received the Ph. D. degree in 1907, and was for a year pastor of an important New York church. In 1910 he was called to the presidency of Smith College; after 7 years in that position, he was for 3 years president of the University of Minnesota; then, from 1920 to 1925, president of the University of Michigan. During his term of administration at these institutions, President Burton not only raised the standards of scholarship, but was remarkably successful in securing money for the enlargement of departments, and for the construction of new buildings. He raised $1,000,000 for Smith $11,000,000 for the University of Minnesota, and $14,000,000 for the University of Michigan.

BURY (*bĕr'ĭ*), **JOHN BAGNELL** (1861–1927). English educator and historian. Educated at Trinity College, Dublin, where he became fellow in 1885; although a fine Greek scholar, he devoted himself chiefly to history. After nine years as professor at Dublin, he was elected regius professor of modern history in the University of Cambridge in 1902. He edited Gibbon's *Decline and Fall of the Roman Empire* (1896–1900), the standard text; was author of *History of Greece to the Death of Alexander the Great, History of the Later Roman Empire, 395–800, Life of St. Patrick and His Place in History*, and other works.

BUSS, FRANCES MARY (1827–1894). A pioneer in the movement for the higher education of women in England, but chiefly in promoting secondary education for girls. A small private school, with the aid of the Brewers' and Clothiers' Companies, developed into the North London Collegiate and Camden Schools, the first school for girls in England offering educational facilities corresponding to the English grammar schools for boys, serving as a model for the many secondary schools founded by the Girls' Public Day School Company, the Church Schools Company, and many others.

BUTLER, NATHANIEL (1853–1927). Born at Eastport, Me.; a graduate of Colby University. Was teacher and professor in high schools and colleges; was president of Colby from 1895 to 1901, and became dean of the College of Education, University of Chicago in 1905; largely identified with the University Extension movement.

BUTLER, NICHOLAS MURRAY (1862–). Born in Elizabeth, N. J. In 1885, he became connected with Columbia College, as tutor, dean, and professor of philosophy and education, and finally president; he was president of Barnard College, Teachers College, and of the College of Pharmacy; trustee of the Carnegie Foundation for the Advancement of Teaching, and

president of the University Settlement Society. In 1893 he founded the *Educational Review;* was editor of the *Great Educators* series; president of the N. E. A. in 1895; served on various boards of education, and was active in civil and political reform; founded the New York College for the Training of Teachers (now Teachers College), and was its first president. Author of *The Meaning of Education,* and of a number of monographs on *Education in the United States.*

BUTTERFIELD, KENYON LEECH (1868–1935). Born at Lapeer, Mich.; a graduate of Michigan Agricultural College, and took graduate work at the University of Michigan; was president and professor of political economy and rural sociology at the Rhode Island College of Agriculture and Mechanical Arts, from 1903 to 1906; president and head of the division of rural social science, at the Massachusetts Agricultural College from 1906 to 1924; then became president of Michigan State College. An authority on rural problems; editor of farm journals; member of various commissions for the consideration of agricultural problems; member of many learned societies. Author: *Chapters in Rural Progress, The Country Church and the Rural Problem, The Farmer and the New Day, A Christian Program for the Rural Community.*

CALKINS, NORMAN A. (1822–1895). Born at Gainesville, N. Y.; successively, teacher, principal, and superintendent of schools; conducted teachers' institutes for many years in New York and adjoining states; assistant-superintendent of schools in New York City and instructor in methods and principles of education in the Saturday Normal School; active in the National Education Association; author of *Primary Lessons* and other books for teachers.

CAMP, WALTER (1859–1925). Called the father of modern American football, received his collegiate training at Yale, where he received the A. B. degree in 1880. He played Rugby ball in his preparatory school, and as an undergraduate at Yale had much influence in starting football with Harvard. In 1883 he suggested the rule of five yards in three downs, changed in 1906 to four. During the World War, Mr. Camp was chairman of the athletic department of the Navy Commission on Training Camp Activities. Out of this position developed the exercises later recorded on phonograph disks and called the Daily Dozen. His selection of a national All-American football team yearly for many seasons was a national feature of the sport. Mr. Camp was also active in business and as an author of books of stories and discussion of sports, including *Book of College Sports, American Football, Keeping Fit All the Way, Jack Hall of Yale,* and *Captain Danny.*

CAMPBELL, WILLIAM WALLACE (1862–1938). College president, astronomer. Born on farm in Hancock County, Ohio; B. S., University of Michigan, 1886. In 1891, became professor of astronomy at the University of California; in 1901, appointed director of Lick Observatory; from 1923 to 1930, was president of the University of California. One of the greatest astronomers of his time; was in charge of numerous expeditions to India, Spain, Russia, Western Australia, and other parts of the world; for his contributions to astronomical knowledge received many prizes and decorations. Author: *The Elements of Practical Astronomy, Stellar Motions,* and various articles on astronomical subjects.

CAPEN, SAMUEL PAUL (1878–). Became professor of modern languages at Clark College in 1902; president of Public Education Association in 1908.

CARLIN, JAMES JOSEPH (1872–1925). College president. Born in Peabody, Mass.; educated at Boston College and Woodstock Seminary, specializing in the classics and philosophy; became a member of the Society of Jesus in 1892; was professor of Latin, Greek, and English at Georgetown University for five years; in 1907, was ordained a priest in the Roman Catholic Church; in 1918, was chosen president of Holy Cross College, Worcester, Mass.

CARPENTER, FRANK GEORGE (1855–1924). Writer of *Geographical Readers.* Born at Mansfield, Ohio. After almost ten years experience as a newspaper correspondent, he started out on a journey around the world, having previously arranged with 15 newspapers to publish his weekly travel letters. This was the beginning of travels which extended over 36 years, took Mr. Carpenter to every part of the world, and resulted in hundreds of syndicate articles and many books. *The Carpenter's Readers* are still widely used in the schools throughout this country; they include readers on *Asia, North America, South America, Europe, Australia, Our Colonies, and Other Islands of the Sea,* and *Africa.* Mr. Carpenter later published another series of readers on commerce and industry, entitled *How the World is Fed, How the World is Clothed,* and *How the World is Housed.* In 1921 he formed a new syndicate and began writing a series of *World Travels;* 20 volumes have been published but he died before the work was completed.

CARR, GENE (1881–). Caricaturist. Born in New York. Educated in the public schools, but never made a special study of art. When but 13 years old, he was employed on the New York *Recorder;* later, went to the New York *Herald,* to the *Philadelphia Times,* and in 1903, to the *New York Journal,* and *New York World.* Creator of many series of comic pictures: *All the Comforts of Home, Phyllis, Romeo, Lady Bountiful, The Jones Boys, Flirting Flora,* and a number of others.

CASAUBON (*ka-sô'ban*), **ISAAC** (1559–1614). French classical scholar. Born in Geneva, the son of a French refugee; when Isaac was three years old the family returned to France, but the father who was a Calvinist was continually obliged to flee from fanatical bands of Catholics. Isaac was instructed by his father until he was 19; it was in a cave in the mountains that he received his first Greek lesson. At 19, Isaac went to the Academy of Geneva; in 1581 became professor of Greek there, and held this post for fifteen years. He made himself an accomplished Greek scholar and a master of ancient learning; for three years he was professor at Montpelier, then relinquished that position to devote himself to the editing and annotating of Greek works. From 1604 to 1610 he was sub-librarian of the Royal Library in Paris; his reputation for learning increased and he was considered, next to Scaliger, the most learned man of his time. The great work of his life was his edition of *Athenaeus* with commentaries. In 1610, he went to England where he became naturalized; he was a great favorite of the pedantic King James, who was continually interrupting Casaubon's work to discuss theological subjects with him. Casaubon's diary, the manuscript of which is preserved at Canterbury, was printed in 1850; it is a valuable historical document, the best record existing of the life of a scholar in the sixteenth century.

CASSIODORUS (*kas"i-o-dō'rus*), **MAGNUS AURELIUS** (about 468 to 568). Roman historian and statesman. The most profound and enlightened scholar of an age of barbarism. He may be regarded the father of the monastic *scriptorium* to which we owe the preservation of most of the classic literature; writer of text-books on rhetoric and grammar which had great vogue in the Middle Ages.

CATTELL (*kă-tĕl'*), **J. McKEEN** (1860–). Educator, psychologist. Born in Easton, Pa., where his father was president of Lafayette College; graduated at Lafayette, studied in Germany and received his Ph. D. from the University of Leipzig in 1886. Was professor of psychology first at the University of Pennsylvania, then from 1891 to 1917, at Columbia University. Editor of *The Psychology Review,* of *Science, School and Society, The Scientific Monthly, The American Naturalist, American Men of Science.* Author of many articles on psychology and education. President for a number of years of the American Association for the Advancement of Science.

CAVANAUGH, JOHN WILLIAM (1870–1935). Roman Catholic clergyman; born at Leetonia, Ohio; was superior of Holy Cross Seminary, Indiana, from 1898 to 1905. He was professor of English literature, and after 1905 president at the University of Notre Dame. Member of the Rhodes scholarship committee for Indiana; author of *Priests of the Holy Cross.*

CHAMBERLAIN, ALEXANDER FRANCIS (1865–1914). A Canadian educationist, born in England; educated in Canada; graduated at Toronto University (B. A., 1886; M. A., 1889); at Clark University (Ph. D., 1892), where he became assistant professor of anthropology; member of several learned societies; made special investigations of the Kootenay (B. C.) Indians; editor of *Journal of American Folk-Lore* in 1900; department editor *American Anthropologist;* author of essays, sonnets, short poems, and hymns.

CHAMBERS, ROBERT (1881–). Educator, biologist. Born in Erzerum, Turkey, son of a missionary; educated at Robert College, Constantinople, Queens University, Canada, in 1908 obtained his Ph.

D. from the University of Munich, Germany, and was a research student at Columbia, 1911–12; was assistant professor of histology at the University of Cincinnati for three years, then went to the Cornell Medical School in New York City, where, in 1923, he became professor of microscopic anatomy. Conducted investigations at the government stations at Woods Hole and Mt. Desert Island. In 1925 was the recipient of two medals, the Trail Medal, for researches on the physical nature of protoplasm, and the John Scott Medal by the City of Philadelphia, "for invention of devices for microdissection of living cells."

CHANCELLOR, WILLIAM ESTABROOK (1867–). Born in Dayton, Ohio; lecturer on sociology, history, and economics, at Brooklyn Institute; superintendent of schools in Bloomfield, and Paterson, N. J., and after 1906 in the District of Columbia; lecturer on school administration at Chicago University, and on education and history at the George Washington University; member of several important scientific associations. His principal important scientific works are *Mathematical Series* in 10 volumes, *American History, Graded City Spellers,* and *A Theory of Education.*

CHANNING, EDWARD (1856–1931). Educator, historian. Born in Dorchester, Mass.; received A. B., A. M., and Ph. D. from Harvard University. Became in succession instructor, assistant professor, and, in 1897, full professor of history at Harvard. Author of numerous works on history: *The Narragansett Planters, The Navigation Laws, The United States of America, 1765–1865* (in Cambridge History Series), *History of the United States,* in six volumes, embracing the period from the coming of the Norsemen to the close of the Civil War. Dr. Channing was awarded the Pulitzer Prize of $2,000 for the best book of 1925 upon the history of the United States. This was the sixth volume of his *History,* bearing the title, *The War for Southern Independence.*

CHEEVER, EZEKIEL (1615–1708). Born in London, but came to New England in 1637. He taught in New Haven, Ipswich, and Charlestown, for thirty-two years. In 1670 he went to Boston, and for thirty-eight years served as head master of the Boston Latin School; the most famous of colonial schoolmasters. He wrote the *Accidence,* which was used as a text-book in Latin for over a century, and *Scripture Prophecies Explained.*

CHILD, FRANCIS JAMES (1825–1896). A distinguished American scholar and teacher; born in Boston, Mass.; professor of English at Harvard (1876–1896); wrote *Observations on the Language of Chaucer* and *Of Gower's Confessio Amantis.* His greatest work is the edition of *English and Scottish Ballads* in eight large volumes.

CHILDS, GEORGE WILLIAM (1829–1894). Born in Baltimore, Md. At 13, he entered the United States Navy, and was 15 months at Annapolis. When not quite 15, he went to work for a bookstore; later he was connected with several publishing firms. The great success of his life and the foundation of his fortune was the building up of the *Public Ledger* of Philadelphia. In company with Anthony J. and Francis A. Drexel, Mr. Childs bought this paper in 1864, when it was in an almost bankrupt condition. Under Childs' management, it soon became a prosperous paper with an enormously increased circulation, which, by 1876, had reached 90,000 copies a day, and the paper was known all over the country for its accuracy and decency. Mr. Childs gave the Shakespeare Memorial Fountain, in Stratford-upon-Avon; a memorial window to the poets Herbert and Cowper in Westminster Abbey, and made other gifts to churches and libraries. To the Drexel Institute were left his valuable collections of manuscripts.

CHITTENDEN, RUSSELL HENRY (1856–). Born in New Haven, Conn.; Ph. B., Sheffield Scientific School, 1875; Ph. D., Yale, 1880; studied abroad. For forty years was professor of physiological chemistry at Yale; in 1922, became professor emeritus; was director of the Sheffield Scientific School from 1898 to 1922. During the World War was United States representative on the Inter-Allied Scientific Food Commission at London, Paris, and Rome. A specialist on nutrition; author of many works on that subject,—*Studies in Physiological Chemistry,* 4 vols., *Physiological Economy in Nutrition, The Nutrition of Man,* and many articles in American and foreign journals.

CHRYSOLORAS (*kris-o-lō'ras*), **MANUEL** (? – 1415). A Byzantine Greek scholar, the first important teacher of Greek of the Renaissance; taught in Constantinople, and, at the invitation of the Florentine Republic, in Florence; later, in other cities of Italy; his most important work was a *Greek Grammar,* published in Venice in 1484.

CLARK, JOHN BATES (1847–1938). Economist, Born in Providence, R. I.; educated at Brown University and at Amherst College; his college education was twice interrupted by the illness of his father, and in the intervals he was engaged in selling plows to farmers in Minnesota, which was then decidedly pioneer ground. He was thus in the latter part of his college course a more mature and experienced person than the ordinary college student, and he acquired the reputation of being a student of exceptional brilliance; on the advice of his professors he went to Europe where he continued his studies for nearly three years at German universities; he was thus the first of that group of American students who repaired to Germany in the early seventies, and later lent distinction to economic studies in this country. He was professor at Carleton College, 1877–1881, where Thorstein B. Veblen (q. v.) was one of his students; professor at Amherst College, 1893–1895; professor at Columbia from 1895 to his retirement in 1923. Author: *The Distribution of Wealth, The Control of Trusts, Essentials of Economic Theory,* etc. Professor Clark achieved an international reputation as a writer and thinker on economic theory. In 1927 a volume of essays by seventeen distinguished associates and former students of John Bates Clark, contributed in honor of his eightieth birthday, was published under the sponsorship of the American Economic Association.

CLARKE, CASPAR PURDON, KT. (1846–1911). Director of the Metropolitan Museum of Art, New York (1905–1910); born in London, England; educated in England and France; for a time he was principal of the School of Arts, Calcutta, India, and was a recognized authority on Indian Art; afterwards, he became director of the Art Museum, South Kensington, London, which contains the finest collection in the British Empire.

CLAXTON, PHILANDER PRIESTLEY (1862–). Educator. Born in Tenneesee; graduated from the University of Tennessee, and studied in Germany; after ten years experience as superintendent of schools in several cities, he became professor of pedagogy at the North Carolina State Normal School and Industrial College; later, was connected with the educational department of the University of Tennessee for nine years; from 1911 to 1921, was United States Commissioner of Education; was two years provost of the University of Alabama; and, in 1923, became superintendent of schools at Tulsa, Oklahoma. Editor of several educational journals, and author of many articles on educational subjects.

CLERC, LAURENT (1785–1869). Educator of the deaf. Born near Lyons, France. When but a year old, he became deaf as a result of a fall in the fire. At the age of twelve, he went to the Institute for the Deaf and Dumb in Paris; there he proved himself a brilliant pupil, and at twenty became a teacher. In 1816 he came to the United States at the request of Dr. Gallaudet (q. v.) and the next year the two opened an institution for the deaf in Hartford, Conn., with Gallaudet as principal and Clerc as a teacher. Here for more than forty years Clerc taught; it was largely through his efforts that the school received from Congress in 1819 a grant of land which later sold for $300,000. Clerc married a deaf-mute, but the several children born of the marriage could all hear and speak.

COCHRAN, DAVID HENRY (1828–1909). Born in Springville, N. Y.; president of the New York State Normal College, and of the Brooklyn Collegiate and Polytechnic Institute; when president of the Brooklyn Y. M. C. A., he organized evening schools and a course of scientific lectures.

COFFMAN, LOTUS DELTA (1875–1938). College president. Born in Salem, Ind. A. B., Indiana State University; Ph. D., Columbia University. After considerable experience in public schools as supervisor and superintendent, became professor of education in the University of Illinois; in 1915 was appointed dean of the college of education at the University of Minnesota, and in 1921 became president of that institution. Author of *The Social Composition of the Teaching Population,* and co-author of many books on educational problems.

COLBURN, DANA POND (1823–1859). Horace Mann's attention being attracted to him by his teaching of arithmetic, he was appointed an institute instructor. In 1852, opened a private normal school in

Providence, which became a state institution and of which he was the first principal. He published *Arithmetic and its Applications* and *Common School Arithmetic.*

COLBURN, WARREN (1793–1833). A distinguished American mathematician and educator; born in Massachusetts; his *First Lessons in Intellectual Arithmetic* was immensely popular in America and England and was widely translated. He wrote a *Sequel* to his arithmetic and an *Algebra.*

COLBY, FRANK MOORE (1865–1925). Born at Washington, D. C.; graduated from Columbia in 1888; from 1891 to 1895, he was lecturer on history at Columbia University and instructor in history and economics at Barnard College; from 1895 to 1900 he was professor of economics at New York University. The remainder of his life was devoted to editorial and literary work. He started his career as an editor when, in 1893, to add to his income, he became editor of the history and political science department of Johnson's Encyclopedia; in 1898 he became editor of the International Year Book, later named the New International Year Book; in 1900–03, with Daniel Coit Gilman and Talcott Williams, he edited the New International Encyclopedia; he also edited two supplementary volumes of 1924, besides his annual work on the Year Book. To his ability in planning and organization is largely due the high character of the New International Encyclopedia. Through his editorial work he exercised a beneficial influence on popular education. He was a frequent contributor to the best magazines; some of the articles he collected in several volumes of essays: *Imaginary Obligations, Constrained Attitudes, The Margin of Hesitation.*

COLE, GEORGE WATSON (1850–1939). Born at Warren, Conn.; educated at Phillips Andover Academy; admitted to the bar in 1876 and practiced nine years; graduated from the Library School, Columbia, in 1888; cataloger and librarian at various libraries until appointed librarian of the Henry E. Huntington (q. v.) Library in 1915; became librarian emeritus in 1924; member of various librarian and antiquarian societies. Author of many books on library work and compiler of numerous catalogs and bibliographies. Author: *American Libraries, Their Past, Present, and Future, Compiling a Bibliography, Book-Collectors as Benefactors of Public Libraries, Bibliographical Ghosts,* and other books. Compiler: *Elizabethan Americana, Check-List of English Literature to 1640 in Library of Henry E. Huntington,* etc.

COMENIUS (*kō-mā'nē-ōōs*), (or **KOMENSKY**), **JOHANN AMOS** (1592–1670). Bishop of the Moravian Church; born in *Moravia;* in 1631, published his *Janua Linguarum Reserata* in which he attempts to systematize the entire field of knowledge, so as to bring it in outline within the grasp of each child; organized the schools in Moravia, Sweden, and Holland. He recommended a system of schools like the American system of kindergarten, elementary and secondary schools, and university. His *Orbis Pictus* was a description, in short and easy sentences, of objects illustrated by rude engravings, and was the most popular text-book in Europe. He was the forerunner of Rousseau, Pestalozzi, and Froebel.

COMMONS, JOHN ROGERS (1862–). Economist, authority on labor organizations, was graduated from Oberlin in 1888, taught political economy at Wesleyan University, sociology at Oberlin, at Syracuse, and in 1904 became a professor at the University of Wisconsin. For some time was Director of the American Bureau of Research. Some of his works on labor problems are *Trade Unionism, Labor and Administration, Legal Foundations of Capitalism,* and (with others) *History of Labor in the United States.* Professor Commons served as member of the Wisconsin Minimum Wage Board, President of the American Economics Association, National Consumers League, and National Monetary Association, and as chairman of the Unemployment Insurance Board.

COMPAYRE, JULES GABRIEL (1843–1913). Born in France; professor of philosophy and the history of education in normal schools, and rector of the Academy at Poitiers and at Lyons; member of the higher council of public instruction, and of the commissions appointed to reorganize primary instruction; was inspector-general of public education in 1905; is considered one of the foremost French writers of this century on pedagogic questions. His principal writings are: *Histoire critique des doctrines de l'education en France,* a brilliant and valuable work, *Etudes sur l'enseignment et l'education, Histoire de la pedagogie,* and *Abelard and the Origin of Universities.*

COOK, ALBERT STANBURROUGH (1853–1927). Born in Montville, N. J.; graduated from Rutgers in 1872; pursued graduate work at Gottingen, Leipzig, London, and Jena, obtaining his Ph. D. from Jena in 1882; was professor of English at the University of California from 1882 to 1889; then for 32 years was professor of English language and literature at Yale, becoming professor emeritus in 1921. Professor Cook was the founder of the annual prizes in poetry at Yale, and at the University of California; was the recipient of many honorary degrees and member of many learned societies. Author: *The Art of Poetry, The Bible and English Prose Style, The Artistic Ordering of Life, The Authorized Version of the Bible and Its Influence, First Book on Old English, The Possible Begetter of the Old English Beowulf and Widsith,* etc. From 1898 until his death, Professor Cook was the editor of Yale Studies in English (70 volumes).

COOLEY (*kū'li*), **EDWIN GILBERT** (1857–1923). Born at Strawberry Point, Iowa; was superintendent of schools, principal of a high school, and elected principal of Chicago Normal School, but before taking the position was elected to the superintendency of the Chicago Schools; was president of the National Education Association for 1907–1908.

CRAIGIE (*krāg'i*), **WILLIAM A.** (1867–). Born at Dundee, Scotland; educated at West End Academy, Dundee; studied at St. Andrews University, 1883–1888, receiving his M. A. with honors in classics and philosophy; was assistant and lecturer in Humanity at St. Andrews, 1893; lecturer in Scandinavian languages at Taylor Institution, Oxford, 1905–1916; Rawlinson and Bosworth professor of Anglo-Saxon at Oriel College, Oxford, 1916–1925; in 1925 he became professor of English language at the University of Chicago, giving courses on *A Dictionary of American English,* and *Studies in Middle and Early Modern English.* He was knighted in 1928. In 1897 he became engaged in work on the Oxford English Dictionary, and in 1901, became joint-editor. Author of various articles on Scottish, Gaelic, and Scandinavian subjects appearing in well-known magazines; also, *Scandinavian Folklore, Religion of Ancient Scandinavia, Icelandic Sagas, The Pronunciation of English, The Asloan Manuscript, Easy Readings in Old Icelandic, English Spelling, The Study of American English.*

CRANE, FRANK (1861–1928). Journalist. Born in Urbana, Illinois; educated in public schools and spent one year at Illinois Wesleyan University; for some 25 years he was a successful pastor of Methodist and Congregational churches in various places, but became dissatisfied with his profession and entered newspaper work. His ability in the new field was such that before long he became firmly established as a writer for magazines and newspaper syndicates. He is the author of a number of books but his renown rests chiefly upon the four hundred word essays which were for many years a daily feature of many American newspapers. His shrewd common sense, his humor, and optimism made Crane popular with plain people by whom he was regarded as a sage. While derided by the wits as a facile optimist, his optimism was apparently profitable as he left a fortune of some $200,000. Among his many books are: *The Religion of Tomorrow, God and Democracy, Lame and Lovely, Just Human, Christmas and the Year Round, 400 Four Minute Essays* (10 vols.), *The Crane Classics* (10 vols.)

DABNEY, CHARLES WILLIAM (1855–). President of the University of Cincinnati 1904–1920, but retired from presidency in 1920; professor of chemistry in the University of North Carolina and state chemist; discovered the phosphate deposits and tin ore in North Carolina, and was largely instrumental in establishing an industrial school at Raleigh; was president of the University of Tennessee and assistant secretary of agriculture at Washington during Cleveland's administration; author of *Old College and New, Washington's Interest in Education,* and *Agriculture and Education.*

DANA (*dā'na*), **EDWARD SALISBURY** (1849–1935). Born in New Haven, Conn.; curator of the mineral collection at Yale, and professor of physics; trustee of Peabody Museum and editor of the *American Journal of Science.* His text-books on mineralogy have been deservedly popular and are in use in many schools.

DASENT (*dā'sent*), **GEORGE WEBBE** (1817–1896). Born in St. Vincent, West Indies, where his father was attorney-general of the island; educated

at Westminster School, King's College and Oxford. In 1853 was appointed professor of English literature and modern history at King's College, London; specialized in Scandinavian literature and mythology; published a version of *The Prose or Younger Edda*, and other translations from the Icelandic. Author of *A Grammar of the Icelandic or Old Norse Tongue.*

DAVENPORT, HOMER CALVIN (1867–1912). Cartoonist. Born at Silverton, Ore.; reared on a farm; had almost no educational advantages, and never attended art school. His early life was a varied and adventurous one; he was at times a jockey, a railroad fireman, and a clown in a circus, but always drawing pictures. In 1892, he was employed on the San Francisco Examiner, and three years later was taken to New York by William R. Hearst, and there began to draw cartoons for the New York Journal, which made him famous. He originated the Mark Hanna $ mark suit of clothes, and the great figure of the trusts. His work caused an attempt to pass an anti-cartoon bill in New York in 1897. Author: *Davenport's Cartoons, The Bell of Silverton and Other Short Stories of Oregon, The Dollar and the Man.*

DAVIDSON, GEORGE (1825–1911). Educator and astronomer. Born in Nottingham, England; when he was seven, his family emigrated to America, and settled in Philadelphia, where George attended the public schools and graduated from the high school. When twenty years of age, he became connected with the United States Coast and Geodetic Survey and served for fifty years. From 1845 to 1850, he was engaged in geodetic and astronomical work in the Eastern States and for the remaining forty-five years in the coast survey of California, Oregon, Washington, and Alaska. He was one of the foremost astronomers of his time; he traveled to many parts of the world to make observations, particularly on the transits of Venus. After serving as honorary professor of geology and astronomy at the University of California for three years, in 1895 he became professor of geography at that institution. Mr. Davidson published 261 papers and volumes on astronomy, navigation, geography, and kindred subjects.

DAVIS, WILLIAM MORRIS (1850–1934). Geographer and geologist; born in Philadelphia; for three years assistant at the Argentine National Observatory; was connected with Harvard after 1878 as professor of physical geography and geology; a member of the Carnegie Institution Expedition to Turkestan in 1903, and traveled in South Africa two years later; author of *Physical Geography* and *Elementary Meteorology*, and associate editor of *Science, American Naturalist*, and *The American Journal of Science.*

DAY, JAMES ROSCOE (1845–1923). Born in Maine; was clergyman in Portland, Boston, and New York Methodist churches; chancellor of Syracuse University after 1894; was elected Bishop of the Methodist Episcopal Church in 1904, but resigned.

DEGARMO (*dĕ-gär'mō*), **CHARLES** (1849–1934). Born in Wisconsin; professor of modern languages, professor of psychology in the University of Illinois, and president of Swathmore College. In 1898 he became professor of the science and art of education at Cornell; author of *Essentials of Method, Herbert and Herbartians, Language Lessons*, and *Principles of Secondary Education.*

DEVINE (*dē-vīn'*), **EDWARD THOMAS.** See under PHILOSOPHERS.

DEWEY (*dūū'i*), **MELVIL** (1851–). Born in New York State; while at Amherst College he was acting librarian; planned and directed three national educational societies—the American Library Association, the Metric Bureau, and the Spelling Reform Association; also the Library Bureau for advancing library interests. From 1883 to 1888, he was chief librarian and professor of library economy at Columbia; founder and director of the Albany Library School; has written *Library School Rules* and *Decimal Classification and Relative Index.*

DIESTERWEG (*dēs'tĕr-vāk*), **FREDRICH ADOLF WILHELM** (1790–1866). German educator. Born at Siegen, Prussia; educated at German universities. After 7 years of teaching experience, he became director of the New Teachers' Seminary at Mors where he put into practice the methods of Pestalozzi; later, he was for 15 years director for the Seminary for City Schools in Berlin; there he was a strong supporter of unsectarian religious teaching. He founded two educational magazines and was a voluminous writer on educational subjects and the author of many text books. He ranks among the most noted of modern educators; by his training of teachers, he rendered a signal service to the schools of his country.

DINWIDDIE (*din-wid'i*), **ALBERT BLEDSOE** (1871–). College president. Born at Lexington, Ky.; received his B. A. and Ph. D. from the University of Virginia, and studied in Germany. In 1906 he became a member of the mathematics department at Tulane University; in 1910 he was appointed Dean of the College of Arts and Sciences, a position he held until 1918, when he was made president.

DRAPER, ANDREW SLOAN (1848–1913). Born in New York State; American lawyer and educator; served on the City Board of Education in Albany; member of the Court of Commissioners on Alabama claims in 1885; state superintendent of public instruction in New York, and he accomplished among other reforms, the adoption of a system of uniform examinations; superintendent of the Cleveland, Ohio, schools for two years, and president of the University of Illinois for ten years; elected first commissioner of education for the state of New York (1904–1913); declined the election to the first superintendency of the schools of Greater New York; member of the Board of United States Indian Commissioners (1902–1913); published *The Rescue of Cuba* and many addresses; received medals for work as educational writer and speaker; editor-in-chief of *Self Culture for Young People.*

DUNSTER (*dun'star*), **HENRY** (1612?–1659). First president of Harvard. Born in Lancashire, England; educated at Magdalen College, Cambridge, where he was associated with John Milton and Jeremy Taylor; emigrated to Massachusetts in 1640, and that same year became president of Harvard College which had been founded four years before, but had been presided over by an incompetent "master." Dunster was a man of profound learning, and one of the best Hebrew scholars of his time. Under him Harvard took a high stand, and received an impulse which influenced its whole future history. The requirements for admission and the course of study which he established remained practically unchanged for nearly a century, and formed a model followed by the other colonial colleges. In the time of its greatest need, President Dunster contributed 100 acres of land to the college; he was the chief influence in securing the charter of 1650, under which with a few amendments, the college continues to be governed. In spite of the invaluable service which Dunster rendered, he was forced to resign the presidency because he publicly expressed his doubts of the efficacy of infant baptism.

DURUY, VICTOR (1811–1894). French educator and historian. Born in Paris of lowly parentage. Was for 25 years professor in the College Henry IV (Paris); an admirable teacher, he spent his spare time writing text books and became widely known as an authority in the field of education. In 1863 he was made Minister of Public Instruction by Napoleon III. To him is in large part due the modern system of education in France.

DUTTON, SAMUEL TRAIN (1849–1919). A teacher, principal and superintendent of schools (1874–1900); professor of school administration and superintendent of Horace Mann Schools, Teachers College, N. Y., in 1900; lecturer in pedagogy at Harvard; author of several valuable text-books.

DWIGHT (*dwait*), **TIMOTHY** (1752–1817). Born in Northhampton, Mass.; his father, also Timothy, was graduated from Yale in 1744; his mother was a daughter of Jonathan Edwards, the great theologian and one of the first graduates of Yale. Timothy entered Yale at thirteen and graduated at seventeen, ranking second in his class. In 1795 he became president of Yale; his claim to distinction rests on his record in this position; when he assumed control, there were but 110 students, the curriculum was narrow, and the methods of discipline harsh. President Dwight broadened the curriculum, promoted better relations between faculty and students, abolished the system of fines for minor offenses, and improved the methods of instruction. At his death the enrollment had increased to 313. Dwight was a voluminous writer. The most important of his works is *Travels in New England and New York*, in four volumes; he wrote many hymns and poems; one of his hymns, *I Love Thy Kingdom Lord, the Place of Thine Abode*, is included in most modern collections.

FAIRBANKS, ARTHUR (1864–). Born at Hanover, N. H. A. B., Dartmouth College, 1886; Ph. D., Freiburg University, Germany, 1890; was professor of Greek literature and archaeology at the

University of Iowa for six years; then professor of Greek and Greek archaeology at the University of Michigan. From 1907 to 1925, was director of the Boston Museum of Fine Arts. During Mr. Fairbank's term as director, the beautiful and spacious new building on the Fenway was completed and occupied. Author: *First Philosophers of Greece, A Study of the Greek Paean, The Mythology of Greece and Rome, Greek Gods, and Heroes.*

FALCONER (*fô'k'n-ẽr*), **ROBERT A.** (1867–). College president. Born at Charlottetown, Prince Edward Island; as a boy spent eight years in Trinidad, B. W.; educated at the Universities of Edinburgh, Leipzig, Berlin, and Marburg; Gilchrist scholar, 1885; received degrees from the University of London and Edinburgh University; was lecturer and professor of New Testament Greek in Pine Hill College, Halifax, N. S. from 1892 to 1907; was elected president of the University of Toronto in 1907. Author: *The German Tragedy and its Meaning for Canada, Idealism in National Character,* and *The United States as a Neighbor,* also author of numerous articles on educational and political questions.

FARRAND, LIVINGSTON (1867–1939). Received his A. B. from Princeton in 1888 and honorary degrees from various colleges. Took an M. D. at the Columbia Medical School, New York, and later studied in Cambridge and Berlin. Instructor of psychology 1893–1901 at Columbia, and from 1901 professor of psychology and later of anthropology till 1914. President of the University of Colorado, 1914 to 1919, and then Chairman Central Committee of the Red Cross till October, 1921, when Dr. Farrand became president of Cornell University. An authority on tuberculosis.

FAUNCE, WILLIAM HERBERT PERRY (1859–1930). Born at Worcester, Mass.; was graduated at Brown; instructor of mathematics at Brown; pastor of Baptist churches at Springfield, Mass., and New York City until his election to the presidency of Brown University in 1899; was lecturer at University of Chicago and at Yale.

FAWCETT, (*fô'sĕt*), **HENRY.** See under AUTHORS.

FELLOWS, GEORGE EMORY (1858–). Born at Beaver Dam, Wis.; taught for ten years in high schools; professor of European history at Indiana University and assistant professor of history at Chicago University. From 1902 to 1911 was president of the University of Maine; president of Decatur College of Milikin University (1913–1915). In 1915 went to the University of Utah as head of the department of history and political science. Author of *Outlines of the Sixteenth Century* and *Recent European History.*

FENOLLOSA, ERNEST FRANCISCO (1853–1908). Born at Salem, Mass.; went to Japan as professor of political economy and philosophy in Tokyo University; was imperial fine arts commissioner to the Japanese government in 1886; professor of aesthetics and manager of the Tokyo Arts Academy; became curator of the oriental art department of the Museum of Fine Arts in Boston; professor of English literature in the Imperial Normal School in Tokyo; lectured on the Orient, and was the author of several books, including two volumes of poems and monographs on oriental art.

FERGUSSON (*fûr'gu-son*), **JAMES** (1808–1886). Scottish writer on architecture. Born at Ayr; educated at the high school in Edinburgh. He went to Calcutta as a partner in a mercantile firm and there became interested in Indian architecture. After making a fortune in the indigo trade he retired from business and devoted himself to the study of architecture. His fame rests upon his monumental work, *The History of Architecture in All Countries from the Earliest Times to the Present Day,* which for its comprehensive plan, grasp of the entire subject, and critical analysis, "stands quite alone in architectural literature."

FERRIS, WOODBRIDGE NATHAN (1853–). Born in Spencer, N. Y.; after a number of years experience as educator in business colleges, founded and became president of Ferris Institute, Big Rapids, Michigan; was governor of Michigan 1913–14 and 1915–16, and United States Senator, 1923–29.

FETTER, FRANK ALBERT (1863–). Economist. Born in Peru, Ind.; educated in the public schools, and entered upon a business career; became interested in social studies, and graduated from Indiana University in 1891; pursued graduate studies at Cornell University, the Sorbonne, and Ecole de Droit, Paris, and the University of Halle, Germany; received the Ph. D. degree from Halle in 1894; taught economics at Indiana, Leland Stanford, Cornell, and in 1911 went to Princeton as professor of political economy; was president of the American Economic Association, 1912. Author: *Principles of Economics, Source Book in Economics; Economic Principles,* and various essays and monographs on economic subjects; an authority on economic theory and welfare economics.

FINEGAN, THOMAS EDWARD (1866–1932). Educator. Born in West Fulton, N. Y.; graduated from the State College for Teachers, Albany, N. Y. in 1889; admitted to the New York bar in 1894; was identified with the public schools of New York as teacher and state official for about 35 years; from 1919 to 1923 was state superintendent of public instruction for Pennsylvania; in 1927 became educational director at the Eastman Kodak Company, directing experimental program in developing motion pictures for regular work of classroom in public schools. Author: *Judicial Decisions in Education, Teacher Training Agencies, Free Schools, the Township System.* In 1927 became editor-in-chief of the *Winston Loose Leaf Encyclopedia.*

FINLEY, JOHN HUSTON (1863–1940). Secretary of the State Charities Aid Association in New York; founder and editor of the *State Charities Record* and *Charities Review* of New York; professor of politics, Princeton; president of New York College (1903–1913); Commissioner of Education, New York state (1913–1921). In 1921 became editor of the New York *Times.*

FINLEY, MARTHA (MARTHA FARQUHARSON) (1828–1909). Born in Chillicothe, Ohio; educated in private schools; taught school and engaged in journalistic work; lived in Philadelphia for many years and became widely known as a writer of Sunday School books. The most famous of these are the "Elsie Books" in 26 volumes, written at intervals during forty years, beginning in 1868; *Elsie Dinsmore, Elsie's Holidays, Elsie's Girlhood,* etc. Less known are the Mildred Books: *Mildred Keith, Mildred at Roselands,* and a number of others; others of Miss Finley's books are: *An Old Fashioned Boy,* and *The Thorn in the Nest.*

FINNEY, CHARLES GRANDISON (1792–1875). Educator and clergyman. Born in Warren, Conn.; for a time studied law, then turned to theology; he became an eloquent preacher of the evangelistic type and was instrumental in the founding of many churches. In 1835 he was called to the chair of theology at the recently founded Oberlin College, and from 1851 to 1866 was president; the influence of his powerful personality was felt for many years.

FISHER, HARRISON (1877–1934). Born in Brooklyn, N. Y.; educated in San Francisco, England, and France; illustrator for many books and for short stories for the *Saturday Evening Post, Ladies' Home Journal,* and other periodicals; portrait painter and etcher; connected with the *Cosmopolitan* as designer of covers and illustrator. Author: *The Harrison Fisher Drawing Book.*

FISHER, HARRY CONWAY (BUD FISHER) (1884–). Cartoonist. Born in Illinois; educated at Hyde Park High School in Chicago; began as cartoonist in San Francisco in 1905. In 1907 he made his first cartoon of "Mutt" (there was then no "Jeff") in the strip; this was the beginning of the famous *Mutt and Jeff* series, and the beginning of the daily comic in the newspapers, the author was then with the *San Francisco Chronicle* at a salary of $22 a week; his yearly income twenty years later was said to exceed $200,000; he was then "the highest paid cartoonist in the world." His comic strips were published in more than 200 newspapers in the United States and Canada; they also appeared in England, Ireland, South America, Japan, and Scandanavia. *Mutt and Jeff* was the first comic strip to appear regularly in the London newspapers.

FISHER, IRVING (1867–). Economist. Born in Saugerties, N. Y.; A. B., Yale, 1888; Ph. D., 1891, also studied at Berlin and Paris; began at Yale as tutor in mathematics, then became successively, instructor, assistant professor, and professor of political economy; member of many learned societies; president of the American Economic Association, 1918. Author of many books on social science topics, including also mathematical studies: *The Nature of Capital and Income, The Rate of Interest, Stabilizing the Dollar, The Making of Index Numbers, The Purchasing Power of Money* are perhaps the most important; identified with movements for the prevention of tuberculosis, the spread of principles of hygiene, the stabilization of the value of money and the abolition of price fluctuations.

and the bringing about the world peace; published many articles on prohibition and the Eighteenth Amendment, and a book in their defense, entitled *Prohibition at Its Worst;* achieved an international reputation as an economist and publicist.

FISK (*fisk*), **EVERETT OLIN** (1850–1934). Born in Marlboro, Mass.; graduated from Wesleyan University; after considerable experience in teaching and ten years as agent for the publishing firm of Ginn & Company, in 1885, he founded, and was for many years president of Fisk Teachers' Agencies, one of the oldest and largest concerns of its kind in the country.

FISKE, HARRISON GREY (1861–). Born in Harrison, N. Y.; student at New York University; active in the theater world, as manager, producer, director, playwright, and dramatic critic. In 1890, he married Minnie Maddern Davey who, as Mrs. Fiske, became a famous actress, her husband being her manager. Author and adapter of numerous plays; writer of articles in magazines.

FITCH, JOSHUA G. (1824–1903). An English educator; vice-principal of the British Normal College, then principal; finally inspector of schools, including the training college for teachers. His books, *Lectures on Teaching, Art of Questioning,* and *Art of Securing Attention,* are well known.

FLEXNER, ABRAHAM (1866–). Educator. Born in Louisville, Ky.; graduated from Johns Hopkins University, and did graduate work at Harvard and the University of Berlin. After many years teaching experience, he was, from 1908 to 1925, connected in various capacities with the Carnegie Foundation for Advancement of Teaching; in 1925, became director of the division of studies and medical education of the General Education Board. An authority on educational problems. Author: *The American College, Medical Education in the United States and Canada, Medical Education in Europe, A Modern School, A Modern College,* also many articles in periodicals.

FRANCKE (*fränk'e*), **AUGUST HERMANN** (1663–1727). A distinguished German educator. In 1695 he became pastor of a small town near Halle, where he started a private school in his house, which at his death had grown to be a large educational and charitable institution with 2,165 students, comprising three departments, the Pedagogium, for the children of the wealthy, the Latin School, and the common schools. The teachers were students at the University of Halle. This institution was the first to combine Christian and practical training with normal school work. Francke's ideas were opposed both to extreme rationalism and the classical school. He advocated the use of the vernacular.

FRANK, GLENN (1887–1940). College president. Born in Queen City, Mo.; graduated from Northwestern University in 1912 and for four years after graduation was assistant to the president there; for three years afterward was associated with Edward Filene, the Boston merchant, in research and organization; in 1919 he became associate editor of the *Century Magazine,* and in 1921, editor-in-chief. In 1925 he was elected president of the University of Wisconsin. Author: *An American Looks at His World, The Politics of Industry,* also of many articles in the *Century.*

FREEMAN, EDWARD AUGUSTUS. See under AUTHORS.

FRIDAY, DAVID (1876–). Economist. Born in Coloma, Mich.; graduated from the University of Michigan in 1908, and continued there as instructor and professor of economics until 1916; at New York University 1916–1919, and then returned to the University of Michigan; elected president of Michigan Agricultural College in 1921 and served two years; in 1923 became lecturer on economics, New School for Social Research; authority on problems of taxation and valuation. Author: *Problems in Accounting, Reading in Economics, Profits, Wages, and Prices.*

FROEBEL (*frö'bĕl*), **FRIEDRICH WILHELM AUGUST** (1782–1852). Famous German educationist and originator of the *Kindergarten,* an institution for simultaneously furthering the physical, moral, and intellectual growth of children between the ages of three and seven; a "garden of children" in which young human plants are nurtured. He held that the essence of education was to be found in wisely directed but spontaneous action, and that play was a child's most natural employment. The master-stroke of Froebel's genius was his organization of children's play. In 1826, he published his great work, *The Education of Man,* and seventeen years later, the *Mutter-und-Kose-lieder* (Songs, Games, and Stories for use of Mothers). Froebel holds that education creates nothing in the children, but merely directs the growth of inborn qualities. To him education meant unity of development in perfect accordance with the laws of being.

FRYE, ALEXIS EVERETT (1859–). Educator and author, teacher of methods and practice, Chicago Normal School; superintendent in California and Cuba; organizer of Cuban school system; educational lecturer; author of many school text-books relating to nature study and geography.

FRYER, JOHN (1839–1909). Educator. Born at Hythe, Kent, England; graduated from Highbury College, London. From 1861 to 1867 he taught in various educational institutions in China; from 1867 to 1896 he was head of the department for translation into Chinese of foreign scientific books at the Imperial Government Arsenal at Shanghai; from 1896 until his death, was Agassiz professor of Oriental languages and literature at the University of California. Author: *Educational Directory for China,* and more than 100 books published at Shanghai in the Chinese language.

GALLAUDET (*găl'ô-dĕt'*), **EDWARD MINER** (1837–1917). Born in Hartford, Conn.; taught in his father's institution for deaf-mutes at Hartford before organizing, in 1857, the institution for Deaf, Dumb, and Blind at Washington; founded in 1864, Gallaudet College for the Deaf, which is the only college of its kind in the world. He was professor of moral and political science there, and president of the convention of American Institutions for the Deaf. He wrote *Popular Manual of International Law,* and the *Life of Thomas Hopkins Gallaudet.*

GALLAUDET, THOMAS HOPKINS (1787–1851). American educator of deaf and dumb; born in Philadelphia, Pa., of French Huguenot ancestry. Familiarizing himself with the system of the Abbé Sicard in Paris, and with that of Braidwood and Watson in London, he founded an institution in Hartford, Conn., for the deaf and dumb.

GARFIELD, HARRY AUGUSTUS (1863–). College president. Born at Hiram, Ohio, son of James A. Garfield, the twentieth president of the United States, who had himself been a college president; like his father before him, Harry Augustus graduated from Williams College; he then studied law for a year at the Columbia Law School, then at Oxford University and the Inns of Court, London; was admitted to practice in 1888; practiced law in Cleveland from 1888 to 1903; was professor of politics at Princeton for five years, and was then elected president of Williams College, the first layman to be president of that institution. His immediate predecessor was Dr. Henry Hopkins, the son of the famous Mark Hopkins.

GASTER, MOSES (1856–1939). Jewish scholar. Born at Bucharest, Rumania; educated at Bucharest University. He became lecturer on Rumanian language and literature at Bucharest University in 1881. On account of his championship of the cause of persecuted Jews, he was expelled from Rumania in 1885 and went to England. From 1886 to 1891, he was lecturer at Oxford on Byzantine and Slavonic languages; from 1890 to 1896 he was principal of Montefiore College at Ramsgate. In 1887 he was appointed chief rabbi of the Sephardic communities of England, author of numerous works and scholarly articles.

GAYLEY, CHARLES MILLS (1858–1932). Educator and author. Born in Shanghai, China; graduated from the University of Michigan in 1878; also studied in England and Germany. After nine years teaching experience at the University of Michigan, went in 1889 to the University of California, where he was professor of English for almost 35 years, becoming professor emeritus in 1923. Author: *Classic Myths in English Literature, Plays of Our Forefathers, Beaumont, the Dramatist, Shakespeare and the Founders of American Liberty, The Gayley Anniversary Papers* (dedicatory volume), etc.; contributor to magazines, and member of the editorial board of *The Golden Book.*

GAZA (*gā'zā*), **THEODORUS** (1400?–1475). Born at Thessalonica; when his native city was captured by the Turks, he fled to Italy and was there one of those Greek scholars who were leaders in the revival of learning in the fifteenth century. In 1447 he became professor of Greek in the newly founded University of Ferrara and there acquired such fame as a teacher that students from all parts of Europe flocked to the new school. He was later employed by Pope Alexander in making translations from Aristotle and other Greek

authors. His *Greek Grammar*, first printed in 1495, was for a long time the leading text-book.

GENUNG (*jē-nung'*), **JOHN FRANKLIN** (1850–1919). An American educator; born in Willseyville, N. Y.; was professor of rhetoric in Amherst College; wrote a number of excellent text-books.

GEORGE, HENRY (1839–1897). Social educator. Born in Philadelphia where his father was a Custom House clerk. He left school when less than 14 years of age to work in a store, but after two years, went to sea as a foremast boy; when 17, returned home and became a printer. He drifted to California, and, being impressed by the contrast between the unemployment about him and the amount of land in private hands, he wrote a pamphlet on *Our Land and Land Policy*, which, however, attracted little notice. He then set to work in 1877 to elaborate his ideas more fully, and having set much of the type himself, in 1879, published his book entitled *Progress and Poverty*. This book attracted a great deal of attention, and brought fame and numerous disciples to its author. It has since been translated into many languages. Whatever its merits or fallacies, it is a book to be reckoned with. George's thesis is that progress and poverty are inevitable so long as land and natural resources are held as private property. His remedy is to have the state take all rent and increase in value by taxes, and abolish all other taxes, especially those on improvements. Mr. George made many lecture tours in America, England, and Australia. His other important books are *Protection and Free Trade*, *Social Problems*, and *A Perplexed Philosophy*. He died suddenly of apoplexy in the midst of a campaign for the mayorship of New York City in 1897.

GIBBS, JOSIAH WILLARD (1839–1903). Mathematical physicist. Born at New Haven, Conn.; graduated from Yale University in 1858; also studied in Paris, Berlin, and Heidelberg. He became professor of mathematical physics at Yale in 1871, which position he held until his death in 1903. In 1873 he published two papers, one on *Graphical Methods in the Thermodynamics of Fluids*, and the other on *Method of Geometrical Representation of the Thermodynamic Properties of Substances by means of Surfaces*. His researches are said to have revolutionized chemical science by the introduction of chemical energetics. Gibbs was the most distinguished American mathematical physicist of his day and enjoyed an international reputation.

GILDERSLEEVE (*gĭl'der-slēv*), **BASIL LANNEAU** (1831–1924). Distinguished classical scholar; born at Charleston, S. C.; professor of Greek in the University of Virginia; appointed to the professorship of Greek at Johns Hopkins University; edited the *American Journal of Philology* which was established in 1880. Among his numerous works are: *A Latin Grammar; Persius; Justin Martyr; Pindar; Essays and Studies; Greek Syntax*.

GILMAN, ARTHUR (1837–1909). Born in Alton, Ill.; planned the Harvard Annex School (1876), which became Radcliffe College (1894), of which Gilman became regent; founded the Cambridge school for girls, since known as the "Gilman School" (1886); wrote *Boston Past and Present*, *Shakespeare's Morals*, *History of the American People*, *The Making of the American Nation*, etc.

GILMAN, CHARLOTTE PERKINS (1860–1935). Born in Hartford, Conn., a great-granddaughter of Lyman Beecher; largely self-educated; in 1890 began writing and lecturing on ethics, economics, sociology, and other educational subjects. Author *Women and Economics*, *Concerning Children*, *The Man-Made World*, *His Religion and Hers*, etc. Her writings have had considerable influence in the advancement of women.

GILMAN, DANIEL COIT (1831–1908). Born at Norwich, Conn.; successively librarian, secretary of the Sheffield Scientific School, and professor of physical and political geography; president of the University of California, first president of Johns Hopkins University, continuing from 1875 to 1901, and then president emeritus; president of the Carnegie Institution at Washington; member of the United States Commission on the boundary line between Venezuela and British Guiana; trustee of the Russell Sage Foundation and of Carnegie Institution. He published *Life of James Monroe*, *University Problems*, and *The Launching of a University*. He was editor-in-chief of the New International Encyclopedia.

GINN (*gĭn*), **EDWIN** (1838–1914). Born at Orland, Me. When a young man, entered the publishing business, and was for many years head of the firm of Ginn and Company, the largest publishers of school and college text-books in the United States. The first book was Allen's *Latin Grammar*, published in 1868; then followed the series of mathematical text-books written by Professor Wentworth which had an immense sales, and laid the foundation for Mr. Ginn's success as a publisher. He was a lifelong advocate of world peace and in his will left $1,000,000 for the establishment of the World Peace Foundation.

GIRARD (*jĭ-rärd'*), **JEAN BAPTISTE** (known as **"LE PERE GIRARD"**) (1765–1850). French-Swiss educationalist. Born at Fribourg; educated for the priesthood at Lucerne. In 1804 began his career as a public teacher at first in the elementary school at Fribourg; later in the gymnasium at Lucerne; after 30 years of teaching, he retired in 1834 to devote himself to writing books on education. In Switzerland, Father Girard was called a second Pestalozzi and his books influenced methods of education in other countries. He tried to stimulate the intelligence of his pupils instead of cramming their heads with facts.

GOLLANCZ, ISRAEL (1864–1930). Born at London; educated at the City of London School, at University College, London, and at Christ's College, Cambridge; he was Quain student and lecturer in English at University College, London; in 1896 he became university lecturer in English, and in 1906 was made university professor of English language and literature at King's College, London; he became secretary of the British Academy on its foundation in 1903, and was knighted in 1919. He edited the texts of several English writers; his published works include: *Cynewulf's Christ; Exeter Book of Anglo-Saxon Poetry;* and *Hamlet in Iceland*. See also under AUTHORS.

GOODWIN, WILLIAM WATSON (1831–1913). Well-known American classical scholar; born at Concord, Mass.; Eliot professor emeritus of Greek at Harvard University; first director of the American School of classical studies at Athens; author of various text-books.

GRADY, HENRY WOODFEN (1851–1889). Born in Athens, Ga.; educated at the University of Georgia; entered journalism and published a series of articles on the resources of the state which attracted much attention. In 1880 he became editor of the *Atlanta Constitution*, and contributed many articles to it and also to various magazines. In 1886 he delivered a most remarkable speech before the New England Society in New York, on *The New South* which was widely copied; another address delivered shortly before his death on *The Future of the Negro*, also was much discussed. Mr. Grady did much to improve relations between the North and the South and was one of the first prominent representatives of the South to show that he was ready to forget sectional prejudices and consider himself a citizen of the whole country.

GRANDGENT, CHARLES HALL (1862–). Born in Dorchester, Mass.; educated at Harvard (A. B., 1883). Taught in public schools of Boston; was tutor, instructor, and in 1896 became full professor of Romance languages at Harvard; from 1899 to 1911 was chairman of the Romance department; Harvard Exchange Professor in Paris, 1915–16; president of the Harvard Alumni Association, 1925. Author *Italian Grammar*, *Introduction to Vulgar Latin*, *The Power of Dante*, *Discourses on Dante*, etc.; a leading authority on Dante and his age; writer of many articles on phonetics and educational subjects.

GREGOROVIUS (*grĕg-ô-rō'vĭ-ŭs*), **FERDINAND** (1821–1891). German historian and poet. Born in East Prussia. When a little over 30 years of age, he began his travels in Italy, and wrote in a unique manner a book about them that was widely read; later he traveled in Greece, Egypt, Syria, and Turkey and wrote books describing his journeys in those countries. He was the author of poems, critical works, and many histories; his international fame rests upon his great work, *Geschichte der Stradt Rom in Mittelalter*, which was translated into Latin, and into English under the title *History of Rome in the Middle Ages;* it ranks as one of the greatest histories of the nineteenth century.

GRIGGS, EDWARD HOWARD (1868–). Widely-known lecturer; born in Minnesota. Instructor in English literature and professor of literature at Indiana University; professor of ethics, and of ethics and education at Leland Stanford Junior University. He lectured on ethics and literature to cultured

audiences in the larger cities. His writings include *The New Humanism, A Book of Seventy Meditations,* and *Moral Education.*

GROSVENOR (*grō'vĕ-nēr*), **EDWIN AUGUSTUS** (1845–1936). American historian; born in Newburyport, Mass.; professor of European history at Amherst from 1892–1899; author of various historical works including; *Constantinople, Contemporary History of the World,* also a translation from the French of Duruy's *History of Modern Times,* etc.

GULICK, LUTHER HALSEY (1865–1918). Born in the Hawaiian Islands; secretary of the physical training department of the International Committee of the Y. M. C. A.; one of the faculty of the International Y. M. C. A Training School of Springfield, Mass.; principal of Pratt Institute High School; director of physical training in the public schools of Greater New York until 1908, when he began to serve on the Russell Sage Foundation for playgrounds. His writings are *Physical Measurements,* and *Physical Education by Muscular Exercise,* and *Mind and Work.*

GUYOT (*gē'yô*), **ARNOLD** (1807–1884). Educator, geographer. Born near Neuchâtel, Switzerland; educated at the College of Neuchâtel and the University of Berlin, where he received the Ph. D. degree; for nine years he was a colleague of Agassiz as professor of history and physical geography in the College of Neuchâtel. In 1848 he came to America and settled at Cambridge, Mass. That same year he delivered a series of lectures at the Lowell Institute which were translated into English under the title *Earth and Man,* and attracted wide attention. For six years after, Guyot was a lecturer at normal schools and teachers' institutes in the service of the Massachusetts State Board of Education; then for nearly thirty years was professor of physical geography and geology at Princeton. There he founded the Museum which has since developed into one of the finest in the country. He made an international reputation by his studies of glaciers; he perfected plans for a national system of meteorological observations which developed into the Weather Bureau. He did much to improve the methods of teaching geography through the preparation of a series of text-books and wall maps, for which he obtained a medal of progress from the Vienna Exhibition in 1873.

HADLEY, ARTHUR TWINING (1856–1930). Born in New Haven, Conn.; professor of political science and political economy until 1899, when he became president of Yale; lectured on railroad administration, and commissioner of labor statistics. Published *Railroad Transportation—Its History and its Laws, The Education of the American Citizen, Freedom and Responsibility,* and *Standards of Public Morality.* His writings give him first rank among American economists. President of Yale 1899–1921, when he became president emeritus.

HAILMANN, WILLIAM NICHOLAS (1836–). Born in Switzerland; after teaching several years, was elected superintendent of the public schools of La Porte, Indiana; became national superintendent of Indian schools and later superintendent of schools at Dayton, Ohio. Head of the department of psychology at the Chicago Normal School. His writings include a large number of educational works, among which are *History of Pedagogy, Early Education, Kindergarten Culture, The English Language,* and *The Laurel Primer.*

HALL, GRANVILLE STANLEY (1846–1924). Born in Ashfield, Mass.; professor of psychology at Antioch College; lecturer on psychology at Harvard and at Williams, and professor of psychology at Johns Hopkins, becoming then (1888) president and professor of psychology at Clark University. He made child-study a specialty, and was a well-known lecturer and writer in various publications on that subject. His books include *Aspects of German Culture, Adolescence,* and *Youth—Its Education, Regimen and Hygiene.* He was the founder and editor of *The American Journal of Psychology* and the *Pedagogical Seminary.*

HANUS, PAUL HENRY (1855–). Born in Germany; brought to the United States by his widowed mother when four years of age; graduated from the University of Michigan in 1878; after a number of years' experience in teaching, he became, first associate professor (1891–1901), then full professor of the history and art of teaching at Harvard University; in 1921 he retired as professor emeritus; served on various educational commissions and surveys; author of *Educational Aims and Educational Values, A Modern School, School Efficiency, School Administration and School Reports,* etc.; editor *School Efficiency Series;* contributor to various educational journals. Professor Hanus was one of the principal influences in making education a field for graduate instruction and in raising teaching to the level of a profession.

HARKER, JOSEPH RALPH (1853–). Born in County of Durham, England; at ten years of age began work in the coal mines of Durham; emigrated to Illinois in 1871, and worked as a coal miner for three years, giving his leisure time to study; became a public school teacher in 1874, and taught in various places; became principal of Whipple Academy at Jacksonville, Ill., holding this position until 1893, and pursuing at the same time a college course and graduate studies, receiving from Illinois College his A. B. in 1888, A. M. in 1891, and his Ph. D. in 1893. He was elected president of the Illinois Woman's College, Jacksonville, Ill. in 1893 and served until his retirement as president emeritus in 1925. Was ordained minister in the Methodist Episcopal Church in 1891.

HARPER, WILLIAM RAINEY (1856–1906). An American educator; born at New Concord, Ohio; professor of Hebrew at the Baptist Seminary, Chicago (1879), where he perfected a method of teaching Hebrew by correspondence; professor of Semitic languages and Biblical literature at Yale (1886–1889); president of the University of Chicago (1891–1906); wrote *Elements of Hebrew, Hebrew Vocabularies, Hebrew Method and Manual, Elements of Hebrew Syntax,* and *Prospects of the Small College.*

HARRIS, ABRAM WINEGARDNER (1858–1935). Born in Philadelphia; taught mathematics at Wesleyan and elsewhere; director of the Office of Experiment Stations, United States Department of Agriculture; from 1893 to 1901 president of the University of Maine; president of Northwestern University 1906–16; corresponding secretary Board of Education of the M. E. Church 1916–24; became secretary in 1924.

HARRIS, GEORGE (1844–1922). President of Amherst College (1899–1912); born in Maine; professor of Christian theology in Andover Theological Seminary; one of the editors of the *Andover Review;* author of *Moral Evolution,* and *Inequality and Progress.*

HARRIS, WILLIAM TORREY (1835–1909). One of the most eminent American educators; was United States Commissioner of Education from 1889 to 1906; superintendent of St. Louis public schools (1867–1888); lecturer at the Concord School of Philosophy; represented the U. S. Bureau of Education at the Brussels Educational Congress and the Paris Exposition in 1889; established the *Journal of Speculative Philosophy,* and was regarded as the best exponent in this country of the philosophy of Hegel. He helped edit Appleton's School Readers, edited Appleton's educational series, department of philosophy in Johnson's Cyclopædia, and was editor-in-chief of Webster's International Dictionary. He was the author of *Introduction to the Study of Philosophy, Hegel's Logic,* and *Psychologic Foundations of Education,* besides many other works.

HAZARD (*haz'ard*), **CAROLINE** (1856–). Born in Rhode Island; member of the Massachusetts State Board of Education; president of Wellesley (1899–1910). Author of *Some Ideals in the Education of Women.*

HECKER, JOHANN JULIUS (1707–1768). A German educator. Pupil of Francke. By command of Frederick II. of Prussia he formulated a system for the government of common schools, which is now partly in force, and established the first permanent real-schule.

HEGIUS, ALEXANDER (1420–1495). A German humanist. He was a pupil of Thomas à Kempis, and in his turn instructed Erasmus, Pope Adrian VI., and Conrad Goclenius. He used no mediæval text-books, but made Latin his standard. His works include treatises on pedagogy, psychology, and morals.

HERBART (*her'bart*), **JOHANN FRIEDRICH** (1776–1841). A German philosopher and eminent educationist. Following at first in his teaching the methods of Pestalozzi and Fichte, after more reflection he formed one of his own, now familiarly called the *Herbartian System.* The theory of "Apperception" was fully set forth by him as well as the problem of how to realize the ideas of freedom, perfection, right, equity, and benevolence within the sphere of education. Many training schools have been established on his methods. His writings fully explain his position and theories, among them *Herbart's A B C of Sense-Per-*

ception, Application of Psychology to the Science of Education, and *Outlines of Educational Doctrine.*

HIBBEN, JOHN GRIER (1861–1933). President of Princeton University, received his education at Princeton and the University of Berlin. For a number of years he held pastorates and from 1891 taught logic at Princeton until 1912, when he was elected president in succession to Woodrow Wilson. Among his philosophical works are *Inductive Logic, Problems of Philosophy, The Philosophy of Enlightenment, A Defense of Prejudice and other Essays,* and *The Higher Patriotism.*

HICKS, FREDERICK C. (1863–). College president. Born in Capac, Mich.; graduated from the University of Michigan in 1886, and four years later, received his Ph.D. from the same institution; taught in public schools; was assistant at the University of Michigan, then professor of history and economics at the University of Missouri from 1892 to 1900; professor of economics and commerce at the University of Cincinnati for twenty years, and was then elected president of that institution. Author: *Lectures on the Theory of Economics, Competitive and Monopoly Price,* etc.; contributor to educational and economic journals.

HICKS, FREDERICK CHARLES (1875–). Librarian and professor. Born at Auburn, N. Y.; graduated from Colgate University in 1898, and from the Georgetown (D. C.) Law School in 1901; he was in the map division of the Library of Congress for six years while taking his law course; afterwards practiced law for two years in Auburn, N. Y.; became librarian of the United States War College in 1905; went to the Brooklyn Library in 1908; and in 1915 became law librarian and associate professor (1921) of legal bibliography at Columbia University. Author: *Biography of Thomas Hutchinson, Men and Books Famous in the Law, The New World Order,* etc.

HIRSCH (*hûrsh*), **EMIL G.** (1851–1922). He became a rabbi in 1877, and in 1892 was appointed professor of rabbinical literature and philosophy at Chicago University; for several years editor of the *Zeitgeist,* and now edits the *Reform Advocate,* Chicago.

HOFFMAN, JOHN WASHINGTON (1867–). College president; born at Noblestown, Pa.; educated at Washington and Jefferson College (A. B. 1892; A. M. 1895), with graduate work at Yale and Princeton; was ordained a minister of the Methodist Episcopal Church in 1897 and served various churches of that communion. In 1916 he was elected president of Ohio Wesleyan University.

HOLDEN, PERRY GREELEY (1865–). Agricultural educator. Born in Dodge County, Minn.; educated at Michigan Agricultural College (B. S. 1889; M. S. 1895), and also at the Michigan State Normal School; was teacher and superintendent of schools for several years; professor of agronomy at the University of Illinois from 1896 to 1900; in 1902 he was appointed professor of agronomy and vice-dean of Iowa State College, and in 1912 became also director of the agricultural extension department of the International Harvester Company for the extension of agricultural education. Author of monographs on corn, potato, and sugar beet culture.

HOLLANDER (*hol'and-ar*), **JACOB H.** (1871–1940). Economist. Born in Baltimore; educated at Johns Hopkins University (A. B. 1891; Ph. D. 1894); was successively assistant, associate, associate professor, and in 1904 became full professor of political economy at Johns Hopkins; was special commissioner and treasurer of Porto Rico (1900–1901); during his term of service, he devised and introduced the present revenue system of the island; was commissioner to Santo Domingo, and financial adviser of Dominican Republic from 1905 to 1910, and was largely instrumental in adjusting the debt of the Republic; president of the American Economic Association 1921. Author: *The Cincinnati Southern Railway, The Financial History of Baltimore, David Ricardo, A Centenary Estimate, The Abolition of Poverty, War Borrowing,* etc.; editor of *Letters of Ricardo,* and *Economic Tracts.*

HOLT (*hōlt*), **HAMILTON** (1872–). Editor and educator. Born in Brooklyn, N. Y.; graduated from Yale in 1894; pursued graduate work in economics and sociology for three years; was editor, manager, and owner of the *Independent* for nearly twenty-five years; was for many years identified with the movement for world peace; member of numerous peace societies; served on various commissions during and after the Great War: elected president of Rollins College, Florida, in 1925, and there introduced various changes in methods and subjects, in order to arouse intellectual interest and accomplishment on the part of the students. Author of *Commercialism and Journalism,* and various addresses on world peace and education.

HOLT (*hōlt*), **HENRY** (1840–1926). Born in Baltimore; graduated from Yale in 1862, and from the Columbia Law School in 1864; never practiced; was with the publishing house of G. P. Putnam from 1863 to 1873; entered the business for himself, and was president of Henry Holt and Company from 1873 to 1926; published many outstanding books in the educational field; was lecturer on books at Yale University, the University of Vermont, and Columbia University; editor and publisher of *The Unpopular Review* from 1914 to 1921; author of *On Civic Relations, The Cosmic Relations and Immortality, Garrulities of an Octogenarian Editor,* etc.

HOPKINS (*hop'kinz*), **ERNEST MARTIN** (1877–). College president. Born in Dunbarton, N. H.; educated at Worcester Academy, Dartmouth College (A. B. 1901; A. M. 1908); from 1901 to 1905 he was secretary to the president of Dartmouth, and from 1905 to 1910, was secretary of Dartmouth College; later was engaged in industrial organization work with concerns in Boston, Chicago, and Philadelphia; was elected president of Dartmouth College in 1916. During the Great War, served on various industrial commissions; recipient of numerous honorary degrees; author of various papers and addresses on educational topics.

HOPKINS (*hop'kinz*), **MARK** (1802–1887). Professor of moral philosophy and rhetoric at Williams in 1830; elected to the presidency of Williams in 1836, which office he held for thirty-six years, retaining the professorship of mental and moral philosophy after resigning the office of president. As a teacher he made a wonderful impression upon his classes, and his administration of the college was remarkably successful. Among his published works are *The Law of Love, Love as a Law,* and *Teachings and Counsels.*

HOWARD, OLIVER OTIS (1830–1909). From 1865 to 1874, he was commissioner of the Freedmen's Bureau, establishing within three years 1,400 schools and 700 Sabbath schools; he was largely instrumental in establishing Howard University, Washington, and was its president from 1869 to 1873; superintendent at West Point for a year; founded Lincoln Memorial University in 1895. He wrote *Donald's School Days, Nez Perces Joseph,* and *Our Wild Indians.*

HOWE (*hou*), **SAMUEL GRIDLEY** (1801–1876). An American educational reformer and philanthropist. His name will long be remembered for his work among the blind. In 1832 he established the famous Perkins Institution for the Blind, and later was the means of a number of similar institutions being founded throughout the country. He introduced many improvements in the printing and preparation of books for the blind.

HOWISON (*hou'i-son*), **GEORGE HOLMES** (1834–1917). Born in Maryland; graduated from Marietta College in 1852, and from the Lane Theological Seminary three years later; also studied a year at the University of Berlin. He was professor of logic and the philosophy of science at the Massachusetts Institute of Technology for some eight years; then went as professor of philosophy to the University of California, serving for twenty-five years and retiring as professor emeritus in 1909. Author: *Limits of Evolution and Other Essays, Philosophy—Its Fundamental Conceptions and Its Methods.* Also, contributor to the leading philosophical journals.

HUDSON (*hud'son*), **HENRY NORMAN** (1814–1886). Born at Cornwall, Vt.; in early life he was a baker and a wheelright; he graduated from Middlebury in 1840, then taught school in Kentucky and Alabama. When about thirty years of age, he began an intense study of Shakespeare, and after a number of years acquired a wide reputation and was accepted as an authority on the life and works of the great poet. He was appointed professor at Boston University; he delivered numerous lectures in different parts of the country, and wrote many books. Having entered the priesthood of the Protestant Episcopal Church, he was, for several years, editor of the *Churchman;* he served as a chaplain in the Union Army during the Civil War. Author of *Lectures on Shakespeare, Shakespeare, His Life, Art, and Characters* (2 vols.), a valuable annotated edition of Shakespeare's Works in eleven volumes; also, *Studies in Wordsworth, Essays in Education,* etc.

HUGHES (*hūz*), **RAYMOND M.** (1873–). Born in Atlanta, Ga.; educated at Miami University (A. B. 1893), and pursued graduate work at Ohio State University and the Massachusetts Institute of Technology; after some secondary school teaching, became in 1898 professor of physics and chemistry at Miami University, then dean, and president from 1913 to 1927; in the latter year he was elected president of Iowa State College. Author of various papers on scientific and educational subjects, particularly successful in administration.

HUNTINGTON (*hunt'in-ton*), **EMILY** (1841–1909). A writer as well as educator. In 1872 she became the head of the Wilson Industrial School for Girls in New York, the first school of its kind in America, laboring for twenty years; started the first boys' club and the first kitchen garden; author of many books on gardening.

HUTCHINS, HARRY BURNS (1847–1930). Instructor and assistant professor of history and rhetoric in the University of Michigan, 1872–1876; of law, 1884–1887, in the same university; professor of law in Cornell, 1887–1894; professor and dean in law department, 1895–1910; acting president in 1897–1898, and again from October 1909, to June, 1910, then president of the University of Michigan from 1910 to 1920, when he became president emeritus.

HUTCHINS, ROBERT MAYNARD (1899–). College president. Son of William J. Hutchins (q. v.), president of Berea College, Ky.; born at Brooklyn, N. Y.; student at Oberlin College, 1915 to 1917; in ambulance service in the United States army from 1917 to 1919; with the Italian army part of the time, and decorated with the Cross of War by the Italian government; student at Yale from 1919 to 1921, graduating with the A. B. degree in 1921: graduate of Yale Law School in 1925; secretary of Yale University from 1923 to 1927; lecturer at Yale Law School from 1925 to 1927; acting dean for the year 1927–28, and professor of law from 1927 to 1929. He was elected president of the University of Chicago in 1929, at thirty years of age, thus becoming one of the youngest college presidents in the country.

HUTCHINS, WILLIAM JAMES (1871–). College president. Born at Brooklyn, N. Y.; educated at Oberlin College from 1888 to 1890, and received his A. B. degree from Yale in 1892; graduated from Union Theological Seminary in 1896; pastor of Bedford Church, Brooklyn, from 1896 to 1907; professor of homiletics at Oberlin Graduate School of Theology from 1907 to 1920; elected president of Berea College, Ky. in 1920. Author: *The Preacher's Inspiration and Ideals, The Religious Experience of Israel,* etc. Berea College holds a unique place in the educational field in giving regular college and vocational courses and by being devoted chiefly to the uplift of the mountain whites of the Appalachian region.

HUTTON (*hut'n*), **MAURICE** (1856–). Born in Manchester, Eng.; educated at Magdalen College School and at Worcester College, London; he was fellow of Merton College from 1879 to 1886. In 1887, was appointed professor of Greek at the University College, Toronto, and in 1901 became principal. Author: *The Greek Point of View, Wit, Humor and Satire,* etc.

HYDE (*haid*), **DOUGLAS** (1860–). Irish scholar and writer. Born at Frenchpark; educated at Trinity College, Dublin. In 1893 he formed the Gaelic League for the preservation and extension of the Gaelic language, and was president until 1915. He was instrumental in saving the Irish language from being excluded from the Irish schools, and later aroused such enthusiasm for the native language that its teaching was finally made compulsory in the schools of Ireland. In 1905 he toured America and raised $55,000 for the Gaelic League; on his return, he was appointed a member of the royal commission of Irish University Education. In 1909, he was made professor of modern Irish at the University College, Dublin.

HYDE (*haid*), **WILLIAM DEWITT** (1858–1917). Pastor of a church in Paterson, N. J.; called to be the seventh president of Bowdoin College in 1885. Wrote and spoke on educational topics. Some of his published works are *Practical Ethics, Social Theology, The Evolution of a College Student, The Art of Optimism,* and *From Epicurus to Christ.*

ISIDORE (*iz'i-dōr*), **ARCHBISHOP OF SEVILLE** (?570–636). Most famous ecclesiastic of the seventh century, and most learned man of his time. We are indebted to him for many fragments of Greek and Latin authors. His *Etymologies,* in twenty books (edited by Otto Leipsig, 1833), formed the great mediaeval encyclopedia.

ISOCRATES (*ai-sok'ra-tiz*) (436–338 B. C.). The most celebrated teacher of his age, was educated at Athens, being taught by Socrates. In 392 B. C. he opened a school at Athens, where he taught the art of rhetoric. Cicero gained much from him, and said that in his school the eloquence of Greece was developed and perfected. His writings include orations and letters. See also under AUTHORS.

JACKSON, A. V. WILLIAMS (1862–). Born in New York; graduated from Columbia at the head of his class in 1883; received the Ph. D. degree in 1886, also from Columbia; studied for two years at the University of Halle, Germany; specialized in the languages of India and Persia, and in 1895 became professor of Indo-Iranian languages at Columbia University. Between 1901 and 1918, he made many trips for research through India, Persia, and Central Asia. Author: *A Hymn of Zoraster, Yasna XXXI, An Avestan Reader, Zoroaster, the Prophet of Ancient Iran, Persia, Past and Present, From Constantinople to the Home of Omar Khayyam, Early Persian Poetry.* Editor: *A History of India* in 9 volumes, *Columbia University Indo-Iranian Series* (10 vols.)

JAMES, EDMUND JANES (1855–1925). Political economist; born in Jacksonville Ill.; professor of public finance and administration, Wharton School of Finance and Economy, University of Pennsylvania (1883–1895); professor of political and social science in the same university (1884–1895); professor of public administration, University of Chicago (1896–1901); president of the Northwestern University from 1902 to 1904; president of the University of Illinois (1904–1920), when he became president emeritus; editor and author of a number of works on political economy and social science and public law.

JAMES, WILLIAM (1842–1910). American psychologist and philosopher; born in New York; filled the following offices at Harvard: Assistant professor of comparative anatomy and physiology; assistant professor of philosophy; professor of psychology and philosophy; besides being Gifford lecturer on natural religion at Edinburgh. He contributed much to analytical psychology and to metaphysical analysis in philosophy. Some of his works are: *Principles of Psychology, The Will to Believe, Talks to Teachers on Psychology, Human Immortality, Pragmatism.*

JAMESON, J. FRANKLIN (1859–1937). Born in Boston; graduated from Amherst College in 1879; received his Ph. D. from Johns Hopkins in 1882; assistant and associate in history at Hopkins from 1882 to 1888; professor of history at Brown University from 1888 to 1901; professor and head of the department of history at the University of Chicago from 1901 to 1905; director of the department of historical research at Carnegie Institute, Washington, D. C. from 1905 to 1929; elected director of Research, Congressional Library, in 1929. Managing editor of the *American Historical Review* from 1895 to 1901, and from 1905 to 1929. Author of *Willem Usselinx, The American Revolution.* Editor of *Correspondence of John C. Calhoun,* and *Original Narratives of American History.*

JASTROW (*yās'tro*), **JOSEPH** (1863–). Psychologist. Born in Warsaw, Poland; educated at the University of Pennsylvania (A. B. 1882; A. M., 1885), graduate student in psychology at Johns Hopkins University and received Ph. D. degree in 1886; was professor of psychology at the University of Wisconsin for nearly forty years, retiring in 1927; was president of the American Psychological Association in 1900. Author of *Time Relations of Mental Phenomena, The Subconscious, The Psychology of Conviction,* etc.; also contributor to scientific journals.

JENKS, JEREMIAH WHIPPLE (1856–1929). Economic expert, became professor of political economy at Cornell in 1891 and at New York University in 1912. Acted as expert agent of the United States Industrial Commission from 1899 to 1901; U. S. Immigration Commission from 1907 to 1910; founder and director of the Far East Bureau, 1913–1921; chairman of the board of Alexander Hamilton Institute; director American Motion Picture Corporation, and many other honors and offices of trust. Author of *Citizenship and the Schools, Great Fortune, The Political and Social Significance of the Life and Teachings of Jesus, Life Questions of High School Boys, Business and the Government,* and many others.

JESPERSEN, JENS OTTO HARRY (1860–). Danish philologist. Born at Randers, Denmark; in 1893 was appointed professor of the University of Copenhagen; in 1909–10 he lectured at Columbia University; his theory of the development of language was influenced by the ideas of Herbert Spencer and Wilhelm Ostwald; he wrote many books on philological subjects: *Progress in Language, Phonetics, Growth and Structure of the English Language, Language, Its Nature, Development and Origin,* and *The Philosophy of Grammar.*

JESSE (*jes'i*), **RICHARD HENRY** (1853–). Born in Virginia; instructor in the universities of Louisiana and Tulane until called to the presidency of the University of Missouri in 1891; prominent in the National Education Association, being one of the Committee of Ten on the course of study for secondary schools (1892–1893). President of Southern Association of Colleges and Secondary Schools; author of many pamphlets and addresses.

JOHNSON, EMORY RICHARD (1864–). American educator; professor of commerce and transportation, University of Pennsylvania, in 1896; expert on transportation and railway property for U. S. government (1899–1905); author of works on transportation. Became dean of the Wharton School of Finance and Commerce.

JOHNSON (*jon'son*), **SAMUEL** (1696–1772). Born at Guilford, Conn.; graduated from Yale in 1714, when the college was still located at Saybrook; was for several years tutor in the college; was ordained a Congregational minister in 1720, but coming to believe that "the Church of England came the nearest to the purity and perfection" of the primitive church, he went to England and was ordained a minister of Episcopal Church. For more than twenty-five years he was rector of the Episcopal Church at Stratford, Conn.; in 1754 he became the first president of Kings College, founded that year in New York, and served until 1763. Kings College, after the Revolution, was renamed Columbia. Johnson was a friend of Franklin; a man of broad and tolerant views, and one of the best scholars of his time in America.

JONES, CECIL CHARLES (1872–). College president. Born at Monckton, New Brunswick; educated at the University of New Brunswick, Harvard University, and the University of Chicago; was professor of mathematics and physics at various Canadian universities, and in 1906 became chancellor of the University of New Brunswick; author of articles and pamphlets on educational and mathematical subjects.

JORDON (*jôr'dan*), **DAVID S.** See under SCIENTISTS.

JOWETT (*jō'et*), **BENJAMIN** (1817–1893). A distinguished English scholar and educationist. A brilliant university career was followed by a fellowship and tutorship at Balliol, of which college he was master from 1870 until the time of his death. Jowett exercised a marked personal influence over his pupils, and did more perhaps than any of his contemporaries toward shaping the life and thought of his generation. He was the foremost Greek scholar of his day.

JUDD (*jud*), **CHARLES HUBBARD** (1873–). Psychologist. Born in Bareilly, British India; came to the United States in 1879; graduated from Wesleyan University in 1894 and received his Ph. D. degree from the University of Leipzig in 1896. After teaching psychology at various American colleges, became professor and head of the department of education at the University of Chicago in 1909; director of various educational surveys, and author of numerous monographs and articles on educational subjects; his principal books are the following: *Introduction to the Scientific Study of Education, Psychology Laboratory Course, Silent Reading, Evolution of a Democratic School System.*

JUDSON (*jud'son*), **HARRY PRATT** (1849–1927). Born at Jamestown, N. Y. Teacher and principal of the high school at Troy, N. Y.; professor of history in the University of Minnesota; head professor of political science, and dean of the faculties of art, literature, and science, at the University of Chicago. In 1907 he became president of the University of Chicago; author of a number of books on historical and educational subjects.

KEYNES (*kānz*), **JAHN MAYNARD** (1883–). British economist. Born in Cambridge, England; educated at Eton and King's College, Cambridge; in 1915, he joined the Treasury, where during the World War, he did important work in connection with loans to the Allies; at the Paris Peace Conference, he was the chief representative of the Treasury. Writer of a number of books on economic subjects: *The Economic Consequences of Peace, Indian Currency and Finance, A Treatise on Probability, A Short View of Russia, The End of Laissez-faire.* Was made fellow and later bursar of King's College, Cambridge; in 1912 became editor of the *Economic Journal.*

KEYSERLING (*kī'zēr-lĭng*), **HERMANN, COUNT** (1880–). German philosopher and scholar. Born at Konno, in Livonia, of a noble family. Traveled in Russia, Switzerland, and Germany; lived for some time in Paris; in all the lands he visited, he made a special study of the natural sciences. When in Paris, he began to publish essays on the criticism of art and on philosophy; the years 1907–11, he spent in traveling all over Europe, and the next year took a trip around the world; he then acquired an appreciation of oriental philosophy which, together with his scientific and political studies, influenced the development of his own philosophy. In 1919 he married the granddaughter of Prince Bismarck. Among his books are: *The Travel Diary of a Philosopher, Die Philosophy als Kunst, Europe,* etc.

KING (*kin*), **HENRY CHURCHILL** (1858–1934). Born at Hillsdale, Mich.; was associate professor, professor and dean of Oberlin College from 1884 to 1902; President of Oberlin College 1902–1927; then became president emeritus; was a member of the Committee of Ten in the National Education Association to report on secondary school studies; author of *The Appeal of the Child, Personal and Ideal Elements in Education,* and *Letters to Sunday School Teachers.*

KINGLAKE (*kin'lāk*), **ALEXANDER WILLIAM** (1809–1891). English historian and traveler. Born at Taunton, England; educated at Eton, and Trinity College, Cambridge, where he was a friend of Tennyson and Thackeray. He studied law, and was admitted to the bar in 1837. In 1835 he traveled in the East, and recorded his impressions in a book entitled, *Eothen,* published in 1844, and still ranking as a classic. In 1854 Kinglake went to the Crimea and was present at the battle of Alma. Lord Raglan suggested to him a plan for an elaborate history of the war and placed at the writer's disposal his own private papers. The remainder of Kinglake's life was devoted to the writing of his great work, *The History of the Crimean War,* comprised in eight volumes which appeared at intervals from 1863 to 1887. See also under AUTHORS.

KINLEY, DAVID (1861–). College president. Born in Dundee, Scotland; came to the United States at eleven years of age; graduated from Yale University in 1884; studied at Johns Hopkins for two years; received his Ph. D. from the University of Wisconsin in 1893. In 1894, became professor of economics and dean of the College of Literature and Art at the University of Illinois; in 1906 was made dean of the Graduate School, and in 1920 became president of the University. From 1913 to 1922, was a member of the commission on research of the Division of Economics and History, Carnegie Endowment for International Peace. Author: *The Independent Treasury of the United States, Monograph on Trusts, Money,* and contributions to magazines.

KIRKLAND (*kûrk'land*), **JAMES HAMPTON** (1850–1939). University chancellor. Born in Spartanburg, S. C.; graduated from Wofford College in 1877; received the Ph. D. degree from the University of Leipzig in 1885; in 1886, became professor of Latin at Vanderbilt University, a position he held until 1903, when he was elected chancellor of the University. Recipient of many honorary degrees; author of numerous monographs, and editor of *Satires and Epistles of Horace.*

LADD, GEORGE TRUMBULL (1842–1921). American psychologist and philosopher; born at Painesville, Ohio; became professor of philosophy at Yale in 1881. He has written numerous works on psychology and philosophy, including *Philosophy of Religion, Outlines of Physiological Psychology, Philosophy of Mind, Philosophy of Conduct.*

LANCASTER, JOSEPH (1778–1838). English educator; born in London. He made use of, and improved, Bell's Monitorial System; established the Royal Lancastrian Society from which grew the British and Foreign School Society.

LA SALLE (*là sàl*), **JEAN BAPTISTE DE** (1651–1719). A French priest; born at Rheims; founder of

the order commonly called the "Christian Brothers," having for its object the providing of schools for the poor. After establishing schools in various parts of France, he went to England and James II. intrusted to him the educating of fifty Irish boys of good family. In 1699 he established the first technical school. At his death the order comprised 274 Brothers and 10,000 pupils. Some of his books have been translated into English: *The Rules of Christian Politeness* and *Management of Christian Schools*. La Salle was canonized by Pope Leo XIII.

LEA (*lē*), **HENRY CHARLES** (1825–1909). Born in Philadelphia; at eighteen joined his father in the publishing business and retained his connection with the company until 1880. He was never of robust health, and devoted much of his time to research on church history in the middle ages, becoming a leading authority on the Inquisition. Among his works may be mentioned *Superstition and Force, History of the Inquisition of the Middle Ages, History of Auricular Confession and Indulgences in the Latin Church*, and *History of the Inquisition of Spain*. He was a recipient of honorary degrees from the universities of Princeton, Harvard, Pennsylvania, Giessen, and Moscow.

LEVERMORE, CHARLES HERBERT (1856–1927). Educator and authority on peace, won the Bok Peace Prize of $50,000 for the plan judged to be best for maintaining peace among the nations. Mr. Levermore received his A. B. from Yale, and after a number of years engaged in teaching, was awarded a Ph. D. at Johns Hopkins. He was professor at the University of California and Massachusetts Institute of Technology, principal of Adelphi Academy and then president of Adelphi College in Brooklyn. After 1913 he gave his attention mainly to peace societies, and became secretary of the New York Peace Society in 1917. He was also author of several pamphlets on peace and edited the first three series of the *Year Books of the League of Nations*.

LILY, or **LILLY WILLIAM** (about 1468–1522). A celebrated English grammarian. He was graduated from Oxford, traveled to the Orient, lived at Rhodes and Rome to perfect his knowledge of Greek and Latin. He opened the first private or aristocratic school in London for training gentlemen's sons for Oxford and Cambridge in the dead languages. He was the first headmaster in Colet's School, in St. Paul's Churchyard, the first public school in England. He was probably the first teacher of Greek in England and was one of the chief exponents of the "new learning" in that country. He edited and published a work known as *Lilly's Grammar*.

LORIMER, GEORGE HORACE (1868–1937). Born in Louisville, Ky.; educated at Mosely High School, Chicago, and at Colby College and Yale University. In 1899 he became editor-in-chief of the *Saturday Evening Post, Chevalier de la Legion d'Honneur*. Author: *Letters from a Self-Made Merchant to His Son, Old Gorgon Graham, The False Gods, Jack Spurlock—Prodigal*.

LOW, SETH (1850–1916). An American administrator; born in Brooklyn, N. Y.; graduated at Columbia University (1870); president Columbia University (1890–1901); united its several departments, expanded its scope, promoted removal to its present commanding site, and gave to it the great library building completed at a cost of over $1,000,000 to his private fortune; mayor New York City (1902–1903).

LOWELL, ABBOTT LAWRENCE (1856–). Was graduated from Harvard (1877); and from Harvard Law School (1880); legal practitioner (1880–1897); lecturer on government at Harvard (1897–1899); professor of the science of government (1900–1909); president of Harvard University (1909); trustee of the Lowell Institute of Boston; author of *Essays on Government, Governments and Parties in Continental Europe*, a widely used treatise; and *The Government of England*.

LOYOLA (*lō-yō'lä*), **IGNATIUS DE** (?1491–1556). Founder of the Jesuits; born in Spain. At the age of thirty-three he began to teach the rudiments of grammar in a public school to little boys; continued his studies in Paris, where Francis Xavier was one of his chosen companions; became a priest and founded the Order of the Jesuits in 1534, establishing a number of orphan asylums for boys and girls. At his death no fewer than 130 colleges had been established by the Jesuits. Loyola was canonized in 1622.

LYON (*lāi'an*), **MARY** (1797–1849). Pioneer in the movement for the higher education of women; taught at Derry, N. H., and from 1828 to 1834 was principal of Ipswich Seminary; founded in 1837 Mt. Holyoke Seminary, where women could fit themselves for teaching. For the sake of economy and to give the young women exercise and practice in household tasks, she arranged the course so that each student should perform some household labor each day.

McCARTHY, CHARLES HALLAN (1860–). American educator; became professor of American history, Catholic University of America in 1904; author of *Lincoln's Plan of Reconstruction*.

McCOSH (*mä-kŏsh'*), **JAMES** (1811–1894). Educator. Born in Ayrshire, Scotland; educated at the universities of Glasgow and Edinburgh. For many years he was a minister in the Church of Scotland, and was an influence in establishing the Free Church of Scotland as a protest against the receiving of State aid by the Established Church. In 1850, he published *The Method of Divine Government, Physical and Moral*, which not only brought him fame, but the following year, led to his appointment as professor of logics and physics in the college at Belfast of the newly founded Queen's University. Professor McCosh remained there nearly eighteen years; then, in 1868 accepted the position of president of Princeton College, a post he held for twenty years, retiring then because of advancing years, but still continuing his connection with the college as professor of philosophy. Under his administration the standards of the institution were raised, and the number both of professors and students was more than doubled. President McCosh was one of the first of orthodox clergymen to accept and defend the theory of evolution in biology. He was a voluminous writer. Among his books may be noted *Typical Forms and Special Ends in Creation, The Supernatural and the Natural, The Emotions, Psychology of the Motive Powers*.

McGUFFEY, WILLIAM H. (1800–1873). Author and teacher, born near Claysville, Pa. After some training at Greensburg, Pa., he entered Washington College and graduated in 1836 with high honors. He was successively president or teacher in Cincinnati College, Miami University, and Woodworth College, Cincinnati, and in 1845 was called to the chair of mental and moral philosophy at the University of Virginia, where he was always a notable figure. Though he had a gift for preaching, which he often exercised, he never was an ordained minister. With a memory that was truly prodigious, he is said by his admirers to have composed and long remembered the chief parts of about 3,000 addresses and sermons without ever writing down one of them. No textbooks were ever more popular nor had more copies sold than the famous readers of McGuffey, with an estimated distribution of over 122,000,000. They are still used in at least a few localities. The series began in 1836 with the *First* and *Second Readers*, ran through the *Primer, Third* and *Fourth*, and the *Speller* in the next two years, and then the *Fifth* in 1844 and the last, or *Sixth*, in 1857. All these went through many editions with numerous changes and revisions. Museums for relics and the readers are now at Miami University and at Dearborn, Mich., where Henry Ford has reconstructed the school where McGuffey first taught. He also erected a memorial on the grounds of the original school, located south of West Alexander, Pa., just off U. S. Route 40 or the National Highway, which is visited each year by thousands of tourists. Perhaps no books in our early common schools exerted a more profound or more wholesome influence than did the readers and spellers of McGuffey.

MacCRACKEN (*mä-krak'en*), **HENRY MITCHELL** (1840–1916). Born at Oxford, Ohio. He was teacher of classics, school superintendent, chancellor of Western University, then went to New York University as vice-chancellor and professor of philosophy; chancellor of New York University (1891–1911); author of *Kant and Lotze*, and *A Metropolitan University*.

MacCRACKEN, HENRY NOBLE (1880–). College president. Born at Toledo, Ohio; graduated from New York University in 1900 and received his Ph. D. from Harvard in 1907; from 1907 to 1913 was connected with the Sheffield Scientific School at Yale, then for two years professor of English at Smith College. In 1915, was elected president of Vassar College. Author, *John the Common Weal* (Well lectures on American Citizenship). Co-author: *Introduction to Shakespeare, Manual of Good English*, etc.; editor of works of Chaucer, Lydgate, and Shakespeare.

McLAUGHLIN (*măk-lôk'lin*), **ANDREW CUNNINGHAM** (1861–). Born at Beardstown, Ohio; graduated from the University of Michigan in 1882, and from the Law School in 1885; was professor of

American history at the University of Michigan for fifteen years, then in 1906 went to the University of Chicago as professor of history and head of the department. Author of many authoritative works on history and government: *Lewis Cass* (in the American Statesmen series), *A History of the American Nation, The Confederation and the Constitution, The Courts, the Constitution, and Parties, Steps in the Development of Democracy;* editor with Prof. A. B. Hart of the *Cyclopedia of American Government.*

MacLEAN (*măk-lān'*), **JAMES ALEXANDER** (1868–). College president. Born at Mayfair, Ont.; graduated from the University of Toronto in 1892; received the Ph. D. degree from Columbia in 1894; was professor of political science at the University of Colorado for six years, then in 1900 became president of the University of Idaho; in 1913, went to the University of Manitoba as president.

McMURRY, CHARLES ALEXANDER (1857–1929). Educator. Born in Crawfordsville, Ind.; educated at the University of Michigan, and obtained his Ph. D. degree from the University of Halle, Ger. After many years experience in teaching, in the supervision of schools, and in normal school work, in 1915 he became professor of elementary education at the George Peabody College for Teachers, Nashville, Tenn. Author of many books on educational subjects: *Special Method in Reading, Special Method in Literature and History, Special Method in Geography, Course of Study in the Eight Grades, Special Method in Arithmetic, Special Method in Grammar, Teaching by Projects;* editor *Yearbooks of the National Herbart Society.*

McMURRY, FRANK MORTON (1862–1936). Educator. Born in Crawfordsville, Ind.; educated at the universities of Michigan, Halle, and Jena; received his Ph. D. from Jena; also studied in Geneva and Paris. Entered public school work, and was principal of various schools; for three years was professor of pedagogics and dean of the Teachers College, University of Buffalo; for nearly twenty years was professor of elementary education at the Teachers College of Columbia University, becoming professor emeritus in 1926. Author of *Tarr and McMurry Common School Geographies* (with Ralph S. Tarr), 1900, *How to Study and Teaching How to Study, Elementary School Standards, McMurry and Parkins Common School Geographies* (with A. E. Parkins), 1921. Editor, *McMurry and Benson Social Arithmetics.*

MACY, JESSE (1842–1919). American educator and political economist; became professor constitutional history and political science, Grinnell, after 1885; author of the *British Constitution,* texts on civics, and other works on political science.

MAHAFFY (*ma-haf'ĭ*), **JOHN PENTLAND** (1839–1919). Irish classical scholar. Born in Switzerland, and privately educated there; he entered Trinity College, Dublin, in 1856 and three years later graduated with high honors. In 1871 he was appointed professor in the University of Dublin, and held that chair for 28 years; in 1914 he became provost of Trinity College; in 1916 during the Irish rebellion, he directed the defense of the college, and prevented great destruction of property; for his aid, he was decorated by the government. For more than thirty years he was the foremost figure at Trinity College. He was one of the greatest classical scholars of his time. His *Classical Greek Literature* is everywhere regarded as a standard work. *The Silver Age of Greece* which was first published in 1890 under the title, *The Greek World under Roman Sway,* is also an authoritative work. Other books of his are *Greek Social Life from Homer to Menander, Greek Pictures, What Have the Greeks Done for Modern Civilization?* (Lowell Lectures). Mahaffy possessed remarkable ability in deciphering texts and his work along this line led to the writing of *The Empire of the Ptolemies.*

MAIN, JOHN HANSON THOMAS (1859–1931). Born at Toledo, Ohio; professor of ancient languages at Moore's Hill College; professor, acting president, dean, and, later, president of Grinnell College.

MANN (*man*), **HORACE** (1796–1859). President of Antioch College (1852–1859). As secretary of the board of education appointed by the state legislature of Massachusetts (1837) to revise the school laws and to reorganize the school system, Mann wrote 12 volumes of annual *Reports* (1837–1848) which are educational classics; wrote *Lectures on Education, On the Study of Physiology in Schools, Slavery Letters and Speeches.*

MARCH (*märch*), **FRANCIS ANDREW** (1825–1911). Educator and philologist. Born at Milbury, Mass.; graduated from Amherst in 1845; while there, his attention was turned to the study of Anglo-Saxon by Noah Webster; he studied law, was admitted to the bar, and built up an excellent practice which he was forced to relinquish on account of ill health. Mr. March then devoted himself to the pursuit of his favorite studies—philosophy, language, and literature. In 1857 he was appointed professor of English language and comparativo philology at Lafayette College, a position he held for fifty years, retiring as professor emeritus in 1907. He was a pioneer in the philological study of English classics; he was president of the Spelling Reform Association from 1876 to 1905; from 1879 to 1882, he was director of the American Readers of the famous Oxford Dictionary; he served as consulting editor on the Standard Dictionary. His great work, however, was the editing, with his son, F. A. March (q. v.) of *March's Thesaurus-Dictionary,* "A Treasure House of Words and Knowledge." He was regarded as the first authority of his day on derivation, spelling, definition, and grammar.

MARCH, FRANCIS ANDREW, JR. (1863–1928). Educator. Born at Easton, Pa., son of Professor Francis Andrew March (q. v.); was graduated from Lafayette College in 1881; from 1882 until his death, he was connected with the English department at Lafayette, first as tutor, then adjunct professor, as professor of English literature from 1891 to 1905, and as professor of English language from 1905 to 1928. After his father's death, he was editor-in-chief of *March's Thesaurus-Dictionary;* was assistant in the etymology department of the *Century Dictionary,* and editor in charge of the etymology department of the *Standard Dictionary;* also author of *History of the World War, America in the World War* (with R. J. Beamish), etc.

MARTIN (*mär'tin*), **GEORGE H.** (1841–1917). Born at Lynn, Mass. He was a teacher at Bridgewater Normal School for 18 years; agent of the Massachusetts State Board of Education for two years; supervisor of the Boston schools from 1892–1904, became secretary of the State Board of Education. His works include *Civil Government,* a text-book for schools, and *Hints on Teaching Civics.*

MARX (*märks*), **KARL.** See under PHILOSOPHERS, THEOLOGIANS, AND REFORMERS.

MASSON (*ma"sēn'*), **DAVID ORME** (1858–1937). Educator. Born in London, England; educated at the University of Edinburgh; after graduation he was assistant to Prof. Ramsey in chemistry at the University College, Bristol; he held a research fellowship in Edinburgh University from 1882 to 1885. From 1886 to 1923 he was professor of chemistry at Melbourne University, Australia; was president of the Australian Association for the Advancement of Science 1911–13; was knighted in 1918; writer of many articles on chemistry and chemical physics for English and Australian scientific journals.

MAXWELL (*maks'wel*), **WILLIAM HENRY** (1852–1920). Born in Ireland. He came to the United States, became superintendent of schools in Brooklyn, and finally since 1898 superintendent of the Greater New York City schools. He is author of two school grammars.

MEIKLEJOHN, ALEXANDER (1872–). Educator. Born at Rochdale, England; came to America at the age of eight; graduated from Brown University in 1893 and received the Ph. D. degree from Cornell in 1897; returned to Brown, where he was for fifteen years, a member of the philosophy department, and from 1901 to 1912, was dean. In 1912 he became president of Amherst College, a position he held until 1924. In 1926 he went to the University of Wisconsin as professor of philosophy, where he established later the "Experimental College," an interesting venture in the field of education.

MILL (*mil*), **JAMES** (1773–1836). Economist and publicist. Born at Northwater Bridge, Scotland; educated at the University of Edinburgh, and designed for the ministry; but giving up this career on account of intellectual doubts, he went to London in 1802, and supported himself by literary efforts. In 1818, after some years of labor, he published a *History of India,* which was the means of his appointment to a lucrative position in the East India Company. Meantime, he had become a friend and ardent disciple of Jeremy Bentham, whose opinions and philosophy he did much to propagate. He also became acquainted with David Ricardo, and induced him to publish his economic

opinions. Mill, himself, wrote an interesting and valuable work on *Elements of Political Economy*. His chief claim to fame is, perhaps, that he was the father and teacher of John Stuart Mill, the most eminent English thinker of the nineteenth century.

MONROE, PAUL (1869–). Became professor of history of education in 1902, in Teachers College, Columbia University; author of several books, including *Text-book in the History of Education*, and a brief course in the same subject.

MONTESSORI (*mŏn-tes-sō'rē*), **MARIA** (1872–). Was the first woman graduate in medicine at the University of Rome in 1894. After making some preliminary studies in medicine and psychology, she became associated for six years with a hospital for defective children. When an association in Rome was building a series of better houses for the poor, Miss Montessori took advantage of the opportunity to instruct the tenants. Here she taught from 1907 to 1911. Out of her experiences and her theories that children should be selected with a view to their inclinations, and drawn in the direction of their main talents, grew her theories of education. She developed her ideas in several treatises, one of which, *The Montessori Method*, was translated into English in 1912, and another, *Pedagogic Anthropology*, was translated in 1913.

MORGENSTERN, JULIAN (1881–). Educator, rabbi. Born in St. Francisville, Ill.; graduated at the University of Cincinnati in 1901; received his theological training at Hebrew Union College; studied at the universities of Berlin and Heidelberg, and received his Ph. D. from Heidelberg in 1904. In 1907, became professor of Biblical and Semitic languages at Hebrew Union College; director of the American School for Oriental Research at Jerusalem and Bagdad; member of the World Union for Progressive Judaism. Author of *The Doctrine of Sin in the Babylon Religion, A Jewish Interpretation of the Book of Genesis*, etc.

MUIR, ALEXANDER (1834–1906). Scotch birth; B. A. at Queen's University, Kingston (1851); taught at Scarboro, Newmarket, Beaverton, Toronto (1880); principal Gladstone avenue public school, Toronto (1897). Well known national poet; author of *The Maple Leaf Forever*, the national song of Canada (1856); also *Canada, The Old Union Jack*, and *Canada Forever*. Member Orange Order; president Army and Navy Veterans' Association, Toronto (1892); bard to Militia Veterans '66 (1894).

MULCASTER, RICHARD (1548–1611). An English schoolmaster of wide repute; first head master of the Merchant Taylors' School (1561–1586); subsequently high master of St. Paul's School, London, (1596–1608). His best known books are: *Positions, wherein those primitive circumstances be examined, which are necessarie for the training up of children, either for skill in their book or health in their bodie* (1581); and the *Elementarie, which entreateth Chefelie of the right writing of our English tung* (1582). He strenuously advocated physical training as well as music for boys.

MULLANY, PATRICK FRANCIS (BROTHER AZARIAS) (1847–1893). Born in Ireland. President of Rock Hill College for seven years; teacher of literature at De La Salle Institute, New York; author of *Philosophy of Literature* and *Phases of Thought and Criticism*.

MUNRO, DANA CARLETON (1866–). American educator; instructor and professor of history at University of Pennsylvania (1893–1902); in 1902 became professor of European history, University of Wisconsin; author of *Mediaeval History, Source Book of Roman History*, and *Mediaeval Civilization*.

MURLIN, LEMUEL HERBERT (1861–). College president. Born in Mercer County, Ohio; A. B., DePauw University, 1891; S. T. B., 1892; taught for a number of years before completing his college course; was in the active ministry for some six years. In 1894, became president of Baker University at Baldwin, Kansas; in 1911, was called as president to Boston University and served for fourteen years, then returned to the Middle West and was for three years president of DePauw University; was a member of the General Convention of the Methodist Episcopal church five times between 1900 and 1924; also, member of various commissions, and recipient of many honorary degrees.

MURPHY (*mer'fi*), **THOMAS EDWARD** (1856–). Born in New York; professor of Latin and Greek at Georgetown University, as well as vice-president; president of the College of St. Francis Xavier, and (1906–1910) of Holy Cross College, Worcester.

MURRAY (*mur'i*), **JAMES AUGUSTUS HENRY** (1837–1915). British lexicographer. Born at Denholm, Eng.; attended the University of Edinburgh and was graduated from the University of London in 1873; was engaged in teaching for 30 years, chiefly at Harwick and Mill Hill. He acquired a great reputation as a philologist, and in 1878 wrote a masterly article on the English language for the Encyclopedia Britannica. The great work of his life was the editing of the *New English Dictionary*. This monumental work originated in 1857, when Richard C. Trent (q. v.) suggested that an attempt should be made under the auspices of the London Philological Society to compile a new dictionary with a larger vocabulary and fuller historical material than any then existing. This suggestion was adopted, some material gathered, and Mr. Herbert Coleridge appointed editor; he died a few years later, and was succeeded by F. J. Furnival (q. v.). About two million quotations were collected, but, aside from that, little was done until 1878, when the expense of printing and publishing the proposed work was assumed by delegates of the Oxford University Press, and Mr. Murray was made editor. Dr. Furnival turned over to the new editor not far from two tons of material which had accumulated. In 1879, Murray began the examination and arrangement of this vast mass, and the creation of an organization to carry out the undertaking. While he did not live to see the completion of the work, he planned it, and was the inspiration of his colleagues and his successors. The first volume was printed in 1884; the entire dictionary, in ten volumes, was completed in 1928. For his services in the management of this scholarly work, Murray was knighted in 1908.

MURRAY, JOHN (1745–1793). Founder of the great publishing house of London, bought out a thriving book business in Fleet Street in 1768. His name had been McMurray, but with the new venture he dropped the Scottish prefix, and became the English Murray. The business flourished. When he died his son, John Murray (1778–1843), was but fifteen, and for a year the business was managed by another, but on attaining his majority, the second John assumed control. He founded the *Quarterly Review* (1809) with Scott, Southey, Canning and other famous men as early contributors. He bought out another large firm, moved to Albemarle Street, and became the best known publisher in the world, the close friend and publisher of Byron, who called him "the Anak of publishers." John Murray (1808–1892) began the famous series of *Murray's Handbooks for Travellers*, and published works by Hallam, Gladstone, Dean Stanley, Darwin and other great writers. He was at his death succeeded by his sons, John Murray (1851–1928) and Alexander Henry Hallam Murray (1854–).

MURRAY, WALTER CHARLES (1866–). College president. Born in Canada; educated at the University of New Brunswick; at the University of Edinburgh, where he received the M. A. degree with honors in philosophy; and at the University of Berlin, where he was a Canadian Gilchrist Scholar (1887–90). He was Munro professor of philosophy at Dalhousie University from 1892 to 1908, and in 1908 was elected president of the University of Saskatchewan.

MYRICK, HERBERT (1860–1927). Editor and publisher. Born at Arlington, Mass.; educated at the Massachusetts Agricultural College and Boston University. Mr. Myrick was president for many years of the Phelps Publishing Company, and editor of its weekly, *The New England Homestead*; he was also identified with *Current Events, Good Housekeeping, Farm and Home*, and other publications; he lectured and wrote articles on public questions, such as farming, banking, and coöperation. Author: *Coöperative Finance, The Federal Farm Loan System, Rural Credits*, and *Financing Second Mortgages*.

NEEDHAM (*ned'am*), **CHARLES WILLIS** (1848–1912). Born in Castile, N. Y.; elected dean of the Schools of Law of Columbian University, Washington, D. C., and later appointed professor of law. He organized the School of Comparative Jurisprudence and Diplomacy at Washington, and was elected its dean (1898); professor of transportation and interstate commerce. President of George Washington University 1902–1910.

NEILSON (*nel'son*), **WILLIAM ALLAN** (1869–). College president. Born in Doune, Scotland; A. M., Edinburgh, 1891; Ph. D., Harvard, 1898; was a teacher in Scotland and Toronto, Canada, for several years, and later connected with the English department at Bryn Mawr and at Columbia; from 1906 to 1917 was professor of English at Harvard. In 1917, became president of Smith College. Author of *Origins and Sources of the Court of Love, Essentials of Poetry, The Facts about Shakespeare, Burns, How to Know Him, A History of English Literature.*

NICHOLS (*nik'olz*), **ERNEST FOX** (1869–1924). Born in Leavenworth, Kan.; professor of physics at Cornell, Colgate, and Dartmouth successively; professor of experimental physics, Columbia (1903–1909); president of Dartmouth College (1909); writer on radiation.

NIEBUHR (*nī'bŭr*), **BARTHOLD GEORG** (1776–1831). Historian. Born in Copenhagen; educated chiefly by his father under whose tutelage he became an excellent classical scholar and acquainted with several modern languages. Later he attended the universities of Kiel and Edinburgh. For a number of years he was in the service of his native state, then entered the Prussian civil service. In 1810, on the opening of the University of Berlin, Niebuhr resigned his government position to give a course of lectures on Roman history. These remarkable lectures brought about an important change in historical method, and made Niebuhr an acknowledged leader in the scientific study of history. Later as Ambassador to the Papal Court, Niebuhr continued his historical studies, and also discovered and published fragments of the work of Cicero and Livy. His *Roman History* ranks among epoch-making histories, not only as a study of the era of which it treats, but for its great influence on the general conception of history; the stress is laid, not so much on persons as on institutions, tendencies, and social characteristics.

NOLLEN, JOHN SCHOLTE (1869–). American educator; professor modern languages, Grinnell (1893–1903); became dean of Grinnell College; president Lake Forest University (1907–1918); author *Outline History Modern German Literature;* editor, Schiller's *Maria Stuart,* and other poems.

NORTHROP (*nōr'throp*), **CYRUS** (1834–1922). Born in Connecticut; professor of rhetoric and English literature at Yale from 1863 to 1884, when he was elected president of the University of Minnesota.

O'CONNELL, DENNIS J. Born at Charleston, S. C.; secretary to Cardinal Gibbons; head of the American College in Rome for several years; rector of the Catholic University of America, and president of the Catholic Educational Association. Appointed Bishop of Richmond in 1912.

O'SHEA, MICHAEL VINCENT (1866–1932). Educator. Born in LeRoy, N. Y.; graduated from Cornell in 1892; after some years teaching experience in normal schools, became in 1897, professor of education at the University of Wisconsin; a lecturer on educational subjects throughout the United States, and in England and Scotland; director of many educational surveys; author of numerous valuable books on education: *Suggestions for the Observation and Study of Children, Aspects of Mental Economy, Education as Adjustment, Dynamic Factors in Education, The Trend of the Teens, Every-day Problems in Teaching, The Child: His Nature and His Needs, Tobacco and Mental Efficiency.*

PAGE (*paj*), **DAVID PERKINS** (1810–1848). Born at Epping, N. H. Principal of the State Normal School at Albany. His *Theory and Practice of Teaching,* the most popular of American pedagogical books, has given him a high place among nineteenth century educators.

PAGE, WALTER HINES (1855–1918). Born at Cary, N. C.; graduated at Randolph-Macon in 1876 and afterwards studied at Johns Hopkins where he won his fellowship in Greek under Dr. Gildersleeve. In 1880 he became editor of the *Daily Gazette* in St. Joseph, Mo.; he wrote a series of articles on *Social Conditions in the Southern States* which were widely read. Later, Mr. Page was connected with a paper in Raleigh and also with the *New York Evening Post.* From 1890 to 1895, he was manager and editor of the *Forum;* was editor of the *Atlantic* for several years, and in 1899 became a member of the publishing firm of Doubleday, Page and Co., and was editor of the *World's Work,* the magazine issued by that firm. In 1913 he was appointed by President Wilson Ambassador to Great Britain, and in that position acquired international fame, and won great praise for his tact and skill in handling delicate situations.

PAINTER (*pānt'er*), **FRANKLIN VERZELIUS NEWTON** (1852–). An American educator and author. From 1878 to 1882 he was instructor in, and from 1882 till 1906, professor of modern languages at Roanoke College, Va., his alma mater; after which he became professor of pedagogy there. His educational writings, many and of unusual merit, include *A History of Education, Luther on Education, Introduction to American Literature, A History of English Literature, Lyrical Vignettes, Poets of the South, Great Pedagogical Essays from Plato to Spencer, An Ancient History,* and *Poets of Virginia.*

PALMER (*päm'ar*), **ALICE FREEMAN** (1855–1902). Born in Colesville, N. Y.; elected to the chair of history at Wellesley in 1879; acting-president the next year, and in 1882 appointed president; appointed non-resident dean of the women's department of the University of Chicago.

PALMER, GEORGE HERBERT (1842–1933). An American educator. Born in Boston; educated at Harvard and in Germany; Oxford professor of natural religion, moral philosophy, and civil polity at Harvard 1889–1913, retiring as professor emeritus; a writer on classical and pedagogical subjects, his chief works being: *New Education, Self Cultivation in English, The Glory of the Imperfect.*

PARKER (*pär'ker*), **FRANCIS WAYLAND** (1837–1902). An American educator; born in Bedford, N. H.; principal of schools in Manchester, N. H., and Dayton, Ohio; superintendent at Quincy, Mass., and supervisor in Boston, Mass. In 1883 he was made principal of the Cook County Normal School, and in 1896 of the Chicago Normal School. He was appointed president of the Chicago Institute in 1899. His publications include: *Talks on Teaching, Course in Arithmetic,* and *How to Study Geography.*

PARKIN, (*pär'kin*), **GEORGE ROBERT** (1846–1922). Principal of the Upper Canada College, Toronto (1895–1902). Author and lecturer on Imperial Federation, organizing representative of the Rhodes Scholarship Trust 1902. Publications include *Reorganization of the British Empire, Imperial Federation, Geographical Unity of the Empire, The Great Dominion,* and *The Life of Dr. Edward Thring.*

PARSONS (*pär'sanz*) **FRANK** (1854–1908). American educator. Born in New Jersey; professor of political science and economics, dean of College of Liberal Arts, Ruskin University, Mo.; director of history, Bureau of Economic Research, Washington; authority on railroads; noted lecturer on economics and sociology; wrote *Our Country's Need, The Drift of Our Time, The New Political Economy, Direct Legislation,* and other works.

PATTEN (*pat'n*), **SIMON NELSON** (1852–1922). Economist. Born at Sandwich, Ill.; educated at Northwestern University and the University of Halle, from which he received the degree of Ph. D. in 1878. He farmed, and taught in public schools for ten years; then in 1888, was appointed professor of economics at the University of Pennsylvania, where he taught for almost 30 years, retiring in 1917. Among his many writings are *The Consumption of Wealth, The Theory of Dynamic Economics, The Theory of Prosperity;* and *Heredity and Social Progress.* He was a stimulating lecturer and teacher, and did much pioneer work in the advancement of social studies.

PAYNE (*pān*), **WILLIAM HAROLD** (1836–1907). Born in New York State. Superintendent of schools for several years; professor of the art and science of teaching in the University of Michigan; chancellor of the University of Nashville and president of the Peabody Normal College; returned to the University of Michigan. His works include *School Supervision, Contributions to the Science of Education, The Education of Teachers,* and translations of several of Compayre's pedagogical books.

PEABODY (*pē'bod-i*), **ELIZABETH PALMER** (1804–1894). Born in Billerica, Mass. She became an ardent disciple of Froebel, and was one of the most active in introducing the kindergarten system into the United States. She published *Kindergarten Culture* and *Letters to Kindergartners.*

PEARSON (*pēr'son*), **RAYMOND ALLEN** (1873–1939). College president. Born at Evansville, Ind.; graduated from Cornell University in 1894; pursued special studies in agricultural science, and obtained

the Master's degree from Cornell in 1899; was assistant chief of the dairy division, United States Department of Agriculture, for seven years, professor of dairy industry at the College of Agriculture, Cornell University, from 1903 to 1908; Commissioner of Agriculture for New York State for four years; then became president of Iowa State College of Agriculture and Mechanical Arts for fourteen years; in 1926 was elected president of the University of Maryland; author of numerous articles on agricultural subjects.

PEIRCE (*pûrs*), **BENJAMIN** (1809–1880). Mathematician and astronomer. Born at Salem, Mass.; graduated from Harvard in 1829; became professor of mathematics at Harvard in 1833, and also of astronomy in 1842. After the death of Nathaniel Bowditch in 1838, Peirce ranked first among American mathematicians; his fame was increased by his researches into the perturbations of Uranus and Neptune, and his work in connection with the rings of Saturn and Neptune, he was appointed consulting astronomer for the American Nautical Almanac, and for this work prepared new tables of the moon. His best known works are *The System of Analytical Mechanics* and *Linear Associative Algebra.*

PEIRCE, BENJAMIN OSGOOD (1854–1914). Educator and physicist. Born in Beverly, Mass.; graduated from Harvard in 1876, and for several years studied at Leipzig and Berlin; in 1881 he went to Harvard as instructor, and seven years later became professor of mathematics and physics; in 1888 he was appointed Hollis professor of mathematics and philosophy, holding that chair until his death. He achieved an international reputation as one of the greatest physicists of his time. He wrote *Theory of the Newtonian Potential Functions, Table of Integrals, Experiments in Magnetism,* and numerous monographs, mostly on magnetism, for scientific journals.

PENNIMAN, JOSIAH HARMAR (1868–). College president. Born in Concord, Mass. Received his A. B. degree from the University of Pennsylvania in 1890, and his Ph. D. in 1895. The next year was appointed professor of English literature at the University of Pennsylvania, was dean of the faculty from 1897 to 1909, and in 1923 became president and provost. President Penniman was the writer of *The War of the Theatres, A Book about the English Bible,* and many articles for various magazines.

PESTALOZZI, JOHANN HEINRICH (1746–1827). A Swiss educational reformer, and the chief founder of modern pedagogy. He was, with the exception of Froebel, the greatest educational reformer since the time of the Revival of Learning. Realizing that social reform must come through education, he early allied himself with the reformers of the day. His principles were elaborated and carried out, and formed the basis of the Educational Movement of the nineteenth century. The modern enthusiasm for technical education is, for example, largely due to his teachings. In 1801 he gave a summary of his ideas on education in the book *Wie Gertrud Ihre Kinder Lehrt* ("How Gertrude teaches her children"). His great idea was to "psychologize education" (his own expression). Pestalozzi's method is to proceed from the easier to the more difficult; to begin with observation and then pass to consciousness, and from consciousness to speech. Instead of the "three R's" he would substitute language, number, and form, as the elements of education. In his masterpiece, *Leonard and Gertrude,* he centers the education in the home itself, and seeks to reform the child's first teacher—the mother. What he strove for was not the mere enlightenment of the mind, but the regeneration of the race through sounder methods of education.

PETERSON, WILLIAM (1856–1921). Born in Edinburgh, Scotland; educated at the University of Edinburgh, the University of Gottingen, and at Corpus Christi College, Oxford; was assistant professor of Humanity at the University of Edinburgh for three years; then for thirteen years, principal of University College, Dundee; from 1895 until his death, was principal of McGill University, Montreal. Under his administration the endowment was increased and the curriculum broadened; the medical department was raised to a high level, making it rank in Canada with the medical schools of Harvard and Johns Hopkins in the United States.

PHELPS (*felps*), **WILLIAM LYON** (1865–). Writer on literature; a teacher of English at Yale in 1892; and Lampson Professor of English Literature in 1901. As a lecturer and college preacher he was well known. Besides editing many books and complete novels of Jane Austen and Samuel Richardson, he wrote a score of books of criticism, some of which are *The Beginnings of the English Romantic Movements, Essays on Modern Novelists, Teaching in School and College, Browning, Reading the Bible, Human Nature in the Bible, The Twentieth Century Theatre.*

PITMAN (*pit'man*), **ISAAC** (1813–1897). Born in Trowbridge, England; attended a training school for teachers; taught for eleven years in public schools, and then opened a private school in Bath. He became interested in improving the existing systems of shorthand; the result was the invention of a system of his own which marked a new era in the development of stenography. Though afterward superseded, for the most part, by other systems, the Pitman system of shorthand was, for many years, the one most widely used.

PLATTER, THOMAS (1499–1582). Swiss educator. For thirty-seven years professor of Hebrew at Basel. His autobiography is one of the best pictures extant of the school life of that time.

PRITCHETT, HENRY SMITH (1857–1939). Was assistant astronomer at U. S. N. Observatory, and later at Morrison Observatory; professor of astronomy at Washington University, St. Louis; superintendent of the United States Coast and Geodetic Survey; elected president of the Mass. Institute of Technology in 1900 and resigned in 1906 to accept the presidency of the Carnegie Foundation for the Advancement of Teaching.

PUPIN (*pû-pēn'*), **MICHAEL IDVORSKY.** See under INVENTORS.

QUICK (*kwik*), **ROBERT HERBERT** (1831–1891). An English educator; the first to lecture at Cambridge University on the history of education; wrote *Essays on Educational Reformers,* and other educational articles. The former is still a leading text-book in the study of education.

QUINTILIAN (*kwin-til'i-an*), **(MARCUS FABIUS QUINTILIANUS)** (about 35–about 97 A. D.). A Roman rhetorician, born in Spain. Educated in Rome, he revisited Spain to teach oratory, but returned with Galba to Rome in 68. As a teacher of elocution he won great fame. Among his pupils were Pliny the Younger and the two grand-nephews of Domitian. His modern reputation is based on his great work *De Institutione Oratoria,* a complete system of rhetoric in twelve books.

RAND (*rand*), **THEODORE HARDING** (1835–1900). Canadian educationist; born in Nova Scotia. Became superintendent of education for Nova Scotia, and later was appointed to a similar post in New Brunswick; professor of history and didactics in Acadia College; professor of education and English history in the University of New Brunswick.

RAYLEIGH (*rā'li*), **BARON** (J. W. Strutt) (1842–1919). Eminent English physicist, professor at Cambridge and Royal Institute. He evaluated electric units, made many discoveries about gases at low pressures, and discovered with Ramsey the element argon. Wrote 250 learned papers. Awarded the Nobel and other prizes.

REINHARDT, AURELIA HENRY (MRS. GEORGE FREDERICK REINHARDT) (1877–). College president. Born in San Francisco, California. Miss Henry graduated from the University of California in 1898; from 1898 to 1901, was instructor in English at the University of Idaho; obtained her Ph. D. degree from Yale University in 1905. In 1909, she married Dr. George Frederick Reinhardt, and in 1914 was left a widow with two boys. From 1914 to 1916, was lecturer in English at the University of California and in 1916 became president of Mills College, Oakland, California, a leading woman's college on the Pacific coast.

RHEES (*rēs*), **RUSH** (1860–1939). College president. Born in Chicago, Ill.; graduated from Amherst College in 1883, and from the Hartford Theological Seminary in 1888; ordained a Baptist minister, and was for three years pastor of Middle St. Church, Portsmouth, N. H. In 1892 he became assistant professor, and two years later full professor at Newton Theological Institution, serving until 1900, when he was called as president to the University of Rochester. Author: *Life of Jesus of Nazareth, A Study, St. Paul's Experience as a Factor in His Theology,* and many contributions to periodicals.

RICHARDS (*rich'ardz*), **CHARLES RUSSELL** (1865–1936). American educator; director of science and technology at Pratt Institute (1888–1898); director of manual training at Teachers College, Columbia University (1898–1908); director of Cooper Union,

New York (1908–1923). In 1923 was appointed director of the American Association of Museums.

RICHARDSON (*rich'ard-son*), **CHARLES FRANCIS** (1851–1913). An American author and educator; born at Hallowell, Maine. Professor of Anglo-Saxon and English language and literature in Dartmouth College (1882–1911). Author of *A Primer of American Literature, The Choice of Books, American Literature* (2 vols.), *The End of the Beginning*, and *Daniel Webster for Young Americans.*

RIGHTMIRE, GEORGE WASHINGTON (1868–). University president. Born at Center Furnace, Ohio; graduated from Ohio State University in 1895, and afterwards was a part time student in law until 1902, being at the same time a teacher in the North High School of Columbus; he was a teacher of law in the Ohio State University from 1902 to 1925, also practicing law for much of this period. After a year as acting president, he was elected president of Ohio State University in 1926.

ROGERS (*roj'arz*), **WILLIAM BANKS** (1857–1937). Born in Cincinnati, Ohio; taught English and the classics at St. Ignatius and St. Xavier's; president of Marquette College for two years, and president of St. Louis University from 1900 to 1908 when he resigned on account of ill health.

ROLFE (*rolf*), **WILLIAM JAMES** (1827–1910). Born in Newburyport, Mass.; graduated from Amherst in 1849; for more than fifteen years was head master of high schools in the vicinity of Boston. In 1868 he gave up teaching and became editor of the *Popular Science News* and afterwards of the Shakespearean Department of the *Literary World* and the *Critic.* He wrote and compiled a dozen books on Shakespeare and by his lectures and writings did more than any other American scholar to popularize Shakespeare. He edited with notes the entire works of Shakespeare in 40 small volumes; first published in 1870–73, and revised in 1903–07. In the latter part of his life he brought out scholarly editions of Milton, Goldsmith, Scott, Wordsworth, Tennyson, Browning, and other great writers. Also wrote *Tales from English History, Tales from Scottish History, Shakespeare as a Boy, Life of Shakespeare*, and *Shakespeare's Proverbs.*

ROSS, HON. GEORGE WILLIAM (1841–1914). Canadian statesman and educator. Born in Ontario, of Scotch parentage; appointed inspector of public schools for the county of Lambton, and towns of Petrolea and Strathroy; leader in promotion of normal schools, serving as inspector of them; author of *The History of the School System of Ontario.*

ROUSSEAU (*rōō-sō'*), **JEAN JACQUES** (1712–1778). A distinguished French writer of the eighteenth century; born at Geneva. In 1762 he published *Emile*, which had a marvelous effect throughout Europe, continuing in influence upon the whole educational world to the present time. In the opening sentence of his book he sounds the keynote of all his teachings: "All is good as it comes from the hand of the Creator; all degenerates in the hands of man." The burden of his message was nature, the nature of an idealist, perhaps, but still worthy of our efforts. Rousseau presented a negative idea of moral education. "The first education consists not in teaching the principles of virtue or truth, but in guarding the heart against vice and the mind against error." With him, all education was to come by development from within, an expansion of natural powers and not an acquisition of knowledge.

RUOFF, HENRY WOLDMAR (1867–1935). Editor and author, born in Germantown, Pa., graduated from Indiana University 1890. Studied at Harvard and Columbian (now George Washington University), and later in several foreign universities. Traveled extensively in Europe, Asia, Africa. For a time he was instructor in psychology and philosophy at Pennsylvania State College. Acted as editor of *Ridgway's American Spectator* and *Nashville Tennessean* (1904–7). Member of American Academy of Political and Social Science, National Geographic Society. Through his efforts the single volume reference work has become a valuable adjunct to the school. He is either the main author or editor of *Home and State, Women in the Middle Ages, Century Book of Facts, Capitals of the World, Universal Cyclopedic Handbook, The Standard Dictionary of Facts, Masters of Achievement, The Volume Library*, and *The Circle of Knowledge.*

RUSSELL (*rus'el*), **JAMES EARL** (1864–). Born at Hamden, N. Y.; graduated from Cornell University in 1887, pursued graduate work at several German universities, and received the degree of Ph. D. from the University of Leipzig in 1894, taught in various American colleges and then was for thirty years professor of education at Teachers College, Columbia University, retiring in 1927. Author of *The Extension of University Education in England and America, German High Schools, Trend of American Education;* editor of the *American Teachers' Series*, and contributor of numerous articles to educational journals.

SCHURMAN (*shur'man*), **JACOB GOULD** (1854–). Born on Prince Edward Island, Canada, and won the Canadian Gilchrist scholarship to the University of London, from which he was graduated in 1877, with further studies in Germany and Italy. He was professor of philosophy at Acadia College, and Dalhousie College, Nova Scotia, for six years and then went to Cornell, where he was Sage Professor of Philosophy from 1886 to 1892, and president from 1892 to 1920. Dr. Schurman spent much of 1899 in the Philippines as president of the U. S. Commission; from 1912 to 1913, he was minister to Greece and Montenegro; and from 1921 envoy to China. In 1925 he was appointed ambassador to Germany.

SCOTT (*scŏt*), **WALTER DILL** (1869–). College president. Born at Cooksville, Ill.; graduated from Northwestern University in 1895, and from McCormick Theological Seminary in 1898; continued his studies in Germany and received the Ph. D. degree from the University of Leipzig in 1900; for nineteen years, from 1901 to 1920, he was professor of psychology and education at Northwestern University, and was then elected president. Author of *Theory of Advertising, Influencing Men in Business, Personnel Management;* authority on the application of psychology to business and business affairs.

SEAVER, EDWIN PLINY (1838–1917). American educator, born in Northborough, Mass. He taught in the Boston schools and was superintendent of the same schools for fourteen years; was a member of the American Academy of Arts and Sciences, and the Massachusetts Historical Society. Author of the *Franklin Arithmetic, Algebra*, and *Trigonometry*, and the *Mathematical Handbook.*

SEELYE (*sē'lĭ*), **JULIUS HAWLEY** (1824–1895). President of Amherst College (1879–1890) and inaugurated the "Amherst system" of self-government; wrote a translation of Schwegler's *History of Philosophy; The Way, the Truth, the Life*, etc.

SEELYE, LAURENUS CLARK (1837–1924). Born in Connecticut. Pastor of North Congregational Church at Springfield, Mass.; later professor of rhetoric and English literature at Amherst College; first president of Smith College (1873–1909).

SEERLEY, HOMER HORATIO (1848–). Became president of Iowa State Normal School in 1886. Received degrees from Iowa State University and Penn College. Superintendent of schools, (1875–1886), Oskaloosa, Ia.; president Iowa State Teachers' Association (1884), and the department of Normal Schools in N. E. A. (1898); member of many educational societies.

SHAHAN (*shā'ăn*), **THOMAS JOSEPH** (1857–1932). University rector. Born at Manchester, N. H.; educated at Montreal College and the American College at Rome; ordained to the Roman Catholic priesthood in 1882, and later, continued his studies in Paris and Berlin. He was, from 1891 to 1909, professor of church history and petrology at the Catholic University of America, and in 1909, was chosen president. Author of various books and addresses on religious and historical subjects.

SHANKLIN (*shank'lĭn*), **WILLIAM ARNOLD** (1862–1924). College president. Born in Carrollton, Mo.; educated at Hamilton College and the Garrett Biblical Institute at Evanston, Ill.; entered the Methodist Episcopal ministry, and served in various pastorates. In 1905, became president of Upper Iowa University; four years later, he became president of Wesleyan University and after fourteen years of service retired in 1923 as president emeritus. He was a member of the Connecticut State Board of Education, of various commissions, and the recipient of many honorary degrees.

SHOREY, PAUL (1857–1934). University professor. Born at Davenport, Ia.; graduated from Harvard in 1878; studied at various German universities, at the American School of Classical Studies at Athens, and in 1884 received the degree of Ph. D. from the University of Munich; was professor of Greek at Bryn Mawr College from 1885 to 1892. In 1892 he became professor of Greek at the University of Chicago, and in 1896 was made head of the depart-

ment; recipient of numerous honorary degrees; a leading authority on Greek language and literature; Turnbull lecturer on poetry at Johns Hopkins University in 1912, and Roosevelt professor at the University of Berlin, 1913–1914, president of the American Philological Association in 1910. Author of *The Idea of Good in Plato's Republic, The Odes and Epodes of Horace, The Assault on Humanism,* and others.

SLOCUM (*slō'kum*), **WILLIAM F.** (1851–). Born at Grafton, Mass.; president of Colorado College from 1888 to 1917, retiring a president emeritus; extensive writer on sociology.

SMITH (*smith*), **ADAM** (1723–1790). Economist. Born at Kirkcaldy, Scotland, and attended the grammar school there; spent three years at the University of Glasgow; in 1740 received a Snell Exhibition at Balliol College, Oxford, where he was a student until 1746. Returning to Scotland, he gave courses of lectures on economics and literature; in 1751 he became professor at Glasgow, and continued there until 1763; in 1759 he published his celebrated book on the *Moral Sentiments,* in which he elaborated a theory of ethics based on sympathy. In 1763, Charles Townsend prevailed on him to resign his chair at the University of Glasgow, and he became tutor to the young Duke of Buccleugh during a three years' trip in Europe; during these three years, Smith stayed longest at Paris and Toulouse, and met many eminent scholars; returning home in 1766, he continued work on his book, *The Wealth of Nations,* begun previously in France; and finally published in 1776. This book widely extended his fame and soon became a classic. Smith may be said to be the founder of economics as a science; the influence of *The Wealth of Nations* is without parallel in economic literature; the 150th anniversary of its publication was celebrated by the University of Chicago in 1926.—See also under AUTHORS.

SMITH, NORA ARCHIBALD, American author of kindergarten and children's books, born at Philadelphia. She taught in Mexico and Arizona and in 1880 entered kindergarten work in San Francisco, part of the time as superintendent; author of *Children of the Future, Kindergarten in a Nutshell, The Message of Froebel, Kindergarten Principles and Practice, Golden Numbers, The Posy Ring, The Fairy Ring,* and many others.

SPENER (*spē'nar*), **PHILIPP JAKOB** (1635–1705). Founder of the German Pietists; born in Alsace; in 1670 held meetings at his house to cultivate greater evangelical piety; reformed the methods of catechising and religious instruction for children; his ideas were practiced later by Francke.

STEINER (*shtai'nar*), **EDWARD ALFRED** (1866–). Sociologist. Born in Czechoslovakia, educated in public schools, in the gymnasium of Pilsen, Bohemia, and the universities of Heidelberg, Göttingen, and Berlin; was minister of various Congregational churches from 1891 to 1903; became professor of Applied Christianity at Grinnell College in 1903. Author of *Tolstoy, the Man, On the Trail of the Immigrant, From Alien to Citizen, The Eternal Hunger,* and other sociological works. The keynote of his work is the application of the principles of Christianity to life.

STONE (*stōn*), **MELVILLE ELIJAH** (1848–1929). Journalist. Born at Hudson, Ill.; graduated from the Chicago High School in 1867; later, was the recipient of honorary degrees from five colleges. He became a reporter on the *Chicago Tribune* in 1864; ran a machine shop from 1869 to 1871, but was burned out in the Chicago fire of 1871; established the *Daily News* in 1875 and in 1881, *The Chicago Morning News;* sold his interest and that of his partners in both these papers to Victor F. Lawson, under whose management these combined papers became one of the most successful and prosperous newspaper properties in the whole world. Mr. Stone then spent three years in travel in Europe; on his return, he became identified with the banking business for several years. In 1893 he became general manager of the *Associated Press,* holding this position until 1921, when he retired from office but continued his connection as an adviser. Mr. Stone was one of the best known and liked newspaper men in the world.

STRONG, FRANK (1859–1934). Born in Venice, N. Y. Principal of the High School, St. Joseph, Mo.; superintendent of schools at Lincoln, Neb.; lecturer on history at Yale; president of the University of Oregon (1899–1902); chancellor of the University of Kansas from 1902 to 1920, then became professor of constitutional law; author of *Life of Benjamin Franklin, A Forgotten Danger to the New England Colonies, Causes of Cromwell's West Indian Expedition,* and *Government of the American People.*

STRAYER, GEORGE DRAYTON (1876–). Born at Wayne, Pa.; graduated at Johns Hopkins University in 1903, received the Ph. D. degree from Columbia University in 1905; taught in the public schools before completing his college course; in 1905 became instructor, and in 1910 professor of educational administration in the Teachers College of Columbia University; director of numerous educational surveys and member of various educational associations. Author of *The Teacher Process, Retardation and Elimination in Schools and Colleges,* editor of the *American Educational Series* and of the *Journal of Educational Research.*

STURM (*stürm*), **JOHANN** (1507–1589). The most renowned teacher of his age, who has left his mark on the secondary school system of all northern Europe; born in Germany; reorganized the educational system of Strassburg. His plan aimed at an extended, systematic, and well-balanced course of study. His method of teaching Greek and Latin was by double translation. The important pedagogic ideas in his method were: Subjects to be kept within range of pupils' ability; all teaching to be clear and definite; little at a time; all instruction should have an ethical and a spiritual side. The instruction in our classical preparatory schools of the United States still shows Sturm's influence in a marked degree, possibly tracing its origin through English public schools like Eton, Rugby, and Harrow.

SUZZALO (*sū'zä-lō*), **HENRY** (1875–1933). Born at San Jose, Calif.; graduated from Leland Stanford University in 1899, and received his Ph. D. from Columbia in 1905; was a member of the department of education at Leland Stanford from 1902 to 1907; then went to Columbia, where in 1909 he was appointed professor of the philosophy of education. He was elected president of the University of Washington in 1915 and retired in 1926. Afterward indentified in various official capacities with the Carnegie Foundation for the Advancement of Teaching; editor of the *Riverside Educational Monographs;* lecturer on educational topics.

SWEET (*swēt*), **HENRY** (1845–1912). English philologist; foremost British authority on phonetics as well as a distinguished Anglo-Saxon scholar. He has contributed largely to both subjects; in particular, his works on phonetics have done much to foster more scientific methods in the study and teaching of modern languages.

TARR, RALPH STOCKMAN (1864–1912). Born at Gloucester, Mass.; at 18 he became connected with the United States Fish Commission and the Smithsonian Institute; later, he attended the Lawrence Scientific School (Harvard) and graduated in 1891. For the remaining twenty years of his life he was a member of the geology department at Cornell University, first as assistant professor of geology, then professor of dynamic geology and physical geography and after 1906, professor of physical geography. He was special field assistant, United States Geological Survey from 1903 to 1912. He wrote several standard textbooks widely used in schools and colleges—*Economic Geology of the United States, Elementary Physical Geography, Elementary Physical Geology, Tarr and McMurry Geographies* (with F. M. McMurry).

TAUSSIG, FRANK WILLIAM (1859–1940). Political economist, received his A. B., A. M., LL. B., and Ph. D. at Harvard, where he became professor of political economy in 1892, having served as instructor and assistant professor from 1882. Being a recognized authority on the tariff, he was appointed Chairman of the U. S. Tariff Commission in 1917 and served till 1919. He is the editor of the *Quarterly Journal of Economics.* Some of his publications are *Tariff History of the United States, Wages and Capital, Some Phases of the Tariff Question, Free Trade, the Tariff and Reciprocity.*

TERTULLIAN (*tar-tul'i-an*), **(QUINTUS SEPTIMIUS FLORENS TERTULLIANUS)** (about 160–about 230). An early Father of the Church; born in Carthage, son of a Roman centurion; converted to Christianity; he was a man of great originality and genius, and his writings display great wit, keen imagination, and profound learning. His chief work is the *Apologeticus,* a weighty defense of Christianity.

THOMAS (*tom'as*), **JOHN MARTIN** (1869–). College president. Born at Point Covington, N. Y.; graduated from Middlebury College, Vt., in 1890, from

the Union Theological Seminary in 1893, and later pursued graduate study at the University of Marburg. He was pastor at East Orange, N. J., from 1893 to 1908; was president of Middlebury College from 1908 to 1921; president of Pennsylvania State College 1921 to 1925, and in 1925 was elected president of Rutgers University. Author of *The Christian and the Old Testament*, and of various addresses on educational topics.

THOMAS, M. CAREY (1857–1935). Born at Baltimore, Md.; the first woman to receive the Doctorate of Arts at an European university; in 1885 appointed professor of English, and president of Bryn Mawr College 1894 to 1922, then retired as president emeritus.

THRING (*thrin*), **EDWARD** (1821–1887). A famous schoolmaster, head of Uppingham School, England, from 1853 until his death; pioneer of many important reforms in secondary education and public school life; first head master in England to evince sympathy with the liberal education of girls. To English composition, pursued *pari passu* with composition in foreign languages, he assigned a foremost place, while he held the opinion that English grammar, taught inductively and analytically, provided the very best basis for language training. His writings include *Education and School*, which sets forth his matured opinions on educational methods. Other books are: *The Theory and Practice of Teaching, Exercises in Grammatical Analysis*, also *School Sermons and Songs*.

THWING (*twing*), **CHARLES FRANKLIN** (1853–1937). Born in Maine; president of Adelbert College and Western Reserve University from 1890 to 1921. His publications include: *American Colleges, The Reading of Books, Within College Walls, The American College in American Life*.

TRENT (*trent*), **WILLIAM PETERFIELD** (1862–1939). Born at Richmond, Va.; educated at the University of Virginia, (A. M. 1894) and at Johns Hopkins University; was professor of English at the University of the South from 1888 to 1900, then went as professor of English to Columbia University. He was the editor of the *Swanee Review* from 1892 to 1900; also, editor of numerous editions of the works of the best English and American writers. Author of *English Culture in Virginia, Authority of Criticism* and others; a leading authority on the life and works of Defoe.

TRUMBULL (*trum'bul*), **HENRY CLAY** (1830–1903). Religious educator. Born in Stonington, Conn.; educated at Stonington Academy and Williston Seminary; was engaged in railroad business until nearly thirty, then became a missionary of the Connecticut State Sunday School Society; was ordained a Congregational minister, and served as Chaplain of the Tenth Connecticut Regiment from 1862 to 1865. Afterwards, he was for more than twenty-five years (1875–1903), editor of the *Sunday School Times*. He wrote numerous books on Sunday School work and for Sunday School libraries: *A Model Superintendent, Teaching and Teachers, Hints in Child Training, Teachers' Meetings*.

TUCKER (*tuk'ar*), **WILLIAM JEWETT** (1839–1926). Born at Griswold, Conn.; professor at Andover, and founder of Andover House, a social settlement, in Boston; president of Dartmouth College from 1893 to 1909; author of *From Liberty to Unity* and *The Making and the Unmaking of the Preacher*.

TYLER (*tai'lar*), **MOSES COIT** (1835–1900). Educator. Born at Griswold, Conn.; graduated from Yale in 1857; studied theology, and was for some years in the active ministry; in 1867 he became professor of English at the University of Michigan, and from 1881 until his death, was professor of American history at Cornell. In 1878 he published *History of American Literature during the Colonial Time*, in two volumes, which won for him a wide reputation; this was followed by *A Literary History of the American Revolution*, and *Three Men of Letters* (Bishop Berkley, President Dwight, and Joel Morley); these three works carry the story of American literature to about the beginning of the nineteenth century, and form so complete a study of early American literature that they are not likely to be superseded. Professor Tyler also wrote a biography of *Patrick Henry* for the American Statesmen series.

UPSON (*up'san*), **ANSON JUDD** (1823–1902). Born in Philadelphia, Pa.; professor of logic and rhetoric from 1853 to 1870; in 1890 became chancellor of the University of the State of New York.

VAN DYKE, JOHN CHARLES (1856–1932). Authority on art, became librarian of Rutgers College in 1878 and professor of the history of art in 1888. Studied art extensively in European galleries. Author of *How to Judge of a Picture, Art for Art's Sake*, a discussion of the province of painting, *The Desert* and *The Opal Sea*, descriptions of the beauties of nature, *The Grand Canyon of the Colorado, Rembrandt and His School*, a discussion partly of the genuineness of certain pictures attributed to Rembrandt, *History of Painting*.

VAN HISE (*văn hīs'*), **CHARLES RICHARD** (1857–1918). Educator and geologist; born at Fulton, Wis. Held the following appointments in the University of Wisconsin; instructor of chemistry and metallurgy, assistant professor of metallurgy, of mineralogy, and of archean and applied geology; professor of geology; elected president of the University (1903). He is the author of a number of books and papers on geological subjects: *Archean and Algonkian, Principles of North American Pre-Cambrian Geology, Some Principles Controlling the Deposition of Ores*.

VEBLEN (*vĕb'lĕn*), **THORSTEIN B.** (1857–1929). Born on a farm in Minnesota, was brought up under pioneer conditions; educated at Carleton College, Minn., where he was a student of John Bates Clark, and received his A. B. in 1880, after taking the examinations of Junior and Senior years together; was a graduate student at Johns Hopkins University, and at Yale University; from Yale, he received the Ph. D. degree in 1884, and was awarded a university prize for an essay on the panic of 1837; studied at Cornell University during the year 1891–92, and then accompanied Professor Laughlin of that institution to the University of Chicago, where he was successively fellow, instructor, and professor in political economy from 1892 to 1906; he taught at Leland Stanford University for three years, at the University of Missouri for seven years, and at the New School for Social Research, from 1918 to 1926. Dr. Veblen was one of the most brilliant and interesting American economists of his day; besides teaching, he wrote many books, among them, *The Theory of the Leisure Class, The Instinct of Workmanship, The Theory of Business Enterprise, The Vested Interests, The Place of Science in Modern Civilization and Other Papers*.

VEGA (*vā'gä*), **GARCILASO DE LA,** called **"INCA"** (1535?–1616). Early Peruvian historian. Born in Cuzso; his father was a Spaniard, his mother of the Peruvian blood-royal; Vega was very proud of his descent and claimed the right to the title of Inca. In 1560 he moved to Spain, hoping to obtain a lucrative office; in this he was disappointed, and turned to writing the history of his native land. His history of Peru is the first contribution of a South American to Spanish literature; it is in two parts, and the second, *Cordova*, was translated into English, French, German, and Italian; written before the days of scientific history, much romance is mingled with fact.

VIETOR (*fī'ē-tōr*), **WILHELM** (1850–). German professor of philosophy in Marburg; one of the pioneers of modern language teaching by the "New Method" (*die neuere Richtung*); the author of many recognized works in modern language teaching, one of the best-known being *Elements of Phonetics* in German, English, and French.

VINSON, ROBERT ERNEST (1876–). University president. Born at White Oak, S. C.; educated at Austin College and at Virginia Union Theological Seminary; preached in various Presbyterian churches; was professor at Austin College from 1902 to 1916; served as president of the University of Texas from 1916 to 1923, and in 1923 was elected president of Western Reserve University; the recipient of many honorary degrees.

VIVES (*vī'vēs*), **GIOVANNI LUDOVICO** (1492–1540). Born in Spain; considered the most learned man of his time. After being tutor to the children of Ferdinand and Isabella he lectured at Paris and at Oxford, and taught Latin to Mary, future queen of England. He wrote several pedagogical books, *The Instruction of a Christian Woman* being the most popular book of the age.

WASHBURN (*wŏsh-bûrn*), **GEORGE** (1833–1915). American clergyman and educator; missionary in Turkey under the American Board of Commissioners for Foreign Missions (1858–1868); professor of philosophy and acting president of Robert College, Constantinople (1870–1877); president of Robert College from 1877 until his return to the United States in 1903.

WASHINGTON (*wash'in-tan*), **BOOKER TALIAFERRO** (1859–1915). American negro educator; born a slave in Virginia. In 1879 was appointed instructor in Hampton Institute, and introduced the night school, of which he took charge. In 1881 was appointed by the state to establish a colored industrial and normal school at Tuskegee, Ala., of which he became the successful principal. He was known as an interesting and effective speaker, and for his work in uplifting his race. He wrote *Up from Slavery* and *Character Building*.

WAYLAND (*wē'land*), **FRANCIS** (1796–1865). An American educator and author; was graduated at Union College in 1813; assumed the presidency of Brown University in 1827, retiring after 28 years of service. He published several books regarding education, political economy, and religion.

WELLS (*welz*), **BENJAMIN WILLIS** (1856–1923). American educator and editor; professor of modern languages at the University of the South (1891–1898). Besides numerous French and German text-books, he published *Modern German Literature*, *Modern French Literature*, and *A Century of French Fiction* (1898).

WELLS (*welz*), **WEBSTER** (1851–1916). Mathematician and educator; born in Boston, Mass.; was graduated at the Massachusetts Institute of Technology in 1873, became associated with the department of mathematics in that institution, and was made full professor of that subject in 1893. His publications include *Logarithms* (1878), *University Algebra* (1878), *Plane and Spherical Trigonometry* (1884), *College Algebra* (1890), *Essentials of Algebra* (1890), *Complete Trigonometry* (1900), and numerous other educational books.

WENDELL (*wen'del*), **BARRETT** (1855–1921). Born in Boston, Mass.; graduated from Harvard in 1877; in 1880 he began teaching at Harvard, commencing as instructor, and in 1898 attaining the rank of professor of English, retiring in 1917, after nearly forty years of service. He lectured in France and England, and ranked among the foremost teachers of English literature of his day. Among his many books are *William Shakespeare, a Study in Elizabethan Literature*, *A Literary History of America*, *The Temper of the Seventeenth Century in English Literature* (Lectures given at Trinity College, Cambridge in 1902, '03, '04); *The France of Today*, *The Privileged Classes*, *The Mystery of Education*.

WEST (*wĕst*), **ANDREW FLEMING** (1853–). Born at Alleghany, Pa.; graduated from Princeton University in 1874; in 1883 became professor of Latin at Princeton, and in 1901 was appointed dean of the graduate school. Professor West was the founder and protagonist of the Princeton graduate school, and its high rank is largely due to his policies. Author of *Alcuin and the Rise of the Christian Schools*, *American Liberal Education*, *The Proposed Graduate College of Princeton University*; also, contributor to scientific publications.

WHEELER (*hwēl'ar*), **BENJAMIN IDE** (1854–1927). Born at Randolph, Mass.; instructor at Brown and Harvard; professor of comparative philology and of Greek at Cornell and at Athens, Greece; president of University of California since 1899; wrote *The Greek Noun-Accent* and *Organization of Higher Education in the United States*.

WHEELOCK, ELEAZER (1711–1779). American educator; graduate of Yale College (1833); pastor (1735); 1754, opened a school to Christianize the Indians, with two Indian boys; 1764, increased to 30 pupils, mostly white youths; 1770, located the school at Dartmouth, N. H.; a charter from George III. gave it the title of college; in recognition of Lord Dartmouth's aid, called Dartmouth College.

WILLARD (*wil'ard*), **EMMA** (1787–1876). Educator. Born at Berlin, Conn.; began teaching at the age of sixteen; when only twenty, she became principal of a girls' school in Middlebury, Vt., and later opened a boarding school of her own. In 1819 she published *A Plan for Improving Female Education*, which so impressed Governor Clinton that he invited her to establish a school in New York State. The result was the founding at Troy in 1821 of the Troy Female Seminary, of which Miss Willard was for many years principal. After 1858, she spent most of her time lecturing on educational subjects throughout the country, and she aroused an interest in providing better education for women. Several of the textbooks she wrote were widely used in the schools up to the time of her death; among them were *Ancient Geography*, *Morals for the Young*, *Astronomy*; she also wrote a book of poems, the best known being, *Rocked in the Cradle of the Deep*.

WILSON (*wil'san*), **WOODROW.** See under RULERS AND STATESMEN.

WIRT (*wûrt*), **WILLIAM A.** (1874–1938). Since 1907 has been superintendent of schools at Gary, Ind., where he has perfected a system of education by which classes alternate between a regular and special teacher. This has been tried in New York and many other places under various names, such as the Duplicate System, Gary System, Study Play School. It adds 40 per cent to the use of school rooms and 20 to the school time, without increase of teachers.

WITHERSPOON (*with'ar-spūn*), **JOHN** (1723–1794). College president. Born at Gifford, Scotland; educated at the University of Edinburgh (M. A., 1739), and completed his theological studies there in 1743. For twenty-three years he was pastor of Presbyterian churches in Scotland, becoming renowned as a theologian and publishing many essays and sermons. In 1868 he accepted a second call to become president of Princeton, then the College of New Jersey. Under his administration the young college advanced greatly in standing. He broadened the curriculum, provided scientific equipment, and obtained an increased endowment. He was enthusiastic in his support of the colonial cause when the troubles with England began; he was a member of both the First and the Second Continental Congress and was the only clergyman to sign the Declaration of Independence.

WOOLLEY (*wul'i*), **MARY EMMA** (1863–). College president. Born at Norwalk, Conn.; graduated from Brown University, A. B., 1894 and A. M., 1895; taught at Wellesley College from 1895 to 1900; was elected president of Mount Holyoke College in 1900. Author of *Early History of the Colonial Post Office*, *Development of Love of Romantic Scenery in America*, etc.; contributor of articles on educational subjects to various magazines, and member of numerous learned societies.

WRIGHT, CARROLL DAVIDSON (1840–1909). An American economist, statistician, and educator; born in Dunbarton, N. H.; United States commissioner of labor (1885–1902); member of the anthracite coal strike commission (1902); one of the original trustees of the Carnegie Institution; president of the College Department of Clark University, Worcester, Mass.; wrote *The Industrial Evolution of the United States*, *Outline of Practical Sociology*, and numerous essays.

WRONG (*rông*), **GEORGE MACKINNON** (1860–). Born in Canada; educated at University and Wycliffe Colleges, Toronto, and in Germany. In 1894 he became professor of history in the University of Toronto, and served for more than thirty years, retiring as professor emeritus in 1927. Among his books are *The British Nation: A History*, *The Earl of Elgin*, *The Fall of Canada*, *The Conquest of New France*, *Washington and His Comrades in Arms*, *The Rise and Fall of New France*.

WYSS (*vis*), **JOHANN** (1781–1830). Born at Bern, Switzerland; became professor and chief librarian of the university of his native town. He was a collector of Swiss fairy tales and folklore, wrote *Idyllen und Erzahlungen aus der Schweiz* (Idyls and Tales of the Swiss), and edited the fifteen volume collection *Alpenrose*. He is best remembered, however, as the author of *Der Schweizerische Robinson*, first translated into English as *The Swiss Family Robinson* in 1820, and since appearing in many editions; he also wrote the Swiss national hymn, *Rufst du, mein Vaterland?*

YOUNG (*yun*), **ELLA FLAGG** (1845–1918). Superintendent of Chicago schools (1909); a teacher 47 years; district superintendent (1887–1899); professor of education, University of Chicago (1899–1905); principal of Chicago Normal School (1905–1909); member of Illinois State Board of Education since 1888; president of Illinois State Teacher's Association (1910); editor and author; president of N. E. A. (1910–1914).

ADDINGTON, HENRY, FIRST VISCOUNT SIDMOUTH (1757–1844). English chancellor of the exchequer; born at Reading; graduated at Brasenose, Oxford, and was admitted to the bar (1784). Speaker of the House of Commons (1789–1801); premier and chancellor of the exchequer (1801–1804); was raised to the peerage and served as president of the council (1805, 1806, 1807). He subsequently filled the office of home secretary, and was a member of the cabinet from 1822 to 1824.

ALDRICH (*ôl'drich*), **WINTHROP W.** (1885–). Financier. Born at Providence, R. I.; son of Nelson W. Aldrich, United States senator from Rhode Island for many years, who served as chairman of the National Monetary Commission and was recognized as a financial authority. Winthrop Aldrich is a brother-in-law of John D. Rockefeller, Jr. He is a graduate of Harvard College and Harvard Law School and was admitted to the New York bar in 1912. Became identified with numerous corporations as adviser and director. He is now president of the Chase National Bank, the largest bank in the world, formed in 1930 by the merging of the Chase National Bank, the Equitable Trust Company, and the Interstate Trust Company.

ASTOR, JOHN JACOB. See under CAPTAINS OF INDUSTRY.

ASTOR, JOHN JACOB (1864–1912). Capitalist. Born at Rhinebeck, N. Y., the fourth of the name in America. He was a graduate of Harvard and spent two years in foreign travel. In 1897 he built the Astoria section of the famous Waldorf-Astoria Hotel. During the Spanish American War, he rendered signal services to the Government and at its close, the rank of brevet colonel was conferred for "faithful and meritorious services." Mr. Astor was fond of experimenting in mechanics and invented among other things a bicycle brake and an improved turbine engine. Much of his time was given to the management of the enormous fortune, founded by the first John Jacob Astor. He was director of many corporations. Returning from a trip to Europe, he was lost on the ill-fated *Titanic;* many survivors testified that in the catastrophe he displayed great coolness and courage.

ASTOR, WILLIAM WALDORF (1848–1919). Capitalist; born in New York; great grandson of John Jacob, who laid the foundation of the Astor fortune. At his father's death (1890) William inherited his personal fortune estimated at about $100-000,000; United States minister to Italy (1882–1885); settled in England (1890), became sole owner of the *Pall Mall Gazette* (1893), and *Pall Mall Magazine;* built the Waldorf hotel in New York, which with the Astoria built by his cousin, John Jacob Astor, forms one of the most costly hotels in the world.

BABSON, ROGER W. (1875–). Financier and statistician. Born at Gloucester, Mass.; educated at the Massachusetts Institute of Technology. He was the originator of the theories of action and reaction, of the long pull and the short pull and the use of statistics in the buying and selling of stocks. He was founder of the Babson Statistical Organization at Wellesley Hills, Mass., with branch offices in 25 American cities; also, of the Babson Institute for the training of young men in business administration. He is director in half a dozen different corporations; writer and lecturer on financial and economic subjects. His theories are worked out in his books on *Business Barometers* and *Selected Investments.*

BACHE (*bäch*), **JULIUS SEMON** (1861–). Financier. Born in New York City. At 19 he began as cashier with Leopold Kahn & Co., bankers. In 12 years he had become head of the firm, the name of which was then changed to J. S. Bache & Co. This firm became one of the largest stock brokerages in the world.

BAKER, GEORGE FISHER (1840–1937). Capitalist and philanthropist. Born in Troy, N. Y. Later the family moved to Williamsburg, L. I., where he attended school. At 18, he became clerk in the State Banking Department where he worked seven years, becoming known as the best informed clerk in the department. When the First National Bank of New York was organized, shortly after the passage of the National Banking Act, Mr. Baker used his savings to buy 30 shares of its stock, and in 1868 became active head of the institution, a position he retained for many years. In 1882 he began his railroad career—buying a road when it was in a run-down condition and building it up until it was prosperous and a paying property. He had large interests in many big corporations; in 1929 he was listed as the second largest stockholder of the American Telephone and Telegraph Company. Of the great wealth he accumulated, Mr. Baker gave generously $2,000,000 to the Memorial Library at Dartmouth, $5,000,000 to the Graduate School of Business Administration at Harvard, a student dormitory and a chemical laboratory at Cornell, and many other donations.

BALFOUR (*bäl'fo͝or*), **ARTHUR JAMES.** See under RULERS AND SATESMEN.

BANNARD, OTTO TREMONT (1854–1929). Financier. Born in Brooklyn; graduated from Yale in 1876 and from the Columbia Law School in 1878; practiced law in New York for eleven years. Director of many corporations and president of the New York Trust Company.

BARUCH (*bă'rŭk*), **BERNARD M.** (1870–). Financier. Graduated from the College of the City of New York in 1889 and was a member of the New York Stock Exchange for many years, where he amassed a large fortune. During the World War, served as an economic and financial expert on many commissions and attended as a delegate on the American Peace Commission which took part in drawing up the Versailles Peace Treaty at Paris in 1919. Gave the funds for the International Institute of Politics at Williams College.

BELMONT, AUGUST (1853–1924). Banker; born in New York; head of August Belmont & Company, the American representatives of the European banking firm of Rothchilds; chairman board of directors of several construction companies; president Cape Cod Construction Company; trustee of savings banks and insurance companies; director of a number of railroads, steamship lines, real estate companies, and other corporations.

BELMONT, OLIVER HAZARD PERRY (1858–1908). Capitalist; born in New York; educated at United States Naval Academy, and served two years in the navy. Was member August Belmont & Company; published *The Verdict;* delegate Democratic National Convention (1900); member Congress (1901–1903), 13th New York district.

BISMARCK. See under RULERS AND STATESMEN.

BLAND. See under RULERS AND STATESMEN.

BOUTWELL. See under RULERS AND STATESMEN.

BRISTOW, BENJAMIN HELM (1832–1896). A United States secretary of the treasury; born in Elkton, Ky.; practised law until the outbreak of the Civil War, when he entered the service of the Union army; was made United States solicitor general (1870), and was secretary of the treasury (1874–1876); was defeated for the Republican presidential nomination (1876), and spent the remainder of his life in the practice of law; as secretary of the treasury his part in the prosecution of the "Whiskey Ring" made him well known as a reformer.

BROWN, ALEXANDER (1764–1834). Merchant and banker. Born in Ballymena, Ireland; in 1800 he came to America, bringing with him the oldest of his four sons, and settled in Baltimore; two years later he sent for the rest of the family. Starting in a small way as an importer of Irish linen, his business rapidly expanded and, from a mercantile house, developed into a merchant banking house. Mr. Brown's extensive importations and exportations made it profitable for him to buy and build ships; thus he became a large ship owner. He soon acquired great wealth and from his home in Baltimore directed his banking, trading, and importing operations, the movement of his ships, and his world wide commercial activities. One after another he took his sons into partnership. William, the oldest, went to Liverpool and started the firm later known as Brown, Shipley and Company; John A. went to Philadelphia and organized the firm which later became Brown Bros. & Co.; while James (q. v.) went to New York and founded there the present firm of Brown Bros. and Company; George remained in Baltimore, and, after his father's death, became head of the parent firm. Alexander Brown was

active in whatever concerned the welfare of his adopted city; he helped to incorporate the Maryland Institute of Art and to erect the first monument in the country to George Washington; he was also one of the founders of the Baltimore and Ohio Railroad. He was one of the first of America's millionaires, leaving an estate estimated at $2,000,000, a great sum in those days. The firm he established, Alexander Brown & Sons, now the oldest private banking house in the United States, still exists in Baltimore as one of the most substantial institutions. The branches founded by his sons in London, Philadelphia, and New York are today directed by his descendants and known throughout the world.

BROWN, JAMES (1791–1877). Banker. Born in Scotland; the youngest of the four sons of Alexander Brown (q. v.). He came to America in 1802 with his brothers, George and John. Like his brothers he became a member of his father's firm, Alexander Brown & Sons. In 1825, the year in which the Erie Canal was opened, James was sent to New York to do business under the firm name of Brown Bros. & Co.; he made this house one of the most influential in the country, his business growing to such immense proportions that eventually his firm broke with the parent company. He guided the New York house successfully through several periods of business depression, and during the critical period of the Civil War he was the most influential member of the family. He was interested in local philanthropies; was one of the founders of the Association for the Improvement of the Poor and of the Presbyterian Hospital, and from its beginning was a trustee of Union Theological Seminary.

CAMPHAUSEN, OTTO VON (1812–1896). Great German financier; born at Hünshoven; was educated at the universities of Munich, Berlin, Heidelberg, and Bonn, giving special attention to law and political economy; from 1834 to 1845 he held several government positions of minor importance, but in the latter year he was made privy councilor of finance; from 1849 to 1852 was a member of the second Prussian Chamber, and now began to use his large fortune for the encouragement of literature and art, and for the support of charitable institutions; the resignation of Baron von der Heydt (1869) led Bismarck to name him as chancellor of the exchequer; the position was accepted, and Camphausen's administration (1869–1878) brought the finances of the country to a prosperous condition, an act which showed ability of the highest order; but the opposition of the Liberals and the continued conflict with Bismarck, caused by his free trade principles, finally resulted in Camphausen's resignation.

CHASE, SALMON. See DICTIONARY OF LEADING JURISTS.

CHILDERS, HUGH CULLING EARDLEY (1827–1896). English chancellor of the exchequer; born in London; was graduated at Cambridge (1850), and was commissioner of trade and customs in Victoria, Australia, until 1857; returning to England he was first lord of the Admiralty under Gladstone (1868–1871), secretary of war (1880–1882), and chancellor of the exchequer (1882–1885); was home secretary in the Gladstone ministry of 1886.

CLARENDON, EDWARD HYDE, EARL OF (1609–1674). An English chancellor of the exchequer; born at Dinton, Wiltshire; prepared for the church at Magdalen College, Oxford, graduating in 1626; leaning toward letters rather than his chosen profession, he became acquainted with the literary men of the period; sat in both the Long and Short Parliaments, and in 1643 he was made privy councilor, chancellor of the exchequer, and knighted; was active in opposing the execution of Charles I., and became lord chancellor (1658), the appointment being confirmed at the time of the Restoration; was made chancellor of Oxford University (1660), and the following year received the titles of viscount Cornbury and earl of Clarendon; his administration witnessed the settlement of many important questions, but the ill success of some of his projects, together with court intrigue, led to his complete downfall (1667); the remainder of his life was spent in exile.

CLEWS, HENRY (1830–1923). Banker; born at Staffordshire, England; entered mercantile life in New York at 15; member firm Stout, Clews & Mason (1858); later Livermore, Clews & Company; organized firm Henry Clews & Company (1877); was connected with many city institutions and financial corporations.

COLGATE, JAMES BOORMAN (1818–1904). Financier. Born in New York City, son of William, the pioneer soap manufacturer. At 16 he went to work in the commission house of Boorman, Johnson & Co. In 1852 formed a stock brokerage partnership with John B. Trevor under the name of Trevor and Colgate; the name was changed in 1873 to James B. Colgate, which is still retained. During the early stages of the resumption of specie payment after the Civil War, the firm conducted the largest specie and bullion business of any house in the United States. Having, at an early age, acquired wealth, he followed his father's example in giving liberally to religious and educational institutions. He made many gifts to Madison University at Hamilton, N. Y. With the assistance of his brother, Samuel, he built and endowed in the same town, Colgate Academy. In 1890 when the two institutions were combined, the resulting institution was named Colgate University in honor of his father. To this Mr. Colgate made generous gifts each year.

CORTELYOU, GEORGE B. See under RULERS AND STATESMEN.

CORWIN, THOMAS. See under RULERS AND STATESMEN.

CRANFIELD, LIONEL, EARL OF MIDDLESEX (1575–1645). Sometimes called the first of English financiers; early became a merchant, and attracted the attention of the nobles when representing his company before the privy council; was appointed receiver of customs for Dorset and Somerset (1605); became master of the great wardrobe (1618); chief commissioner of the navy (1619), and master of the court of wards in the same year; in each of these offices he wrought great reforms, and prevented much financial waste; was created baron and earl of Middlesex (1622), but, on being charged with corruption in regard to the court of wards, was deprived of all his offices, fined, and sentenced to the Tower during the king's pleasure; Cranfield was released (1625) and pardoned the following year.

DALLAS, ALEXANDER JAMES. See under RULERS AND STATESMEN.

DAWES, CHARLES G. See under RULERS AND STATESMEN.

DAVISON, HENRY POMEROY (1867–1922). Banker. Born in Troy, Pa.; attended the schools in Troy until 15; at 16 became a teacher, achieving such success that his grandmother decided to send him to Greylock Institute (Mass.). When 19 he went to work in his uncle's bank at Troy. In 1891 he went to New York as teller in the Astor Place National Bank; three years later became connected with Liberty Bank, first as assistant cashier, then cashier, vice president, and at the age of 32, president, one of the youngest bank presidents in the world. In 1908, he became a partner in the firm of J. P. Morgan & Co. where he took active part in the consummation of several important bank mergers. During the World War, J. P. Morgan & Co. became fiscal agents for the Allies, and Mr. Davison was active in negotiating loans. On the entrance of the United States into the war, Mr. Davison was made head of the Red Cross War Council with the rank of major general. Under his administration the Red Cross was welded into an efficient organization, and nearly $300,000,000 raised for war relief work. For his war work, he received honors from all nations; he was made a Commander of the Legion of Honor, the first American to receive this honor from France; Albert of Belgium conferred upon him the Order of Leopold; the King of Italy made him a Grand Officer of the Crown of Italy.

DILLON, CLARENCE (1882–). Banker. Born in San Antonio, Texas; educated at Worcester Academy in Massachusetts and at Harvard, from which he was graduated in 1905. He was identified with mining and coal companies until 1908 when he went abroad and studied art for two years. Returning home, he became president of the Milwaukee Tool Company; then more by accident than conscious choice, he entered Wall Street and in 1916 became a member of William A. Read & Company, bankers; he became its head in 1921 and the firm name was changed to Dillon, Read & Co. This firm has financed the issuance of stocks and bonds on a large scale. It engineered the $100,000,000 Steel and Tube Company merger involving 6 large steel companies in or near Chicago and Milwaukee. In 1921 it underwrote a $50,000,000 loan for the United States of Brazil, and more recently has floated a $40,000,000 loan to the Royal Dutch Company.

DREXEL, ANTHONY JOSEPH (1826–1893). Banker. Born in Philadelphia, Pa. His father, an emigrant from the Austrian Tirol, was founder of the bank of Drexel & Co. At 16, Anthony entered his father's counting room and finally with his brothers succeeded to the control of the business and organized the firm of Drexel, Morgan & Co. In 1864, with George W. Childs, Mr. Drexel bought the *Philadelphia Public Ledger*. In 1891, he founded and endowed with $2,000,000 the Drexel Institute which provides technical instruction for both day and night classes.

EATON (*ē'tan*), **CYRUS S.** (1883–). Capitalist. Born in Nova Scotia; graduated from McMaster University, Toronto, in 1905. He began life as a Baptist minister but was persuaded by one of his parishioners to help in the formation of a gas company, and from this start, Mr. Eaton went on to the formation and consolidation of various electric light and power companies in the Middle West until now he is the guiding director of some 15 large corporations. The gross earnings of these companies have increased from $52,000 in 1912 to nearly $100,000,000 per annum in 1929. Mr. Eaton has been a member of the banking firm of Otis & Company since 1915; recently with associates he gained control of the Goodyear Tire and Rubber Company; more recently, he has been identified with such companies in the iron and steel industry as the Trumbull Steel Company, the Republican Iron and Steel Co., the Central Alloy Steel Co., and others now merged in the Republic Steel Company. Recently he has been a strong opponent of the merging of the Youngstown Sheet and Tube Company with the Bethlehem Steel Company. He is a trustee of Denison University, of the Cleveland Y. M. C. A., of the Cleveland Museum of Natural History, and other organizations to all of which he has given freely.

ECKELS, JAMES HERRON (1858–1907). American financier; born at Princeton, Ill.; graduated at Albany Law School (1880); practised law at Ottawa, Ill. (1881–1893); was comptroller of the currency (United States) from 1893 to 1898; figured as a gold standard Democrat in the presidential campaign of 1896; president of the Commercial National Bank, Chicago (1898).

EPSTEIN, MAX (1875–). Capitalist. Born at Cincinnati, Ohio; graduated from the College of the City of New York in 1891; moved to Chicago that same year where he became a member of the Chicago Board of Trade on which he made a large fortune. Later he became president of the General American Tank Company and a director in numerous corporations. He was chairman of the Draft Board during the World War. He is actively interested in educational and philanthropic work and is the donor of the Max Epstein Loan Fund at the Harvard Law School and of the Max Epstein Dispensary and Social Hall at the University of Chicago, and in 1929 to the same university, he gave $1,000,000 for the development of an Art Center.

EWING (*ū'ng*), **THOMAS.** See under RULERS AND STATESMEN.

FESSENDEN (*fĕs'ĕn-dĕn*), **W. P.** See under RULERS AND STATESMEN.

FISH, STUYVESANT. See under CAPTAINS OF INDUSTRY.

FLAGLER (*flăg'lĕr*), **HENRY.** See under CAPTAINS OF INDUSTRY.

FORGAN, JAMES BERWICK (1852–1924). Banker. Born in St. Andrews, Scotland; at 17 he entered the employ of the Royal Bank of Scotland at its St. Andrews Branch; after three years training he entered the employ of the Bank of British North America, first in London, then crossed the ocean to Montreal, New York, and Halifax. Later, he went to the Bank of Nova Scotia and when only 30 was made inspector of branches; he was sent out to establish a bank in Minneapolis and made such an impression that after three years, he was called as cashier to the Northwestern National Bank of Minneapolis. In 1892, at the request of Lyman P. Gage, then president of the First National Bank of Chicago, he was elected vice president of that bank and became president in 1900 when Gage was made Secretary of the Treasury. Under his administration the business of the bank experienced a great expansion, the assets increasing from about $49,000,000 to something over $258,000,000. In 1916, Mr. Forgan resigned the presidency and became chairman of the board.

GAGE, LYMAN J. (1836–1927). Financier. Born in De Ruyter, N. Y.; attended Rome academy. At 17 he became office boy in a bank; two years later, he went to Chicago where in 1868 he became connected with the First National Bank, one of the city's biggest banks, of which, after twenty-three years' service, he was elected president. He was the first president of the Board of Directors of the Columbian Exposition and it was largely due to his efforts that the exposition was held in Chicago. In 1897 Mr. Gage was appointed Secretary of the Treasury by President McKinley and continued in this position until 1902, a period of unusual activity because of the necessity of financing the Spanish-American War. After leaving the Cabinet, Mr. Gage went to New York as president of the United States Trust Company, a position he retained until his retirement from business. He died at the age of ninety.

GIANNINI, AMADEO P. (1870–). Banker. Born at San Jose, Calif.; received a public school education and attended a business college; began work in the fruit commission business with his stepfather, L. Scatena, and at 19 was admitted to the firm. In 1904 he established the Bank of Italy which today with its numerous branches is one of the largest banks in the world. In 1919, he formed the Bancitaly Corporation in New York, an investment and controlling company, which is interested in numerous banks and corporations through mergers and stock control. He has given a great deal of money to educational and charitable institutions, including a gift in 1928 of a million and a half dollars to the University of California. In 1924 he turned over to his successor the presidency of the Bank of Italy. Later he organized the Transamerica Corporation, the world's largest bank holding company. Turning to the East, he secured control of the Bank of America, New York City, and Blair & Co., a private banking house. In 1930, at the age of 60, he retired as an active officer from all his companies for a year's absence abroad.

GIRARD (*jĭ-rärd'*), **STEPHEN** (1750–1831). Merchant and financier. Born at Bordeaux, France, son of a sea captain. At 14 he went to sea and at 24 was captain and part owner in a vessel engaged in the West Indian and American coasting trade. In 1776 he settled in Philadelphia where he gave sympathetic support to the patriot cause. After the Revolution, he amassed a considerable fortune in West Indian trade. In 1812, when the charter of the First United States Bank lapsed, Mr. Girard bought the building and most of the stock of the bank. He renamed it the Bank of Stephen Girard and made it one of the soundest and most substantial financial institutions in America. During the War of 1812, he was the chief financial supporter of the Government, taking up, in 1814, almost the entire loan of five million for which no subscribers could be found. On the chartering of the Second United States Bank, he became one of the chief stockholders and for many years a dominating influence in determining its policies. Mr. Girard left practically all his entire fortune of seven and a half million to benefactions, the greater part to Girard College.

GLADSTONE (*glăd'stŭn*), **Wm. E.** See under RULERS AND STATESMEN.

GOSCHEN (*gō-shen*), **GEORGE JOACHIM** (1831–1907). English financier and statesman; educated at Rugby and at Oriel College; early entered upon a financial career, and became director of the Bank of England (1856); was elected to Parliament for London (1863); took an active part in bringing about the abolition of religious tests; was made vice-president of the Board of Trade and privy council (1865), and chancellor of the duchy of Lancaster (1866); became president of the Poor Law Board (1868); first lord of the Admiralty (1871), retiring with his party in 1874; Goschen served as special ambassador to the Porte (1880–1881), and in the Salisbury government (1886–1892) was chancellor of the exchequer; in this office he won much praise for his scheme for reducing the national debt; resumed his old position as first lord of the Admiralty (1895), continuing in that office until 1900; on the question of tariff reform brought up in the ranks of the Unionist party (1903–1905). Goshen became well known as an obstinate supporter of free trade.

GOULD (*gūld*), **FRANK J.** See under CAPTAINS OF INDUSTRY.

GOULD, GEORGE J. See under CAPTAINS OF INDUSTRY.

GOULD, HOWARD (1871–). Capitalist; born in New York; director Missouri Pacific Railway Company, Western Union Telegraph Company, International & Great Northern Railway Company, New York Mail & Newspaper Transportation Company, and numerous other corporations; member of the New York Stock Exchange.

GOULD, JAY (1836–1892). Capitalist. Born in Roxbury, N. Y.; studied at Hobart Academy. After some experience in surveying and banking, he went to New York City and became a stock broker, dealing at first in Erie Railroad bonds; he soon gained control of the road and for four years was its president. His manipulation of the Erie was the beginning of a long series of speculations by which he was able to dominate some of the most important railroads in the country. His method of procedure was to depress the stock he wished to control and then acquire it during the period of depression. In this way he gained control of the Union Pacific which he held for ten years during which time the stock rose from 15 to 75. He could then sell at an immense profit. In 1880 he controlled fully 10,000 miles of railroad, more than one-ninth of the entire mileage of the country. Perhaps his most reprehensible action was the entering into a scheme to corner the gold market, which resulted in the disastrous "Black Friday" (page 1176).

GREEN, HETTY ROWLAND ROBINSON (1835–1916). Financier. Born in New Bedford, Mass.; educated at private school in Boston. Her father, Edward Mott Robinson, died in 1865, leaving her a large fortune which she managed herself, acquiring an interest in almost every large corporation in the world. She was probably the richest woman in America and the greatest woman financier in the world.

GRESHAM (*grĕsh'ăm*), **SIR THOMAS** (1519–1579). Financier. Born in London; educated at Gonville College, Cambridge and was early apprenticed to his uncle, a mercer or merchant; was admitted a member of the Mercers Company in 1543; in 1551 or 1552 he became king's agent or factor at Antwerp and retained this lucrative post with three sovereigns down to 1574; he negotiated loans, bought arms and military stores, and sent bullion to England; his endeavors raised the rate of exchange and greatly benefited English trade; besides these services he was accounted "the greatest merchant in London," and amassed great wealth. He founded the Royal Exchange, Gresham College, eight almshouses, and one of the earliest English paper mills. He is chiefly known as the enunciator of Gresham's Law which is —"bad money drives out good money" or, perhaps better, "where two media come into circulation together, the more valuable will tend to disappear."

HALIFAX, CHARLES MONTAGUE, EARL OF (1661–1715). Financier. Born at Horton, England; educated at Westminster School and at Trinity College, Cambridge, where he formed a lifelong friendship with Isaac Newton. He entered political life and joined the movement calling William and Mary to the throne; he became one of the commissioners of the treasury and brought to pass a loan bill which was the beginning of the English national debt. More money being required, he pushed through in 1694 a plan for a national bank which had been proposed by William Paterson some three years before. The condition was that a loan should be made to the Government—some six million dollars at eight per cent:—the subscribers to this loan were to be incorporated under the name of the Governor and Company of the Bank of England and authorized to do a general banking business without any special privilege, and with power to lend to the crown without consent of Parliament. Later, Montague became chancellor of the exchequer, reformed the currency, introduced bills of exchange and other financial reforms.

HAMILTON, ALEXANDER. See under RULERS AND STATESMEN.

HAMMOND, JOHN HAYS. See CAPTAIN OF INDUSTRY.

HARCOURT (*ar'kŭr*), **SIR Wm. V.** See under RULERS AND STATESMEN.

HARDWICKE (*hărd'wik*), **PHILIP YORKE, FIRST EARL OF** (1690–1764). English lord chancellor; born at Dover; was admitted to the bar (1715); elected a member of Parliament for Lewes (1719); appointed solicitor general (1720); lord chief justice of the King's Bench (1733); lord chancellor (1737); was created earl of Hardwicke in 1754.

HARRIMAN, EDWARD HENRY (1848–1909). Capitalist; born at Hempstead, Long Island; at 14 entered a broker's office in Wall Street, as clerk; became stockbroker for himself; member New York Stock Exchange since 1870; president and director of Portland and Asiatic Steamship Company, Oregon Railroad & Navigation Company, and of many other railroads; director Erie Railroad Company, Western Union Telegraph Company, and numerous other corporations; trustee Equitable Trust Company.

HARRIS, NORMAN WAIT (1846–1916). Capitalist. Born in Becket, Mass.; received a common school education. His father's character resembled the granite of the New England hills among which he lived, and the boy, receiving what he esteemed an undeserved punishment, ran away from home. After some adventures he reached Cincinnati, and by the time he was 21, was getting a salary of $5,000 with a life insurance company. In 1882 he went to Chicago and opened an office for the sale of bonds; he sent his salesmen out to sell bonds, then considered an undignified procedure; he and his men were called "door-bell ringers." The business grew and expanded, until before his death, the firm which Mr. Harris had founded became the Harris Trust and Savings Bank in Chicago, with a bond department; Harris, Forbes & Co. in New York, and Harris & Company in Boston, the three forming one of the largest financial and bond houses in the country.

HEPBURN (*hep'bŭrn*), **A. BARTON** (1846–1922). Banker. Born on a farm at Colton, N. Y.; attended St. Lawrence Academy; graduated from Middlebury College. After graduation he taught for some years, first at St. Lawrence Academy, then at Ogdensburg Educational Institute, at the same time studying law. His attention being called to the opportunities open in the lumber business, he bought large tracts of forest lands and started in that industry. He achieved great success and acquired considerable wealth. He then received the appointment of Superintendent of the State Banking Department, and showed much ability in that line of work. He soon sold his lumber business for $200,000 and turned to banking as his life work. He was appointed national bank examiner in New York City; then was called to Washington as Controller of the Currency. In 1893 he accepted an offer to become president of the Third National Bank and from that time until his death, nearly thirty years, he was continuously in banking business in New York City. He left the Third National in 1897, was two years with the National City Bank, then became president of the Chase National Bank. Under his leadership this bank developed and expanded its activities in a remarkable degree. In 1911 he resigned the presidency and became Chairman of the Board; when, in 1917, he wished to resign that position, the directors insisted upon his remaining as Chairman of an Advisory Board, an innovation in banking. Mr. Hepburn died as the result of injuries and shock suffered when he was knocked down by a motor bus. He left about $3,000,000 in benefactions; two-thirds of this sum being for educational institutions.

HEYDT, AUGUST, FREIHERR VON DER (1801–1874). Great German financier; born at Elberfeld: early showed great aptitude for business, and, after completing his education in Germany, worked as clerk in several financial houses of France and England; in company with his two brothers he now carried on a banking business in Elberfeld; from this time on his reputation steadily increased; accepted the office of president of the Board of Trade and Public Works in the Brandenburg-Manteuffel cabinet (1848); became chairman of the bank of Prussia (1851), and minister of finance in the Hohenlohe-Itzenplitz cabinet (1862); resigned the same year, but, in 1866, when it was found that money was lacking to defray the expenses of the war with Austria, Bismarck prevailed with the king to reappoint Heydt; this was done, and the finances were skillfully managed until 1869, when Heydt, failing in health and discouraged with the condition of the country, tendered his resignation.

HICKS-BEACH, SIR MICHAEL EDWARD (1837–1916). English chancellor of the exchequer; born in London; educated at Eton and at Christ Church, and entered Parliament (1864); was chief secretary for Ireland (1874–1878); secretary of state for the colonies (1878–1880); chancellor of the exchequer and leader of the House of Commons (1885); served as president of the Board of Trade (1888–1892); again chancellor of the exchequer from 1895 to 1902;

greatly disconcerted the Balfour government by his acute attack on the methods of the war office.

HIGGINSON, MAJOR HENRY LEE (1834–1919). Banker. Born in New York City. After spending two years at Harvard, he entered the counting house of S. & E. Austin where, with the exception of a year's study of music in Vienna, he remained until the Civil War; he entered the Union army as second lieutenant in 1861, and four years later was honorably discharged, having reached the rank of major. He became a member of the firm of Lee, Higginson and Company, bankers, and after Mr. Lee's retirement was virtually the head of the firm. For fifty years this firm financed some of the most important undertakings in the business world. He was a loyal alumnus of Harvard, presenting to that institution the great athletic ground known as Soldiers' Field, a memorial to those students who gave their lives in the Civil War; he also gave $150,000 for the building of Harvard Union. He was perhaps most widely known as the founder of the Boston Symphony Orchestra, which gave its first concert in 1881, and which led to the founding of similar organizations in various other cities of the country.

HUSKISSON (*hus'ki-san*), **WILLIAM** (1770–1830). English statesman and financier; born in Worcestershire; went to Paris to study medicine; became a member of the Club of 1789; delivered before its members a speech on currency; on his return to England (1792) he received a minor government appointment; became intimate with such men as Canning and Pitt; was under secretary of war (1795–1801); from 1796 until the time of his death was almost continuously a member of Parliament; was appointed secretary of the treasury (1804); lost his position (1806), but regained it in 1807; became chief commissioner of woods and forests (1814); president of the Board of Trade (1823); secretary of state for the colonies (1827); his term of service in this last position witnessed the removal of the restrictions on the foreign trade of the colonies, and a reduction of many import duties.

HUNTINGTON, COLLIS P. See under CAPTAINS OF INDUSTRY.

HUNTINGTON, HENRY EDWARDS (1850–1927). Financier. Born at Oneonta, N. Y., a nephew of Collis P. Huntington, who in the early 90's made him his general representative in the management of the Central Pacific and Southern Pacific Railroads. After his uncle's death, Henry Huntington became particularly interested in the development of Los Angeles and its vicinity; he built street railways into the outlying sections, bought the adjoining territory, and built power houses. So extensive were his interests that the section became known as "Huntington's Interurban Empire." In later years his fame rested chiefly upon his preëminence as a collector of books and paintings; his collection at San Marino, Cal. was generally conceded to be the finest private collection in the world. Among the paintings are many by Reynolds, Romney, and Gainsborough, including the famous *Blue Boy*. At his death this collection became public property. He also left $8,000,000 to create fellowships for research work.

ISELIN (*iz-lan'*), **ADRIAN, JR.** Banker; director of Southern Railway Company, Lackawanna Steel Company, National Bank of Commerce, City & Suburban Homes Company, New British & Mercantile Insurance Company of London and Edinburgh; vice-president and director Buffalo, Rochester & Pittsburg Railway Company, and many other corporations. Died 1935.

JAMES, ARTHUR CURTISS (1867–). Capitalist. Born in New York; received both the A. B. and A. M. degrees from Amherst in 1889. Vice-president and director of the Phelps Dodge Corporation and its subsidiaries. Chairman of the board of directors of the Western Pacific and director of many other roads, he is supposed to own more railroad stock than anyone else in the country.

JESUP (*jes'up*), **MORRIS KETCHUM** (1830–1908). New York banker, born at Westport, Ct.; began business career as a clerk for a New York manufacturing firm; became an active banker (1852–1854); gave his aid in a financial way to many educational and religious institutions; president New York City Mission and Tract Society (1881–1903); one of founders (president, 1872) Y. M. C. A. of New York; president Chamber of Commerce of New York since 1899; Audubon Society, state of New York, after 1896; American Sunday School Union since 1896; Peary Arctic Club and Sailors' Snug Harbor after 1899; director and trustee of Atlantic Mutual Insurance Company, Western Union Telegraph Company, and of other corporations.

KAHN (*kän*), **OTTO H.** (1867–1934). Banker. Born at Mannheim, Germany; his father came to America with numerous other Germans after the unsuccessful German revolution of 1848, became a naturalized American citizen, but later returned to Germany; the son was educated in Germany. After a thorough apprenticeship in the banking business, he was with the branch of the Deutsche Bank in London for five years. He came to America in 1893 where for several years he was with Speyer & Co., then, in 1897, he became a member of the banking firm of Kuhn, Loeb & Co. He was a directing force in the expansion of that firm's financing of numerous railroads and corporations and made it one of the leading investment banks of the country.

KEMMERER, EDWIN W. (1875–). Money doctor. Born at Scranton, Pa.; graduated from Wesleyan University in 1899; received the degree of Ph. D. from Cornell in 1903. He then became financial adviser to the Philippine Commission and began the work which later gained him the title of "Money Doctor;" returning to this country, he was professor of economics and finance at Cornell from 1906 to 1912; in the latter year he went to Princeton where he has since remained. He was called upon to put the finances of Mexico in order in 1917; those of Guatemala in 1919; of Colombia in 1923; Chile, 1925; Poland, 1926; Ecuador, 1927; Bolivia, 1927; and China, 1929. He also served on the Gold Standard Inquiry Committee for the Union of South Africa, 1924–25; and as an expert on currency and banking to the Dawes Committee in 1925. The recently endowed Bureau of International Finance at Princeton is under the direction of Dr. Kemmerer. Among his books may be mentioned the *A. B. C. of the Federal Reserve System, Modern Currency Reforms, The United States Postal Savings System,* and *High Prices and Deflation.*

KNOX, JOHN JAY (1828–1892). American financier; born in Knoxboro, N. Y.; graduated from Hamilton College (1849); entered the banking business; his sympathy with the National Banking plan of Secretary Chase led to his appointment to a position in the treasury department (1866); was deputy comptroller of the treasury (1867–1872); comptroller (1872–1884); president of the National Bank of the Republic in the city of New York (1884–1892); prepared the original draft of the Coinage Act of 1873, which stopped the coinage of the silver dollar; was an authority on all matters relating to currency.

LAW, JOHN (1671–1729). A Scotch financier; founder of the first banking institution in France, the Banque Générale, established in Paris in May, 1716; in conformity with his views he issued paper currency which was accepted in payment of taxes, soon being at a premium; was given control of Louisiana by the French government in 1717; trade and colonization were the objects in view, to promote which was formed the "Compagnie d' Occident," usually called the "Mississippi Company," but later known as the "Mississippi Scheme" or "Bubble"; the company became of great importance in foreign as well as home commercial and financial affairs by absorbing the Africa, China, and East India companies and taking over the powers of receivers general and the control of the mint; in 1718 the Banque Générale was changed to Banque Royale; two years later the bank and the company became one, when Law became controller general of finance; but there was an overissue of paper money, the government opposed Law's scheme, and he left the country in May, 1720, after there had been a tremendous speculative craze, followed by a complete collapse.

McCAIN, CHARLES S. (1884–). Financier. Born at Pine Bluff, Ark. Was a Phi Beta Kappa graduate of Yale in 1904. Helped to organize several banks in Arkansas, the largest being the Bankers Trust Company of Little Rock in 1913 of which he was successively vice-president and president. He went to New York and became identified with the National Park Bank of which he was made president in 1927. Two years later when the Park Bank merged with the Chase National Bank he went to the latter institution. In 1930 on the merger of the Chase National, the Equitable Trust, and the Interstate Trust, forming the largest bank in the world, he became chairman of the board of directors of the Chase National, the continuing bank. He is described as a man with an innate appreciation of personality and a great capacity for work.

McGARRAH, GATES W. (1863–1940). Banker. Born at Monroe, N. Y.; has been identified as cashier and president with several of the larger New York banks. Served as president of the New York Clearing House Association (1917–1919); was chairman of the board and federal reserve agent of the Federal Reserve Bank of New York; is director in many corporations. In 1930 he was elected one of the American directors of the Bank for International Settlements which is designed to bring about a settlement of reparations and act as an international clearing house. The three objects of the bank are to promote the cooperation of central banks, to provide additional facilities for international financial operations, and to act as trustee or agent in connection with international financial settlements entrusted to it under agreements with the parties concerned.

McHUGH, JOHN (1865–). Financier. Born at Belleville, Ontario, Canada; came to the United States in 1891; received a public school education and acquired his early banking training in the Middle West. He directed a substantial merger of four banks into the First National Bank of Iowa and increased the business of this bank from $357,000, to $7,500,000. He went to New York at the invitation of Gates W. McGarrah to become vice president of the Mechanics and Metals National Bank and, in 1926, on its consolidation with the Chase National Bank, became president of the united banks. He is one of the few men who can exhibit notes of four different banks to which his signature was attached as president. He is now chairman of the executive committee of the Chase National Bank, the world's largest bank, formed in 1930 by the merging of the Chase National Bank, the Equitable Trust Company, and the Interstate Trust Company.

MACKAY, JOHN WILLIAM (1831–1902). Capitalist. Born in Dublin, Ireland; came as a boy to New York City. In 1852 he went to Nevada; there he obtained a two-fifths share in the Bonanza mine of the Comstock Lode. After many bitter disappointments, in 1873, a rich vein was discovered which yielded a hundred million. Mr. Mackay became very wealthy. For many years he was president of the Nevada Bank. In 1884 with James Gordon Bennett, he formed the Commercial Cable Co., and the Postal Telegraph Co. to fight the Western Union. The cable was laid in spite of many difficulties and the monopoly of the existing company was broken. In 1908 a school of mines was presented to the University of Nevada by his widow and his son, Clarence H. Mackay.

McROBERTS, SAMUEL (1868–). Financier. Born in Malta Bend, Mo.; a graduate of Baker University and of the University of Michigan Law School; practised law in Chicago a number of years and served as attorney, then as treasurer and financial director, for Armour & Co.; moved to New York and became identified with several banks; an official of the National City Bank, Metropolitan Trust Co., and chairman of the board of the Chatham Phenix National Bank and Trust Co.; served with distinction in the ordinance department during the World War; a director in various manufacturing, financial, and insurance corporations; interested in many philanthropic and educational institutions.

McVEAGH, FRANKLIN. See under CAPTAINS OF INDUSTRY.

MELLEN, CHARLES S. See under CAPTAINS OF INDUSTRY.

MELLON, ANDREW (1854–1937). Banker and secretary of the treasury, for many years was identified with the commercial and manufacturing life of the Pittsburgh district. He was an associate in the enterprises of the late Henry C. Frick and founded the town of Donora, Pa., where extensive mills were established. Resigning from the presidency of the Mellon National Bank, Pittsburgh, on March 1, 1921, he entered the cabinet of President Harding and continued as secretary of the treasury in the Coolidge and Hoover administrations.

MERRILL, EDWIN G. (1873–). Financier. Born in Bangor, Maine; a graduate with honors of Harvard University. After a number of years of banking experience in Bangor and New York, and official connection with several banks, he became president of the Bank of New York and Trust Company, which had absorbed several other banks. He is a director in many corporations.

MILLS, DARIUS OGDEN (1825–1910). Banker, financier; born at North Salem, Westchester County, New York; was a clerk in New York; went to California (1849) and became merchant and dealer in exchange in Sacramento; founded bank in that city; regent and treasurer University of California (1868–1880); one of first trustees of Lick estate and Observatory, California; returned to New York (1880); built Mills Building, a system of hotels, and Nurses' Training School in New York; president New York Botanical Garden; director and trustee of several railroads and other corporations.

MITCHELL, CHARLES EDWIN (1877–). Financier. Born in Chelsea, Mass.; a graduate of Amherst in 1899. That same year he began with the Western Electric Co., Chicago, within 5 years becoming assistant manager; he then became connected with several banking and investment companies. Since 1916 he has been president of the National City Company and since 1921 has also been president of the National City Bank of New York.

MORGAN, JOHN PIERPONT (1837–1913). Banker, financier; born at Hartford, Ct.; entered bank of Duncan, Sherman & Company (1857); in 1860 became agent and attorney in United States, for George Peabody & Company, bankers of London; became member of firm of Drexel, Morgan & Company (1871), which is now J. P. Morgan & Company, leading private banking house in the country, with important branch house in London; floated United States bond issue of $62,000,000 during Cleveland's administration; secured American subscriptions of $50,000,000 to British war loan of April (1901); controlled over 50,000 miles of railways in the United States and England; president Metropolitan Museum of Art (1905–1913); donated largely to educational and religious institutions as well as to art.

MORGAN, JOHN PIERPONT 2nd (1867–). Financier. Son of John Pierpont Morgan. Born at Irvington, N. Y.; educated at St. Paul's School and Harvard University. In 1891 he became a member of his father's firm; later, spent 8 years with the London house of J. P. Morgan & Co. On his father's death in 1913, he became head of the firm of J. P. Morgan & Co. Sixteen months later, the World War broke out. The British, and later the French, government made the firm purchasing agents for their supplies of foodstuffs and munitions, purchases aggregating several billion dollars. The work accomplished in organizing the industrial supply was of great service to the United States government when we entered the war in 1917. Mr. Morgan's firm was also active in financing loans for the allies, not only during the war but during the period of world reconstruction which followed it. Their loans to Great Britain, France, Belgium, Italy and other countries aggregated between 1917–1926 about $1,700,000,000. For 5 years Mr. Morgan was a member of the advisory council of the Federal Reserve Board. In 1920 Mr. Morgan presented his residence at Prince's Gate in London to the United States government for an embassy. In 1923, by public charter, he dedicated his father's library, augmented by his own additions, as an institution of research for scholars, at the same time providing a liberal endowment for it. In 1929 he served as an unofficial delegate at the conference in Paris for the fixation of German reparations.

MORRIS, GOUVERNEUR. See under RULERS AND STATESMEN.

MORRIS, ROBERT (1734–1806). Financier. Born in Liverpool, Eng.; came to America in 1747 where he found employment with a prosperous mercantile firm of which, seven years later, he became a partner. In the Revolution, he supported the colonial cause, was a member of the Continental Congress and a signer of the Declaration of Independence. He rendered invaluable service to his adopted country by financing the War of Independence; he practically controlled the financial affairs of Congress from 1776 to 1778; in 1781 he was made superintendent of finance; by requisitions from the various states, by giving of his own means or borrowing on his own credit he financed the transferring of Washington's army from Dobbs Ferry to Yorktown, and thus made possible the great victory which insured the success of the American cause.

MORTON, LEVI PARSONS. See under RULERS AND STATESMEN.

NECKER, JACQUES. See under RULERS AND STATESMEN.

NORMAN, MONTAGUE C. (1871–). Governor of the Bank of England and eminent financier. Born

at Much Hadham, Herts, England; educated at Eton and Kings College, Cambridge. He obtained his banking training with Brown, Shipley, & Company and has been identified with international banking transactions for many years. In 1930 he was elected for the eleventh consecutive year as governor of the Bank of England, a notable departure from the tradition of that institution. In 1930 he was also elected one of the directors of the newly established Bank for International Settlements. It is said that from the start of his career he was a breaker of precedents and showed great capacity for understanding American finance and for coöperating with American bankers in their international policies.

NORTH, FREDERICK. See under RULERS AND STATESMEN.

NORTHCOTE, STAFFORD. See under RULERS AND STATESMEN.

OSGOOD, JOHN CLEVELAND (1851–1926). Capitalist; born in Brooklyn. Began his business career as office boy in Providence, and later went to New York as clerk for a commission firm; from 1874–1877 he was cashier for the First National Bank of Burlington, and during the next five years engaged in coal mining. In 1892 he organized the Colorado Fuel and Iron Company, of which he was either president or chairman of board of directors until his resignation in 1903. Acted as president of Crystal River Railroad, and Colorado & Wyoming Railroad, built in the interest of the Fuel and Iron Company.

OVERSTONE, SAMUEL JONES LLOYD, BARON (1796–1883). Welsh banker and authority on finance; educated at Eton and Cambridge, entering the banking and mercantile business after graduation; from 1816 to 1823 sat in Parliament for Hythe; became a great student of banking questions, subsequently publishing two or three works on the subject; his influence over the chancellors of the exchequer was great, and in the bank charter act (1844) his ideas in the main were carried out; raised to the peerage (1860).

PATERSON, WILLIAM (1658–1719). British financier; born in Dumfriesshire, Scotland; removed to England when a young man, and, engaging in trade in London, acquired quite a fortune; first proposed to the government his plan for the establishment of the bank in 1691, but it was not until 1694 that Parliament passed an act adopting his ideas; although an original stockholder in the bank, he soon resigned and removed to Scotland, where he prevailed on the Scottish Parliament to pass the act founding the "Company of Scotland trading in Africa and India," under which name the Darien colonization scheme was carried out; in this Paterson was not wholly successful, and in 1715, in recognition of his public services, the government voted him about $90,000 to compensate his losses in the Darien scheme; Paterson was active in securing the union of England and Scotland.

PAYNE, OLIVER HAZARD (1841–1917). Capitalist; born at Cleveland, Ohio; graduated at Yale in 1863, and was a Union officer in the Civil War. Director in Standard Oil Company, American Tobacco Company, Chase National Bank, Manhattan Trust Company, Havana Tobacco Company, International Railway Company, Virginia & Southeastern Railway Company, New York Loan and Improvement Company, etc. Gave $500,000 to aid in establishing and maintaining medical department of Cornell University in New York.

PERKINS, GEORGE W. (1862–1920). Financier and organizer. Born in Chicago. With only a public school education, he began his career as an office boy in the Chicago office of the New York Life Insurance Co., and remained with that company until 1900, when he had advanced to the position of the chairman of the finance committee. He displayed great ability as an organizer, introducing improved methods which revolutionized the insurance business. In 1900 he became a partner in the firm of J. P. Morgan and Co. There his work was largely concerned with organization; he organized the International Harvester Co., and was, to a great extent, instrumental in organizing the United States Steel Corporation. His pleasing personality was a great asset and attracted the attention of Andrew Carnegie who is reported to have remarked: "This young man actually sweetens sordid business dealings by the amiability of his manner." Mr. Perkins was a pioneer in the profit-sharing plan; he actively sought to create a better understanding between capital and labor. He was a directing influence in the organization of the Progressive party, and the direction of the campaign for Roosevelt as a presidential candidate of that party was largely in his hands. During the World War, Mr. Perkins was chairman of the War Work Council of the Y. M. C. A.

PITT, WILLIAM. See under RULERS AND STATESMEN.

QUESNAY (*kĕ-nĕ'*), **FRANCOIS** (1694–1774). French economist; born at Méré; early practised as a surgeon and physician; devoted much time to the study of economics; was the author of several works and had several stanch disciples, who did much to popularize his views, and who afterwards formed the sect known as the Physiocrats.

RASKOB, JOHN J. (1879–). Financier. Born at Lockport, N. Y.; received a common school and business college education. He has been connected with the E. I. DuPont de Nemours Company of Delaware in various official positions; he is identified with General Motors and other corporations. He was formerly a Republican but was financial manager of Governor Smith's campaign for the presidency in 1928. He is a director of the Bankers Trust Company, the American Surety Co., and the County Trust Company.

REVELSTOKE, JOHN BARING, LORD (1863–1929). Banker. Born in England; educated at Eton and Trinity College. After his graduation he became director in his father's bank, Baring Brothers & Co., Ltd.; when his father died in 1897, he assumed control. The bank, a few years before, had been on the verge of collapse, but under his guidance was restored to complete prosperity and was at the time of his death one of the two greatest of English banks. He occupied in the British financial world a position comparable to that held by J. P. Morgan in the United States. During the World War he rendered invaluable service to his government; he died suddenly while serving as a member of the experts commission for the fixation of German reparations.

REYNOLDS, JACKSON E. (1873–). Banker. Born at Woodstock, Ill.; graduated from Leland Stanford University in 1896 and the Columbia Law School in 1899. He practised law in New York City and also taught law at Columbia University; while attorney for the Central Railroad of New Jersey he attracted the attention of George F. Baker, one of the directors, and was invited to join the staff of the First National Bank of New York; he became actively interested in the affairs of Mr. Baker and his associates. On Mr. Baker's becoming chairman of the board, he was elected president of the bank. Besides being identified with the Federal Reserve Bank of New York, he is a director in various railroads and corporations; he has been a prominent figure in the various German Reparations commissions and in bringing about the organization of the Bank for International Settlements.

RICARDO (*rĭ-kär'dō*), **DAVID** (1772–1823). English political economist; born in London; at the age of 14 entered his father's stock exchange business, and about five years later established himself as a broker; soon became wealthy; report of the bullion committee (1811) was drafted under Ricardo's influence, and, from the time he entered Parliament (1819), his influence in financial matters was very great; noted also for his writings, which probably exerted more influence upon economic thought than those of any other writer, Adam Smith excepted.

RICHELIEU (*rē'shĕ-lyû'*), **ARMAND.** See under RULERS AND STATESMEN.

ROGERS, HENRY H. (1840–1909). Capitalist; born at Fairhaven, Mass.; vice-president and director Standard Oil Company, Brooklyn Union Gas Company, United Metals Selling Company; president and director Amalgamated Copper Company, National Transit Company, National Fuel Gas Company, New York Transit Company, Richmond Light and Railroad Company; and as trustee or director was also connected with many other corporations; has given liberally to his native town.

ROTHSCHILD (*rŏths'chīld*). A family of European financiers, of which the following two may be mentioned: **MAYER ANSELM** (1743–1812). Founder of the family; born at Frankfort-on-the-Main; entered the counting house at Hanover, opened a money exchange business at Frankfort, and was intrusted with the private fortune of the elector of Hesse-Cassel (1806) when the latter fled; the money was ably handled, and in 1815 was returned to the elector with interest; his five sons became known throughout Europe as eminent financiers, and few international transactions were undertaken without their aid.

LIONEL (1808–1879). Eldest son of Nathan, son of Mayer Anselm Rothschild; born in London; received his education at Göttingen; continued his father's business in London; was elected to Parliament for London (1847, 1849, 1852, 1857); noted for his success in obtaining Jewish emancipation in Great Britain; taking his seat in the Commons (1858) he served until 1868, and again from 1869 to 1874.

RYAN, THOMAS FORTUNE (1851–1928). Financier; born in Nelson County, Virginia; in 1868 entered a Baltimore dry goods house; entered Wall Street (1870); member New York Stock Exchange (1874); vice-president Morton Trust Company; member Chamber of Commerce; reorganized various railroads; director of many financial enterprises; in 1905 purchased controlling interest of the stock of Equitable Life Assurance Society of the United States.

SAGE, RUSSELL (1816–1906). Born in Oneida County, N. Y.; educated in the public schools. He began as a clerk in a grocery store; within a few years he had established himself in the wholesale grocery business. In 1868 he removed to New York where he bought a seat on the Stock Exchange; besides speculating in railway stock, he became a money lender, a dealer in "puts" and "calls" and "privileges." He became associated with Jay Gould in control of the Wabash, the St. Louis and Pacific, and other western roads. He left almost his entire estate, consevatively estimated at $60,000,000, to his wife, Margaret O. S. Sage. She began a series of benefactions to many worthy causes: $1,000,000 to Rensselaer Polytechnic Institute at Troy; $1,000,000 to the Troy Female Seminary where she was educated; and in 1907 she gave $10,000,000 to establish the Russell Sage Foundation for the betterment of social conditions in the United States.

SCHIFF, JOCOB H. (1847–1920). Banker. Born in Frankfort-on-the-Main, Germany, and educated in the schools there; came to the United States at 18, where after considerable experience in banking and brokering, he became a member of Kuhn, Loeb & Co. He displayed such outstanding ability that, when Mr. Loeb retired, he was made head of the firm. Under his leadership the company not only held its place as one of the largest banking houses in the United States, but so expanded that it acquired an international reputation. The firm financed Harriman in the reorganization of the Union Pacific; it acted as bankers for the Pennsylvania Railroad, and is said to have floated for this company loans to the amount of $100,000,000 at one time; it financed the building of the Pennsylvania Railroad Station; floated a $200,000,000 bond issue for the Japanese government. In the later years of his life, Mr. Schiff became known especially as a philanthropist. He was donor of the Semitic Museum at Harvard; his benefactions amounted each year to several million dollars.

SHERMAN, JOHN. See RULERS AND STATESMEN.

STEFANI, ALBERTO DE (1879–). Italian financier, elected in 1921 as an independent from Verona in parliament, after being a lecturer in economics in Padua. Mussolini appointed him minister of finance in 1922, and two months later as minister of the treasury in addition. He stabilized finances, balanced the budget, and reduced the national debt before he retired in 1925.

TOWER, CHARLEMAGNE (1854–1923). Financier and diplomat. Born in Philadelphia; educated at Phillips Exeter, and Harvard; spent four years in travel and study in Europe; then studied law and in 1882 was admitted to the bar. For many years he devoted himself to his steadily growing law practice and to the various business enterprises with which he became connected. In 1897, he was appointed by President McKinley minister to Austria, later was Ambassador to Russia, and in 1902 was sent by President Roosevelt to Berlin where in his six years' stay he made a brilliant record, becoming a prime favorite to the former Kaiser, William II. In the later years of his life, Mr. Tower resumed the direction of his large business interests. He was a director in a number of important corporations, the New York, New Haven, and Hartford Railroad, the Philadelphia and Reading Coal and Iron Company, and others. He was also the author of a number of essays and one book, *The Marquis de Lafayette in the American Revolution.*

TRAYLOR, MELVIN A. (1878–1934). Banker. Born at Breeding, Ky.; educated in the common schools; he moved to Texas and was a cowboy on the plains, a school teacher, and a clerk in a country grocery store; while clerking in the store, he studied law nights, and was admitted to the Texas bar. After filling several minor political offices, he entered the banking field at Malone, Texas, in 1905, then became connected with county banks, with banks in St. Louis and Chicago, and in 1925 was elected to the presidency of the First National Bank of Chicago. It is reported in financial circles that Mr. Traylor is the only man to refuse a partnership in J. P. Morgan & Company. Besides his banking interests he is a director in numerous corporations and has acted on government credit and reparations commissions.

TUPPER, CHARLES. See under RULERS AND STATESMEN.

TURGOT, ANNE ROBERT JACQUES, BARON DE L'AULNE (1727–1781). French economist and statesman; born in Paris; was educated for the church, but turned his attention to the study of political economy, allying himself with the liberal views of the time; was intendant of Limoges (1761–1774), where he inaugurated many beneficial reforms, and after the death of Louis XV. was called to the ministry; the disordered condition of the finances gave him a chance to show his ability as a financier; was first minister of marine and later comptroller general; greatly reduced expenditures, required of the nobles the same tax asked of others, and aimed to establish free trade throughout France; among his important measures were the abolition of the *Corvée* (January 6, 1776), and the *jurandes* (March 12, 1776); the first of these related to the forced labor of the peasants upon the making of high roads; the second to the government of privileged corporations; his reforms, especially those directed against the nobility, soon won him the hostility of that class, and he retired in May, 1776, after 20 months of service; spent the greater part of the remainder of his life in writing.

VANDERBILT, ALFRED GWYNNE (1877–1915) Capitalist; born in New York; was graduated from Yale (1899); director Hanover National Bank, Plaza Bank, Conried Metropolitan Opera Company, American Horse Exchange, and various other banks and railways. Died in the sinking of the *Lusitania.*

VANDERBILT, CORNELIUS (1794–1877). Capitalist; born near Stapleton, Staten Island, N. Y. Without education or capital, he started a ferry between New York and Staten Island at the age of 16. In two years he owned and controlled three boats and at 30 years of age he held controlling interest in a company owning a large number of river and harbor vessels. Later he controlled fleets of steamboats on the Hudson, the Sound, and the Delaware; ran lines to Boston and other coast cities, to California via Lake Nicaragua, and to Havre, France. He gradually transferred his capital from steamers to railroads, and by 1864 he had control of the Hudson River Railroad. He secured the New York Central three years later, and soon united the two roads into one system, which he finally extended into a through route from New York to Chicago. Fortune estimated at $100,000,000.

VANDERBILT, CORNELIUS II. (1843–1899). Financier and capitalist, born at New Dorp, Staten Island, N. Y., son of William H. and grandson of Cornelius. After acting as banking clerk in New York, he entered the brokerage house of Kissam Brothers. Since 1867, he has been an official in railroad management, chairman of governing boards of New York Central & Hudson River Railroad, and Michigan Central, and director in 34 different railways. He was head of Vanderbilt railroads interests until ill health compelled him to retire.

VANDERBILT, CORNELIUS III. Capitalist; born in New York; graduated at Yale (1895); director of New York Life Insurance and Trust Company, Mutual Life Insurance Company, Allis-Chalmers Company, Lackawanna Steel Company, Marine National Bank of Buffalo, Illinois Central Railway Company, Hudson Companies, Mexican Telegraph Company, Philippine Railway Company, and of numerous other financial enterprises.

VANDERBILT, FREDERICK WILLIAM (1856–1938). Capitalist; graduated from Yale Sheffield Scientific School (1876); received a business training in office of his father's railroad system; director New York Central Railroad, Chicago & St. Louis Railroad, Canadian Southern Railway Company, The Pullman Company, and numerous other financial and railway corporations.

VANDERBILT, GEORGE WASHINGTON (1862–1914). Capitalist; born at New Dorp, Staten Island, New York; gave largely to educational institutions; presented American Fine Arts Society of New York the room in their building known as the Vanderbilt Gallery; purchased 100,000 acres of mountain land near Asheville, N. C., which he developed and on which he erected a mansion.

VANDERBILT, WM. HENRY. See under CAPTAINS OF INDUSTRY.

VANDERBILT, WM. KISSAM. See under CAPTAINS OF INDUSTRY.

VANDERLIP, FRANK A. (1864–1937). Banker. Born at Aurora, Ill.; he was a special student of economics at the University of Chicago and Illinois. He entered newspaper work and became the financial editor of the Chicago *Tribune* and then associated with the Chicago *Economist;* became private secretary to Lyman P. Gage, Secretary of the Treasury, and later was appointed assistant secretary of the treasury. In 1901 he went to the National City Bank of New York and became president in 1909. He assisted in governmental financial operations during the World War. Since 1919 he has devoted himself to his private business interests. He is a director in numerous corporations.

VAN SWERINGEN, MANTIS J. (1881–1935). Capitalist. Born at Wooster, Ohio; educated in the public schools; moved to Cleveland and became a partner with his brother in the real estate business, the development of Shaker Heights, of transit lines in Cleveland, and was instrumental in various railroad mergers; director in many corporations and a member of the firm of O. P. & M. J. Van Sweringen.

VAN SWERINGEN, ORIS P. (1879–1936). Capitalist. Born at Wooster, Ohio; educated in the public schools; went to Cleveland where he sold newspapers and worked as an office boy; with his brother, he entered the real estate business and became the active head of the firm of O. P. & M. J. Van Sweringen; he planned and developed the suburb of Shaker Heights, Cleveland, one of the largest undertakings of its kind up to 1921. He helped to finance and build the Cleveland Terminal, a union depot for various railroads entering Cleveland. In recent years he has been identified with railroad consolidation and control of railroads; he has a controlling interest in the Erie, Nickel Plate, Hocking Valley, and other railroads and is working out a consolidation of various railroads into a unified system.

WARBURG, FELIX M. (1871–1937). Banker. Born at Hamburg, Germany and educated in the public schools of that city. He came to the United States in 1894 and became a naturalized citizen in 1900. He entered banking business, becoming a partner of Kuhn, Loeb & Co. in 1896. The preceding year he had married the daughter of Jacob H. Schiff, the managing partner of this banking house. Mr. Warburg is a director in a number of banks and corporations; he has given freely of time and money to numerous philanthropic undertakings. The firm of Kuhn, Loeb & Co. stands out in the financial world as one of the leading private banking houses of this country.

WHITNEY, WILLIAM COLLINS (1841–1904). Financier and political leader. Born at Conway, Mass.; graduated from Yale and studied law at Harvard. He began practice in New York, displaying such obvious talent that his progress was rapid. He acquired a reputation as an expert corporation lawyer and became connected professionally with many large corporations. He was an agressive opponent of the "Tweed Ring," and an active worker in anti-Tammany organizations. For ten years he was corporation counsel of New York; he showed remarkable power in this position, saving the city some $12,000,000. He was Secretary of the Navy during President Cleveland's first administration and did much toward reorganizing and developing the Navy. He was an active supporter of Cleveland in 1892, but not believing in "free silver," refused to support William J. Bryan. Mr. Whitney devoted the remainder of his life to his many business interests; he was one of the organizers of the Metropolitan Street Railway Co. and one of his last pieces of work was the organization of the New York Electric Light, Heat and Power Co. He was interested in horse racing and in 1901 won the English Derby.

WHITTINGTON, RICHARD (about 1359–1423). English merchant; nothing definite is known of his early life; in 1397, 1398, 1406, and 1419 he was mayor of London; is said to have loaned large sums of money to the king, and at his death left the greater part of his fortune for charitable purposes.

WIGGIN (*wig'in*), **ALBERT H.** (1868–). Financier. Born at Medfield, Mass.; at 17, after a high school education, he began as a bank clerk and was later identified in various capacities with several Boston banks until 1899 when he removed to New York. In 1904 he became vice-president of the Chase National Bank, later president, and then chairman of the board. He was a fuel administrator during the World War, chairman of the Clearing House in the adjustment period of 1918–19, and in 1920–21 president of the Clearing House Association. He is a director in many corporations and has been the driving force in the growth of the Chase National Bank. Mr. Wiggin has been described as "a tower of strength in the banking world." He is now chairman of the governing board of the Chase National Bank, the World's largest bank, formed in 1930, by the consolidation, largely under his influence, of the Chase National Bank, the Equitable Trust Company, and the Interstate Trust Company.

YERKES (*yĕr'kēz*), **CHARLES TYSON** (1837–1905). Financier. Born in Philadelphia; received a high school education. He began as clerk in a grain commission house, then became a broker and banker, making a specialty of dealing in bonds. In 1871 he failed; and was in debt to the city of Philadelphia for bonds sold on its account; he refused to give the city preference over other creditors; was convicted of misappropriation of funds and imprisoned, but afterward pardoned and the conviction decided to be illegal. He recuperated his fortune in the early seventies. He became interested in street railways in Chicago and gained control of the greater part of the car lines of that city. Later he went to London, and became identified with what is known as the underground tubes. Mr. Yerkes gave to the University of Chicago a telescope costing about $400,000, one of the finest and largest in the world. It is located in the Yerkes Observatory on Lake Geneva in Wisconsin.

ABBATO or **ABATI** (*ab-bah'te*), **NICCOLO DELL'** (1512–1571). An Italian painter and fresco artist, follower of Raphael and Correggio. His *Adoration of the Shepherds* at Bologna is considered his finest; best known by his frescoes in the palace of Fontainebleau. His *Martyrdom of St. Peter and St. Paul* is in Dresden.

ABBEY, EDWIN AUSTIN (1852–1911). An American figure painter and illustrator, among the strongest colorists and most intellectual painters. His most important works are *Search for the Holy Grail*, Boston Public Library (1891–1901); *Coronation of King Edward* (1901); three mural paintings, Capitol at Harrisburg, Pa. (1902–1911); *A May-Day Morning, Fiammetta's Song, Crusaders Sighting Jerusalem*, and *Columbus in the New World*. He was a member of the Legion of Honor, the Royal Academy, the National Academy, the Royal Bavarian Academy, and many art societies.

ABBOTT, EMMA (1849–1891). An American soprano; born in Chicago, Ill.; studied in Milan and Paris; made her début in Covent Garden, London, as Maria in *La fille du régiment;* sang in America in *Martha, Faust, Les Huguenots*, and *Chimes of Normandy;* most widely known American singer of her time, except, perhaps Clara Louise Kellogg. She married E. J. Wetherell in 1873.

ABINGTON, FRANCES (1737–1815). A famous English actress who was a flower-girl at the theaters but made her first appearance as Miranda in the *Busybody* at the Haymarket, in London (1765). After an absence of 10 years she returned to England at the invitation of Garrick and played for 18 years in Drury Lane, and, later, at Covent Garden. She was the original Lady Teazle (1777), and played many Shakespearean rôles. She became the leading actress of her time; her last appearance was on April 12, 1799.

ABT (*abpt*), **FRANZ** (1819–1885). A German song writer and musical conductor; kapellmeister at the court theater in Bernberg in 1841, at Zürich (1842–1852); a prolific composer; published about 600 books of music. Some of these contain from 20 to 30 numbers. His songs are remarkable for simplicity and clearness of melody; visited the United States in 1872. Among his best known songs are "Wenn die Schwalben heimwärts zieh'n" (When the Swallows Homeward Fly); "Gute Nacht, du mein herziges Kind;" "Schlaf' wohl, du süsser Engel;" and "Leuchtendes Augen."

ACHENBACH, ANDREAS (1815–1910). A German marine and landscape painter; born at Cassel; one of the most famous of the Düsseldorf School. His works are chiefly scenes on the Rhine, in Holland, and Norway. Many of his works are owned by private collectors in the United States.

ACHENBACH, OSWALD (1827–1905). A German landscape painter; born in Düsseldorf; brother and pupil of Andreas Achenbach. His works are scenes in the Bavarian Alps, Switzerland and Italy. Many of his works are owned in the United States.

ACHURCH, JANET (1864–1917). An English actress, born in Lancashire, appeared in London at the Olympic Theatre (January 1, 1883); with Beerbohm Tree (1887); created the part of Nora Helmer in *A Doll's House* at the Novelty Theatre (June 7, 1889) on the occasion of the first presentation in England of an Ibsen play; appeared in the United States with Richard Mansfield (1895); acted Cleopatra to Louis Calvert's Antony, at the Olympic (1897). She married Charles Charrington.

ACKERMANN, KONRAD ERNST (1712–1771). A German actor and one of the founders of dramatic art in Germany; with the famous Schönemann company at Lünenburg (1740). His theater at Hamburg (1765) set the standard of dramatic art for his country.

ADAM, ADOLPHE CHARLES (1803–1856). A French composer of light operas which had a great vogue; he was a pupil of the great master of opera, Boieldieu. Of his 53 pieces *Pierre et Catherine, Le Postillion de Longjumeau, Cantique de Noël*, and the ballets *Faust* and *Giselle* were the most popular.

ADAM, ROBERT (1728–1792). English architect, who studied for three years in Italy, and produced a restoration of the palace of Diocletian at Spalato, Dalmatia. He acted as royal architect to the king (1762–68), built the Adelphi Terrace, London, many private houses, and greatly influenced style in architecture for many years. Numerous interiors and no little furniture were designed by him.

ADAMS, EDWIN (1834–1877). An American actor; born in Massachusetts; first appearance at the Boston National Theatre (August 29, 1853) as Stephen in *The Hunchback;* played Hamlet with Kate Bateman and J. W. Wallack in New York at the Winter Garden (1861); Robert Landry in *The Dead Heart* (1866); at the opening of Booth's Theatre (February 3, 1867), and played there Mercutio, Iago, and Enoch Arden.

ADAMS, MAUDE (1872–). An American actress whose family name was Kiskadden, but she adopted the maiden name of her mother. She was born in Salt Lake City; appeared in children's parts in the West; joined E. H. Sothern's company in New York, playing in *The Midnight Bell* (1888); member of Charles Frohman's stock company; played with John Drew in *The Masked Ball* (1892); Lady Babbie in *The Little Minister* (1898); Juliet to William Faversham's Romeo (1899); The Duc de Reichstadt in *L'Aiglon* (1900); Miss Phoebe in Barrie's *Quality Street* (1902), and in *Peter Pan* (1906). Some of her other dramas were Rostand's *Chantecler* and Shakespeare's *Romeo and Juliet* and *As You Like It*.

ADAMS, SUZANNE (1873–). An American soprano; born in Cambridge, Mass.; studied with Marchesi in Paris; made her début (1894) at the Paris Opéra as Juliette in Gounod's *Romeo et Juliette;* appeared at Covent Garden, London (1898); at the Metropolitan Opera House in New York (1898 and 1899); married Leo Stern, the violoncellist (1898); she also appeared in other popular rôles.

AETION (c. 350 B. C.). A Greek painter praised by Cicero, Pliny, and other Latin authors, especially for his picture of the marriage of Alexander and Roxana. No work of his survives.

AGATHARCHUS (*ăg-ă-thär'kŭs*) (about 480 B. C.). A Greek painter; noted as the first scene painter; employed perspective in opposition to the school of Polygnotus.

AGESANDER (*ăj-ĭsăn'dĕr*) (about beginning of first century B. C.). A Greek sculptor of the school of Rhodes. Pliny says he was one of the executors, with Athenodorus and Polydorus, of the celebrated group of *Laocoön* discovered near the baths of Titus in the sixteenth century.

AGORACRITUS (*ag"o-rak'ri-tus*) (fifth cent. B. C.). Greek sculptor, born at Paros, and became a favorite pupil of Pheidias, some of whose work he rivaled, including the great statue of Nemesis. Part of the hand of this is now in the British Museum.

AGOSTINO DI DUCCIO (1418–1498). An Italian sculptor and architectural decorator; born at Florence; one of the greatest of the middle early Renaissance. His work includes a series of reliefs in the cathedral at Modena; the tomb of Sigismundo Malatesta and other decorations in the interior of San Francesco at Ramini; the façade of San Bernardino at Perugia, one of the finest examples of Renaissance sculpture decoration; and the *Madonna* in the Opera del Duomo.

AGRICOLA, CHRISTOPH LUDWIG (1667–1719). A Bavarian landscape painter; born at Ratisbon. His works are to be seen in Dresden, Vienna, Florence, and Naples. He excelled in producing effects of climate and color and light.

AHL (*āl*), **HENRY HAMMOND** (1869–). An American painter who studied in Munich and Paris. Paintings of his are in the galleries of the Worcester Art Museum, Boston Art Museum, Corcoran Art Gallery, Hartford Athenaeum, and other places, and murals in several churches. Painted portraits of Justice Moody, David B. Henderson, and Senator Hoar.

AIKMAN, WILLIAM (1682–1731). A Scottish portrait painter; noted for portraits of Allen Ramsay, Gay, Thomson, and John, duke of Argyll.

AINMULLER, MAX EMANUEL (1807–1870). A German painter; born in Munich; director of the royal

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FAMOUS PAINTERS

1 Sir Joshua Reynolds
2 M. Van Dongen
3 James McNeil Whistler
4 Howard Chandler Christy
5 John Singer Sargent
6 Henry Raeburn
7 George Innes, Jr.
8 Peter Paul Rubens
9 George Innes, Sr.
10 Leonardo da Vinci

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FAMOUS SCULPTORS

1 Real del Sarte
2 James Earle Fraser
3 Walter Russell
4 Augustus St. Gaudens
5 Michelangelo
6 Gutzon Borglum
7 George Grey Barnard
8 Lorado Taft

manufactory of stained glass at Munich (1844), where he directed the making of much stained glass for the cathedrals of Cologne, Ratisbon, Speier, St. Paul's at London, and St. Peter's College at Cambridge. Views of the interior of Westminster Abbey and others by him are in the Munich Gallery, the National Gallery at Berlin, and elsewhere.

AKERS (*ākarz*), **BENJAMIN PAUL** (1825–1861). An American sculptor; born in Westbrook, Me. It is said that the character of Kenyon in Hawthorne's *Marble Faun* is drawn after Akers. Among his noted works are *Una and the Lion, Milton, The Dead Pearl Diver, Isaiah,* and bust and medallions of Longfellow, Edward Everett, and Sam Houston.

ALARD, JEAN DELPHIN (1815–1888). A French violinist; born in Bayonne. He was a pupil of Habeneck and Fétis; succeeded Baillot as first violinist to the king (1840); professor of the violin at the Paris Conservatory (1843–1875); Sarasate was one of his pupils; represented the modern French school of violin playing; wrote several compositions and an *École du violon* used in the Conservatory.

ALAUX, JEAN, or **LE ROMAIN** (1786–1864). A French historical painter; born at Bordeaux; a pupil of Vincent and Guérin; won the Grand Prix de Rome (1815); director of the French Academy at Rome (1847–1850); a member of the Institute (1851). His chief works include *Pandora brought from Heaven by Mercury* in the Palace of St. Cloud until destroyed in 1870. *Burial of Our Lord* at Notre Dame de Loretto at Paris, and 29 paintings in the museum of Versailles.

ALBANI (*äl-bä'nē*), **EMMA** (1852–1930). Her original name was Emma Lajeunesse, and she was born in Quebec. At 7 she first sang at Montreal, then studied under Duprez in Paris and Lamperti in Milan, who advised her to adopt the stage name of Albani. She made her début as Amina in *La sonnambula* at Messina (1870); has sung in opera in the principal cities of Europe and America as Senta in the *Flying Dutchman,* Elisabeth in *Tannhäuser,* Elsa in *Lohengrin,* Marguerite, Lucia, Mignon, Ophelia, and Isolde; also in oratorio; married Ernest Gye, the singer, who died in 1925. In the same year she was made a Dame of the British Empire.

ALBANI (*äl-bä'nē*), **FRANCESCO** (1578–1660). An Italian painter of the Carracci school; born at Bologna; follower of Guido Reni, sometimes styled "the Anacreon of painting" on account of his leaning to the classical; opened an academy in Rome, where much of his best work is to be seen. This includes frescoes of scenes from Ovid in the Torlonia Palace; *Four Seasons* in the Borghese Gallery at Rome; *Cupids Dancing* and 10 others in Dresden; *Cupid Disarmed, The Toilet of Venus,* and 13 others in the Louvre.

ALBERTI (*äl-bâr'tē*), **DOMENICO** (c. 1710–1740). An Italian composer who wrote many sonatas characterized by what is now called the Alberti bass, once extremely popular.

ALBERTI, LEON BATTISTA (1404–1472). An Italian architect and writer; born in Venice; leader of the second phase of early Italian Renaissance architecture both in theory and practice; engaged in rebuilding St. Peter's and the Vatican. Among his works is the façade of St. Francis at Rimini. He wrote *De Re Aedificatoria,* the first great work on architecture.

ALBERTINELLI, MARIOTTO (1474–1515). An Italian painter; born in Florence; friend and colleague of Fra Bartolommeo, with whom he studied under Cosimo Roselli. His works are a splendid *Visitation* at Uffizi, a *Holy Family* at Pitti, and an *Annunciation* at the Academy in Florence; with Fra Bartolommeo he produced an *Assumption* at Berlin and a *Last Judgment* in Florence.

ALBONI (*äl-bō'nē*), **MARIETTA** (1823–1894). An Italian contralto; born at Cesena; next to Malibran the greatest contralto of the nineteenth century; sang in all of the principal cities of Europe (1846–1847); in rivalry with Jenny Lind at Covent Garden, in London. Her voice had a compass of two and one half octaves, ranging as high as mezzosoprano, possessing power, sweetness, fullness, and flexibility. Her last appearance in opera was at Munich (1872). After 1866 she lived mainly in Paris.

ALBRECHTSBURGER, JOHANN GEORG (1736–1809). An Austrian musician; one of the most learned contrapuntists of his age; court organist (1772); kapellmeister at St. Stephen's Cathedral (1792); taught Beethoven, Hummel, Moscheles, Seyfried, and Weigl. Three volumes of his discourses on harmony were published in 1826, and translated into English in 1855.

ALCAMENES (*al-kam'i-nēz*) (c. 425 B. C.). Evidently a pupil of Pheidias, he is remembered chiefly for his Hephaestos, Aphrodite, a head of Hermes, of which a copy was dug up in 1903, and probably some of the decorations of the Parthenon.

ALDA, FRANCES (1883–). Operatic soprano, born in Christchurch, New Zealand; studied under Mme. Marchesi; married Guilio Gatti-Casazza, general director of the Metropolitan Opera House, New York, for many years. She made her début at the Opéra-Comique, Paris, 1904, and in New York in 1908 when she appeared as Gilda in *Rigoletto.* In Brussels she created leading part in opera drawn from the *Sleeping Beauty,* and other rôles are Marguerite in *Faust,* Countess in *Figaro.* Took many leading parts at the Metropolitan and made many operatic tours in America.

ALDRICH, RICHARD (1863–). American musical critic, connected with the N. Y. *Tribune* (1891–1902), and chief critic of the *Times* till 1924. He wrote on Schubert, many musical biographies, and with Krehbiel a *History of the Philharmonic Society;* also translated Lilli Lehman's *How to Sing.*

ALDRIDGE, IRA FREDERICK (about 1810–1867) "The African Roscius"; a colored tragedian, said to have been born a slave at Belair, Md. Others said he was the son of a native of Senegal; made his début at the Royalty Theatre, London, as Othello; also played Aaron in *Titus Andronicus,* Zanga, Orozembo, Rolla, and others; played Othello to Edmund Kean's Iago in Belfast; won great success and many decorations from royalty in Europe.

ALEXANDER, JOHN WHITE (1856–1915). An American portrait and figure painter; born in Allegheny City, Pa.; studied at the Royal Academy at Munich and under Frank Duveneck; has attained the highest rank in America. His works include numerous portraits in private European and American collections; portrait of Walt Whitman in the Metropolitan Museum at New York; *The Pot of Basil* in the Boston Museum; *In the Café* in the Philadelphia Academy; *La femme rose* in the Carnegie Gallery at Pittsburgh; *The Green Bow* in the Luxembourg at Paris; and six mural decorations in the Congressional Library at Washington.

ALGARDI (*äl-gär'dē*), **ALESSANDRO** (1598–1654). An Italian sculptor and architect; born at Bologna; studied painting under Carracci and sculpture with Conventui. Next to Bernini he was the most prominent representative of the Baroque school. His chief works are Saint Philip Neri at Bologna; the tomb of Leo XI. at Saint Peter's; the largest alto-rilievo in the world in Saint Peter's, representing Attila's retreat from Rome.

ALLAN, DAVID (1744–1796). A Scottish painter; born at Alloa; went to Rome (1764–1777); gained the gold medal at the Academy of St. Luke for the best historical composition (1773), *Origin of Painting;* returned to London and painted portraits (1777); removed to Edinburgh (1780); succeeded Runciman as head of the Trustees' Academy (1786); illustrated Allan Ramsay's *Gentle Shepherd.* He excelled in humorous domestic subjects.

ALLAN, SIR WILLIAM (1782–1850). A Scotch painter; born in Edinburgh; studied there and in London; went to St. Petersburg (1805) and traveled in Russia and Turkey; returned to Scotland (1814) and took up historical subjects, such as *John Knox Admonishing Queen Mary, Queen Mary Signing Her Abdication, Death of Regent Murray,* which gained him an A. R. A., *Polish Exiles on Their Way to Siberia, The Moorish Love-Letter,* which gained him a seat in the Royal Academy, *A Slave-Market in Constantinople, The Battle of Prestonpans, Waterloo,* bought by the duke of Wellington, and many others.

ALLEGRI, GREGORIO (about 1586–1652). An Italian composer; born in Rome; studied under Nanini and was a friend of Palestrina; in the choir of the Sistine Chapel at Rome; one of the earliest composers for stringed instruments; wrote the *Miserere* for two choirs. It is rendered annually on Good Friday at the Sistine Chapel. This is the work which Mozart at 14 wrote from memory after hearing it twice. Allegri is a link between the Roman and Neapolitan periods of Italian music.

ALLEN, FRED HOVEY. See under INVENTORS.

ALLEN, VIOLA (1867–). An American actress; daughter of the actor C. Leslie Allen. When 15,

she appeared in *Esmeralda* at the Madison Square Garden, New York (1882); played later with John McCullough, Tommaso Salvini, Lawrence Barrett, Joseph Jefferson, and W. J. Florence; was at the Empire Theatre, New York (1893–1897) in *The Masqueraders* and *Under the Red Robe*. In 1898 she made a great success as Glory Quayle in Hall Caine's *The Christian*, and in 1900 also *In the Palace of the King* by F. Marion Crawford and Lorimer Stoddard. Married Peter Duryea in 1906.

ALLEYN, EDWARD (1566–1626). An English actor, manager, and founder of Dulwich College; born in St. Botolph, just out of London; went on the stage shortly before Shakespeare came from Stratford. His greatest successes were as the Jew in Marlowe's *Jew of Malta*, Tamburlane, and Faustus. He owned several playhouses; was an associate of Philip Henslowe, a friend of Shakespeare and Ben Jonson, and a patron of Dekker.

ALLONGE (*a-lunj'*), **AUGUSTE** (1833–1898). A French landscape artist; born in Paris; studied under Léon Cogniet; strong in charcoal landscapes and in oil. His best charcoal is *Moulin de Givry* and his oils are views on the Somme.

ALLSTON, WASHINGTON (1779–1843). An American painter; born in Waccamaw, S. C.; was graduated from Harvard (1800); earliest art influences from Pine, the portrait artist, and Malbone, the miniature painter; studied at the Royal Academy, London, where Benjamin West was president; then at the Louvre and in Italy; was associated with Vanderlyn, Thorwaldsen, and Coleridge; spent four years in Rome and returned to America (1809); soon went to London, where he painted and exhibited with success. Among his important works are *The Dead Man Revived* in the Pennsylvania Academy of Fine Arts; *St. Peter Liberated by the Angels, Uriel in the Sun*, and *The Prophet Jeremiah* in Yale College; his unfinished *Belshazzar's Feast* in Boston; and many smaller works.

ALMA-TADEMA (*ahl'ma tah'de-ma*), **SIR LAWRENCE** (1836–1912). An eminent painter; Dutch by birth, Belgian by training, and English by adoption; born in West Friesland; studied under Wappers and Leys at Antwerp. His work depicts life and manners of the ancient Greeks and Romans. *Roman Amateur, Pyrrhic Dance, The Roses of Heliogabalus, Spring, The Conversion of Paula*, and *Thermae Antoninianae* are among his most important; member of the Royal Academy (1879) and knighted in 1899.

ALTDORFER (*ahlt'dor-fer*), **ALBRECHT** (1488–1538). A Bavarian painter and engraver; celebrated pictures are *The Victory of Alexander at Arbela, Adoration of the Shepherds*, and *Susanna at the Bath*, besides over 100 works on copper. He was also a practical architect.

ALVAREZ (*ăl'va-res*), **JOSE** (1768–1827). A Spanish sculptor; born at Priego, Cordova; was a stone mason with his father; studied at the Academy of Granada; gained the highest prize at the Academy of San Fernando (1799); studied in Paris; removed to Rome, where he gained the friendship of Canova and Thorwaldsen. His chief works are a *Ganymede*, bas-reliefs on the Quirinal in Rome, and his colossal group *The Defense of Saragossa* in the Museum of Madrid.

AMATI (*a-mä'tī*) (1520–about 1700). An eminent Italian family of violin makers who lived at Cremona. It consisted of **ANDREA**, the founder of the Cremona school of violin makers; **NICOLA**, his younger brother, made basses; **ANTONIO** and **GERONIMO** were sons of Andrea; **NICOLA** (1596–1684), Geronimo's son, was the most eminent of the family and taught Antonio Stradivari and Guarneri. The family ended with Geronimo, the son of Nicola.

AMATO, PASQUALE (1879–). Italian baritone, who was born in Naples, educated in civil engineering, but later studied in the Naples Conservatory for three years. He appeared first on the stage at Naples as Germont in 1900, toured several lands, and made his American début at the Metropolitan, New York, 1908. Created several parts, including Jack Rance in *The Girl of the Golden West*, and has appeared in many rôles.

AMERLING, FRIEDRICH (1803–1887). An Austrian painter; born at Vienna; studied at Vienna, London, Paris, and Munich; went to Rome in 1831; most important Austrian portrait painter, his portraits numbering more than 1,000.

AMES, JOSEPH (1816–1872). An American portrait painter; born in Roxbury, N. H.; studied at Rome, where he painted a portrait of Pope Pius IX.; worked at Boston, Baltimore, and New York; elected a member of the National Academy of Design (1870). Among his best portraits are those of Emerson, Rachel, Ristori, Clarence H. Seward, Webster, Choate, and President Felton of Harvard. His *Death of Webster* is one of his best ideal subjects.

AMMANATI, BARTOLOMEO (1511–1592). Celebrated Florentine architect and painter, designer of numerous buildings in Rome and Florence, such as the addition to the Pitti Palace, the bridge over the Arno, which has curved arches that have withstood the floods while more modern structures have been swept away. He married the poet Laura Battiferri (1550).

AMSLER, SAMUEL (1791–1849). A Swiss engraver, who from 1816 to 1829 studied and executed various works in Italy, and then succeeded his old master, Hess, as professor of copper engraving at the University of Munich. Some of his great works are a full length *Christ, The Triumphal March of Alexander the Great*, suggested by sculptured works of Thorwaldsen and Dannecker, and *The Union between Religion and the Arts*, on the last of which he spent six years.

ANDERSON, ALEXANDER (1775–1870). Early American engraver on wood, who at 12 made some first designs without previous training except his own observation of others. By rolling copper pennies out thin he obtained plates on which he made many engravings for medical works. In 1796 he took his M. D. at Columbia University, but practiced only a short time. After the death of all his family in the yellow fever scourge in 1798, he turned to illustrating such works as Shakespeare's plays, Holbein's *Dance of Death*, Webster's *Elementary Spelling Book*, and made 300 cuts for Bewick's *Quadrupeds*. He has been justly called the father of wood engraving in America. At the age of 93 he cut a series of illustrations for Barker's *Historical Collection of New Jersey*.

ANDERSON, MARY (1859–1940). An American actress, whose father was an officer in the Confederate Army until his death in 1863. Acting on advice of Charlotte Cushman, she studied for the stage and appeared first when 16 as Juliet at Louisville, Ky. For several seasons in London and America, she developed Shakespeare parts, including Rosalind, Hermione, Perdita, and Lady Macbeth. She also appeared as Galatea in Gilbert's play and as Ion in Talfourd's. In 1890 she married Antonio de Navarro and lived afterward in Europe.

ANDREA DEL SARTO (1486–1531). Celebrated Italian painter, son of Andrea called Del Sarto, that is, the tailor, and noted for his frescoes and his portraits. Some of his contemporaries called him "the faultless painter" because of his skill, but his works lacked elevation or soul. Among his frescoes are one representing the *Nativity, Baptist Preaching in the Desert, Beheading of the Baptist, Madonna del Sacco*, and the *Last Supper*. Among his portrait figures, many of which appear in the frescoes, are several of his wife, some madonnas, a Charity, a Piéta, and two or three of himself. He married Lucrezia, wife of a hatter, but she made his life unhappy by her ways and unfaithfulness. In Browning's poem *Andrea del Sarto*, we have a fairly authentic interpretation of the spirit of Andrea, though the poem is not true to fact at every point.

ANDREINI, GIOVANNI BATTISTA (1578–1650). A Florentine actor and playwright whose *L'Adamo* has been thought the work which suggested to Milton the topic of *Paradise Lost*. He was the son of actor parents, and his mother Isabella was a celebrated poet. During the reign of Louis XIII. at Paris he played in many actor rôles. Among his mother's works, *Mirtilla*, is a pastoral drama of some merit.

ANGELICO (*ăn-jĕl'ĕ-kō*), **FRA** (1387–1455). A gifted Italian painter who passed his life in a convent. His paintings of religious subjects are of a high order, and show great beauty and skill. Among the best of these is his *Last Judgment* in the Florentine Academy; the *Coronation of the Virgin;* frescoes at the Convent of San Marco, where there is also a large *Crucifixion;* the celebrated *Madonna*, surrounded by saints and angels, in the Uffizi; and several decorations in the Vatican. He is the last and greatest of the painters in the transition from the Middle Ages to the Renaissance.

ANGLIN (*ăng'lĭn*), **MARGARET** (1876–). A Canadian actress; born at Ottawa, Canada; daughter

of the Hon. T. W. Anglin, then speaker of the House of Commons; studied at the Empire Dramatic School of Acting in New York City; made her début in *Shenandoah* in New York in 1894; played Roxane with Richard Mansfield in *Cyrano de Bergerac*. Mimi in *The Only Way*, Mrs. Dane in *Mrs. Dane's Defence*, Mabel Vaughn in *The Wilderness*, and in 1907 in *The Great Divide;* in 1908 she went to Australia, meeting with signal success; in 1909 and 1910 playing the title rôle in *The Awakening of Helena Ritchie*, in which she was highly praised. Later she played in Greek tragedies, notably in *Antigone* and *Electra*, and in 1916 led 1,200 players in a revival of *As You Like It* at the Shakespeare celebration in St. Louis.

ANIMUCCIA, GIOVANNI (c. 1490–1571). Florentine composer of music and master of the St. Peter's choir, Rome, from 1555 to his death. His *Laudi*, or hymns of praise, gave rise to some of the early forms of the oratorio. Palestrina, his friend and possibly a pupil, succeeded him at St. Peter's.

ANTHEMIUS (d. c. 538). A Greek mathematician and architect, who planned the great church of St. Sophia at Constantinople, finished in 537. Though this had to be restored 18 years later owing to the collapse of the dome, it set the style for Byzantine architecture for a long time. The emperor Justinian encouraged his work.

ANTOINE, ANDRE (1858–). A French actor who founded the Théâtre Libre of Paris to secure a medium for newer types of plays, those of somewhat realistic and unusual subject and manner. Encouraged by Zola and others, he produced dramas by Brieux, Curel, and others of the modern school. Later (1894) he connected himself with the Gymnase and two years later with the Odéon, where he remained till 1914. His playhouse had an immense effect on the drama of all nations.

ANTOKOLSKY (*an-to-kel'skĭ*), **MARK MATVEYEVITCH** (1842–1902). A Russian sculptor; born at Vilna of poor Jewish parents; studied at the Academy of Fine Arts at St. Petersburg, where he won prizes. His famous statue, *Ivan the Terrible* won for him fame, a seat in the Academy, and the favor of the czar Alexander II.; settled in Paris and became a chevalier of the Legion of Honor.

ANTONELLO DA MESSINA (about 1447–1493). An Italian painter of the Renaissance; born at Messina. He is said to have been the introducer of oil painting into Italy, the secret of which he learned in Flanders. His chief works are a *Salvator Mundi* in the National Gallery in London, a *Crucifixion* in the Antwerp Gallery, and numerous portraits, some of which are on wood.

APELLES (*a-pel'lees*) (fourth century B. C.). The most celebrated painter of ancient times; probably a native of Asia Minor; studied at Ephesus; went to Macedonia, where he painted the portraits of Philip, and of Alexander the Great, whom he frequently painted, as Alexander would sit to no other artist. His most famous portrait represented Alexander wielding the thunderbolt. His other noted works were either mythological or allegorical, including *Anadyomene, Artemis Surrounded by Maidens*, and *Slander;* of the latter Lucian gives a description said to have inspired Botticelli, Dürer, and others. He returned to Asia, where most of his celebrated works were found. His accurate drawing and fine coloring are described as remarkable. His daily practice in drawing was so intense it gave rise to the Latin proverb, *Nulla dies sine linea.*

APOLLODORUS (*ă-pŏl-ŏ-dō'rŭs*). (fifth century B. C.). An Athenian painter; said to have introduced the effects of light and shade in place of flat color used by his predecessors.

APOLLODORUS (second cent. A. D.). A Greek architect, who built for the emperor Trajan a stone bridge over the Danube, the forum of Trajan at Rome, the Odeum, public baths, and some triumphal arches. After Hadrian came into power, Apollodorus was banished and not long afterward killed. He dedicated a work on *Siege Engines* to Hadrian.

ARDITI (*ar-dē'tĭ*), **LUIGI** (1822–1903). An Italian composer and musical conductor; conducted opera many seasons in New York and London; was Patti's favorite conductor; wrote famous waltz songs sung by Patti and other prima donnas, and composed the operas *The Spy, The Brigands*, and *The Corsair.*

ARENZKY (*ă-rĕn'skē*), **ANTON STEPANOVITCH** (1861–1906). Russian composer who was born at Novgorod; for a time was professor of harmony at Moscow, and from 1895 to 1901 conducted the Imperial Court Choir. Some of his many works are the *Dream on the Volga* and *Raphael*, operas; *Nuit d'Egypte*, a ballet; *March solennelle* for the orchestra, and numerous small pieces.

ARISTIDES OF THEBES (*ăr-ĭs-tī'dēz*) (fourth century B. C.). A Greek painter; son and pupil of Nicomachus and contemporary of Apelles; the most famous ancient painter of the expressions of the mind and of the passions of men.

ARISTOXENUS (*ăr-ĭs-tŏks'ĭ-nŭs*) (fourth century B. C.). The greatest student in Greek antiquity of the science of music and rhythm; born at Tarentum; wrote 453 treatises, several of which were on music. Part of his *Elements of Harmony* have been preserved. He declared that the notes of the scale should be studied, not as Pythagoras said according to mathematical ratio, but according to ear.

ARMITAGE, EDWARD (1817–1896). An English painter; born in London; studied in Germany and France; a pupil of Delaroche, whom he assisted on the famous *Hémicycle;* chief works are *Caesar's First Invasion of Britain*, a prize painting, and some frescoes in St. John's (Roman Catholic) Church in London and in the House of Parliament; professor of painting in (1875) and member of (1878) the Royal Academy.

ARMSTEAD, HENRY HUGH (1828–1905). An English sculptor; famous for his groups on the Albert Memorial at London; history of King Arthur and Sir Galahad in carved panels in the New Palace at Westminster; and effigies of Bishop Wilberforce at Winchester, Lord Thynne at Westminster Abbey, and a large fountain at King's College, Cambridge.

ARNE (*ärn*), **THOMAS AUGUSTINE** (1710–1778). An eminent English composer; born in London; studied the violin; wrote an opera, *Rosamond;* a comic operetta, *Tom Thumb or the Opera of Operas; Comus; Rule Britannia*, the national air, first given in the masque of *Alfred;* two oratorios, *Judith* and *Abel;* a number of operas, including *Artaxerxes;* and many glees, songs, catches, and canons, as well as the music for Garrick's *Ode to Shakespeare.* In the rendering of *Judith* at Covent Garden (1773), he first introduced feminine voices into the oratorio chorus.

ARNOLFO DI CAMBIO (c. 1232–1302). An Italian architect; born at Colle, Tuscany; the most eminent Florentine architect of the Gothic style; a pupil of Niccola Pisano. His masterpiece is the Church of Santa Croce at Florence.

ARNOULD, SOPHIE (1744–1803). A famous French actress and singer; born in Paris in the room in which Admiral Coligny was murdered. For 21 years (1757–1778) she was the most popular singer in Paris, especially in Gluck's *Iphigenia in Aulis.*

ARTHUR, JULIA (1869–). An actress born in Hamilton, Ontario, her real name being Ida Lewis, but she took her mother's name; married Benjamin P. Cheney, Jr. At early age took part in home theatricals, acting as Gamora in *The Honeymoon* and Portia in *The Merchant of Venice*, and at 15 appeared in *Richard III.* Her first New York success was in *The Black Mask*, and then in the A. M. Palmer Company, mainly as Mercedes (1893); in London in the Irving cast she played next to Ellen Terry (1895), and especially as Rosamund in Tennyson's *Becket* in New York (1896), and as Rosalind at Wallack's (1898), and in *More than Queen*, Broadway (1899).

ARUNDEL (*ar'un-del*), **THOMAS HOWARD, EARL OF** (1592–1664). Born in Essex; held several court offices. First English art collector; his valuable books, works of fine arts, including busts, statues, gems, and inscribed marbles were unrivaled. The most widely known were the ARUNDEL MARBLES, these being a collection of ancient sculptures consisting of 37 statues, 128 busts, and 250 inscribed stones, which were found on the island of Paros about 1610. They were collected by Mr. W. Petty, purchased by Lord Arundel, and given (1664–1667) by his grandson, Henry Howard—afterward Duke of Norfolk—to the University of Oxford.

ASHMOLE (*ash'mōl*), **ELIAS** (1617–1692). English collector of old objects which he gave (1677) to Oxford University where they were installed six years later in a special building. This museum was the first open to the public in Great Britain.

ATTAVANTE (c. 1455–c. 1520). A Florentine artist and probably the greatest miniature painter of the Italian Renaissance. His best work was done under the patronage of Matthias Corvinus, king of Hungary.

AUBER (*ō-bair'*), **DANIEL FRANCOIS ESPRIT** (1782–1871). Celebrated French composer who collaborated often with A. E. Scribe (q. v.), and wrote music to many great successes in light or sentimental opera. His *Masaniello* (1828) attained great fame all over Europe for the songs, choruses, and overture; the duet *Amour sacré de la patrie* had something to do with the revolution of 1830. Some other operas were *Le Maçon* (1825); *L'Ambassatrice* (1836), *Les Diamants de la Couronne* (1841), *Manon Lescaut* (1856), and a version of Scott's *Kenilworth* (1823).

BACH (*bäk*), **JOHANN SEBASTIAN** (1685–1750). A celebrated German musician; born at Eisenach. At the age of 15 he entered the Michaelis School at Lüneburg; filled successively the following positions: Violinist in the court at Weimar; organist at Arnstadt; organist at Mühlhausen; court organist at Weimar; Kapellmeister at Köthen; cantor at the Thomas-Schule; organist and musical director in two churches at Leipzig; honorary court composer to the elector of Saxony; honorary kapellmeister to the duke of Weissenfels. The author of much magnificent church music, but best known by his *Preludes* and *Fugues*. Among his works are 190 church cantatas, about 25 secular musical vocal selections, as many pieces for the orchestra, some chamber music, two books for the clavichord and four for the harpsichord, a considerable collection of organ music, and a series of arrangements of music by other composers. His influence on classical music has been far-reaching and highly beneficial.

BACH, KARL PHILIPP EMANUEL (1714–1788). Third son of Johann Sebastian Bach (q. v.); four others also attained fame in music. Indeed the Bach family was celebrated for more than 200 years. From 1625 to 1775, there was usually a Johann Christian Bach among the well-known German musicians, six different men in all. K. P. E. Bach was born at Weimer and died at Hamburg. Among his great compositions are the *Magnificat* (1749), over 175 sonatas and other solos, *Der Israeliten in der Wuste* (1779), *Sonaten fur Kenner unde Liebhaber*, and the concertos in G major and D major, most of which are availabe at present to music lovers.

BACHE (*bāch*), **WALTER** (1842–1888). English pianist who studied for three years (1862–65) under Liszt at Rome, and did much to introduce the latter's works into England, also founding the Liszt scholarships. Professor at the Royal Academy of Music. His older brother, Francis Edward (1833–58) composed a trio for piano and strings which was very famous.

BAILLOT, PIERRE MARIE FRANCOIS DE SALES (1771–1842). One of the great school of eminent French violinists, and author of a valuable treatise, the *Art du Violon*, still much used by musicians. For his skilful technique in chamber music and the old classics he for years was popular as a concert artist in most European centers.

BAILY, EDWARD HODGES (1788–1867). A notable British sculptor, who began by making wax figures and busts of his associates, and who later studied under Flaxman and in the regular schools. His chief works are some bas reliefs on the Marble Arch in Hyde Park, London, and several statues, including that of Nelson in Trafalgar Square. He was made an R. A. in 1821.

BALAKIREV (*bä-lä-kē'rĕf*), **MILY ALEXIEVITCH** (1837–1910). Founder of the new Russian school of music; self taught as a musician. Made début as a pianist in 1855. For many years taught in a "Free Music School"; conducted concerts at Leningrad (1867–70); and introduced Liszt and other German music into Russia. His own compositions include two symphonic poems, music to *King Lear*, *Islamei*, an oriental phantasy, and many pieces for the pianoforte. His collection of folk-songs of Russia (1866) had a great influence on later musicians.

BALFE (*bälf*), **MICHAEL WILLIAM** (1808–1870). British musician of Irish descent, who began as a violonist at the age of seven, and later sang at Norwich in *Der Freischutz*, but afterward gave his life to musical composition of popular operas. With Malibran at the Scala of Milan and in his own *Siege of Rhodes* and *The Maid of Artois* in London he attained a great vogue. Of his many works, some still well known are *Joan of Arc* (1837), *The Bohemian Girl* (1843), *The Bondman* (1846), *Sicilian Bride* (1852), and an adaptation from Scott called *Richard en Palestine*, later renamed *Il Talismano* (1874). Two immensely popular songs *When other Lips* and *I Dreamt I Lived in Marble Halls* were composed by Balfe.

BALL, THOMAS (1819–1911). American sculptor, singer, and in early life a portrait painter, who was born in Charlestown, Mass., studied alone and later in Florence, Italy, where he remained from 1854 to 1857, and again from 1865 to 1897, when he returned and established a studio in New York City. His first sculptured bust was that of Jenny Lind, followed by many others of great singers, with whom he had much in common, since he was the first of all artists to sing the *Elijah* in America. He made an equestrian statue of Washington, now in the Boston Public Gardens; a statue of Josiah Quincy, in City Hall Square, Boston; Daniel Webster in Central Park, New York; the Lincoln Emancipation Group, Washington, and many others. Ball profoundly influenced American sculpture.

BALTARD (*bal-tär'*), **LOUIS PIERRE** (1764–1846). A French architect who designed several of the largest public buildings in Paris, but attained greater fame as an engraver, some of his best work being in *Paris and its Monuments* (1803), and a work called *The Grand Prize of Architecture*. His son, Victor, attained some note in the same field.

BALTAZARINI or **BALTAGERINI** (about the middle of the sixteenth century). An Italian musician; first violinist of his time and founder of the modern ballet.

BANCO (*ban'ko*), **NANI D'ANTONIO** (c. 1374–c. 1420). A Florentine sculptor; pupil of Donatello. *The Porto della Mandola*, on the south side of the Duomo, commenced by Niccola d'Arezzo, was completed by Banco (1408). Many of his works are about Or San Michele.

BANTOCK, GRANVILLE (1868–). An English composer of great originality and vividness; principal of the school of music of the Midland Institute at Birmingham, and later professor at the University of Birmingham. His chief works are an elaborate musical setting for *Omar Khayyam*, *The Great God Pan*, and *Atalanta in Calydon*.

BARNARD, GEORGE GREY (1863–1938). American sculptor, who studied in the Art Institute of Chicago, and under Cavelier of Paris, where he lived for 12 years, and then began to exhibit in America. Some of his greatest works are *Two Friends* (1887), *Great God Pan* in Central Park of New York; 31 statues for the Pennsylvania Capitol at Harrisburg; a statue of Lincoln in bronze at Cincinnati, severely condemned by prominent critics; and a *Monument to Democracy*, containing 400 plaster figures (1920).

BARNBY, JOSEPH (1838–1896). An English organist, composer, and conductor; appointed instructor of music at Eton College (1875) and conductor at the Royal Academy of Music (1886). Among his many other rôles were Richard III, Wolsey, David Garrick, Benedick, and Hernani. He wrote a life of Edwin Forrest (1881) and a fine sketch of Edwin Booth (1886).

BARRETT, WILSON (1846–1904). An English actor, manager, and playwright; born in Essex; manager of the Amphitheatre in Leeds; of the Court Theatre at London, securing Madame Modjeska for her first English appearance; of the Princess Theatre, where he presented the *Lights of London* for 286 nights; the *Silver King*, in which he played Wilfred Denver; played Hamlet (1884) and Othello (1897); wrote *Clito*, a tragedy; *Nowadays*, a drama; *The Sign of the Cross; Daughters of Babylon; Ben My Chree*, an adaptation of Hall Caine's *Deemster;* also adapted Hall Caine's *Bondman* and *Manxman*, and *Quo Vadis* of Sienkiewiez.

BARRY, ANN STREET (1734–1801). English actress, second wife of Spranger Barry (1719–1777), himself a favorite on the stage, especially as Romeo, in which part some preferred him to Garrick. Mrs. Barry, then Mrs. Dancer, in 1758 appeared as Cordelia in *King Lear* at Bath. Her great fame rests on a long popularity at Covent Garden in London, where some said she excelled the great Sarah Siddons in certain parts like Lady Randolph in *Douglas* and Desdemona in *Othello*.

BARRY, CHARLES (1795–1860). English architect, who studied in London, went on a long tour of Italy, Egypt and Palestine for study, and in 1831 introduced the Italian style for the Travellers' Club in Pall Mall and later for the Reform Club. He designed many private mansions; built the King Edward School in the Tudor style; two public buildings for Manchester; and his great work, the Houses of Parliament at Westminster.

BARRY, ELIZABETH (1658–1713). English actress who for many years was a chief favorite of both the court and the playhouse. In over 100 parts she continued to delight audiences for a generation, drawing forth praise from persons like Betterton, the great actor, Dryden, and Colley Cibber, the dramatist. The latter declared that the custom of giving benefit performance to prominent actors arose out of a command by James II that Elizabeth Barry should be so favored.

BARRY, JAMES (1741–1806). An Irish painter; born at Cork. Under the patronage of Burke he studied at London, Paris, and Rome. His masterpiece is a series of six panels representing *Human Culture* painted on the walls of the Great Room in Adelphi; elected to the Royal Academy (1773), but he was expelled in 1799 for critical attacks on fellow artists. His decorations at the Adelphi occupied his time for seven years. Burke remained his friend, as did also Sir Joshua Reynolds, whom Barry had attacked by his caustic criticisms.

BARRYMORE, ETHEL (1879–). American actress, who was born in Philadelphia, where she was educated in the convent of Notre Dame. She first appeared in the company of John Drew, her uncle (1896), and in the next year toured England in *Secret Service*, followed by an engagement (1898) in the Irving Company, and then two years later in *Captain Jinks* with Charles Frohman. Later she added to her fame in *A Doll's House, Mid-Channel, Hamlet, The Merchant of Venice*, and *The Second Mrs. Tanqueray*.

BARRYMORE, JOHN (1882–), and **LIONEL** (1878–). Brothers of Ethel Barrymore, continued the traditions of the family of actors. John played in Shakespeare parts and attained eminence in the motion pictures. Lionel played in *The Rivals* for the screen.

BARRYMORE, MAURICE, or **HERBERT BLYTHE** (1847–1906). An actor and playwright; born in India; educated in England and lived in America after 1875; first appearance here was in *The Shaughraun* at the Boston Theatre; leading man for Madame Modjeska (1882); for Mrs. Langtry (1887); for Mrs. Bernard Beere (1893); and for Olga Nethersole (1894).

BARTHOLDI (*bär-tôl-dē'*), **FREDERIC AUGUSTE** (1834–1904). A French sculptor; born in Colmar, Alsace; principal works: the *Lion of Belfort;* statue of Lafayette in Union Square, New York; bronze group of Lafayette and Washington in Paris; and the colossal figure in New York harbor, *Liberty Enlightening the World*.

BARTHOLOME, ALBERT (1848–). French painter and sculptor, born at Thiverval, and educated at the Lycée of Versailles. Was elected a commander of the Legion of Honor, decorated by various governments, and acted as president of the Society of Beaux Arts. His sculptures and paintings are in the galleries of the Luxembourg at Paris, Dresden, Budapest, Rome, and Copenhagen, and his monuments to Père-Lechaise, Meilhac, Rousseau, Sardou, and others are in Paris mainly.

BARTLETT, PAUL WAYLAND (1865–1925). An American sculptor; born at New Haven, Conn.; studied with Frémiet in Boston; with Cavelier in Paris; member of the Legion of Honor (1895). Among his works are an equestrian statue of General McClellan in Philadelphia; statue of General Joseph Warren in Boston; of Lafayette, presented by the school children of the United States to France, now in the Louvre, Paris; Columbus and Michelangelo in the Congressional Library at Washington; and others in the Luxembourg Museum at Paris and elsewhere. Some of his last work also takes high rank, including a group on the House wing of the Capitol at Washington and six statues in front of the New York Public Library.

BARTOK, BELA (1881–). Hungarian composer of national poems, chamber music, and numerous folk-tunes, who was born in Transylvania, at 9 became interested in music, and at 22 produced at Manchester, England a symphonic poem, *Kossuth*. Later he gave his attention to the study of national music, folk-lore, and ballads, and composed his *Bluebeard* and the pantomime, *The Wonderful Mandarin*.

BARTOLOMMEO (*bär-tô-lŏm-mē ô*), **FRA** (1469–1517). A celebrated Florentine painter of sacred subjects; born at Florence. *St. Mark* and *St. Paul* are among his best productions. He was one of the principal painters of the Florentine Renaissance. He is said to have invented the use of the lay figure.

BARYE (*ba-ree'*), **ANTOINE LOUIS** (1795–1875). A French sculptor; born in Paris; studied under Bosio and Gros. Among his works are *Tiger Tearing a Crocodile*. Some of his bronzes may be seen in Mount Vernon Place, Baltimore. Few modern artists have excelled him in animal figures.

BASTIEN-LEPAGE (*bas-tĭ-ăn-la-pāj'*), **JULES** (1848–1884). A French painter; born at Damvilliers. He died at the height of his fame; studied in Paris with Cabanel under severe privations. Among his works are *The Song of Spring, Portrait of My Grandfather, The Haymakers, The Potato Gatherers*, and *Joan of Arc Listening to the Voices* in the Metropolitan Museum at New York, *The Beggar, Love in a Village*, and *The Forge;* also portraits of Sarah Bernhardt, Albert Wolff, Edward VII., and Gambetta on his deathbed.

BATES, BLANCHE (1873–). American actress, who was born at Portland, Ore., first appeared on the stage at San Francisco (1894), in a play by Brander Matthews, acted in several comedies, in Shakespeare rôles, and then in *The Green Ruby, The Musketeers, Madame Butterfly, The Darling of the Gods*, and *The Girl of the Golden West*. Married George Creel.

BEACH, AMY MARCY CHENEY (1867–). An American pianist and composer; born at Henniker, N. H.; chief works are the *Gaelic Symphony* for full orchestra; the *Jubilate*, composed for the opening of the Woman's Building at the Columbian Exposition; *Mass in E flat;* several compositions for voice and piano; and some successful cantatas. Married (1882) Henry H. A. Beach (d. 1910).

BEARD, WILLIAM HOLBROOK (1825–1900). An American artist; born in Ohio; brother of James Henry Beard; traveled and studied in Europe; after living some time in Buffalo, removed to New York (1860); member of the National Academy (1862); noted animal painter; chief works are *Bears on a Bender, Dance of Silenus, Flaw in the Title, Darwin Expounding His Theories*, and *Bulls and Bears in Wall Street;* published *Humor in Animals* and *Action in Art*. His brother, James Henry (1814–1893), painted some historical scenes and portraits of various statesmen.

BEARDSLEY, AUBREY VINCENT (1872–1898). English artist of odd and original technique, who specialized in black and white, and in earlier days in single lines with masses of black. Though his work for years was criticised because it deliberately ignored conventions of perspective and proportion, it came to be regarded at last as the best of its type. Certain posters attracted much attention, but his masterpiece was the frontispiece to *Volpone*, often called a wonderful pen-drawing.

BEAUX (*bow*), **CECILIA** (1863–). An American artist; born in Philadelphia; studied under Sartain, and after 1899 with Bouguereau, Constant, Courtois, and Dagnan-Bouveret in Paris; member of several societies and winner of important prizes; chief works are *Last Days of Infancy, Sita and Sarita, Cynthia, The Dreamer, Mother and Daughter, A New England Woman, Dorothea and Francesca*. Her portraits of children are highly regarded for technique and interpretation of character.

BECKER, AUGUST (1821–1887). A German landscape painter; born at Darmstadt; traveled extensively; taught the English royal princesses at Balmoral; chief works are *Evening in the Bernese Oberland, Norwegian Tableland*, and *The Kaisergebirge in the Tyrol*.

BECKWITH, JAMES CARROLL (1852–1917). An American portrait painter; born at Hannibal, Mo.; studied with Carolus-Duran at Paris; elected to the Society of American Artists and the National Academy of Design (1894). His best known portraits are those of General Schofield, Judge Palmer, Colonel Appleton, Mark Twain, and of the Ogden and Parish families; exhibited *The Nautilus* at the St. Louis Exposition. The New York Public Library and Yale and Johns Hopkins Universities have some of his works.

BEETHOVEN (*bāy'tō-vĕn*), **LUDWIG VAN** (1770–1827). One of the greatest musical composers; born in Bonn, of Dutch extraction; the author of symphonies and sonatas that are known over all the world; showed early a most precocious genius for music; commenced his education as a musician at four; trained at length under the tuition of his illustrious predecessor, Haydn; revealed the most wonderful musical talent; quitted Bonn and settled in Vienna; attracted the

attention of Mozart; about the age of 30 was attacked with deafness that became total and lasted for life; continued to compose all the same, to the admiration of thousands; during his last days was a prey to melancholy. His chief works are the three trios, the first set of pianoforte sonatas, the *Sonata Pathétique*, the *First Symphony*, the ballet music to *Prometheus*, the pianoforte sonata with the favorite funeral march, the *Moonlight Sonata*, the *Kreutzer Sonata*, the *Third* or *Eroica Symphony*, the *Waldstein* and *Apassionata Sonatas*, the opera *Fidelio*, the *Fourth Symphony*, the violin concerto, the *Coriolanus Overture*, the *Mass in C*, the *Fifth* and *Sixth* or *Pastoral Symphonies*, the *Seventh* and *Eighth Symphonies*, the *Battle Symphony*, the *Glorious Moment*, the *Ninth Symphony*, the *B flat Sonata, Opus 106*, *The Mass in D*, the *Last Quartets*, and the *Last Sonatas*.

BELASCO (*bĕ-lăs'kō*), **DAVID** (1862–1931). An American playwright; born in San Francisco; in 1874 became an actor in the Metropolitan Theatre; adapted plays for the stage, such as *Hearts of Oak;* stage manager in the Madison Square Theatre, New York, and, later, in the Lyceum; wrote, with Henry C. DeMille, *The Wife* and *The Charity Ball*, also for E. H. Sothern, *Lord Chumley*, and, with Franklin Fyles, *The Girl I Left Behind Me*. Among his others are *The Heart of Maryland, Zaza, May Blossom, Men and Women, La belle Russe, Valerie, Du Barry, Naughty Anthony*, and *Madame Butterfly*.

BELLEW, HAROLD KYRLE (1857–1911). An English actor and playwright; cadet in the British navy; actor, newspaper man, and lecturer in Australia; actor in London; appeared in America in *In His Power* at Wallack's (1885); played throughout English-speaking countries with Mrs. James Brown Potter (1887); was Leander to Mrs. Potter's Hero in his own play, *Hero and Leander;* Marat in *Charlotte Corday;* Romeo to Mrs. Potter's Juliet; wrote *Yvonne* and *Iolande*.

BELLINI (*bĕl-lē'nē*), **GENTILE** (1428–1507). The son of Jacopo Bellini; was distinguished as a Venetian portrait painter; decorated, with his brother, the council chamber of the ducal palace; one of his finest pictures was the *Preaching of St. Mark*.

BELLINI, GIOVANNI (1430–1516). Brother of Gentile Bellini; produced a great many works; the subjects religious, all notably treated; had Giorgione and Titian for pupils. Among his best works are *The Transfiguration, Feast of the Gods, Blood of the Redeemer, Pietà*, a *Virgin and Child* in the Academy at Venice and another in the National Gallery at London, and *The Virgin and Child with Saints* in the Benson Collection, London.

BELLINI, JACOPO (about 1400-about 1464). The founder of a celebrated Venetian family of painters of the Renaissance; father of Gentile and Giovanni Bellini.

BELLINI, VINCENZO (1801–1835). Celebrated Italian composer of operas which for many years were immensely popular. He was born at Catania, educated at Naples, and produced his operas at Naples and Milan. *Bianca e Fernando, Il Pirata* (1827), *I Montecchi e Capuleti* (1830), in which many great contraltos have sung, *La Sonnambula* (1831), *Norma* (1831), perhaps his best, and *I Puritani* (1835) are his chief works. The last was written for the Paris theatre.

BENNETT, WILLIAM STERNDALE (1816–1875). English composer, influenced by Schumann, and Mendelssohn during study in Leipzig (1837), and became a conductor, pianist, and composer of great note. He held the chair of music at Cambridge. Some of his works are *Parisina* and *The Wood-nymphs*, overtures, *The Woman of Samaria*, an oratorio, and *Paradise and Peri*, a fantasy for the orchestra.

BENSON, FRANCIS ROBERT (1858–1939). An English actor and manager, whose first appearance was at the Lyceum with Irving in 1882, in *Romeo and Juliet*. Later he organized his own company, founded a school of acting (1901), and appeared regularly in various Shakespeare parts, the best of which were Hamlet, Lear, Coriolanus, and Petruchio. He was in charge of many of the annual Festivals at Stratford.

BENSON, FRANK WESTON (1862–). An American painter, who was born in Boston, taught in the Museum School of Fine Arts (1889–1912), and won a score of medals in various exhibitions. Besides in painting he won renown as an etcher and maker of wash drawings of wild fowl. His best works are the four decorations in the National Library at Washington.

BENOIT (*ba-nwä'*), **PIERRE LEONARD LEOPOLD** (1834–1901). A Belgian composer educated at Brussels and later conducted at the Flemish Theatre. In 1857 he won a government prize for his *Murder of Abel*, after which he traveled in Germany, and later went to Paris; and ten years later he founded the Flemish School of Music. In all his own work, which consists chiefly of songs, choruses, and small cantatas, with a few longer works, he sought to create a Flemish manner in music.

BENZIGER, AUGUST (1867–). Swiss portrait painter of celebrated personages on both continents, such as the Lord Mayor of London, Leon Bourgeois, Presidents McKinley, Roosevelt, and Taft, three popes, four presidents of Switzerland, and many others. He built the Grand Hotel, Brunnen, Switzerland, and there entertained various celebrated men and women.

BERLIOZ (*ber-le-oze'*), **HECTOR** (1803–1869). A French composer; born in La Côte St. André. He forsook medicine to study music at the Paris Conservatoire, where he gained the first prize in 1830 with his cantata, *Sardanapale*. His *Damnation de Faust*, with its famous "Rakoczy March"; *Benvenuto Cellini; Roméo et Juliette*, with its "Queen Mab Scherzo"; and the *Danse des sylphes* stamp him as the father of orchestration.

BERNARD, OLIVER PERRY (1881–). Consultant designer and technical director to the Royal Opera, Covent Garden, Boston Opera Company, British National Opera Company, and Drury Lane. Engaged in designing modern theatres, stages, and costumes for further development of dramatic productions.

BERNHARDT, SARAH (ROSINE BERNARD) (1845–1923). A French actress; born in Paris. At an early age her Jewish parents placed her in a convent at Versailles. When 14 years old she left the convent and entered the Paris Conservatoire, and there studied tragedy and comedy. Her first great success was as Marie de Neuberg, in Victor Hugo's *Ruy Blas*. Becoming very popular by her representations, notably in *Andromaque* and *Le sphinx*, she was soon recognized as the foremost actress in French tragedy; made successful appearances in the United States, and visited Switzerland, Holland, South America, Italy, Algeria, Australia, etc. In 1899 she appeared in a new rendering of *Hamlet* in Paris, and scored a most flattering triumph, and since then she appeared successfully in *L'Aiglon*, and a number of other dramas specially adapted to her genius. During the World War she played for the soldiers in France, and later made a final tour of the United States and England, after she could no longer get about unaided owing to an accident.

BERNINI (*ber-nī'nē*), **GIOVANNI LORENZO** (1598–1680). An Italian painter, sculptor, and architect; born at Naples; produced his *Apollo and Daphne* at 18, his masterpiece; designed the colonnade of St. Peter's; the most celebrated Italian sculptor of the Baroque period. He was considered the dominant power in European sculpture for over 100 years.

BERVIC, CHARLES CLEMENT BALVAY (1756–1822). A French engraver; born in Paris; achieved early fame by an engraving of Louis XVI. after Collet one of the finest works of its kind. Among others are *Laocoön, Education of Achilles* after Regnault, and *Rape of Deianira* after Guido. His works are regarded as among the choicest of the French school.

BEST, WILLIAM THOMAS (1826–1897). Celebrated English organist, from 1855 to 1894 at St. George's Hall, Liverpool, and solo player at most of the Handel festivals at Crystal Palace. He inaugurated the great organ at Albert Hall (1871), gave much attention to the works of Bach, and composed some fine *Organ Pieces for Church Use*, which are original and delicate in theme and technique.

BETTERTON, THOMAS (1635–1710). An English actor; born in Westminster; famous for his Hamlet; was buried in the cloister of Westminster Abbey. After a visit to French playhouses, at the suggestion of Charles II., he is said to have introduced innovations in the manner of making scenery for the English stage.

BETTY, WILLIAM HENRY WEST (1791–1874). An English boy actor, the talk of the town for several years, while he played in heavy parts at Drury Lane, and for a time at a salary of 75 guineas a night. Before he was 12 he acted in Voltaire's *Zaire*, and in

1804 on his first appearance at Covent Garden, troops had to be called to handle the crowds which rushed to see him. Pitt once adjourned parliament early so that the members could be on time at one of his performances. He retired in 1808 to enter Cambridge, and tried vainly after four years to restore his fame.

BEWICK (*bu'ik*), **THOMAS** (1753–1828). An English engraver, born near Newcastle-upon-Tyne. He was the founder of modern wood engraving. His greatest work is the *History of British Birds*. He cut in the end of the block instead of in the side, which was the prevailing method, and invented the use of the white line. Some of his other engravings were made for *Quadrupeds* (1790), Goldsmith's poems, and a collection of *Fables* from Aesop.

BIANCHI (*bē-än'kē*), **FRANCESCO** or **IL FRARI** (1447–1510). An Italian painter of the Ferrara school; born in Modena; seems to have been a teacher of Correggio. His *Madonna with Saints* in the Louvre is a beautiful example.

BIARD (*bē-är'*), **AUGUSTE FRANCOIS** (1798–1882). A French painter; born in Lyons; traveled extensively, even to Greenland and Spitzbergen. From the recollections of this trip he painted his remarkable *Battle of the Polar Bears*. Among his works are *Babes in the Wood, Beggar's Family, Strolling Comedians* in the Luxembourg, and others which are highly valued.

BIERSTADT (*bēr'stät*), **ALBERT** (1830–1902). An American painter; born near Düsseldorf, Germany; removed with his parents to New Bedford Mass., in 1831; began to paint in oils in 1851, and in 1853 returned to Düsseldorf to study his art, spending a winter in Rome, traveling in Italy and Switzerland, and returning to the United States in 1857. In 1861 he finished his painting, *Laramie Peak*, and in 1863 *View of the Rocky Mountains—Lander's Peak*. These at once gave him a high reputation. His *Discovery of the Hudson River* and *Settlement of California* are in the National Capitol at Washington.

BISHOP, HENRY ROWLEY (1786–1855). An English composer; born in London; composer and director of music in Covent Garden Theatre for 14 years; produced 60 pieces, of which *Guy Mannering* and *The Miller and His Men* were most popular; was for a brief space professor of music in Edinburgh University, and eventually held a similar chair in Oxford; composed the familiar music for John Howard Payne's *Home, Sweet Home*. His own song *My Pretty Jane* was long famous, and he was the first musician to be given knighthood (1842).

BISPHAM (*bĭs'făm*), **DAVID** (1857–1921). An American baritone singer, who was born in Philadelphia and was educated at Haverford College, with a thorough musical training in England and Italy. He made his first appearance on the opera stage in 1891, and for years was one of the leading singers at Covent Garden, London, and the Metropolitan Opera House in New York. Later he attained unusual fame as a concert singer, teacher and critic of music. An ardent advocate of the use of English in opera and concert, Bispham was greatly applauded in his renderings of translation of German and other foreign songs. In opera Wagner rôles were among his favorites.

BIZET (*bē-zāy'*), **GEORGE** (1838–1875). A French operatic composer; born at Paris; his greatest work, *Carmen*, is one of the half-dozen most popular lyric operas of the present day. Among the other compositions long celebrated were *La Jolie Fille de Perth*,—founded on Sir Walter Scott's novel,—*Les Pecheurs de Perles*, and *Djamileh*, in which he used an oriental subject.

BLAKE, WILLIAM. See in DICTIONARY OF AUTHORS.

BLAKELOCK, RALPH ALBERT (1847–1919). One of the great artists of his age in America, Blakelock educated himself to be a painter, after he completed a course at the College of the City of New York. From the first crude beginnings he rose rapidly to the heights of his art, using evening and moonlight subjects and Indian life and color as his chief themes. Some of his best works are *Indian Girl, Autumn, Pipe Dance*, now in the Metropolitan Museum, New York, and *Moonlight*, for which the Toledo Museum paid twenty thousand dollars. During the latter part of his life, except for two or three years, he was confined in the state hospital for the insane at Binghamton, New York, but he died at the camp of a friend in the Adirondacks.

BLASHFIELD, EDWIN HOWLAND (1848–1936). An American artist; born in New York City; studied in Paris under Léon Bonnat, and began exhibiting in the Paris Salon in 1874. He returned to the United States in 1881, and afterward distinguished himself by the execution of large decorative works, such as *Christmas Bells, The Angel with Flaming Sword*, the central dome of the Congressional Library at Washington, and the Waldorf-Astoria ball-room ceiling.

BLOOMFIELD-ZEISLER, FANNY. See under ZEISLER.

BLUMENTHAL, JACOB VON (1829–1908). A German pianist and composer; born in Hamburg; went to London (1849); appointed pianist to Queen Victoria, taught music; composed brilliant pieces for the pianoforte and popular sons, such as *My Queen, The Bend in the River, The Broken Flower*, and *The Venetian Boat-Song*.

BOEHM (*bûm*), **SIR JOSEPH EDGAR** (1834–1890). An English sculptor; born in Vienna; lived in England from 1862; member of the Royal Academy (1882); chief works are a colossal statue of Queen Victoria at Windsor and statues of Bunyan, Lord John Russell, Duke of Wellington, and Carlyle.

BOGGS, FRANK M. (1855–1926). An American artist; born at Springfield, Ohio; studied at the Ecole des Beaux-Arts, Paris, and under Gérôme; won a $2,500 cash prize in New York with his *Rough Day at Honfleur* (1885), bought by the Boston Museum; won a silver medal at the Paris Exposition (1900); has a fine *La Place de la Bastille* in the Luxembourg Museum, bought by the French government (1882).

BOIELDIEU (*bō-yĕl-dĭyŭ'*), **FRANCOIS ADRIEN** (1775–1834). French composer of light opera, who was born at Rouen, began to write songs at an early age, and produced a number of operas that enjoyed a great vogue. From 1802 to 1811 he lived in St. Petersburg, now Leningrad. *Le Calife de Bagdad* (1800), is an early piece of merit, *Le Petit Chaperon rouge* is the great success of his middle age, and *La Dame Blanche* (1825), his masterpiece. The last of these was founded largely on the works of Scott, notably *The Monastery*.

BOLOGNA (*bo-lō'nya*), **GIOVANNI DI,** or **JEAN DE BOULOGNE** (1524 or 1530–1608). A Flemish sculptor of the Italian Renaissance; born at Douai; went to Rome; influenced by Michelangelo; settled in Florence. His chief works are *Rape of the Sabines, Hercules and Nessus, Flying Mercury*, and the statue of the duke of Ferdinand in Florence, which inspired Browning's *The Statue and the Bust*.

BOND, CARRIE JACOBS (1862–). American composer, who was born in Wisconsin, and married Dr. Frank L. Bond of Iron River, Mich., who died in 1895. Among her best known songs are *A Perfect Day, God Remembers While the World Forgets*, and *Do You Remember*, which were published by her in various collections. She also wrote stories and poems for children.

BONHEUR (*bo-nur'*), **ROSA** or **MARIE ROSALIE** (1822–1899). A French painter of animals; born at Bordeaux; brought up in poverty from ill fortune; taught by her father; exhibited when she was 19. Her best known works are the *Horse Fair*, which was bought by Cornelius Vanderbilt for $55,500 for the Metropolitan Museum of Art in New York City, *Hay Harvest in Auvergne, On the Alert, Weaning the Calves*, and *Deer Drinking*.

BONNAT (*bo-nà*), **LEON JOSEPH FLORENTIN** (1833–1922). A French portrait painter; born in Bayonne; studied in Madrid. His work is greatly influenced by Velasquez and Ribera. His reputation rests on his portraits, chief of which are of Thiers, Victor Hugo, Don Carlos, Léon Cogniet, Jules Grévy, and Ernst Renan.

BOOTH, EDWIN THOMAS (1833–1893). An American actor; born near Belair, Md.; the fourth son of Junius Brutus Booth. When 16 years of age he made his first appearance on the stage, in the part of Tressel, his father acting as Richard III. He visited England (1861–1862), and in 1864 produced *Hamlet* at New York for 100 nights consecutively. In 1869 he opened a splendid theater in New York, whose building cost over $1,000,000, but which involved him in pecuniary ruin. He revisited California in 1876, and in the spring of 1877 was able to settle with his creditors, having earned during the season over

$600,000. Booth visited Great Britain and Germany in 1880 and 1882, and was everywhere received with enthusiasm.

BOOTH, JUNIUS BRUTUS (1796–1852). An Anglo-American tragedian; born in the parish of St. Pancras, London. He received a classical education, but early manifested a predilection for the stage, and when 17 years of age appeared in some unimportant parts. Subsequently he played Richard III. at Covent Garden, a part in which he suddenly became famous. In 1821 he came to the United States, where for the ensuing 30 years he followed his profession with much success.

BORDONE (*bōr-dō'nē*), **PARIS** (about 1495–1571). A Venetian Renaissance painter; born at Treviso; studied at Venice under Titian; painted King Francis I. and court by invitation in 1538. His portraits are most famous. His historical work *A Fisherman Presenting the Ring of St. Mark to the Doge* in the Venice Academy is one of the greatest of Venetian masterpieces. The English National Gallery has a *Daphnis and Chloe* and a portrait of a lady by Bordone, Boston in the Gardner collection has *Christ among the Doctors*, and Philadelphia has a *Baptism of Christ*. They are also found in a dozen European galleries and in private collections in England.

BORGLUM (*bôr'glŭm*), **GUTZON** (1867–1941). An American sculptor, mainly of colossal figures quite unusual in modern art. He was educated in San Francisco and Paris, came under the influence of Rodin, had a studio in London for a time, and established himself in New York in 1902. Among his great figures are the *Twelve Apostles*, in the Cathedral of St. John the Divine, New York, *Ruskin* in the Metropolitan Museum, *Henry Ward Beecher* in Brooklyn, and *Lincoln* at Newark, N. J. In 1927 he executed on Mount Rushmore, South Dakota, some figures of Washington, Jefferson, Lincoln, and Roosevelt, dedicated by President Coolidge on Aug. 10. Earlier he was commissioned to carve some portraits of famous men of the South on Stone Mountain, Georgia, a work interrupted for a time, but again continued in 1929.

BORGLUM, SOLON HANNIBAL (1868–1922). Brother of Gutzon Borglum; he was educated in Cincinnati and Paris, and devoted himself largely to scenes and persons of the western plains. Among his celebrated sculptures are *Last Round-up, Burial on the Plains, Little Lady of the Dew, Inspiration, Aspiration*, and *God's Command to Retreat*, the last a bronze of Napoleon in a snowdrift. As Y. M. C. A. secretary in France in 1918, he was awarded the Croix de Guerre.

BORI, LUCREZIA (1888–). A lyric soprano, born of Italian parentage in Spain, the real name being Borgia or Borja, and made her début in Rome, after training in Milan, as Micaela in *Carmen*. After singing in various cities of Europe, she came to America in 1912, joining the Metropolitan Opera Company, where she sustained rôles in *Pagliacci, Traviata, Romeo and Juliette, Falstaffe, Rigoletto, Faust*, and *Madame Butterfly*.

BOTTICELLI (*bot-te-chel'lee*), **SANDRO** or **ALESSANDRO FILIPEPI** (1447–1510). A celebrated painter of the Florentine school of the early Renaissance; began as a goldsmith's apprentice; a pupil of Fra Lippo Lippi. The best known examples of his art are on religious subjects, though he was no less fascinated with classical-mythological conceptions; is distinguished for his attention to details and for delicacy, particularly in the drawing of flowers. Among his best works are *Spring* at Florence; *Madonna and Angels* at Milan; *Birth of Venus* in the Uffizi; *Pallas Taming a Centaur* in the Pitti; *Mars and Venus* in London; *The Adoration of the Magi*, where the faces are those of the Medici and other Florentine nobles, in the Uffizi; two circular Madonnas in the Uffizi; and the *Assumption of the Virgin* in London.

BOUCICAULT (*bū-sī-kō'*), **DION** (1822–1890). Irish-American playwright and actor, whose *London Assurance* (1841) before he was 20 had a great run in England and America. *Old Heads and Young Hearts, Louis XI., The Colleen Bawn*, an immense success, and *The Octaroon* were his best of scores of dramatic works from his pen. As an actor of character parts he was long a favorite; immense sums made from his dramas were dissipated in theatrical ventures in England and America. For many years, including his last 15, he lived in New York. His first wife, Agnes Robertson, an adopted daughter of Charles Kean, was an actress of unusual finish and charm, especially in parts of her husband's dramas.

BOUGUEREAU (*boog-ro'*), **ADOLPHE** (1825–1905). A distinguished French painter; born at Rochelle. His subjects are both classical and religious, as well as portraits; studied under Picot; took the Prix de Rome (1850) and medals of honor (1878 and 1885); member of the Institute (1876); grand officer of the Legion of Honor (1905). Of his many paintings which are in the museums of Europe and the United States the most important are *The Body of Saint Cecilia Borne to the Catacombs, The Birth of Venus*, and *La vierge consolatrice*.

BOUTS, DIERICK (?1400–1475). A Dutch painter; born at Haarlem; one of the leading members of the Flemish school. His leading works are *Martyrdom of Saint Erasmus, The Last Supper, Martyrdom of Saint Hippolytus*, and *Torture of Saint Sebastian*. Bouts is highly praised for coloring, perspective, and realism as a portraitist.

BRAHMS (*bräms*), **JOHANNES** (1833–1897). A distinguished German composer; born at Hamburg; settled in Vienna. The appearance of his compositions were an event in the musical world; approaches Beethoven as no other does. Among his works are *German Requiem, Funeral Hymn*, four symphonies, and a series of songs upon which alone his fame might rest. Brahms began as a Romantic composer, but gradually turned to the past and classic manners, succeeding where others failed. One of his great ideals was to improve and perfect the sonata. Some of the compositions published first after his death are among his most delicate and imaginative.

BRETON, JULES ADOLPHE (1827–1906). A French painter of peasant life; born at Corrières; studied at Ghent, Antwerp, and Paris. Among his works are *Blessing the Grain, Return of the Gleaners, Planting a Calvary, Women Weeding, Song of the Lark* (Art Institute at Chicago), and *Twilight Glory*.

BRIGGS, CLARE A. (1875–1929). American cartoonist, who was born in Wisconsin, educated at the University of Nebraska, and at various times was an artist on the St. Louis *Chronicle*, New York *World, Journal*, Chicago *American, Tribune* and New York *Tribune Syndicate*. Among the series that he created were *Skin-nay, When a Fellow Needs a Friend, Ain't it a Grand and Glorious Feeling, How to Start the Day Wrong* and other well known comic strips, noted for human interest and kindly views of life.

BRIGNOLI (*brī-nyō'lī*), **PASQUALE** (1824–1884). An Italian tenor; born in Naples. After a most successful European tour he came to America in 1855 and for a quarter of a century was most popular; sang with Patti, Parepa-Rosa, La Grange, Tietjens, and Nilsson.

BROCK, THOMAS (1847–1922). English sculptor, the pupil of J. H. Foley, but later turned to romantic portraiture. Some of his best works are statues of Lord Leighton, Queen Victoria, Captain Cook, and Lord Suydenham, a colossal figure of Edward the Black Prince at Leeds and busts of King Edward VII., Lord Lister, and Edwin A. Abbey. The bust of Longfellow in Westminster Abbey is by Brock. In 1911 he was knighted.

BROCKWELL, MAURICE WALTER (1869–). Writer and lecturer on art, educated mainly at St. Paul's Cathedral Choir School. He assisted in revising the catalogs of the National Gallery, acted as director or secretary of various special exhibitions, and wrote numerous works on artists and art history. Some of his literary works are *Leonardo da Vinci, Erasmus, The National Gallery*, with 100 color plates, *The Louvre* with 50 color plates, *The Van Eycks and their Art, Frans Hals*, and numerous contributions to papers and journals on art.

BRONZINO, AGNOLO or **ANGIOLO** (1502–1572). An Italian painter; born at Monticelli; pupil of Jacopo da Pontormo. Among his works are *Descent of Christ into Hell, Young Sculptor, The Dead Christ* and a portrait of Duke Cosimo I. He painted many portraits of men of his day like Dante, Petrarch, and Boccaccio. Next to Andrea del Sarto he was the greatest portraitist of his age.

BROWN, FORD MADOX (1821–1893). An English painter; born in Calais, France; supported Rossetti in the Pre-Raphaelite Brotherhood movement. Among his works are *Wikliff Reading His Translation of the Scriptures, King Lear, Chaucer at the Court of Edward III., Christ Washing Peter's Feet, Work*, and *Don Juan*.

BROWN, GEORGE LORING (1814–1889). An American painter; born in Boston, Mass.; studied un-

der Hartwell two years abroad, and, on his return, with Washington Allston. Then, in 1840, he entered the studio of Isabey in Paris. Among his works are *Doge's Palace and Grand Canal, Bay of Naples,* and *A Moonlight Scene.* His *Bay of New York* and *Crown of New England* were owned by King Edward VII.

BROWN, JOHN GEORGE (1831–1913). An American sculptor in bronze; born in Leyden, Mass.; studied in Boston and several years in Italy; settled in Brooklyn, N. Y. He made the first bronze statue ever cast in America. Among his works are statues of DeWitt Clinton in Greenwood, of Nathanael Greene and General Scott in Washington, and of Lincoln in Union Square, New York City.

BROWN, JOHN GEORGE (1831–1913). An American painter; born in Durham, England; came to America in 1853; president of the Water Color Society (1901). His works are very popular, especially his portrayals of New York bootblacks and street children. They include *His First Cigar, The Passing Show, A Merry Air and a Sad Heart, Street Boy, The Gang,* and *Street Boys at Play.*

BRUCKNER, ANTON (1824–1896). Austrian organist and composer, who won the appointment as cathedral organist at Linz among many notable competitors. Later he became court organist, professor in the conservatory at Vienna, and concert organist in France and England. His works include symphonies, masses, choruses, and notable *Te Deum.*

BRUNELLESCHI (*brōō-nĕl-lĕs'kē*), **FILIPPO** (1379–1446). An Italian architect; born in Florence. He was the founder of Renaissance architecture. He raised the dome of the Cathedral of Florence to a height of 300 feet—the problem of the century—and began the Pitti Palace, his masterpiece.

BRUSH, GEORGE DE FOREST (1855–). An American painter, who studied under Gérôme of Paris, and began to attract notice first (1883) by his paintings of American Indians and later turned his attention to portraiture. Some of his best works are *Moose Hunt, Aztec King, Mourning her Brave, In a Garden,* the last now in the Metropolitan of New York, *Mothers and Children,* in the Pennsylvania Academy, and *Mother and Child,* in the Corcoran Art Gallery of Washington.

BUCK, DUDLEY (1839–1909). An American organist at the Church of the Holy Trinity, Brooklyn (1877–1903), and composer of sacred cantatas like *The Golden Legand* and *The Light of Asia,* a comic opera called *Deseret,* a symphonic overture *Marmion,* a symphony in E flat, and many organ selections. He was born in Hartford, Conn., and studied abroad under Richter, Hauptmann, and Rietz.

BULL, JOHN (c. 1562–1628). An English composer and organist; one of the most honored musicians of his age in England and on the continent. He was professor of music at Gresham College, London, (1596–1607), the rule that lectures must be given in Latin having been waived because he spoke only English. At two different periods he acted as organist in churches on the continent, especially at Notre Dame at Antwerp. He seems to have done much to develop harpsichord music in England. Several authorities credit him with the original form of the music of the National Air, *God Save the King,* a version of which was introduced about 1745 as the work of Henry Carey.

BULL, OLE BORNEMANN (1810–1880). A Norwegian violinist; born in Bergen. He secured great triumphs both throughout Europe and in the United States by his wonderful playing. He lost all his money in a scheme to found a colony of his countrymen in Pennsylvania, and had to take again to his violin to repair his broken fortunes. He afterwards settled in Cambridge, Mass., and had also a summer residence in his native city, where he died.

BULOW, HANS GUIDO VON (1830–1894). A German pianist and conductor; born in Dresden; studied under Wieck, Eberwein, and Hauptmann; conductor of the royal opera at Munich (1864), where he conducted the first performances of Wagner's *Tristan und Isolde* and *Die Meistersinger;* visited the United States (1875–1876 and 1889–1890); one of the greatest pianists of the century and a famous conductor; the greatest authority on Beethoven.

BURNE-JONES, EDWARD (1833–1898). An English painter; born at Birmingham, of Welsh descent. He was one of the foremost, if not the foremost, of the artists of his day; imbued with ideas that were specially capable of art-treatment; designed several stained-glass windows, notably the Saint Cecilia window at Christ Church College, Oxford. He was the "greenery-yallery, Grosvenor-gallery" young man of *Patience.* He overcame the ridicule which greeted his earlier efforts. Among his works are *Venus's Mirror, Chant d'amour, The Golden Stair, The Wheel of Fortune, Cophetua and the Beggar Maid,* and numerous water colors.

BUTLER, HOWARD RUSSELL (1856–1934). An American artist, who was largely responsible for founding the American Fine Arts Society, of which he was president (1889–1906). He specialized in oil paintings of landscapes, and also of three solar eclipses, at Baker Ore., in 1918, the canvas now being owned by the American Museum of National History; at Lompoc, Calif., in 1923; and at Middletown, Conn., in 1925. He was also president of Carnegie Music Hall, New York (1896–1905).

BUTT, DAME CLARA (1873–1936). British contralto, who was born in Sussex, educated at the Royal College of Music, and sang first in *Orfeo* at the Lyceum in 1892. In 1900 she married Kennerley Rumford, the singer, with whom she appeared in concerts in Great Britain and the colonies. Her voice was of great range and power, she being celebrated for oratorio and ballad singing.

CABANEL (*kȧ-bȧ-nal'*), **ALEXANDRE** (1823–1889). A French portrait and historical painter; born at Montpellier; studied with Picot; won the Prix de Rome (1843); elected to the Academy (1863); professor in the Acadêmie des Beaux-Arts. Among his portraits are those of Napoleon III. and his ministers. One of *Miss Catherine Wolfe* is in the Metropolitan Art Museum at New York. His *Death of Moses* is in the Corcoran Gallery at Washington. *Birth of Venus,* his masterpiece, is in the Louvre and a replica of it in the Metropolitan Museum. His *Expulsion from Paradise* and *Death of Francesca and Paolo* are among his best works.

CADMAN, CHARLES WAKEFIELD (1881–). American composer, known for making use of Indian melodies, such as *From the Land the Skyblue Water.* One of his operas *Shanewis or The Robin Woman* attained a great hearing at the Metropolitan, New York, in 1918 and 1919, the only American opera at the time which had succeeded more than one season in this country. His *Witch of Salem* was produced in Chicago in 1926. He is also known for *The Vision of Sir Launfal,* a cantata, some piano music, and many songs.

CALLOT (*kȧ-lō'*), **JACQUES** (1592–1635). A French designer, engraver and etcher; born in Nancy. He was a pitiless realist, noted for painstaking effort, originality, life, and humor. He left over 1,500 prints of genre pictures, and no etcher has succeeded better than he by simple lines in representing the form, features, or action of a character or a group.

CALVART, DENIS (1540–1619). A painter born in Flanders, but educated at Bologna under Fantana so thoroughly that he took on the style of Italian art, and later became the founder of a new school. He assisted Sebbatini in the decorations of the palace of the pope at Rome, and carefully studied the works of Raphael, some of which he reproduced.

CALVE (*kȧl-vȧ'*), **EMMA** (1864–). A French dramatic soprano; born in France; studied under Rosine Laborde; made her début in *Faust* in Brussels (1882); made her début in New York (1893); has sung in *Lalla Rookh, Nozze di Figaro, Magic Flute, Carmen, Hamlet, Cavalleria Rusticana, Mefistofele, Pagliacci.* Perhaps she will be longest remembered for her inimitable Carmen in Bizet's opera. In 1927 she appeared in lectures on music in America.

CAMP, JOHN SPENSER (1858–). American composer, born in Middletown, Conn., and educated there and studied with Parsons, Shelley, Dudley Buck, and Dvořák. For many years he was choirmaster of Hartford, Conn., and composer of several cantatas, including *The Prince of Peace, The Morning Star,* and *The Prince of Life,* and of various anthems, songs, orchestra suites, and overtures.

CAMPANINI (*kām-pa-nī'nī*), **ITALO** (1846–1896). An Italian tenor; born in Parma; studied in Milan under Francesco Lamperti; made his début in Faust there; sang in New York with Christine Nilsson (1873) and became the most popular operatic tenor of his day. He was a notable Lohengrin, and scored successes in *Aïda, Carmen, The Huguenots,* and *Faust.*

CAMPBELL, MRS. PATRICK (1865–1940). An English actress named Beatrice Stella Tanner, who married Capt. Patrick Campbell, and in 1893 rose to

fame immediately in the chief rôle of Pinero's *Second Mrs. Tanqueray* at the St. James Theatre of London. She played in Shaw's *Pygmalion*, in Ibsen's *Little Eyof*, in Pinero's *Notorious Mrs. Ebbsmith*, and with Forbes-Robertson as Lady Macbeth, Ophelia, and Juliet.

CANO (*kä'no*), **ALONZO** (1601–1667). A Spanish painter, sculptor, and architect; born in Granada. He has been called the Michelangelo of Spain. There are many fine examples of his work in the Cathedral of Granada, six in the Prado, and several throughout Europe. Philip IV. appointed him royal architect and painter, rewarding him with the office of a canon in the church.

CANOVA (*ka-nō've*), **ANTONIO** (1757–1822). A great Italian sculptor; born in Treviso. His first great work, which established his fame, was the group of *Theseus and the Minotaur*, which was succeeded by his *Cupid and Psyche*, distinguished by a tenderness and grace quite peculiar to him, and erelong by *Perseus*, perhaps the triumph of his art. His works were numerous and brought him a large fortune.

CARAVAGGIO (*kä-ra-vä'jo*), **MICHELANGELO AMERIGHI** (1569–1609). An Italian painter, founder of the Naturalistic school; born in Caravaggio. Among his best works are *The Entombment of Christ* in the Vatican, *Death of Mary* in the Louvre, *Saint Matthew Writing the Gospel, Christ and the Apostles at Emmaus, Love as a Ruler, Love Conquered, Gypsy Fortune-Teller, Card-Players, Portraits of Himself*, and *Grand Master of the Knights of Malta*.

CARISSIMI (*ka-rēs'sē-mē*), **GIACOMO** (c. 1604–1674). Chapel master of Assisi for four years and at Rome for the rest of his life (1628–1674). He did important work in developing the recitative in music, in improving the chamber cantata, and in perfecting a form of oratorio. Little else is known of his life.

CARPACCIO (*kär-pät'chō*), **VITTORE** (c. 1460–c. 1520). An Italian painter, whose biography is obscure, but who lived mainly in Venice and painted between 1490 and 1520. Apparently he was a pupil of Bastiani, and perhaps of the great Bellini. Besides nine pictures on the life of St. Ursula, now at Venice, and some scenes in the life of the Virgin, his chief works are *Life of St. Stephen, Presentation in the Temple*, and a *Dead Christ*, now in Berlin.

CARRACCI (*kär-rät'chē*), **AGOSTINO** (1557–1602). Celebrated painter of Bologna, who, with his brother Annibale, and his uncle, Lodovico, established an eclectic school of art. He studied under Fantana, and went to Rome in 1600 with his brother to paint the palace of a cardinal, and then he went to Parma where he finished his great picture *Celestial, Terrestrial, and Venal Love*, just before he died. Agostino was also a proficient engraver.

CARRACCI, ANNIBALE (1560–1609). After he assisted his brother (noted just above) in finishing the decoration of the cardinal's palace of Rome, he went to Naples, where he died. Of his many pictures, some of the best known are the *Dead Christ, Infant and St. John, St. Catherine, St. Roch*, and *Saviour Bewailed by the Maries*. He is now represented in the Dresden, Dublin, and National Gallery of London.

CARRACCI, LODOVICO (1555–1619). Eminent Bolognese painter, who founded an eclectic school of art, and set up an academy which was long popular. In his teaching he was assisted also by his two nephews, who are noted just above. Some of his great works are *John the Baptist, St. Jerome, St. Benedict, St. Cecilia*, and *Limbo of the Fathers*.

CARRIERE, EUGENE (1849–1906). French painter noted for various pictures of family groups, for which his wife sat often as a model. His *Maternity* and *The Sick Child* are in Luxembourg. Celebrated persons who were his friends appear in his portraits, like those of Alphonse Daudet, Anatole France, Louis Henry, and Paul Verlaine.

CARSTENS, ARMUS JACOB (1754–1798). A leader of the modern school of historical painters in Germany, especially celebrated for his *Plato's Symposium* and the *Battle of Rossbach*. He was born in Schleswig, studied in Copenhagen and in Italy, and lived at Lübeck. For a time he was a professor at Berlin. His Argonaut pictures were engraved in 24 plates.

CARUSO (*kä-rōō'zō*), **ENRICO** (1873–1921). One of the greatest operatic tenors of all time, who was born in Italy, began to sing in a choir in Naples when 11, and made his début in 1894. For four years he was at St. Petersburg (1899–1903) in the winter and in Buenos Aires in summer, appearing also at times in various European capitals. From 1903 to his death he was leading tenor at the Metropolitan Opera House in New York. Of his extensive repertoire, some of the operas were *Carmen, Les Huguenots, Pagliacci, Rigoletto, Samson and Delilah*, and *La Bohème*. His voice was of great richness, power, and artistic finish.

CARY, ANNIE LOUISE (1842–1921). An American contralto; born at Wayne, Me.; studied in Milan under Giovanni Corsi; made her début in Copenhagen in Italian opera. For over 12 years she was the favorite of the American public. She created the part of Amneris in *Aïda;* married Charles Monson Raymond of Brooklyn (1882).

CAZIN (*ka-zăn'*), **JEAN CHARLES** (1841–1901). A French painter; born at Samer; originated the French landscape in religious subjects as in *Hagar and Ishmael, Dusk, A Dead City*, and *The Flight into Egypt*.

CELLINI (*chĕl-lē'nē*), **BENVENUTO** (1500–1571). The greatest of the Italian Renaissance goldsmiths; born in Florence. His works comprise elaborate silver vases, statuettes, silver-gilt repoussé, bronze statues, and bronze portraits. Among his best known is his *Victorious Perseus* with the Gorgon's head. Many of Cellini's works have disappeared, but among those remaining are a salt-cellar made for Francis I. at Vienna, a medallion of Clement VII., a medal of Francis I., a medal of Cardinal Bembo, and some dies for coins and medals cast at the papal mint. He lived at Florence, Rome, and Venice; at times for various scrapes he was banished from his native city, but in time was recalled and rose more in favor. In addition to works in silver and gold, he executed a number of sculptures, notably the *Perseus Holding the Head of Medusa*, now at Florence. His *Autobiography*, though full of self-assertion and exaggeration, throws important light on the age in which Cellini lived.

CESNOLA (*chĕs'nō-lä*), **LUIGI PALMA DI** (1832–1904). An American archaeologist; born in Piedmont, Italy. He served in the Italian War with Austria and came to the United States in 1860, serving in the Civil War. He was United States Consul at Cyprus, where he made extensive archaeological discoveries. In 1879 he became a trustee and director of the Metropolitan Museum of Art, in New York City.

CESPEDES, (*thes'pē-dēs*), **PABLO DE** (1538–1608). Spanish painter, sculptor, architect, and poet, who spent some time in Rome studying the works of Rephael and Michelangelo. On his return to Spain, he was made a prebend at Cordova, where his best picture, *The Last Supper*, is at present, while others are at Madrid and Seville. He wrote a didactic poem on *The Art of Painting*, which has been pronounced the finest work of its kind in Spain.

CEZANNE, PAUL (1839–1906). A French painter, who in the beginning of his artistic career painted highly fanciful pictures, and was a leader in the revolt against older methods and leaders. After 1873 he turned his attention more to nature, came under the influence of Poussin, out of which grew several fine landscape scenes. Some of his portraits were also highly praised, especially that of Geffroy, which is a masterpiece for artistic finish and harmony.

CHALIAPIN (*shal'yah-pēn*), **FYODOR IVANOVICH** (1873–1938). A Russian bass singer, born at Kazan; for a number of years worked at various things; made his début at Tiflis in 1892 in *A Life for the Tsar*. From then till 1913 he appeared often in Russia and gained a notable success at London in the latter year in *Prince Igor*. In 1921 he again appeared in England, and in 1922–23 in the United States, where he had also been in 1908. Some of his great parts are those of Ivan in *The Maid of Peskof*, Salieri in *Mozart and Salieri*, Leporello in *Don Giovanni*, Don Basilio in *The Barber of Seville*, and Don Quichotte in *Don Quichotte*.

CHAMINADE (*shä-mē-nàd'*), **CECILE LOUISE STEPHANIE** (1861–). A French pianist and composer; born in Paris; noted throughout Europe as a pianist and as an orchestra conductor. She wrote *Callirrhoë*, a ballet symphony; *Les Amazones; Ménétriers; La Lisonjera;* and a number of songs.

CHAMPAIGNE (*shan-pē'nya*), **PHILIPPE DE** (1602–1674). A Flemish painter; born in Brussels; went to Paris and was one of the few distinguished painters there before the accession of Louis XIV. Most of his works are in the Louvre and include *The Dead Christ* and *Portrait of Cardinal Richelieu*. His *Triple Portrait of Cardinal Richelieu, Portrait of Fénelon*, and three religious subjects are in London.

CHAMPNEY, BENJAMIN (1817–1907). An American painter; born in New Ipswich, N. H.; spent several years in Europe painting at the Louvre (1841–1848); painted White Mountain landscapes and New England flower groups; ex-president of the Boston Art Club; published *Sixty Years' Memories of Art and Artists* (1900).

CHANTREY, SIR FRANCIS LEGATT (1781–1842). An English sculptor; born at Norton, Derbyshire; member of the Royal Academy (1818); made the statue of Washington in the State House at Boston, Mass.; also Pitt, Watt in Westminister Abbey, Canning, and Wellington. Greatly admired are his busts of children, particularly the figures of two asleep in each other's arms at Litchfield Cathedral. He left the bulk of his estate to the Royal Academy for the purchase of works of art.

CHARDIN, JEAN SIMEON (1699–1779). French painter of small objects, famous for his still-life pictures and for domestic scenes; also a great colorist. He was a pupil of Cazes and Coypel, was made a member of the Royal Academy in 1728, and in 1759 became connected with the Louvre, where several of his best pictures are now, besides others at the University of Glasgow and in the English National Gallery.

CHASE, WILLIAM MERRITT (1849–1916). An American painter; born in Franklin, Ind.; studied under B. F. Hayes in Indianapolis and at New York; settled in St. Louis; thence at Munich under Wagner and Piloty for six years; one year at Venice on Tintoretto's works; returned to New York (1878) and was president of the Society of American Artists for 10 years; taught in the Art Students' League and in his own schools; he received many medals and was a National Academician. His best work is in still life.

CHAVANNES. See under PUVIS DE CHAVANNES.

CHERUBINI, MARIA LUIGI CARLO ZENOBIO SALVATORE (1760–1842). An Italian musical composer; born in Florence; director in the French Conservatory and instructor of hundreds of eminent musicians. In the interval from 1780 to 1788 he composed 11 Italian operas, including *Ifigenia in Aulide*—the most successful of the series. His operatic masterpiece is *Les Deux Journées*. His greatest work is the *Requiem in C minor*. Other great compositions are *Lodoiska, Médée*, the ballad *Anacreon, Les Deux Journées*.

CHIPPENDALE, THOMAS (c. 1718–1779). An English cabinet and furniture maker, who from about 1749 conducted a shop in London. Though it is now difficult to identify much of the furniture that resembles his undoubted pieces, because of later imitation, it is evident that some English houses have genuine examples. His work was characterized by solidity without apparent heaviness. At different times he imitated Gothic, French, and Chinese objects. Among the places where the furniture still exists are Notell Priory, and Harewood House, both in Yorkshire, Stourhead in Wiltshire, and Rowton Castle in Shropshire.

CHOPIN (*shō'pàn*), **FREDERIC FRANCOIS** (1810–1849). An eminent Polish musical composer and pianist; born near Warsaw; settled in Paris (1831). As a pianist Chopin was second to Liszt only. He was born near Warsaw, where he was educated under Joseph Elsner, director of the conservatory there. His début as a pianist occurred at Vienna in 1829, and he resided there until two years later. He left intending to go to England, but he remained at Paris the rest of his life. Some of his works are 42 mazurkas, 24 preludes, 18 nocturnes, 4 ballades, 8 waltzes, and various small compositions, all of which are of exquisite workmanship.

CHRISTY, HOWARD CHANDLER (1873–). An American illustrator; born in Morgan County, Ohio; studied in New York; began to illustrate in 1895; war artist in the Spanish War for *Scribner's* and *Leslie's*; instructor in the Cooper Institute, New York.

CHURCH, FREDERIC EDWIN (1826–1900). An American landscape painter of fine technique, who specialized in the wonders of nature, such as scenes at Niagara Falls, the Andes, and many variations of light and color. His paintings sold for extravagant sums. Among his characteristic works are *The Great Fall of Niagara*, which is now in the Corcoran Art Gallery, Washington, *Twilight* in the Waters Gallery, Baltimore, *Heart of the Andes, Cotopaxi*, and *Morning in the Tropics*.

CIMABUE (*chĭ-mä-bū'ē*), **GIOVANNI** (1240–1302). A Florentine painter and founder of the Florentine school, which ranked among its members such artists as Michelangelo, Raphael, and Leonardo da Vinci; was the first to leave the stiff traditional Byzantine forms of art and copy from nature and the living model, though it was only with the advent of his great disciple, Giotto, that art found beauty in reality. His *Madonna* in the Church of Santa Maria has been long regarded as a marvel of art, and of all the *Mater Dolorosas* of Christianity, Ruskin does not hesitate to pronounce his at Assisi the noblest.

CLAUDE LORRAIN (1600–1682). A great French landscape painter; born at Chamagne, of poor parents; went to Rome; became servant and color-grinder to Tassi, who instructed him in his art; by assiduous study of nature in all her aspects attained to fame; was eminent in his treatment of aërial perspective, and an artist whom it was Turner's ambition to rival.

CLAXTON, KATE (1848–1924). An American actress; born in New York City; made her début with Lotta in Chicago in 1870; with Augustin Daly's stock company in New York; and with A. M. Palmer's Union Square company in 1872. Her greatest success was as Louise in *The Two Orphans;* married Charles A. Stevenson, her second husband (1878).

CLAYS, PAUL JEAN (1819–1900). A Belgian painter of marine subjects. Some of his notable pictures are *The Port of Antwerp, Coast near Ostend, Calm on the Scheldt*, and *Festival of the Freedom of the Scheldt*, the last now in the Metropolitan Museum at New York.

CLINEDINST, BENJAMIN WEST (1860–1931). An American artist; born at Woodstock, Va.; studied in Paris under Cabanel and Bonnat; settled in New York; chiefly engaged as illustrator in black and white for books and magazines. He specialized on genre and portraits; illustrated books by Hawthorne, Stevenson, Parkman, Cable, Bret Harte, and Mark Twain; and painted portraits of Roosevelt, Admiral Peary, General E. W. Nichols, and many others.

CLOUET, FRANCOIS (d. 1572). French miniature painter of great delicacy and elaboration. He was a son of Jean Clouet who was also a distinguished artist. Among his reputed works are the portrait of Francis I. in the Uffizi, Florence; Catherine de' Medici at Versailles; a picture of Henry II. now in the Morgan collection in New York; a portrait of the duc d'Alencon now at South Kensington, England. Both he and his father passed under the name of Janet.

COLE, BELLE (1845–1904). An American contralto singer; born in Chautauqua, N. Y.; church soloist in New York; leading contralto with Theodore Thomas's Festival tour (1883); sang in *Elijah* in London under Sir Joseph Barnby (1888); made a tour around the world in 1901; lived in London after 1888.

COLE, THOMAS (1801–1848). American landscape painter, who came to America from England when he was 18, went about for a time as a wandering portraitist, removed to New York (1825), and was encouraged by the great artist Trumbull, who secured him patrons. He was a leader in the Hudson River school of artists. Some of his typical canvases are the series of four, *The Voyage of Life*, and another of five pictures, called *The Course of Empire*, the second set being in the New York Historical collection. The *Expulsion from Eden* is in the Metropolitan Museum, New York. Cole was one of the leaders in the American school of nature painters.

COLE, TIMOTHY (1852–1931). An American wood engraver; born in London, England; emigrated with his parents to Chicago (1857); removed to New York (1871); noted for his series of engravings of the paintings of the old masters of Europe, which appeared in the *Century Magazine*. Thus his reproductions of the old Italian, Dutch, Flemish, and other masters, especially as painted by him with his own notes in book form, were justly famous. Cole received various medals, and, at a time when wood engraving was almost obsolete, succeeded in attracting marked interest.

COLE, VICAT (1833–1893). English painter of scenes in Surrey and Sussex, including the pictures of landscapes along the Thames. The trustees of the Chantrey Fund bought a large canvas by him, entitled *The Pool of London*, for the Tate Gallery.

COLERIDGE-TAYLOR, SAMUEL (1875–1912). An Anglo-African musical composer; born in London; studied at the Royal College of Music. His choral-orchestral work, *Scenes from the Song of Hiawatha, Blind Girl of Castèl Cuillè*, and a cantata, *The Atonement*, are best known; conducted *Hiawatha* in Washington in 1904. Some incidental music for plays by Stephen Phillips and for *Othello* was highly admired.

COLLINS, WILLIAM (1788–1847). An English landscape and figure painter; born in London; father of Wilkie Collins, the novelist; studied at the Royal Academy; chief works are *Young Fifer, The Sale of the Pet Lamb, As Happy as a King,* and *Early Morning;* elected to the Royal Academy in 1820.

COLMAN, SAMUEL (1832–1920). An American painter; born in Portland, Me.; studied under Durand and abroad; member of the National Academy (1860); a founder and the first president of the American Society of Painters in Water Colors (1866–1871); chief works are foreign and American landscapes in oil and water colors and some etchings, *Moonrise in Venice, Sunny Afternoon in Harbor of Algiers, The Ships of the Western Plains,* now in the Union League Club, New York, and *The Spanish Peaks, Colorado,* now in the Metropolitan Museum.

COLONNE (*kō-lon'nä*), **EDOUARD (JULES JUNE)** (1838–1910). French violinist and conductor of Italian birth, who was first violin at the Opéra from 1858 to 1867, and then helped found a series of artist performances, later called the Concerts Colonne. He popularized the works of men like Berlioz, Franck, Dubois, Grieg, Raff, Tschaikowsky, and Wagner, some of whom were first introduced to English audiences through his subscription concerts. Colonne also conducted at the Opéra, on the continent, and for the Philharmonic Society of New York (1906).

CONNICK, CHARLES JAY (1875–). American artist in stained glass, who was born in Pennsylvania, studied in Pittsburgh and Boston, and did research work at various times in England and France. From 1895 to 1911 he acted as a designer for several firms, after which he set up private business. Some of his windows are in the Cathedral of St. John the Divine, New York, Princeton University Graduate College, St. Paul's Cathedral, Detroit, Boston University, Fourth Presbyterian Church, Chicago, and in various other churches.

CONSTABLE, JOHN (1776–1837). An eminent English landscape painter; born in Suffolk, England. His works were more generously appreciated in France than in his own country, where they had to stand comparison with those of Turner. Enormous prices have been given of late for his best pictures. Some of his best works adorn the walls of the National Gallery. Among these are *The White Horse, Cornfield, Hampstead Heath, The Valley Farm, The Hay Wain,* and many others. Constable was a leader of modern art.

CONSTANT, JEAN JOSEPH BENJAMIN (1845–1902). A highly popular French painter of the Realistic school; born at Paris. His first picture was *Hamlet and the King.* Afterwards he took chiefly to Oriental subjects, which afforded the best scope for his talent; occupies a high place in the modern French school. His *Justinian in Council* is in the Metropolitan Museum of Art in New York. Some of his portraits of celebrated persons were justly famous, including his *Queen Victoria* (1900).

CONVERSE, FREDERICK SHEPHERD (1871–1940). An American composer, professor of theory and composition at the New England Conservatory of Music; author of various musical works, including *Sonata in A, The Mystic Trumpeter,* a fantasy; *The Pipe of Desire,* opera; *Job,* oratorio; *Ormazd,* a symphonic poem; a symphony in E minor; and *The Peace Pipe,* cantata.

COPLEY (*kop'li*), **JOHN SINGLETON** (1737–1815). An American portrait and historical painter; born in Boston. Benjamin West was his patron; went to England in 1775; painted portraits of the king and the queen; began the historical works on which his fame chiefly rests, perhaps the most widely known of which is the *Death of Chatham,* now in the National Gallery, London. The Boston Museum now contains his portraits of John Quincy Adams, Samuel Adams, General Warren, and others.

COQUELIN (*kōk-lăn'*), **BENOIT CONSTANT** (1841–1909). A French actor; born in Boulogne; made his début at the Théâtre Français (December 7, 1860). For over a quarter of a century he played there with unbroken success. He appeared in 1887 in London, in 1888 in South America and the United States. He played Flambeau in *L'Aiglon* to the Duc de Reichstadt of Sarah Bernhardt.

CORELLI (*kō-rĕl'i*), **ARCANGELO** (1653–1713). Italian violinist and composer, trained by G. Benvenuti of Bologna, and attached to the court of Cardinal Ottoboni. He was one of the most popular teachers of the age, especially in the manner of holding the bow and in chord-playing. Numerous compositions are still played and highly praised, among them being the *Concerti grossi,* his last work, and various arrangements of "Suonate" for strings.

CORLETTE, HUBERT CHRISTIAN (1869–). British architect, who was born and educated at Sydney, Australia, with further study at University College, London, and in France and Italy. Taking up the profession of architecture, he designed many important buildings, such as those at New College, Oxford; Clifton College and Winchester College; Burton Manor, Cheshire; the Kensington War Memorial; various buildings, including the New Post Office, Treasury Buildings, and Government House at Jamaica; Imperial College of Tropical Agriculture at Trinidad; and many others. Some of his publications are *Chichester Cathedral, Use of Colour in Architecture,* and *Education and Tradition in Architecture.*

CORNELIUS (*kor-nā'lē-ŏs*), **PETER VON** (1783–1867). A German painter; born in Düsseldorf. He studied the great masters, especially Raphael. In 1811 he went to Rome, where, in conjunction with Overbeck, Veit, and other associates, he may be said to have founded a new school of German art, and revived fresco painting in imitation of Michelangelo and Raphael. In 1841 he was invited to Berlin by Frederick William IV., who intrusted him with the painting of the royal mausoleum or Campo Santo. His *Last Judgment* in the Ludwig church is the most colossal fresco ever painted.

COROT (*ko-rō'*), **JEAN BAPTISTE CAMILLE** (1796–1875). A celebrated French landscape painter; born in Paris. His landscape work is a new interpretation, marked by the freshness of the morning and the silvery mists of evening. He is a worshiper of nature in her quieter moods. His *Ville d'Avray* is in the Metropolitan Museum of Art in New York, *Dante and Vergil* in the Boston Museum of Fine Arts, and many fine examples are in private collections. Others in public collections are *Une Matinée* in the Louvre, Paris; *Macbeth* in the Wallace collection, London; *Pastorale-Souvenir d'Italie* in Glasgow.

CORREGGIO (*kor-red'jō*), **ANTONIO ALLEGRI DA** (1494–1534). An Italian painter; known as "the divine." His work excels in harmony, grace, and sweetness of color and form. He is one of the greatest Italian painters of the Renaissance. His fine *St. Francis Madonna* in Dresden, *The Ascension of Christ* in the cupola at Parma, *The Assumption of the Virgin* at Parma, *The Marriage of St. Catherine* in the Louvre, *The Madonna della Scodella* in Parma, *The Holy Night* in Dresden, and his *Ecce Homo* in London are among his most famous works.

COSIMO, PIERO DI (1462–1521). An Italian painter; born in Florence; pupil of Cosimo Roselli and master of Andrea del Sarto. His chief works are a *Conception* in the Uffizi at Florence, a *Madonna* and *Death of Procris* in London, a *Coronation of the Virgin* in the Louvre, and *Christ and John the Baptist* in Berlin.

COSTA, LORENZO (1460–1535). Italian painter, who was born in Ferrara, but lived mainly in Bologna, where his main works are now found. Other pictures of note are the *Madonna and Child* now in London and the celebrated fresco in one of the chapels of San Giacomo Maggiore at Bologna.

COUPERIN (*kŭ-pär-ăn'*), **FRANCOIS** (1668–1733). The most celebrated member of a family of French musicians, between 1626 and 1850. He attained great perfection of art and melody in his various works for the clavecin or harpsichord. Bach greatly admired his work, and used some of Couperin's cross-rime and other arrangements for his own musical compositions. *Pièces de Clavecin,* an elaborate work in four books, is his chief collection; for the proof-reading of the first book alone he took a whole year.

COURBET (*kö-bā'*), **GUSTAVE** (1819–1877). A French painter, of peasant birth; studied in Paris; joined the Commune and led in the overthrow of the Vendôme Column to distract the maddened populace from the collections of Thiers and of the Luxembourg. Courbet was essentially a realist and naturalist. His *Winnowers* in Nantes, *Burial at Ornans* in the Louvre, *Combat of the Stags,* and *The Wave* are among his best.

COUSIN (*kö-zăn'*), **JEAN** (1500–1590). A French painter, artist in stained glass, sculptor, and author. Of his pictures, which turned away from the old style of portraiture, the *Last Judgment* is in the Louvre; his glass in the windows of the Sainte Chapelle at Vincennes is highly admired; and his chief literary works are books on perspective and on portraiture.

COWEN, FREDERICK HYMEN (1852–1935). A composer born in Jamaica; from the age of four lived mainly in England, but spent some time in Berlin; and after 1869 was well known in Europe. Some of his chief works are *The Rose Maiden*, a cantata, which was immensely famous; two symphonies; *The Corsair*, a festival work; and an opera, *Pauline*, used by the Rosa Company. Some of his compositions were first produced by the Philharmonic Society, of which he became conductor (1888–92), after the death of Sir Arthur Sullivan. In 1911 he was knighted.

COX, KENYON (1856–1919). An American painter; born in Warren, Ohio. He studied in Paris under Carolus-Duran and Gérôme, settling in New York in 1882 as a portrait and figure artist. He did two decorations in the Library of Congress, Bowdoin College, Capitol at St. Paul, Minn. He was awarded a medal by the Architectural League for his murals. Cox also wrote extensively on art, some of his books being *Old Masters and New*, *The Classic Point of View*, *Artist and Public*, and *Concerning Painting*.

COX, PALMER. See page 891.

CRAIG, EDWARD GORDON (1872–). Beginning his professional career on the stage, Craig developed original ideas of production and stagecraft. In 1913 he founded a school of theatrical art at Florence, Italy, the outgrowth of his book on *The Art of the Theatre* (1911). Both in his theory of staging and in his literary art, Craig profoundly influenced all of Europe. He staged a Purcell opera, a nativity play by Housman, an Ibsen drama, a drama for Duse at Florence, and productions at Moscow and Copenhagen.

CRAM, RALPH ADAMS (1863–). An authority on architecture of the middle ages, especially on Gothic building, he held important commissions as consulting architect for the cathedrals at San Francisco and Washington, supervised the Cathedral of St. John in New York, and, after the death of Bernard Goodhue (q. v.), took charge of the building of the Capitol at Lincoln, Neb. Some of his numerous writings are *Church Building*, *The Ministry of Art*, *The Substance of Gothic*.

CRANACH (*kran'ak*), **LUCUS** (1472–1553). A German painter; born at Kronach; second to Dürer among his contemporaries. The finest collection of his works is in Berlin. It includes *Hercules and Omphale* and *The Fountain of Youth*. London has a *Portrait of a Young Girl*. Dublin has a *Judith* and a *Christ on the Cross*. New York has a portrait of *John Frederick the Magnanimous*, a *Portrait*, and a *Venus and Cupid*. Brussels has a *Charity* and a *Portrait of an Old Man*. His son, Lucas, assisted the father in many works, and painted several religious pictures of his own. His *Portrait of a German Lady* is in the Metropolitan at New York.

CRANE, WALTER (1845–1915). An English artist and illustrator, influenced by Ruskin and the Pre-Raphaelites, Japanese art, and as a decorator by William Morris. Many of his drawings and pictures were made for children's books, nursery rimes, and famous English poems. Some of these are *The Lady of Shalott* (1862), *The Baby's Opera*, *Stories from Grimm*, Hawthorne's *Wonder Book*, Mrs. Deland's *Old Garden*, and Spenser's *Faerie Queene*. Along with Morris and others he did much to bring art within the reach of ordinary persons. He executed some notable wood engravings.

CRANE, WILLIAM HENRY (1845–1928). An American actor; born in Leicester, Mass.; leading comedian in Hooley's Theatre, Chicago (1874); in partnership with Stuart Robson (1877–1889). His later rôles were in *The Senator*, *David Harum*, *Business is Business*, and *The American Lord*.

CRAWFORD, THOMAS (1814–1857). An American sculptor; born in New York; died in London. Among his works are the bronze statue of Beethoven in Boston Music Hall, an equestrian statue of General Washington at the Capitol, Richmond, Va., and a number of marble and bronze pieces in the Capitol, Washington, D. C., including the *Liberty* surmounting the dome, the bronze doors, and the relief *Progress of American Civilization*.

CRIVELLI, CARLO (c. 1435–c. 1500). Viennese painter of great force, somewhat crude in technique, but fine in coloring; probably of the school of Murano. Some remaining works are the *Madonna* at Verona; the *Dead Christ* in the Vatican; *Madonna and Saints* in Berlin; and *The Coronation of the Virgin* at Milan.

CROSMAN, HENRIETTA (1870–). An American actress; born at Wheeling, W. Va.; made her début in *The White Slave* (1889); played with Daly's and Frohman's companies; married Maurice Campbell (1897); appeared as a star (1898) in the rôle of *Mistress Nell* and of Rosalind in *As You Like It*.

CRUIKSHANK (*krōōk'shănk*), **GEORGE** (1792–1878). An English pictorial satirist; born in London. His illustrations for Home's political squibs and pamphlets, and especially those dealing with the Queen Caroline trial, attracted much attention. He illustrated a number of Dickens's works. In his late years he devoted himself to oil painting.

CUSHMAN (*kōōsh'măn*), **CHARLOTTE SAUNDERS** (1816–1876). An American actress; born in Boston; appeared first in opera and as Lady Macbeth in New Orleans in 1835. In 1844 she accompanied Macready on a tour throughout the Northern states and afterward appeared in London. Miss Cushman retired from the stage in 1875. Of her many parts in a great variety of dramatic compositions, her best were Rosalind, Romeo, Cardinal Wolsey, Portia, Lady Macbeth, her most artistic rôle, and Meg Merillies, in a dramatization of Scott's *Guy Mannering*, her most popular.

CUYP (*koip*), **ALBERT** (1606–1672). A Dutch painter; born at Dordrecht; son of the painter, Jakob Gerritsz Cuyp (1575–1649); one of the greatest of the masters in animal painting. Ruskin says that "for expression of effects of yellow sunlight, parts might be chosen out of the good pictures of Cuyp which have never been equaled in art."

CZERNY (*zäir'nē*), **KARL** (1791–1857). An Austrian pianist and musical composer; born in Vienna; pupil of Beethoven. Among his puipls were Liszt, Thalberg, and other distinguished musicians; best known by his *Theoretical and Practical School*.

DAGNAN-BOUVERT (*dăn-yon-bōr-vā'*), **PASCAL ADOLPHE JEAN** (1852–1929). A French painter; born in Paris; a painter of Breton life and a follower of Holbein. Among his famous works are *A Wedding Party at the Photographer's*, *Vaccination*, and *Le pain bénit* in the Luxembourg; the *Breton Pardon*, a *Virgin* in sunlight and shadow, the *Last Supper*, and *The Supper at Emmaus*. A *Breton Peasant* is in Chicago, *A Pardon in Brittany* is in New York, and the fine *Village Musician* is in the Walters collection in Baltimore.

DAGUERRE (*dă-gār'*), **LOUIS JACQUES MANDE.** French painter and inventor of a photographic process. See under INVENTORS.

DAINGERFIELD, ELLIOTT (1859–1932). An American painter, who first exhibited at the National Academy of Design in New York (1880), studied in Europe, and was commissioned to decorate the Lady Chapel of the Church of St. Mary in New York. Some of his later paintings are *Child of Mary*, *The Story of the Madonna*, and *Slumbering Fog*, the last now in the Metropolitan Museum, New York.

DALOU (*dă-lōō*), **JULES** (1838–1902). A French sculptor; born in Paris; pupil of Carpeaux; fled to London during the Commune and was prominent in the English renascence. The *Triumph of Silenus* in the Luxembourg, *The States-General* in the Chamber of Deputies in Paris, the colossal *Triumph of the Republic* in the Place de la Nation, the bronze statue of Eugène Delacroix, and numerous busts are among his more celebrated works.

DALY, AUGUSTIN (1838–1899). An American theatrical manager and dramatist; born at Plymouth, N. C. His plays and adaptations number 75. He was associated with the best and most popular actors and actresses of the times; managed theaters in New York and in London that made his name celebrated.

DAMROSCH (*dăm'rosh*), **LEOPOLD** (1832–1885). A German-American musician and composer; born in Posen; took an M. D. at Berlin (1854); studied the violin under Ries, Dehn, and Böhmer. Through Liszt he became solo violinist at Weimar, where he made the acquaintance of Wagner; conductor of the Breslau Philharmonic concerts (1859–1860); came to America in 1871 as conductor of the Arion Society, and until his death was the leading musical figure in New York; founded the Oratorio Society (1873) and the Symphony Society (1877); and gave a season of German opera in 1884.

DAMROSCH, WALTER JOHANNES (1862–). An American musician; son of Leopold Damrosch; born at Breslau; studied with his father, Rischbieter, Draeseke, von Inten, Max Pinner, and von Bülow; conductor of the Newark, N. J., Harmonic Society; took up his father's work on his death in 1885 and carried it through; conductor of the New York Oratorio

and Symphony societies; rendered *Parsifal* for the first time in America (1886); organized the Damrosch Opera Company (1894); composed *The Scarlet Letter*, an opera, and a *Te Deum* in honor of Dewey's victory at Manila. Director N. Y. Symphony Orchestra (1903–07). Composed an opera *Cyrano*, incidental music to several Greek plays, and many other works. For General Pershing organized a school for bandmasters at American headquarters at Chaumont, France, 1918.

DANNAT (*dan'at*), **WILLIAM T.** (1853–1929). An American artist and figure painter; born in New York City; studied in Munich and in Paris under Munkácsy; teacher in the École des Beaux-Arts; chief works are *Belle Otero, Spanish Women, A Sacristy in Aragon, A Lady in Red, A Lady in White*, and *The Quartette*, the last now in the Metropolitan Museum, New York.

DANNECKER (*dän'nek-er*), **JOHANN HEINRICH VON** (1758–1841). A German sculptor; born near Stuttgart; studied in Paris and in Rome with Canova; professor of sculpture at Stuttgart (1790); chief works are *Sappho, Psyche, Ariadne on the Panther, Christ, John the Baptist*, and busts of Schiller, Gluck, Lavater, and others.

DAUBIGNY (*dō-bēn-yī'*), **CHARLES FRANCOIS** (1817–1878). A French landscape painter and etcher; born in Paris; member of the Barbizon school; studied with Paul Delaroche. Of his many works in the United States, *On the River Oise* in New York, a *Town and River Scene* in Philadelphia, are well known.

DAUMIER (*dō-myā'*), **HONORE** (1808–1879). Beginning as an artist for music publishers and magazines, he joined the staff of a comic magazine as a caricaturist during the reign of Louis Philippe. Certain pictures representing the Emperor as Gargantua led to six months in prison in 1832. Later for *Charivari* Daumier produced pictures ridiculing bourgeois life, others the pseudo-classic in art and on the stage. Besides nearly 4,000 of such pictures, he found some time for naturalistic painting of very serious pictures, some of which are *Christ and his Apostles, The Good Samaritan, Don Quixote and Sancho Panza*, and *Christ Mocked*.

DAVENPORT, EDWARD LOOMIS (1816–1877). An American actor; born in Boston. His first appearance was with the elder Booth in *Sir Giles Overreach*. He progressed rapidly and became a leading artist in tragedy, comedy, and melodrama. His impersonations of *Brutus, Hamlet, Sir Giles*, and *Bill Sykes* were notable.

DAVENPORT (*dav'en-pōrt*), **FANNY LILY GIPSY** (1850–1898). An American actress; born in London, England; daughter of Edward Loomis Davenport; first appeared as a child in the Chambers Street Theatre in New York (1857); most successful in Daly's company in leading parts (1869–1873), and later in her own company till 1898.

DAVID d'ANGERS. See DAVID, PIERRE JEAN.

DAVID (*dä-vēd'*), **FELICIEN CESAR** (1810–1876). A French composer; born at Vaucluse; wrote *The Desert*, a symphonic ode which achieved an instant and complete triumph; an oratorio, *Moses on Sinai;* a symphony, *Christopher Columbus;* and several operas.

DAVID (*dä-vēd'*), **JACQUES LOUIS** (1748–1825). Regenerator of the modern French school of painting; born in Paris. In the Revolution he was a violent Jacobin and wholly devoted to Robespierre. Several of the scenes of the Revolution supplied subjects for his brush. He was appointed first painter to Napoleon about 1804; and after the second restoration of Louis XVIII. he was included in the decree which banished all regicides from France, when he retired to Brussels, where he died; painted *The Dead Marat*, the emperor, the pope, the famous *Mme. Récamier* in the Louvre, *The Three Fates, The Death of Socrates, The Oath on the Tennis Court*, and *Rape of the Sabines*. Many of his pictures are grand in style and composition, his portraits having remarkable insight into character.

DAVID, PIERRE JEAN (1788–1856). A French sculptor; born in Angers (hence commonly called David d'Angers. He executed a great number of medallions, busts, and statues of celebrated persons of all countries, including those of Washington, Lafayette, and Jefferson.

DAVIES, ARTHUR B. (1862–1928). An American painter, the pupil of Dwight Williams at Utica, N. Y., and a student in New York and Chicago. Some of his best pictures are *Dream* and *The Girdle of Ares* in the Metropolitan Museum, New York, *Maya, Mirror of Illusions* in the Art Institute, Chicago, *The Place of the Mother* and *Children of Yesterday* in Minneapolis, and *After-Thoughts of Earth*, for which he was awarded a medal and $1,500 by the Carnegie Trust.

DAVIES, HENRY WALFORD (1869–). An English organist, knighted in 1922, and performer at Temple Church from 1898 to 1923; conductor of the London Bach Choir; and professor of music (1919–26) at University College of Aberystwith, Wales. In 1927 he became organist at St. George's Chapel, Windsor. Apart from his influence as an organist and teacher, his notable work lies mainly in his church music; a chorus and orchestra setting for the morality play, *Everyman; The Sayings of Jesus;* and *Heaven's Gate*.

DEARMER, REV. PERCY (1867–1936). An English clergyman and professor of Ecclesiastical Art, King's College, London, who, besides many books on religious and social questions, wrote or edited the *Oxford Cathedral, Wells Cathedral, Fifty Pictures of Gothic Altars, English Carol Book, The Necessity of Art, Art and Religion, Songs of Praise* and other collections; editor of the *English Hymnal* (1906).

DEBUSSY (*dŭ-büs-sē'*), **CLAUDE** (1862–1918). French composer, a pupil of Chopin, and educated at the Paris Conservatory where he thrice won the medal of the solfeggio class. From the time that a jury of the Academy refused to place some of his music on a program, he became an independent and capable composer. Some of his notable works are *Pelléas and Mélisande, Trois Nocturnes, Rhapsodie*, some *Masques*, many songs, and numerous piano pieces.

DECAMPS (*de-kon'*), **ALEXANDRE GABRIEL** (1803–1860). French painter of original genius, who offended the critics by departing from most of the acknowledged methods in art, and in reprisal he painted *The Monkey Connoisseurs*, a brilliant satire on the jury of award. He was a leader in the school which reproduced scenes with fidelity of color, such as *Joseph Sold by His Brethren, Moses Taken from the Nile*, and a series of scenes in the life of Samson. The Metropolitan Museum of New York has his *Midnight Watch at Smyrna*.

DEGAS (*dē-gä*), **HILAIRE-GERMAINE EDGARD** (1834–1917). A French impressionist artist; born in Paris; a pupil of Ingres; chief works are the *Absinthe Drinkers*, the *Danseuse assise*, and the *Danseuse* in the Luxembourg; *The Ballet in Robert le Diable* in London.

DE GOGORZA (*dē gŏ-gŏrtz'ä*), **EMILIO** (1874–). Spanish-American baritone singer, born in Brooklyn, educated in Spain, England, New York, and Paris; married Emma Eames (q. v.). Except for occasional tours abroad, he sang mainly in the United States, having made many transcontinental tours, after his début in New York with Mercella Sembrich in 1897. Because of his Spanish parentage, his French training, and mastery of languages, he sang almost equally well in Spanish, French, Italian, and English. His repertoire was very extensive.

DEJAZET (*dä-zhä-zä'*), **PAULINE VIRGINIE** (1798–1875). French player of youthful parts of great popularity from 1820 to 1868, when she retired. For many years she managed the Théatre Déjazet, formerly the Folies, where she continued even in old age to be immensely praised for her children's rôles.

DE KOVEN (*dē kō'ven*), **REGINALD** (1861–1920). At the age of 20 he was granted the degree of doctor of music at Oxford University, after which he studied in several European cities. In the United States he was musical critic for a number of publications, such as *Harper's Weekly* and the New York *World;* founded and conducted the Washington Symphony Orchestra (1902–05); and wrote 300 compositions, including music for light operas, songs, and orchestra pieces. Some of his operas are *Don Quixote, The Fencing Master, Rob Roy, The Golden Butterfly*, and *Robin Hood*, the last of which continues to be sung. Harry B. Smith wrote the librettos for most of his operas. *Oh, Promise Me* and *The Armorer's Song* have been popular lyrics. De Koven was born in Middletown, Conn.

DELACROIX (*d'-lah-krwäw*), **FERDINAND VICTOR EUGENE** (1798–1865). A French painter; chief of the Romantic school; born near Paris. In 1857 he was chosen by the Insitute to fill the place of Delaroche. He was an artist of great versatility. Among his works are *Lady Macbeth, The Massacre of*

Scio, Dante's Boat, and *Milton Dictating Paradise Lost.*

DELAROCHE (*d'-läh-rōsh'*), **HIPPOLYTE** (familiarly styled **PAUL**) (1797–1856). A French painter; born in Paris. His signal merits consist in correct drawing, brilliant and harmonious color, and great distinctness and perspicuity in treatment, rendering the story of his pictures at once intelligible. Among them are *The Princes in the Tower, Stafford Blessed by Archbishop Laud, Mazarin Playing Cards, Execution of Lady Jane Grey, Murder of the Duke of Guise, Joan of Arc in Prison,* and numerous portraits.

DELIUS (*dā'lē-ōs*), **FREDERICK** (1863–1934). A composer born in England of German parentage, and educated at Bradford and the International College, Isleworth. For several years he was an orange grower in Florida, then went to Leipzig for further musical study, and afterward lived in Paris. His compositions have been highly appreciated by musicians, including the operas *The Magic Fountain, Fennimore and Gerda,* and *A Village Romeo and Juliet;* choral works like *A Song of the High Hills, Sea Drift* and *Songs of Sunset;* and various shorter pieces for stringed instruments.

DELLA ROBBIA, ANDREA. See under ROBBIA.

DELLA ROBBIA, LUCA. See under ROBBIA.

DE LUCA, GIUSEPPE (1876–). Italian baritone singer, born in Rome, made his début as Valentin in *Faust* at Piacenza in 1897, spent eight seasons at the La Scala Theatre at Milan, and toured the chief European capitals. Appearing as Figaro in *The Barber of Seville* at the Metropolitan in New York in 1915, his fame was instantaneous. Among his important rôles are in *Rigoletto, Don Giovanni, Otello, Don Pasquale, Parsifal, Pagliacci,* and *Favorita.*

DERAIN, ANDRE (1880–). A French painter, friend of Picasso, Braque and other Cubist artists, but not greatly affected in his work by them. In both his landscapes and in his figure painting he shows more of the influence of the classics.

DESTINN (*des'tin*), **EMMY** (1878–1930). Born in Prague as Emmy Kittel, she took the name of her music teacher, Mme. Loewe Destinn. Her musical career began as a violinist, until remarkable voice and dramatic talent were revealed. She appeared at Berlin in 1898, next in London, and finally at the Metropolitan, New York. She won fame in *Cavalleria Rusticana, Salome, The Flying Dutchman, Madame Butterfly, Don Giovanni,* and *Aïda.*

DETAILLE (*de-täy'*), **JEAN BAPTISTE EDOUARD** (1848–1912). A French historical and military painter; born in Paris; a pupil of Meissonier. His works include *Conquerors,* which won him the Legion of Honor (1872); *In Retreat, Charge of the Cuirassiers at Morsbronn,* and the *Passing Regiment* in the Corcoran Gallery at Washington; *Skirmishing near Paris* and three others in New York; and equestrian portraits of Edward VII. and the duke of Connaught.

DICKINSON, CLARENCE (1873–). American organist and composer, born in Lafayette, Ind., educated in Chicago, and for years directed the choir of the Brick Presbyterian Church and Temple Bethel of New York; professor of ecclesiastical music at Union Theological Seminary from 1912. Some of his notable compositions are *The Medicine Man* (1895), about 150 sacred choruses, and many solos. With Mrs. Dickinson (Helene Adelle Snyder, Ph. D.) he wrote *Excursions in Musical History, Songs of the Troubadours, Technique and Art of Organ Playing,* and *Choirmaster's Guide.*

DOMENICHINI (*dō-men-ē-kē'nē*), **DOMENICO ZAMPIERI** (1581–1641). A distinguished Italian painter of the Bolognese school. His *Communion of St. Jerome* in the Vatican is considered among the finest works of the masters. He assisted Annibale Carracci on his Farnese frescoes at Rome.

DONATELLO (*don-ä-tel'lō*), **(DONATO BARDI)** (c. 1386–1466). One of the revivers of the art of sculpture in Italy; born and died in Florence; patronized by Cosimo de' Medici and pupil of Brunelleschi and Squarcione. His masterpiece is *St. George,* for San Michele in Florence. Other works are the bronze *David,* the *St. John,* the bust of Niccolo da Uzzano, and *Angel with the Tambourine.*

DONIZETTI (*dō-nē-dzet'te*), **GAETANO** (1798–1848). An Italian composer, many of whose sixty odd operas were immensely famous in his period. His first great success was *Anna Bolena* at Milan, but the *Marino Faliero* at Paris (1835) found the contemporary success of Bellini's *Puritani* too great a competition. Donizetti then went to Naples, where the same year his *Lucia di Lammermoor* became a wonderful favorite. Next again in Paris his most popular work, *La Fille du régiment* was produced at the Opéra Comique. Other great operas are *Lucrezia Borgia, Linda di Chamounix, La Favorite,* considered the most artistic opera, and *Don Pasquale.* Though many of his compositions show evidence of haste and lack of revision, his facility in music was very remarkable.

DONOGHUE, JOHN (1853–1903). An American sculptor; born in Chicago; studied there and at the Ecole des Beaux-Arts under Jouffroy. The *Young Sophocles Leading the Chorus after the Battle of Salamis* is considered one of the masterpieces of American sculpture. It is in the Chicago Art Institute. The *St. Paul* in the rotunda of the Congressional Library, the *Seraphim,* and the *Hunting Nymph* are among his best works.

DORE (*dō-rāy'*), **PAUL GUSTAVE** (1832–1883). French illustrator, painter, and sculptor, who for many years was in high regard in England and America. Some of the books he illustrated are Dante's *Inferno, Don Quixote, The Bible, Paradise Lost,* and *Fables of La Fontaine.* His statue of Dumas, and his paintings *Tobit and the Angel* and *Christ Leaving the Prætorium* are other well-known examples of his art.

DOUW (or **DOW**), **GERARD** (1613–1675). Dutch master of color and light effects in painting, who studied under Dolendo and Rembrandt. The skill of the latter is shown in Douw's portrait of himself, now in London, and also one of *Blind Tobit.* In the painting of portraits he took exact and elaborate pains, and eventually sitters could not wait the required time for him. Certain effects of artificial light in his work have hardly been excelled. For many of his pictures, he received large sums.

DREW, JOHN (1853–1927). An American actor; born in Philadephia; first appeared as Plumper in *Cool as a Cucumber* at the Arch Street Theatre (1874), then joined Daly's company in 1875 and became leading man in it (1879); played with Ada Rehan in Shakespearean plays, and after 1892 played under Charles Frohman.

DUBOIS (*dü-bwä'*), **PAUL** (1829–1905). A French sculptor and painter; born at Nogent-sur-Seine. His *Florentine Singer* in the Luxembourg, his equestrian statue of *Jeanne d'Arc* at Rheims, and his *Le connétable de Montmorency* at Chantilly are his chief works.

DUCCIO DI BUONINSEGNA (*dö'chō dē bwōn-ēn-sen'yä*) (c. 1255–1319). An Italian painter; founder of the Sienese school; born in Siena; learned his art at the hands of the best Byzantine masters. He became a master of composition, perspective, grouping, and light. His altarpiece, *Virgin and Child Enthroned,* and *Life of Christ* in 27 scenes, in Siena; the *Transfiguration, Annunciation, Healing the Blind,* and *A Madonna and Child* in London are his chief works. He was the first Italian painter of genius.

DUGMORE, ARTHUR RADCLIFFE (1870–). British photographer, who lived mainly in America after 1889, where he studied natural history under W. E. D. Scott, and in 1898 devised a method of taking photographs of wild life. On extensive world travels took pictures of animals and birds, and painted many of them. Wounded in the World War. Some of his numerous books are *Nature and the Camera, Camera Adventures in the African Wilds,* and various stories of nature study and animals for boys.

DUPRE (*dōō-prāy'*), **JULES** (1811–1889). A French painter; born in Nantes. He is one of the most original and powerful of the French school. His landscapes are very popular in this country. He was the most prominent of the Fontainebleau artists of 1830, known as the Romantic or Natural school, which included Rousseau, Corot, Delacroix, Millet, and others.

DURAND (*dū-rand'*), **ASHER BROWN** (1796–1886). An American painter; born at Jefferson, N. J.; an engraver until 1835; painted a series of heads of the presidents; took up landscape work and with Colo was the earliest of the first American school of landscape artists; founder of the National Academy and its president (1845–1861); chief works, *The Catskills from Hülsdale, Harvey Birch and Washington, A Mountain Forest,* and *Kaaterskill Clove.*

DURER (*dü'rer*), **ALBRECHT** (1471–1528). A German engraver and painter; born at Nuremberg. He is considered one of the earliest etchers. Among his more important copperplates (1494–1504) are *Adam and Eve, The Nativity, The Great Horse,* and

The Little Horse. His magnificent woodcuts of the *Apocalypse* and the *Prodigal Son* were made about 1500. His paintings, *The Adoration of the Magi* in the Uffizi, the portrait of himself in Munich, the *Crucifixion* at Dresden, and *The Feast of the Rosary,* and his portraits, including that of *Jerome Holzschuher* and *The Four Evangelists,* are a few of the works of a man who ranks in the history of art with Leonardo da Vinci and Michelangelo.

DUSE (*dōō-sāy'*), **ELEANORA** (1859–1924). An Italian actress; born in Vigevano. She played in all the principal countries of Europe and then visited the United States. She has played Juliet, Frou-frou, La Femme de Claude, Magda in *Heimat,* Santuzza in *Cavalleria Rusticana,* Mirandolina in *La locandiera,* Marguerite Gautier in *La dame aux camélias, Gioconda,* and *Francesca da Rimini.*

DUVENECK (*dū-ven-ek*), **FRANK** (1848–1919). An American artist; born in Covington, Ky.; studied in Munich under Dietz. He has exercised a great influence on American art as an instructor. In 1875 his group of portraits was exhibited at the Boston Art Club. His *Turkish Page, Circassian, Italian Girl, The Professor,* and many etchings of Venetian subjects are among his best works. He gave many of his works (1915) to the art gallery of Cincinnati, Ohio.

DVORAK (*dvōr'zhäk*), **ANTONIN** (1841–1904). A Bohemian composer; born near Kralup. Attention was first called to him by what remains his best work, a *Stabat Mater,* the most modern and one of the finest settings of this hymn. He came to the United States in 1892, and became director of the National Academy of Music in New York City until 1899; director of the Prague Conservatory (1901). His symphony *From the New World* was produced in New York in 1893. He has utilized the Hungarian music with all of its rhythms, intervals, sudden transitions, and wealth of harmony in his chamber music and songs.

EAMES (*āmz*), **EMMA** (1867–). A talented and popular American soprano; born in Shanghai, China; studied in Boston, Mass., under Miss Munger, in Paris under Mme. Marchesi, and in Brussels under Gevaert; made her début in Paris in *Romeo and Juliet,* having been rehearsed by Gounod himself (1889); became a prima donna at the Metropolitan Opera House in New York in the grand operas, especially in Wagnerian rôles, in which she has achieved great success.

ELGAR (*ĕl'gar*), **SIR EDWARD** (1857–1934). An eminent English music composer; born and educated at Worcester; son of W. H. Elgar, organist for many years of St. George's Roman Catholic Church there; attended Worcester Glee Club from boyhood; learned the violin and occasionally led the orchestra; bandmaster of the county lunatic asylum; began to compose in 1883. Among his more than 50 works is the setting of Cardinal Newman's hymn, *The Dream of Gerontius.* A three-day Elgar festival was held at Covent Garden, London, in 1904, in which year he was knighted. *The Apostles* was produced at Birmingham Festival in 1903, and at Cologne in 1904; oratorio, *The Kingdom,* in 1906, and a symphony in 1908.

EL GRECO (THEOTOCOPULI, DOMENICO) (c. 1542–1614). Spanish painter, called El Greco because he was of Greek parentage and was born in Grete. Much of his work is now at Toledo, where he lived most of his adult life. Of his early period, some of the great pictures are *The Healing of the Blind,* of which one version is now at Parma and a second at Dresden; *Christ Driving the Traders from the Temple,* of which one copy is now at Minneapolis; *The Assumption of the Virgin,* now in the Chicago Art Institute; *The Dead Christ,* now at the Prado; and *Stripping of Christ Before the Crucifixion,* in the cathedral at Toledo, Spain. Of the works of his middle and later periods, certain well-known pictures are *Burial of Count Orgaz,* at St. Tomé at Toledo; *St. Martin* and *The Virgin with Saints,* both in the Widener collection in Philadelphia; *St. Peter,* now in Washington; *The Lady with the Mantilla,* in the Johnson collection, Philadelphia; and the portrait of an old man, said to be the artist's self portrait, now in the Metropolitan Museum, New York. El Greco was a pupil of Titian, and in turn was greatly admired by Velasquez. His son and heir finished many of his incomplete pictures. In showing facial expression he was original and most effective. El Greco is said to have made small pictures in oil of his works before trying a large canvas and there are several versions of some of his pictures.

ELMAN, MISCHA (1891–). Having heard him play the violin while on a tour, Leopold Auer invited Elman to Leningrad for further study. For purity and distinction of tone he at once gained great renown in Russia, England, and after 1908 in the United States. Toured the United States several times, and in 1925 became a permanent resident in New York.

ELSHEIMER, ADAM (1579–1620). A German painter of Frankfort, who went to Munich in 1598, and shortly afterward to Italy, where he remained. At first influenced by painters of Flanders, he became a classic adherent in Rome, and later showed some influence of Caravaggio. Many of his pictures, which are small, were painted on copper. His influence on modern landscape art was great. *St. Paul at Lystra, Fall of Troy, Ceres,* and *Philemon and Baucis* are important pictures.

EMMETT, DANIEL DECATUR (1815–1904). An American negro minstrel and song composer; born at Mt. Vernon, Ohio; organized the *Virginia Minstrels* with Frank Brown, Whitlock, and Phelam (1842), opening at the Chatham Square Theatre in New York; wrote *Dixie* (1859), *Old Dan Tucker, The Road to Richmond, Boatman's Dance,* and *Walk Along, John.*

ENNIS, GEORGE PEARCE (1884–1936). American artist, educated at St. Louis and Chicago. Some of his chief works are the stained glass windows of the New York Athletic Club, Church of all Nations, New York, victory windows at U. S. Military Academy, West Point, and windows in many churches. Exhibited at New York, Philadelphia, Chicago, Buffalo; winner of several art prizes.

ETTY (*et'i*), **WILLIAM** (1787–1849). An English painter; born in York; studied under Lawrence and in Venice; R. A. in 1828. Among his works, which are marked by beauty and brilliance of color, are *Cleopatra* and *Youth on the Prow and Folly at the Helm,* three pictures of Judith, *Combat*—said to be his best—and a fine picture of *Joan of Arc.*

EVES, REGINALD GRENVILLE (1876–). English painter of portraits of celebrated persons, including Stanley Baldwin, Thomas Hardy, the Queen of Spain, Viscountess Churchill, Lady Diana Manners, Lord Sherborne, Viscountess Kurzon, and many others. He was born in London and received his art education at the Slade School, Oxford; won silver and gold medals for his paintings (1924–1926).

EYCK (*īk*), **HUBERT** (c. 1366–1426), **JAN VAN EYCK** (c. 1385–1441), and **MARGARET VAN EYCK** (c. 1377–1430). Eminent Flemish artists; founders of the early Flemish school; born at Maaseyck on the Maas. They were two brothers and sister. Tradition says they discovered the art of oil painting, but the art was known in the twelfth century. They discovered drying mediums and brilliant coloring. Their works include *The Adoration of the Lamb* at Ghent by Hubert; two said to have been painted by Jan are in the Metropolitan Museum in New York; Margaret, a member of the order of Our Lady of Ghent, led a retired life. She is believed to have painted a series of miniatures for the missal of the duke of Bedford.

EZEKIEL (*e-zē'ki-el*), **MOSES (JACOB)** (1844–1917). An American sculptor; born in Richmond, Va.; served in the Confederate army; studied sculpture at Berlin; won admission to the Society of Artists by his colossal bust of Washington; took the Michel Beer prize—the first foreigner to win it; settled in Rome. His *Religious Liberty* in Fairmount Park at Philadelphia, *Apollo and Mercury* in Berlin, *Judith* in Cincinnati, and the Jefferson monument at Louisville, Ky., are the best examples of his work.

FABRIANO (*fä-brē-ä'nō*), **GENTILE DA.** See GENTILE DA FABRIANO.

FAED (*fād*), **JOHN** (1819–1902). A Scottish painter; born at Burley Mill; a miniature painter in Edinburgh (1841–1849); settled in London; chief works are *The Cottar's Saturday Night, Shakespeare and his Contemporaries, The Soldier's Return, The Morning after Flodden,* and *An Incident of Scottish Justice.*

FAED, THOMAS (1826–1900). Brother of John Faed; born at Burley Mill; distinguished himself in his art studies at Edinburgh; went to London (1852), where his pictures of Scottish life won him a foremost place among those of his contemporaries. Among his works are *The Mitherless Bairn, The First Break in the Family, Faults on Both Sides, In Time of War,* and *Annie's Tryst.*

FALGUIÈRE (*fäl-gyar'*), **JEAN ALEXANDRE** (1831–1900). A French sculptor; pupil of Jouffroy; born at Toulouse. His chief works are *The Winner of the Cockfight, The Young Martyr Tarcisius, St. Vincent de Paul, Lamartine, Eve, Progress Abasing Error,* and *Poet Holding a Lyre.*

FANTIN-LATOUR (*fon-tan'lä-tör'*), **IGNACE HENRI JEAN THEODORE** (1836–1904). A French painter; born at Grenoble; friend of Ingres, Delacriox, Corot, Millet, Courbet, Leighton, and Millais; excelled as a portrait painter and in the delicate drawing of flowers. His works include *Hommage à Delacroix, Manet's Study at Batignolles, Coin de table, Autour du piano, Scene from Tannhäuser, Temptation of Saint Anthony,* and *Prelude to Lohengrin.*

FARINELLI (*fä-rē-nel'lē*) (1705–1782). A Neopolitan opera singer of most remarkable power and range of voice; his real name was Carlo Breschi, but he adopted that of his uncle Christiano Farinelli. All over Europe he sang before monarchs and people alike. He remained three years in England, went to Spain for a visit (1738), and stayed there at court for 25 years. Employed by the queen to charm Philip V. when he was melancholy, Farinelli sang the same four songs to him almost every night for nearly ten years. Under Frederick VI. he continued in favor, was decorated, and inspired the king to establish an Italian opera. Charles III. asked him to leave Spain, but paid his salary on condition that he would live at Bologna instead of at Naples.

FARRAR (*făr'ăr*), **GERALDINE** (1882–). American singer, born in New Haven, Conn., educated in Paris under Trabedello and in Berlin under Lilli Lehmann. At 19 she made her first appearance on the operatic stage in Berlin as Marguerite in *Faust.* From 1906 to her retirement in 1922 she sang at the Metropolitan, New York; in 1927 she reappeared with her own company on tour. Some of her famous parts are Mme. Butterfly, Manon, Mignon, Elizabeth, Tosca, and Violetta.

FARWELL, ARTHUR (1872–). He was born at Minneapolis, educated in Berlin under Humperdinck and in Paris under Guilmant; he returned to the United States, and directed various musical projects, lectured, and taught at Cornell, University of California, and elsewhere. He composed *American Indian Melodies, Folk Songs of the South and West,* incidental music for *Joseph and his Brethren, The Garden of Paradise,* the mask *Caliban,* and a *Pilgrimage Play* at Hollywood, Calif.

FECHTER (*fech'ter*), **CHARLES ALBERT** (1824–1879). An Anglo-French actor; born at Paris. He excelled in *Ruy Blas, The Corsican Brothers, Hamlet, Othello, Duke's Motto,* and *No Thoroughfare;* came to the United States in 1870, where his acting was most popular, but his attempts at management were unsuccessful. He was forced to retire from the stage because of an accident, which left him permanently lame, and died in Pennsylvania.

FERRIS, JEAN LEON GEROME (1863–1930). For many years he devoted his attention to a series of paintings representing American history in 1865; and in 1917 the city of Philadelphia, his home, built a special gallery in Congress Hall to accommodate his series of seventy pictures. He also made a special study of early vehicles, ships, and ordnance, the models of which are also in Philadelphia. Ferris studied under S. J. Ferris, in Paris under Bouguereau and was a private pupil of J. L. Gérôme.

FEUERBACK (*foi'er-bäćh*), **ANSELM** (1829–1880). Inspired by the ideals of French art, this German painter also studied at Munich, Vienna, and Rome. He sought to revive old classic methods, and to excell in large pictures, but he is now highest in favor for portraits and landscapes. In 1873 he accepted a position as teacher at the Vienna Academy, and a commission to decorate the ceiling of the building with the *Wars of the Titans,* a work never completed. Some of his best pictures are entitled *Dante Walking with the Noble Ladies of Ravenna* (1857), *Dante's Death* (1858), the coloring of which is admirable; *Plato's Symposium* and *Iphigenia,* which are more in the old classic style; *Hafiz at the Well* and *Death of Aretino* (1854), two earlier works more in the French tradition.

FIELD, JOHN (1782–1837). A British composer; born in Dublin; remembered for his "nocturnes," which greatly influenced Chopin. Except for four years (1831–1835), after 1820 he lived in Moscow. Though his more ambitious work is now forgotten, some of the nocturnes for the piano are still highly admired by musicians.

FILDES (*fīldz*), **LUKE** (1844–1927). An English artist; born at Liverpool; contributed to various magazines and illustrated books, notably Dickens's *Edwin Drood.* His most noted pictures are *The Poor of London, The Widower,* and *The Doctor,* and coronation portraits of Edward VII and Queen Alexandria and of George V. He was knighted in 1906.

FINBERG, ALEXANDER JOSEPH (1866–). After studying art at Lambeth and Paris, he exhibited some works in black and white, and wrote criticism for many journals, such as the *London Graphic* and *Illustrated London News.* In 1905 the trustees of the National Gallery invited him to complete the arrangement of drawings made by J. M. W. Turner and partly collected by Ruskin, and Sir Joseph Duveen built a special gallery to house them. He also wrote *The English Water Colour Painters, The Drawings of David Cox, Ingres,* and several books on the art of Turner.

FISKE, MINNIE MADDERN (1865–1932). An American actress; born at New Orleans, La.; played Françoise in *Richelieu* when only 12 years old; at 16 appeared as a star in *Fogg's Ferry;* married Harrison Grey Fiske, editor of the New York *Dramatic Mirror* (1890); played the title rôles in *Tess of the d'Urbervilles, Becky Sharp, Leah Kleschna,* and *Roshmerholm.* With Henrietta Crosman, Otis Skinner, and other favorite stars, she made a notable tour of the country in 1927–28 with a revival of *The Merry Wives of Windsor.*

FLAGG, ERNEST (1857–). American designer and architect of the Singer Building, New York, the highest tower in New York at the time (612 feet, 1908), St. Luke's Hospital, the Corcoran Art Gallery at Washington, and some buildings of the Naval Academy at Annapolis. Later he used some new methods in designing and constructing small but strong houses, described in his book *Small Houses—Their Economic Design and Construction.*

FLAGG, JAMES MONTGOMERY (1877–). Artist and author, born near New York, and studied there and in England. For years he acted as illustrator for *St. Nicholas* and other magazines, produced a series of popular cartoons for the newspapers, and painted various portraits in Paris, New York, and St. Louis. Appointed military artist of New York by Governor Whitman, he designed a set of 45 posters for the World War.

FLANDRIN (*flŏn-drin'*), **JEAN HIPPOLYTE** (1809–1864). A French painter; born in Lyons, France. Among his chief works are the fine series of frescoes in the churches of St. Germain-des-Près and St. Vincent de Paul, Paris, which are reckoned among the masterpieces of modern painting. He was the favorite pupil of Ingres, and his works show a mystic tendency. *Christ Going up to Jerusalem, Christ Going to Calvary,* and *Recognition of Theseus* are among his best works.

FLAXMAN (*flaks'măn*), **JOHN** (1755–1826). An English sculptor and draughtsman; born in York. The monuments to Nelson and Howe in St. Paul's are by his hand. One of his finest productions is the *Shield of Achilles;* elected R. A. (1800); and became professor of art in a special chair created by the National Academy (1810). Some of his greatest works are monuments of Sir Joshua Reynolds, Captain Webbe, Lord Cornwallis, and Sir John Moore. He also made a series of designs to illustrate the classics, and they were executed by others.

FLEMING, BRYANT (1877–). Landscape architect, educated at Cornell, where he acted as professor (1904–15); planned the restoration of Watkins Glen, N. Y., certain historic monuments, improvements at San Juan, Porto Rico, and changes in many private estates, including those of V. Everitt Macy and Andrew Carnegie.

FLOTOW (*flō'tō*), **FREDERICK FERDINAND ADOLPHUS VON** (1812–1883). A German composer of operas; born at Teutendorf. His best known work is *Martha.* The best among his later operas are *Indra, La veuve Grapin,* and *L'ombre.*

FOLEY (*fō'li*), **JOHN HENRY** (1818–1874). Sculptor born in Dublin, where he studied and then exhibited at the Royal Academy, London, after further study there. Among his notable works are *John Hampden* and *Selden* in the Houses of Parliament, *Sir James Outram* at Calcutta, *Prince Albert* in Hyde Park, London, *Stonewall Jackson* at Richmond, Va., *Goldsmith, Edmund Burke,* and in more fanciful style, *Ino and Bacchus, Asia, Innocence,* and *Death of Abel*

FONTANA (*fon-tä'nä*), **DOMENICO** (1543–1607). An Italian architect. Under Pope Sixtus V. he erected the Egyptian obelisk in front of St. Peter's, Rome (1586), and later built the Lateran Palace, the Vatican Library, and the Royal Palace at Naples.

FONTANA, PROSPERO (1512–1597). An Italian painter who was the pupil of Vasari and adopted his master's style. Much of his work still remains at Bologna, including an *Entombment* and *St. Alessis Distributing Alms*. As a portrait artist he was greatly excelled by his daughter, Lavinia (1552–1614), who painted a large number of the ladies of Bologna and Rome. Both she and her husband, Paola Giovanni, who helped her in some of her portrait work, studied under her father.

FOOTE, ARTHUR (1853–1937). An American musician and composer; born at Salem, Mass.; studied under Paine; settled in Boston and studied under Lang; organist of the First Unitarian Church at Boston (1878–1910). Among his work are chorus and orchestra accompaniment of Longfellow's *Farewell of Hiawatha, Wreck of the Hesperus*, and *Skeleton in Armor;* overtures; piano music; and vocal works.

FORBES-ROBERTSON, JOHNSTONE (1853–1937). From his first appearance in *Mary, Queen of Scots* (1874) to his retirement in 1915, he played in many important rôles. He studied under Samuel Phelps, appeared with Irving at various times, with the Bancrofts, John Hare, Mrs. Patrick Campbell, Helen Modjeska, and after 1900 with Gertrude Elliott whom he married in that year. Important engagements were those of Pinero's *The Profligate, Romeo and Juliet, Hamlet, Macbeth, The Light that Failed, Caesar* and *Cleopatra*, and *The Passing of the Third Floor Back*. He appeared in the United States and Canada in 1910 and on his farewell tour in 1915. In 1913 he was knighted.

FORD, GEORGE BURDETT (1879–1930). American expert in city planning and art; consultant in rebuilding of French cities after the World War, and received the honor of a Chevalier; and lectured on town planning at Columbia (1914–16). He acted as adviser for 70 cities, including New Haven, Conn., Omaha, Nebr., Louisville and Lexington, Ky., Cincinnati and Dayton, O., Richmond and Norfolk, Va., and Wilmington, Del.

FORREST, EDWIN (1806–1872). An American actor; born in Philadelphia, Pa. He played with remarkable success in Europe and the United States; in 1871 retired from the stage. His first appearance was at the Walnut Street Theatre in Philadelphia as young Norval in Home's *Douglas* (1820). He played Shakespearean rôles in New York with great success. In 1849 the jealousy between him and Macready culminated in the Astor Place riots, which caused the 7th Regiment to be called out, and resulted in the death of a score of people and the wounding of many more.

FORTUNY (*fôr-tö'nē*), **MARIANO JOSE MARIA BERNARDO** (1838–1874). A Spanish painter; born at Réus, Catalonia; studied at Rome. His *Mendicant, Don Quixote, The Hindu Snake Charmer*, and *An Ecclesiastic* are in Baltimore. His *Camels at Rest, The Serpent Charmer*, and a *Lady in Black* are at the Metropolitan Museum in New York.

FOSTER, BENJAMIN (1852–1926). An American landscape and animal painter; born at North Anson, Me.; studied under Thayer in New York and with Merson and Corot in Paris; is especially strong in his hazy moonlit scenes and in seascapes; member of the National Academy (1904) and of its Council (1905).

FOSTER, STEPHEN COLLINS (1826–1864). Probably the greatest composer of American negro melodies and folk songs that America has produced. He was born in Pittsburgh, Pa., studied at Athens Academy, and for some months at Jefferson College, Canonsburg, Pa. By 1852 he had decided to give much of his time to what he called Ethiopian music. For four years (1846–50) he worked as a bookkeeper in Cincinnati, and in 1860 went to New York, where his death four years later was accidental. Of his 175 compositions, for which he usually wrote both words and music, some of the most popular sentimental pieces were *Open Thy Lattice, Love, Come Where My Love Lies Dreaming;* his best humorous song *De Camptown Races*, once immensely popular; and his folk-ballads *Uncle Ned* (1848), *Nelly Bly* (1849), *Swanee River* (Old Folks at Home) (1851), *Massa's in the Cold, Cold Ground* (1852), *Old Kentucky Home* (1853), and *Old Black Joe* (1860).

FOUCQUET (*fö-kā'*), **JEAN** (c. 1415–1485). A French painter; born at Tours; studied in Italy; court painter to Louis XI. Among his works are a miniature *Adoration of the Magi* at Chantilly, portraits at Paris and Berlin, and a series of 40 miniatures for Etienne Chevalier's *Book of Hours*. He was notable for the minute rendering of details and also for some fine altarpieces.

FOWLER, FRANK (1852–1910). An American painter; born in Brooklyn, N. Y.; studied with Edward White at Florence, with Carolus-Duran and at the École des Beaux-Arts in Paris; assisted Carolus-Duran on a ceiling for the palace of the Luxembourg, now in Louvre; settled in New York (1879); member of the National Academy (1899); noted for his portraits of celebrities and a decorative ceiling in the ball room of the Waldorf-Astoria.

FRAGONARD, (*frà'gô-nàr'*), **JEAN-HONORE** (1732–1806). French painter, noted for his facility with the brush and in coloring; in recent years has become increasingly popular. Living at the court of Louis XV., he took on much of the life of that brilliant company, until the Revolution drove him to Grasse in 1793. Some of his works now greatly admired are *Serment d'amour, Le Verrou*, decorations for the homes of Maubert, his friend, at Grasse and Mme. du Barry in Paris. Some of the panels at Grasse are now in the Frick Collection, New York. Most European galleries have some of his canvases.

FRANCESCHINI (*frän-ches-kē'nē*), **MARCO ANTONIO** (1648–1729). Painter born at Bologna, Italy, who was called to Rome, Genoa, Parma, and other cities to execute art commissions. Pope Clement XI. made him a knight for painting certain mosaics in St. Peter's. Some of his best work is in the church of Corpus Domini at Bologna, where he attained a great reputation for coloring and for originality of design in his groups.

FRANCIA (*frän chä*), (**FRANCESCO RAIBOLINI**) (c. 1450–1517). Eminent painter of the early Bolognese group, represented in the National Gallery of England by *Virgin and Child of St. Anna and Pieta;* in Munich by *The Madonna within the Rose Garden;* in Rome by *St. Stephen* in the Borghese Gallery; and in Bologna by some frescoes in the church of St. Cecilia. He faithfully studied the old masters, was an enthusiastic friend of Raphael, who pronounced Francia's Madonnas unexcelled by few great artists, and he in turn trained a host of pupils, including two of his own sons.

FRANCK, CESAR (1822–1890). Composer of Belgian-German birth, who lived in Paris after 1837, and became a naturalized subject in 1873, the year after he was appointed professor of organ at the Paris Conservatory, where he had been a student in 1837. Many of the greatest organists of recent times were his pupils, and as a finished and conscientious composer his influence was far reaching. A few of his many notable works are *Ruth* (1846), a biblical cantata; *Rebecca* (1881), an arrangement for solo, chorus, and orchestra; *Psyche* (1888), for orchestra and chorus; and many smaller pieces for violin, piano, and orchestra.

FRANZ (*fräntz*), **ROBERT** (1815–1892). A German musician; born in Halle, Prussia. He was famous for his songs, which were of a peculiar lyric beauty and number about 250. His first published composition appeared in 1843. His later years were spent in editing the works of Bach, Handel, and others.

FREMIET (*frā-myā*), **EMMANUEL** (1824–1910). A French sculptor; born in Paris; nephew and pupil of Rude. Among his best works are *Joan of Arc* at Paris, *Joan of Arc* and *Condé* at Nancy, *Velasquez* at Paris, *Lesseps* at the entrance of the Suez Canal, *Ourang-Outang and Borneo Savage*, and his earlier *Wounded Bear* and *Wounded Dog*, both of which are in the Luxembourg Museum.

FRENCH, DANIEL CHESTER (1850–1931). An American sculptor; born at Exeter, N. H.; studied with J. Q. A. Ward and in Florence and Paris. Among his works are *Minute Man;* busts of Emerson, Alcott, Hunt, and John Boyle O'Reilly; groups on the St. Louis Customhouse, the Philadelphia Courthouse, the Boston Post Office, and the New York Customhouse; *The Angel of Death and the Young Sculptor, The Republic*, and *Alma Mater* at Columbia University; statues of John Harvard, Rufus Choate, Thomas Starr King, and General Cass. His *Washington* in collaboration with Potter was presented to France by the Daughters of the Revolution. His group of *Doctor Gallaudet and his First Deaf Mute Pupil* is in Wash-

ington. He finished his statue of Lincoln for the Memorial at Washington in 1920 and that of Lafayette in 1922.

FREMSTAD, OLIVE (1870–). Dramatic soprano, born in Sweden, educated at Oslo, and at 12 came to America, beginning her musical education in New York in 1890, and later studied under Lilli Lehmann in Berlin. Making her début in *Il Trovatore* at Cologne (1895), she soon sang in various cities of Europe, being engaged at Munich for three years (1900–03), and singing at Covent Garden, London. After 1903, when she made her New York appearance in *Die Walküre*, she appeared in many Wagnerian and other rôles.

FRITH, WILLIAM POWELL (1819–1909). An English painter; born at Aldfield, Yorkshire; elected A. R. A. (1845) and R. A. (1853). Among his best works are *Ramsgate Sands, The Derby Day, The Railway Station, The Marriage of the Prince of Wales*, and *The Road to Ruin*.

FROHMAN, CHARLES (1858–1915). An American theatrical manager; born in Sandusky, Ohio; began at 18 as manager of one of Haverly's minstrel troupes; leased Madison Square Theatre (1890); opened the Empire with Belasco's *The Girl I Left Behind Me* (1893); manager, lessee, or owner of several theaters in New York and London; perished on the *Lusitania*.

FROHAWK, FREDERICK WILLIAM (1861–). British artist and zoölogist, who was reproduced many birds and animals in oils, watercolors, lithography, and black and white; illustrator on ornithology and reptiles for *Britannica, The Field*, and various journals. Some of his works are *Birds of the Sandwich Islands, Birds with their Nests and Eggs, Geese of Europe and Asia*, and *Natural History of Butterflies*.

FROMENTIN (*frō-mon-tan'*), **EUGENE** (1820–1876). A French painter and writer; born in La Rochelle. His *Crossing the Ford* and *Arabs Watering Horses* are in New York, and his *Encampment in the Atlas Mountains* is in Baltimore. His *Les maîtres d'autrefois* is the sole masterpiece of art criticism published in France in the nineteenth century.

FULLER, GEORGE (1822–1884). An American painter; born at Deerfield, Mass.; studied under Henry Kirke Brown at Albany, N. Y., and abroad; noted for his portraits. Among his other works are *A Turkey Pasture in Kentucky, And She Was a Witch*, and *Winifred Dysart;* member of the National Academy (1857).

FURSCH-MADI (*försh'-mä-dē*), **EMMA** (1847–1894). A French soprano singer; born at Bayonne; sang the leading soprano parts in *Aïda, Don Giovanni, Huguenots, Trovatore*, and others in France, England, and in the United States from 1884 till 1894.

GADE (*gä'de*), **NIELS WILHELM** (1817–1890). A Danish musical composer; born at Copenhagen; studied at Leipzig and formed a friendship with Mendelssohn; with Hartmann founded the conservatory at Copenhagen (1865). His best works include *Michael Angelo*, an overture; eight symphonies; several compositions for piano and for strings; and cantatas, such as *Spring Message, Spring Fantasy, Psyche*, and *The Erlking's Daughter*.

GADSKI (*gät'skĭ*), **JOHANNA** (1872–1932). A German soprano singer; born at Anclam; sang Brunhilde in the Metropolitan Opera House at New York (1896) and for several years sang leading parts there; a popular singer of German *Lieder*. She is greatest in Brunhilde in the *Ring*, Eva in *Die Meistersinger*, and Senta in *The Flying Dutchman*. She married Hans Tauscher of Berlin in 1892. After her retirement from the stage (1917) she acted as teacher and adviser to young artists.

GAINSBOROUGH (*gainz'bro*), **THOMAS** (1727–1788). An eminent English landscape and portrait painter; born at Sudbury; became a fashionable portrait painter at Bath (1760); one of the 36 original members of the Royal Academy; settled in London (1774). He painted more than 300 canvases, of which 220 were portraits. The portrait of the *Duchess of Devonshire* was bought for £10,065. It was cut from the frame in the galleries of Thomas Agnew and Sons by a thief (1876) and recovered in the United States (1901). It is now in the collection of Mr. J. Pierpont Morgan of New York. *A Landscape with Figures* is in the Chicago Art Institute; and two "Landscapes," *Mr. Borroughs*, and *A Child with Cat* are in the Metropolitan Museum at New York.

GALLI-CURCI (*gäl-lee-koor'-chee*), **AMELITA** (1889–). Italian-American coloratura soprano of great smoothness, range, and sweetness of voice, who was born in Milan, Italy, of Italian and Spanish parentage. In the Royal Conservatory, she studied piano and harmony; but for her singing she had no definite teacher. She made her début at Rome in 1909 in *Rigoletto*, toured Europe and South America, and in 1916 was engaged by the Chicago Opera Company, with which she appeared for four seasons. In 1919 she joined the Metropolitan Opera Company. Some of her chief parts are Juliette in *Romeo and Juliette*, Lucia in *Lucia di Lammermoor*, Mimi in *La Bohème*, and Leila in the *Pearl Fishers*.

GARCIA (*gär-thē'ä*), **MANOEL (DEL POPOLO VINCENTE)** (1775–1832). Spanish composer, singer, and teacher, already known as a composer of light operas, appeared at Paris in 1808 in *Griselda*. At Naples, again at Paris, and later in London he acquired great fame, producing many operas of his own. Yet his ability as a teacher in London overshadows his work as a performer. His eldest daughter was the celebrated Madame Malibran (q. v.), and his son, also a great teacher, died in London in 1906 at the age of 101. The son was the inventor of the laryngoscope.

GARDEN, MARY (1877–). General director of the Chicago Opera Company (1921–22), and member of the company from 1910, Mary Garden achieved a notable following in parts like Thaïs, Salomé, Mélisande, and Louise. She was born in Aberdeen, Scotland, came to America with her parents at six, and lived in Chicago. After study under Trabadello, Chevalier, and Fougère in Paris, she made her first appearance at the Opéra Comique in 1900 as Louise.

GARRICK (*gar'ik*), **DAVID** (1717–1779). English actor and manager, regarded as the greatest tragedian of his age, from youth had a passion for acting. Born in Litchfield, he became a pupil of Samuel Johnson, and went with him to seek fortune in London in 1737. Garrick appeared *incognito* in 1741 at a London theatre, having already written a dramatic piece, *Æsop in the Shades*. His first great success was in *Richard III*. Later he acted in London, Dublin, and the provinces, remaining at Drury Lane for 30 years, but acted only little after 1766. During much of the time he managed the playhouse. He produced 24 Shakespeare plays, in 17 of which he took star parts, made four volumes of adaptations or original plays, revised Shakespeare to suit the taste of the age; as manager he missed few notable hits, unless it be Goldsmith's *Good Natured Man*, which he refused to stage.

GATTI-CASAZZA (*gät-ty-kä'säz-zä*), **GIULIO** (1869–1940). Operatic director, who was educated in Italy, where he was born at Udine, being trained as an engineer, but took up music and literature privately. For five years he directed the municipal theater and music of Ferrara, and for ten following (1898–1908) the Scala at Milan. Caruso and Chaliapin appeared under his management. In 1908 he began to direct the Metropolitan Opera of New York.

GAUGUIN, PAUL (1848–1903). A French painter, who departed from the Impressionism of his time, and developed what was often called Synthesism, which greatly influenced some of his friends. He spent some years in a banking firm of Paris, married a Danish lady, lived for two years in Martinique, and after 1891 mainly at Tahiti and the Marquesas in the South Pacific, where he died. He was an exponent of the use of brilliant colors. Among his best works are *Le Christe, Jeune, Seule, Devant le Case*, and a huge canvas which was designed to be his great masterpiece completed just before his sad death.

GAY, EDWARD (1837–1928). For his *Broad Acres* the Metropolitan prize of $2,000 was awarded to him in 1887. It is now in New York. Among his other large canvases are *Washed by the Sea, Atlantis, Where Sea and Meadow Meet*, now in the Governor's Mansion at Albany, and *Waving Grain*, now at Minneapolis.

GAY, WALTER (1856–1937). An American artist; born at Hingham, Mass.; studied with Bonnat in Paris. His *Fencing Lesson* was exhibited at the Salon (1879); his *Bénédicité* was purchased by the French Government and given to the Amiens museum; his *Las Cigarreras* is in the Luxembourg; his *Spinners* is in the Metropolitan Museum at New York; and there are some highly representative pieces in the Tate collection in London and in the Boston Museum of Fine Arts.

GEIBEL (*gī bel*), **ADAM** (1855–1933). Celebrated blind composer of sacred music, who was born in Germany, was blinded at the age of 9 days, studied under David D. Wood in Philadelphia, and became a church organist and teacher of music. Some of his compositions are a collection of songs for men, a similar one for

ladies. *The Nativity, Light out of Darkness, The Lord of Glory, Heavenly Glory,* all sacred cantatas, the *Philadelphia Sesquicentennial Ode,* and several noted hymns.

GERARD, FRANCOIS, BARON (1770–1837). A French painter; born at Rome, of French and Italian parentage. In 1795 his *Blind Belisarius* brought him to the front, while subsequent work as a portrait painter raised him above all his contemporaries. His masterpiece, *Entry of Henry IV. into Paris,* brought him a barony at the hands of Louis XVIII. His historical paintings characterized by minute accuracy of detail, include *Napoleon in his Coronation Robes* and *Battle of Austerlitz.*

GENTILE DA FABRIANO (c. 1370–1427). Italian painter, the first great Umbrian master, who painted for Venice a series of frescoes dealing with the life of Barbarossa. For these he was allowed to wear the dress of a noble of Venice and awarded a life pension. In Florence he painted the *Adoration of the Magi,* now in the Uffizi, a *Madonna,* now in Berlin; a *Madonna with Angels,* now owned by the king of England and lent to the National Gallery of London. The freshness and refinement of his paintings greatly influenced the history of Venetian art.

GERMAN, EDWARD (1862–1936). English composer, whose music to *King Richard III.* pleased Sir Henry Irving so much that he asked for music for *Henry VIII.* Afterward (1892) German gave all his time to writing, and among his numerous works are the *Gypsy Suite,* the symphonic poem, *Hamlet, Welsh Rhapsody, Coronation March and Hymn, Moon Fairies,* and *Just So Song Book.*

GEROME (*zhȳ-rōmé*), **JEAN LEON** (1824–1904). A celebrated French painter and sculptor; born at Vesoul. He studied at Paris under Paul Delaroche, with whom he subsequently traveled in Italy. Among his most famous pictures, all characterized by vivid coloring and strong dramatic effect, are *The Age of Augustus and the Birth of Christ, Roman Gladiators before Cæsar,* and *Cleopatra and Cæsar. His Abyssinian Chief* and *Sheik at Devotions* are at the Metropolitan Museum; *Louis XIV. and the Grand Condé* is also in New York; *The Duel after the Masquerade* is in the Walters collection at Baltimore; and his *Cæsar Dead* is in the Corcoran Art Gallery in Washington.

GERSTER, ETELKA (1857–1920). Celebrated Hungarian contralto singer, a pupil of Mme. Marchesi. She made her début in Venice in 1876, and in the following year married Carlo Gardini. For high and flexible voice, dramatic qualities, and pleasing stage presence, she was a great favorite until her retirement in 1890. After 1896 she maintained a school for singers in Berlin.

GHIBERTI (*gē-bâr'tē*), **LORENZO** (1378–1455). An Italian sculptor and designer; born at Florence. His most famous achievement, which immortalized his name, was the execution of two doors with bas-relief designs in the baptistry at Florence. He spent 21 years at this work, and so noble were the designs and so perfect the execution that Michelangelo declared them fit to be the gates of Paradise.

GHIRLANDAJO (*gēr-län-dä'yō*), **DOMENICO (BIGORDI)** (1449–1494). An Italian painter; born at Florence. He was a painter of amazing facility, as shown by his *Visitation* in the Louvre; his *Adoration of the Magi* in the Church of the Innocents at Florence; his *Birth of John the Baptist* in the Church of Santa Maria Novella at Florence; and his fresco, *The Last Supper,* in the Church of the Ognisanti at Florence. His son Ridolfo (1483–1561) became a celebrated painter of large canvases, of which *The Procession to Calvary* is in the National Gallery of London; a *Coronation of the Virgin* is in the Louvre, Paris; and a *Nativity* is in the Hermitage, Leningrad.

GIBSON, CHARLES DANA (1867–). An American illustrator and artist, who created a series of pictures of the American girl, which attained an enormous vogue. Later he drew pictures for an edition of *The Prisoner of Zenda,* and 52 drawings for *Collier's Weekly* for $50,000, said to have been a record price at the time. For several years after 1905 he dropped illustration for painting in oils, later coming back to his first style. In 1920 he acquired a large interest in *Life,* for which he had made some of his earlier drawings.

GIBSON, JOHN (1790–1866). Sculptor born in Wales, encouraged by the great Canova, but began work without definite technical training. Yet his first figure, *Sleeping Shepherd,* in its way is a masterpiece. Some of his great works are *Hunter and Dog, Theseus Cana, Lucia, Lucrezia Borgia, Francesca da Rimini, Queen Victoria,* and *George Stephenson.* He was the first Englishman to tint sculptures, his *Venus* and *Cupid Tormenting the Soul* being examples of this type. Harriet Hosmer, the American sculptor, was the only pupil he ever trained.

GIFFORD, SANFORD ROBINSON (1823–1880). An American artist; born in Greenfield, N. Y.; traveled and studied abroad. His works include *San Giorgio, Venice, Ruins of the Parthenon, Tivoli, The Golden Horn, Morning on the Adirondacks, Sunset on the Hudson,* and *Mount Rainier.*

GIGLI, BENIAMINO (1890–). Tenor, born in Italy and studied in Rome under Enrico Rosati. Made his appearance on the stage at Rovigo, Italy, 1915, and afterwards sang in Europe, South and Central America, and came to the Metropolitan, New York, in 1920. Some of his parts are in *Cavalleria Rusticana, Lucia, Lucrezia Borgia, Francesca da Rimini, Lohengrin, Madame Butterfly, Pagliacci* and others.

GILBERT, CASS (1859–1934). Among the many notable public structures designed by this American architect are the Minnesota State Capitol; Custom House and Union Club, New York; Central Public Library, St. Louis; Ives Library of New Haven, Conn.; Universities of Minnesota and Texas. In 1926 he was appointed to design the proposed bridge over the Hudson at New York, being that year elected president of the National Academy of Design. He was also the architect of the Woolworth Building, 760 feet high, New York. Gilbert was born in Zanesville, Ohio, trained at the Massachusetts Institute of Technology, and began practice at St. Paul, Minn.

GILLETTE (*ji-let'*), **WILLIAM HOOKER** (1855–1937). An American actor and playwright; born at Hartford, Conn.; played *The Private Secretary, The Professor, Esmeralda, A Legal Wreck, Held by the Enemy, Too Much Johnson, Mr. Wilkinson's Widows, All the Comforts of Home, Because She Loved Him So, Clarice Morland, Secret Service,* and *Sherlock Holmes,* all his own plays in which he took the leading part. Gillette was best in comedies featuring a calm, resourceful man of affairs.

GIORDANO (*jōr-dä'no*), **LUCA** (1632–1705). Italian painter, born in Naples, spent much time copying the old masters, making 20 versions of the great Battle of Constantine by Romano and nearly as many of some pictures of Raphael and Michelangelo. For eight years he lived by invitation at the court of Charles II. of Spain. In fresco he was a leader of his age, perhaps his best known design being that of the ceiling of the Medici Palace. As a painter on glass and the borders of cabinets, he achieved great fame. Other well known works are the early *Slaughter of the Priests of Baal, Moses and the Brazen Serpent,* a fresco, *Triumphs of the Church,* a fresco at Madrid, and *Celebrated Women of the Scriptures,* all of them being large and impressive designs.

GIORGIONE (*jor-jō'ne*) (c. 1478–1510). A Venetian painter born at Castelfranco. He was one of the seven supreme colorists of Renaissance; studied with Giovanni Bellini. His authentic works are *The Madonna with Saints Francis and Liberale* at Castelfranco, *The Sleeping Venus* at Dresden, *Fête Champêtre* in the Louvre, *The Family of Giorgione, The Three Philosophers* and *The Concert.*

GIOTTO (*jot'tō*), **DI BONDONE** (1266–1337). A great Italian painter; born at a village near Florence; was a shepherd's boy. While tending his flock and drawing pictures of his sheep, it is said he was discovered by Cimabue, who took him home and made a pupil of him. That he was a pupil of Cimabue is now discredited. Ruskin says of him: "His special character among the great painters of Italy was that he was a practical person; what others dreamed of he did; he could work in mosaic, he could work in marble, and paint; could build . . . built the Campanile of the Duomo, because he was then the best master of sculpture, painting, and architecture in Florence, and supposed in such business to be without a superior in the world."

GIULIO ROMANO (*jö'lē-ō rō-mä'nō*) (1499–1546). He was also called Giulio Pippi, his name in full being Giulio di Pietro di Filippo de' Giannuzzi. Raphael made him a chief pupil, gave him work to finish from the master's designs and left to him and Penni his painting implements and art works. Giulio finished the frescoing of the *Hall of Constantine* in the Vatican, containing four major pictures. About 1525 he went to Mantua and there executed many commis-

sions for the duke in painting, architecture, and sanitation. He was called "the prince of decorators." Of his works in oil, the *Martyrdom of Stephen, Holy Family*, and *St. Margaret* have been highly praised. His self-portrait is in the Uffizi, Florence.

GLUCK (*glŏŏk*), **ALMA** (1884–1938). An opera singer, who was brought to America when six from Roumania, her birthplace; maiden name was Reba Fiersohn; married Efrem Zimbalist, the violinist (q. v.). Studied at the Normal College, N. Y., and Union College, Schenectady. Début in 1909 in Werther, and sang 11 rôles in the first season, and has often sung since at the Metropolitan Opera House, and on the concert stage.

GLUCK (*glŏk*), **CHRISTOPH WILLIBALD** (1714–1787). A German composer. He conjoined with himself in his labors the poet Ranieri di Calzabigi, and his opera, *Orpheus and Eurydice*, was received with tumults of applause. In 1774 he went to Paris and presented there successively several masterpieces, including *Alcestis, Paris and Helen, Iphigenia in Aulis, Armida, Bauci e Filemone*, and *Echo and Narcissus*.

GODARD (*goh dahr*), **BENJAMIN** (1849–1895). French composer educated at Paris and in Germany. Early works for the violin won a prize from the Institut de France. Later he turned to operas, among which were *Jeanne d'Arc, La Vivandière, Les Guelphes*, and other compositions like the *Symphonie-ballet* and the lyrical *et Actéon*.

GODOWSKY (*gō-dŏv'skĕ*), **LEOPOLD** (1870–1938). Composer and pianist, born in Russia, studied in Berlin and in Paris. Appeared first in America in 1884; directed piano department, Chicago Conservatory of Music, 1895–1900. Composed 53 studies based on Chopin, 12 compositions for the violin, 30 for the piano, and many others.

GOLDMARK, KARL (1830–1915). An Austrian composer; born at Keszthely, Hungary. Among his works are *The Queen of Sheba*; his symphony, *The Country Wedding; The Cricket on the Hearth*; and *Merlin*.

GOODHUE, BERTRAM GROSVENOR (1869–1924). Having studied architecture in New York, Goodhue established an office in Boston, becoming a partner of R. A. Cram (q. v.). From 1903 to 1914, when he began to practice alone, he was in charge of the New York office of Cram and Goodhue. Some of the important structures designed by him are St. Thomas Church, New York, the Cathedral of Maryland at Baltimore, National Academy of Sciences and National Research Council, Washington, D. C., the Exposition Buildings of San Diego (1915), and the Capitol at Lincoln, Nebr. Though he specialized in Gothic churches of modern design he also favored large office buildings.

GOOSENS, EUGENE (1893–). Conductor and composer of English birth, who led the London Symphony Orchestra, the Russian Ballet, the Carl Rosa companies, and the Orchestra at Rochester, N. Y. He was born in Bordeaux, was educated at Bruges, Liverpool, and the London College of Music. Some typical works are *Five Impressions of a Holiday* for piano, flute, and violin, chamber music for flute, violin, and harp, and several folk-songs.

GOTTSCHALK (*got'shălk*), **LOUIS MOREAU** (1829–1869). An American pianist and composer; born at New Orleans, La.; studied at Paris under Hallé, Stamaty, and Maleden; played with phenomenal success all over the United States after 1853. Among his 100 compositions are *Bananier, Cradle Song, Last Hope*, and a *Tarantella* for piano and orchestra.

GOUJON (*gōō-zhŏn'*), **JEAN** (c. 1520–1566). A French sculptor and architect; born in Paris. He was the author of what is considered the masterpiece of French sculpture, the *Huntress Diana*, now in the Louvre collection, and the *Fontaine des Innocents*. He executed some commissions for Henry II., helped ornament the Louvre of Paris, and assisted in many buildings not now extant.

GOUNOD (*gōō-nō'*), **CHARLES FRANCOIS** (1818–1893). A French composer; born in Paris. In 1859 he produced *Faust*, his chief work, which attained European popularity, and raised its composer to the foremost rank of contemporary musicians. From 1870 to 1875 he resided in England. His other works include *Sapho, Messe solennelle, Philemon and Baucis, Mireille, Romeo and Juliet, Cinq Mars, Polyeucte, La rédemption*, and *Mors et vita*.

GOYA Y LUCIENTES (*gō'yä ē lō-thē-en'tes*), **FRANCISCO** (1746–1828). A Spanish painter; born near Saragossa; friend of Louis David at Rome; painted the portrait of the Duke of Wellington. His etchings and aquatints are much finer than his sacred subjects. His three best styles are adequately shown by *The Picnic, The Bewitched*, and *A Portrait* in the National Gallery at London.

GOYEN (*goi'en*), **JAN JOSEPHSZOON VAN** (1596–1656). Dutch painter who broke away from tradition, influenced the art of his age, and left many pictures of sea, ice, and shore effects. His earliest works were characterized by minute details, but after 1625 he selected only the most striking features. Some of his work remains in the Louvre, Berlin, Vienna, and Munich, the National Gallery of London, and the city of The Hague, the last a large canvas. More than 1,000 pictures of his have been listed.

GOZZOLI (*got'sō-lē*), **BENOZZO (BENOZZO SANDRO)** (1420–1498). An Italian painter; born at Florence; pupil of Fra Angelico; assisted Ghiberti in bronze work; painted the immense frescoes in the Church of Saint Agostino at San Gemignano, and the vast series of frescoes in the Campo Santo at Pisa.

GRAINGER, PERCY ALDRIDGE (1882–). Pianist and composer, who was born in Australia, where he studied under Pabst at Melbourne. Later he went to Frankfort, Germany, lived in England, made many concert tours, from 1900 to 1914, and then settled in the United States. He played in many lands, made several hundred records for the phonograph, and composed 50 works for various instruments. Some important pieces are *Molly on the Shore* for orchestra, *Irish Tune from County Derry, The Sussex Mummers' Christmas Carol, Marching Song of Democracy, Green Bushes* (for 21 instruments), and *Scotch Strathspey and Reel* (4 male voices and 15 instruments).

GRAU (*grou*), **MAURICE** (1849–1907). A German-American opera manager; born at Brünn in Moravia; brought to the United States in 1854; brought Aimée to America in 1872; formed the Clara Louise Kellogg Opera Company (1873); managed the tours of Salvini, Rubinstein, Patti, Bernhardt, Irving, Jane Hading, Mounet-Sully, and Mme. Réjane; manager of the Metropolitan Opera House at New York (1897–1903).

GRAUN (*groun*), **KARL HEINRICH** (1701–1759). A German composer, who studied under Schmidt, became interested in Italian operas, and was engaged by Frederick the Great for his private chapel and later to go to Italy to secure singers for an opera (1740). As conductor of the royal orchestra he wrote 28 operas, of which *Merope* (1756) was long famous. His oratorio *Der Tod Jesu* (1755) is now considered his greatest composition, and it was sung yearly during Holy Week down to the present century.

GREENAUGH (*grēn'ō*), **HORATIO** (1805–1852). An American sculptor; born in Boston, Mass.; studied four years at Harvard; from 1825 spent the greater part of his life in Italy. His *Venus Victrix* is in the Boston Athenæum, and his colossal statue of Washington, his principal work, in front of the National Capitol.

GREET, BEN (–1936). English actor especially in the revival of Shakespeare's plays according to the old manner of production. He appeared at Southampton in 1879, turned to the acting of pastoral drama in 1886, began to produce *Everyman* in 1902, played this and Shakespeare in America till 1914, and then led in a movement to produce various Shakespeare plays for London children in all schools. Some of his own parts were Benedick, Hamlet, Touchstone, Malvolio, and Dogberry in Shakespeare; Sir Peter Teazel in Sheridan's *School for Scandal*, Tony Lumpkin in Goldsmith's *She Stoops to Conquer*, the Cardinal in Marshall's *A Royal Family*, and scores of others.

GREUZE (*grèz*), **JEAN BAPTISTE** (1725–1805). A French painter; born at Tournus, near Mâcon; elected to the Academy (1769). His portraits and heads are the more esteemed of his works. The Wallace collection at London has the greatest number of his works; several are in the Louvre; and some in the Metropolitan Museum at New York. Hoping to be admitted an Academician on the strength of historical paintings, as well as on genre, he exhibited his *Sévere et Caracalla* (now in the Louvre) in 1769, but his colleagues more highly praised his genre pictures. He became incensed, refused to exhibit till a year before his death, and died in great poverty.

GRIEG (*grēg*), **EDVARD HAGERUP** (1843–1907). A Norwegian composer and pianist; born at Bergen, of

Scottish ancestors. His works include orchestra suites, cantatas, quartets, trios, sonatas for violin and for violoncello, songs and compositions for the piano. At first a romantic, Grieg turned about 1863 to highly nationalistic style and themes for his music. On these his fame now essentially rests. Some of his chief pieces are the notes for Ibsen's *Peer Gynt* and the songs *Ich liebe dich*, *Solvejg's Lied* and *Ein Schwann*.

GROVE, GEORGE (1820–1900). English writer on music, after acting as an engineer for several years, took up the work of promoting musical concerts at Sydenham, and inspired many young composers and artists of Great Britain. While editing *Macmillan's Magazine* (1868–1883), he initiated the *Dictionary of Music and Musicians*, finished in 1889. Others edited his monumental work after his death for subsequent printings, the third edition appearing in 1927. In 1882 he was knighted and appointed first director of the Royal College of Music.

GUIDO RENI (*rā'ne*) (1575–1642). An Italian painter of the school of Bologna; best known by his masterpiece *Aurora and the Hours* at Rome, painted on a ceiling; his unfinished *Nativity* at Naples; the *Crucifixion of St. Peter* in the Vatican; the *Madonna della Pietà*, the *Crucifixion*, and the *Massacre of the Innocents* at Bologna; and *St. Paul the Hermit* and *St. Anthony in the Wilderness*, in Berlin. Two hundred of his works adorn the art galleries of Europe. One of his chief traits is a lightness of color in his pictures.

GUTHRIE (*guth'ri*), **JAMES** (1859–1930). Scotch painter, born in Greenock, who is well known for his scenes like *The Gypsy Fires are Burning* (1882), *Funeral Service in the Highlands*, and *Schoolmates*. Later he painted many portraits of celebrities. He was knighted in 1903.

HABERMANN, HUGO (1849–1929). German painter, influenced at first by his master, Piloty, under whom he studied at the Munich Academy, where he also became a professor in 1905. In both the use of color and in craftsmanship he attained great favor, especially for his *Monk* (1875), in a realistic manner, his *Child of Sorrow*, and various portraits.

HACKETT (*hăk'et*), **JAMES HENRY** (1800–1871). An American actor; born in New York City. He was particularly successful in impersonating Yankees and Westerners, but was best known by his Falstaff, which he played first about 1832. He wrote *Notes and Comments on Shakespeare*.

HACKETT, JAMES KETELAS (1869–1926). An American actor, son of the foregoing, in 1892 became leading man at New York Lyceum (youngest to that time in American stage history). First star to appear in *The Prisoner of Zenda* for Famous Players (1912). With Mr. and Mrs. H. G. Fiske, Henrietta Crosman, and others organized the independent theatrical agency in opposition to older agencies. He produced *Macbeth* in New York (1916), and later went to England (1920) taking entire production, and later appeared in Paris with English and French actors in a notable series of performances. In 1918 he played in a cast for *Out There*, which netted $700,000 for the Red Cross. Again, in 1922, he played in France and at Stratford-on-Avon, England, in connection with the Shakespeare tercentenary.

HADING (*ä-dan'*), **JANE** (1859–). Her real name was Jeanne Alfrédine Tréfouret. For a number of years she sang in Algiers, Cairo, and finally in Paris, at first in *La Chaste Suzanne*, and in 1883 at the Gymnase in *Le Maître de forges*, which was highly successful. In 1888 and 1894 she toured America with Coquelin (q. v.), and later acted in plays by Capus, Donnay, Dumas fils, and Bergerat.

HADLEY (*had'li*), **HENRY KIMBALL** (1871–1937). Beginning in 1904, as choirmaster at Mainz, this American composer, who was born at Somerville, Mass., later toured Europe (1908), presenting his own tone poem founded on Wilde's *Salome*. He next conducted the Seattle and San Francisco Symphony Orchestras in turn (1909–15); in 1921 became associate conductor of the Philharmonic Orchestra of New York; in 1923 his own *Resurgam* in London; and in 1927 on invitation conducted his own works in Buenos Aires. Other works of his are *Safie*, his first opera (1909), *Bianca*, *Cleopatra*, and *The Ocean*, which he produced in 1923 at Stockholm and elsewhere.

HADOW, WILLIAM HENRY (1859–). An Oxford man and teacher, he became principal of Armstrong College, Newcastle (1909–19), and then vice chancellor of Sheffield University. In 1918 he was knighted. Having studied music for many years, he wrote volumes of appreciation of Schumann, Wagner, Chopin, Brahms and others, which were highly praised and very popular. Other criticisms are *Sonata Form*, *A Croatian Composer*, four *Albums of Songs*, and *Church Music*. As a composer he prepared incidental music for Robert Bridges' *Demeter* and wrote some songs. Hadow combined both a technical knowledge of music with a layman's enthusiasm and appreciation of the best the art affords.

HALE, GARDNER (1894–). An American fresco painter, who was one of the leaders in the revival of the older methods of the art. He was born in Chicago, where he began to study, and later went to Italy, Paris, and New York for further work. Some of his frescoes are those of the Illinois Merchants Trust Building, Chicago; residences of Mrs. Walter Lewisohn in Paris; Edward Shearer at Palm Beach, Fla.; J. Walter Spalding, Florence, Italy; Bishop Herbert Shipman, New York.

HALLE (*häl lā'*), **CHARLES** (1819–1895). Having been forced out of Paris in 1848 by the revolution, he settled in London; since he emigrated from his native land, Germany, in 1836 he had been influenced by the greatest French musicians. For years his vogue in England remained unabated, and the concerts he founded at Manchester (1857) continue to this day. In London his home was the center of musical interest, and he frequently performed in public. In 1888 he was knighted and married the talented violinist, Norman Neruda (1839–1911), with whom in 1890 and 1891 he toured Australia and other countries. Lady Hallé ranked with the best masculine performers of her age.

HALS (*häls*), **FRANZ, THE ELDER** (1584–1666). A Dutch portrait and genre painter; born in Mechlin. He is usually regarded as the founder of the Dutch school of genre painting and the greatest portrait painter of Holland excepting Rembrandt. He died in Haarlem, Netherlands. His brother, **DIRK HALS** (1589–1656), a pupil of Abraham Bloemaert, was also an excellent genre painter. Several of Franz's sons were artists, the most celebrated being **FRANZ HALS, THE YOUNGER,** who flourished from about 1637 to 1669.

HAMILTON, JOHN McLURE (1853–1936). An American portrait painter, but lived in London after 1878; born in Philadelphia, educated there, with Van Lerius at Antwerp, and Gérôme at Paris. He devoted himself mainly to pastels and portraits, some of the principal ones being Gladstone, Cardinal Manning, George Meredith, in the Philadelphia Academy; Prof. Tyndall and others at London; Prof. Lewis Campbell at the University of St. Andrews; and portraits of General Booth, Dr. A. Geikie, Col. Edward M. House, and Joseph Pennell.

HAMMERSTEIN, OSCAR (1847–1919). Beginning in New York at 16, on his arrival from Germany, Hammerstein became an inventor and maker of plays, turning to theatrical ventures in 1870. He built the Harlem Opera House (1888), and in 1905 established the Manhattan Opera, where he introduced the best French talent, and gathered a large following. He built opera houses in Philadelphia (1908), in London (1911), but this failed to succeed, and in New York (1914) opened the Lexington Theatre.

HANDEL (*hän'del*), **GEORGE FREDERICK** (1685–1759). A German composer; born at Halle-an-der-Saale, in Lower Saxony; settled in England in 1712. *The Messiah*, the greatest of oratorios, was produced in 1741. His other important oratorios are *Esther*, *Saul*, *Israel in Egypt*, *Samson*, *Judas Maccabaeus*, and 17 others. He wrote more than 40 operas, the cantatas *Acis and Galatea* and *Alexander's Feast*, and much church and chamber music, also many odes and songs. Handel was stricken with blindness (1752), but continued to conduct his oratorios until his death.

HARDING (*här'ding*), **CHESTER** (1792–1866). An American portrait painter; born in Conway, Mass.; settled in Boston (1823); went to London (1832) and painted portraits of many noblemen. Among his portraits of Americans are those of Webster, Washington Allston, John Randolph, Clay, Calhoun, Chief Justice Marshall, Presidents Madison, Monroe, and John Quincy Adams, and General Sherman. Harding was a drummer in the New York State militia in 1813, afterwards acted as chairmaker, peddler, and house-painter, and as an artist was self-taught. A man without education or early advantages, he moved at ease among royalty at the height of his career.

HARPIGNIES (*är-pēn-yē'*), **HENRI JOSEPH** (1819–1906). A French landscape painter; born at Valenciennes; visited Italy with Corot (1860). Among

his works are *Lisière de bois de l'allier*, *Le saut de loup* (his masterpiece in the Louvre), *Evening*, *Rising of the Moon*, and a water color, *Garden of the Villa Medici*.

HARTLEY (*hart'li*), **JONATHAN SCOTT** (1845–1912). An American sculptor; born at Albany, N. Y.; studied with E. D. Palmer; three years at the Royal Academy at London and one year at Berlin; professor of anatomy for the Art Students' League at New York (1878–1884); member of the National Academy of Design (1891); married the daughter of George Inness, the painter. Among his works are *The Whirlwind*, *Miles Morgan*, *Ericsson*, *Alfred the Great*, *Thomas K. Beecher* at Elmira, N. Y., and *Young Hopi Stick Thrower*, and many portrait busts.

HASSAM (*has'am*), **CHILDE** (1859–1935). An American etcher and painter, born in Boston and educated at the Museum of Fine Arts in that city. In the manner of the European impressionist school, he painted a series of brilliant pictures, notable for rich and fine coloring and good form. He won numerous medals, including a gold award at the Sesquicentennial at Philadelphia in 1926, and other medals at the Pennsylvania Academy of Fine Arts, and Pan-American and Paris Expositions, and the World's Fair, Chicago.

HAYDN (*hā'dn*), **JOSEPH** (1732–1809). A German musical composer. His masterpiece, the oratorio of *The Creation*, was produced in 1798; composed 125 symphonies, including *Farewell* and *Joy*; the "Emperor's Hymn," *Gott erhalte Franz den Kaiser*; the *Seasons*, an oratorio; and 83 string quartets. Haydn is regarded as the creator of the symphony. With the exception of his *Creation*, *a Stabat Mater*, and some of the songs in which he used folk material, the work of Haydn is now known only to professional musicians and students.

HAYDON (*hā'don*), **BENJAMIN ROBERT** (1786–1846). An English painter of historical scenes, who was born in Plymouth and educated at the National Academy. Some of his best paintings are *Dentatus* (1809), *The Judgment of Solomon* (1814), *Punch*, *Christ's Entry into Jerusalem*, which formed the basis of a collection made by his cousin, John Haviland, of Philadelphia. Twice he was imprisoned for debt, and his *Mock Election* (founded on a happening of the prison) was purchased by George IV. Lack of appreciation by the critics, however, made him melancholy, and he ended his own life by shooting, before he had fully completed his *Alfred and the Trial by Jury*.

HEALEY, GEORGE PETER ALEXANDER (1808–1894). An American portrait painter; born in Boston, Mass.; studied in Paris; painted *Webster's Reply to Hayne*, containing 130 portraits, now in Faneuil Hall, Boston; *Franklin Presenting Claims of the American Colonists to Louis XVI.*; and portraits of several of the presidents, now in the Corcoran Art Gallery in Washington.

HEIFETZ (*hī'fets*), **JASCHA** (1901–). Violinist of Russian birth, noted for precocity and finish of this art; he was graduated from the Royal School at Vilna at 8, and at once became the pupil of Leopold Auer at Leningrad. At 9 he appeared in his first public recital, later touring the leading cities of the world, and arriving in America from the Orient in 1917. In 1925 he gave money for building a concert hall at Jerusalem.

HELLER, STEPHEN (1814–1888). A distinguished pianist and composer; born at Budapest. In 1838 he settled in Paris and gave himself to teaching and composition. He ranks beside Chopin as a master of technique. His *Etudes*, *Preludes*, *morceaux* under quaint titles, and *Pensées fugitives* are his best familiar works. Though he outlived his early fame, he was for years a brilliant member of the group that included Berlioz, Chopin, Liszt, and Hallé, who greatly admired his compositions.

HELST (*vän dêr helst*), **BARTHOLOMAEUS VAN DER** (1613–1670). Celebrated Dutch portrait painter, whose *Banquet of the Civic Guard* was pronounced by Sir Joshua Reynolds "the first picture of portraits in the world." Of his 100 paintings of persons the *Dutch Burgomaster*, now in the New York Metropolitan Museum, the *Peace of Munster*, in Amsterdam, a work almost equal to Rembrandt in coloring, and the *Four Syndics* shown in the gallery and also in the town hall are among his best.

HEMPEL, FRIEDA (1885–). Operatic coloratura soprano of the Royal Opera, Berlin (1907–12), and of the Metropolitan Opera, after 1912. Married William B. Kahn, New York, 1918. After a course of training under Mme. Nicklass Kemper of Berlin, she sang at Bayreuth in 1907, made her first appearance the same year in London, and her formal début at the Royal Opera, Berlin, where she had appeared first two years earlier in *Merry Wives of Windsor*. Later she sang in important centers of Europe and before royalty. Some of her many rôles were Violetta in *Traviata*, Gilda in *Rigoletto*, Rosina in *The Barber of Seville*, Marie in *The Daughter of the Regiment*, and Marguerite in *Faust*.

HENNER, JEAN JACQUES (1832–1905). A French painter; born in Bernwiller, in Alsace; pupil of Drölling and Picot; one of the most poetic and realistic of the French school. Among his works are *St. John the Baptist*, *The Evening*, *The Dead Christ*, *The Chaste Susanna*, *An Idyl*, *The Good Samaritan*, *Naiad*, *Magdalene*, and *St. Sebastian*.

HENRI (*hen'rī*), **ROBERT** (1865–1929). American artist, teacher, and author, educated at the Philadelphia Academy of Fine Arts and in France, Spain, and Italy; from 1915 to 1923 taught in the Art Students' League of New York City, having earlier been an instructor in Philadelphia. His *La Neige* was purchased by the government for the Luxembourg of Paris (1899). His work is found in many galleries, such as the Metropolitan, Carnegie Institute, Pittsburgh, and Corcoran of Washington, D. C. All his work is characterized by energetic treatment and independence of set standards of portraiture.

HENRY, EDWARD LAMPSON (1841–1919). An American painter; born in Charleston, S. C.; studied at Philadelphia and in Paris; member of the National Academy (1869). Among his works are *Initial Excursion of the First Railway Ever Constructed in New York*, containing about 50 figures, in the Corcoran Art Gallery; *Old Cock on the Stairs*, and *A Morning Call in 1800*.

HENSCHEL (*hen'shel*) **ISIDOR GEORG** (1850–1934). A German baritone singer, composer, and conductor; born at Breslau; achieved great successes at Brussels, Cologne, and London; conducted the Boston Symphony Orchestra for its first three seasons (1881–1884); succeeded Jenny Lind as professor of singing at the Royal College of Music (1886–1888). He composed songs, vocal studies, a *Requiem Mass*, *Stabat Mater*, *Te Deum*, an opera, *Nubia*, and an operetta, *A Sea Change* or *Love's Stowaway*, to words by W. D. Howells.

HENSELT, ADOLF VON (1814–1889). Bavarian pianist, who made his début in 1836, and two years later went to Russia, where he became court pianist. Among other tours he visited England in 1852 and 1867. His playing was remarkable for sonority and effect of great volumes, and he devised a method of stretching the hands by exercise. He edited the piano compositions of Weber.

HERBERT, VICTOR (1859–1924). An American violoncellist, conductor, and composer; born in Dublin. His mother was a daughter of Samuel Lover, the novelist; studied in Germany; came to the United States in 1886; violoncellist in the Metropolitan Opera House and appeared as soloist under Anton Seidl and Theodore Thomas; bandmaster of the 22d Regiment Band (1894); conductor of the Pittsburgh Orchestra (1898–1904); formed his own orchestra in New York (1904); composed *The Captive* for the Worcester, Mass., Festival in 1891; the comic operas, *Prince Ananias*, *The Wizard of the Nile*, *The Serenade*, *The Idol's Eye*, *Happy Land*, *It Happened in Nordland*, and *Babes in Toyland*, besides several suites. Besides *Natoma*, a grand opera, he composed the music for the photodrama, *The Birth of a Nation*.

HERNE, JAMES A. (1840–1901). An American actor and dramatist; born at Troy, N. Y. In the latter part of his life he appeared only in his own plays, such as *Hearts of Oak*, *Margaret Fleming*, *Shore Acres*, *Rev. Griffith Davenport*, and *Sag Harbor*. His Uncle Nat Berry in *Shore Acres* was a notable creation in American comedy.

HERRERA (*er-rā'rä*), **FRANCISCO DE** (1576–1656). A distinguished Spanish painter; founder of the Seville or new Spanish school; born at Seville. His finest paintings include the famous *St. Hermenegild in Glory* in the Seville Museum and *The Last Judgment* and a *Saint Peter*, both in churches at Seville. Others are in the Louvre, Paris. They exhibit boldness of execution with faultless technique.

HILLER, FERDINAND (1811–1885). A German composer, conductor, and pianist; born at Frankfort-

on-the-Main; studied and toured with Hummel; went to Paris (1829); popularized the works of Bach and Beethoven; musical director at Düsseldorf (1847–1850); founded the Conservatorium at Cologne (1850); composed chamber music; *The Destruction of Jerusalem*, which is the finer of his two oratorios, and six operas.

HOBBEMA (*hob'e-mä*), **MEINDERT** (1638–1709). A famous Dutch landscape painter; born at Amsterdam. His fine, subdued pictures of woodland life and scenery are ranked among the masterpieces of Dutch landscape painting, along with those of Cuyp and Ruysdael. Among his best works are *The Avenue of Middelharnis*, *Showery Weather*, *Watermills and Bleacheries*, *Ruins of Brederode Castle*, and *The Mill*.

HOFFMAN, MALVINA (1887–). American sculptor, educated in New York under Herbert Adams and Gutzon Borglum and in Paris under Rodin. Her *Russian Dancers* won first prize (1911) at the Paris salon. Other works now on exhibit are *John Muir* in the American Museum of Natural History, New York; *Modern Crusader* in Metropolitan; *Sacrifice*, a memorial group for Harvard University, but deposited temporarily in the Cathedral of St. John, New York; *Paderewski the Artist*, Rome; *Paderewski the Statesman*, and *Bill*, now in the Luxembourg.

HOFMANN, JOSEF (1876–). A pianist born at Cracow, Poland; studied under his father, who was a composer and kapellmeister; at age of 7 attracted notice of Rubinstein. When he was 11 he made a tour of the United States, until stopped by authorities representing the Society for Prevention of Cruelty to Children. On his return to Europe, he studied under Urban and Rubinstein. In 1924 he became head of piano at the Curtis Institute of Music of Philadelphia, and director in 1927. Now an American citizen. Besides composing a symphony, orchestra suite, sonatas for piano, and other music, he wrote works on *Piano Playing* and *Piano Questions*.

HOGARTH (*hō'gärth*), **WILLIAM** (1697–1764). English satirist and humorist painter, whose work is noted for perfection of technique, ease of execution, and harmonious coloring. He leads the school of realistic painters who criticise human life in their art, without undue cynicism or bitterness. The son of a London schoolmaster and hack author, Hogarth early began to draw, and when he was about 20 made some engravings for sale. In 1724 his *Masquerades and Operas* (the first plate published under his name), satirized the fashion of following the unusual in opera. His series of pictures entitled *The Harlot's Progress*, completed in 1731 and engraved by him, shows his moral satire at its best. Some of his later works are *Sleeping Congregation* (1736), *Scholars at a Lecture* (1737), *Strolling Actresses, Dressing in a Barn* (1738), *Stage Coach* (1747), *Four Stages of Cruelty* (1751), and some historical works like *Paul before Felix*, *Moses Brought to Pharaoh's Daughter*, and a fine picture of himself and his dog. As an engraver of his own works he is almost unrivaled.

HOLBEIN (*hōl'bīne*), **HANS** (*c.* 1460–1524). Celebrated member of a great family of painters, including also his sons, Ambrose and Hans the Younger (q. v.). Of his many works in churches and museums, some of the best are three pictures commemorating the birth and early life of Christ, now at the Augsburg Cathedral; a Passion series now at Donaueschingen; a *Martyrdom of St. Sebastian* at Munich; a picture of himself at Chantilly; *The Well of Life* now at Lisbon, and a Passion in 11 parts now at Augsburg. For gradation of color, delicacy in the shadowing, and reality in portraiture he was one of the great artists of his age.

HOLBEIN (*hōl'bīne*), **HANS** (1497–1543). A German painter; son of Hans Holbein the Elder; born at Augsburg; attracted the attention of Erasmus, who took a great interest in him, and persuaded him to go to England, and introduced him to Sir Thomas More, who in turn introduced him to Henry VIII. Here under Henry's patronage he remained, executing numerous portraits of his courtiers, till his death of the plague. His *Last Supper* and *Dance of Death* are well known. His *Virgin and Child with the Family of the Burgomaster Meyer* is at Darmstadt; his *Portrait of Erasmus* is in the Louvre; and his masterpiece in portraiture, *The Ambassadors*, is in the National Gallery in London.

HOLL, FRANK (1845–1898). An English artist of subject paintings and portraits, member of a family of artists, was born in London and trained mainly at the Royal Academy, where he exhibited *A Portrait* and *Turned out of Church* in 1864. Some of h other works are *A Fern Gatherer*, *The Ordeal*, *Co valescent*, *The Gifts of the Fairies*, a notable portra of Samuel Cousins, now in the National Gallery, ar others of Millais, Lord Roberts, John Bright, Gla stone, and many more.

HOLLAND, EDMUND MILTON (1849–1913). A American actor; born in New York City; played i Wallack's company (1867–1879), Pittacus Green i *Hazel Kirke*, Old Rogers in *Esmeralda*, Capt, Redwoo in *Jim, the Penman*, Jenkins Hanby in *A Social Hig wayman*, Leopold Kolditz in *Hearts are Trumps*, an Eben Holden.

HOLMES, AUGUSTA MARY ANNE (1849–1903) An Irish-French composer who lived mainly in Pari Besides 100 songs, some of great delicacy and beauty she wrote numerous operas, cantatas, and symphoni poems,—including *La Montagne Noire*, *Astarte*, *L Vision de la Reine*, *Ode Triomphale*, *Roland*, *Le Argonautes*.

HOMER, LOUISE (1871–). American con tralto singer, the daughter of a clergyman, W. T Beatty of Pittsburgh; married Sidney Homer, the com poser (q. v.), 1895. Having studied in Pittsburgh New York, and for two years in Paris, she made he first appearance in Paris in 1898, the next year a London, and then at Brussels. Her New York débu was in 1900, since when she has appeared in mos years at the Metropolitan Opera, and also with the Chicago, Los Angeles, and San Francisco Opera Com panies. Important rôles were Amneris in *Aïda*; Azucena in *Il Trovatore*; Ottrud in *Lohengrin*; and Dalila in *Samson and Dalila*. Her daughter, Louise Homer (Mrs. Ernest V. Stires), is an accomplished soprano singer.

HOMER, SIDNEY (1864–). Composer of songs and teacher of harmony and counterpoint, born in Boston, educated at Phillips Academy at Andover, Mass., and studied music in Germany and Austria. He taught music in Boston for eight years and then located in New York. Some of his compositions are *Sweet and Low* and *Thy Voice is Heard* from Tennyson's *Princess*; *A Woman's Last Word* from Browning; *Requiem* and two other songs from Stevenson; *Bandanna Songs*; *General William Booth Enters into Heaven* from Vachel Lindsay; 17 songs from Christina Rossetti's *Sing Song*, and other music.

HOMER, WINSLOW (1836–1910). As a painter of scenes in the South, the fishermen of the north Atlantic, and views along the shore of New England, Homer was influenced only slightly by the traditions of old masters. Yet much of his work has a striking beauty, a ruggedness of plan, and no little originality. After studying in Boston and New York, he sent a series of drawings to *Harper's Weekly* during the Civil War, and these established his fame. *Prisoners from the Front* is perhaps his best war picture; *Cotton Pickers* and *Visit of the Old Mistress* are characteristic Southern subjects; and *The Life Line*, *Coming of the Gale*, *Wrecking of a Vessel*, and *Lost on the Grand Banks* are among his best seascapes. Some of his water-colors painted at Gloucester, Mass., are admirable.

HOPPNER (*hop'nĕr*), **JOHN** (1758–1810). Having received the favor of George III., this English artist turned from landscapes, which he preferred, to the painting of portraits, and counted among his sitters some great men and women of his period. Besides various members of the Royal family, some of his subjects were Lord Nelson, Lord Rodney, Wellington, Sir George Beaumont, and Sir Walter Scott.

HOSMER (*hoz'mĕr*), **HARRIET GOODHUE** (1830–1908). Sculptor, born in Boston, and showed early love for modeling and the study of anatomy which she furthered under the direction of her father, a physician, and in the St. Louis Medical College. From 1853 to 1860 she studied under the English artist, John Gibson, she being the only pupil he ever trained. Most of her life she lived in Rome where she knew Hawthorne, Thackeray, George Eliot, and Mr. and Mrs. Robert Browning. In portraiture in marble she excelled. Among her characteristic works may be named *Daphne*, *Medusa*, *Oenone*, *Beatrice Cenci*, now in St. Louis, and *Zenobia, Queen of Palmyra, in Chains*, now in the Metropolitan of New York.

HOUDON (*ö-dôn*), **JEAN ANTOINE** (1741–1828). A French sculptor; born in Versailles. After studying in Italy he returned to Paris and executed the busts of Voltaire, Rousseau, Molière, Franklin, Buffon, Catherine II., and others. He was invited to the United States and carved the statue of Washington now at the

Virginia State Capitol in Richmond, which is considered the most authentic likeness of "the father of his country."

HOVENDEN (*hō'ven-den*), **THOMAS** (1840–1895). Born in Ireland and a pupil of the South Kensington Art School, Hovenden came to America in 1863 and studied at the National Academy of Design, New York. Later he went to Paris, worked under Cabanel, and painted many peasant scenes in Brittany. He was fatally injured while trying to save a child from a railway train at Germantown, Pa. His *Last Moments of John Brown*, now in the Metropolitan of New York, and his sentimental picture *Breaking Home Ties*, long a favorite in engravings, represent his mature art. *A Breton Interior*, *Jerusalem the Golden*, and *Loyalist Peasant Soldier* are among his best pictures.

HUBBELL, HENRY SALEM (1870–). Beginning as an illustrator for the *Woman's Home Companion* and other periodicals, Hubbell turned to painting and exhibited a large picture, *The Bargain*, at Paris in 1901. Some of his subsequent canvases are *Child and Cat* and *Larkspurs*, bought by the French government, *The Poet*, *The Caress*, *By the Fireside*, *The Brasses*, now in Memorial Hall, Philadelphia, and *Black and White*, now in city collection of Grand Rapids, Mich. He also painted numerous portraits.

HUBER, HANS (1852–1921). Swiss composer of individuality and talent. From 1874 to 1918 he taught successively at Wesserling, Thann, and Basle. He wrote notable symphonies, chamber works, piano pieces, operas, and cantatas.

HUMMELL, JOHANN NEPOMUK (1778–1837). Beginning to compose music when he was 11, he completed his studies in Vienna, learned to write songs, and from 1804 to 1811 was kapellmeister to Prince Esterhazy. Then he toured Europe as pianist and conductor, attaining a tremendous vogue. Some of his compositions for the piano were long played, and he explained his method as a teacher in the *Great Pianoforte School*. In his youth Mozart instructed him for two years, and Hummel became the master's most proficient student.

HUMPERDINCK (*hum'pĕr-dinyk*), **ENGELBERT** (1854–1921). German composer, born at Sieburg; studied in Cologne and Munich. He went to Italy in 1879 on a Mendelssohn scholarship, and was invited by Wagner to help produce *Parsifal* at Bayreuth. For years, till 1900 when he removed to Berlin, he lived at Frankfurt, taught composition in the conservatory, and wrote criticism for the *Zeitung* of the town. He specialized in folk-tunes in his later works. Some of his compositions that were famous are *Humoreske* (1880), *Die Wallfahrt nach Kevlaar* (1887), and *Hansel und Gretel*.

HUNT, WILLIAM HOLMAN (1827–1910). An English religious painter; born in London. Among his works are *Hireling Shepherd*, *Awakened Conscience*, *Light of the World*, *The Scapegoat*, *Christ Discovered in the Temple*, and *The Triumph of the Innocents*. Hunt was a potent force in the pre-Raphaelite movement, to which he was drawn by his mystical and symbolical turn of mind.

HUNT, WILLIAM MORRIS (1824-1879). An American painter, who was born in Vermont, studied at Harvard, and then went to France to complete his art education under Couture. Influenced early by J. F. Millet, he introduced the French painters of the group of this artist to America. After 1855 he lived in Boston, but continued to be influenced by his training in France, especially in pictures like *The Belated Kid*, *Girl at the Fountain*, *Hurdy-Gurdy Boy*. Several of his best pictures, and five by Millet owned by Hunt, perished in the Boston fire of 1872. His *Bathers*, *Prodigal Son*, *The Drummer Boy*, *Charles River*, and portraits of W. M. Evarts, Rev. J. F. Clarke, Charles Sumner, and Judge Horace Gray were highly appreciated.

ICTINUS (*ik-ti'nus*) (fifth century B. C.). A famous architect of Greece; employed at Athens during the administration of Pericles. He designed the Parthenon, completed about 438 B. C., and, in collaboration with Carpion, it is said, wrote an architectural treatise thereon. He designed also the Temple of Apollo Epicurius at Bassae, and is mentioned by Vitruvius and Strabo as one of the architects of the Temple of Demeter and Persephone Eleusis.

IDRAC, ANTOINE (1849–1884). A French sculptor; born at Toulouse. Among his important works are *Cupid Stung by a Bee*, bought by the French government, and *Mercury Discovering the Caduceus*, now in the Luxembourg Museum. One of his later works, a *Salambo*, received a first prize at the Munich Exposition, and secured for him the French Legion of Honor.

IFFLAND, AUGUST WILHELM (1759–1814). A noted German actor, dramatist, and director. He studied at Gotha; became director of the Berlin National Theatre in 1796; 15 years later was appointed manager of all the royal theatres. He was a fine comedian. His plays met with great success, notably *Die Jaeger*, *Dienstpflicht*, *Der Spieler*, and *Die Mündel*.

INDY, PAUL VINCENT D' (1851–1931). French composer and leader in music for many years. In 1871 he helped form the Société Nationale de Musique, of which he was secretary, and after 1891 the president. From 1911 he was director of the Sholia Cantorum, a school for training singers; and from 1899 he was inspector of musical instruction in the schools of Paris. His compositions are orchestral, choral, and piano works.

INGHAM (*ing'am*), **CHARLES CROMWELL** (1796–1863). A British-American painter; born in Dublin; came to America in 1817 and became active in helping to promote an interest in art. He was successful as a painter of portraits and miniatures, and numbered many prominent men among his subjects. His best known figure paintings are *Death of Cleopatra*, *Day Dream*, and *White Plume*. Among his portraits are those of De Witt Clinton and Lafayette. He was one of the original members of the National Academy of Design.

INGRES (*ang'r*), **JEAN AUGUSTE DOMINIQUE** (1780–1867). French painter, at first designed by his father for a musical career, became an artist through the influence of Raphael's works. He became a pupil of David in Paris in 1796, won the Prix de Rome five years later, for his *Ambassadors of Agamemnon*, and during the following years he painted a series of portrait scenes and allegories, but gained little fame. The tide turned with his *Entry of Charles V. into Paris* (1824), and he suddenly became immensely popular, his *Grand Odalisque* attracting notice which was denied by all in former years. His studio was filled with pupils and admirers. Some of his chief works of this period were *Martyrdom of St. Symphorien*, and various portraits. Again his fame ebbed and then once more reached a higher flood. Later works were *Apotheosis of Napoleon*, *Joan of Arc*, *Christ and the Doctors*.

INMAN, HENRY (1801–1846). An eminent American artist; born in New York; died while at work on a commission from Congress for the historical embellishment of the Capitol. While in England he painted portraits of Wordsworth, Macaulay, Dr. Thomas Chalmers, and others. His American portraits are in the Boston Athenaeum, New York City Hall, and elsewhere. His other work includes *Rydal Water*, *The Newsboy*, and *Rip Van Winkle Awakening*.

INNESS (*in'es*), **GEORGE** (1825–1894). An American painter; born in Paris, France; resided in Italy from 1871 to 1875. His pictures are noted for the accuracy with which they represent the American climate and the aspects of American scenery. He was elected to the National Academy in 1868. Some of his works are *Delaware Valley*, *American Sunset*, *Pontine Marshes*, *Niagara Falls*, *Sunset—Montclair*, and *Autumn Oaks*.

INNESS, GEORGE, JR. (1854–1926). American painter, son of George Innes (q. v.), under whom he studied in Rome (1870–74), and with Bonnat in Paris. Later occupied a studio with his father in Boston and New York; lived in Montclair after 1880, except 1895–99, when he was in Paris; won gold medal of Paris Salon in 1900. He wrote a life of his father. Some of his great paintings are *The Ford*, *Pasture at Watchung*, *Monarch of the Herd*, and *After the Combat*.

IRVING, HENRY (1838–1905). His name was changed by royal enactment from John Brodribb after his first stage success in *Richelieu* (1856). Continuing in various stock companies till 1866, he obtained an engagement in London in *The Belle's Stratagem*. *The Two Roses*, his first immense success (1870) ran for 300 nights, and a year later he saved the fortunes of the Lyceum with *The Bells*, which ran for 150 nights. In 1874 he began to play in *Hamlet* and later added various Shakespeare rôles. With Ellen Terry, and now as manager of the Lyceum, he revived *Hamlet* (1878), acted in *The Merchant of Venice*, Tennyson's *Cup*, *Othello*, and *Romeo and Juliet* in successive years. Besides in other classical English

dramas, he later appeared in Merivale's *The Bride of Lammermoor*, based on Scott, in *King Arthur, Peter the Great*, Conan Doyle's *Waterloo*, and finally a magnificent presentation of Sardou's *Dante*. In 1895 he was created a knight, the first actor to receive this honor in England. Irving had a high conception of acting, much artistic finish, in spite of some mannerisms which tended to make him unpopular with audiences.

IRVING, HENRY BRODRIBB (1870–1919). The elder son of Sir Henry Irving (q. v.), he played during his Oxford course the leads in Browning's *Strafford* and Shakespeare's *King John*. From the time of his first appearance in London in 1891, he continued to revive many of the parts his father had played, but added a number of great creations of his own, in plays like *The Admirable Crichton* (1903), *Dr. Jekyll and Mr. Hyde*, and plays by Stephen Phillips. He wrote a life of Judge Jeffreys, and two works on criminals.

IRVING, LAURENCE SYDNEY BRODRIBB (1871–1914). Younger son of Henry Irving (q. v.) for whom he wrote *Peter the Great*. As an actor his main successes were in *The Three Daughters of M. Dupont, The Unwritten Law, Bonnie Dundee*, and *Richard Lovelace*, the last three being his own. Both he and his wife (Mabel Hackney, the actress) were drowned when the *Empress of Ireland* sank in the St. Lawrence River on May 29, 1914.

ISRAELS (*īz-rä-ăls'*), **JOSEF** (1824–1911). A Dutch painter of Hebrew parentage, intended by his father for the priesthood. Coming under the influence of two painters of Groningen, he showed such talent that he was sent to study in Amsterdam, where, except for two years of study in Paris, he remained till 1870. Like Millet in France, he devoted his life to humble themes, mainly life of the peasantry. As an artist of deep feeling, as a painter in water-color, and as an interpreter of life, he holds a high place in his generation. Some of his best canvases are *The Zandvoort Fishermen, The Silent House, Village Poor, A Frugal Meal, Toilers of the Sea*, and *David Singing before Saul*.

ITTENBACH, FRANZ (1813–1879). A German painter; born at Düsseldorf; royal professor and member of the Academy at Vienna. His *Holy Family in Egypt* in the National Gallery at Berlin and *Christ and the Doctors* at Remagen are among his best works.

JACKSON, JOHN ADAMS (1825–1879). An American sculptor; born in Bath, Me.; studied in Paris under Suisse; lived in New York (1858–1860); then removed to Italy; chief works are a bust portrait of Wendell Phillips in the Boston Museum; one of Lyman Beecher owned by Henry Ward Beecher; *Eve and the Dead Abel; Cupid Stringing the Bow; The Culprit Fay;* a group at the southern gatehouse of Central Park in New York; and the *Soldiers' Monument* at Lynn, Mass.

JANACEK, LEOS (1854–1928). Czech composer, who was professor of composition in the State Conservatory, and wrote many songs and other works showing a deep knowledge of the human mind. Besides an opera that pictures village life most accurately, and his modification of Ostrovsky's *The Storm*, he wrote an operatic satire, a dramatic song cycle, a symphonic poem, and many smaller pieces of great merit.

JANAUSCHEK (*yä'now-shek*), **FRANCESCA ROMANA MAGDALENA** (1830–1904). A German and American actress; born in Prague, Bohemia; leading actress at Frankfort (1848–1860); came to New York (1867), playing in German; studied English and presented Medea, Lady Macbeth, Meg Merrilies, and *The Great Diamond Robbery*.

JANSSENS VAN NUYSSEN, ABRAHAM (c. 1575–1632). A Flemish painter; born at Antwerp; ranks next to Rubens among the Flemish masters of the seventeenth century. Among his best works are a *Madonna;* an *Adoration of the Magi; Scaldis*, a representation of the river god of the Scheldt; an *Entombment* and *Madonna with Saints* at Antwerp; and an *Ecce Homo* and *Descent from the Cross* at Ghent. He was especially strong in torch-light effects.

JAQUES-DALCROZE, EMILE (1865–). Swiss composer and music teacher, the author of many famous songs of life and sentiment; educated at Geneva, Vienna, and Paris. As a teacher of rhythm his influence has been far-reaching, his theories being expressed in *Rhythmic Movements, Rhythm, Music and Education* (1921), and similar works. Some of his longer compositions are *Le Festival Vaudois, Le violon Maudit, Janie, Les premiers souvenirs*.

JARVIS, JOHN WESLEY (1780–1840). An American artist; born in South Shields, England; nephew of John Wesley; came to Philadelphia at five years of age; encouraged in art by Malbone. His portraits of statesmen, divines, and naval heroes are in the City Hall at New York and in the New York Historical Society rooms; the pioneer of the study of anatomy in art in America.

JEANRON, PHILIPPE AUGUSTE (1809–1877). A French historical and genre painter; born at Boulogne-sur-Mer; director of the Louvre and National museums (1848), where he classified and arranged the art treasures of the Louvre; founded the Luxembourg Museum; chief works are *Little Patriots, The Abandoned Port of Ambleteuse, The Flight*, and *The Repose in Egypt*.

JEFFERSON, JOSEPH (1829–1905). An American comedian; born in Philadelphia, Pa. Jefferson was on the stage from his very infancy, appearing as Cora's child in *Pizarro* when only three years of age. In 1865 he visited London, and at the Adelphi Theatre played for the first time his world famous part of Rip Van Winkle, September 4, 1865. With this character his name is identified, and though he has shown himself an admirable comedian in many characters, to the English speaking world he will always be Rip Van Winkle.

JEHIN-PRUME, FRANTZ (1839–1899). A Belgian Canadian violinist; born at Spa; pupil of Servais, François Prume, De Bériot, Léonard, Fétis, Vieuxtemps, and Wieniawski; toured Europe with the Rubinsteins, Jenny Lind, and Essipoff; and America with Carlotta, Patti, and Theodor Ritter (1869–1871); settled in Montreal, Canada, in 1887 and became professor at the Trafalgar Institute there.

JERICHAU, JENS ADOLF (1816–1883). A Danish sculptor; born at Assens, in Fünen; studied at home and with Thorwaldsen in Rome; professor at the Academy in Copenhagen (1849); chief works are *Hercules and Hebe, Penelope, The Panther Hunt, Adam and Eve after the Fall, Christ, David*, and the much admired monuments to Oersted and Anderson in Copenhagen.

JERITZA (*ye'rit-sä*), **MARIA** (1891–). Soprano, born in Austria, began to sing in 1909 in Olmütz, then went to Vienna, 1913, and to the Metropolitan, New York, 1921. Some of her chief rôles were Elsa in *Lohengrin*, Marietta in *Die tote Stadt* and in *La Tosca, Tannhäuser, Der Rosenkavalier*, and *Thaïs*. Popular as a concert singer.

JOACHIM (*yō'ä-chim*), **JOSEPH** (1831–1907). A German violinist; born near Pressburg; regarded as the greatest performer of his time, his success extending over a period of more than 60 years. His greatest composition is his *Hungarian Concerto, Opus* 11. His other works follow Schumann's models and are grave and melancholic, but of earnest purpose and high ideal. He founded the Joachim Quartet in 1869 and it occupied a supreme position in the world of chamber music.

JOANES, VINCENTE (1506–1579). A Spanish painter of portraits and religious subjects; founder of the school of Valencia. His *Baptism of Christ, Conversion of Paul*, and a *Holy Family* in the Cathedral of Valencia; a *Last Supper* in the Church of St. Nicholas there; and a series of six pictures of the *Life of St. Stephen* in the Prado Museum are among his best works.

JOHNSON, EASTMAN (1824–1906). An American painter; born in Lovell, Maine; studied at Düsseldorf, Italy, Paris, Holland, and at The Hague; member of the National Academy (1860); especially successful in pictures of American domestic and negro life. Many of his works have been reproduced. His *Card Players* and *The Savoyard* were done at The Hague; his *Old Kentucky Home* first gave him reputation; his *Old Stage Coach* and the *Wanderer's Fiddler*, which sold for $2,375, are among his many notable works. Also gifted as a portrait painter, he had among his sitters men like Emerson, Hawthorne, Webster, Evarts, and Presidents Hayes, Arthur, Cleveland, and Harrison.

JOHNSON, EDWARD (–). A Canadian tenor, born at Guelph, educated at the University of Toronto; became an American citizen in 1920. Beginning as a church soloist in New York, he went into light opera, and then studied in Italy under Lombardi. In 1911 he made his operatic début in *André Chenier* at Padua, after which for five seasons he sang at the Scala of Milan. Some of his creations were *Parsifal* in Italian, *El Tobarro* and *Gianni Schicchi*

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FAMOUS COMPOSERS—I

1 Walter Damrosch
2 Irving Berlin
3 Edward McDowell
4 George W. Chadwick
5 Arthur Foote
6 Henry Hadley
7 John K. Paine
8 Victor Herbert
9 John Philip Sousa
10 Horatio Parker

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FAMOUS COMPOSERS—II

1 Ludwig van Beethoven
2 Frederick Handel
3 Johannes Brahms
4 Richard Wagner
5 Franz Liszt
6 Johann Mozart
7 Franz Schubert
8 John Sebastian Bach
9 Claude Debussy
10 Dr. Richard Strauss

he introduced certain Wagner rôles into Italy. After appearing in other cities of Italy, in London, and in South America, he joined the Chicago Opera Company in 1920, and the Metropolitan of New York, two years afterward.

JOMMELLI (*yom-mel'lē*), **NICCOLO** (1714–1774). An Italian composer; born at Aversa, near Naples; the most conspicuous among the many eminent composers of the eighteenth century. Among his available music is a *Miserere, Victimae paschali, Lux eterna, Hosanna filio, Mulieres bonae, In Monte Oliveto, Requiem,* and some scattered works in collections. For fifteen years from 1753 he acted as kapellmeister at Stuttgart, and so thoroughly changed his style of composition that his countrymen, after he returned to Italy, refused to hear his newer works on the stage.

JONCIERES, VICTORIN (1839–1903). A French composer; born in Paris; studied with Elwart, Leborne, and at the Conservatoire; wrote the music for the *Hamlet* of Dumas and Paul Meurice; the grand operas *Sardanapale, Le dernier jour de Pompéi,* and *Dimitri, A Symphonie Romantique; Sérénade Hongroise; La Mer;* and other instrumental music.

JONES, INIGO (1573–1652). An English architect; born in London; studied in Italy, and, returning to England, obtained the patronage of James I., and became chief architect in the country. The banqueting hall at Whitehall is reckoned his masterpiece. The portico of the Church of St. Paul, London, destroyed in the fire of 1666, was from his design. His style follows Palladio of Venice. He was the principal representative of Renaissance architecture in England. After the Civil War, he was forced to pay fines as a royalist, and eventually died in poverty.

JORDAENS (*yor'däns*), **JAKOB** (1593–1678). A Flemish painter and engraver; born at Antwerp; was a friend of Rubens, and ranks next to him among the Flemings. Reinach calls him a "brilliant but vulgar painter, sometimes caricatures Rubens and at other times appears as his compeer in boisterous good humor." Among his works are *Christ Chasing the Money Lenders from the Temple, The Four Evangelists, The Entombment of Christ, The Last Supper, Diogenes Seeking an Honest Man,* and a *Holy Family* which is in New York.

JORDON, DOROTHEA (1762–1816). An Irish actress, known for many years as a great favorite at Drury Lane, England, where she first appeared in 1785 as Peggy in *A Country Girl.* Eight years before she had acted first in Dublin as Phoebe in *As You Like It.* Parts like Rosalind, Imogen, Lady Teazel, and men's rôles were her favorites.

JOSEFFY (*yō-sef'i*), **RAFAEL** (1852–1915). An Hungarian-American pianist, teacher, and composer; born at Miskolez; studied under Brauer, Wenzel, Moscheles, and Carl Tausig. After a successful career in Europe he came to America in 1879; played with the Philharmonic Orchestra and with Theodore Thomas and his orchestra; revealed Brahms' pianoforte beauties; composed the important *School of Advanced Piano Playing.*

JOUVENET (*zhöv-nā'*), **JEAN** (1644–1717). A French painter; born at Rouen; assisted Le Brun on the decorations of Versailles and succeeded him as the head of the French school; one of the best French religious painters. His *Descent from the Cross* in the Louvre is his great work.

JUCH (*yūh*), **EMMA** (1863–1939). An American dramatic soprano singer; born of American parents in Vienna, Austria; studied under Madame Murio-Celli; made her début in London (1881); prima donna with Theodore Thomas (1884); sang Marguerite in *Faust,* Elsa in *Lohengrin,* Senta in *The Flying Dutchman,* Crysa in *Nero,* and Eurydice in *Orfeo et Eurydice;* prima donna of American Opera Company, three seasons, and then in her own English Opera Company.

KAUFFMANN (*kouf'män*), **ANGELICA** (1741–1807). A Swiss painter; born at Coire; studied in Italy; passed some years in England; married Zucchi, the Italian painter (1781), and spent the rest of her life in Rome; one of the first members of the Royal Academy. Joshua Reynolds painted her portrait, and she complimented him in turn with her *Sir Joshua Reynolds.* Some other pictures are *Leonardo Expiring in the Arms of Francis I., Interview of Hector and Andromache,* and several more in various European galleries.

KAULBACH (*koul'bäch*), **WILHELM VON** (1805–1874). A German painter; born at Arolsen; studied with Cornelius; painted *The Battle of the Huns, The Destruction of Jerusalem,* and several frescoes into which he introduced the free use of profane subjects. He spent more than ten years painting the grand staircase of the Berlin Museum, more than a score of compositions, some of them as large as 30 feet long. At the height of his career he was in great demand as an illustrator of German classics, notably Goethe.

KEAN (*kēn*), **CHARLES JOHN** (1811–1868). More competent as an actor in melodrama than in heavy tragedy, Charles J. Kean followed the choice of the family, his father being Edmund Kean, noted just below. Beginning at Drury Lane (1827) as Norval in Home's *Douglas,* he acted next at Glasgow in Payne's *Brutus* with his father, then in America, and finally found himself famous at Drury Lane in *Hamlet.* Later he and his wife, Ellen Tree, visited America and then enjoyed much success in various London playhouses.

KEAN, EDMUND (1787–1833). Celebrated English actor in Shakespeare dramas, who was born in London, appeared in a ballet on the stage at four, acted with Mrs. Siddons at Belfast in 1808, and became famous in *The Merchant of Venice* in 1814. His Shylock was followed by a Richard III., Hamlet, Othello, and Macbeth. In 1820 he appeared in New York as Richard III. amid great applause. While playing Othello to his son's Iago at Covent Garden in March 1833, he suddenly exclaimed, "I am dying; tell them, Charles," and fell insensible in the arms of his son. He died less than two months later. For the portrayal of strong action and character, Kean was one of our greatest actors. Irregular and violent habits hastened his end.

KEENE (*kēn*), **CHARLES SAMUEL** (1823–1891). Black-and-white artist, who was born in Hornsey, England, and made his advent as an artist in *Punch* in 1851. For the periodical *Once a Week* (1859), he drew a masterly series of illustrations for Reade's *The Cloister and the Hearth* and Meredith's *Evan Harrington.* For almost 20 years dating from 1872 he made a remarkable series of more than 2,000 pictures for *Punch.*

KELLER, ALBERT VON (1844–1920). Born in Switzerland, he studied under various masters, and developed a rather remarkable sense of color. A notable example of his art is entitled *Dinner.* Keller also excelled in painting various kinds of cloth materials.

KELLOGG, CLARA LOUISE (1842–1916). An American soprano; born at Sumterville, S. C.; educated in New York; sang in the United States (1868–1872), in London, and in Italian opera in the United States; organized her own company (1874), for which she made her own translations, libretti, and was stage and chorus manager; married Carl Strakosch in 1887, retiring from the stage. *Memoirs of an American Prima Donna* appeared in 1913.

KELLY, JAMES EDWARD (1855–1933). An American sculptor; born in New York City; studied at the National Academy; at first a wood engraver, then an illustrator, and since 1881 a sculptor. From his well executed historical subjects he has been called "the sculptor of American history." His bronze *Sheridan's Ride; General Buford;* the 6th New York Cavalry Monument on the field of Gettysburg; and *The Call to Arms,* a 17-foot figure of Columbia on the Soldiers' Monument at Troy, N. Y., are among his best works. Recent works are a bronze group of *Leather Stocking* and *The Last of the Mohicans* (1926), and a bust of Thomas A. Edison (1927).

KELLY, MICHAEL (1762–1826). A composer born in Dublin; lived in Italy from 1782 to 1786, and in London from 1786 to 1811,—employed first at Drury Lane till 1793 and then at the King's Theatre. He is remembered chiefly for the music for many dramas.

KEMBLE, CHARLES (1775–1854). One of the members of the celebrated Kemble family of actors, a younger brother of Sarah (Mrs. Siddons), and of John Philip Kemble, and father of Frances or Fanny Kemble,—all noted below. As Orlando in *As You Like It* he first appeared at Sheffied in 1792; and as Malcolm in *Macbeth* at London two years later. He excelled in lighter parts, and in *Laertes* and *Macduff* he was famous. With his daughter Fanny, he made a tour of America (1832–34), when he was inordinately popular. In later years he was involved in monetary troubles owing to unsuccessful theatrical ventures, but was justly celebrated for his dramatic readings in public. Macready once called Kemble "a first-rate actor in second-rate parts."

KEMBLE, FANNY (FRANCES ANNE) (1809–1893). English actress and author, the daughter of Charles Kemble, noted above. From 1829, when she first acted at Drury Lane, her fame was universal among English-speaking folks. She played most of the notable women's parts, not only in Shakespeare, but in plays like *The Hunchback*, and in dramas of her own writing like *Francis the First* and *The Star of Seville*. Between 1879 and 1891, she published five volumes of reminiscences, parts of which make a valuable stage record of the period. In 1834 she married a Southern planter, Pierce Butler, from whom she was divorced in 1849, two years after she returned to the stage. She was in great demand as a Shakespearean reader.

KEMBLE, JOHN PHILIP (1757–1823). An elder brother of Charles and Sarah Kemble (Mrs. Siddons). After an education at Douay, France, he joined a troupe, appeared in Dublin in 1871, and two years later with his sister in Shakespeare and other dramas at Drury Lane in London. Their performance of *Macbeth* (1785) gave them no little reputation, which he retained throughout his life. In 1788 he began to manage Drury Lane, and there introduced many reforms in costuming and staging old plays. In 1803 he transferred to Covent Garden, but in the end the venture proved unprofitable. Kemble probably excelled in the Roman characters of Shakespeare.

KEMBLE, SARAH. See SIDDONS, MRS. SARAH. Several other members of the Kembles were fair actors.

KEMEYS, EDWARD (1843–1907). An American sculptor; born at Savannah, Georgia; removed early to New York; served in the Civil War; did his first work in sculpture as a member of the civil engineering corps of Central Park; made a specialty of Indians and wild animals. His *Bison and Wolves*, *The Still Hunt* in Central Park, *Wolves* in Fairmount Park at Philadelphia, *Panther and Deer*, *Raven and Coyote*, and *Panther and Cubs* are among his chief works.

KENDALL (*ken'dal*), **WILLIAM HUNTER** (1843–1917). His real name was William Hunter Grimston. In 1862 he first appeared in Glasgow, and in 1866 at the Haymarket in London in a variety of parts. With his wife, Madge S. Robertson, he revived many old plays, including Shakespeare and the great comedies of the eighteenth century. For nine years (1879–88) with John Hare he managed St. James Theatre, after which the Kendalls acted chiefly in America and the provinces. Mrs. Kendall created the part of Galatea in *Pygmalion and Galatea* by Gilbert (1871), and both made hits in *The Squire*, *Impulse*, *A Scrap of Paper*, and *The Second Mrs. Tanqueray*.

KENDALL, SERGEANT (1869–1938). An American artist, who won many medals at various exhibitions, including a silver medal for painting, a bronze for drawing, and honorable mention for sculpture at the Buffalo Exposition, 1901; gold medal for painting and bronze for sculpture at San Francisco, 1915; and Potter Palmer gold medal for painting, Art Institute of Chicago, 1910. His pictures hang in the Metropolitan Museum of New York, Corcoran Art Gallery of Washington, D. C., Pennsylvania Academy of Fine Arts, and others.

KENDALL, WILLIAM MITCHELL (1856–). A member of the firm of McKim, Mead, and White of New York, Mr. Kendall had much to do with various structures designed by the firm. Some of these are the McKinley Monument at Canton, O., Plymouth Rock Portico, Arlington Memorial Bridge, additions to the Metropolitan Museum, the New Post Office of New York City, and buildings of the Harvard Business School.

KENT, ROCKWELL (1882–). An American artist, who turned from architecture to painting, and became the pupil of Chase, Henri, Miller, and other American masters. From various travels about the world, especially in a small boat, he gathered impressions for many pictures. The Metropolitan of New York, Art Institute of Chicago, Brooklyn Museum are some of the notable galleries in which pictures of his are hung. *Deer Season* at Chicago, *Annie McGinley* at Pittsburgh, and *Lone Woman* at Brooklyn are some of his best pictures.

KENT, WILLIAM (1685–1748). Though he is represented in Westminster Abbey by his Shakespeare statue, he was not a great sculptor; nor was he a great architect, though Holkham Palace is a fair representative of the art. Walpole called him the "father of modern gardening," and it must be as a landscape architect that his fame will be secured. He got rid of symmetrical forms, artificial restraint of nature, uniformity, and many other conventions in gardening By imitating the variety of nature he indeed became the origin of a new school.

KEYSER, EPHRAIM (1850–1937). Born in Baltimore, and educated in Munich and Berlin; maintained studio in Rome (1880–86), in New York (1887–93), and since in Baltimore. He executed the statue of Baron De Kalb now at Annapolis for the U. S. Government, the memorial for President Chester A. Arthur at Albany, busts of Sidney Lanier, President D. C. Gilman of Johns Hopkins, and others. Among his ideal sculptures are *The Page* at Munich and *Psyche* at Rome.

KING, JULIE RIVE. See under RIVE-KING.

KJERULF (*kyâ'rōölf*), **HALFDAN** (1815–1868). A Norwegian composer, educated for the law, but in 1840 turned to music, and after 1850 taught in Christiania. He became intimately associated with both Grieg and the poet Björnson, from whom he derived no little inspiration. In all he composed the music to over a hundred beautiful songs, noted for poetic and delicate sentiment.

KNEISEL (*k'nā'zel*), **FRANZ** (1865–1926). An violinist and conductor, after a musical education in Europe and a number of years at Vienna and Berlin, became concert master of the Boston Symphony Orchestra (1885–1903). Later he appeared as a soloist and conductor of his own Quartet, and as leader of the Worcester Orchestra, and in 1905 head of violin at the New York Institute of Musical Art.

KNELLER (*nel'ĕr*), **GODFREY** (1648–1723). Painter of historical scenes and portraits, who was born at Lubeck, Germany, studied under Rembrandt and Bol at Amsterdam, acquireda reputation in Italy, and settled in England in 1674. He made many portraits of Charles II., went to Paris to paint Louis XIV., and there became court painter. William III. made him a knight, and George I. a baronet. In coloring he is brilliant, in drawing rather free from conventions, but rather monotonous. In all he painted 10 sovereigns. At Hampton Court are his *Forty-three Celebrities of the Kit-Kat Club* and *Ten Beauties of the Court of William III.*

KREISLER (*krīce'lĕr*), **FRITZ** (1875–). Austrian violinist, a pupil at 7, and winner of the Grand Prize at the Paris Conservatory when he was graduated at 12. After making a tour of the United States in 1889, he studied medicine and served in the Austrian army, as he did also in the World War in his old regiment, being wounded and invalided from service. He had reappeared in 1889 as a concert artist, made a profound impression in the United States the following year, and from then on visited most parts of the world. Besides being one of the great violinists of all time, he composed a number of delightful pieces and wrote *Four Weeks in the Trenches* (1915), an account of his war experience.

KUBELIK (*kö'be-lik*), **JAN** (1880–). A violinist born near Prague, becoming a naturalized Hungarian subject in 1903, on his marriage to Countess Szell. At the age of 8 he appeared in a recital at Prague, and later developed a wonderful technique in all his playing. He was honored by many societies of artists. His début in London occurred in 1901 and in America two years later.

KUPKA, FRANTISEK (1871–). Czech satirical painter, who lived mainly at Prague and Paris, and made a series of drawings showing a keen insight into life and human nature. Much of his work appeared in Paris journals. Later in life he took a pronounced interest in color effects.

KYOSI, SHO-FU (1831–1889). Japanese political caricaturist and painter, independent in his ideas of art and of contemporary events. Several times he ran afoul of the authorities and suffered imprisonment. The folk-lore of Japan attracted him in subjects for various pictures. Besides illustrating many books, he wrote two accounts of his life and art ideals. Examples of his work are found in various museums of the world, notably in the British and in the National Art Gallery of England.

LABLACHE (*lä-bäsh'*), **LUIGI** (1794–1858). An Italian operatic basso; born at Naples. He had a voice of extraordinary volume and quality, compassing two octaves from E below the bass staff to E above. He created the part of Dr. Bartolo in *Il barbiere*. Bellini wrote *I Puritani* for him; Mercadante, *Elisa e Claudio;* and Donizetti, *Don Pasquale*.

LA FARGE (*lä färj*), **JOHN** (1835–1910). An American painter, born of French parentage in New

York; studied drawing under his grandfather, read law, and then went to Paris for study under Couture. He was influenced also by William M. Hunt in America. After 1866 he devoted much time to mural painting and stained glass work, making important contributions to the latter. Some of his work is found in Trinity Church, Boston, the churches of St. Thomas, the Paulist, and the Brick Presbyterian in New York, and the *Battle Window* in Memorial Hall, Harvard University. Some of his work in both oil and water-color was highly admired.

LANCRET, NICHOLAS (1660–1743). French painter of over 700 different works under the influence of his first master Pierre d'Ulin, but more especially under that of Watteau. Many of his pictures have been engraved. His *Four Ages of Man* is in the English National Gallery.

LANDOVSKA, WANDA (1877–). A Polish musical artist, who interpreted the old masters on instruments like the harpsichord. After studying in Berlin, she went to Paris, and became a musician of much charm in bringing out the coloring of older music. From 1913 to 1919 she taught in the Hochschule of Berlin. Some of her writings like *Bach, Music of Former Days*, and various criticisms of single authors take high rank.

LANDSEER, SIR EDWIN HENRY (1802–1873). An English painter; born in London. He began to draw animals when a mere child; exhibited regularly at the Academy; took the very highest rank among animal painters, and, though he was criticised for introducing too human a sentiment and expression into some of his animals, the humor and pathos of animal nature has had no finer exponent. Among his works are the famous bronze lions on Trafalgar Square, *The Shepherd's Chief Mourner, The Return from Deer Stalking, Dignity and Impudence, Piper and Pair of Nutcrackers*, and *Oxen at the Tank*.

LARGILLIERE (*lar-zĭ-lyār'*), **NICOLAS** (1656–1746). French painter who studied at Antwerp, but lived in Paris much of his life. His best work is in portraits, but some of his historical subjects are worth while, like the *Crucifixion*. He was made a member of the Academy in 1686, and later held various offices, ending with the chancellorship. Versailles has some of his works, and a large canvas in Paris contains portraits of most of the city officials of the day (1694).

LASSO (*lăs'sō*), **ORLANDO** (c. 1530–1594). Belgian musical composer, who for many years lived at the court of Albrecht IV., duke of Bavaria, where he composed and played the best music for the court. He represents the highest ideals of music of the generation in which he lived. Some of his works are four volumes of madrigals, three of French songs, two of German three or four parts songs, three of church music, and eleven volumes of his more important compositions.

LE BRUN (*lĭ-brun'*), **CHARLES** (1619–1690). A celebrated French painter; born in Paris; studied in Rome; settled in Paris. He exercised for about 40 years a great influence on the art of the period. He decorated Versailles, and has many works in the Louvre. His reputation was greater in his own day than now. His influence on the industrial arts was widespread in his age. For the king of France he executed a magnificent series bearing on the life of Alexander the Great.

LE BRUN, MARIE LOUISE. See under VIGÉE-LE BRUN.

LE CORBUSIER, M. (JEANNERET) (1887–). A Swiss architect, who for many years lived in Paris, and with a cousin, Pierre Jeanneret, produced a remarkable series of buildings from concrete molds, using the same designs, with ingenious variations. For a time after 1916 he was a painter. Besides working in concrete in the type buildings, he designed several single structures of great beauty, such as the Maison Laroche at Auteuil, the Pavilion de l'Esprit Nouveau at Paris (1925), and a design for the Palace of Nations at Geneva. He also gave attention to planning large towns to secure a maximum of space, air, and light for every inhabitant.

LEECH, JOHN (1817–1864). An English artist and humorist; born in London. His political cartoons in *Punch*, his illustrations of Gilbert A'Becket's *Comic Histories*, of Hood's *Comic Annual*, and of Dickens's works are the basis of his great reputation. Some of his particular illustrations are in the *Comic History of England* (1848), *Comic History of Rome* (1852), *Hints on Life, Portraits of the Children of the Mobility*, showing how poor little folks live, and *Comic English* and *Latin Grammars*. His connection with *Punch* lasted from 1841 to 1864, but meanwhile he drew for several other publications. J. E. Millais helped him color a series of mechanical enlargements of his sketches for an exhibition in London (1862).

LEGROS (*le-grō'*), **ALPHONSE** (1837–1911). A painter and etcher, who settled in England in 1863, taught etching in the South Kensington School of Art, and acted as Slade professor at University College, London, from 1876 to 1892. He was born at Dijon, France, where a number of his works are now exhibited, including the *Ex Voto*. As a teacher he developed great originality, power, and certainty of technique in his classes. Some of his other works are the *Dead Christ, The Triumph of Death, The Tinker, Jacob's Dream, Saint Jerome*, an *Angelus*, and portraits of Browning, Burne-Jones, and Huxley.

LEIBL, WILHELM (1844–1900). German painter who lived for years among peasants, shared their life, and represented them in unfailing and beautiful realism. His pictures are noted for coloring, fidelity to artistic ideals, and firmness of execution. In his earlier life he was influenced by Courbet and by the Dutch masters. He studied at two different times in Paris. Some of his best subject pictures are *The Village Politicians, In Church, Frau Gentz, The Artist Sattler and his Dog*, and many notable peasant scenes.

LEIGHTON (*lāy-tŏn*), **FREDERICK, BARON** (1830–1896). English painter and sculptor, who exhibited a picture in 1855 entitled *Cimabue's Madonna Carried in Procession through the Streets of Florence;* this was purchased by Queen Victoria and gave him a great reputation. From his early youth till 1860 he lived on the continent, mainly in Italy, where he knew many celebrated English authors and artists. In Florence he painted *Tybalt and Romeo, The Reconciliation of the Montagues and the Capulets*, and *The Death of Brunelleschi*. He became one of the firmest and best draftsmen of his age. Of his many pictures, some of the most interesting are: *Electra at the Tomb of Agamemnon, Helios and Rhodos, Nausicaa, Last Watch of Hero, St. Jerome, David Musing on the Housetop, The Summer Moon, and Clytie* — his last unfinished work.

LELY (*lē-lī*), **PETER** (1618–1680). English painter, born in Westphalia, whose real name was Van der Faes. Lely adopted his father's nickname, removed to England in 1641, and for years was known as a painter of landscape, a few historical scenes, and portraits. He painted Charles I, Cromwell, Charles II and his court (including "the Beauties"), and *Susannah and the Elders*.

LENBACH (*len'băch*), **FRANZ** (1836–1904). A German portrait painter; born in Munich; studied there under Piloty. Among his portraits are those of Bismarck, Gladstone, Wagner, and Heyse, in which the character and personality of the subject are magnificently brought out Other important works are *Shepherd Boy* and *Peasants Taking Refuge from the Weather*.

LEO, LEONARDO (1694–1744). An Italian composer; born near Brindisi; studied at Naples and Rome; choirmaster and director of the school of San Onofrio in Naples (1717); wrote the oratorios *Santa Elena* and *La morte d'Abele;* the operas *Sofonisbe, Olimpiade, La clemenza di Tito*, and *Achille in Sciro;* and church music, including masses, the well-known *Miserere*, introits for Lent, and sacred solos.

LEONARDO DA VINCI (*dā vēn'chē*) (1452–1519). An Italian painter, sculptor, and architect; born at Vinci, between Pisa and Florence; studied with Andrea del Verrocchio and Ludovico Sforza. He holds a supreme place as an artist; but few of his paintings have endured. His *Last Supper*, painted on the wall of the refectory of the Convent of Santa Maria delle Grazie at Milan, has been frequently "restored" because of the injury from the dampness of the wall; yet it remains one of the world's masterpieces. His *Mona Lisa*, a half-length portrait of a woman with a mysterious smile, in his most celebrated easel picture. It with *The Virgin of the Rocks* and *The Virgin and Child with Saint Anne*, is in the Louvre. Da Vinci and Michelangelo are the giants of the Florentine Renaissance. He was also one of the greatest scientists of his age, known for his studies in anatomy, mathematics, physics, and mechanics, being one of the first to consider the problems of mechanical flight.

LEONCAVALLO (*lā-ōn-kā-văl'lō*), **RUGGIERO** (1858–1919). An Italian composer, who was born at Naples, and studied there under Cesi, Ruta, and Rossi. After several unsuccessful attempts, he finally

secured the production of his *Pagliacci* at Milan in 1892. *La Bohème* also gained some favor, though not so much as Puccini's operas of the same title. His *Medici* and *Chatterton* gained little applause, but *Zaza* and *Der Roland* in 1900 and in 1904 were fairly well received. He was his own librettist.

LESCHETIZSKY (*lesh-e-tit'skē*), **THEODOR** (1830–1915). One of the most famous teachers of piano in modern times, who was born in Poland, studied under Czerny, won great fame as a pianist, and trained a number of artists who attained considerable note. For 14 years he taught in the Conservatorium at St. Petersburg (1864–78), and then established his own school at Vienna. Some of his pupils were Paderewski, Mark Hambourg, and Annette Essipoff, whom he married.

LESLIE (*les'li*), **CHARLES ROBERT** (1794–1859). Painter, born in America and educated in Philadelphia, but after 1811 lived mainly in England, save for six months as a teacher of drawings at the United States Military Academy at West Point. He early won two silver medals at English Royal Academy. Much of his work treats of subjects drawn from celebrated authors like Shakespeare, Cervantes, Swift, Sterne, Fielding, and Smollett. Besides his *Life* of the painter Constable and an *Autobiography*, he compiled a *Handbook for Young Painters*.

LEUTZE (*loit'se*), **EMANUEL** (1816–1868). An American artist of German parentage and born in Württemberg; brought by his parents to Philadelphia in infancy. Returned to Düsseldorf for his art education. He is known principally for his large historical paintings, which include scenes in the life of Columbus, a decoration in the Capitol at Washington, entitled *Westward the Star of Empire Takes Its Way*.

LIEBERMANN (*lē'bĕr-măn*), **MAX** (1847–1935). A German painter and etcher, who has been called the Millet of his country. Like J. F. Millet in France he broke with traditions in art and turned toward the peasants, whom he portrayed in remarkable vitality and realism. After his first great picture, *Woman Plucking Geese*, was exhibited he went to Paris in 1872 and to Barbizon the next year, where he came to know Millet, Corot, and their school of art. His painting *Christ in the Temple* was condemned as sacrilegious because of its utter realism. After 1884 he lived in Berlin, where a section of the National Gallery contains specimens of his best work. Some earlier works are *An Asylum for Old Men, The Flax Spinners*, and *The Cobbler's Shop;* some others are *The Woman with Goats, The Seamstress*, and *Beercellar at Brandenburg*.

LIND, JENNY (1820–1887). One of the most artistic and accomplished singers of the nineteenth century, a great public favorite for many years, was born at Stockholm, Sweden. She passed through a period of training for several years, first sang in 1836, and was definitely engaged in 1837. Within four years she attained the height of fame at Paris, particularly in *Der Freischütz*. She was a fine actress in all her operatic parts. Appearing in England first as Alice in Meyerbeer's *Robert le Diable*, her reputation increased with almost every performance. Some of her other parts were in *Figaro, I Puritani, Il Flauto magico*, and in the *Messiah* (1850), just before she left for America. For two years she sang in many cities of the United States, for the most part under the management of P. T. Barnum. In Boston she married Otto Goldschmidt (1852). For some years in England she appeared in oratorios and concerts, fostered the Bach choir of which her husband was conductor, helped many young singers, and for a time was professor of music at the Royal College of Music. She last appeared in 1870 in *Ruth*, an opera composed by her husband. Her hold on the public for a generation was due to her talent, the superb perfection of her voice and in a large measure to the naturalness, simplicity, and sincerity of her life and manner.

LIPPI (*lēp'pē*), **FILIPPINO** (1457–1504). An Italian artist; born at Florence; son of Fra Filippo Lippi and pupil of Boticelli; noted for his frescoes in churches in Florence and Rome and for *The Virgin and Saints, The Adoration of the Magi* in the Uffizi at Florence, *The Virgin Appearing to St. Bernard* in the Church of the Badia at Florence, and *The Vision of St. Francis*.

LIPPI (*lēp'pē*), **FRA FILIPPO** or **LIPPO LIPPI** (1406–1469). One of the great painters of Florence in a magnificent age of art. He was attached to the Carmelite monastery from 1521 to 1532, and afterwards seemed to be bound by some religious vows. One of the best colorists, draftsmen, and interpreters, he painted people more nearly as they were than most artists of the time. Little is known of his life, save that Vasari claims he was at Ancona and Naples and was captured by Barbary pirates. in 1456 he began to execute a commission at Prato. Some of his best frescoes are found in Florence, in the cathedral at Prato, and the cathedral of Spoleto. An altarpiece for S. Ambrogio at Florence, mentioned by Browning in his poem, the *Virgin Adoring the Infant Christ*, and *Annunciation* and *Seven Saints* in the National Gallery of London, and a *Madonna and Angels* in the Louvre are notable works.

LISZT (*list*), **FRANZ** (1811–1886). An eminent Hungarian pianist and musician; born at Raiding, near Oedenburg; studied at Vienna and Paris; brought out Wagner's *Lohengrin* and Berlioz's *Benvenuto Cellini* at Weimar, which became the musical center of Germany; took minor orders in the Catholic Church (1865) and was consequently known as Abbé. He was unapproachable as a pianist, both by reason of his supreme command of technique and the poetic quality of his playing. His compositions for the pianoforte are enormous in number. His 12 symphonic poems, one or two masses, and the *Legend of St. Elizabeth* form the body of his religious and other works.

LOEFFLER (*lēf'lĕr*), **CHARLES MARTIN TORNOV** (1861–1935). A composer, who played with the Boston Symphony Orchestra from 1881 to 1903, when he gave all his time to writing music. He was born in Alsace, lived for a time in Russia, and was educated finally in Switzerland and in music in France. Of his many excellent works, one might mention *A Pagan Poem*, for orchestra and piano; *Memories of my Childhood*, a symphonic poem; *Canticle of the Sun*, which was used for the opening of the Chamber Music Room, Library of Congress; a *Quartet in A Minor; For One Who Fell in Battle*, an eight-part chorus.

LORENZO, MONACO (c. 1370–c. 1425). Called also Don Lorenzo. Born in Siena, he became attached to the monastery of Santa Maria, and left many examples of his art in Florence. Some of his works that remain are a *Coronation of the Virgin*, a smaller painting on the same theme in the National Gallery of London, some frescoes depicting *The Life of the Virgin, Life of a Hermit* and the *Journey of the Three Kings*.

LOTTO, LORENZO (c. 1480–1556). A Venetian painter, who left some notable works at Bergamo, especially a *Madonna, Christ Taking Leave of his Mother* (which is now at Berlin), a *Bride and Bridegroom*, now at Madrid, and a fine series of frescoes. Returning to Venice, he painted *Christ and the Adulteress, Crucifixion*, and *Madonna and Saints*. For the last four years of his life, having completely lost his voice, he lived in a monastery.

LOW, WILL HICOCK (1853–1932). An American artist and illustrator; born at Albany, N. Y.; studied in Paris with Gérôme and Carolus-Duran; joined the Barbizon school; painted *Day of the Dead;* returned to New York (1877); taught the life class at Cooper Union (1882–1885); at the National Academy (1889–1892); elected N. A. (1890); did much mural decoration; painted the portrait of Mme. Albani, *Lady of the Empire, Telling the Bees, Aurora*, and *Spring*. Low also did much work in stained glass for churches and made a number of mural decorations, the chief ones being for the U. S. Federal Building of Cleveland, *Victory* in Earl Hall, Columbia University, and decorations in the State Capitol of Albany, N. Y., and 32 pictures in the Education Building of the same city.

LUCAS, JOHN SEYMOUR (1849–1923). An English painter; born in London; elected R. A. (1898). Among his important works are *The Armada in Sight, After Culloden, Flirtation*, and an excellent fresco in the Royal Exchange at London.

LUINI (*lō-ē'nī*) (c. 1475–c. 1532). An Italian painter; supposed to have been born in the village of Luino, near Lake Maggiore, but it is only known for certain that his works were mostly executed between 1520 and 1530. He is one of the five painters of whose supremacy Ruskin was most certain. He was the most popular of the disciples of Leonardo da Vinci at Milan. Among his works are *The Marriage of the Virgin* and *The Nativity*, two frescoes in the Church of Saronno.

MacCHESNEY, CLARA TAGGART (1861–1928). An American painter; born at Brownsville, Cal.; studied in Paris under Courtois and Girardot and at New York under Mowbray and Beckwith. She ex-

celled in the drawing of children and in water-color work; received many medals and much public recognition.

McCORMACK (*mà-kôr'mäk*), **JOHN** (1884–). Tenor singer, born at Athlone, Ireland; studied voice under Signor Sabatini of Milan. First appeared in London in *Cavalleria Rusticana*, and in the same season (1907) sang in *Rigoletto* with Tetrazzini. After 1909 sang with Chicago Grand Opera and several other companies. In 1919 became a naturalized United States citizen. Of his many rôles some of the chief are Ridolfo, Pinkerton, Faust, Don Ottavio. He was given the title of Count by the Pope in 1928. Appeared frequently in concert in many lands.

MacDOWELL (*mak-dou'el*), **EDWARD ALEXANDER** (1861–1908). An American composer and pianist; born in New York City; studied in Paris and Germany from 1876 until 1887. He returned to America, established himself in Boston, and engaged in teaching and concert work; appointed to the chair of music in Columbia University, New York City, in 1896; resigned in 1904. His musical career was terminated by ill health in 1905. Among his works are a number of beautiful compositions for the pianoforte, songs, choruses, and orchestral works. For romantic atmosphere, delicacy, and use of snatches of folk-music, Indian tunes, and artistic technique and finish, he stands in the front rank of American musical composers.

MACKENZIE, ALEXANDER CAMPBELL (1847–1935). Scotch violinist, educated in London and Edinburgh, and lived in Florence for six years (1879–85). In 1885 he was chosen principal of the Royal Academy in London, and won also many honors. Among his compositions are *Colomba*, *The Troubadour*, operas; incidental music to *Marmion*; *The Little Minister* and *Ravenswood*, oratorios; the *Rose of Sharon* and *Bethlehem*, cantatas; and incidental music for *The Cotter's Saturday Night*.

McKIM (*ma-kim'*), **CHARLES FOLLEN** (1847–1909). An American architect; born in Chester County, Pa.; studied at Harvard and at L'Ecole des Beaux-Arts in Paris; settled in New York (1872) and formed a partnership with William R. Mead (1877) and with Stanford White (1879). The work of this firm produced a renaissance in American architecture. Buildings with which they are associated are Boston Public Library, Columbia Library, Century Club in New York, J. Pierpont Morgan's Library, War College at Washington, the new Pennsylvania depot in New York, Bellevue Hospital, and the Madison Square Presbyterian Church.

MacMONNIES (*mak-mun'iz*), **FREDERICK** (1863–1937). An American sculptor; born in Brooklyn, N. Y.; studied with St. Gaudens and with Falguière in Paris. Among his important works are *Diana*, *Nathan Hale* in the City Hall Park in New York, the huge fountain at the Columbian Exposition in Chicago, *Bacchante* and *Sir Henry Vane* in the Boston Public Library, *Victory* at West Point, *Shakespeare* and the bronze doors in the Congressional Library, and groups on the Memorial Arch in Prospect Park in Brooklyn.

MacNEILL (*mak-nēl*), **HERMON ATKINS** (1866–). An American sculptor; born at Chelsea, Mass.; studied in Paris under Falguière and Chapu; for three years instructor at the Chicago Art Institute; assisted Martiny in his work for the Columbian Exposition; studied in Rome for four years. His notable works include *The Moqui Runner*, *A Primitive Chant*, *The Sun Vow*, *The Fountain of Liberty* at the St. Louis Exposition, *Coming of the White Man* in Portland, Ore., and the *McKinley Memorial* at Canton, Ohio.

MACREADY (*mak-rē'di*), **WILLIAM CHARLES** (1793–1873). An English tragedian; born in London. In 1826 he made his first visit to America, and in 1828 played in Paris, with great success in both countries. He did much to reform the stage and cultivate the public taste for Shakespearean drama; revisited the United States in 1849; returned to England; gave a series of farewell performances and finally retired from the stage in 1851. The Astor Place Riot (May 10, 1849) was caused by the rivalry and ill feeling between Macready and Forrest.

MacWHIRTER, JOHN (1839–1911). A Scottish painter; born at Slateford, near Edinburgh; elected R. A. in 1894. Among his notable works are *Nature's Archway*, *June in the Austrian Tyrol*, *The Lord of the Glen*, *The Track of the Hurricane*, *The Silver Strand*, and *Loch Katrine*.

MAKART, HANS (1840–1884). An Austrian painter; born at Salzburg; studied with Piloty at Munich (1861–1865); settled in Vienna (1869); professor of the Art Academy (1879); chief works are *Amorettes*, *The Seven Deadly Sins*, *The Homage of Venice to Catherine Cornaro*, *Cleopatra on the Nile*, *Entrance of Charles V. into Antwerp*, *Death of Cleopatra*, *The Spring* and *Diana's Hunting Party*, which is in the Metropolitan Museum at New York.

MALIBRAN, MARIE FELICITE (1808–1836). A French mezzo-soprano and actress; born at Paris; daughter of Manuel Garcia; made her début in London in 1825, and soon her reputation extended over Europe. She married M. Malibran, a French merchant, who soon became bankrupt. She then returned to the stage, and was received with great enthusiasm in France, England, Germany, and Italy. Her first marriage having been dissolved, she married M. de Bériot, a famous violinist, in 1836. She was one of the greatest of operatic singers.

MANET (*mànāy'*), **EDOUARD** (1832–1883). French painter, an early student of Couture, who influenced him greatly at first, before the Spanish claimed his marked attention. For a long time his independence and modern tendencies excluded him from exhibitions and favor of the elect. In turn he greatly inspired a small group of younger men. Some of his earlier works are *Spaniard Playing the Guitar*, *Breakfast on the Grass*, *The Angelus at the Tomb*, and *A Bullfight*. In 1867, rejected from the exhibition, he and Couture set up their works in a private gallery. Later pictures, more under the influence of the open air, called forth some interest; but in 1887 he again held a private exhibition. *The Garden*, *Hamlet*, *In the Conservatory*, and some portraits later were highly appreciated. He was admitted to the Legion of Honor in 1881. His *Boy with a Sword* is in the Metropolitan Museum of New York. Like all other innovators, Manet was long misunderstood and censured.

MANSARD (*män-sär*), **JULES-HARDOUIN** (1646?–1708). Eminent French architect, who was liberally patronized by Louis XIV., and designed many fine buildings in or near Paris. A few of these are the Palace of Versailles, the foundations of the Pont-Royal, Trianon, part of the cathedral at Orleans, and the dome of the Invalides. Not only skill and rapidity of execution, but great originality and freedom from convention mark his work.

MANSFIELD (*mans'field*), **RICHARD** (1857–1907). An American actor; born in the island of Heligoland, Germany; in business in Boston, Mass. for some years; went to England and played small parts in comic opera; came to the Standard Theatre in New York (1882); made a great success as Baron Chevrial in the *Parisian Romance* (1883); played in American cities in a number of rôles, from Ko-Ko in *The Mikado* to Richard III. and Shylock (1883–1890). He played Dr. Jekyll and Mr. Hyde, Prince Karl, Richard III., Beau Brummel, Dimmesdale in his own *Scarlet Letter*, Shylock, Bluntschli in *Arms and the Man*, Dick Dudgeon in *The Devil's Disciple*, Cyrano de Bergerac, and numerous other parts.

MANSHIP, PAUL (1885–). American sculptor, born in St. Paul, Minn., educated there, at Philadelphia, and New York, and Rome, where he went on a fellowship of the American Academy. Returning in three years, he almost instantly won high praise, and in time was awarded many medals, including a gold award by the Philadelphia Academy and the San Francisco Exposition. Some of his best portrait statues are *John D. Rockefeller*, *Miss Manship* (his daughter aged three days), now in the Metropolitan Museum, New York, *Dancing Girl and Fauns*, *Little Brother*, *Playfulness*, and *Dancer and Gazelles*.

MANTEGNA (*man-tane'yah*), **ANDREA** (1431–1506). An Italian painter; born in Vicenza, Italy; pupil and adopted son of Squarcione. Mantegna excelled in perspective, which was then a rare merit. He introduced the art of engraving on copper into Upper Italy; painted nine tempera pictures representing the *Triumph of Cæsar*, now in Hampton Court. Among his frescoes are *The Martyrdom of St. James* in the Eremitani at Padua and *Barbara of Brandenburg*, *Marchesa di Genzaga*, *and her Court* in the Palace at Mantua. It is probable that the highest qualities of the great Venetian art of the fifteenth century were derived from Mantegna.

MARCELLO (*mär-chel'lō*), **BENEDETTO** (1686–1739). An eminent Venetian composer. He was also a student of law, and in his early life held several important government posts. His great work, *Estro poetico-armonico*, *Parafrasi sopra i primi*, 50 *psalmi*,

Poesia di Girolamo Giustiniani, appeared in two parts (1724–1727). They are composed for one, two, three, and four voices, and for expression, it is said, far surpass any other work of the kind. Among his other compositions are instrumental concertos; an opera, *La Fede riconosciuta;* and an oratorio, *Giuditta.* Marcello was also a poet of much distinction.

MARCHESI (*mär-kā'zē*), **MATHILDE GRAUMANN** (1826–1913). German singer and teacher of distinguished artists like Calvé, Emma Eames, Emma Nevada, and Etelka Gerster. She married Salvatore Marchesi in 1852. From 1844 to 1849 she spent most of her time in singing, afterward a large part at various conservatories. Besides a number of books on her art, she wrote *Marchesi and Music*, a book of personal history.

MARTINI, GIAMBATTISTA (1706–1784). Learned Italian composer, who specialized in history and theory of music, accumulating a remarkable private library of over 17,000 volumes. His own writings were confined to masses and other sacred compositions for the most part. His *Storia della Musica* (1757) was long a favorite.

MASCAGNI (*mäs-kän'yē*), **PIETRO** (1863–). An Italian composer; born in Leghorn, Tuscany. He produced a one-act opera, *Cavalleria Rusticana*, in competition for a prize; also *L'amico Fritz*, *I Rantzau*, *Nerone*, *William Ratcliff*, and *Zanetto;* director of the Conservatorium at Pesaro in 1896.

MATISSE (*mät-tēs*), **HENRI** (1869–). French painter, one of the most eminent of the "independent" modern artists. His specialty was large masses of light, instead of many contrasts of color; many of his pictures have a statuesque effect, due to his treatment of form and color. He painted scenes in Morocco, Southern France, and Italy.

MATTESON, TOMPKINS HARRISON (1813–1884). An American painter; born at Peterborough, N. Y.; best known by his *Spirit of '76*, often reproduced; elected N. A. in 1874.

MAY, PHIL (1864–1903). English caricaturist, born near Leeds, but went to London at 17 to earn his living as an illustrator. For a time he fared very poorly, but obtained some work for the *St. Stephens Review*, after two years going to Australia. For three years he made some of his best drawings for the Sydney *Bulletin*, and in 1892 was back in London with the *St. Stephens Review*. Seven years before his death he obtained a permanent place on *Punch*. Knowing the London types well, he succeeded admirably in showing their human and odd qualities.

MATZENAUER (*mät'sĕn-ou-ĕr*), **MARGARETE** (1881–). An operatic mezzo-soprano, who was born in Hungary; became an American citizen in 1918. She received much of her early training from her musical parents. Her début as Puck in *Oberon* occurred at Strassburg, Germany, in 1901, where she continued for three years, and then from 1904 to 1911 at Munich, appearing at Bayreuth. In 1911 she joined the Metropolitan Opera Company, New York. Some of her parts were Herodias, Brünnhilde, Carmen, Isolde, and Donna Elvira.

MAYNARD, GEORGE WILLOUGHBY (1843–1923). An American painter; born in Washington, D. C.; studied under Edwin White in Italy, at the Antwerp Academy, and in Paris; painted portraits of Kate Field and of Frank D. Millet; settled in New York (1885). One of the earliest of American mural decorators, his work on the Agricultural Building at Chicago (1893), on the Congressional Library, the Waldorf-Astoria, and other buildings is of a high order. His *In Strange Seas* is in the Metropolitan Museum in New York.

MAYO, FRANK (1839–1896). An American actor; born in Boston, Mass.; first appeared in San Francisco; played frequently with Edwin Booth; appeared in Boston (1865) as Othello, Hamlet, Macbeth, and D'Artagnan. He is remembered for his Davy Crockett and Pudd'n-Head Wilson.

MEAD, LARKIN GOLDSMITH (1835–1910). An American sculptor; born in Chesterfield, N. H.; studied under Henry K. Brown. His colossal *Vermont* for the dome of the State Capitol at Montpelier; his *Ethan Allen;* the National Lincoln Monument at Springfield, Ill.; the Soldiers' Monument at St. Johnsbury, Vt.; the pediment, *Return of Proserpine*, over the Agricultural Building at Chicago in 1893; the colossal *Mississippi River;* the marble group of the Stanford family at Stanford University in California (injured by the earthquake) are among his best works.

MEAD, WILLIAM RUTHERFORD (1846–1928). An American architect, member of the New York firm of McKim, Mead, and White. He was graduated from Amherst, studied under Russell Sturgis, also in Europe, and entered the firm in 1879. The National Institute of Arts and Letters awarded him a gold medal, and the king of Italy made him a Knight Commander of the Crown. Some important buildings designed by his firm are the Boston Public Library, the New York *Herald* Building, New York Post Office, Brooklyn Institute of Arts and Sciences, the Tiffany Building, and National City Bank of New York.

MEHUL, ETIENNE HENRI (1763–1817). Also known as **ETIENNE NICOLAS.** A French musical composer; born in Ardennes; settled in Paris in 1778; composed 24 operas, including *Euphrosine et Coradin*, *L'irato*, *Joseph*, and *La journée aux aventures;* several symphonies; and numerous songs, including "Chant du départ," "Chant de victoire," and "Chant du retour," popular with French Revolutionary soldiers.

MEISSONIER (*māy-sō-nē-ā'*), **JEAN LOUIS ERNEST** (1815–1891). A French painter; born in Lyons. All his works were painted with Flemish care and finish, but were thoroughly original in their treatment. His pictures, though of small size, sold for large sums, especially his *Napoleon I. and Friedland, or 1807;* illustrated *Paul and Virginia* and the *Chaumière Indienne.*

MELBA, NELLIE (1865–1931). An Australian soprano operatic singer; born near Melbourne; performed publicly at six; appeared in London (1886); took Brussels and Paris by storm (1887 and 1889); sang in *Lucia di Lammermoor* at Covent Garden in London (1888); most successful in *Romeo and Juliet;* first appeared in New York in 1893 in *Lucia di Lammermoor*, where she has appeared every season since; sang at the World's Fair in Chicago (1893); one of the most celebrated *prime donne* of our time. Her stage name "Melba" is taken from the city of Melbourne. Her maiden name was Nellie Porter, and she married Captain Charles Armstrong in 1882.

MELCHERS (*mel'chērz*), **GARI** (1860–1932). An American artist, born in Detroit, educated in Düsseldorf and Paris, especially under Lefebvre and Boulanger. Some of his notable pictures are *Maternité*, in the Luxembourg, Paris; *The Family*, National Gallery, Berlin; decoration of the Congressional Library, entitled *Peace and War;* portrait of President Roosevelt, Smithsonian Institution of Washington; portrait of Charles Hutchinson, Art Institute, Chicago.

MEMLING or **MEMLINE, HANS** (about 1430–1495). A Flemish painter; born at Mainz on the Rhine; settled in Bruges. He was the Raphael of Flemish art. Reinach asks, "Is there a more fascinating achievement in all the domain of painting than the *Shrine of St. Ursula* at Bruges? If we except those of Van Eyck, what portraits are superior to Memling's?"

MENDELSSOHN-BARTHOLDY (*men'dels-sōn-bär-tol'dē*), **JACOB LUDWIG FELIX** (1809–1847). A German composer, who at 9 played before friends and at 11 had done some composing. Two sisters and a brother were also fine musicians. Some of his early works are a violin piece (1820), now called opus 4; an octet, now opus 20; a quartet for the pianoforte, an overture to *Midsummer Night's Dream* (1826), and an opera founded on *Don Quixote* (1827). In 1825 he visited Paris, where he knew the chief musicians and artists; in 1829 he made his first visit to England, and left a profound impression. After a tour of Scotland he produced his *The Hebrides*, better known now as *Fingal's Cave.* In 1832 he became conductor at Düsseldorf, and in 1841 kapellmeister to the King of Prussia. His *St. Paul* and *Elijah*, the latter of which he conducted at Birmingham in 1846, gave him tremendous fame in England. These are still among our greatest oratorios. From 1835 he conducted the famous Gewandhaus orchestra at Leipzig. Other notable compositions are the music to the 42d *Psalm*, the *Lobgesang*, and some extraordinary chamber music, which should be better known.

MENZEL (*men'tsel*), **ADOLF** (1815–1905). A German painter; born at Breslau; best known for his historical pictures and drawings illustrating the times of Frederick the Great and William I. Some of his best pictures are *The Forge* and *The Coronation of William I.*, the latter of which is independent and wonderfully life-like.

MERCIE (*mer-syā'*), **ANTONIN** (1845–1916). A French sculptor; born at Toulouse; won the Prix de Rome (1868). Among his best works are the famous

statue of Napoleon on the Vendôme Column; his *Gloria Victis*, bought by the French government; *William Tell* at Lausanne; monument of Thiers in Père Lachaise; and *Jules Ferry* at St. Dié.

MESDAG (*mes'dăch*), **HENDRIK WILLEM** (1831–1915). A Dutch painter of scenes of the sea, who was born at Groningen and lived mainly at The Hague, where his collection of paintings, given by him to the nation, is now housed in a special museum. He won a gold medal in the Paris salon, having been influenced by Israëls to abandon banking for art. *Après l'Orage* and *Une Soirée sur le plage de Scheveningen* are two of his greatest works.

METSU (*met'sü*), **GABRIEL** (1630–1667). A Dutch painter, influenced by his master, Gerard Dow, by Jan Steen, Rembrandt, and Franz Hals. Some of the early religious pictures are *Lazarus*, *Departure of Hagar*, and *Widow's Mite;* some of the realistic views are *Women at the Fishmonger's Shop* and *Market Place in Amsterdam*, which was his home for many years; and more sentimental pictures are *Music Lovers*, *Mother Nursing her Sick Child*, and *The Repast*. Metsu is noted for his varied interests.

MEUNIER (*mė-nyā'*), **CONSTANTIN** (1831–1905). Belgian sculptor and painter, who exhibited a cast called *The Garland* in 1851, but fell under the influence of Millet and others, turning to the life of workers. Some of his paintings were *The Tobacco Factory at Seville* and illustrations for a book on Belgium. After 1885 he gave all his attention to sculpture, some of his best pieces being *Puddler at the Furnace*, *The Smith*, *The Miner*, *An Old Colliery Horse*, *Fire Damp*, and *Maternity*.

MEYERBEER, GIACOMO (1791–1863). His original name was Jakob Meyer Beer. Having been noted as a pianist since he was nine years old, and a composer of two operas that failed to succeed, Meyerbeer turned in disappointment to Rossini and Italy, and produced a series of Italian operas that won an immense popularity. Later at Paris (1831) his *Robert le Diable* established the vogue of the florid, romantic musical piece for which he is best known. Next *L'Africaine* and *Le Prophète*, for which Scribe wrote librettos, added much to his fame. *Les Huguenots* and *L'Etoile du Nord* also for years attracted large audiences. Meyerbeer introduced Jenny Lind to Prussian audiences; he also did much to keep the music of Wagner before the public when the master himself was in exile.

MICHAELANGELO (*mī-kel-an'je-lō*) **(MICHELAGNIOLO BUONARROTI)** (1475–1564). An Italian painter, sculptor, architect, and poet, born of an old Florentine family, and at 13 overcame his father's opposition to becoming an artist. He studied with the Ghirlandaio brothers and learned much from earlier masters as well. Some of his first paintings are religious in subject. For about three years (1489–1492) he painted for Lorenzo dei Medici, and then spent a year at Bologna, and from 1496 to 1501 he was at Rome. Early statues are the magnificent *David*, a smaller one of the same subject, *St. Matthew*, *Madonna and Child*. In painting his greatest work is the decoration of the Sistine Chapel with a series of nine biblical scenes, unrivaled in their conception, daring and strength of execution. These and other works, some uncompleted, were made for Pope Julius II. Some of his great statues of a later day are the *Moses*, *Slaves*, *Christ*, *Victory*, a *Madonna and Child*, executed for the Medici family, *Evening* and *Morning*. Some of his later paintings are *The Entombment of Christ*, *The Last Judgment*, and the *Fall of Phaeton*. In poetry he wrote some noble sonnets, and in architecture he planned some of the buildings on the Capitol at Rome, the dome of St. Peter's, and numerous others, only a few of which were carried forth according to his designs.

MIGNARD, PIERRE (1610–1695). French painter, who lived for 22 years in Italy, but returned to Paris in 1652. Because of his opposition to Le Brun, Mignard had to confine himself to portraiture, since the great public works went to members of the Academy, of which his rival was the guiding genius. He painted Bossuet, Molière, Sévigné, Descartes, and many other celebrities. When Le Brun died Mignard succeeded to his honors and commissions, but enjoyed his change of fortune only five years before his death.

MILLAIS (*mil'ā*), **JOHN EVERETT** (1829–1896). English painter, who with W. Holman Hunt in 1848 founded the Pre-Raphaelite Brotherhood, in which they were soon joined by Dante G. Rossetti and others. Millais painted *Christ in the House of his Parents* as his first contribution, his object being to paint nature as they saw it. More imitative still is his *Isabella*, suggested by the poem of Keats. Some of the early pictures are *The Return of the Dove to the Ark*, *Mariana*, and *The Huguenot*. Millais illustrated works by Trollope, Tennyson, and Scott. Between 1871 and 1876 he painted a series of landscapes, some of which are *Scotch Firs*, *Fringe of the Moor*, and *The Sound of Many Waters*. He also painted a number of eminent persons.

MILLET (*mil-lay'*), **AIME** (1819–1891). A French sculptor; born in Paris. His *Ariadne* (1857) was bought for the Luxembourg. His masterpiece is the colossal *Vercingétorix* at Alise-Ste-Reine in Côte d'Or. *Apollo* at the Grand Opera and *Mercury* at the Louvre are well known.

MILLET (*mil'et*), **FRANCIS DAVIS** (1846–1912). An American artist and author; born at Mattapoisett, Mass.; studied at Harvard; studied art at Antwerp; war correspondent in the Russo-Turkish War (1877–1878) for the New York *Herald*, London *Daily News*, and *Graphic*, and for London and New York papers at Manila (1898); director of decorations at the World's Fair (1893); studied mural work under La Farge; helped to decorate Trinity Church, Boston; best work is *Between Two Fires* in the National Gallery, London. Millet also wrote some excellent stories and essays. He was drowned in the sinking of the *Titanic*.

MILLET (*mil-lay'*), **JEAN FRANCOIS** (1814–1875). A French painter. In 1849 he settled among the peasants of Barbizon, on the edge of Fontainebleau forest, and devoted himself to transferring their simple everyday life to his canvases, which he did with great truth of sentiment and subdued poetic charm. Of his paintings *The Angelus* was sold by auction in Paris, in 1889, for about $115,000. His *Sower*, *Peasants Grafting*, *The Gleaners*, *Waiting*, *The Sheep Shearers*, *The Man with the Hoe*, *Women Carding*, and *The Shepherdess and Flock* are his chief productions.

MILMORE, MARTIN (1845–1883). An American sculptor; born at Sligo, Ireland; studied sculpture with Thomas Ball in 1860; made several statues for Boston Horticultural Hall; modeled the Soldiers' Monument for Roxbury, Mass. (1867); the Soldiers' and Sailors' Monument for Boston Common (1877); busts of Pope Pius IX., Wendell Philips, Emerson, Sumner (in the Metropolitan Museum at New York), Grant, Lincoln, and Webster; and, with his brother, the granite sphinx in Mount Auburn Cemetery, Cambridge, Mass.

MILLS, CLARK (1815–1883). An American sculptor, born near Syracuse, N. Y.; specialized in colossal statues, such as the equestrian figure of Washington, for which the government paid $50,000, and Crawford's immense statue called *Liberty*, which he cast for the Capitol at Washington. His bust of Calhoun was purchased for the City Hall of Charleston, S. C., and his General Jackson for the Lafayette Square at Washington.

MITCHELL, MAGGIE (MARGARET JULIA) (1832–1918). An American actress; born in New York City; began acting at five; appeared as Julia in *The Soldier's Daughter* (1851). Her best rôles were Jane Eyre, Mignon, and Fanchon in *Fanchon the Cricket*, which last she played more than 2,000 times.

MODJESKA (*mō-jes'kä*), **HELENA** (1844–1909). A Polish actress; born in Cracow. She began to act in a traveling company in 1861. Four years later she made a great name at Cracow. She settled with her second husband near Los Angeles, Cal., to try farming, but the enterprise not succeeding she returned to the stage and won a complete triumph at San Francisco in 1877 as Adrienne Lecouvreur in English. Among her most successful rôles were Juliet, Rosalind, Beatrice, and the leading part in the *Dame aux camélias*. She returned to farming in California in 1895.

MONET (*mo-nā'*), **CLAUDE** (1840–1926). A French painter, one of the founders of the Impressionist School, turned from a military career to study under Gleyre. In 1870 he spent some time in England, after which he frequently illustrated new tendencies. Changes of light, influences of air, delicacy of color were his main motives, while he carried on the traditions of Turner, Corot, Degas, and Manet. Views of cathedrals, of the banks of the Seine, of London, of Pourville and neighborhood, and of Argenteuil are among his notable canvases.

MOORE, ALBERT JOSEPH (1841–1893). English painter, who has been called "the poet of drapery." Many of his pictures have strong men and women figures with luxurious backgrounds of colored dra-

peries and of flowers. He was the son of William Moore and brother of John C. and Henry Moore, all gifted artists. Some of his best works are the decorations of Coombe Abbey, pictures of *The Last Supper* and *The Feeding of the Five Thousand* at St. Alban's, Rochdale, and a representation of a Greek play at the Queen's Theatre at Long Acre. Some scriptural and nature studies were also well received.

MOORE, HARRY HUMPHREY (1844–1926). An American painter; born in New York City; studied with Gérôme in Paris and with Fortuny. Among his gorgeously colored pictures of oriental life are *The Gypsy Encampment, Granada, Moorish Water Carriers,* and *A Moorish Bazaar.*

MOORE, HENRY (1831–1895). English painter, born in New York, the brother of A. J. Moore, noted above. Like his brother he received preliminary training under his father, a portrait artist. For the first part of his life, under the influence of the impressionists, he made a series of landscapes and animals. Later he painted many fine scenes along the shore, such as *The Newhaven Packet, Catspaw off the Land,* and *Mount's Bay.*

MORAN (*mō-ran'*), **EDWARD** (1829–1901). An American painter; born at Bolton, England; came to America in 1844 and settled finally in Philadelphia; studied under James Hamilton and Paul Weber, then in London; noted for his marine work; elected A. N. A. (1873). Among his works are *Launching of the Lifeboat, Relief Ship Entering Havre, On the Narrows, Nations Paying Tribute to Liberty,* and 13 marine historical paintings, designed to illustrate the marine history of America from the beginning to the victory of Dewey at Manila Bay in 1898.

MORAN, PETER (1842–1914). An American etcher and painter; born at Bolton, England; brother of Edward Moran; studied with his brothers and in London; one of the founders of the New York Etching Club (1877); president of the Society of Etchers in Philadelphia. His works include *The Return of the Herd, Going to the Hunt, The Challenge, Wolves on the Buffalo Trail,* and *The Stable Door.*

MORAN, THOMAS (1837–1926). An American artist, the brother of Edward and Peter Moran, noted just above; studied with Hamilton, worked also in France and Italy, and was greatly influenced by Turner. In 1871 he accompanied the Hayden expedition to the Yellowstone and two years later went with Major Powell and party to the region along the Colorado. Some of his paintings, inspired by these trips, were *The Grand Cañon of the Yellowstone, Chasm of the Colorado,* both of which were bought for the Capitol by the government; and *The Mount of the Holy Cross. A Storm on the Coast of Easthampton* is a famous picture of an eastern scene.

MOREL-LADEUIL, LEONARDO (1820–1888). A French sculptor and goldsmith, who for many years was engaged by a firm of Birmingham, after he became unpopular among his fellows in France because he obtained direct from the government a commission to design the *Empire Shield.* Two of his great works, the *Milton Shield* and *Helicon Vase,* were highly prized, the first being bought by the English government, and the latter by persons of the court as a present for Queen Victoria.

MORETTO, IL (1494–1554). Italian painter, who was born and lived in Brescia, with brief intervals at Milan and Verona. For delicacy of light and shade and the ability to bring out the inner meaning of both scenes and portraits he is especially famed. Of his work still at Brescia are the *Christ Bearing the Cross, Vision of Moses,* and *Christ in the Home of Levi.* In the Johnson Collection of Philadelphia is the *Madonna and Donors;* in the Metropolitan, New York, are two of his pictures, a *Christ in the Desert* and an *Entombment.* His real name was Alessandro Bonvicino.

MORLAND, GEORGE (1763–1804). An English painter; born in London. Among his noted works are *The Gypsies, The Tea Garden, Inside of a Stable, Old Sportsman,* and *Dogs Fighting,* owned by the New York Historical Society; *Midday Meal* and *Weary Wayfarers* in the Metropolitan Museum of New York. Though Morland was always in debt, and frequently imprisoned, he found time to paint several hundred pictures, the best of which have to do with animals and rural views.

MORRIS, CLARA (1849–1925). Her real name was Morrison; in 1874 she married F. C. Harriott. She was born in Toronto, but at 17 entered a stock company at Cleveland, Ohio, and appeared first in New York under Augustin Daly (1870) in a version of Wilkie Collins's *Man and Wife.* During the next few years she gained immense fame as an actress of sentimental parts. After her marriage she turned to writing. *Life on the Stage* and *Life of a Star* throw no little light on the stage of the period.

MORRIS, WILLIAM (1861–1936). An American actor; born in Boston, Mass.; played (1875) with the Boston Museum stock company; acted with Augustin Daly, Madame Modjeska, and as Lieutenant Hawksworth in *The Girl I Left Behind Me;* in *The Lost Paradise* and *Under the Red Roe;* in partnership with Edward E. Rice (1901) in *When We were Twenty-one,* by H. V. Esmond.

MOSLER, HENRY (1841–1920). From the age of ten he lived in Cincinnati, where he studied illustrating by himself, and then acted as illustrator for *Harper's Weekly* at the front in the Civil War. Later he studied in Europe, and his *Le Retour,* exhibited at the Paris salon in 1879, was the first picture by an American to be bought for the Luxembourg gallery. He is represented in several American collections.

MOUNT, WILLIAM SYDNEY (1807–1868). An American genre painter; born in Long Island, N. Y.; successful in delineation of farm life and of negro character. Among his works are *Dance of the Haymakers, Music Hath Charms, Farmer's Nooning, Turning the Grindstone,* and *War News,* the last now being in the Metropolitan, New York.

MOWBRAY (*mō'brā*), **HARRY SIDDONS** (1858–1928). Born of English parents at Alexandria, Egypt, he was brought as an orphan by relatives to America, studied at West Point, and then went to Paris for training in art under Bonnat. His notable pictures are *Aladdin, The Last Favorite, Le Destin,* and *Evening Breeze.* Even better known was he as a mural decorator of the homes of J. Pierpont Morgan, Larz Anderson, and F. W. Vanderbilt, and of the Appellate Court House and University Club Library of New York; Federal Court, Cleveland; and Library at Washington, Conn.

MOZART (*mō-zärt'* or in German *mō'tzärt*), **WOLFGANG AMADEUS** (1756–1791). A German composer; composed short pieces at the age of six, and at seven gave concerts in Paris and London; distinguished for the universality of his genius. He gave artistic form to opera. His *Marriage of Figaro, Don Giovanni, The Magic Flute,* and *The Requiem Mass* are among the most successful of his 624 compositions. His C major or *Jupiter,* G minor, and E flat symphonies are the best of his 41 symphonies.

MULREADY (*mul'red-i*), **WILLIAM** (1786–1863). An Irish painter; born in Ennis, County Clare. Among his works are *Old Kaspar, The Rattle, The Carpenter's Shop and Kitchen, Idle Boys, Fight Interrupted, The Sonnet, Choosing the Wedding Gown,* and *The Seven Ages;* elected R. A. in 1816. Some later works are *Wolf and the Lamb, Dogs of Two Minds, Sonnet* and *First Love.*

MUNKACSY (*mōn'kä-chē*), **MICHAEL VON** (1844–1900). His real name was Michael Leo Lieb, but he took the name of his birthplace, Munkacs in Hungary. After some study at Arad, he settled in Düsseldorf in 1867 and in Paris five years later. His best-know works are *Milton Dictating Paradise Lost to his Daughters, The Death of Mozart,* and *Last Day of a Condemned Man.*

MURILLO (*mū-ril'ō*), **BARTOLOME ESTEBAN** (1617–1682). A Spanish painter of Seville, who began under Castillo, but later had to earn his bread by hasty works which gave him some facility. Coming under the influence of the great Velasquez, by 1644 he was able to interest the king in his progress, and four years later he married a wealthy lady. Freed from worry, he began a brilliant series of warm-toned paintings, such as the *Flight into Egypt,* probably his best-known work now, the *Nativity of the Virgin, Allegory of Faith, Return of the Prodigal,* and St. Elizabeth. Much of his work was executed for the Franciscan monks, including 18 paintings for the Convent de los Capuchinos. *The Young St. Thomas* is now in Cincinnati, *The Rose of St. Francis* is in Cologne, and the *Holy Family* is in the National Gallery of England. Besides his numerous religious pictures, he left some interesting studies of children.

MURPHY, JOHN FRANCIS (1853–1921). An American painter; born in Oswego, N. Y.; elected N. A. in 1887; won the second Hallgarten Academy prize with his *Tints of a Vanished Past* in 1885, and the Webb prize for the best landscape at the Society of American Artists in 1887. His *Autumn* in

the Metropolitan Museum is considered his best. His *Uplands—Morning* is noted for its color.

NASH, PAUL (1889–). British painter, whose pictures of scenes at the front in France during the World War won great admiration. He first exhibited in 1911, was an official artist during the foreign campaign, and later produced some interesting landscapes. Besides acting as teacher of design in the Royal College of Art, he also executed a number of able engravings and book illustrations.

NASMYTH (*nā'smith*), **ALEXANDER** (1758–1840). Scotch portrait and landscape artist, who at 16 began to illustrate the poetry of Allen Ramsey in London. After 1778 he was in great demand as a painter of portraits at Edinburgh, his native town. One of his best pictures is that of Burns. Later he devoted himself mainly to landscapes and to improving the estates of wealthy patrons.

NAST, THOMAS (1840–1902). An American artist; born in Landau, Bavaria. He is best known for his political cartoons, which were of great influence in the various political campaigns, and were effective in the exposure of the "Tweed ring." In 1902 he was appointed United States consul at Guayaquil, where he died of yellow fever. Nast first used the elephant, donkey, and tiger in political cartoons to signify the parties.

NEAGLE, JOHN (1799–1865). An American painter; born in Boston, Mass.; married the daughter of Thomas Sully, painter. His *Patrick Lyon at the Forge* in the Pennsylvania Academy is his best known. Among his portraits are those of Henry Clay, Dr. Thomas Parke, George Washington, and Gilbert Stuart.

NEAL, DAVID DAHLHOFF (1837–1915). An American painter; born at Lowell, Mass.; studied in Munich under Ainmüller (his father-in-law) and with Piloty and Wagner. Among his works are *The First Meeting of Mary Stuart and Rizzio, Cromwell Visits Milton* (in the Public Library at Cleveland), *Nuns at Prayer*, and portraits of Adolph Sutro, Rev. Mark Hopkins (at Williams College), and Whitelaw Reid.

NEILSON, LILIAN ADELAIDE (1848–1880). English actress, whose real name was Elizabeth Ann Brown, and who became famous for her emotional parts. Appearing first at Margate in 1865, by 1870 she was known in the English-speaking world, especially for her Juliet, and for Rebecca and Amy Robsart in adaptations of Scott's novels. She appeared at Booth's Theater, New York, in 1872 and four times afterward.

NETHERSOLE, OLGA (1870–). English emotional actress, who appeared first at Brighton (1887), acted as manager of different London theatres in turn, and of the Théâtre Bernhardt in Paris, playing in both cities some leading rôles. Important parts were Sapho in Fitch's play of that name, Paula in *The Second Mrs. Tanqueray*, and the heroine in *La Tosca*. Her first American appearance was in 1894.

NETTLETON, WALTER (1861–1936). An American painter; born in New Haven, Conn.; was graduated at Yale; studied in Paris under Lefebvre, Duran, Boulanger, and Harrison; settled in Stockbridge, Mass.; noted for his Breton landscapes and for his New England snow scenes.

NEUVILLE (*nē'vēl*), **ALPHONSE MARIE DE** (1836–1885). A French painter, mainly of battle scenes of the Franco-Prussian and Zulu Wars. Some of his best works are *The Fifth Battalion of Chasseurs, The Last Cartridges, Surprise at Daybreak*, and the *Despatch-Bearer*.

NEVADA, EMMA (1861–1940). An American soprano singer, born Emma Wixon at Austin, Nevada; hence her adopted name. After studying under Mme. Marchesi at Paris, she made her début at Her Majesty's Theatre, London, in 1880 as Amina in *La Sonnambula*. Some of her other operas were *Lucia di Lammermoor, Mignon, Martha*, and *Rigoletto*. In 1885 she made a tour of the United States, and in the same year married Dr. Raymond Palmer, an English surgeon, after which she lived in Europe, mainly in London and Paris.

NEVIN, ETHELBERT (1862–1901). An American composer; born in Vineacre, near Pittsburgh, Pa.; studied in Dresden under Von Böhme; returned and taught in Pittsburgh; studied in Berlin under Klindworth and with Bülow; taught in the music department of Yale University (1900). His *Water Scenes*, including the universally popular *Narcissus;* the suite *En Passant;* the *Tuscan suite;* and his songs *Lehn' deine Wang' an meine Wang', Rosemary, I' the Wondrous Month of May, 'T was April, Boris*, and *In Winter I Get up at Night*.

NEWELL, PETER, or **"SHEAF HERSEY"** (1862–1924). An American illustrator; born near Bushnell, Ill.; studied at the Art Students' League in New York; noted for his humorous drawings collected in *Topsys and Turvys, A Shadow Show*, and *Peter Newell's Pictures and Rhymes*. He illustrated Stockton's *The Great Stone of Sardis*, Twain's *Innocents Abroad*, and Bangs's *House-Boat on the Styx*.

NICOL (*nīk-ol*), **ERSKINE** (1825–1904). A Scottish painter of Irish life and character; born in Leith; lived in Dublin (1845–1849); settled in London (1862). Among his popular works are *Among the Old Masters, Both Puzzled, Paying the Rent* in the Vanderbilt collection in New York, *The Trio, Paddy's Mark* in the Corcoran Gallery, and *Interviewing their Member*.

NICOLL, JAMES CRAIG (1847–1918). An American marine painter; born in New York City; studied with M. F. H. de Haas and Kruseman van Elten; one of the jury at the St. Louis Exposition (1904); elected N. A. in 1885; noted for his surf pictures. Among his best are *Squally Weather, On the Newport Rocks, Sunlight on the Sea*, and *A Summer Surf*.

NIEHAUS (*nē'hous*), **CHARLES HENRY** (1855–1935). An American sculptor; born in Cincinnati, Ohio; studied at the McMicken School of Design there and at Munich, where he won a first prize with his *Fleeting Time*. Among his works are a statue of Washington on Race Street, Cincinnati, and another in the rotunda of the National Capitol; lived in Rome for a few years, where he did *The Scraper, or Greek Athlete Using a Strigil, Caestus*, and *Silenus;* lived in New York after 1885, where he executed a statue of William Allen for the National Capitol. Among his other notable works are the Garfield Statue in Cincinnati, *Mineral Wealth* and Lincoln in Buffalo, N. Y., Benjamin Harrison at Indianapolis, McKinley for the tomb at Canton, O., Francis Scott Key for Baltimore, and the Astor Memorial Doors for Trinity Church, New York.

NIELSEN (*nēl-sen*), **ALICE** (1876–1925). An American singer, who turned from light to grand opera, and won a distinguished position in both forms. She was born in Nashville, Tenn., educated in San Francisco, and first sang as Yum Yum in the *Mikado*, which was followed with parts in *Robin Hood, The Serenade*, and *The Singing Girl*. After study in Rome, she made her début in grand opera at Naples as Marguerite in *Faust*, appeared at Covent Garden, London, and throughout the United States, in various rôles, including *Figaro, Don Giovanni*, and *La Bohème*.

NIKISCH (*nīk'ish*), **ARTHUR** (1855–1922). Hungarian conductor, who made his appearance as a pianist when he was very young, after which he studied at the Vienna Conservatory (1866–1873). In 1877 he became assistant conductor, and two years later conductor of the opera at Leipzig. Then he led the Boston Symphony Orchestra (1889–1893). Directed at Budapest, Berlin, and finally at the celebrated Gewandhaus at Leipzig. He composed a symphony and much chamber music.

NILSSON (*nīl'sŭn*), **CHRISTINE** (1843–1921). A Swedish soprano singer; born at Wexiö; studied at Stockholm and Paris; made her début in Paris (1864) as Violetta in *La Traviata*, and became one of the foremost soprano singers; frequently visited the United States. Ophélie, Violetta, Elsa, Margaret, Mignon, Donna Elvira, and the Countess were her most famous rôles. In 1887 she married Count A. de Casa Miranda and retired from the stage.

NOLLEKENS (*nol'e-kenz*), **JOSEPH** (1737–1823). An English sculptor; born in London; lived for many years at Rome, where he executed his *Timocles before Alexander* and *Mercury and Venus Chiding Cupid*, and the busts of Garrick and Sterne; elected R. A. in 1772. Among his other works are Mrs. Howard's monument statue of Venus, and the monuments of Captains Manners, Bayne, and Blair in Westminster Abbey.

NORDICA (*nôr'di-kä*), **LILLIAN** (1859–1914). Born Lillian Norton at Farmington, Me.; married G. W. Young. She received her musical education in Boston, and under Sangiovanni in Italy. After singing at Crystal Palace in London and the Trocadero in Paris, she appeared in *La Traviata* at Brescia (1880). Some of her rôles in Europe were in *Faust, Rigoletto, Lucia di Lammermoor, Aïda, Les Huguenots, Don Giovanni*, and in Wagner parts. At the

Metropolitan Opera in New York, some of her appearances were as Elizabeth, Elsa, Brünnhilde, and Isolde. On the concert stage she was immensely popular for years. Nordica died in Java while on a world tour.

NOVELLO (*nō-vel'lō*), **VINCENT** (1781–1861). An English musician and publisher of music, of Italian and English parentage, who was born in London. After acting as organist in the Portuguese and the Spanish chapels, and at St. Mary's, Moorfields, he went to live at Nice in 1849. Though his musical compositions are numerous, particularly the sacred pieces, his main service was in introducing various great musicians to English audiences.

OCHTMAN, LEONARD (1854–1934). An American landscape painter; born in Zeeland, Holland; came to America in 1866; studied at the Art Students' League; won the landscape prize at the Brooklyn Art Club (1892), a medal at the World's Fair (1893), silver medals at the Pan-American (1901) and Charleston (1902), the Shaw prize at the Society of American Artists (1902), the Inness gold medal (1903), the Webb prize (1904), two gold medals at St. Louis (1904), and second prize at the Corcoran Gallery (1905); elected N. A. in 1904.

OFFENBACH (*of'en-bäk*), **JACQUES** (1819–1880). A musical composer, born at Cologne of Jewish parents. Conducted the Théâtre Français orchestra at Paris (1848–1855), and the Théâtre Comique in 1855. Wrote *Orphée aux enfers, La belle Hélène, Madam Favart,* and *Les contes d'Hoffmann,* which was produced in New York in 1908 by Hammerstein.

OLMSTEAD, FREDERICK LAW (1822–1903). American landscape architect, who with Calvert Vaux designed the plan chosen for Central Park of New York among 30 competitors, and he was invited to supervise the making of the park. Last he designed or improved many public grounds, such as Prospect Park of Brooklyn, Fairmount Park of Philadelphia, Mount Royal of Montreal, the Capitol grounds at Washington, and the grounds for the Word's Fair at Chicago. Many cities and several universities engaged his services; for Boston he planned an extensive series of parks. For California he directed the work of laying out Yosemite Park.

O'NEIL, JAMES (1849–1920). An American actor; born in Kilkenny, Ireland; brought to Buffalo (1850); studied acting in Cincinnati; appeared there and in St. Louis; noted for his presentations of Othello and other Shakespearean rôles. Later he excelled as Edmond Dantes in *Monte Cristo,* Virginius, Hamlet, and D'Artagnan in *The Three Musketeers.*

OPPER, FREDERICK BURR (1857–1937). An American illustrator, who was connected with *Leslie's* for three years and with *Puck* for 18, and then with the *New York Journal.* He was born in Ohio and gained first notice by his drawings for *Wild Oats,* afterward illustrating the works of Bill Nye, Mark Twain, and F. P. Dunne (Mr. Dooley). Some of his own books are *Our Antediluvian Ancestors, Happy Hooligan,* and *Alphonse and Gaston.*

ORCAGNA (*or-kä'nyä*), (c. 1310–c. 1368). An Italian artist who succeeded Giotto as the leading painter of Florence. Some of his best frescos are in the church of Ste. Maria Novella, representing scenes in the life of Mary, a conception of Paradise, and one of Christ, St. Peter and St. Thomas Aquinas, with attendant musicians. As a sculptor and architect he made a large marble tabernacle for the church of Or San Michele, which remains one of the noblest works of Italy. Using the methods of sculpture in painting, he raised his figures so that they stand out like statuary. His real name was Andrea di Cione, and he was also called Arcagnuola.

ORCHARDSON, WILLIAM QUILLER (1835–1910). A British painter; born in Edinburgh. Among his works are *The Challenge, The Duke's Antechamber, The Protector, The Bill of Sale, Queen of the Swords, Hard Hit, On Board H. M. S. Beerophon, Mariage de Convenance, After, Salon of Madame Récamier, The First Cloud, Her Mother's Voice, The Young Duke,* and *Reflections.* He was a most refined painter of genre and history.

OSTADE (*os-tä'dē*), **ADRIAEN VAN** (1610–1685). A Dutch painter who was born and died in Haarlem; his canvases are in almost every European collection, numbering several hundred. They are noted for fidelity in detail and grayness of tone, while most of his subjects show the simple life of the humble peasant. Besides a father sitting in state among his large family, a fine picture now in the Louvre, some notable paintings by Ostade are *Countryman Having his Tooth Drawn, Bagpiper, Nativity,* and a portrait of a painter.

OUTCAULT, RICHARD FELTON (1863–1928). An artist, creator of the Buster Brown series of illustrations. He was born in Lancaster, Ohio, educated in Cincinnati, joined the staff of the *New York Journal* in 1905, and later formed his own company in Chicago. Some of his creations were Hogan's Alley, the Yellow Kid, besides the various cartoons of Buster Brown, his dog Tige, and the only Mary Jane.

OVERBECK (*ō'ver-bek*), **JOHANN FRIEDRICH** (1789–1869). A German painter, at first under the influence of classical tradition at Vienna, but later with others the founder of a pre-Raphaelite group of artists who lived in austere simplicity in a Franciscan monastery at Rome. Most of his works show deep feeling. Besides frescoes of Joseph and his Brethren and decorations in several villas and pavilions, his chief works are *Christ's Entry into Jerusalem, Lubeck, Triumph of Religion in the Arts,* and *Incredulity of St. Thomas,* now in London.

PACHMANN (*päch'män*), **VLADIMIR DE** (1848–1933). Concert pianist, the son of a Russian professor at Odessa, who began to study the violin at six and the piano at ten, the latter under Dachs of Vienna. Though he first played for audiences in 1869, he continued study for several years; and by 1878, when he appeared in the Leipzig Gewandhaus Concerts, he was known as an exact and favorite performer. In 1882 he played in Vienna, Paris, and London, after which he toured the world at various times. As an interpreter of Chopin and as an informal artist, noted for his comments to the audience, he won distinguished attention.

PADEREWSKI (*pä-de-ref'skē*), **IGNAZ JAN** (1859–). Polish pianist, composer, and political leader, born in Podolia, then a province of Russian Poland. After study under Leschetizky, he played first in Vienna in 1887, in Paris two years later, and in London in 1890. In 1891 and at different times later he played in America to immense audiences. From 1920 to 1923 he played in both hemispheres. For originality of interpretation, keen insight, and great enthusiasm, together with technical mastery, he won unbounded fame. As a composer he was known especially for his concerto in A minor, a symphony in B minor, and other works for the pianoforte and orchestra. During the World War he gave all his energies toward assisting Poland. He helped raise a Polish legion, trained in Canada, went to Poland with a British Mission in 1918, and for a time acted as premier, independent of parties. At the Peace Conference and later he did valuable service in helping secure recognition for Poland.

PAGANINI (*pä-gä-nē'nē*), **NICOLO** (1784–1840). A phenomenal Italian violinist; born at Genoa; gave his first concert in 1793; began his professional tours in 1805. His success was unbounded in Austria, Germany, London, and Paris.

PAGE, WILLIAM (1811–1885). An American artist, who studied for the ministry, and then turned attention to painting, becoming a pupil of Herring and S. F. B. Morse. While residing in Rome (1849–1860) he painted portraits of his friends, the Brownings, and of other distinguished persons. Returning to New York in 1860, he had many prominent sitters, including J. R. Lowell, Charles Sumner, H. W. Beecher, President Grant, and Charlotte Cushman.

PAINE, JOHN KNOWLES (1839–1906). An American composer, for many years a professor at Harvard, where he acted as orchestra conductor and composer of fine music. Theodore Thomas played his first symphony in 1876. Paine wrote music for many public occasions, such as for the Centennial of 1876, using Whittier's poem, for the Columbian Exposition in 1893 the *Columbus March,* and for the St. Louis Exposition the *Hymn of the West.* Some of his other compositions are the *Oedipus Tyrannus;* overtures for *The Tempest* and *As You Like It;* an opera, *Azara;* an oratorio, *St. Peter,* many smaller pieces of chamber music, cantatas, and works for the piano.

PALESTRINA (*pä-les-trē'nä*), **GIOVANNI PIERLUIGI DA** (1526–1594). Italian composer of sacred music, born in Palestrina; hence his name. After study in Rome, he became composer to Julius III. about 1550, a singer in the Sistine chapel (1555), a choir master at St. John Lateran, and later a choirmaster at St. Peter's. Some of his greatest works are the music to *Lamentations, Missa Pro Defunctis,* and three other books of masses, *Song of Solomon,* several

volumes of motets, litanies, madrigals, and magnificats. His influence on various forms of music has been profound and wide-spread.

PALLADIO (*päl-lä'dē-ō*), **ANDREA** (1518–1580). An Italian architect, designer of many fine churches, palaces, and country estates. A great student of ancient art and literature, he wrote a work on architecture which was a classic in Europe for many years. Some of his buildings are the villa of Capra, the Capuchin church and several palaces on the Grand Canal in Venice, the Porti Palace and Theater at Vicenza, where much of his life was spent.

PALMA, JACOPO, or PALMA VECCHIO (about 1480–1528). An Italian painter; born in Venice; the foremost of the second class of great Venetian artists. His *Adoration of the Shepherds* in the Louvre is one of the most charming idyls of Venetian art.

PALMER, ERASTUS DOW (1817–1904). An American sculptor; born at Pompey, N. Y.; began to cut cameos in Albany, N. Y. (1846); exhibited his marble bust, *Infant Ceres* (1851), followed by *Faith*, *Mercy*, portrait busts of Alexander Hamilton and Washington Irving, and statues of the *Sleeping Peri*, *The White Captive*, and *The Angel of the Sepulchre* in the Rural Cemetery at Albany.

PALMER, WALTER LAUNT (1854–). Son of the preceding and born at Albany, N. Y.; studied in Paris and elsewhere. He won many medals and prizes, including awards at the World's Fair (1893) and Paris Exposition (1900), and became noted for snow scenes. Two of his best canvases are *Across the Fields* and *Lake George*.

PARKER, HORATIO WILLIAM (1863–1919). An American composer and musician, born in Boston, educated in Munich, and elected Battell Professor of Music at Yale in 1894. *Hora Novissima*, an oratorio, was frequently performed in the United States and in England at Worcester, the first American piece so honored. His *Mona*, an opera, won the $10,000 prize offered by the Metropolitan Opera Company (1911), and another called *Fairyland*, the Women's Clubs Federation prize of a like amount (1914). The *Wanderer's Psalm* was sung at the Herford festival in England in 1900, and a cantata, *Morven and the Graal*, at the centennial of the Handel and Haydn Society at Boston in 1915.

PARMIGIANO (*pär-mē-jä'nō*), **FRANCESCO MAZZUOLI** (1504–1540). An Italian painter; born at Parma; studied in Rome; lived for a time in Bologna, then returned to Parma. Among his works are *Baptism of Christ*, *St. Margaret*, *Cupid Fashioning his Bow*, and *Vision of St. Jerome*.

PARRATT, WALTER (1841–1924). An English organist and interpreter of the compositions of Bach, a large number of which he is said to have learned before he was ten. He was an organist at Magdalen College, Oxford, at St. George's Chapel, Windsor, for ten years professor of music at Oxford (1908–18), and dean of the faculty of music at London University (1916–20). In 1892 he was created a knight.

PARRHASIUS (*pär-ā'shus*) (flourished 400 B. C.). A gifted painter of ancient Greece; born at Ephesus; went to Athens and became the rival of Zeuxis. He was the contemporary of Socrates.

PARRISH, MAXFIELD (1870–). An American artist and illustrator of magazines, who was born in Philadelphia, studied there at the Academy of Arts and under Howard Pyle. Some of his awards were honorable mention at Paris in 1900, Silver Medal at Buffalo in 1901, and gold medal of the Architectural League of New York in 1917.

PARRY, CHARLES HUBERT HASTINGS (1848–1918). English composer, professor at Oxford (1899–1908), and successor to Sir George Grove as director of the Royal College, London (1894). He specialized in fine choral works and in writing music for poems by Milton, Tennyson, Pope, and other English authors. Among his notable books on music are *The Art of Music*, *Style in Musical Art*, and many important articles in Grove's *Dictionary of Music and Musicians*.

PARSONS, ALBERT ROSS (1847–1933). An American musician and archaeologist; born at Sandusky, Ohio; studied at the Leipzig Conservatory and with Kullak, Moscheles, and Tausig. His songs *Night has a Thousand Eyes* and *Three Fishers* have been very popular. His contributions to musical literature include a translation of Wagner's *Beethoven*, *The Science of Pianoforte Practice*, *The Secret of Wagner's Genius*, and an essay on *Parsifal*.

PARSONS, ALFRED (1847–1920). English painter, noted for his beautiful views of flowers and gardens, besides many interesting landscapes. *When Nature Painted all Things Gay* was bought by the Chantry Bequest (1887) for the Tate Gallery. He made illustrations for Wordsworth's *Sonnets*, *The Warwickshire Avon*, and with F. D. Millet (q. v.) for *The Danube from the Black Forest to the Black Sea*.

PARTRIDGE, BERNARD (1861–). British artist, knighted in 1925, who spent some time at the University of London, joined a firm of architects and then turned to stained-glass designing. In later years he gained a notable following for his illustrations in *Punch*, having connected himself with that journal in 1891.

PARTRIDGE, WILLIAM ORDWAY (1861–1930). An American sculptor, who lectured on fine arts at George Washington University, Washington, D. C. (1897–1903), and before other bodies. Some of his statues are Samuel J. Tilden, Riverside Drive, New York; Thomas Jefferson, Columbia University; Pietà, St. Patrick's Cathedral, New York; Pocahontas, Jamestown, Va.; Shakespeare, Lincoln Park, Chicago; and a series of busts of poets for the Boston Public Library. Besides two or three novels, he wrote *Art for America*, *Technique of Sculpture*, and *The Song Life of a Sculptor*.

PASCAL (*pas'kal*), **JEAN LOUIS** (1837–1920). A French architect, pupil of Gilbert, Questel, and the École des Beaux-Arts. Having won the Grand Prize of Rome (1866), in 1870 he became inspector of works at the Louvre, and later a member of art committees. In some respects his best work was as a teacher of artists from all over Europe and America. Yet he designed some noble monuments, including those to Henri Regnault and President Carnot, and the imposing National Library at Paris.

PAS'TA, JUDITH (1798–1865). A famous Italian operatic singer; born near Milan, of Jewish birth. Her celebrity lasted from 1821 to 1832, after which she retired into private life. She had a voice of great compass.

PATINIR, JOACHIM DE (c. 1475–1524). Flemish painter, who specialized in landscapes containing small figures of persons. Some of his pictures were from a point of view taken from a hill, with a mass of foliage in the foreground, rocks in the middle distance, and plenty of details. Only a few of his works are extant, including two of the *Flight into Egypt*, one at Antwerp and another at Madrid; the *Baptism of Christ* at Vienna; and *Temptation of St. Anthony* at Madrid.

PATTI (*păt'ē*), **ADELINA** (1843–1919). Eminent singer, born in Spain, of Italian parentage; brought early to America by her parents, who were both operatic performers. Possessed of a wonderful soprano voice, which was trained by Strakosch, who married an older sister, she first appeared in *Lucia di Lammermoor* in New York in 1859. In London she appeared in *La Sonnambula* in 1861, and then in all the music centers of the world, in one unbroken succession of artistic triumphs. Having divorced her first husband, the marquis de Caux, to whom she was married in 1868, she married the tenor Nicolini (q. v.) in 1885, and after his death in 1898 the Baron Cederström, a naturalized Englishman of Swedish birth. For the last 30 years of her life she appeared little in public, but loved to entertain her friends at her home in Wales. On behalf of the Red Cross, she made a final public appearance in 1914.

PAUR, EMIL (1855–1932). American conductor of Austrian birth and musical education, who came to this country as conductor of the Boston Symphony Orchestra in 1893, after holding similiar positions at Cassel, Mannheim, and Leipzig. He conducted the New York Philharmonic Society (1898–1900), German works at the Metropolitan (1900–1902), in Europe again for two years, and then at Pittsburgh, Pa., where he directed the Symphony Orchestra. He composed a number of songs, sonatas, and concertos.

PAVLOVA, ANNA (1885–1931). A Russian dancer, at an early age the first dancer at the imperial ballet school of Leningrad, and in 1910 a great favorite in London. In London she was seen in *Le Cygne* at the Palace Theatre; in Paris in *Les Sylphides* and *La Nuit Egyptienne*; and in New York in *Coppelia*, when she achieved an immense vogue.

PAYNE, JOHN HOWARD (1791–1852). An American actor, dramatic author, and writer of *Home Sweet Home*, who had his first play performed in New York when he was 15, and in 1809 he first appeared at the same theatre (the Park) as Norval in *Douglas*. After

various successes in his own land, he was engaged for Drury Lane of London, and for a time lived in Paris as a translator for the same playhouse. In all he adapted more than 50 dramas for the English stage. His *Brutus,* with Kean in the title rôle, ran at Drury Lane for 50 nights in 1818. *Clari; or the Maid of Milan,* an opera, first sung in May 1823, contained his celebrated song, which was first rendered by Ann Maria Tree. He died in Tunis, Africa, while serving a second time as American consul.

PEALE, CHARLES WILSON (1741–1826). American portrait artist, known mainly for his portraits of Washington; born in Maryland, studied at Annapolis, under Copley in Boston, and West in London. His portrait done in 1772 is the earliest known picture of Washington, and this was followed by the celebrated one of 1778 which Peale copied a number of times. Several portraits of famous men are now in Independence Hall, Philadelphia. *Christ Healing the Sick at Bethesda* is one of his best subject pictures.

PEALE, REMBRANDT (1778–1860). Son of the preceding, after study under his father, West in London, and others in Paris, began with a portrait of Washington, a copy of which (made in 1823) is now in the Capitol at Washington. For this picture Washington gave him three sittings. Some of his portraits are those of Jefferson, Mrs. Madison, Commodore Perry, the sculptor Houdon, and an equestrian of Washington, which is now in Philadelphia. In 1825 he became president of the American Academy of Fine Arts, succeeding John Trumbull.

PEEL, PAUL (1860–1892). A Canadian figure painter; born in London, Ontario; studied at the Pennsylvania Academy and in Paris under Gérôme and Constant. His gold medal picture *After the Bath* was bought by Hungary for the gallery at Budapest. His *Two Friends* is in Buckingham Palace, London.

PENNELL (*pen'el*), **JOSEPH** (1860–1926). An American illustrator, etcher, and author; born in Philadelphia; studied there; illustrator on the *Century* magazine for many years since 1881; visited Italy in 1883 to make illustrations for Mr. Howell's *Tuscan Cities;* married Elizabeth Robbins (1884), who later collaborated with him in a number of books, such as *A Canterbury Pilgrimage, Our Sentimental Journey through France and Italy, Two Pilgrims' Progress, Our Journey to the Hebrides,* and a *Life of James McNeill Whistler* at his own request.

PERUGINO (*pā-rō-jē'nō*), **PIETRO,** or **PIETRO VANNUCCI** (1446–1524). An Italian painter; born in Città della Pieve. He was employed for 10 years in the Sistine Chapel and the Stanze of the Vatican, and on his return to Perugia opened a school and had Raphael among his pupils. His best works are the *Pietà* in the Pitti Palace and *Christ Giving the Keys to Peter* in the Sistine Chapel (the rest of his frescoes there being destroyed to make way for Michelangelo's *Last Judgment*). His fresco in the Stanz of the Vatican, *Stanza del Incendio,* was the only one spared by Raphael when he repainted the walls.

PERUZZI (*pā-röt'sē*), **BALDASSARE** (1481–1536). Italian architect and painter, educated at Rome through the help of a Sienese banker, for whom he designed on the banks of the Tiber the Farnesina, a fine villa, which was decorated by Raphael. Some of his other works are the designs for St. Peter's, not executed, frescoes in the Capella Pozzetti, and the Palazzo Massimi; and at Siena the city fortifications, fresco in the Castel Belcaro, and in the church of Fonte Giusta. After 1535 he lived again in Rome.

PHIDIAS (*fid'i-as*) (490–432 B. C.). The greatest of Greek sculptors and architect of the Parthenon. He was never excelled in expressing the ideal majesty of the human form, and his *Zeus* at Olympia is counted among the wonders of the world.

PHELPS, SAMUEL (1804–1878). English actor, who for more than 20 years at Sadler's Wells Theatre in London produced many notable plays, including a score of Shakespeare revivals. He made his first London appearance as Shylock at the Haymarket in 1837, later supported Macready at Covent Garden, and acted at other playhouses.

PICASSO (*pē-käs'sō*), **PABLO** (1881–). Cubist painter in Spain, the son of an artist of Barcelona; settled in Paris in 1903. He became a leader among the impressionists, and then developed work combining both painting and sculptural ideas, along with those of Georges Braque. Orginality, cleverness of execution, and feeling are his chief characteristics, apart from the form of his paintings.

PICKNELL, WILLIAM LAMB (1852–1897). An American painter; born at Hinesburg, Vt.; studied at Rome, Paris and in Brittany under Inness, Gérôme, and Wylie; came back in 1882. His works include *Route de Concarneau, Coast of Ipswich, Bleak December, Among the Olives,* and *Route de Nice.*

PINSUTI (*pēn-sū'ti*), **CIRO** (1829–1888). An Italian composer; born near Siena; taught singing in England (1848); at the Royal Academy of Music at London (1858–1885); wrote the operas *Il mercante di Venezia* and *Mattia Corvino,* a *Te Deum,* nearly 300 songs, and numerous pianoforte compositions.

PINTURICCIO (*pēn-tū-rēk'kē-ō*) (1454–1513). Italian painter, whose real name seems to have been Bernardino Di Biagio. Celebrated for his fine work in fresco. Some of his chief works are *Adoration of the Shepherds,* Rome; *The Dispute of St. Catherine,* in one of five rooms of the Vatican built by Pope Alexander VI; decorations for the cathedral library at Siena, in a remarkable state of preservation, and several notable commissions for Cardinal Piccolomini, afterward Pope Pius III.

PISANO (*pē-zä'nō*), **NICCOLA** (c. 1220–c. 1278). Italian sculptor and architect of Pisa, of whom little is known apart from his works. He designed the pulpit for the baptistry at Pisa, in which both Gothic and classic ideas enter, illustrating scenes in the life of Christ. Other works are the great pulpit at Siena, a relief over the door at San Martino at Lucca, and a fountain in the piazza near the cathedral at Perugia. Giovanni, his son, became a celebrated architect and sculptor, collaborating with his father in his later works, and executing alone the Campo Santo Cemetery at Pisa, the ivory madonna in the cathedral at Pisa, and churches in Florence and Arezzo.

PISANO, VITTORE (1397–1455). He was familiarly known as Pisanello. Little is known of his early life or education in art. He worked with Fabriano on the doge's palace at Venice, made various designs for many noble patrons, including costumes, houses, harness for their horses, and portraits. Of his paintings that now remain, the National Gallery of London has the *Miraculous Stag Appearing to St. Eustace;* the Louvre has a portrait of a noble lady; and the Pellgrini Chapel in Verona has a fresco of *St. George Mounting His Horse.*

PLANQUETTE (*plän'ket*), **ROBERT** (1850–1903). A French composer; born in Paris; wrote the popular operas *Cloches de Corneville* or *Bells of Corneville, Le chevalier Gaston, Rip Van Winkle, The Old Guard, Paul Jones, Le Talisman,* and *Man'zelle Quat'sous.*

PLATTE, CHARLES ADAMS (1861–1933). American painter and architect, educated at the National Academy of Design and in Paris under Boulanger and Lefebre. Some of his paintings include *Early Spring, Snow, The Market Ship at Low Tide,* and *On the Connecticut River.* Turning to architecture, he designed the Freer Art Gallery of Washington, D. C.; the library for the Connecticut College for Women at New London; and the Lowell Memorial Fountain in New York City. In *Italian Gardens* (1892) he explains the results of study in Italy.

POLLAIUOLO (*pol-lä-yō-ō'lō*), **ANTONIO** (1429–1498). Italian painter, one of two gifted brothers, and uncle of Simone, all artists of Florence. Antonio became a sculptor, painter, and worker in metals, noted for his service in enamelling. Some of his noted pictures are *Martyrdom of St. Sebastian* in the National Gallery, London; *Labors of Hercules* in the Uffizi of Florence; and *The Young Warrior* in the Florence Museum. Tradition says he was perhaps the first to use dissection in his study of the human form.

POLYCLITUS (*pol-i-klī'tus*) (fifth cent. B. C.). A Greek sculptor; born at Sicyon and lived in Argos; studied along with Myron and Phidias. Among his chief works is the *Doryphorus* or spear bearer, known as the *Canon* or chief type of a perfect male figure. A copy of it found in Pompeii is now in Naples. His *Diadumenos,* an athlete binding a fillet around his head, is revealed to us by a copy now in the British Museum. His gold and ivory statue of Hera was made for the Heraeum at Argos. He designed the theater at Epidaurus. Recent excavations have discovered fragments of his work at Olympia.

POORE, HENRY RANKIN (1859–1940). An American painter; born in Newark, N. J.; studied in New York, Philadelphia, and at Paris under Lumenais and Bouguereau; instructor in the Pennsylvania Academy. Among his works are *Close of a City Day, Fox Hounds, Hounds in Winter* and *Clearing Land.* Poore also wrote books on art criticism, including *Pictorial Com-*

position and the Judgment of Pictures, The Conception of Art, and *New Tendencies in Art.*

POTTER, PAUL (1625–1654). Dutch animal painter, who in his short life produced 175 pictures, most of which are true to life. *Young Bull,* a life-sized picture, is a celebrated work of his early days. Of his later works, most of them being small, are his *Orpheus* and some fine animal figures.

POUSSIN (*pö-san'*), **NICHOLAS** (1594–1665). French painter, born in Normandy, who studied the works of Raphael at Rome, and was long called "the Raphael of France." In landscape and historical figures he specially excelled. Some of his greatest works are *Triumphs of Flora, Massacre of the Innocents, Labors of Hercules, Triumph of Truth, Triumph of Pan,* and *Vision of St. Paul.*

POWELL, MAUD (1868–1920). American violinist, born in Illinois, educated in Chicago and European centers, making her first public performance in Berlin in 1885. In the United States she acted as soloist in several orchestras and won a great host of admirers in various concert tours. No violinist did more to educate the public in appreciation of the best in music. In 1904 she married H. Godfrey Powell of London. She died in Pennsylvania while on a concert tour.

POWERS, HIRAM (1805–1873). An American sculptor; born in Woodstock, Vt. In 1835 he went to Washington. Two years later he was enabled to go to Italy to study his art, and he resided in Florence till his death. There he produced his statue of *Eve,* which excited the admiration of Thorwaldsen, and in 1843 the still more popular *Greek Slave,* of which six copies in marble, with cast copies innumerable, were produced. Among the other works, the chief were *Proserpine, Il Penseroso, A Californian, An American,* and a bust of Washington for the state of Louisiana, of Calhoun for South Carolina, and of Daniel Webster for Boston, as well as of John Q. Adams, Andrew Jackson, Marshall, Van Buren, and other distinguished Americans.

POYNTER (*poin'tar*), **EDWARD JOHN** (1836–1919). British painter, who first exhibited in 1861, and was elected an N. A. in 1876. Among his own works are *Atalanta's Race* and *Visit to Aesculapius.* He is best known, however, as the director of the Art School which is now the Royal College of Art at South Kensington, and as director of the National Gallery of British Art (Tate Gallery), which was united with the National Gallery. In his edition of the *Illustrated Catalogue of the National Gallery,* completed in 1900, every picture is reproduced, and his *Lectures on Art* were famous. On becoming successor to Sir John Millais as president of the Royal Academy, he was knighted (1896), and six years later was created a baronet.

PRADILLA (*prä-thēl'yä*), **FRANCISCO** (1847–1921). A Spanish painter; born at Villanueva de Gallego. Among his best works are *The Rape of the Sabines, Mad Johanna Following the Coffin of Philip the Fair,* and *The Surrender of Granada to Ferdinand and Isabella*—a magnificent canvas.

PRATT, SILAS GAMALIEL (1846–1916). An American composer, who organized the Apollo Club in Chicago (1872), and conducted a season of opera there. In 1884 he made a tour of Europe, using his own compositions for his programs; in 1895 he established a school in New York City. Some of his works are the operas *Zenobia,* and *Triumph of Columbus,* and *Lucille,* besides several symphonies, cantatas, and songs.

PRAXITELES (*prak-sit'e-lez*), (360–280 B. C.). A celebrated Greek sculptor; executed several fine statues, in bronze and marble, of Bacchus, a satyr, Venus, and Apollo. Of his work the *Hermes of Olympia* is the only original example extant. He excelled by the grace, tenderness, and finish of his works. He was esteemed as second to Phidias only.

PROCTOR, ALEXANDER PHIMISTER (1862–). American sculptor and painter of animals; born in Ontario, Canada, but lived mainly in the United States, except for five years in Paris for study. In early life he saw much of the animals of the Rocky Mountains; in 1893 attracted attention by his statues at the Columbian Exposition in Chicago. Received various medals. He is represented by *Panthers* in Prospect Park, Brooklyn; by lions for the McKinley Monument, Buffalo; heroic bison and tigers, Washington; Princeton tigers; Princeton University; equestrian statue of the circuit rider at Salem, Ore.; *Col. Roosevelt as Rough Rider* at Portland, Ore. and Minot, N. D.; and by *Pioneer Mother,* an equestrian group at Kansas City, Mo. Paintings of his are in the Corcoran Art Gallery, St. Louis Gallery, and Metropolitan Museum.

PRUD'HON (*prü-dôn'*), **PIERRE** (1758–1823). French painter, educated by the monks of Cluny, and after 1778 in the studio of Wille, the engraver, in Paris. Having won a prize, he studied in Rome, and came to be regarded as the French Correggio. Notable works are *Truth and Wisdom* at the Louvre, *Diana and Jupiter, Crime Pursued by Vengeance and Justice,* all in the Louvre at present.

PUCCINI (*pöt-chē'nē*), **GIACOMO** (1858–1924). Italian composer of operas, born of a family noted for generations as professional musicians. After a course at the Milan Conservatry, he produced *Edgar* at La Scala in 1889. This was followed by *Manon Lescaut,* a real hit, *La Bohème,* perhaps his most successful opera, *La Tosca, Madame Butterfly,* and *Fanciulla del West,* produced in New York as *The Girl of the Golden West.*

PURCELL (*pûr'sel*), **HENRY** (1659–1695). Eminent English composer, trained in singing and music under Henry Cooke, Pelham Humphrey, and John Blow, whom he succeeded as organist at Westminster in 1680. In addition two years later he became organist at the Chapel Royal. Some of his first compositions are *12 Sonatas, Swifter, Isis,* the *St. Cecilia* odes, *Te Deum,* and *Jubilante.* An opera, *Dido and Aeneas,* is one of the best compositions of the age, classical in manner, and some of Purcell's music is beyond any reproach. Some of his other work was the music to Betterton's *Diocletian,* and incidental music for several of Dryden's plays, and songs and music for *The Fairy Queen,* which was adapted from Shakespeare's *Tempest.*

PUVIS (*pü-vē'*) **DE CHAVANNES, PIERRE** (1824–1898). A French painter; born at Lyons; studied under Henri Scheffer. Among his works are *Peace, War, Labor, Repose, Ave Picardia Nutrix, Ludas pro Patria,* five panels from the *Life of St. Geneviève* at the Pantheon in Paris, and nine fine panels in the Boston, Mass., Library, including *The Muses Saluting the Spirit of Enlightenment* and the *Arts* and *Sciences.*

PYLE, HOWARD (1853–1911) An American illustrator and writer who established a school of art at Wilmington, Del., his birthplace, where instruction was free. In 1907 he became a member of the National Academy of Design. Besides many paintings of great merit showing colonial and pioneer life, he wrote several books of fiction, and painted *The Battle of Nashville* in the Capitol at St. Paul, Minn., and *The Landing of Carteret* for the court house at Newark, N. J.

QUERCIA (*kwär'chä*), **JACOPO DELLA** (c. 1374–1438). An Italian sculptor; born at Quercia, near Siena; first to use a wooden framework covered with plaster in making large statues; best work is seen in a door of San Petronia at Bologna, decorations in Santa Maria del Fiore, and the marble fountain in the market place at Siena.

RACHEL (*rā'shel*), **ELISA** (1821–1858). A great French tragédienne; born in Switzerland, of Jewish parents; made her début in Paris in 1837, and soon became famous as the interpreter of the principal characters in the masterpieces of Racine and Corneille, her crowning triumph being the representation, in 1843, of Phèdre in the tragedy of Racine. Some of her other parts were those in Duport's *La Vendéenne,* based in part on Scott, and on *Adrienne Lecouvreur.*

RACHMANINOFF (*räch-mä'nyē-nof*), **SERGEI VASSILIEVITCH** (1873–). Russian composer and pianist, educated at the conservatories of St. Petersburg and Moscow. His opera, *Aleko,* in 1892 won a gold medal at Moscow, where it was successfully produced the following year. Beginning in 1899 he won immense applause at London, Vienna, and other capitals, but in 1903 returned to Moscow as a professor of piano. Next he lived in Dresden, visited the United States first in 1909, and settled there permanently in 1918. Of his numerous compositions, a few of the most celebrated are the C sharp minor prelude; the operas, *The Avaricious Knight* and *Francesca da Rimini;* the symphonic poem, *The Isle of Death;* and various works for the piano and for the chorus.

RACKHAM (*rak'am*), **ARTHUR** (1867–1939). English illustrator, who in 1919 was elected master of the Art Workers' Guild, having been made an associate of the Society of Beaux-Arts in 1912. Some

of his book illustrations, now well known, are for *Rip Van Winkle, Alice in Wonderland,* Dickens's *Christmas Carol,* Grimm's *Fairy Tales,* Hawthorne's *Wonder Book, Midsummer Night's Dream,* and *Mother Goose.* His wife, Edythe Starkie, also attained fame as a painter.

RAEBURN (*rā'burn*), **HENRY** (1756–1823). Celebrated Scotch portrait painter, who began life as an apprentice to a goldsmith, by whom he was introduced to David Martin, the great portraitist of Edinburgh. In his 22d year he painted the picture of the widow of Count Leslie, who soon became Raeburn's wife. After study at Rome, he began to paint in Edinburgh (1787). Some of his famous sitters were Lord President Dundas, Dr. James Hutton, Hugh Blair, and Sir Walter Scott. By 1800 he was the leader of the Scotch school of artists; and in 1815 he was made a member of the Royal Academy, and a knight in 1822. Three hundred of his paintings were exhibited in 1876 by the Royal Scottish Academy.

RAEMAEKERS (*rā'mä-kėrs*), **LOUIS** (1869–). A Dutch cartoonist, who early engaged in painting landscapes and portraits, and then turned to posters and cartoons. From 1908 he made a series of important political cartoons, which rose to a climax of fury during the World War, when he published in the *Amsterdam Telegraf* a series against the German Allies. He held successful exhibitions in various cities of Holland. His *Cartoon History of the War* (1919) shows the nature and extent of his drawings.

RAFF, JOSEPH JOACHIM (1822–1882). Swiss composer, who lived for nine years near Liszt at Weimar (1850–1859). He married the actress Doris Genost, and taught music for years at Wiesbaden. Some important works are the symphonies *In der Alpen* and *Zur Herbstzeit;* overtures, *Jubel* and *Macbeth;* operas, *King Alfred* and *Dame Kobold.*

RAMEAU (*rà-mō'*), **JEAN PHILIPPE** (1683–1764). A French composer; born at Dijon; wrote on harmony and, settling in Paris, composed operas, his first successful one, *Hippolyte et Aricie,* and his best, *Castor et Pollux.* His work laid the foundation for a rational science of harmony. He is now especially noted for his discoveries of inverted chords and his perfection of a natural harmony upon a fundamental bass. Of his critical works, *Traité de l'harmonie* and *Nouveau système* best set forth his theories.

RAPHAEL (*raf'ā-el*), **SANZIO** (1483–1520). The greatest of modern painters; born in Urbino, Italy. He received his earliest instructions from his father, Giovanni Santi, after whose death, in 1494, he probably became the pupil of Timoteo Viti. In 1504 he visited Florence and lived there till 1508, when he was called to Rome by Pope Julius II. and employed to paint the chambers of the Vatican. Raphael spent the rest of his short life at Rome. In the numerous works, frescoes, and oil paintings of the unrivaled master, three styles are distinctly recognizable. The first is the "Umbrian," the second "Florentine," and the third style "Roman," and is peculiarly Raphael's own—that which constitutes him the greatest of painters. Its supreme excellence is the equable development of all the essential qualities of art, composition, expression, design, coloring. Among Raphael's oil paintings are the *St. Cecilia* at Bologna; the famous *Madonna di San Sisto,* now in the Dresden Gallery; the *Spasimo di Sicilia,* now at Madrid; and the *Transfiguration,* his last work. His drawings are very numerous, and are to be found in most of the public and private museums of America and Europe. Raphael, who had occupied himself with architecture as well as painting, was charged, on the death of his friend, Bramante, in 1514, with the direction of the building of St. Peter's. Raphael died at Rome, in the height of his fame, on his thirty-seventh birthday.

RAUCH (*rôch*), **CHRISTIAN DANIEL** (1777–1857). An eminent Prussian sculptor; born in Waldeck; patronized by royalty; influenced at Rome by Thorwaldsen and Canova; resided chiefly in Berlin; executed statues of Blücher, Dürer, Schiller, and others, as well as busts. His masterpiece is a colossal monument in Berlin of Frederick the Great.

RAVEL, MAURICE (1875–1937). French composer, who from the time he won the second Grand Prix de Rome in 1901 rose steadily until he stood at or near the top of his profession. Some of his greatest works are the string quartet in F, *Introduction and Allegro* for four instruments, *Spanish Rhapsody* for the orchestra, *Miroirs, Sonatine, Valses nobles, La Valse,* and a ballet *Daphnis and Chloe,* besides many pieces for the pianoforte.

REDFIELD, EDWARD WILLIS (1869–). American painter, who was born in Delaware, and educated in Philadelphia and in Paris under Bougureau and Fleury. Numerous prizes and medals were awarded him, and he is represented in many galleries, including the Art Institute of Chicago, Carnegie Institute of Pittsburgh, Academy of Fine Arts of Philadelphia, the Luxembourg of Paris, Corcoran of Washington, Peabody Museum of Baltimore, and Metropolitan of New York. For his winter scenes he became celebrated, notable illustrations being the *Brook in Winter, The Old Bridge,* and *February,* the best of which was placed in the Luxembourg by the French government.

REGNAULT (*rēh-no'*), **HENRI** (1843–1871). Son of a celebrated French chemist, he exhibited two portraits in the Salon of 1864, gained the grand prize two years later with his *Thetis,* and in Rome came under Spanish art influences. He was killed while serving in the Franco-German War of 1870. Other notable pictures are *Judith, Salome, Execution without Hearing under the Moorish Kings,* all of which show a developed sense of colors, indicating that Regnault might have become one of the greatest artists of his age.

REHAN (*rē'an*), **ADA** (1860–1916). Her real name was Crehan. Being brought from Ireland by her parents, she appeared first on the stage in 1874 at Newark, later acted in several minor troups, and in 1879 joined the Augustin Daly players in New York. In this company she became the star in many adaptations from the German, and in various old plays like the *Country Girl, Hunchback,* and most celebrated in Shakespeare revivals, such as *The Taming of the Shrew* and *As You Like It.*

REID, GEORGE AGNEW (1861–). A Canadian artist; born near Wingham, Ontario; studied under Harris at Toronto and Thomas Eakins at Philadelphia; worked under Constant, Lefèbvre, and others in Paris. His *Foreclosure of the Mortgage,* a medal winner at the World's Fair (1893), and his panels in the City Hall of Toronto are among his chief works.

REID, ROBERT (1863–1929). An American figure and mural painter; born at Stockbridge, Mass.; a pupil of William M. Chase and of Boulanger and Lefèbvre in Paris. His designs in the Congressional Library, the Appellate Court House, the Paulist Fathers' Church in New York, and in the State House of Massachusetts, where he painted three large panels representing *James Otis Delivering his Speech against the Writs of Assistance, Paul Revere's Ride,* and *The Boston Tea Party.*

REMBRANDT VAN RIJN (*rem'brant vän rīn*) (1606–1669). Celebrated Dutch painter, born in Leyden where he lived till 1631, after which he moved to Amsterdam, and one of the greatest colorists of all time in his later period. He was eminent in subject pictures and especially in portraiture. Though he was a prolific artist, no doubt, the exact number of his paintings varies from 988 listed by Groot (1916) to 48 claimed by John C. Van Dyke (in *Rembrandt and his School*) as by the master himself alone. In his early manner light tints of gray and green predominate; in the last dark browns, blacks, and deep reds. Several of his best portrait scenes contain his wife, Saskia, who inspired him until her death in 1642. Great works of the earlier group are *St. Paul in Prison, Samson in Prison* (one of several based on the life of this hero), *Simeon in the Temple, Flight of the Angel,* and *Christ as the Gardner.* Some of the best of his later manner are the wonderful self-portrait (1640), now in the English National Gallery, *Christ Healing the Sick,* the *Night Watch* (containing 29 life-sized figures), *Slaughtered Ox,* now in the Louvre, *The Anatomy Lesson,* now at the Hague, *Landscape with Ruins, Windmill, John the Baptist Preaching,* and *Adoration of the Magi,* now in Buckingham Palace.

REMENYI (*ray-mānē'yeh*), **EDOUARD** (1830–1898). An Hungarian violinist; born in Heves, Hungary. In 1854 he visited London, where he was appointed solo violinist to Queen Victoria; in 1860 returned to Hungary, where he attained great distinction. In 1878 he came to the United States, where he spent much of his time and gave many concerts.

REMINGTON, FREDERIC (1861–1909). An American artist and author; born in Canton, N. Y. He was one of the most conspicuous of American artists in "black and white." His *Broncho Buster, The Wounded Bunkie,* and his stories illustrated by his own drawings, *Pony Tracks, Crooked Trails, Frontier Sketches, Sundown Leflare,* and *John Ermine of the*

Yellowstone, are among the more notable of his many fine works.

RENOIR, FIRMIN AUGUSTE (1841–1919). French painter of varied abilities, influenced at first by the Impressionists, and later sought to secure great freedom in form, even by the aid of the study of architecture. Monet, Courbet, Corot, and others influenced his sense of color. Some of his subjects are *The Box, The Terrace, Rowers' Luncheon*, and the *Bathers*.

RENWICK, JAMES (1818–1895). An American architect; born in New York City; constructed the Croton Reservoir; studied under Upjohn; designed St. Patrick's Cathedral in New York (1858–1883), Vassar College, Grace and Calvary churches in New York, and the Smithsonian Institution and the Corcoran Gallery in Washington.

RESZKE (*dĕ resh'ke*), **EDOUARD DE** (1855–1917). Operatic bass singer of Polish birth and training; brother of Jean De Reszke, noted below. In 1876 he first appeared in Paris, where he was soon acclaimed one of the greatest singers of the day in range and power of voice. Several tours of the United States met with considerable success.

RESZKE, JEAN (1850–1925). Operatic singer, born in Warsaw, Poland; educated in Italy. His first appearance in Venice, London, and Paris in 1874 was not an unqualified success. Later he reappeared, after further training and study, this time as a tenor instead of a baritone, and at once attained a wide reputation at Madrid in *Robert le Diable*. In Wagnerian parts, such as Siegfried, Tristan, and Lohengrin, in *Le Cid* and other rôles, he was long famous. From 1904 to his death he engaged in teaching.

REYNOLDS, JOSHUA (1723–1792). Great English portrait painter, who "filled England with the ghosts of her noble squires and dames." He was born in Devon, received some education from his father, studied under Hudson of London for two years, and later went to Italy. While in Rome he caught a cold, which left him permanently deaf. After 1752 he lived in London, where he established a club with Johnson, Burke, Garrick, Sterne, and Bishop Percy, most of whom he painted. In portraits of single persons he stands with Gainsborough. In the United States, the Metropolitan, New York, possesses 14 of his pictures; the New York Public Library has *Mrs. Billington as St. Cecilia;* the Huntington Library, San Marino, Calif., has *Mrs. Siddons as the Tragic Muse;* the Boston Museum has *Kitty Fisher* and *Sir Thomas Mills;* and private collectors have a score of others. Following Reynolds' election as president of the new Royal Academy, the king knighted Reynolds in 1769. Sir Joshua delivered many lectures on art, included now in his *Discourses*.

RIBE'RA, JESEPE DE (1588–1656). A Spanish painter; born near Valencia; indulged in a realism of a gruesome type; had Salvator Rosa and Giordano for pupils.

RICHARDS, WILLIAM TROST (1833–1905). An American marine painter; born in Philadelphia; a pupil of Paul Weber; studied also in Florence, Rome, and Paris; noted for his painting of surf scenes. Many notable examples of his work are in the several galleries of the United States.

RICHARDSON, HENRY HOBSON (1838–1886). American architect, born in Louisiana, educated at Harvard, studied and practiced for a time in Paris (1860–65), his family having lost their all in the Civil War. Then he settled in New York, moved to Boston in 1878, and there designed the buildings which made him a leader in his generation and after. Some of them are Trinity Church, Boston; Sever and Austin Halls, Harvard University, Cambridge; changes in the Capitol at Albany, N. Y.; the county buildings of Pittsburgh; the Chamber of Commerce of Cincinnati; and the Field Building of Chicago.

RICHTER (*rish'tĕr*), **HANS** (1843–1916). Hungarian musical conductor, interpreter of Wagner and of other great composers, and a leader in popularization of German opera. He was born of musical parents at Raab, studied five years at Vienna, conducted the National Opera at Budapest, and then for 25 years at Vienna. In 1885 he began to direct the festival held every three years at Birmingham, and in 1900 began to conduct the Hallé orchestra at Manchester. One of his most celebrated accomplishments was a series of Wagner performances at Drury Lane, London, in 1892. Richter was noted for his intimate knowledge of each instrument in the orchestra and for his prodigious memory.

RICKETTS, CHARLES (1866–). English artist and designer of fine books; in 1889 he became joint editor of the *Dial;* and in 1896 founded the Vale Press, the publications of which he designed until 1904. He is represented by *The Plague* in the Luxembourg and by *Don Juan* in the National Gallery. Among his writings are *The Prado and its Masterpieces* and *Titian*.

RINEHART, WILLIAM HENRY (1825–1874). An American sculptor; born in Carroll County, Md.; studied in Italy and eventually settled in Rome. His *Chief Justice Taney* at Annapolis: *Atalanta, Latona and her Children, Diana, Endymion*, and *Rebecca* in the Corcoran Gallery; and his masterpiece, *Clytie Forsaken by Apollo* in Baltimore, are his chief works; left his property to assist young sculptors. The fund amounts to $100,000.

RISTORI (*rĭst'ŏ-rē*), **ADELAIDE** (1822–1906). Italian actress of great ability and fame. She appeared on the stage at 14 as Francesca in Pellico's tragedy, at 18 played as Mary Stuart in Schiller's famous version, and became a member of the Sardinian and of the ducal company of Parma. In 1846 she married the marchese del Grillo, who died in 1861. France gave her a wonderful ovation in 1855, despite partisanship in favor of the great Rachel at the time. Before her retirement in 1885 Ristori had made four tours of the United States. Combined with theatrical genius, she made a profound study of historical characters like Mary of Scotland and Queen Elizabeth. Her *Studies and Memories* (1888) throw valuable light on her art and the stage of her period.

RITTER, FREDERIC LOUIS (1834–1891). An American composer; born in Strassburg; pupil of Hause in Strassburg and of Kastner in Paris; settled in Cincinnati, Ohio, in 1856; organized the Cecilia Society and the Philharmonic Society; conductor of the Arion Society in New York (1861); professor of music at Vassar College (1874); wrote five symphonies and more than 100 songs.

RIVE-KING, JULIE (1859–). An American pianist; born in Cincinnati, Ohio; studied with William Mason in New York and with Reinecke and Liszt in Germany. For 20 years she played with the leading orchestras; composed some piano pieces that have been popular.

RIVIERE (*rē-vy-ar'*), **BRITON** (1840–1920). An English painter; born in London; noted as a faithful painter of animals. His *Sympathy* in Holloway College and six pictures in the Tate Gallery are among his best works. Besides exhibiting at the Royal Academy each year after 1863, he drew many illustrations for *Punch* and similar periodicals, becoming a member of the Academy in 1881 and ten years later a D. C. L. at Oxford.

ROBBIA (*rob'bē-ä*), **ANDREA DELLA** (1437–1528). Nephew and pupil of Luca della Robbia and noted for his sculptures in terra cotta and for his medallion of infants for the foundling hospital at Florence. He is represented in the Metropolitan Museum of New York by a fine retable of the *Assumption*. Many reliefs of the Madonna and Child were finished by him, each one having something original. Five of his sons worked for him in his numerous reliefs, retables, medallions, and similar works at Florence and Pistoia.

ROBBIA (*rob'bēä*), **LUCA DELLA** (1399–1482). Florentine decorative artist, uncle of Andrea della Robbia just noted. In early life he completed many important works in bronze, marble, and other materials, including the singing gallery in the cathedral at Florence. Other important works are five reliefs for the campanile, ten panels for the cathedral, a bronze door of wonderful beauty and skill, a marble tomb for the bishop of Fiesole, and medallions of the Four Evangelists in a chapel in S. Croce. Though he was not the first to ornament terra cotta in sculpturing, he greatly extended and perfected the process, especially in polychrome, and this is now called Della Robbia ware. Many of his medallions in this style are now in the South Kensington Museum, London.

ROBERTS, HOWARD (1843–1900). An American sculptor; born in Philadelphia; studied under Joseph A. Bailly and with Dumont in Paris. His *Fulton* in the National Capitol, *Lot's Wife, Hypatia*, and other statuettes are among his best known works.

ROBESON, PAUL (1898–). Negro actor and singer, who was born in New Jersey, was graduated at Rutgers College with highest average scholarship, besides being a great athlete,—all-American end for two

years. He completed a law course at Columbia University (1923), but turned to the stage in *Taboo* (1922), *All God's Chillun's Got Wings, Emperor Jones,* and *The Black Boy.* In 1925 he played in London, the season following again in New York, and in 1928 returned to Europe. His singing of the negro spirituals in London and Paris aroused a great deal of enthusiasm.

ROBINSON, THEODORE (1852–1896). An American artist; born at Irasburg, Vt.; studied with Gérôme and Duran in Paris and with Monet; one of his best pictures—*Hudson River Canal*—was rejected when offered as a gift to the Metropolitan Museum in New York. A storm of protest followed. His *Winter Landscape* was accepted. His work was too impressionistic for the academic standard which obtained at the time.

ROBSON, STUART (1836–1903). An American actor; born at Annapolis, Md.; appeared first in Baltimore; played Captain Crabtree in *Black-eyed Susan* and in *Our Boarding-House,* Bronson Howard's *The Henrietta, She Stoops to Conquer, Oliver Goldsmith,* and others. He was associated with William H. Crane (1877–1889).

RODIN (*rô-dăn'*), **AUGUSTE** (1840–1917). French sculptor, employed for six years in a Paris studio, and then acted as assistant to Van Rasbourg in Brussels, after which he launched out for himself in a series of original works, greatly praised by some, greatly condemned by other critics. His *Man with a Broken Nose* (1864) first gained attention, followed by *The Bronze Age, Victor Hugo,* and *Portrait of Garnier.* For twenty years he worked at intervals on his gigantic *Portal of Hell,* suggested by a scene in Dante. Some of his other works are *Bastien-Lepage, The Burgesses of Calais, Contemplation,* and *Le Penseur,* presented in 1904 by Ernest Beckett to the British Nation. In 1900 his *Statue of Balzac,* in its preliminary plaster form, was rejected by the commission of the Society of Men of Letters, which had ordered it. Yet in the same year the city of Paris erected a building to house his principal works. Rodin gave several of his statues to the museum at South Kensington, England, including his *John the Baptist, Age of Bronze,* and *Fallen Angel.*

ROGERS, RANDOLPH (1825–1892). An American sculptor; born in Waterloo, N. Y.; studied with Bartolini in Rome, where he spent much of his life. His most remarkable works include the bronze doors in the National Capitol with the eight panels of scenes from the life of Columbus; *The Angel of the Resurrection* for the tomb of Colonel Colt at Hartford; figures of Marshall, Nelson, and Mason on the Washington Monument at Richmond, Va.; the bronze statue of Lincoln in Philadelphia; *The Genius of Connecticut* for the Capitol at Hartford; and *Seward* in Central Park, New York.

ROMNEY, GEORGE (1734–1802). An English portrait painter; born at Dalton, Lancashire; settled in London and became a rival of Reynolds in popularity. He painted men and women of the day, especially Emma, Lady Hamilton, whom he depicted in a long series of portraits. He was never admitted to the Royal Academy. Some of his pictures are *Death of General Wolfe, Mrs. Yates as the Tragic Muse, Infant Shakespeare Attended by the Passions, Milton and his Daughters,* and *Newton Making Experiments with the Prism.* His fame rests, however, on his portraits.

ROOT, GEORGE FREDERICK (1820–1895). An American musical composer and organist, born in Massachusetts. He attained a great vogue as the author of music, and sometimes the words, of sentimental and patriotic songs, like *The Battle Cry of Freedom, Tramp, Tramp, Tramp, Just before the Battle, Mother,* and *There's Music in the Air.* More ambitious works are the cantatas *Daniel, Pilgrim Fathers, The Haymakers,* and *The Flower Queen,* for which Fanny J. Crosby, the blind poet, wrote the words, as she did also for *There's Music in the Air.*

ROPS (*rō*), **FELICIEN** (1833–1898). Belgian painter and engraver, born at Namur, and began as a humorous illustrator while still in the Universtiy of Brussels. In all he executed about 600 engravings, a number of fine water colors like *Le Scandale, Une Attrapade,* and *Tentation de St. Antoine,* and illustrated many literary works. Preëminent in engraving, Rops is fine in technique and thought, and nearly perfect in the use of dry-point.

ROSA (*rō'zä*), **SALVATOR** (1615–1673). Italian painter of Naples, who also attained some fame as an actor and poet. For a time he executed many battle scenes, then turned to rough and wild landscapes peopled by strange beings, and finally turned to more romantic works still. He lived at Rome, then at Florence, and again at Rome in his last years. Among his characteristic works are the *Battlepiece,* now in the Louvre; *Saul and the Witch of Endor,* also in the Louvre; *Oath of Catiline,* now in the Pitti Gallery; and *Mercury and the Dishonest Woodman.*

ROSA, CARL AUGUST NICHOLAS (1842–1889). English musical manager and violinist, born in Germany, his original name being Rose. In 1867 he married the celebrated soprano, Madame Parepa, who died in 1874. Then Rosa organized a company to make popular in English various operas of different languages. During his life and even afterwards the Rosa Opera Company did much to encourage and train young artists.

ROSENTHAL (*rō'zen-tăl*), **MORITZ** (1862–). An Austrian pianist, student of Mikuli at Lemberg, which was his birthplace, of Joseffy at Vienna, and of Liszt at Weimar and Rome. He made public appearances at European capitals at 13, finally acted as court pianist in Austria and Roumania, and made six tours of the United States, the last being in 1906. Some compositions for the piano are *Romanza, Papillons, Carneval de Vienne.*

ROSENTHAL, TOBY EDWARD (1848–1917). An American painter; born in New Haven, Conn.; studied in San Francisco under Henri Bacon and Arriola, and under Piloty in Munich, where he afterward lived. Among his works are *Morning Prayers in the Bach Family, Elaine, The Trial of Constance Beverly,* and *A Dancing Lesson during the Empire.*

ROSSETTI, DANTE GABRIEL (1828–1882). English painter and poet, of a distinguished family of poets and artists. With Millais, Holman Hunt, and others Rossetti belonged to the Pre-Raphaelite Brotherhood, a group of English painters who looked for inspiration to the age before Dante. Some of his best pictures are *The Girlhood of Mary, Virgin* (1849), *Dr. Johnson at the Mitre, Beata Beatrix* (an idealized portrait of his wife), *Dante's Dream,* and the Celebrated *Blessed Damozel* (1877). Much of his painting is mystical, dreamy, and ethereal. Rossetti's tall ladies in unusual attitudes aroused both inordinate admiration and mirthful disdain. For other details of his life and poetry, see the DICTIONARY OF AUTHORS.

ROSSINI (*ros-sē'nē*), **GIOACHINO** (1792–1868). A celebrated Italian composer of operatic music; born at Pesaro. His operas were numerous, of a high order, and received with unbounded applause, beginning with *Tancred,* followed by *Barber of Seville, La gazza ladra, Semiramis, William Tell,* etc. He composed a *Stabat Mater,* and a *Mass* which was given at his grave.

ROUSSEAU (*rō-sō'*), **PIERRE ETIENNE THEODORE** (1812–1867). Gifted painter of the Barbizon group, friend of J. F. Millet for many years. Some of his smaller early works were received by the Paris exhibition, but most were rejected, because of their romantic and unusual type. Many of these are now highly regarded,—such as *La Descente des vaches, The Chestnut Avenue, The Marsh in the Landes,* and *The Edge of the Forest.*

ROUSSEAU, VICTOR (1865–). Belgian sculptor, a director of the Brussels City Academy, and a resident in England during the World War, where he designed the monument expressing the gratitude of Belgium to England. Some of his earlier works are *Les Soeurs de l'Illusion, Démeter,* and *Maturité.*

RUBENS (*rōō'benz*), **PETER PAUL** (1577–1640). The greatest of the Flemish painters; born at Siegen, in Westphalia; went with his widowed mother in 1587 to Antwerp, where he sedulously cultivated the painter's art and early revealed his masterly gift of coloring; went to Italy, and for a number of years was in the service of the duke of Mantua, who encouraged him in his art and employed him on a diplomatic mission to Philip II. of Spain; executed at Madrid some of his finest portraits; returned to Antwerp in 1609; completed in 1612 his masterpiece, *The Descent from the Cross* in Antwerp Cathedral. With the aid of assistants he painted the series of 24 pictures now in the Louvre, illustrating the principal events in the life of Marie de' Medici during 1628–1629. Diplomatic missions engaged him in Spain and at the English courts, where his superabundant energy enabled him to execute many paintings for Charles I.

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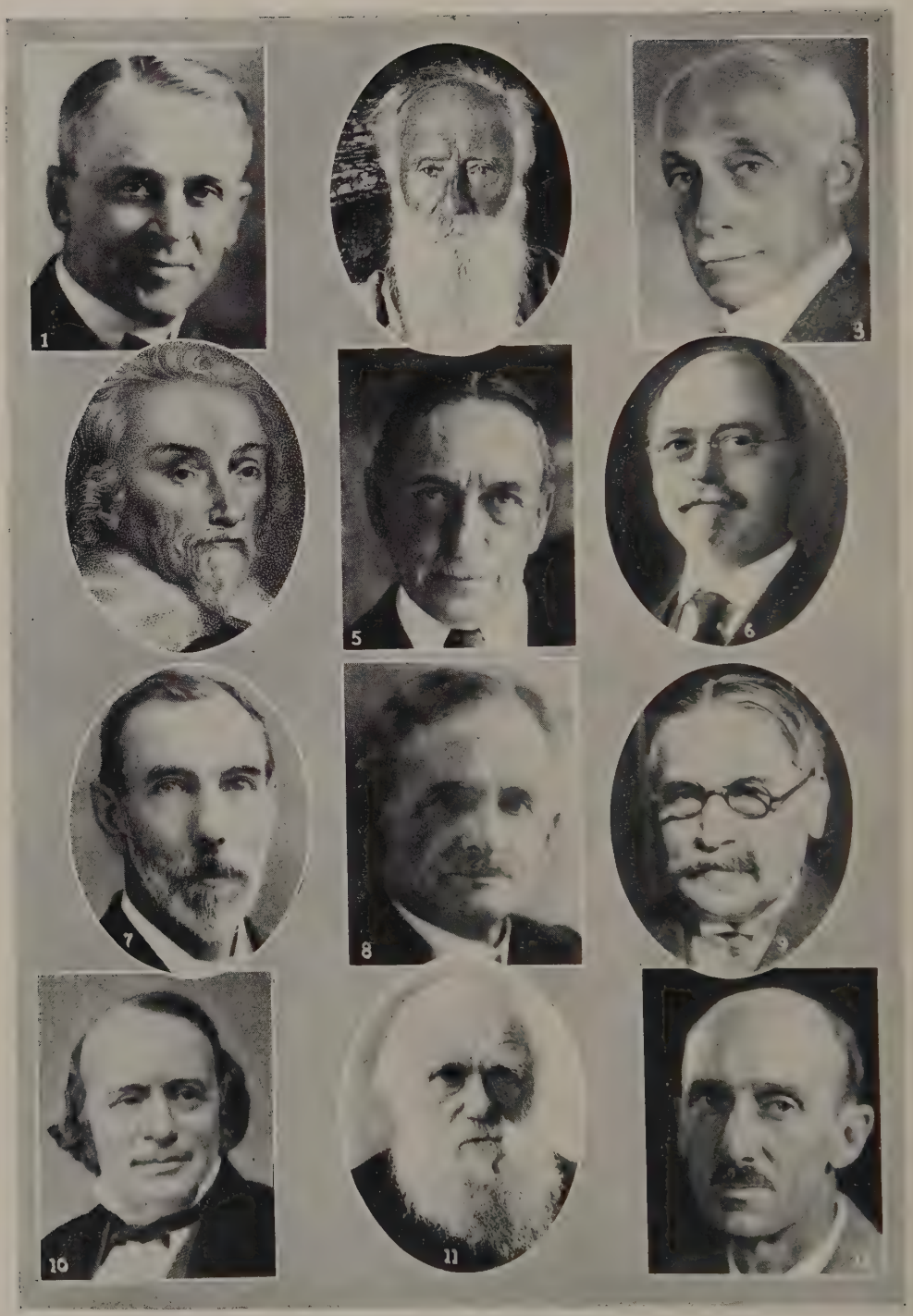
FAMOUS SINGERS

1 Anna Case
2 Mary Lewis
3 Geraldine Farrar
4 Giovanni Martinelli
5 Titta Ruffo
6 Edward Johnson
7 Amelita Galli-Curci
8 Mary Garden
9 Louise Homer



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FAMOUS SCIENTISTS

1 Dr. Robert Milliken
2 John Burroughs
3 Elmer A. Sperry
4 Asa Gray
5 Henry F. Osborne
6 Irving Fisher
7 Sir William Ramsay
8 Albert Michelson
9 Michael J. Pupin
10 Louis Agassiz
11 Charles Darwin
12 Dr. William Beebe

RUBINSTEIN (*rö'ben-stīn*), **ANTON GREGOR** (1830–1894). A Russian musician; born at Wechwotyneez, Kherson; in 1848 settled in St. Petersburg as teacher of music, where he succeeded in getting a musical conservatory founded and became its director. In 1872 he came to the United States and had an enthusiastic reception. He ended his concert tours in 1886. As a pianist he held the highest rank, being usually reckoned the greatest since Liszt. He ceased playing in public some time before his death, which occurred in St. Petersburg, Russia.

RUCKSTUHL, FREDERICK WELLINGTON (1853–). An American sculptor; born at Breitenbach, Alsace. His parents brought him to St. Louis, Mo. (1854); studied in Paris. His works include *Evening* in the Metropolitan Museum in New York; *Mercury Leading the Eagle of Jupiter* in St. Louis; *Solon* in the Congressional Library; statue of General Hartranft in Harrisburg; *Victory* on the Soldiers and Sailors' Monument at Jamaica, N. Y.; heads of Franklin, Goethe, and Macaulay on the façade of the Congressional Library; *Wisdom* and *Force* on the Appellate Court of New York; and *Gloria Victis* on the Confederate Monument at Baltimore. He wrote *Great Works of Art and What Makes them Great.*

RUDE, FRANCOIS (1784–1855). A French sculptor; born at Dijon; gained the Grand Prix (1812). His *Mercury, Young Neapolitan Fisherman,* and the trophy on the Arc de Triomphe de l'Etoile are among his best known works.

RUFFO (*rōōf'fō*), **TITTA** (1877–). Baritone singer, born at Pisa, and educated at the Conservatory of St. Cecilia, Rome, and under Cassini of Milan, after the Conservatory advised him to think of some other profession. Persisting, he went to South America, where he gained some success, and was met by a triumph on his return to Italy. In 1912–13 he sang in the United States; during the World War he served by choice in the Italian ranks; and afterward returned to America, where he was engaged by the Chicago Opera Company and the Metropolitan of New York.

RUSSELL, ANNIE (1869–1936). An American actress; born in Liverpool, England; appeared when a child on the stage at Montreal, Canada; played in *Pinafore;* joined the Madison Square company and played in *Esmeralda, Elaine,* and *May Blossom;* played *The Royal Family, Miss Hobbs,* and *The Girl and the Judge* (1898); played Puck in *A Midsummer Night's Dream* at the Astor Theatre (1906). Later in various revivals of Shakespeare, Sheridan, Goldsmith, and others she won a notable hearing.

RUSSELL, HENRY (1812–1900). English author of music to more than 800 songs, including the very popular *Cheer, Boys, Cheer* and *A Life on the Ocean Wave.* Appearing on the concert stage as a mere child, he completed his education finally at Bologna and Naples. For a number of years he toured the Canadian provinces and the United States (1833–41), and was inordinately celebrated. One of his entertainments, called *The Far West,* greatly increased immigration to the western states and provinces.

RUSSELL, SOL SMITH (1848–1902). An American actor; born in Brunswick, Me.; a drummer boy in the Union army; joined Daly's company (1874); starred in *Edgewood Folks, Peaceful Valley, A Poor Relation, A Bachelor's Romance,* and *The Hon. John Grigsby.*

RUYSDAEL (*rois'dayhl*), **JACOB VAN** (1628–1682). A Dutch painter of landscapes, who lived most of his life in Haarlem. Little is known of his early life or training, but in 1659 he was given the freedom of Amsterdam, where he died in an almshouse. He is one of the greatest painters of foliage, effects of clouds, and forests. Among his fine pictures are *The Pool in the Wood,* now at Leningrad; the *Castle of Bentheim,* the *Cornfield* and the *Travellers,* the last two of which are etchings.

RYDER, ALBERT PINKHAM (1847–1917). A gifted American painter, whose works were placed on special exhibition by the Metropolitan Museum, New York, in 1918. Some of his great canvases are *Jonah and the Whale, Forest of Arden, The Flying Dutchman, Tempest, Macbeth,* and *Lowlands near Highbridge.*

SAINT-GAUDENS (*sant-gâ'denz*), **AUGUSTUS** (1848–1907). An American sculptor, the son of a French father and Irish mother, and born in Dublin. He was early apprenticed to a cameo cutter in New York and studied at Cooper Union and the Academy of Design. Shortly before he left for study in France, he completed a bust of his father; he remained abroad for five years, the last three in Italy. After 1873 he lived mainly in New York. In statuary *Silence* and *Hiawatha* were executed in Rome; *Lincoln* stands in Lincoln Park, Chicago, one of the nation's noblest monuments; the Adams Memorial (1891), often called the finest work in art that America has produced, stands in Rock Creek Cemetery, Washington, D. C.; *Deacon Chapin* or *The Puritan* is in Springfield, Mass.; the Shaw Memorial is on state-house hill in Boston, showing Robert G. Shaw as a colonel of colored troops in the Civil War; and *General Sherman* led by a winged *Victory* stands at the entrance to Central Park, New York City. His *Amor Caritas* was purchased by the French government. St. Gaudens made many interesting low reliefs of friends, including Bastien-Lepage, the artist, Robert Louis Stevenson, William M. Chase, Jacob H. Schiff, and Kenyon Cox. By many he is considered the greatest sculptor of America. His son, Homer St. Gaudens, became director of art at the Carnegie Institute, Pittsburgh, where he built up a great collection of noble art objects.

SAINT SAENS (*sän sön'*), **CHARLES CAMILLE** (1835–1921). Eminent French composer and musician, more successful in symphonic poems and smaller pieces than in his operas, though his *Samson et Dalila* has been justly popular. He was a pupil of Halévy in Paris, organist at the Madeleine for 16 years (1861–77), and won a prize for his first opera *La Princess jeune.* Some later operas are *Henry VIII., Proserpine,* and *Las Barbares.* Two of his other operatic compositions are the *Oratorio de Noël* and *Le Lyre et la Harpe.*

SALOMON, JOHANN PETER (1745–1815). A German violinist and composer, who was born in Bonn, and is chiefly remembered for his interpretation of Haydn, whose *Twelve Grand Symphonies* he produced in London at his Philharmonic Concerts. He made his first English appearance at Covent Garden in 1781; known as a fine solo and quartet player. Buried in Westminster Abbey.

SALVINI (*säl-vē'nē*), **TOMMASO** (1829–1915). An Italian tragedian; born in Milan. In 1849 he won great distinction in the revolutionary war. He scored success in Brussels and Madrid; visited the United States in 1873 and England in 1875. After another visit to the United States in 1880, and to Great Britain in 1884, he retired from the stage to enjoy a life of leisure in his villa near Florence (1890). Among his rôles were Romeo, Hamlet, Othello, the leading parts in Racine's and Corneille's plays, of Voltaire's *Zaïre,* and Alfieri's *Merope* and *Saul.*

SANDHAM, HENRY (1842–1910). A Canadian painter; born in Montreal; studied under J. A. Fraser and in Paris; lived for a time in Boston, Mass., then settled in Toronto (1890). His *Battle of Lexington, Founding of Maryland,* and portrait of Sir John A. McDonald are his chief works.

SANSOVINO (*sän-sō-vē'nō*), **JACOPO** (1486–1570). Italian sculptor and architect, whose family name was Tatti, but he took the name of his art teacher. For a time he remained in Florence, after a period in Rome, then returned to the latter, and finally fled to Venice during the wars. Some of his statues are a marble *Madonna and Child,* a colossal *Neptune* and *Mars,* both now in the ducal palace of Venice, and the bronze doors of the sacristy of St. Mark's. Yet he is best known for his many beautiful buildings at Venice, such as the public library, the mint, Palazzo Manin, and the church of S. Martino.

SARASATE Y NAVASCUES (*dā sä-rä-sä'tā ē nä väs-kö-äs'*), **PABLO MARTIN MELITON DE** (1844–1908). Celebrated Spanish violinist, a student of Alard at Paris, and a concert violinist when he was 16. The next year he first played in London; later he visited many lands, including the United States in 1889. For purity of tone and skill of execution he was one of the great artists of modern times.

SARGENT, JOHN SINGER (1856–1925). A painter of American parentage, born in Florence, and lived in Paris and London most of his life, with occasional visits in the United States. At 18, after much travel with his parents, he entered the studio of Carolus-Duran, gaining an honorable mention (1878) for his first picture. After a visit in Spain, he began as a portrait painter of independent and exact methods. Some of his early works, notably *Madame Gautreau,* now in the Metropolitan at New York, aroused a great storm; but Sargent was always impervious to blame or praise, refusing to read any criticism of his paint-

ing. Some of his distinguished patrons were the Duke of Connaught, the Duke of Portland, Duchess of Sutherland, several crowned heads, Coventry Patmore, Henry James, and Ellen Terry as Lady Macbeth. The Metropolitan Museum, New York, and the Boston Fine Arts Museum contain several of his finest works. From 1890 to 1916 he worked at intervals on the magnificent *History of Religion* of the Boston Public Library, a task involving much research and historical study. Decorations for the Boston Museum and the Memorial Chapel at Harvard University also occupied much of his late years. As a portrait painter of insight, clever interpretation, and fine technique he stands with the best of modern times in England and America.

SARTAIN (*sär-tān'*), **JOHN** (1808–1897). An American artist; born in London, England; came to the United States in 1830 and was one of the first to introduce mezzotint engraving. He was the author of a large number of engravings for book illustration, and engraved many historical paintings; designed the monument to Washington and Lafayette in Monument Cemetery, Philadelphia, and published interesting personal reminiscences.

SARTAIN, WILLIAM (1843–1924). Born in Philadelphia, Pa.; son of John Sartain; studied under Bonnat in Paris; first picture exhibited at Royal Academy in London (1875). His *Lucia, An Arab Café, Narcissus* in Smith College, *In the Hackensack Valley, The End of Day,* and *The Sudden Shower* are notable.

SARTO, ANDREA DEL. See under ANDREA DEL SARTO.

SCHONBERG, ARNOLD (1874–). Austrian composer, at first a romantic in compositions for stringed instruments, but later he turned to Bach and the early classic authors. Notable works are *Verklärte Nacht* (in its final form for string orchestra and six soloists), a chamber symphony (the second), and a quartet, opus 11 (for piano), and *Pierrot Lunaire, Gurrelieder,* and *Pelléas et Mélisande,* a symphonic poem.

SCHUBERT (*shö'bērt*), **FRANZ PETER** (1797–1828). A composer who lived most of his life at Vienna, Austria, where he was the son of a poor teacher and musician. After some desultory education, he was a pupil for five years under Salieri, and in 1810 completed his first piece of music, a pianoforte composition. Next followed three vocal works, many smaller pieces, and in 1814 his first opera, *Des Teufels Lustschloss,* and within two years a great number of various compositions. Later and better works are a symphony called *Tragic, Rosamunde,* an opera, *Mullerlieder,* a group of songs, settings for three Shakespeare lyrics, and some for poems by Heine, and many incidental works. Schubert is best known now for his songs, over 500 in number.

SCHUMANN (*shö'män*), **ROBERT** (1810–1856). A German musical composer; born in Zwichau, Saxony. In the year following his marriage he published nearly 140 songs, many on Heine's words. He then commenced his great series of orchestral works, his symphony in B flat being first performed at the close of 1841. Under stress of work, however, his reason failed him, and after an attempt to drown himself in 1854 he was confined in a lunatic asylum, where he died.

SCHWABE, RANDOLPH (1885–). English draughtsmen, educated at the Slade School and in Paris, and known principally for his beautiful book illustrations. He worked for the Ministry of Education in the World War, designed for the theater, and helped write an interesting book on *Historic Costume.* Various museums contain his prints, drawings, and etchings.

SCHUMANN-HEINK (*shö-män-hingk'*), **ERNESTINE** (1861–1936). Celebrated contralto of German birth, but long a resident of the United States. She made her début at the Court Theater, Dresden, went to Hamburg, Berlin, and in 1896 sang at Bayreuth. Her first American appearance at Chicago in 1898 was in *Lohengrin,* and at London in *Das Rheingold.* In both opera and concert singing she was famous for many years. In 1926 she deeded her magnificent estate in California for a hospital for veterans of the World War.

SCOTT, CYRIL MEIR (1879–). English composer, poet, and writer, educated in music in Germany, and produced his first symphony at Darmstadt when he was 20. Some of his various orchestral and chamber works have been performed in most European capitals and in New York, including *The Alchemist,* an opera; *The Incomplete Apothecary,* a ballet; a *Nativity Hymn.* Of his poetry, *The Celestial Aftermath* and *The Voice of the Ancient* may be mentioned, and also his discussion, *The Influence of Music on History and Morals.*

SCOTT, GILES GILBERT (1880–). British architect, in practice at London since 1902. His designs for the new Liverpool Cathedral were accepted in 1903, and the building was consecrated in 1924. This is the first English cathedral to be erected in modern times, and it will be the largest when completed. He was knighted in 1924. Besides several other churches and war memorials, he designed buildings for Clare College at Cambridge University.

SCOTT, JULIAN (1846–1901). An American battle painter; born in Johnson, Vt.; studied in New York and with Leutze. His works are chiefly scenes from the Civil War and include *Rear Guard at White Oak Swamp* (in the Union League Club at New York), *Capture of André,* and *In the Cornfield at Antietam.*

SCOTTI, ANTONIO (1868–1936). Baritone singer, born in Naples, showed his talent as a mere child, and studied under Mme. Trifari-Paganini, his only teacher of singing. He appeared first at Malta, 1889, at many places in Italy, South America, Madrid, Moscow, and St. Petersburg, in London in 1889, and in the same year at the Metropolitan in New York, for the first of many seasons. Some of his numerous parts are Don Giovanni, Tonio, Falstaffe, Iago, and Amonsaro.

SCRIABIN (*skryä'bēn*), **ALEXANDER NICHOLAEVICH** (1871–1915). Russian composer, educated at the Moscow Conservatory, where he also taught for a number of years. For a time he lived in Brussels, and he made a number of tours, including one to the United States. Many of his compositions express his mystic ideals or some certain spiritual conception. He was influenced by Chopin, Mozart, Wagner, and Liszt. Some of his chief works are the *Poem of Fire, Reverie, Divine Poem* (third symphony), and many works for the piano.

SEIDL (*zī'dl*), **ANTON** (1850–1898). An Hungarian conductor, who was born at Budapest, assisted Wagner in producing the *Niebelung* trilogy at Bayreuth (1876), and succeeded Leopold Damrosch as conductor at the Metropolitan Opera House, New York (1885–91). Conducted at Covent Garden in 1887 and Bayreuth in 1886 and 1897. In New York he produced a number of operas for the first time in America, such as *Tristan und Isolde, Siegfried,* and *Die Meistersinger.*

SEMBRICH (*zĕm'brĭk*), **MARCELLA** (1858–1935). Operatic singer, born near Lemberg, Austria, as Praxede Marcelline Kochanska, but took her mother's maiden name for her public career. As Elvira in *I Puritani* she appeared at Athens in 1877, the next year at Dresden in the title rôle of *Lucia di Lammermoor,* and also at London in 1880 and New York, 1883. After five seasons at Covent Garden, she came back to America, where she sang at the Metropolitan till 1909. She married Wilhelm Stengel, under whom she had studied. Among other celebrated parts are Rosina in the *Barber of Seville,* Norina in *Don Pasquale,* and Leonora in *Il Trovatore.* Retiring from the opera in 1916, she trained or encouraged many artists that attained fame in music.

SHERWOOD, WILLIAM HALL (1854–1911). An American teacher, composer, and pianist; born in Lyons, N. Y.; studied under William Mason in New York and in Europe under Kullak, Deppe, and Liszt; did concert work in Germany (1882–1884); taught in the New England Conservatory (1885); head of the piano department of the Chicago Conservatory (1889–1899); established the Sherwood Piano School; wrote a *Scherzo-Caprice,* a *Gypsy Dance,* and many other pieces.

SHANNON, CHARLES HAZELWOOD (1865–). An English artist, noted for his sense of color similar to that of some of the old Italian masters and for his etchings and lithographs. In the Dublin Gallery is his *Bunch of Grapes;* in Munich is his *Study in Gray;* in the collection owned by Northcliffe is *The Bath of Venus;* and a collection of his etchings in the British and other museums.

SHIRLAW, WALTER (1838–1909). An American painter; born in Paisley, Scotland; came with his parents to Chicago in 1840; went to Munich (1870); teacher in the Art Students' League in New York (1876); first president of the Society of American

Artists (1878); elected N. A. in 1888. His notable works include *Tuning the Bell, Sheep Shearing in the Bavarian Mountains, The Goose Girl, The Marble Quarry, A Street Scene in Brittany, Rolling Steel Plates, Emptying the Crucible,* many designs for stained glass, and some mural decorations.

SHORT, FRANCIS JOB (1857–). An English painter and engraver, who turned to engraving after several years as a sanitary engineer in London. Among his early works were some remarkable etchings from the pictures of J. M. W. Turner; and some fine mezzotints of the pictures of G. F. Watts. Short is noted for engravings of the effects of water, and for his influence upon young artists as head of the school of engraving of the Royal College of Art at South Kensington.

SIBELIUS (*si-bā'li-ös*), **JEAN JULIUS CHRISTIAN** (1865–). Finnish composer educated at Helsingfors, Berlin, and Vienna, attaining remarkable skill. Awarded various honors, including a doctorate in music by Yale in 1917. Important compositions are music to the tragedies of *Kaolema* and *King Christian II., Dance Intermezzo, Finlandia, In Memoriam,* seven symphonies, and considerable piano music.

SICKERT (*zik'ert*), **WALTER RICHARD** (1860–). British painter and etcher, who studied under Whistler, and then under Degas. Some of his chief pictures are *Noctes Ambrosianæ, Army and Navy, Sinn Fein, Supper at the Casino,* and *Lansdowne Crescent.*

SIDDONS, SARAH (1755–1831). Distinguished member of the Kemble family, noted in the annals of the English playhouse. She was born at Brecon, Wales; married William Siddons in 1877. At Cheltenham she acted in *Venice Preserved* in 1774, and later went to Drury Lane at £5 a week. After five years at Bath, she appeared once more at Drury Lane, where her reception was most hearty. For a generation she was hailed as the greatest English actress, her only rival for fame in Europe being the great French player, Rachel, who was more intense but less finished. Mrs. Siddons long excelled in Shakespeare parts, her best being Lady Macbeth, Desdemona, Volumnia, and Rosalind. Her last appearance was for the benefit to Mr. and Mrs. Charles Kemble in Home's *Douglas* in 1819.

SIGNORELLI (*sē-nyo-rel'lē*), **LUCA** (1441–1523). An Italian painter; born at Cortona; taught Michelangelo; worked on the frescoes of San Francisco at Arezzo, in Perugia Cathedral, at Volterra, at Monte Oliveto, and at the Orvieto Cathedral. His paintings in the Vatican were destroyed to make way for those of Raphael.

SIMMONS, EDWARD EMERSON (1852–1931). An American painter, who was born at Concord, Mass., and studied under Lefèbvre and Boulanger in Paris, after completing his course at Harvard. Among his numerous mural decorations are those for the Criminal Courts Building and Waldorf-Astoria Hotel in New York, Massachusetts State House, Minnesota Capitol, South Dakota Capitol, Panama-Pacific Exposition at San Francisco, and the home of John D. Rockefeller at Tarrytown, N. Y.

SKINNER, OTIS (1858–). American actor, who began his career as a reader at Hartford, Conn., and made his first stage appearance in Philadelphia, Pa., in 1877. Later he played in *Enchantment* at Niblo's, New York, at Booth's with Barrett and with Augustin Daly in New York, London, Paris, and Berlin for five years. He was leading man with Modjeska (1892–95), and then starred in various plays, including *Kismet, A Celebrated Case, The Honor of the Family, Blood and Sand,* and *Sancho Panza.*

SMETANA (*smet'ä-nä*), **FRIEDRICH** (1824–1884). Czech composer and pianist, who became Konzertmeister to Emperor Ferdinand at Prague, and who was greatly influenced by Liszt while staying at Weimar. In 1856 he went to Gothenburg, but after 1866 lived again at Prague. Some of his compositions are *Hakon Jarl, Die Brandenburger in Böhmen,* the celebrated opera *Die verkaufte Braut,* and *Libuse,* which was written for the opening of the National Theater at Prague. Smetana trained a number of young musicians, of whom possibly Dvořák, the pianist, was the most famous.

SMILLIE, GEORGE HENRY (1840–1920). An American painter; born in New York; studied under James Hart and in Europe. Among his works are *The Merrimac River* in the Boston Art Club, *Light and Shadow Along the Shore* in the Union League Club at Philadelphia, *Boats of Venice, Gloucester Harbor, A Grey Day, Vineyard Sound,* and *At Narragansett;* elected N. A. in 1882.

SMILLIE, JAMES DAVID (1833–1909). American painter, born in New York, the son of a Scotch engraver, who attained fame as a landscape artist and engraver of bank notes. The son followed in the latter type of art, and made a series of notable engravings of Darley's pictures from Cooper's novels.

SMITH, FRANCIS HOPKINSON (1838–1915). Self-taught in art, Smith developed a pleasing and picturesque style in illustrating his own stories, like *Colonel Carter of Cartersville,* perhaps his most famous. His paintings are in public galleries at Washington, D. C., Buffalo, and Baltimore. He also wrote *Outdoor Sketching* (1915), an exposition of his work as an illustrator. See DICTIONARY OF AUTHORS for an account of his books.

SOROLLA Y BASTIDA (*so-rōl-yä ē bäs-tē-thä*), **JOAQUIN** (1863–1923). A Spanish painter, born in Valencia, educated there and in Paris. For years he was considered a leader in art of his country. Celebrated canvases are *Another Margaret, Fisherman's Return,* which was bought for the Luxembourg, and, for the Hispanic Society of America, a series of 49 compositions representing the provinces of Spain.

SOTHERN (*sŭth'ĕrn*), **EDWARD ASKEW** (1826–1881). English actor, who emigrated to America in 1852. He attained a great success in Taylor's *Our American Cousin,* created the main rôle in Robertson's *David Garrick,* and played as Sam Slingsby in Oxenford's *Brother Sam.* For years he was a popular comedian.

SOTHERN, EDWARD HUGH (1859–1933). American actor, son of the preceding, who made his first appearance in his father's company in 1879. After engagements in England and at the Lyceum Theatre, New York, he played a number of parts that brought him great distinction, such as Hamlet, Lovelace, and Villon. Though he took a great variety of rôles, Sothern is now best remembered in Shakespeare plays, supported by Julia Marlowe, first in 1904 and almost continuously until both retired. They were married in 1911. Other dramas in which they appeared are *Jeanne d'Arc, John the Baptist, When Knighthood was in Flower,* and *Lord Dundreary.*

SOUSA (*sō'zä*), **JOHN PHILIP** (1854–1932). American composer and leader of bands, born of Portuguese parentage in Washington, D. C. From an early age he was proficient in music. In 1880 he became leader of the United States Marine Band and in 1892 he organized his own band, but continued his connection with the former. Sousa is noted for his many stirring marches, such as *The Washington Post, High School Cadets,* and *Stars and Stripes Forever.* Besides he composed several comic operas, many songs, and a number of suites. *El Capital,* an opera, attained no little success.

SQUARCIONE, FRANCESCO (1394–1474). An Italian painter; born at Padua; founded one of the first Italian academies of art, and known as the "father of Italian painting"; taught Mantegna; best known by his altarpiece at Padua.

STAINER, JOHN (1840–1901)). An English composer and organist; born in London; organist of St. Paul's (1872–1888); professor of music at Oxford (1889); wrote two cantatas, *The Daughter of Jairus* and *Mary Magdalen;* an oratorio, *The Crucifixion;* and a *Treatise on Harmony.*

STANFORD, CHARLES VILLIERS (1852–1924). Irish composer, born in Dublin, educated in London under Paur, and then on a scholarship at Cambridge University. From 1873 to 1892 he was organist at Trinity College, and acted as conductor of the Musical Society at Cambridge. Some outstanding compositions are the incidental music to *Queen Mary,* an opera the *Veiled Prophet,* and a later one, *Shamus O'Brien,* which became rather famous, chamber music, songs, and symphonies. He acted as professor of composition at the Royal College of Music (1883), conducted various musical organizations, and succeeded Macfarren as professor of music at Cambridge in 1887. In 1902 he was knighted.

STEELL, SIR JOHN (1804–1891). A Scottish sculptor; born at Aberdeen; studied in Rome; modeled *Alexander Taming Bucephalus,* the statue of Scott on Scott's Monument, statue of Queen Victoria, statue of Wellington, and the Albert Memorial, all in Edinburgh. His *Sir Walter Scott* and *Robert Burns* are in Central Park, New York.

STEEN, JAN HAVICKSZ (1626–1679). Dutch painter, noted for his good draftsmanship, the distinction of his coloring, and the range of his subjects, —everything from religious scenes to tavern brawls. In the London National Gallery are three of his pictures, the *Music Master* being notable. Much of his best work is in private galleries, and his paintings are not very numerous.

STILLMAN, WILLIAM JAMES (1828–1901). An American painter and author; born in Schenectady, N. Y.; studied under Church and in London, where he was influenced by Turner and Ruskin; painted in New York until 1861, when he was made consul at Rome, and at Crete in 1865; a friend of Lowell, Longfellow, Holmes, and Agassiz; wrote *The Acropolis of Athens, The Cretan Insurrection, The Old Rome and the New, Francesco Crispi,* and *Autobiography of a Journalist.*

STOESSEL, ALBERT FREDERIC (1894–). American musician, since 1921 conductor of the New York Oratorio Society, and since 1923 professor of music at New York University. Some of his compositions are *Sonata in G,* suite for 2 pianos and orchestra, *Hispania* (for piano), *Antique* (suit for orchestra), and many smaller pieces. He wrote *Technique of the Baton* (1919). Stoessel was born in St. Louis and educated in Berlin, where he made his début.

STORY, WILLIAM WETMORE (1819–1895). An American sculptor and poet; born in Salem, Mass.; was graduated at Harvard (1838) and at the Law School in 1840; practised until 1845; went to Rome and opened a studio (1848), where he completed the statue of his father, which is in the Mount Auburn at Cambridge, Mass. Among his sculptures are *Cleopatra, Libyan, Sibyl, Delilah, Jerusalem in her Desolation, Semiramis;* statues of George Peabody in London, Edward Everett in Boston Public Garden, Professor Henry in the Smithsonian Institution, and the Francis Scott Key Monument in Golden Gate Park at San Francisco. Taft says that "Story's art came at the right time and had its very powerful influence in interesting a large public."

STRADIVARI (*strä-dē-vä'rē*), **ANTONIO** (1644–1737). Italian violin maker, who lived all his life at Cremona, and was a pupil and fellow-workman of the great Amati. He set the standard for size and technical excellence for all time. The secret of the varnish he used has not yet been discovered. Though his violins sold for less than $50, many of them now are worth thousands. For a time he specialized in long models, but later returned to an earlier form of short and broad instruments. Some of his violoncellos, notably the Piatti (1720), have been almost as famous as the violins.

STRANG, WILLIAM (1859–1921). Scottish painter and engraver, born in Canada, educated at the Slade School in London, and later taught etching. Kipling, Thomas Hardy, and other celebrated men sat for his etchings, which introduced new methods. Some of his engravings illustrate *The Pilgrim's Progress, Ancient Mariner, Allegory of Death,* and some scenes from the *Arabian Nights.*

STRAUSS, (*strous*), **JOHANN** (1804–1849). Austrian composer of dances and leader of orchestras, who began as a violinist, organized a band, and became Kappelmeister to the first Bürger Regiment. Of his many compositions, the *Täuberl Walzer* is still most famous. After 1833 he frequently toured Europe, visiting England in 1838 and during his last year, when he was the center of a great ovation.

STRAUSS, JOHANN (1825–1899). An eminent Austrian composer son of the preceding. After composing dance music for many years he undertook an operetta, *Indigo,* which was produced in 1871 and met with instantaneous success. Subsequently he produced *The Forty Thieves, Cagliostro, The Gypsy Baron,* etc., and numerous waltzes, the best known being *The Beautiful Blue Danube.*

STRAUSS, RICHARD (1864–). A German composer and conductor; born at Munich; director at Meiningen; second conductor at Munich (1894); first conductor at Berlin (1898); visited the United States and conducted several of his own compositions (1905). Since the death of Brahms he is the most noted of living German musicians; wrote *Symphonia Domestica,* several symphonic poems, over 50 extremely popular songs, and the operas *Guntram, Feuersnot, Salome* (to Oscar Wilde's text), and *Elektra.*

STRAVINSKY (*strä-vin'skē*), **IGOR FEDOROVICH** (1882–). Russian composer, at first a law student, who turned to the writing of light music, especially dances. *The Firebird, Petruska,* and his first opera followed between 1910 and 1914, after which he again returned to the ballet. *Oedipus Rex,* having features of both the oratorio and the opera, attracted considerable attention in 1928.

STUART, GILBERT (1755–1828). An American painter; born in Narragansett, R. I. In 1775 he made his way to London, where he led for two years a Bohemian life. Upon his talent being recognized he became a fashionable portrait painter. In 1792 he returned to the United States and painted portraits of Washington, Jefferson, Madison, John Adams, and many of the distinguished men of the period.

STURGIS, RUSSELL (1836–1909). American architect and critic, who was born in Baltimore, and studied art in New York and for two years in Munich. Some of the structures he designed are the Battel Chapel at Yale, together with two dormitories, the Flower Hospital of New York, and several bank buildings. From 1880 he gave much attention to writing on architecture and painting. He edited the *Dictionary of Architecture and Building* (1902), brought out the English translation of Luebke's *Outlines of the History of Art,* and wrote books on how to judge architecture, painting, and sculpture. The *History of Architecture* was uncompleted because of failing eyesight.

SUK (*sūk*), **JOSEF** (1874–). Czech violinist, a student of Dvořák, whose daughter he married, and one of the famous Bohemian Quartet. In 1924 he began to direct the Prague Conservatory. Some important works are the *Prague* and *Summer Tale,* symphonic romances, *Legend of Dead Victors,* inspired by the War, and a number of pieces for the piano.

SULLIVAN, ARTHUR SEYMOUR (1842–1900). An English composer, the son of a celebrated band master at the Royal Military College. He learned to play every wind instrument in the band, and studied in England and Germany under several masters. Some of his early compositions were the music for a *Tempest, Kenilworth* in operatic form, with four or five songs that were the vogue, and two light operas written in collaboration with F. C. Burnand. With W. S. Gilbert he produced the popular *Thespis* (1872), *The Sorcerer,* and finally *H. M. S. Pinafore,* a tremendous success (1878). These were followed by *The Pirates of Penzance, The Mikado,* and *The Gondolier,* among others, all of which continued the vogue of light opera. Some of his later works are the *Te Deum* (1872), *The Golden Legend* (1886), *Ivanhoe* (1891), an attempt at grand opera, the hymn tune *Onward Christian Soldiers,* and music to Tennyson's *Foresters.*

SULLY, THOMAS (1783–1872). An American portrait painter; born in Lincolnshire, England; brought by his parents to Charleston, S. C., in 1792; studied in London under Benjamin West; settled in Philadelphia in 1812. Stephen Girard built a home for him in 1825; visited London in 1837 and painted a portrait of Queen Victoria. His portraits include those of George Frederick Cooke as Richard III., Dr. Rush and Dr. Coates, Commodore Decatur, Thomas Jefferson, Charles Kemble, Rembrandt Peale, Andrew Jackson, William Gynn, and the portrait of himself which is in the Metropolitan Museum at New York.

SUPPE (*zu-pā'*), **FRANZ VON** (1820–1895). An Austrian composer; born at Spalato, in Dalmatia; musical director at Vienna. Among his operas are *Fatinitza, Boccaccio,* and the overture to *Poet and Peasant* (*Dichter und Bauer*).

TAFT, LORADO (1860–1936). American sculptor, a graduate of the University of Illinois, and a student at the École des Beaux Arts of Paris. For many years he was a well-known teacher and lecturer in art, at the Chicago Institute, University of Chicago, and elsewhere. Besides some portrait sculptures, some of his works are *Sleep of the Flowers, Solitude of the Soul, Black Hawk,* an Indian figure at Oregon, Ill., and the *Fountain of Time* at Chicago. He wrote *Modern Tendencies in Sculpture* and edited a new edition of *History of American Sculpture* (1924).

TALMA, FRANCOIS JOSEPH (1763–1826). A famous French tragedian; born in Paris. During the Revolution he was the foremost actor at the Théâtre de la République, and subsequently enjoyed the favor of Napoleon. His notable carriage and matchless elocution enabled him to play with great dignity such characters as Othello, Nero, Orestes, and Leicester.

TANNER, HENRY OSSAWA (1859–1937). American painter, of Negro parentage, born in Pittsburgh.

Pa., the son of a bishop of the African M. E. Church. His art education was received under Thomas Eakins of Philadelphia and J. P. Laurens of Paris, where he first exhibited in 1895. *The Destruction of Sodom and Gomorrah* (1925) is in the Metropolitan Museum of New York, and other pictures are in the Luxembourg and various European galleries.

TARBELL, EDMUND C. (1862–1938). American artist who studied and later taught for some years in the school of the Boston Museum of Fine Arts. He won numerous medals and prizes, including the gold medal of the National Academy of Design and of the International Exhibition of the Carnegie Institute of Pittsburgh. Pictures of his are in several American museums of fine arts. His specialty was outdoor scenes, portraits, and effects of sunlight.

TAUT (*tōt*), **BRUNO** (1880–). German architect, who studied under Theodor Fischer, acted as city architect at Magdeburg, and then moved to Paris. Among his buildings are one of glass and iron at Leipzig, one of glass at the Werkbund Exhibition at Cologne, a municipal building at Magdeburg, and other modern designs. He wrote several books on the art of building.

TAYLOR, DEEMS (1885–). American composer, born in New York, and educated at New York University. He acted as director of the theory department of the Lichtmann Piano Institute, and acted as musical editor for *Collier's*. Besides *A Cycle of Joy, Siren Song,* and other notable songs, he wrote *Chambered Nautilus* and *The Highwayman.*

TAYLOR, WILLIAM LADD (1854–1926). An American illustrator; born at Grafton, Mass.; studied in Boston, New York, and at Paris under Boulanger and Lefèbvre; illustrated *Selections from Longfellow, The Century in New England,* and *The Pioneer West.*

TENIERS (*ten'yerz*), **DAVID** (1582–1649). A Flemish artist, known now for his landscapes, humorous pictures of peasants on holiday, and a few good religious paintings. His *Works of Charity* is in St. Paul Church at Antwerp, *Playing at Bowls* is in the English National Gallery, and others at Vienna, Dresden, and Berlin.

TENIERS, DAVID, the Younger **(1610–1690).** Flemish painter, the son of the preceding, whom he greatly excelled as an artist in form and color. Two early pictures, the *Prodigal Son* and a group called the *Five Senses,* are fine in conception and execution. His *Marriage Festival* and *Judith* are in the Metropolitan Museum of New York, and several others are in the rooms of the Historical Society, including *Parable of the Laborer and Village Fête.*

TENNIEL (*ten'yel*), **JOHN** (1820–1914). English artist, who for many years drew humorous pictures for *Punch;* he was knighted in 1893. Some of his pictures did much to fix political opinions of his generation. All his work is accurate, detailed, and free from pronounced mannerisms often found in work of this type. Of his illustrations for books, perhaps the best were in *Alice in Wonderland.* Besides minor works, his cartoons and illustrations number over 2,500.

TERRY, ELLEN ALICIA (1848–1928). English actress of a celebrated family of stagefolk, who first appeared in London as the boy in *The Winter's Tale* in 1856. Though her greatest fame arose from her very finished acting in *The Taming of the Shrew, The Merchant of Venice, Coriolanus,* and other Shakespeare dramas, she also gained tremendous applause in Will's *The Vicar of Wakefield,* and two other plays, in Tennyson's *Becket,* and in *Robespierre.* For years she acted with Henry Irving. In 1907 Miss Terry married James Carew, who was an American actor. She was one of the great idols of the stage. *The Story of my Life* was published in 1908.

TETRAZZINI (*tet-rrah-tzee'nee*), **LUISA** (1874–1940). A singer born in Florence; married Signor Bazelli. She made her début as Inez in Mayerbeer's *L'Africaine* at the Verdi Opera House, Florence. She later sang in Rome, South America, again in Italy, and in Mexico, coming to San Francisco. She made her first New York appearance in 1908 in *La Traviata.* Among her numerous and varied operatic parts were those in *La Sonnambula, The Cobbler and the Fairy,* and *Lucia di Lammermoor.* In 1913–14 she sang with the Chicago Grand Opera Company.

THALBERG (*tahl'burg*), **SIGISMUND** (1812–1871). A celebrated German pianist; born at Geneva; took rank as one of the most brilliant pianists of the age. He was in the United States (1856–1858) and made tours of the principal cities.

THAYER, ABBOTT HENDERSON (1849–1921). An American painter; born in Boston, Mass.; studied in Paris under Gérôme. Among his best known works are *Corps Aîlé, The Virgin, The Virgin Enthroned,* and *Caritas* in the Boston Museum; elected N. A. in 1901. During the World War he was engaged on camouflage work in England, having become noted for his theory of coloring of animals.

THOMAS, ARTHUR GORING (1801–1892). An English composer, some of whose works are *The Light of the Harem, Esmeralda, The Golden Web,* and the choral works *The Swan and the Skylark* and *Hero* and *Leander.*

THOMAS, THEODORE (1835–1905). A German-American conductor; born in Esens, East Friesland; settled in New York in 1845; first violin at the Jenny Lind concerts (1851); traveled for several years as violinist with Jenny Lind, Grisi, Sontag, Mario, and others; formed an orchestra (1864); president of the new College of Music in Cincinnati (1878); conductor of the Philharmonic Society of New York (1885); leader of the Chicago Orchestra (1888). America learned through his efforts to know the works of Wagner, Berlioz, Rubinstein, and Liszt; and the Wagner festival which he conducted in New York in 1881 made the establishment of a German opera in that city possible a few years later.

THOMPSON, DENMAN (1833–1911). An American actor; born near Girard, Pa.; appeared first at Lowell, Mass., in 1852; went into business, but resumed the stage in 1871; wrote *Joshua Whitcomb* and acted in it until 1886, when *The Old Homestead,* with Joshua Whitcomb as the chief character, was presented at the Boston Theater; he acted in this part countless times.

THOMPSON, LAUNT (1833–1894). An American sculptor; born at Abbeyleix, in Ireland; brought to Albany, N. Y., in 1847; elected N. A. in 1862. His colossal *Napoleon* in the Metropolitan Museum in New York, his bust of *Edwin Booth,* the statue of John Sedgwick at West Point, and of President Pierson at Yale College are his chief works.

THORNYCROFT, W. HAMO (1850–1925). An English sculptor; born in London; elected R. A. in 1888. His chief works are his statue of *General Gordon, Cromwell, The Stanley Memorial, King Alfred, The Mower,* and *Gladstone.* In 1917 he was made a knight.

THORWALDSEN (*tôr'vâl-sĕn*), **BERTEL** (1770–1844). An eminent Danish sculptor; born near Copenhagen; the son of a poor Icelander; studied in Rome, where Canova encouraged him, and a fine statue of Jason established his reputation; executed a colossal group of *Christ the Consoler, The Twelve Apostles, St. John Preaching in the Wilderness,* and other religious subjects, besides statues of Copernicus and Galileo and the celebrated reliefs *Night* and *Morning;* bequeathed to his country his large fortune and nearly 300 of his works, now in the Thorwaldsen Museum, Copenhagen, where he now lies in the courtyard under a rose-bed as he requested.

TIFFANY, LOUIS COMFORT (1848–1933). An American artist and art manufacturer; born in New York; studied under George Inness, Samuel Coleman, and with Léon Bailly in Paris; devoted himself to decorative glass, known as the Tiffany "Favrile" glass; chevalier of honor in 1900 and N. A. in the same year. In 1918 he deeded his home, art collection, and $1,000,000, for maintenance at Oyster Bay, N. Y., for a foundation for art students.

TINTORETTO (*tēn-to-ret'to*), **GIACOMO ROBUSTI, IL** (1512–1594). An Italian painter; born at Venice. Save for a few lessons under Titian he seems to have been self-taught; took for his models Titian and Michelangelo, and came specially to excel in grandeur of conception and in strong chiaroscuro effects. Among his most notable pictures are *Belshazzar's Feast, The Last Supper, The Crucifixion, The Last Judgment, The Resurrection,* etc.

TISSOT (*tē-sō'*), **JAMES JOSEPH** (1836–1902). A French painter, who fought in the Franco-Prussian War, lived in England for a number of years, and learned etching under Sir Seymour Hadden. Some of his early pictures are *Faust and Marguerite,* now in the Luxembourg, and *La Femme à Paris.* In middle life he turned to the painting of scenes in the life of Christ—400 water colors in all—about half of which

were exhibited in Paris in 1895, in London the next season, and in the United States later. They were brought out in print form by Lemercier of Paris. He also painted 365 scenes from the Old Testament.

TITIAN (*tish'an*), **VECELLIO** (1477–1576). A great Italian painter; born at Pieve di Cadore; the prince of colorists and head of the Venetian school. He was a master of his art from the very first, and his fame led to employment in all directions over Italy, Germany, and Spain. His works were numerous and rich in variety. He ranks with Michelangelo and Raphael as the head of the Italian Renaissance. His list of works is long and contains many masterpieces. Some of his pictures are *Christ Carrying the Cross, Man of Sorrows, Sacred and Profane Love, Three Ages, Flora, Worship of Venus, St. John the Almsgiver, Twelve Caesars, Sacrifice of Abraham, Ecce Homo, The Last Supper, St. Jerome, Christ Crowned with Thorns, and Pietà.*

TOMMASINI, VINCENZO (1880–). Italian composer, who in 1917 won considerable fame by his *The Good-humoured Ladies*, a ballet, based on a comedy by Goldoni, and this was later played in most of the capitals of Europe. He was born and educated in Rome, where he became assistant director of the Academy of Saint Cecilia. Among other works are a comic opera, a symphonic poem, and a string quartet.

TOSTI (*tos'tē*), **FRANCESCO PAOLO** (1846–1916). An Italian composer; born in the Abruzzi; singing master to the queen of Italy (1870); teacher to the English royal family (1880); best known as a song writer. Among his more popular works are *Come to My Heart, Good-bye, That Day, Mother* and *For Ever and For Ever.*

TOVEY, DONALD FRANCIS (1875–1940). English pianist and composer, the son of the master of Eton College; elected professor of music at Edinburgh University in 1914. Among his varied compositions are an opera, *The Bridge of Dionysus*, two sonatas for violin and one for two 'cellos, and various other pieces.

TREE, HERBERT BEERBOHM (1853–1917). English actor and theatrical manager, whose name was originally Beerbohm, to which he added Tree. First appearing in 1876, he attained a great success in *The Private Secretary* (1884), next played in some humor parts while acting as manager of the Haymarket Theater, and finally in various revivals of Shakespeare. He inaugurated improvements in staging. Later he produced some of Stephen Phillips's poetic dramas, started a school for acting, and carried on quite successfully the management of Her Majesty's Theater. He received knighthood in 1909.

TROYON (*trwo-yôn'*), **CONSTANT** (1810–1865). A French landscape and animal painter; born in Sevres; *Return from the Farm, Oxen Going to Work in the Fields*, and *Sheep after a Storm* are his most noted pictures. The Metropolitan Museum contains several fine examples of his art.

TRUMBULL, JOHN (1756–1843). An American artist; born in Lebanon, Conn.; served on the staffs of Generals Washington and Gates; a pupil of Benjamin West; produced his first historical picture, *The Battle of Bunker Hill* (1786); employed by Congress (1817) to paint four pictures for the rotunda of the Capitol at Washington,—*The Signing of the Declaration of Independence, The Surrender of Burgoyne, The Surrender of Cornwallis*, and *The Resignation of Washington at Annapolis.* His *Alexander Hamilton* is in the Metropolitan Museum of New York, Washington in full military dress, now at Yale, and President and Mrs. Washington, now in the National Gallery of Washington.

TRYON, DWIGHT WILLIAM (1849–1925). An American painter; born at Hartford, Conn.; studied in Paris under Daubigny, Guillemet, and Harpignies; art professor at Smith College, Northampton, Mass.; settled in New York (1890); elected N. A. (1901). His works rank among the first American landscapes, and include *First Leaves, Rising Moon, Evening in Early Spring*, and *Autumn.*

TSCHAIKOVSKY (*chī-kof'skē*), **PETER ILYITCH** (1840–1893). A Russian composer; born at Votkinsk; studied under Rubinstein; professor of harmony at Moscow (1866–1878). His *Fifth* and the *Sixth* (*Pathétique*) symphonies rank among the world's best; visited the United States (1891) and conducted several of his own compositions at the dedication of Carnegie Hall. His operas include *Eugene Onegin, The Maid of Orleans, Mazeppa, The Enchantress*, and *Iolanthe.*

TURNER, JOSEPH MALLORD WILLIAM (1775–1851). An English landscape painter. His *Slave Ship* is in the Boston Museum; the *Grand Canal* in the Metropolitan Museum at New York; his *Norham Castle* and the *Fountain of Indolence* in private collections there; and his *Scene on the French Coast* and *Staffa* are in the Lenox Library in New York. He gave the bulk of his work—262 paintings and 9,000 drawings—to the nation, and left £140,000 to endow an institution for poor artists. Ruskin in 1843 started to defend Turner against unjust and false criticism, and his work grew into five volumes now called *The Modern Painters.*

UCCELLO (*öt-chel'lo*), **PAOLO** (1397–1475). Florentine painter, whose real name was Dono, but he was called Uccello because of his facility in painting birds. From the few works of his that now survive, he is seen to be a fine colorist, excellent in drawing all manner of animals, and in painting armor and clothing. Some of his frescoes in Florence, three battle pieces now in different galleries—Florence, Paris, and London—and portraits of his friends are about all that now survive.

UHDE (*ö'dē*), **FEITZ VON** (1848–1911). A German painter; born in Wolkenburg, Saxony; studied in Paris under Munkácsy. Among his best works are *Suffer Little Children to Come Unto Me, The Last Supper, The Nativity*, and *The Walk to Bethlehem.*

ULRICH (*öl'rich*), **CHARLES FREDERIC** (1858–1908). An American painter; born in New York; studied there and in Munich under Loefftz and Lindenschmidt. His *Glass Blowers of Murano* in the Metropolitan Museum and *Promised Land* are among his best; elected N. A. in 1883; lived in Venice after 1886.

UPDIKE, DANIEL BERKELEY (1866–). American printer, who revised several old types, such as that used by Wilson in the early part of the last century. Goodhue and Horne designed artistic fonts for him. He lectured at Harvard and elsewhere, and wrote *Printing Types—Their History, Forms, and Use*, (1921).

VAN BRUNT, HENRY (1832–1903). An American architect; born in Boston, Mass.; was graduated at Harvard (1854); designed Memorial Hall at Harvard, library of the University of Michigan, First Church in Boston, and the Electricity Building at the World's Fair at Chicago (1893).

VANDERLYN, JOHN (1776–1852). An American painter; born at Kingston, N. Y.; studied with Gilbert Stuart and later in Paris; returned in 1801 and lived with Aaron Burr, vice-president, and painted the famous picture of Burr and his daughter finished in Rome (1803), his two chief works, *Marius among the Ruins of Carthage* and *Ariadne of Naxos*, which latter was reproduced by the engraver Durand; painted portraits of Washington, Monroe, Madison, Calhoun, and Zachary Taylor. The *Landing of Columbus* on the $5 notes was designed by him.

VAN DYCK (*vän dīk*), **ANTHONY** (1599–1641). Flemish painter, born in Antwerp, and from early life painted portraits. With Rubens he was designated as a court painter, and after about 1832 he lived in England, enjoying a pension, title of painter in ordinary to the king, and knighthood. Some of his greatest works are *Martyrdom of St. Peter, Betrayal of Christ, St. Martin, Crucifixion, St. Augustine in Ecstasy*, and *Adoration of the Shepherds.*

VAUX, CALVERT (1824–1895). An American architect and landscape gardener; born in London, England; came to America in 1850; associated with Frederick Law Olmsted; made the plans for Central, Morningside, and Riverside parks in New York; Prospect Park in Brooklyn; State Reservation at Niagara Falls; and parks at Bridgeport, Conn., Chicago, and elsewhere; also designed the Metropolitan Museum of Art and the Museum of Natural History in New York.

VEDDER (*ved'er*), **ELIHU** (1836–1923). An American painter and illustrator; born in New York; studied with Picot in Paris; went to Rome (1857); illustrated the *Rubaiyát of Omar Khayyám* and the *Arabian Nights.* Among his paintings are *Lair of the Sea Serpent, Cumaean Sibyl, Questioning the Sphinx, The Crucifixion, The Last Sun Worshipper*, and the *African Sentinel.* His mural work in the Congressional Library is notable.

VELASQUEZ (*vā-läs'käth*), **DIEGO RODRIGUEZ DE SILVA Y** (1599–1660). The greatest of Spanish painters; born at Seville, of Portuguese family. Portrait painting was his forte, one of his earliest

works being a portrait of Olivarez, succeeded by those of Philip IV., Juan Pareja, and Innocent X. Specimens of his work are found in different countries, but the best are in Madrid, Spain. They include sacred subjects, genre, landscape, and animal paintings, as well as portraits. His *Venus with a Mirror* was bought for the National Collection at London for £45,000 in 1906.

VELDE, WILLEM VAN DE, THE ELDER (1611–1693). A Dutch marine painter; born at Leyden; painter of sea fights to Charles II. of England and later, to James II.

VERBOECKHOVEN (*ver-bŏk'hō-ven*), **EUGEN JOSEPH** (1799–1881). A Flemish painter; born at Warneton, in West Flanders; noted for his pictures of peasant and animal life, such as *Sheep Surprised by a Storm, Horses Attacked by Wolves, Sheep in the Campagna, Souvenirs of Scotland,* and *Ewe and Lambs, or the Good Mother.* Some of his works are in the Metropolitan Museum at New York.

VERDI, GIUSEPPE (1813–1901). Italian composer, who was born and received his early musical education in Busseto, Italy. Four years after a symphony had been performed, he went to Milan to finish his musical studies (1832). For ten years little success came, until his *Nabucodonosor* made him famous. By 1844 with his *Ernani* his repute had spread through Europe. Other great operatic compositions are *Rigoletto, Il Trovatore, Les Vêpres Siciliennes,* written for opera in France, *Aïda, Otello,* and *Falstaff.* Three of these operas at least have proved perennial favorites.

VERESHCHAGIN (*ver-es-chā'gin*), **VASSILI VASSILIEVICH** (1842–1904). Russian artist, educated for a naval career, abandoned at once for travel and painting. He studied under Gérôme. For many years he followed the armies in the field, and finally in the far east in the Chino-Japan War, the war in Philippines, and the Russo-Japanese War. Some of his pictures are *Doukhobors Chanting their Psalms, The Apotheosis of War, Left Behind,* and a series of pictures showing a crucifixion. Most of these aroused violent controversy, because of their anti-war propaganda. He perished in the sinking of the flagship *Petropavlovsk* in 1904 at Port Arthur.

VERMEER (*ver-mār'*), **JAN VAN DELFT** (1632–1675). Dutch artist, for a time forgottn, but since 1860 highly appreciated through the efforts of the artist Thore, who lived in Holland for a time. He is fine in both style and coloring. Some of his great pictures are *Woman and Soldier, Reading Girl, View of Delft, Woman Reading, Lady at a Casement,* now in the Metropolitan of New York, and *Lace Maker,* now in the Louvre.

VERNET (*ver-nā'*), **HORACE** (1789–1863). French artist, the greatest of a family of noted painters, including both his father and grandfather. When he was under 21 he finished the *Taking of an Entrenched Camp,* a canvas that attracted much attention, while his *Defense of the Barrier at Clichy* won immense fame. Among his interesting works is an interior of his own studio, representing himself calmly working in the midst of all sorts of confusion, occasioned by both animals and men. Some of his battle scenes are nobly conceived and strongly executed.

VERONESE (*vā-rō-nā'zā*), **PAOLO,** or **PAOLO CAGLIARI** (1528–1588). A painter of the Venetian school; born at Verona; painted his *Temptation of St. Anthony* for Mantua Cathedral and settled in Venice in 1555, where he soon earned distinction and formed one of a trio along with Titian and Tintoretto. The subjects he treated were mostly Scriptural, the most celebrated being the *Marriage Feast at Cana of Galilee.*

VIBERT (*vē-bār'*), **JEHAN GEORGES** (1840–1902). A French painter and dramatist; born in Paris. Among his works are *L'appel après le pillage, La tentation, Le barbier ambulant, Un couvent sous les armes, Le départ des mariés, Le premier né, L'apothéose de Thiers, Bailli de Suffren, Presentation, Assumption, Annunciation, Mater Dolorosa, Committee on Moral Books,* and *The Missionary's Story.*

VIERGE (*vī-er'hē*), **DANIEL URRIBJETA** (1848–1904). A Spanish artist; born at Madrid; went to Paris (1870) and worked in the art department of *Le Monde Illustré* and *La Vie Moderne;* illustrated Hugo's *L'année terrible, Les Travailleurs de la mer, L'homme qui rit, Quatre-vingt-treize,* and *Notre Dame de Paris,* and many other works; one of the foremost artists in black and white.

VIGEE-LEBRUN (*vē-zhā' le-brun'*), **MARIE-ANNE ELIZABETH** (1755–1842). French painter who (1776) married the art-writer J. B. P. Lebrun. She received her first instruction from her father, at 20 painted notable persons, and in 1783 won membership in the Academy by her *Peace Bringing back Abundance.* During the French Revolution and after she lived in Rome, but traveled about, and left paintings in many prominent galleries. Some of her later works are *Lady Hamilton as a Bacchante, Lord Byron,* the *Prince of Wales,* and many pictures of Marie Antoinette. Several pictures by her are in the Louvre of Paris, including two of Mme. Lebrun and her daughter.

VOGLER (*fō'gler*), **GEORG JOSEPH** (1749–1814). Often called Abt (Abbé) Vogler; A German organist and composer, now best known through Browning's poem *Abt Vogler.* At an early age he became proficient on several instruments, having been encouraged by his father, who was a violin maker. In 1755 he was made court chaplain and second choir master at Mannheim, and in 1778 he moved to Munich with the elector, and there attracted wide attention by his organ recitals. In 1786 he was appointed chief musician to the king of Sweden. His operatic *La Patriotism* was long popular, and some themes in fugue form from Handel were highly appreciated. He invented a form of organ called the orchestrion, on which he played in London (1790) with great finish and charm.

VOLK, DOUGLAS (1856–1935). American artist, born in Pittsfield, Mass., and educated at Rome and under Gérôme in Paris; first exhibited in Paris Salon, 1875. Taught at Cooper Institute (1879–84; 1908–12), and in Art Students' League, both of New York; organized Minneapolis School of Fine Arts (1886–93). Awarded various medals at exhibitions, and represented in Carnegie Gallery, Pittsburgh; Corcoran and National Museum, Washington; Metropolitan, New York; and others. His war portraits of King Albert, Lloyd George, and General Pershing are in the National Gallery, Washington, and his Lincoln in the Albright Gallery, Buffalo, N. Y.

VONNOH (*von'o*), **ROBERT** (1858–1933). American painter, born at Hartford, Conn., educated in Boston, where he taught in the Museum of Fine Arts (1885–87), and also in the Pennsylvania Academy (1891–96). He lived abroad for a number of years. Represented in the White House, Washington; Metropolitan, New York; Brooklyn Institute. He was elected to the National Academy in 1906. His wife, Bessie Potter, took many prizes and has pictures in different prominent galleries.

WAGNER (*väg'ner*), **WILHELM RICHARD** (1813–1883). A great musical composer; born at Leipzig. His principal works were *Rienzi, The Flying Dutchman, Tannhäuser, Lohengrin, Tristan und Isolde, The Meistersingers of Nurnberg,* and the *Ring of the Nibelungen,* the composition of which occupied 25 years. This last was performed in 1876, at Bayreuth in presence of the emperor of Germany and the principal musical artists of the world. *Parsifal* was his last work. Wagner broke away from traditions in music, made his art a medium for the expression of ideas as well as emotions, and thus aroused a great controversy. He combined some of the zeal of a reformer with technical mastery and originality of art.

WALKER, HORATIO (1858–1938). A painter, born in Canada and self-taught, but became a great artist, specializing in animal scenes, figures, and landscapes. His *Ice Cutters* and *A Mükyard,* representing his knowledge of farmer life in Canada, attained considerable note. The Philadelphia Academy awarded him a gold medal in 1906. He was made a N. A. in 1891.

WALLACE, WILLIAM VINCENT (1814–1865). An Irish composer; born at Waterford; leader of an orchestra in Dublin; went to Australia; brought out his successful opera, *Maritana,* on his return in 1845; wrote also *Matilda of Hungary, Lurline, The Amber Witch,* and *The Desert Flower.*

WALLACK, JAMES WILLIAM (1795–1864). An Anglo-American actor; born in London; acted in Drury Lane and supported Edmund Kean; appeared as Macbeth in New York (1818) and settled there about 1850; opened Wallack's Theatre at Broadway and Broome Street (1852) and the theater at Broadway and Thirteenth Street in 1861; noted for such parts as Don César de Bazan.

WALLACK, JOHN JOHNSTONE, or **"LESTER" WALLACK** (1819–1888). An American actor; born in New York; son of James William Wallack; educated in England and became a lieutenant in the British

army in 1842; resigned in 1844 and became an actor; appeared in New York as Sir Charles Coldstream in *Used Up* in 1847; acted leading parts in his father's theater (1852–1864) and assumed proprietorship of it on his father's death; opened the present "Wallack's" at Thirtieth street and Broadway.

WALTER, THOMAS USTICK (1804–1887). An American architect; born in Philadelphia, designed Girard College, St. George's Hall, Philadelphia Savings Bank, Chester County Bank, the Biddle and Cowperthwaite residences in Philadelphia and vicinity; superintended the enlargement of the Capitol at Washington and completed the Post Office and Treasury building; president of the American Institute of Architects (1876).

WAPPERS, EGIDE CHARLES GUSTAVE (1803–1874). A Belgian painter; born at Antwerp; professor at the Academy (1832) and director (1840–1853); president of the Belgian National Museum (1846–1853). Among his works are *Dévouement du Bourgmestre de Leyde Le Christ au tombeau, Scène des journées de septembre, L'adieu de Charles I. à ses enfants, La tentation de Saint Antoine, Geneviève de Brabant,* and *Christophe Colomb.*

WARD, EDWARD MATTHEW (1816–1879). An English painter; born in London; studied there, in Rome, and under Cornelius at Munich; painted *Cimabue and Giotto, Doctor Johnson in Lord Chesterfield's Ante-Room, South Sea Bubble, Marie Antoinette Parting with the Dauphin,* and *Marie Antoinette Listening to the Act of Accusation;* elected R. A. in 1855.

WARD, GENEVIEVE (1837–1928). English singer and actress, born in New York. After marrying Count Constantine de Guerbel, she made her début under the stage name of Ginevra Buerrabella at Bergamo, Italy, in the operatic *Stella di Napoli* (1855). In 1862 she lost her singing voice, after which she taught in New York for some years, then went to England, and achieved a great vogue as an actress in Shakespeare and other rôles.

WARD, JOHN QUINCY ADAMS (1830–1910). An American sculptor; born at Urbana, Ohio; studied under Browne in Brooklyn, whom he assisted with his equestrian statue of Washington in Union Square in New York. His *Indian Hunter* was the first statue placed in Central Park. His *Seventh Regiment Citizen-Soldier, Shakespeare,* and *The Pilgrim* are also in Central Park. *The Freedman* and *The Good Samaritan* are in Boston. His *Washington* on the Subtreasury in Wall Street, *Henry Ward Beecher* in City Hall Park in Brooklyn, *Commodore Perry* in Newport, R. I., and *Horace Greeley* in front of the Tribune Building are noted examples of his work; elected N. A. in 1863.

WARFIELD, DAVID (1866–). American actor, who was born in San Francisco, acted at the Wigwam there in 1889, then after 1890 in New York. He became celebrated as a creator of Jewish parts, such as Solomon Levi in Belasco's *Auctioneer,* and of Von Barwig in Klein's *Music Master* (1903–07), revived, 1917–18), and the chief rôles in *A Grand Army Man* (1907), and in Shakespeare, especially in Shylock.

WARNER, OLIN LEVY (1844–1896). An American sculptor; born at West Suffield, Conn.; studied in Paris. Among his works are a high relief portrait of Edwin Forrest; colossal heads of Michelangelo, Rembrandt, Raphael, Titian, and Velasquez on the Art Building at the World's Fair of 1893; his nude figure *Diana;* head of Daniel Cottier; *William Lloyd Garrison* at Boston; and a fountain in Portland, Ore.

WARREN, WHITNEY (1864–). American architect, member of the New York firm of Warren and Wetmore, who specialized in railway structures, hotels, and other large buildings. Some of their commissions were stations for the New York Central, Michigan Central, and Canadian Northern Railways, the Chelsea Docks and Grand Central Terminal in New York City, and the hotels Biltmore and Commodore. They had charge of the plans for the new Library of Louvain.

WATTEAU (*wä-tō'*), **ANTOINE** (1684–1721). An distinguished French painter; born at Valenciennes. His *Fêtes Galantes* and *Fêtes Champêtres,* decorations on the Louvre; and his fine collections in the Louvre, Sans Souci, in Berlin, and in London are noted for the sunlit colors and great purity of tone.

WATTS, GEORGE FREDERICK (1820–1904). An eminent English painter; born in London; is distinguished as a painter at once of historical subjects, idea subjects, and portraits; did one of the frescoes in the Poets' Hall of the Houses of Parliament and the cartoon of *Caractacus Led in Triumph Through the Streets of Rome;* has, as a "poet painter," by his *Love and Death, Hope* and *Orpheus and Eurydice* achieved a world-wide fame. He was twice offered a baronetcy, but on both occasions he declined.

WEBB, PHILIP SPEAKMAN (1831–1915). English architect, associated with William Morris, with whom he made designs for a great variety of artistic objects. Besides a house built for Morris, additions to Berkeley Castle and to Pusey house, he strengthened many old buildings by an original method of filling the walls with new material.

WEBER, KARL MARIA FRIEDRICH ERNST VON, BARON (1786–1826). A German musical composer; born at Eutin, near Lübeck. He was the founder of German romantic opera and one of the most brilliant pianists of his day. His best known works are *Der Freischütz, Euryanthe, Oberon, Preciosa* and masses, cantatas, songs, symphonies, overtures, concertos and sonatas.

WEIR, JOHN FERGUSON (1841–1926). An American sculptor, painter and author; born at West Point, N. Y.; director of the School of Fine Arts at Yale University (1869). Among his works are statues of President Woolsey and Professor Silliman. His chief paintings are *The Gun Foundry, Forging the Shaft, Tapping the Furnace* and *An Artist's Studio.* His books include *The Way, the Nature, and the Means of Revelation; John Trumbull and His Works;* and *Human Destiny in the Light of Revelation.*

WEIR, ROBERT WALTER (1803–1889). An American painter; born in New Rochelle, N. Y.; studied under Jarvis in New York and with Benvenuti in Florence; professor of drawing at West Point for over 40 years. His works include *The Embarkment of the Pilgrims* in Washington at the Capitol, *Columbus before the Council of Salamanca, Taking the Veil,* several portraits, and the allegory *Peace and War;* elected N. A. in 1829; father of the painters John Ferguson Weir and Julian Alden Weir.

WERRENRATH, REINALD (1883–). Baritone singer, born in Brooklyn, N. Y., and educated under his father and others. Made his début at the Metropolitan, New York, in *Pagliacci* in 1919, and then appeared in various cities in concert performances.

WEST, BENJAMIN (1738–1820). An American painter; born in Springfield, Pa., of Quaker parents. He went to Rome in 1760, and proceeded to England in 1763, where he made his permanent residence. His *Death of General Wolfe* was among the first of his productions that attracted public notice; president of the Royal Academy (1792) to succeed Reynolds. His *Christ Healing the Sick* and *Penn's Treaty with the Indians* are in Philadelphia; *Kingdom* is in the Boston Museum; and *Triumph of Love* and *Hagar and Ishmael* are in the Metropolitan in New York.

WHISTLER (*hwis'lēr*), **JAMES ABBOTT McNEILL** (1834–1903). An American painter; born in Lowell, Mass.; studied for a time at the United States Military Academy; went to Paris and afterward settled in London. The finest of his oil pictures are *The Artist's Mother—an Arrangement in Black and Gray,* the *Portrait of Thomas Carlyle,* and the *Portrait of Miss Alexander—Harmony in Gray and Green.* Whistler's art is original and individual.

WEYR (*vair*), **RUDOLF VON** (1847–1914). Austrian sculptor, born in Vienna, and educated there. He revived some older methods, especially of rococo in several notable works. He specialized in friezes in public buildings and theaters.

WILLETE, LEON ADOLPHE (1857–). French painter, illustrator, and lithographer, who studied under Cabanel in Paris. He achieved a notable place among illustrators by his contributions to many periodicals. For emotion and humor his work excelled.

WOLF, HUGO (1860–1903). Great writer of songs, who spent much of his life in Vienna, where in early life he taught and wrote some musical criticism. Later he devoted all his time to composing works noted for their range and intensity of expression. Among many compositions his *Gedichte vom Goethe, Christnacht, Dem Vaterland, Der Corregidor,* and *Italian Serenade* are the best.

WREN, SIR CHRISTOPHER (1632–1723). The greatest of English architects; born in East Knoyle,

Wiltshire. He began to rebuild St. Paul's in 1675, and saw the last stone laid by his son 35 years afterward. He designed the modern part of the palace of Hampton Court, the library of Trinity College, Cambridge, and the hospitals of Chelsea and Greenwich, the churches of St. Stephen's, Walbrook; St. Mary-le-bow, Cheapside; St. Michael, Cornhill; and St. Bride, Fleet street; as also the campanile of Christ Church, Oxford, and Marlborough House, Pall Mall; sat in Parliament (1685–1700).

WYANT, ALEXANDER H. (1836–1892). An American painter; born at Port Washington, Ohio; studied with George Inness in Paris, where he was influenced by Corot and Dupré, and in Düsseldorf under Hans Gude; settled in New York in 1864; elected N. A. in 1869. His works in the Metropolitan Museum in New York include *Looking toward the Sea, Broad, Silent Valley,* and *A View in County Kerry.*

YSAYE (*ē-zā'yē*), **EUGENE** (1858–1931). Belgian violinist, born in Liége and educated under his father and at the local conservatory. He appeared first in Germany in 1879, in Paris in 1883, and in London in 1889. For a number of years, beginning in 1900, he acted as a conductor. As a violinist he was preëminent in interpretation and in technique. During the World War he led the Cincinnati Orchestra.

ZEISLER (*zīs'lĕr*), **FANNIE BLOOMFIELD** (1863–1927). A pianist, born in Poland, but was brought by her parents in early infancy to America. Married Sigmund Zeisler of Chicago in 1885. For many years she appeared in the chief cities of America, Germany, England, Austria, and France, her last tour abroad being in 1912. She founded a fund for the relief of musicians (1925).

ZIMBALIST (*zĭm'bà-lĭst*), **EFREM** (1889–). Distinguished Russian violinist, began to study under his father when he was seven, and later made great progress under Leopold Auer at St. Petersburg. Toured through Germany and came to the United States in 1911. In 1914 he married the celebrated singer, Alma Gluck. He composed songs, suites for the piano, and other instruments.

ZULOAGA (*thö-lō-ä'gä*), **IGNACIO** (1870–). Spanish painter, sent to Rome to become an architect, but turned to painting after six months of study. Returning to Spain, he carefully studied the old masters, and developed a new style and manner, quite different from the current art. Paris hailed him as a new influence, and eventually all the great galleries of Europe admitted his pictures. *The Poet Don Miguel* is in Vienna; *Amies* in Barcelona; *Madame Louise* in Venice; and *The Topers* in Berlin.

LEADING INVENTORS OF THE WORLD

ACHESON, EDWARD GOODRICH (1856–1931). Inventor of carborundum, was born in Washington, Pa., and turned to earning his own living and invention at an early age. Becoming associated with the Edison interests, he installed the first electric lights in Italy, Belgium, and Holland. Other inventions are a synthetic graphite, much used in commerce, metallic silicon by a cheap process, a way of making clay more plastic, and certain abrasives.

ALBERT, JOSEPH (1825–1886). German photographer, born at Munich; established a studio at Augsburg (1840); removed to Munich (1858); his invention of the "Albertype" process of photo-mechanical printing was of the utmost importance, and was generally adopted. By finding that gelatin plates could be hardened so that many impressions could be made from a single unit, Albert thus greatly improved over the old metal process.

ALLEN, FRED HOVEY (1845–1926). A Congregational clergyman, inventor of the first photographic plates in America for reproduction of works of art. Born and educated in New Hampshire, he also studied abroad, held pastorates at Boston, Rockland, Me., and other cities, founded the Lawrence, Mass., *Eagle*, and wrote several books on art including *Masterpieces of Modern German Art* and *Grand Modern Paintings*.

ALLEN, HORATIO (1802–1889). Born in Schenectady, N. Y., the son of a professor at Union College, Allen was a member of the class of 1823. He went to England, formed a friendship with George Stephenson, and brought back to America the "Stourbridge Lion," the first locomotive to be run on this continent. In 1829 he alone ran this on a track at Honesdale, Pa. He invented the swivel truck for cars for the South Carolina Railway, then the largest line in the United States. Allen also first suggested that the weight of an engine should be evenly distributed among several wheels.

AMSTUTZ, NOAH STEINER (1864–). American engineer of Swiss-French descent, who for several years was a commercial artist and later became a patent attorney. His inventions include a photo-telegraph system and the arkograph, the first automatic engraving machine. Models of these machines were given to the Smithsonian Institution, Washington, in 1916–17.

APPERT, FRANCOIS (d. 1840). French confectioner who won the government prize of 12,000 francs (1810) for a method of preserving fruit in glass and china containers. He studied the subject several years, and tried many plans, succeeding at last as the modern housewife does by driving out the air from the product by boiling it to a certain temperature. Appert thought it was the air which destroyed the food, for the theory of bacteria of Louis Pasteur did not come till many years later.

APPLEBY, JOHN FRANCIS (1840–). Inventor of the first device to tie a knot in a twine for binding grain; born in New York, but went to Wisconsin after the Civil War, during which he invented a repeating fire-arm. His twine-knotter, first demonstrated in 1858, was developed in 1867, and after a time superseded the wire tie invented in the meantime. In 1879 Appleby patented an improved knotter, which was used by the Deering harvesters.

ARCHIMEDES (c. 287–212 B. C.). A Greek inventor and mathematician who was born in Sicily near Syracuse. Some of his ingenious devices seem to have been certain engines of war used against the Romans, a screw type of hydraulic machine and others for irrigation purposes, and some claimed a mirror which set the Roman ships on fire when they approached. He was killed at the siege of Syracuse by the Romans. In mathematics he discovered the ratio of the sphere to the cylinder, certain principles of what we now call integration, and the principle of physics known as specific gravity.

ARKWRIGHT, SIR RICHARD (1732–1792). Noted English inventor of cotton-spinning machinery; in 1767 his whole attention was given to the improvement of the spinning frame; his first mill driven by horses was set up in 1768, and he took out a patent for his invention; one of the first to introduce the steam engine into mills.

ARMSTRONG, WILLIAM GEORGE (1810–1900). British inventor of an improved rotary water motor, an hydraulic crane, and a type of breech loading gu adopted by the navy in 1859, used for 17 years, a then displaced until adopted again in 1880. Arm strong founded the Elswick Manufacturing Compan merged with the Elswick Ordnance Company, und his supervision in 1863. He introduced the idea winding a metal core of a gun with steel wire. Arm strong was made a peer in 1887.

ARNOLD, BION JOSEPH (1861–). An ele trical engineer, born near Detroit, Mich., and educate at Hillsdale College, Cornell University, and the Un versity of Nebraska. Inventor of combined direc current machines, a magnetic clutch, improvements design of storage batteries, and devices used in ele trie railway construction. Supervised the constructio of many electric lines, including the rebuilding of t Chicago Traction System; consulted by numerou municipalities and by the government during and aft the World War in the construction of aircraft.

ATWOOD, GEORGE (1746–1807). An English i ventor and mathematician, who designed Atwood machine, a device for measuring the relations amon space, time, and velocity of a falling body. Thus th machine is used to confirm the laws of accelerate motion under the influence of gravity in the case falling bodies. Among his works are a *Treatise the Rectilinear Motion and Rotation of Bodies* an *Dissertation on the Construction and Properties Arches*.

AUER, KARL. See under WELLSBACH.

BABBITT, ISAAC (1799–1862). American gol smith, who became interested in alloys of metals, an finally devised (1839) the formula for one of th type known now as Babbitt metal. This is a com pound of about 25 parts of tin, 2 of antimony, an half a part of copper, though the proportions var slightly in different foundries. It is used as an ant friction compound. Congress awarded Babbitt $20,00 for his invention. Babbitt also made britannia war (first in this country) and certain brands of soap.

BAEKELAND (*bâ'kĕ-lănd*), **LEO HENDRI** (1863–). The inventor of bakelite, who w born in Belgium, but settled in the United State in 1889, and at first devoted himself to research i photographic materials. Velox paper for printin films was the result. He next devised a method producing caustic soda and chlorine through the us of an electric current passed through a brine. Pe haps his most interesting invention is bakelite, synthetic combination of carbolic acid and formald hyde to make an insulating substance to be use instead of hard rubber. Bakelite has very man other uses in electric devices, the arts, and com merce generally. It also replaces natural ambe He has done much other work in synthetic resi and has written numerous scientific papers.

BALDWIN, MATTHIAS WILLIAM. See unde CAPTAINS OF INDUSTRY.

BALES, PETER (1547–1610?). An Englishma who perfected a system of shorthand writing whic he called brachygraphie. He was head of a school i London and wrote two books on his discoveries of system of writing. Though not perfect in any sens his scheme was long used in taking notes.

BASKERVILLE, CHARLES (1870–1922). A American chemist, who was born in North Carolin studied at the University of Virginia and abroad, an taught at North Carolina and the College of the Ci of New York. His important inventions were in th refining of vegetable oils and in other substances nee ing great purity.

BAYNES, JOHN (1842–1903). Inventor of a ce luloid photographic film process (1884), and a go electro-photographic process (1885). He was born i Westmoreland, England, and came to the United Stat in 1875.

BEACH, ALFRED ELY (1826–1896). Invent of the hydraulic tunneling shield and of numerou other devices. He was born in Springfield, Mass became part owner and editor of the *Scientific Ame ican*, and a patent attorney. In 1865 he devised system of pneumatic mailing tubes, and three yea later came his great invention. He demonstrated h shield by boring underground a tunnel from Warre to Murray Street under Broadway, New York, throug

which he propelled a small car by means of suction. His shield was used in London, Liverpool, New York, many times, and in other cities for underground construction. It consists of a metal ring devised so that one end is driven into the earth, and the end toward the rear is used for taking out the earth and for building the permanent tunnel of brick, concrete, or other material.

BECQUEREL (*běk-rĕl'*), **A. C.** See under SCIENTISTS.

BEHREND, BERNARD ARTHUR (1875–). American engineer, who was born in Switzerland, but came to America to engage in practice as a consulting electrician. Becoming connected with the Allis-Chambers-Bullock and other companies, he invented numerous devices used in connection with dynamos and motors, and designed some of the largest types of motors. Among his numerous articles and works are *The Induction Motor* and *Engineering Education*.

BELL, ALEXANDER GRAHAM (1847–1922). Inventor of the telephone, the photophone (for transmitting sound by vibrations in a beam of light), and several pieces of photographic apparatus. Later he contributed to the theory of mechanical flight. Bell was born in Edinburgh, Scotland, educated there at the University and at the University of London, moved to Canada for the benefit of his health in 1870, and the next year became professor of vocal physiology at Boston University. His original model of the telephone was exhibited in 1876. His father Alexander Melville Bell (1819–1903), also an inventor, devised a system of "visible speech" for deaf mutes by making an alphabet according to the various positions of the vocal apparatus in speaking.

BENZ, CARL. See under DAIMLER.

BERLINER (*bûr'lĭn-ĕr*), **EMILE** (1851–1929). A German-American inventor, who was born at Hanover, came to the United States in 1870, and in 1878 began to investigate improvements in apparatus for transmitting sound. In 1877 he invented a loose contact transmitter now known as the Berliner microphone, and the next year he adapted the induction coil for use in transmitters. He also perfected the gramophone, devised a method of making disk records, and a revolving cylinder engine much used in aircraft. One of his latest inventions was the acoustic tile for aiding in sound transmission within walls. He and his son also made a successful helicopter, or an airplane capable of rising straight up into the air.

BESSEMER, SIR HENRY (1813–1898). English inventor, born at Charlton; known as the originator of the "Bessemer process" of steel making; when a mere boy he turned his attention to mechanical inventions; in 1856 he announced his discovery that pig iron in the molten form, through which a draught of air was drawn, could be converted into malleable iron; this process was at once put into practical use, and has since undergone no radical improvements; Bessemer was awarded the Telford Medal in 1859; was made president of the Iron and Steel Institute of Great Britain in 1871; his own country was slower than others to recognize the value of his work, but he was knighted in 1879.

BIGELOW, ERASTUS BINGHAM (1814–1879). American inventor who was born at West Boylston, Mass., and in youth worked on a farm, taught school for a time, and prepared a book on stenography. He invented devices used in weaving, among which are the power looms for making Brussels, Wilton, tapestry, and other forms of carpets; looms for making counterpanes, ginghams, wire cloth, and other woven products; and perfected the ways of weaving ingrain carpets. Later in life he took a great interest in economic subjects, and wrote several books on the tariff and similar measures. He was one of the original sponsors of the Massachusetts Institute of Technology.

BLAKE, FRANCIS (1850–1913). Inventor of the Blake telephone transmitter (1878). He was born and educated at Needham, Mass., and for 13 years served under the United States Coast Survey. Harvard University gave him the honorary degree of A. M. in 1902.

BLANCHARD (*blăn'shàr*), **THOMAS** (1788–1864). Inventor of a tack-making machine, increasing the capacity to 200 a minute; previously the heads had to be fastened on by hand-work. He made a machine to turn out gun-stocks, a feat long considered impossible; instead of a set tool he used a variable lathe, now known as a "profile lathe"; and this led to many ingenious devices for working on wood. Blanchard's original machine of 1818 is still in the Springfield, Mass., Armory. In 1825 he perfected and ran the first ordinary steam carriage in this country.

BLENKINSOP, JOHN (1783–1831). An English mechanic, who built a locomotive steam engine, which traveled on a racked or toothed rail. This was patented in 1811 and put in use the next year to draw loads of coal near Leeds, and the capacity was 30 tons of material. George Stephenson saw this before he constructed his *Rocket* engine.

BOGARDUS (*bōgär'd-ŭs*), **JAMES** (1800–1874). American inventor, born in New York; his inventions include the dry gas meter (1833), a medal-engraving machine (1836), and an eight-day clock; his machine for the manufacture of postage stamps won the prize offered by the British government (1839); he built in New York the first factory constructed of cast iron.

BORDEN, GAIL (1801–1874). American inventor, who was born in New York, went to Mississippi, and then to Texas, where during the Mexican War he edited a newspaper. He surveyed the land where Houston now is located. When the gold rush to California began, the need of a concentrated portable food was apparent. Borden first made pemmican, which Dr. Kane used in his Arctic journeys in 1851 and 1853. Borden invented a meat biscuit, condensed milk (1856), an extract of beef and other products from fruits and beans. He established factories in New York and elsewhere, and as early as the Civil War his condensed milk was extensively used.

BOTTGER or **BOTTIGER** (*bût'gĕr*), **JOHANN FRIEDRICH** (1682–1719). German inventor, known as the originator of Saxon or Meissen porcelain; a laboratory was erected for him in Saxony, and about 1708 he brought out his celebrated porcelain; attempted to make gold, but without success.

BRAGG, W. H. See under SCIENTISTS.

BRAILLE (*brēl*), **LOUIS** (1809–1852). A French teacher who devised a system of dots representing the letters of the alphabet for use in printing books and music for the blind. He was deprived of sight when he was three, was educated at the Institute for the Blind in Paris, began teaching there in 1828, and developed his system which is now very widely used for instruction in schools for sightless persons.

BROWN, ALEXANDER (1852–1911). Inventor of bulk unloading machinery. Before he perfected the Brown hoist in 1880, ore, coal, and similar products had to be shoveled into a tub or basket, and then hoisted by ropes or other devices. It cost from twenty-five to fifty cents just to hire men to shovel a ton of product. For the old tub Brown substituted a grab bucket. The modern Brownhoist and other like lifting devices and ore bridges are developments of his idea. Of many other patents taken out by him, highway bridges, machines for weighing loads, turntables, and wireless transmission masts are important. He lived in Cleveland, Ohio, where he was graduated from the public schools and also from the Brooklyn Polytechnic Institute.

BROWN, JOHN ROGERS (1810–1876). Pioneer in the design and perfection of various types of precision instruments. Some of these are the first accurate linear dividing machine for use in making graduations on rulers (1850); the vernier caliper, which measures within a single one-thousandths of an inch in accuracy (1851); a precision gear cutter, long the model for all similar machines (1864), and a universal milling machine for use in all sorts of shops (1862). He organized the manufacturing firm of Brown and Sharpe of Providence, Rhode Island, which made the Willcox and Gibbs sewing machine for many years, together with numerous other well-known mechanisms. The influence of Brown's work has been felt in most subsequent attempts to provide machines that are faultless in accuracy.

BROWNING, JOHN M. (1854–1926). An inventor of various types of guns, who was born in Utah, and in 1879 perfected a breech-loading rifle firing a single shot. From that time he designed many types, such as the Remington autoloading, Winchester repeating, Stevens rifles, and Colt automatic pistols. The U. S. army adopted a machine-gun of his design (1890), and two others used in the World War in 1918.

BURDEN, HENRY (1791–1871). He began to manufacture agricultural tools in Albany, N. Y., in 1819, having come from Scotland. In 1820 he patented a cultivator, said to be the first in America. Later he lived in Troy, N. Y. From an early invention

of railway spikes, 1825, fifteen years later he adapted them to the flat rails then coming into use. The present-day hook-headed spike is a descendant of Burden's first type. His horse-shoe making machine (1834) revolutionized the making of iron shoes for horses.

BURROUGHS, WILLIAM SEWARD (1857–1898). After graduating from high school, he worked in a bank in Auburn, N. Y., for seven years; his health being poor, he went to St. Louis where he found work in a machine shop, displaying an obvious mechanical genius. He worked by day in the shop; his evenings were devoted to endless designing and drawing until after repeated failures, he completed designs for all the essential parts of the first adding machines. In 1884 his plans had progressed so far that he was able to obtain a loan of $700 to finance the building of the machine. Seven years of repeated trial and failure followed, but he had found a friend in Mr. Joseph Boyer in whose shop the work was being done and who kept the shop work going, while, to get money to carry on his experiments, Burroughs sold stock in his little company. It cost $100,000 before the machine of practical commercial value was completed. Between 1891 and 1895 the American Arithmometer Co., the parent of the Burroughs Adding Machine Co., sold about a thousand machines but of these more than a hundred had to be taken back because the operators were incompetent. Further improvements had to be made before a "fool-proof" adding machine could be offered to the public. Before Mr. Burroughs died, however, thousands of his machines were in use. In 1904 the business was moved to Detroit and incorporated as the Burroughs Adding Machine Co. It has since grown to mammoth proportions.

BURT, WILLIAM AUSTIN (1792–1858). Going from Massachusetts, his birthplace, to New York, he fought in the War of 1812, and in 1824 emigrated to Detroit. Having been appointed deputy U. S. surveyor in Michigan he invented the solar compass. Later he was a judge of the higher courts of Michigan; he was one of the promoters of the Sault Sainte Marie Canal.

CARTWRIGHT, EDMUND (1743–1823). An English inventor of the power-loom, perfected in 1787, and the wool-combing machine which he first patented in 1790. Mills established by him did not afford him a competence, and the government gave him a grant of 10,000 pounds in 1809, with which he bought a farm in Kent. Other devices patented by him were a machine for making rope (1792), and an alcohol engine (1797), besides some farm machinery.

CAXTON, WILLIAM. First English printer. See DICTIONARY OF AUTHORS.

CHANUTE (*shă-nūt'*), **OCTAVE** (1832–1910). Inventor of gliding planes that were fairly effective; advised the Wright Brothers concerning principles of mechanical flight. The son of a professor, he was born in Paris, educated in New York, and became a civil engineer on the New York Central (1848). In 1867 he built the first bridge across the Missouri River. For years he took part in railway construction and operation, being for a time chief engineer of the Erie Railroad, which he greatly developed. In 1888 he became interested in flying machines. He succeeded in obtaining a fair degree of equilibrium. In 1896 he perfected a five-deck glider, with movable wings fore and aft to prevent pitching; this type led to the invention of a trussed biplane glider. His machines, in which he made hundreds of flights on the sand dunes along Lake Erie, were advances over anything made before.

CLYMER (*klaĭ'mar*), **GEORGE** (1754–1834). The inventor of an improved pump to exhaust the water quickly from coffer dams, was born of Swiss parentage in Pennsylvania. In 1816 he perfected an iron hand-press for use in printing, the first great American invention of such machinery. Putting an eagle on top, and this caused the platen to rise after the impression, he called his press the Columbian. Impressions could be made much more certain and even more delicate by this press.

COLLINS, ARCHIE FREDERICK (1869–). Inventor of the wireless telephone, was born in Indiana, and first succeeded in his experiments at Narberth, Pennsylvania, in 1899. For this he was awarded the gold medal of the Alaska-Yukon Exposition in 1909, after having given a public exhibition the previous year at Madison Square Garden in New York. Collins also invented the rotating oscillation arc in 1909. He wrote *Wireless Telegraphy* (1905), and over 50 other books on scientific and educational subjects, includi *A Bird's Eye View of Invention* (1926).

COLT, SAMUEL (1814–1862). American man facturer; born in Hartford, Ct.; inventor of the volver; secured patents for a revolving pistol (1835 and in 1847 contracted to make 1,000 weapons f General Taylor. Laid one of the first submarine cabl in New York harbor (1843), and erected his weap factory in Hartford (1852).

COOLIDGE, WILLIAM DAVIS (1873–). American physical chemist, inventor of the Coolid tube (1913) for use in X-ray investigations. This a sealed round bulb with prolongations at either en the cathode at one, the anode at the other. T stream from the cathode is provided by evaporati of electrons. Dr. Coolidge also used ductile tungst first in his invention.

COOKE, WILLIAM FOTHERGILL (1806–1879 Inventor of the single needle apparatus in telegrapl (1837), in partnership with Charles Wheatstone (q. v. Disagreeing with the latter as to which had earn the greater share of credit in the invention, he boug out all the others interested and organized his ow company in 1846, which was successful. He was bo in Middlesex, England, served in the Indian arm (1826–31), then studied medicine, but turned to t telegraph as a life interest.

COOPER, PETER (1781–1883). An Americ business man and inventor, born in New York, a was engaged successively in making machines f shearing cloth, in making furniture, and then in t retail business. In 1830 he planned and built t "Tom Thumb," the first steam locomotive made America, which was used on the Baltimore and Oh Railroad. Later he built iron foundries in New Yor New Jersey, and Pennsylvania, where he made ir beams, steel by the Bessemer process, and other pro ucts. He encouraged and financed the laying of t Atlantic cable by Field, and at one time controll about half the telegraph lines in America. Later founded Cooper Institute in New York. For h philanthropies see the index.

CORLISS, GEORGE HENRY (1817–1888). T inventor of the famous Corliss engine for which patented various devices, mainly those for securi uniform revolution of the wheel. A giant model w set up for furnishing power at the Philadelphia position in 1876, and this was later transferred Pullman, Ill. He was born in Easton, N. Y., a lived much of his life at Providence, R. I.

CORT, HENRY (1740–1800). An English fou dryman who built the first puddling furnace and t first rolling mill. In the blast furnace the coal a iron were burned in contact with each other, but Co perfected the process by separating them. This pl allowed the iron to be taken out in a pasty mas which could be hammered, and the process is still common use. Cort also invented some grooved ir rollers, arranged to turn in different directions, a of various sizes arranged in pairs. The iron was r through successions of these and reduced smaller a smaller.

CRISTOFORI, BARTOLOMEO (1665–1731). A Italian musician and maker of harpsichords at Padu In 1687 he was persuaded by the Prince of Floren to take up his residence there, and he remained aft the death of the prince in the patronage of the gra duke. By 1711 he had perfected the predecessor the modern pianoforte, a new type of musical instr ment.

CROMPTON, GEORGE (1829–1886). Coming America from Bolton, England, he became interest in weaving, as several relatives had before him. 1857 he patented a broad loom, capable of almo doubling the width of cloth, and capable of hig speed. Of about 100 of his inventions concerni the making of cloth, a very practical one was a devi to prevent the dripping of oil on fabrics durin weaving.

CROMPTON, SAMUEL (1753–1827). English d signer of the spinning mule, a great improveme over the old spinning devices used before 1779. Bei too poor to take out a patent, he confided the secr to others on stipulation that they should pay him certain sum, but only a small part was receive Not succeeding in business, he was finally awarde £5,000 (1812) by the government.

CRONSTEDT (*krŏn'stĕt*), **EXEL FREDERI** (1702–1765). A Swedish baron and scientist, who

1751 discovered nickel, and this led to the perfection by others of a process of using this element in many commercial ways. He was the first, in a work on mineralogy, to classify rocks according to chemical composition and to distinguish them from minerals.

CROOKES, WILLIAM (1832–1919). English scientist and inventor, best known as discoverer of the element thallium, and for the invention of the Crookes tube, which made modern investigations in radium possible. This is a tube containing a small amount of gas in which an electrical discharge passes. Crookes also invented a kind of glass which protects workers from strong electric rays. See also under SCIENTISTS.

CROWELL, LUTHER CHILDS (1840–1903). After retiring from the sea, Crowell began to invent useful articles. One of his first was a way to fold paper bags, another to tie them, and finally a machine for making them. Hearing that the folding of newspapers after they went through the rotary press was a problem, he perfected a V-shaped device which folded papers of ten or more pages as they went through the press. His invention did away with the old cumbersome tape process of folding.

CURTISS, GLENN HAMMOND. See under SCIENTISTS.

DAGUERRE (*dā-gâr'*), **LOUIS JACQUES MANDE** (1789–1851). French physicist, born at Cormeilles; invented the art of photography on metal, called the "daguerreotype" process; was awarded a pension of 6,000 francs and made a member of the Legion of Honor.

DAIMLER (*dīm'lĕr*), **GOTTLIEB** (1834–1899). Inventor of several types of light oil and gas engines. In 1884 he perfected a four-cylinder gas engine, which he tried in a motor vehicle the following year. He shares with Carl Benz the credit for inventing the first successful gasoline automobile, though George Selden of Rochester, New York (1877) applied for patents on a horseless carriage, which apparently was never manufactured. Benz first applied the electric ignition to a two-cylinder gasoline engine. Daimler was born at Würtemberg in Germany, was educated at Stuttgart, and in 1872 joined with Dr. Otto in perfecting a gas engine. After 1882 he alone developed his inventions.

DALIN (*dā'lĭn*), **GUSTAV** (1869–). A Swedish chemist, who invented a hot-air turbine, a milking machine, a product called agamassan, which will absorb acetylene without danger of explosion, and a substance called solventil, which will cause a fire to light after the sun goes down and will extinguish it when morning comes. He won the Nobel prize in 1912, and in 1913 was blinded by a laboratory explosion.

DANCEL, CHRISTIAN (1847–1897). American inventor who perfected the Goodyear welt system of manufacturing shoes. In 1867 Charles Goodyear, Jr., son of the inventor of the Goodyear rubber process, engaged Dancel to superintend the Goodyear factory, and here he remained for 25 years. Of his numerous inventions, some of the more important ones are the welt guide (1874), the lock-stitch machine, still used in many factories, which was purchased by Goodyear from him (1885), and, finally, the curved needle machine (1893) for sewing welts by lock-stitch while the shoe is on the last.

DAVENPORT, THOMAS (1802–1851). Born of a large family in Vermont, he was set to work at the forge, but turned his thoughts toward an electric magnet near Fort Ticonderoga, N. Y., and from this he developed and patented the first electric motor made in America. In this he used the principle of producing rotary motion by a change in magnetic poles in rapid succession. He employed also the principle of the commutator, or bunch of brush nozzles which take up the electricity generated by a dynamo (1837). He organized the first stock company for electrical developments, applied electricity first to driving the printing press, and left a model of a player piano in incomplete development.

DAVY, HUMPHREY. See under SCIENTISTS.

DEFOREST, LEE (1873–). Inventor of the audion tube and other improvements which have made radio and telephone by wireless possible. He was educated at Yale and Armour Institute, employed by the Western Electric Company, and later established business for himself. He was the first to use alternating generation and transmission in radio, built the first five stations for the U. S. Navy, made other improvements and applications of the audion, and experimented with a device to synchronize sound and picture in the talking film industry.

DELANY, PATRICK BERNARD (1845–1924). Born in Ireland, he lived for many years at Hartford, Conn., and among his inventions is the multiplex telegraph system. This was one of the first plans for transmitting messages and printing them at the other end.

DIESEL (*dē'sĕl*), **RUDOLPH** (1858–1913). A German scientist, who invented a type of engine now bearing his name, which burns heavy oil without explosion in the cylinders. He was educated at Augsburg and Munich and perfected his invention about 1893, with further improvements in 1898, and later he tried to apply the principle to automobiles. The Diesel engine is now used in many of the larger ships.

DISSTON, HENRY (1819–1878). A Quaker of Philadelphia who made the first adequate American steel saws. Not finding good enough material for his product, he went about making better steel (1855), and his firm sold this product to other houses. He commenced in 1840 by making his own tools, but the business was small till the Civil War increased the demand many-fold. Disston equipped and sent 35 of his workmen to war, promising their old jobs back at the end. Later he made fine brass and steel, especially in sheets.

DOLBEAR (*dōl'bēr*), **AMOS EMERSON** (1837–1910). He was born in Norwich, Conn., educated at Ohio Wesleyan, and became a professor at Tufts College. Among his inventions are the improvements in the machine which writes or prints telegrams, in the gyroscope, in magneto-telephony and wireless, and in applying electric waves to photography. He succeeded in converting sound into electricity in 1873.

DOLLOND (*dŏl'ŭnd*), **JOHN** (1706–1761). An English maker of optical goods, originally a weaver, who found a way to make concave lenses of flint glass for use with convex lenses of crown glass. This was a great improvement in telescopic lenses.

DORR, JOHN VAN NOSTRAND (1872–). Metallurgical engineer, who developed the cyanide process for extracting metal from ore rock, and the Dorr classifier and Dorr thickener, which have made it possible to operate many mines hitherto considered unprofitable. He also developed processes for treating sewage and purifying water in running streams. Dorr was born and educated in New Jersey, worked two years with Edison, was a chemist and assayer in the West (1895–1910), a mining operator in Black Hills (1901–13), and then became a consulting engineer.

DREYSE (*drī'zā*), **JOHANN NIKOLAUS VON** (1787–1867). Born at Sömmerda, near Erfurt, Prussia; invented the needle-gun (1827), and made it breech-loading (1836); this firearm was adopted by Prussia in 1841, and used in the war between Prussia and Austria (1866). He was ennobled in 1864.

DUBILIER, WILLIAM (1888–). Inventor of numerous devices for use in radio and the arts, including a substitute for the glass Leyden jar, wireless systems, the first radio installation in a British airplane, and of high frequency apparatus, and other devices covered by scores of patents. United States, British, and French governments adopted his inventions, such as a device for detecting submarines accepted by the British and French in 1916.

DYER (*daĭ'ar*), **LEONARD HUNTRESS** (1873–). American patent lawyer, naval commander, and inventor of a flying boat now built by the Curtiss Company, electric steering apparatus for boats having steam turbines, and a direct drive automobile. He was born in Washington, D. C., and educated at George Washington and Georgetown Universities.

EADS (*ēdz*), **JAMES BUCHANAN** (1820–1887). Eminent American engineer and inventor, born at Lawrenceburg, Ind.; moved to St. Louis (1833); in 1839 he became clerk on a Mississippi steamboat, and studied engineering by himself; he built, within 100 days, seven iron-clad gunboats of his own design, for the use of the government on the Mississippi; he also constructed the bridge across the Mississippi at St. Louis (1867–1874), one of the finest structures of its kind in the world; Eads undertook at his own risk the task of deepening the channel at the mouth of the Mississippi and, by the construction of jetties, successfully carried the enterprise to completion (1875–1879); the last years of his life were devoted to extensive engineering operations; he spent much time

in the planning of a ship-railway across the Isthmus of Tehuantepec; in 1884 the British Society for the Encouragement of Arts, Manufacturers, and Commerce awarded him the Albert medal; Eads was the first American to receive that honor.

EASTMAN, GEORGE (1854–1932). An American inventor, manufacturer, and philanthropist, began as an amateur photographer, perfected a system of making dry plates, and originated the kodak. For many years at the head of the Eastman Kodak Company, and other concerns. Being specially interested in music, he gave large sums to develop a civic opera and music center in Rochester, N. Y., and at the University of Rochester, to which he added considerable money for general purposes. Mr. Eastman also gave millions to the Massachusetts Institute of Technology and two millions to Hampton and Tuskegee Institutes.

EDISON, THOMAS ALVA (1847–1931). Noted American electrician and inventor, born at Milan, Ohio; at an early age he learned telegraphy, and showed a marked fondness for experimenting with electricity; first invention was a "repeater" for use in telegraphy; removed to Boston, and shortly afterward became superintendent of the New York Gold and Stock Telegraph Company; his inventions having placed him in a better financial position, he established a laboratory at Menlo Park, N. J., and developed his quadruplex system of telegraphy; among his other inventions are the microphone, the carbon transmitter, the phonograph (1876), the incandescent lamp (1880), improvements in dynamo-electric machinery, storage cells, etc.; over 300 patents have been granted him; the value of his work has been recognized in Europe as well as in America; in 1878 he was made a member of the Legion of Honor, in 1889 a commander; the Albert medal of the British Society of Arts was awarded him in 1892; no one in the nineteenth century has been so successful in applying scientific truths to practical purposes; laboratory is at present located at West Orange, N. J.

EIFFEL (*ī fel'*), **GUSTAVE** (1832–1923). French engineer, born at Dijon; constructed an iron bridge over the Garonne at Bordeaux (1858), the bridge over the Douro at Oporto (1876), and the remarkable Garabit viaduct (1882); the Eiffel Tower (985 feet), the highest structure in the world, was erected by him (1887–1889) at a cost of about $1,200,000; on the completion of the tower, he was made a member of the Legion of Honor; in 1893 he was arrested for complicity in the Panama Canal scandals and was sentenced to fine and imprisonment, but the sentence was revoked.

EMERSON, HARRINGTON (1853–). American efficiency expert, who perfected ways to eliminate waste in industrial plants, organized long distance mail routes in Alaska (1898–1901), improved service on the Santa Fé system, and helped find a northern route for a submarine cable to Alaska. He was born in New Jersey, educated in Europe, acted as professor of modern languages at the University of Nebraska (1876–82), engaged in banking and land business (1882–96), and was president of Emerson Engineers (1900–23).

ENGERTH, WILLIAM, BARON (1814–1884). Austrian engineer born in Pless, Prussian Silesia. He invented the "Engerth system" for freight locomotives, which since its introduction on the Semmering Railroad has found wide adoption on the Continent. He also invented, devised, and built the river gate near Nussdorf which prevents the entrance of ice into the Danube Canal at Vienna, thus preventing the resultant annual inundations.

ERICSSON, JOHN. See under DICTIONARY OF HISTORY.

EVANS, OLIVER (1755–1819). American inventor, born in Newport, Del.; his first inventions include the automatic flour mill, the first high-pressure steam engine, machine for making card teeth (1777), first steam dredge, the "Cornish" boiler, and an engine for the propulsion of river boats. The dredge weighed about 4,000 pounds, and propelled itself to the river.

FAIRBAIRN (*fâr'bârn*), **WILLIAM** (1789–1874). A Scottish engineer, who at Manchester established a business which led to great results in improving the construction of boilers, the building of bridges, and the use of iron in cannon. Among his early inventions was an iron shaft to replace a wooden one in a cottton mill. With Robert Stephenson, he made a tubular bridge across the Conway and Menai Straits (1845), later applying his knowledge to many oth bridges. In 1869 he was made a baronet.

FARADAY (*făr'ă-dā*), **MICHAEL.** See und SCIENTISTS.

FARMER, MOSES GERRISH (1820–1893). Bo in New Hampshire, he taught in Maine, in Dove N. H., and later at the University of Pennsylvani He was among the first to think of an electric loc motive, building an experimental car which at Dove N. H., in 1846 carried two passengers, using 48 cu of storage battery. For the city of Boston, he pe fected a fire-alarm telegraph, and made some i provements in dynamos. In his day he was the on American honorary member of the English Society Electrical Engineers.

FELT, DORR EUGENE (1862–). Invent of the first key operating calculation machines, a one of the first adding and listing devices. He w born in Beloit, Wisconsin, organized the Felt a Tarrant Company, of which he became president. 1919 he was sent to England by the government investigate conditions of labor and industry.

FISKE, BRADLEY ALLEN (1854–). Ame can rear admiral and inventor of numerous devic used on warships, who was born at Lyons, N. Y was graduated second in his class at Annapolis (187 and became an ensign the following year. He pass through all the grades to rear admiral in 1911 a retired in 1916. As navigator of the *Petrel* in t battle of Manila Bay, he was thanked by Admir Dewey for conspicuous service. Commanded later t *Minneapolis*, *Arkansas*, and *Tennessee*. Of h numerous inventions, the best known are a naval te scope sight now used by all chief navies, a torped plane adopted by most nations, gun director syste and many devices to communicate, steer, and mana boats and guns in action. He wrote *Electricity Theory and Practice*, *The Art of Fighting*, and *I vention*.

FITCH, JOHN (1743–1798). American invento born at East Windsor, Conn. He brought out in 17 a steamboat which accomplished three miles an hou A company for the promotion of navigation on t Delaware proved unsuccessful. Having failed arouse interest in his invention in France (1793) became disheartened and committed suicide. It is sa that Fulton obtained his ideas from some of Fitch plans.

FOUCAULT (*fōō-kō'*), **JEAN BERNARD LEO** (1819–1868). French scientist, who contributed i portant results to the study of light, especially measuring the velocity. He also invented a gyroscop a polarizer now bearing his name, and a device f using electric light in optical and microscopic instr ments. He won the Copley medal (1855) and nume ous honors from learned societies. From 1845 he w scientific editor of the *Journal des Débats*.

FRANKLIN, BENJAMIN (1706–1790). An Ame can author, statesman, scientist, and natural philo opher, one of the great men of the world in his ag Among his inventions are the Franklin open stov a great improvement over anything then existing, t common lightning rod, some improvements in printin and he also proved the identity of lightning with ele tricity and first used the terms positive and negati applied to electric theory. See also under STATESME

FRARY, FRANCIS COWLES (1884–). Ame ican chemist, born in Minneapolis, a graduate of t University of Minnesota, and a student at the Unive sity of Berlin. He taught chemistry at Minneso (1905–15), until he engaged in war service in 191 was with the Oldbury Electro-chemical Company Niagara Falls, New York, and since 1919 with t Aluminium Company of America. He is the invent of Frary metal, a hard alloy of 85% of lead and 15 of antimony, and he has also developed the electrolyt refining of aluminium in the manufacture of the co mercial product.

FRASCH, HERMAN (1852–1914). A Germa American chemist who perfected important process for refining oils, and these were acquired finally the Standard Oil Company. Sulphur, wax, white lea and other commercial substances were treated by hi in new ways. Born in Germany, he came to Ameri in youth, set up a pharmacist shop in Philadelphi and from that developed his interest in ways of pu fying various products.

FRAUNHOFER (*froun'hō-fĕr*), **JOSEPH VO** (1787–1826). German optician and inventor of i proved optical glass, acromatic lenses, and the speci

type of prism through which the light passes in being brought to a focus in front of the telescopic eyepiece. Though not the first to discover dark lines in the solar spectrum, he first studied them and listed 576 which remain more or less constant relatively in various spectra.

FRESNEL (*frā-nĕl'*), **AUGUSTIN JEAN** (1788–1827). French physicist, born in Broglie; ignorant of the work of Young, he established by experiment the undulatory theory of light; invented the Fresnel lenses for lighthouses, which occasioned a great improvement and complete change in the mode of lighthouse illumination.

FULTON, ROBERT (1765–1815). Noted American engineer, born at Little Britain, Pa.; in 1787 he went to London, where he studied painting, but soon decided to devote his time wholly to mechanics, and became interested in steam navigation; while in Paris (1796–1803) he constructed a submarine vessel; a small steamboat made by him in 1803 was entirely successful; returning to New York he launched the *Clermont* (1807), which made regular trips between Albany and New York at the average speed of five miles an hour; Fulton was not the first to apply steam to navigation, but was the first who was successful.

GATLING, RICHARD JORDAN (1818–1903). American inventor, born in Hertford County, N. C.; his principal invention was the revolving gun (1861), which he later improved; the gun was adopted for use by the United States (1866), and by several European governments; among his other inventions may be noted a steam plow, a hemp-breaking machine, and a new gun metal of steel and aluminum; invented the Gatling firearm.

GED (*gĕd*), **WILLIAM** (1690–1749). Inventor of stereotyping, which was patented in 1725. His process consisted of soldering together loose types, but his fellow-printers of Edinburgh refused to adopt his scheme, even though he proved its practical value. In London he formed a partnership, but this resulted in virtual failure, and Ged never profited from his invention. Dutch printers offered him considerable sums, which he loyally as a Briton refused to consider. Through the exertions of his own sons, the process was perfected after Ged's death by Andrew Wilson. Ged had printed two prayer-books and a Latin text from plates made by his process.

GEISSLER (*gīs'lĕr*), **HEINRICH** (1814–1879). The inventor of the mercury high vacuum pump and the tube which both bear his name was a maker of scientific instruments in Bonn, where he established a factory in 1854. The Geissler tubes have been extensively used in spectroscopic examinations of incandescent gases.

GODDU, LOUIS (1837–1919). A French-Canadian inventor of more than 200 devices, most of them connected with the shoe industry. He was born in Canada, but at 16 went to Lynn, Mass., where he worked in a shoe factory for four years. From 1858 to 1866 he lived at Montreal, after which he returned to Mass. Among his inventions was a wire-stitching machine for fastening soles of shoes, much used for many years.

GOETHALS, (*gō'thălz*), **G. W.** See under SCIENTISTS.

GOODYEAR, CHARLES (1800–1860). American inventor, born at New Haven, Conn.; went into business with his father, but failed in 1834; at this time he began experiments with a view to manufacturing india rubber; after discouraging failures, Goodyear finally succeeded in vulcanizing rubber and patented his process (1844).

GRAY, ELISHA (1835–1901). American inventor of the telautograph,—a device for reproducing handwriting through use of electricity in transmitting it,—and of other electric apparatus. Of his other half a hundred patents, the electric annunciator system for hotels and offices, the telegraph printer, and multiplex telegraphy are the most important. He also devised electric bells for use in submarines. Gray's machine for transmitting sound by wire was presented to the U. S. patent office shortly after Alexander Graham Bell's telephone was patented. The United States supreme court at last confirmed the rights of Bell in a series of litigations. Gray wrote *Telegraphy and Telephony* and *Electricity and Magnetism.*

GUERICKE (*gā'rĭ-kē*), **OTTO VON** (1602–1686). A German scientist who first invented the air-pump (1650), which he used to create a vacuum. He also performed many experiments with an electrical machine which used a ball of sulphur to rotate and create the current. Born in Magdeburg, he was educated there and visited France and England, and for a time acted as mayor of his native town.

GUTENBERG (*gōō'tĕn-bĕrg*), **JOHANNES** (*c.* 1400–*c.*1468). Inventor of printing from movable types; with Johannes Fust, set up a press in Mainz, Germany, using wooden types; later printed a Latin Bible with copper or tin types.

GUNTER, EDMUND (1581–1626). An English mathematician who was professor of astronomy at Gresham College, Oxford, from 1619 till his death. Some believe he discovered that magnetic declination at a given point varies from time to time. He is best known, however, as the inventor of Gunter's chain still used in surveying, consisting of 100 links and being 22 yards long; of the scale used often by seamen to solve problems by means of a pair of compasses; the line, which later led to the modern slide rule, and the quadrant, an instrument to find the hour of the day and to determine the altitude of objects in degrees.

HADFIELD, ROBERT ABBOTT (1859–1940). An English metallurgist who patented (1883) a process for the making of manganese steel, and later made many other alloy steels, and improved processes for working in metals. In 1908 he was knighted and in 1917 made a baronet. Besides many technical papers of value, he published a book *Metallurgy and its Influence* (1925), which is a standard work.

HALE, G. H. See under SCIENTISTS.

HALL, CHARLES MARTIN (1863–1914). The inventor of a process for the manufacture of aluminum, which previously had been worth as much as silver, and afterward could be produced for 20 cents a pound. Hall perfected his apparatus in 1886, the year after his graduation from Oberlin College, and by 1890 the company he founded, now the Aluminum Company of America, began turning out the product in quantity. Hall left most of his large estate to Oberlin and other educational institutions.

HALLEY (*hăl'lē*), **EDMUND** (1655–1742). English scientist and astronomer, the discoverer of Halley's comet, and inventor of the diving bell, which is a huge box-like structure in which men can work under water in laying foundations and digging for bridge piers. He also made a leather suit from which the modern diver's apparatus has been evolved. See also under SCIENTISTS.

HAMILTON, WILLIAM ROWAN (1805–1855). See under SCIENTISTS.

HAMMER, WILLIAM JOSEPH (1858–1934). An American maker of radium luminous preparations used in watch and clock dials for seeing time in the dark, and perfector of electrical instruments in connection with the Edison Company. He was born in Pennsylvania, educated at Newark, N. J., and in technical schools abroad, became an associate of Mr. Edison in 1879 and in 1881 the chief engineer of the London branch office. Supervised electrical exhibits at several world expositions.

HAMMOND, JAMES BARTLETT (1839–1913). The inventor of a new type of writing machine characterized by plates on which different alphabets could be placed in the machine in turn for the purpose of using different styles of type and different languages, and of a plan of aligning the machine mechanically. His machine was placed on sale in 1884. Hammond was born in Boston, was graduated from the University of Vermont, the Union Theological Seminary, and later studied philosophy and science in Germany. Much of his later life was devoted to experiments in science.

HAMMOND, JOHN HAYS, JR. (1888–). The son of the eminent mining engineer, John Hays Hammond (q.v.), he was born in San Francisco, educated at Yale, and spent much time in scientific study of improved telephone, radio, and other forms of communication. Of his more than 200 patents, some of the most important are a new type of torpedo for coast defense, controlled by wireless from stations on land, a system of automobile torpedo firing, a device for selective radio telegraphy by which eight messages can be carried at the same time on a single carrier wave, a plan of aerial coast surveying, and several devices for improving the tones of both pipe organs and pianos. Several of these inventions are extensively used by the government for the navy and army.

HAMPSON, WILLIAM (d. 1926). British inventor of a machine to liquefy gases at low pressures, called the Hampson machine, which greatly reduced the cost and increased the efficiency of production. He also made a device for measuring the amount of X-rays in machines used by physicians, and a pencil for practical application of carbonic acid snow to wounds.

HARGREAVES (*här'grēvz*), **JAMES** (—1778). English inventor. While carrying on weaving and spinning at home in 1760, he invented the carding machine, a substitute for hand cards. In attempting to spin several threads at once, an accident revealed the necessary position of the spindles, and the spinning-jenny was the result in 1764. Infringment suits prevented the success he deserved.

HARRISON, JOHN (1695–1776). An English maker of time-pieces of remarkable accuracy, who won a prize offered by the British government for a series of chronometers which would measure the longitude within 60, 40 and 20 miles respectively. His device, on a trip to Jamaica and return, came within less than two minutes from the correct elapsed time and within 18 miles of the correct distance. Between 1762 and 1773 the entire amount of £20,000 was paid him in installments. His gridiron pendulum is a device for keeping its length constant in spite of changes in temperature.

HAYNES, ELWOOD (1857–1925). Securing the aid of the Apperson Brothers, who had a machine shop, Haynes in 1894 perfected a gasoline driven automobile that went one-half mile without stopping. When he drove his machine on the streets of Chicago (1895), he was ordered off by a bicycle policeman.

HENRY, JOSEPH. See under SCIENTISTS.

HERTZ (*hĕrts*), **H. R.** See under SCIENTISTS.

HEWITT, PETER COOPER (1861–1921). An American capitalist and scientist, grandson of Peter Cooper, who established a glue business in the early days of New York. He perfected the process of making glue products, gave up business to devote himself mainly to science, and established a private laboratory. Here he developed the celebrated vapor lamp now much used in photographic studios and other places where certain types of illumination are needed. This is a long glass tube supplied with electric wires, sealed at both ends, and containing a little free mercury, which is heated in the vacuum of the tube and gives off a luminous mist. Red rays are missing from this light, and so it is beneficial to the eyes in printing offices and factories.

HOE, RICHARD MARCH (1812–1886). American inventor, born in New York City; began to study printing press manufacture (1827); his rotary newspaper press known as the "Hoe's lightning press" appeared in 1846; afterwards he invented the web-perfecting press which, besides printing on both sides of the sheet, cuts and folds the papers. His presses revolutionized the art of newspaper printing. Other members of the Hoe family, including his son and grandson, perfected the Hoe presses. His nephew, the third Robert Hoe (1839–1909), was among those who built machines for artistic, magazine, and color work.

HOLDEN, SIR ISAAC (1807–1897). English inventor, who produced the lucifer match (1829); in 1848 he established a large factory at St. Denis, near Paris; there he made many improvements in wool-combing machinery, and became wealthy; established his business at Bradford (1864), entered parliament, and was made a baronet.

HOLLAND, JOHN PHILIP (1844–1914). An Irish-American inventor of the submarine boat, which was perfected finally in 1898. Holland was born in Ireland, taught there for a time, and came to the United States in search of a torpedo device that would destroy a large ship. His first model (1877) proved that a boat could be submerged and controlled under water. Out of his original design all modern submarines and submarine torpedo craft have been developed.

HOLLEY, ALEXANDER LYMAN (1832–1882). American metallurgist, born at Lakeville, Ct.; in 1854, in partnership with one Colburn, he became editor of the *Railroad Advocate*, and later edited other publications; went to England (1863), purchased the Bessemer patents, started the Bessemer plant at Troy, N. Y. (1865), and erected steel works at Harrisburg, Pa. (1867); became president of the Institute of Mining Engineers (1875), and lectured on iron and steel manufacture at Columbia University (1879–1882).

HOPKINS, NEVIL MONROE (1873–). American designer of various electrical devices, instrumen for recording high temperatures, and other mechanis for use in the navy; born in Maine, educated at Geo Washington and Harvard Universities, and enter into practice as an engineer. For three years (190 1908) he was in charge of power plants and constr tion at the U. S. navy yards, and then became expert in the office of the U. S. Bureau of Roa and also technical adviser to several firms and boar

HOUSE, ROYAL EARL (1814–1895). Invent of the telegraph printing machine (1844) by whi messages could be transmitted and printed in Rom characters at the other end. His patent was confirm after extensive litigation. He was born in Vermo lived many years in New York, and died at Brid port, Conn. Numerous improvements in telegraph vices are credited to him.

HOWE, ELIAS (1819–1867). American invent born in Spencer, Mass.; known as the inventor the sewing machine (1845); his machine attract no notice at first, but its value was soon appreciat and he amassed a fortune of $2,000,000; received gold medal at the Paris Exposition (1867), and t cross of the Legion of Honor.

HUNTSMAN, BENJAMIN (1704–1776). A Briti clockmaker of Sheffield, England, who needed bett steel for his own use for watch springs. He devis the crucible steel process, kept it secret for a time, b the plan was revealed by a spy. It consisted simp of melting up small pieces of carbonized iron in a sm crucible. Such a method insured a harder, more u form product.

HUSSEY, OBED (1791–1859). A Nantucke Mass., sailor, who at last turned toward invention. 1833, after less than a year of experiment, he put successful mower in the field anticipating McCormi by at least a year. Taking up the shearing ide Hussey arranged a cutter-bar and fingers, throu which the cutting knives run, and this idea w adopted by all later mowers and reapers. Hussey al invented a type of hook and eye to replace buttons, can-crushing machine, and an artificial-ice machine.

HUTCHISON, MILLER REESE (1876– American inventor of the acousticon, the dictograp klaxon horn and several hundred other patented d vices, many of them having to do with applications electricity. Associated with the Edison interes (1901–17) in the improvement of storage batteri and after 1921 was president of his own company.

HYATT (*hī'at*), **JOHN WESLEY** (1837–1920 An American who patented various products, the chi of which are celluloid and its various adaptation such as the composition billiard ball. A system water purification designed by him is extensively us in American cities. Other important inventions are roller bearing, a stitching machine for sewing leath belts, a new type of crusher for sugar cane in t making of sugar, and a process for solidifying wo for billiard balls, croquet mallets, and the like.

IVES (*īvz*), **FREDERIC EUGENE** (1856–1937 American inventor of the first practical process of col photography and other improvements including t half-tone process now generally used in photo-engra ing (1886), and the three-color printing process no used largely in illustrations and works of art as r produced in papers and magazines. Among his oth numerous patents is one for the taking of moti pictures in colors. Recipient of numerous medals. was born in Litchfield, Conn., and lived for many yea in Philadelphia.

JACQUARD (*zha-kar'*), **JOSEPH MARIE** (175 1834). French mechanician, born at Lyons; know for the Jacquard loom publicly exhibited in 180 which invention revolutionized the art of weaving.

JENKINS, C. FRANCIS (1868–1934). Americ inventor of the first practical projector of life-size m tion pictures, a claim investigated by the Frankl Institute of Philadelphia and confirmed by awardi the inventor a medal in 1895, and the Scott med 18 years later for the usefulness of the machine. M Jenkins completed a first model in 1891, and i troduced it to the public at his home town, Richmon Indiana early in June, 1894. He was born north Dayton, Ohio, educated in Indiana and at Earlha College. In 1890 he became private secretary to S. Kimball, U. S. Life Saving Service. After 1895 devoted himself wholly to invention, and later esta lished his laboratory at Washington. He also pr duced the first photographs by radio (1922), a devi

for viewing distant scenes by radio (1923), and one for transmitting motion pictures to be seen directly on a screen at a distance (1925). Among his 400 other patents are the Jenkins landing altimeter, which enables an aviator to judge the decrease of the distance he is from the ground as he nears a landing point, and the high speed camera. For the U. S. Weather Bureau he perfected machinery for transmitting weather signals and maps by radio. He is a member of many learned societies.

JEROME, CHAUNCEY (1793–1868). Born in Connecticut, he worked for a number of years in a factory where they made clock wheels of wood. He turned out the first clocks with interchangeable brass wheels, and greatly increased the rate of output. Later he established a large factory in New Haven. In 1842 he began shipping clocks to Europe, but two first lots were confiscated, because he set so low a price that the English thought he was trying to beat the customs. At the time he could make and sell a clock for fifty cents. His last few years were spent in Chicago.

JOUFFROY D'ABBANS (*zhoo-frwah' dă-bän'*), **CLAUDE FRANCOIS, MARQUIS DE** (1751–1832). A French inventor and engineer; born at Roche-sur-Rognon, France; in 1776 launched a boat propelled by steam, on the Doubs; this experiment failed, as did likewise another attempt in 1783; Fulton admitted the merit of these experiments; it was not until 1816, 13 years after Fulton's success with the steamboat, that the government granted him permission to float his invention; this final attempt was also unsuccessful. In 1840 his claim was acknowledged by the French Academy.

KATER (*kā'tĕr*), **HENRY** (1777–1835). English scientist who served for a time in the army, attaining the rank of captain, and previously as a surveyor in India. After 1814, when he retired on half pay, he gave himself to invention and study. Among his important accomplishments were the determining of the length of the seconds pendulum at London and elsewhere and the floating collimator, an instrument, of great service in trigonometry. His investigation of the pendulum made it possible for a scientist to determine the length a pendulum should have at any point on earth.

KENNEDY, ALEXANDER (1847–1928). British engineer, who invented devices for the testing of materials to be used in building. He was one of the designers of the first compound marine engines used in the River Tyne in England. In 1874 he became professor of engineering at University College in London, a position he relinquished in 1889 to establish himself as a consulting engineer. Kennedy designed power units for Edinburgh, Manchester, Calcutta, India, towns in Japan, and other centers. He was also instrumental in using a conduit system for some of the underground tramways of London. Applications of his scientific training to actual problems have had a far-reaching effect.

KENT, ARTHUR ATWATER. See under CAPTAINS OF INDUSTRY.

KIER, SAMUEL (1813–1874). First man to refine rock oil or petroleum after the discovery in 1840 that oil burns. Kier about 1845 bottled his "carbon oil," as he named it first, and later sold huge quantities as "medicinal petroleum." In 1845 he erected a pumping station for oil on the banks of the Allegheny in Indiana County, Pennsylvania. He also invented and sold a lamp for burning the oil for lighting.

KRUPP (*krŏŏp*), **ALFRED** (1812–1887). German inventor, metallurgist, and manufacturer, born at Essen, Prussia; in 1852 he invented a method for manufacturing weldless railway tires; his steel siege gun, first made in 1847, was adopted by the Prussian army (1861). It was used with such success in the war of 1870–1871 as to bring Krupp world-wide fame. The Krupp works at Essen, Annen, Kiel, and Gruson in Magdeburg, employ about 43,100 persons.

LANGMUIR, IRVING (1881–). American chemist, who taught at Stephens Institute (1906–09), and then joined the staff of research workers of the General Electric Company, having been selected by the director, Willis R. Whitney to work on a problem in electricity. Dr. Whitney gave him leave to experiment as he saw fit on any important problem he thought worth consideration. For three years, with several assistants, he studied light and the making of electric bulbs. They discovered why bulbs became black inside after burning a time, found also that they would burn much brighter in the presence of nitrogen, and in the end revolutionized the making of electric bulbs. By using tungsten also, it was found that efficiency was multiplied three times. Hundreds of millions of these lamps have been sold. Langmuir has also investigated electron discharge, vacuum pumps, and during the war worked on devices to detect the presence of submarines. Many honors and awards have been granted him.

LANSTON, TOLBERT (1844–). Born in Ohio he served in the Civil War, and afterward was employed in the Pension Office for 22 years. In the meantime he studied law and mechanics. Some of his early inventions were an adding machine, a mail-pouch lock, and an adjustable horseshoe. Departing from the linotype machine used in printing, he developed the idea of casting type one at a time, so that each "job" could be printed with clean, fresh, unmarred type surfaces. Though he took out his patent in 1887, the first machine was not marketed till ten years later. The machine, now called a monotype, is worked like a typewriter, perforating a series of holes in a paper ribbon which proceeds to the casting-machine, and which turns out the finished types at 150 a minute. Thus it is a type-setting and type-casting machine in one.

LECHNER, FRANCIS (? –1915). Inventor of the first power horizontal coal-cutting machine, which was exhibited at Columbus, Ohio, in 1877. Through the help of Joseph A. Jeffrey a company was formed to improve and market the machines. This was the first of the modern efficient types of mining machines.

LEONARDO DA VINCI (*vēn'chē*) (1452–1519). Great Italian artist and author, who attempted to make an airplane, the best model until recent times, though modern science has shown it impractical. Leonardo, however, was the inventor of the parachute. See also under ART.

LESSEPS (*lĕ-sĕps'*), **FERDINAND, VICOMTE DE** (1805–1894). French diplomat and engineer, born in Versailles; evolved the scheme for the Suez Canal (1854), which was begun in 1860, and opened August 15, 1869; commenced the Panama Canal in 1881, but funds for the maintenance of the work were not forthcoming; the management was charged with fraud, and De Lesseps was sentenced to imprisonment and fine; the sentence, however, was never enforced; he received an English knighthood and the Grand Cross of the Legion of Honor for his work on the Suez Canal.

LEWIS, ISAAC NEWTON (1858–). An officer of the United States army who was born in Pennsylvania, was graduated from West Point in 1884, and attained the rank of colonel in 1913, when he was retired because of disability incurred in service. After an intensive study of army equipment in Europe (1900), he made suggestions adopted in rearming the U. S. troops. He invented the Lewis machine gun now in general use, an artillery range and position finder, a time interval clock and bell system of signals, and a quick firing field gun.

LILIENTHAL, OTTO (1848–1906). German inventor and aeronaut, who studied the flight of birds, made important observations of the curvature of their wings, and built an airplane capable of gliding. He first demonstrated the value of curved over flat surfaces in plane construction. After making over 2,000 successful flights, he was killed when his machine upset in a gust at Rhinow.

LIPPMAN, GABRIEL (1845–1921). A French physicist who made important contributions in color photography in which he utilized certain principles of wave motions. This is called the interferential principle of photography. He became professor of physics in the University of Paris and the Sorbonne in 1883. Some of his other inventions were the capillary electrometer, a seismograph that gives the acceleration of the earth directly, an electric connection that does not depend on pressure.

LITTLE, ARTHUR DEHON (1863–1935). Chemical engineer, engaged in practice in Boston from 1886. He superintended the first attempts to make sulphite wood pulp in America (1884). Invented a process of chrome tanning, the electrolytic manufacture of chlorides, artificial silk, gas and petroleum, including the cracking of gasoline by a method which takes out much of the knock. He founded the school of chemical engineering of his alma mater, the Massachusetts Institute of Technology; was a member of the division of engineering of the National Research Council; organized a survey of natural resources for the Canadian Pacific Railway; and in the World War carried on various special investigations.

MacADAM, JOHN LOUDON (1756–1836). Scotch engineer, born in Ayr, Scotland, known for the process of "macadamizing"; came to America in 1770, where he made a considerable fortune, and returned to England in 1783; about the year 1810 he became interested in roadmaking, and evolved the process associated with his name; put his theory to practical use at Bristol (1815), and his roads attracted such attention that his method was considered by a committee of the House of Commons as early as 1819. He was voted the sum of $50,000, and, in 1827, was made surveyor general of metropolitan roads. He declined knighthood.

McCORMICK, CYRUS HALL (1809–1884). American inventor born at Walnut Grove, Va.; common school education; patented his first reaping machine (1834); in 1847 he established the McCormick Harvesting Company at Chicago. His inventions have played an important part in the agricultural development of the United States.

McKAY, GORDON (1821–1905). Inventor of machinery used in the manufacture of shoes, including the heeler, the lasting, and nailing machines, which came into universal use. He was born in Pittsfield, Mass. As early as 1860 he perfected a sewing machine originally invented by L. R. Blake. The bulk of his fortune was willed to Harvard University.

MARCONI (*mär-kō'nē*), **WILLIAM** (1874–1937). Italian electrical engineer, born at Griffone, near Bologna; experimented privately with wireless telegraphy (1895), and put his ideas into practical use in England (1896); established communication across the English channel (1899); between Cornwall, England, and Newfoundland (1901); visited the United States, hoping to induce the government to buy the right to use his system; failed in this, but in 1904 the British post office entered into an agreement with him for the transmission of wireless messages; his system is in use in various European navies, notably those of Great Britain and Italy.

MATHEWS, JOHN ALEXANDER (1872–1935). American inventor of non-corrosive steel alloys, who was born and educated in Washington, Pennsylvania, taught chemistry for two years (1898–1900) at Columbia in New York, and then began to experiment in steel and various combinations. While at the Halcomb Steel Company at Syracuse, New York, he perfected (1906) the use of the first electric furnace to be installed on a grand scale for manufacture of steel in America, and there was able to turn out various steel alloys in quantity. Three years previously he had first used vanadium in high-speed steels. Later nickel and chromium were also used to make stainless steel for use in cutlery, chemical containers, and general purposes where corrosion must not be allowed. Mathews has studied much abroad, has written numerous scientific papers, and after serving as general manager for seven years and president for five of the Halcomb Steel Company, in 1920 became vice president of the Crucible Steel Company of America.

MATZELIGER, JAN EARNST (1857–1889). Inventor of the lasting machine which greatly changed the making of shoes. He was a native of Dutch Guiana, his father being Dutch, and his mother a native black. In 1880, after working some time he made a model of a mechanical laster which his shopmates in derision called a "niggerhead," a name still current. Before he died, a fourth model had been perfected, and success assured. He left his small fortune to the churches of Lynn, Mass., where he worked and died. By this invention one man could last several hundred pairs of shoes a day, instead of less than a hundred as formerly.

MAUDSLEY (*mōdz'li*), **HENRY** (1770–1831). A British inventor of machines for making lock parts, an improved type of lathe, and a machine for producing screw threads of any pitch desired. For eight years he worked in the lock shop of Joseph Bramah, for whom he made (1795) a lathe having a slide-rest. In 1801 he began to design a series of machines suitable for turning out tackle blocks for the navy, and seven years later the first products were finished. It required 44 machines in all, and they were used for a half century at the dockyard at Portsmouth.

MAXIM, SIR HIRAM S. (1840–1916). English inventor, born at Sangerville, Me.; obtained a patent for an incandescent lamp (1877); secured patents for the gun named after him (1881–1882); removed to London, and began the manufacture of his firearm (1888); in later years he gave much thought to the problem of aërial navigation; knighted in 1901.

MERGENTHALER (*mĕr'gĕn-tä-lĕr*), **OTTMAR** (1854–1899). American inventor, born in Württemberg, Germany; in 1872 he came to the United States and took a government position at Washington, where the signal service apparatus, bells, clocks, etc., were assigned to his care; became associated in 1876 with a mechanical engineering firm in Baltimore, Md., and later, while in the employ of the firm, he began experiments which resulted in the typesetting machine connected with his name.

MONTGOLFIER (*mont-gol'fi-ar*), **JOSEPH MICHEL** (1740–1810), and **JACQUES ETIENNE** (1745–1799). French inventors, born at Vidalon-lez-Annonay, in Ardèche, France; made the first balloon (1783), and ascended from Annonay, heated air being used to inflate the balloon. Joseph was the inventor also of a parachute and the water ram. The brothers recieved many honors.

MORSE, SAMUEL FINLEY BREESE (1791–1872). American inventor, born at Charlestown, Mass.; was graduated at Yale (1810); studied painting in England; returned to America and became professor of the history of art, at New York University; successfully operated his recording magnetic telegraph (1835); improved in his instrument and endeavored to interest the Government in his invention, but it was not until 1843 that he received an appropriation of $30,000 for the construction of a line between Washington and Baltimore; this was successfully completed in 1844; the first submarine telegraph line was laid by Morse in New York harbor (1842).

MURDOCK (*mūr'dok*), **WILLIAM** (1754–1839). British inventor, born in Ayrshire, and employed for a number of years with Boulton and Watt in their factory making steam engines. In 1792 he was able to distill gas enough from coal to heat his cottage at Redruth, Cornwall, where he worked setting up the Watt engines. In 1799 he lighted part of a factory at Birmingham with gas. Murdock made improvements on Watt's engine, was the first to devise an oscillating engine (about 1784), and tried to perfect a single cylinder steam-engine for road use, a model of which is in the British Museum. He also made use of compressed air, patented a process for boring stone (1810), devised an iron glue from chips of iron mixed with sal ammoniac, and constructed a steam gun.

NASMYTH (*nē'smith*), **JAMES** (1808–1890). A Scotch engineer, who invented the steam hammer, was born in Edinburgh, the youngest son of the great painter of landscapes, Alexander Nasmyth. In 1839 he made a drawing of the hammer, but this was not used till 1842. Watt apparently had a similar idea in mind. Nasmyth devised a planing machine, a steam piledriver, different types of hydraulic machinery, and other practical devices.

NEWCOMEN (*nū-kŭm ĕn*), **THOMAS** (1663–1729). English engineer who perfected the atmospheric steam engine or the vacuum air pump with driving piston. In his machine a jet of steam in the cylinder was suddenly cooled by means of a stream of cold water, and this produced a vacuum into which the piston was drawn through pressure of the air on the other side. He was associated with Thomas Savery and John Cawley in much of his experiments, the former having already patented a method of drawing water from wells. Newcomen and Savery also produced a pumping engine that served as a standard for fifty years. James Watt's interest in their work gave him an idea for the invention of the steam engine.

NIEPCE (*ny-eps'*), **JOSEPH** (1765–1833). French inventor; his several inventions include making pictures on metal plates (1813), and the process of fixing images of the camera obscura (1824); Daguerre (1826) perfected Niepce's invention, gaining the title "inventor of photography," which seems to belong to Niepce.

NOBEL (*nō-bel'*), **ALFRED BERNARD** (1833–1896). A Swedish inventor and philanthropist; born at Stockholm; aided his father in the manufacture of explosives in Russia (1842); studied mechanical engineering under John Ericsson in the United States (1850–1854); invented a gasometer (1857), and an instrument for measuring liquids (1859); in 1867 invented dynamite or giant powder; of his 129 inventions the more important are dynamite, ballistite, the earliest of modern smokeless powders, and artificial india rubber; owned 15 dynamite factories in different parts of the world; left his fortune of $9,000,000 for the foundation of the Nobel Prizes, the interest on which sum is to be divided equally and distributed

annually between those five persons making the most important discoveries in physics, chemistry, physiology, or medicine, and for the production of idealistic literature and the promotion of universal peace.

OERSTED (*ûr stĕth*), **HANS CHRISTIAN.** See under SCIENTISTS.

OTIS, ELISHA GRAY (1811–1861). American perfector of the safety elevator for use in buildings, was born in Vermont, and erected factories at Albany and Yonkers, N. Y. By his patent a large passenger elevator is prevented from falling even though its cables should suddenly break. Later developments in this type of lift have made large skyscraper office buildings possible.

OWENS, MICHAEL JOSEPH (1859–1923). Inventor of the Owens glass-blowing machines, was born in West Virginia, lived for a time in Wheeling, and then in Ohio. In 1895 he perfected his first machine for casting glass moulds, formerly blown by glass-workers. In 1898 he perfected the bottle blowing machine, which is adapted for large or small containers. The machine consists of a number of blowing-irons, on the ends of which the molten glass is gathered, and then a jet of compressed air is released, and the mass is forced into a mold the exact size and shape of the container desired. This machine, in some types of glass, has revolutionized the making of smaller objects, not requiring special design or skill.

PALISSY (*pâ-lē-sē'*), **BERNARD** (about 1509–1589). Famous French potter, born in Agen; settled at Saintes (1539) and, after 16 years of the hardest labor discovered a process for the production of fine enamel; received royal patronage, but was imprisoned in the Bastille (1585), where he died.

PARSONS, CHARLES ALGERNON (1854–1931). British inventor of an improved type of steam turbine consisting of both fixed and moving blades, the one on a casing, the other on a moving shaft. This proved most efficient, and allowed the building of dynamos of much greater power than the old DeLaval turbines had. The *Mauretania* and other modern ships are equipped with these Parsons turbines. Parsons was the son of the Earl of Rosse and was graduated with high honors from Cambridge University. The first patent for his turbine was issued in 1884. He was knighted in 1911.

PARSONS, WILLIAM BARCLAY. See under SCIENTISTS.

PERKIN, WILLIAM HENRY (1838–1907). English chemist who discovered and perfected aniline dyes, and who was born in London, attended City College, but left early to enter the laboratory of A. W. von Hoffman. Trying to produce artificial quinine from coal tar, which seemed to have some of the properties of the natural medicine, he discovered (1856) that a black powder remaining after oxidation of the impure tar could be made into a beautiful bluish dye. Later he produced alizarin, an artificial red equal to Turkey red from the madder root. He subsequently produced other dyes, coumarin, and various substances. After 1878 he devoted his time to pure science.

PITTS, HIRAM ABIAL (1799–1860). Born in Maine he secured a patent on a treadmill in 1830, and with his brother, John A., perfected a thresher in 1834. His design was very similar to that of modern threshers. He was the first to combine the fanning mill with the thresher, to devise a method of measuring the number of bushels of grain threshed, and to secure any heads or parts that escaped the fanning process.

POPE, FRANKLIN LEONARD (1840–1895). American inventor, who began as a telegraph operator in Great Barington, Mass., were he was born, and later (1857–62) worked at Providence, R. I. In 1867 he joined with Edison and they invented the telegraph ticker, since used entensively in giving stock quotations. In 1872 he invented a rail circuit control for railroads, and seven years later perfected an automatic semaphore system. He made some improvements in telegraph instruments, acted as patent attorney for the Western Union Company, and was president of the American Institute of Electrical Engineers (1895). While assisting in the installation of an electric plant at Great Barrington, he was accidentally electrocuted by a current of 3,000 volts.

PUPIN (*pû-pēn'*), **MICHAEL IDVORSKY** (1858–1935). Hungarian-American inventor of improvements in long distance telephony, electrical wave transmission, and multiplex telegraphy. Having discovered the secondary X-ray radiation (1896), he invented a means of making a short exposure by interposing a fluorescent screen. Born in Hungary, he came to America at 16, was graduated from Columbia University, and then studied at Cambridge, England, then under von Helmholtz at Berlin. Becoming instructor at Columbia in 1890, in 1901 he was made professor of electromechanics. He wrote *From Immigrant to Inventor.*

PULLMAN, GEORGE MORTIMER (1831–1897). He was born in Chautauqua County, New York, worked as a cabinet maker for a time at Albion, and became a contractor in Chicago. He built the first sleeping car (1863), and four years later organized the Pullman Company, of which he was president till his death. Vestibuled trains originated from his suggestions (1887). Pullman was an organizer of the Manhattan Elevated Railway of New York and of other business enterprises. In 1880 he founded a model town in Illinois, which for years attracted no little attention and imitation.

READ, NATHAN (1759–1849). American inventor; born in Warren, Mass.; was graduated at Harvard (1781); built a small boat propelled by steam (1789) and a carriage driven by the same motive power (1790); established an iron works at Salem (1796), and made machinery for the manufacture of nails, for pumping, and for threshing; was a member of Congress (1800–1803), and removed to Belfast, Me. (1807); Read's multitubular boiler, invented in 1789, also deserves mention; he was one of the earliest inventors to apply steam to the propulsion of carriages and boats.

REESE, CHARLES LEE (1862–). American chemist, born in Baltimore and a graduate of the University of Virginia and of Heidelberg, Germany (1886). He taught in several colleges, was connected with the New Jersey Zinc Company (1902–06), and then with the Dupont Company actively till 1924. After the World War he converted vast quantities of deadly chemicals into explosives, especially into sodatol, a new product. Thus he and his assistants saved valuable products. He perfected the contact method of making commercially a fuming sulphuric acid; invented a type of dynamite that will not freeze; and, as director of research of the Dupont Company, produced a variety of products, including artificial leather, pyralin, artificial silk, and lacquers.

REICHENBACH (*rī'hen-bäh*), **KARL, BARON VON** (1788–1869). A German physicist and manufacturer; born at Stuttgart; established foundries in Moravia; was the discoverer of paraffin (1830) and creosote (1833); discovered, as he thought, a new force intermediate between electricity, magnetism, heat, and light, and which he called Od; wrote *Geological Researches in Moravia,* and *Researches on Magnetism.*

REYNOLDS, EDWIN (1831–1909). Inventor of the Reynolds-Corliss engines; introduced the first tripple expansion pumping engine; cross-compound hoisting engine for mining work, and several others.

ROBINSON, STILLMAN WILLIAMS (1838–1911). Inventor and engineering expert; invented the thermometer graduating machine, and various machines for shoe manufacture, having secured about forty patents; author of several books on mechanics.

ROWLAND, HENRY AUGUSTUS (1848–1901). He was born in Pennsylvania, took a course at Rensselaer Institute of Troy, N. Y., and from 1876 to 1901 was a professor of physics at Johns Hopkins University. Among his inventions are the Siemens drum-head armature and a printing telegraph machine, which enables the operator to control the printing of a message at the other end just as a person operates an ordinary typewriter. He also photographed the solar spectrum without the use of plates, and ruled a mirror with 48,000 lines or "gratings" to the inch. See also under SCIENTISTS.

SIANTOS-DUMONT (*sän'tôs dü-môn*), **ALBERTO** (1873–1932). Brazilian aëronaut, born in Sao Paulo; his first balloon ascension was made in 1897 at Paris; he applied the gasolene engine and propeller to an elongated balloon in 1898; attempted to make a dirigible airship, and in 1901 won the Deutsch prize of $20,000; in the same year he was awarded the Encouragement Prize of the Paris Aëro Club, and received a medal from the Brazilian government; he made several successful flights near Monte Carlo in 1902.

SCRIBNER, CHARLES EZRA (1858–). Known as the "wizard of the telephone switchboard," he has taken out nearly 500 patents on various telephone devices and improvements. From 1876 to his

retirement he was connected with the Western Electric Company. Many of the devices now generally used in the switchboard are of his invention.

SENEFELDER, ALOYS (1771–1834). Inventor of the lithographic process, a Bohemian actor and dramatic author, who turned to the printing trade because he was too poor to pay for having his works published. He tried to make his own engravings, but copper-plates were expensive. Finally, almost by accident he discovered that stone could be treated with aqua fortis, a part eaten away in any form of design wished, if a wax coating were used to protect the parts that were to remain "unbitten" by the acid. Thus in 1798 he was able to make fair impressions from stone prepared in this manner, and in 1806 he received help from the government. The king of Bavaria afterward gave him a handsome pension. Before he died his process was in common use. Senefelder published his *Elements of Lithography* (1819), a book curiously illustrated with his own designs, and translated by him into English and French.

SHOLES, CHRISTOPHER LATHAM (1819–1890). Originally a printer by trade, Sholes went to Milwaukee from Pennsylvania, and there became an editor, a member of the Legislature, and for a time postmaster. Some of his early inventions were a device for printing names on the margins of newspapers for mailing, a machine to stamp numbers on bills or on the pages of a blank book, and some improvements in telegraphy. In June, 1868, he demonstrated a crude but practical machine that wrote capitals only. This was improved by Sholes, Carlos S. Gildeen, Charles Weller,—and by others after the rights were transferred to the Remington Company in 1873. About 400 machines were sold in 1874. Before Sholes disposed of his rights, James Densmore had helped finance the project.

SIEMENS (*zī'mens*), **SIR CHARLES WILLIAM** (1823–1883). German-English electrician, born at Lenthe, Hanover; removed to England (1844); constructed a regenerative furnace, which was applied to iron and steel working; in 1866 established steel works at Landore, Wales, and, in 1869, a factory at Charlton, West Woolwich for the manufacture of submarine electric telegraph apparatus; took an active part in the laying of the Atlantic cable (1874); the universities of Oxford, Dublin, Glasgow, and Würzburg awarded him honorary degrees; was president of several scientific organizations; knighted in 1883.

SMEATON (*smē'tan*), **JOHN** (1724–1792). English civil engineer, born in Austhorpe, near Leeds, designed a machine for measuring a ship's way at sea (1751); became a fellow of the Royal Society (1753); designed and rebuilt the Eddystone lighthouse (1756–1758); afterwards built several bridges, and was the engineer of the Forth and Clyde canal. Smeaton also made important improvements on Newcomen's engine.

SOLVAY, ERNEST. See CAPTAINS OF INDUSTRY.

SPERRY, ELMER AMBROSE (1860–1930). An American electrical engineer, who was born in Cortland, N. Y., and was educated there and at Cornell. He was the inventor of the gyroscope, the first electric pick machine for mining, stabilizers for airplanes, a compound internal combustion engine, fire control apparatus, and numerous other machines, including an electric automobile. From many societies and several foreign nations he received awards or decorations.

SPRAGUE, FRANK JULIAN (1857–1934). Pioneer inventor in electric railway operation in the United States. He was born in Connecticut, educated at the United States Naval Academy, and remained in the naval service five years, till 1883. The first modern trolley railway was equipped by him at Richmond, Va., in 1887, followed by 100 similar installations in America and Europe. Invented the multiple-unit control of electric railways, and also a type of automatic signal and brake control, and was a pioneer in underground railway installation.

STEINMETZ (*stīn'mĕts*), **CHARLES PROTEUS** (1865–1923). American electrical expert and inventor, who was born in Germany, educated there, and came to the United States in 1889. After being connected with a factory at Yonkers, N. Y., he joined the staff of the General Electric Company (1893), and became professor at Union College (1902). Besides patenting scores of devices, Steinmetz made important investigations in magnetism and electricity, a method of calculating alternating current performance which made this type more popular for lighting and other purposes, and the investigating of lightning effects, in connection with which he invented valuable arresters for use in high-tension transmission lines to prevent them from being struck by lightning. Other inventions improve dynamos, transformers, and motors.

STEPHENSON (*stē'ven-san*), **GEORGE** (1781–1848). English engineer; born at Wylam, near Newcastle; inventor of the locomotive; invented a colliery safety lamp (1815); was appointed engineer of the Stockton and Darlington Railway (1821); completed the Liverpool and Manchester Railway (1829). His locomotive *Rocket* (1830) ran 30 miles an hour, outstripping all rivals.

STEPHENSON, ROBERT (1803–1859). English engineer, son of George Stephenson; was in South America (1824–1827); became engineer of the London and Birmingham line completed in 1838; built bridges at Montreal (1859), and over the Menai Strait (1854). Known as the inventor of the tubular bridge.

STEVENS, JOHN (1749–1838). An American inventor of the multi-tubular boiler for use in steamboats, a screw propeller adapted to use in a steamboat, which proved impractical only because the boilers of the day failed to generate enough steam to run the two propellers fitted to his steamboat in 1802. Then he turned his attention to the building of better steam-boilers. Stevens's *Phœnix*, on a trip to Philadelphia from what is now Hoboken, N. J., was the first steamship to navigate on any ocean. In 1832 he completed the first railway across New Jersey, which his sons later operated.

STEVENS, ROBERT LIVINGSTON (1787–1856). Son of John Stevens (q. v.), and followed his father's inventions by further designs of ships to make them faster, so that his *New Philadelphia* was the first boat able to ply between New York and Albany by daylight. He also built a ferryboat, introduced the T-rail for use in railways, the wooden tie for use instead of a stone one, and the spikes to hold the rail to the ties. He first used eight wheels for locomotive trucks, and made other improvements in them. For recreation he took up yachting, and built the first yacht to defeat all English challengers, and so founded the American cup races.

TESLA (*tĕs'lă*), **NIKOLA** (1857–). Coming to the United States from the Austrian Croatia in 1884, Tesla for a time was connected with the Edison laboratories, and then set up his own in New York City. Among his many inventions were the induction motor (1888), various devices to use alternating instead of direct current, and he utilized the idea of the rotary magnetic field in the plan for the transmission of power from Niagara Falls, besides many new types of dynamos, electric lamps, induction coils, and condensers.

THOMSON, ELIHU (1853–1937). Of more than 500 patents the chief inventions of Thomson are the process of electric welding now in common use, the first high frequency dynamo (1890), the watt-hour meter for measuring the amount of electricity consumed, and many other improvements in electrical machinery.

THOMSON, WILLIAM, LORD KELVIN. See SCIENTISTS.

TREVITHICK (*trev'e-thik*), **RICHARD** (1771–1833). An English mechanic, born in Cornwall, and in one sense was the father of the modern engine propelled by the steam. In 1796 he placed on exhibition in London a model of his engine, and by 1804 he had constructed "road wagons" propelled by steam engines capable of drawing twenty tons of iron ore. It is said his invention was used in Wales in 1801 to transport passengers. For lack of financial support his efforts came to naught.

TRIPLER, CHARLES EASTMAN (1849–1906). An American physicist, who first made liquid air on a large scale (1895) by use of a machine of his own design for compressing the atmosphere at a temperature of 200 degrees below zero. Linde in Germany and Hampson and Dewar in England made similar experiments about the same time. Tripler in public lectures made the study of liquefaction of gases interesting and popular.

TROUVE, GUSTAVE (1839–1902). French electrician; invented electric polyscope, by which every cavity in the human body may be explored; lamps for use in dangerous places; wound explorer; portable telegraph for use in war; electric motors for small boats.

VAN DEPOLE, CHARLES J. († –1892). Pioneer in the perfection of trolley systems in America, and the inventor of over 250 electrical devices. He

was born in Belgium, came to America in 1846, and perfected the original trolley, first made and named by J. C. Henry. In 1878 he exhibited an immense arc lamp, in 1883 built two trolley roads, and numerous lines thereafter. His electrical training was received in the school at Lille, France, and for several years after he came to the United States he made church fittings at Detroit.

VOGT (*fōht*), **HANS** (1890–). A German who produced a talking film in 1922, after several years of experiment, during which time he had been assisted by Joseph Massolle and Dr. Engl. In his system the voice is photographed directly on the film band and is afterward changed, following adjustments, into light pulsings. It is then reproduced by an electrostatic telephone arrangement.

WATT, JAMES (1736–1819). Scotch engineer and inventor, born at Greenock; famous for his improvements on the steam engine; Watt's engine quickly replaced Newcomen's. He is said to have also discovered the composition of water.

WEDGWOOD, JOSIAH. See under CAPTAINS OF INDUSTRY.

WELSBACH (*vĕls'bäk*), **KARL AUER, BARON VON** (1858–1929). An Austrian nobleman who studied in the laboratories of Bunsen, devoting himself to chemistry as a diversion. While investigating certain rare earth elements, he discovered by accident that a thread of cloth dipped in a solution of thorium and cerium would burn with a brilliant flame. When he made a mantle of cotton cloth, dipped this into a solution, and then lit a flame to it, he found that the form remained of the rare-earth particles after the cloth was consumed. After two years of experimenting to get a mantle strong enough to last he organized a company which turned out the first products in 1885.

WESTINGHOUSE, GEORGE. See under CAPTAINS OF INDUSTRY.

WHEATSTONE (*hwēt'stōn*), **SIR CHARLES** (1802–1875). An English electrician; born near Gloucester; published five papers as a result of his researches on sound (1833); patented an instrument for giving signals by electricity, which proved to be the forerunner of the telegraph; invented the stereoscope (1838), and in 1843 produced instruments for measuring the constants of a voltaic series; brought into public notice an electrical device known as Wheatstone's Bridge.

WHEELER, SAMUEL (1742–1820). A gun inventor, who began as a blacksmith, and served for a time in the Revolutionary War. He secured leave from the army to return to his home and forge in Pennsylvania to make a chain for Washington's men to stretch across the Hudson to prevent the British boats from going up. Among his other inventions was a cannon used at Brandywine, and later in England, a weigher for hay, and a lantern for lighthouses.

WHEELER, SCHUYLER (1860–1926). American who worked with Edison in the development of electric power in New York. He applied electricity to driving tools direct, a motor for use with the Gatling gun, and was the first to introduce a form of electric fan (1886), for which the Franklin Institute gave him the Scott prize in 1904.

WHITWORTH, JOSEPH (1803–1887). British inventor who did much to develop accuracy in instruments, and maker of the first really accurate plane surfaces. He also perfected a standard design for pitch of screws, a measuring machine that was accurate to the ten-thousandths of an inch, and certain improvements in cannon and other arms. To provide a steel of sufficient hardness, he also devised a method of pressing it while in the molten state. In 1869 he was made a baronet. Much of his fortune was left to found scholarships to train artisans.

WHITNEY, ELI (1765–1825). American inventor, born in Westborough, Mass.; was graduated at Yale (1792), and went to work in Georgia; is best known as the inventor of the cotton-gin (patented 1794), but was also very successful in the manufacture of firearms; factory was located at Whitneyville, Ct.

WILKINSON, DAVID (1771–1852). In 1797 he invented the sliding rest for the lathe, but this netted him little, until a grateful Congress in 1848 voted him a grant of $10,000, since this machine had proved extremely useful to the government, notably to the navy. He probably also designed the machinery for Slater's mill at Providence for making woolen cloth.

WILKINSON, JOHN (1728–1808). Beginning with a box-iron invented when he was a boy and patented by his father, Wilkinson became interested in casting different iron products. He perfected a boring machine which Watt used on his engine cylinders, constructed the first iron barge suitable for conveying iron products down the Severn River, and later built the first iron bridge, which connected Broseley and Madeley on the Severn. Wilkinson taught the French how to bore cannon from solid blocks, and his iron works constructed all the pipes and other metal needed for the water works of Paris, one of the greatest engineering feats of the age.

WILSON, ALLEN BENJAMIN (1824–1888). Born in New York, Wilson lived for a time in Pittsfield, Mass., where he invented a new type of sewing machine (1849). He used the double-pointed shuttle, which made one stitch on the forward movement, and one on the backward. This principle was unlike Howe's in the sewing machine. In 1857 he perfected a rotary hook and bobbin and an improved lock-stitch machine. After 1856 he lived in Bridgeport, Conn., where the Wheeler and Wilson Company established a large factory.

WOOD, HENRY A. WISE (1866–1939). Inventor of the autoplate casting machine for making stereotype plates for newspapers. He was born in New York City, the son of Fernando Wood, thrice mayor and member of Congress for 20 years. His newspaper inventions have doubled the speed of printing. The autoplate machine does with three men what eighteen once did at great labor and pain. He took an especial interest in flying, being editor of *Flying Magazine* (1911–19). Awarded gold medal by Franklin Institute.

WOOD, JETHRO (1774–c. 1840). He was the first to devise removable parts for plows to replace worn shares and coulters. Cast iron was substituted for wrought by him with considerable success.

WORCESTER (*wus'ter*), **EDWARD SOMERSET, MARQUIS DE** (about 1601–1667). English inventor of the steam engine; served King Charles during the Civil War; imprisoned in the Tower (1654) because of his failure to raise troops in Ireland for the king; published a *Century of Invention* (1663), which gives an account of the invention of ciphers, signals, mechanical appliances, and of the working of the steam engine invented by him.

WRIGHT, WILBUR (1867–1912). An American aëronaut, born in Dayton, Ohio; invented and demonstrated flying machine, with aid of his brother Orville, first tested the machine at Kitty Hawk, N. C., in 1903; a successful long distance test was made near his birthplace. See under AVIATION.

ZEPPELIN (*tsĕp'ĕ-lin*), **FERDINAND, COUNT VON** (1839–1917). German inventor of various forms of airships, who was born in Baden, served in the army and also on the union side in the American Civil War. In 1891 he retired with the rank of general. After 1900 he made various improvements in airships. See under AVIATION.

AIKINS, JAMES ALBERT MANNING (1851–1929). Canadian solicitor; lieutenant governor of Manitoba (1916–26); M. P. for Brandon (1911–15). Born in Upper Canada, educated at University of Toronto, and called to the bar in 1878. President Canadian Bar Association (1914–24); bencher, Law Society, University of Manitoba from 1882; president of the Commissioners on Uniformity of Laws (1918–23).

AKERMAN, AMOS TAPPAN (1823–1880). Attorney general; born in New Hampshire; was graduated from Dartmouth (1842); admitted to the bar (1844); practised in New Hampshire till 1850, when he removed to Elberton, Ga.; at the opening of the Civil War entered the service of the Confederate government in the quartermaster's department; after the war gave his support to the reconstruction policy of the government; served as United States attorney for the district of Georgia from 1866 to 1870; appointed in the latter year attorney general of the United States; was Republican candidate for United States senator but failed of an election (1873).

AMES, JAMES BARR (1846–1910). Dean of the Harvard Law School from 1895 to his death. He was born in Boston, studied in arts and law at Harvard, and taught there from 1877. Besides a great number of articles in the *Harvard Law Review* and others, he was the author of numerous books, including texts and cases on torts, pleading, partnership, and admiralty.

ANSON, WILLIAM REYNELL (1843–1914). He was born in Sussex, educated at Eton College and Oxford, and in 1874 became Vinerian reader of law, and in 1881 warden of All Souls College. After holding various political offices, in 1890 he was returned to Parliament from the University of Oxford. He was one of those who took an interest in founding a school of Law for Oxford. Two of his treatises, *The Principles of the English Law of Contracts* and *Law and Custom of the Constitution*, have been much used in England.

ALLISON, WILLIAM BOYD (1829–1908). An American lawyer; born at Perry, Ohio; studied law and practised in Ohio until his removal to Iowa (1857); was on the governor's staff during the Civil War; elected to the House of Representatives, serving from 1863 to 1871; in 1872 was elected to the United States Senate, and reëlected five times; the Bland-Allison Act was due to him; representative to Brussels Monetary Conference (1892); prominent in Republican national conventions for presidential nomination (1888, 1896).

ARCHAMBEAULT (*arch'ăm-bōlt*), **HON. HORACE** (1857–1918). Born at L'Assumption, P. Q.; educated at local college and graduated LL.B. with distinction at Laval University (1878); LL.D. (1886). Called to bar (1878); professor of science and law (since 1881); member Legislative Council of Province of Quebec (1888); of Council of Public Instruction (1890); created queen's counsel (1890); attorney general (1897); puisne judge Court of King's Bench, Province Quebec (1907).

BACON, FRANCIS (1561–1626). English essayist, scientist, and student of law, was born in London, was entered at Gray's Inn for legal study (1576), became solicitor in 1607, treasurer of Gray's Inn the following year, and gradually advanced in favor of the court. In January 1618 he became lord chancellor, the same year was made Baron Verulam, and two years later Viscount St. Albans. In 1621 he was removed from office on confession of having received bribes, a custom all too common, but still admitted by Bacon as without good defense. For the rest of his life he retired to study and to complete his scientific and literary labors, including the great *Essays*. He wrote several important legal works, such as *Maxims of the Law, Proposal for Amending the Laws of England, Brief Discourse on the Commission of Bridewell*, and advocated a new codification of English laws. See INDEX for mention in other sections.

BALDWIN, SIMEON EBEN (1840–1927). Born in New Haven, Connecticut, he prepared in law at Yale and Harvard, was instructor (1869–72), and professor of law at Yale till his death. From 1893 to 1907 he was associate justice, and from 1907 to 1910, chief justice of the Court of Errors of Connecticut; governor of Connecticut, 1911–15. He took part in efforts of committees to perfect the statutes and system of taxation of his state. Member and officer of various legal and international societies. Among his books are *Cases on Railroad Law, American Judiciary*, and *The Young Man and the Law*.

BARCLAY, THOMAS (1853–). Of Scotch birth, he was educated at London, Paris, and Jena, acted as correspondent for *The Times*, and was called to the bar in 1881, after which he made a thorough study of law practice in France. Becoming an advocate of better international relations, he visited France, the United States, and Germany, seeking to create interest in arbitration treaties. In 1910 he became a Liberal member of Parliament. Among his important works on law are *Problems of International Practice and Diplomacy, International Law and Practice, Le Président Wilson et l'évolution de la Politique étrangère des Etats-Unis* (1918).

BECK, JAMES MONTGOMERY (1861–1936). Solicitor general of the United States from 1921 to 1925, was educated at the Moravian College at Bethlehem, Pennsylvania. Admitted to the bar in 1884, he held successively positions as U. S. attorney in Eastern Pennsylvania and assistant U. S. attorney general, and then from 1903 to 1921 was a member of law firms in New York City. Delivered many orations on various notable occasions. Author of *War and Humanity, The Passing of the New Freedom*, and *The Constitution of the United States*.

BENJAMIN, JUDAH PHILIP (1811–1884). American lawyer and statesman; born in St. Croix, West Indies, of English-Jewish parentage; admitted to the bar in New Orleans (1832); admitted to practice before Supreme Court; United States senator from Louisiana (1852–1861); withdrew from Senate (1861); was appointed attorney general in provisional cabinet of President Davis; was Confederate secretary of war and in 1862 secretary of state; fled to England on the surrender of Lee at Appomattox; admitted to the English bar (1866); became queen's counsel (1872). In 1868 he published a *Treatise on the Law of Sale of Personal Property*, which is known as a legal classic. In 1881 he retired and went to Paris.

BENTHAM, JEREMY (1748–1832). English philosopher and jurist, a graduate of Oxford (1763) and a student in Lincoln's Inn. He listened to Lord Mansfield and heard Blackstone's lectures on law. Among his works, *Fragment on Government* is a criticism of the *Commentaries* of Blackstone; *Theory of Punishment and Rewards, Treatise on Judicial Proofs*, and *Judicial Organization and Codification* are concerned with changes in the system of administering law. Though Bentham was trained for the law, he practiced little, and later turned to political philosophy. Yet his influence was great.

BERRIEN, JOHN MACPHERSON (1781–1856). Statesman, jurist; born in New Jersey; was graduated from Princeton (1796); admitted to the bar of Georgia (1799), solicitor of the eastern district of Georgia (1809); judge of the same district (1810–1821); sat in Georgia senate (1822–1823); member of United States Senate (1825–1829 and 1840–1852); attorney general of the United States in President Jackson's cabinet (1829–1831); his eloquence before Congress gained him the title of "American Cicero."

BLACK, JEREMIAH SULLIVAN (1810–1883). American jurist; born in Glade, Pa.; admitted to the bar (1831); attorney general of the United States (1857); secretary of state (1860); on the accession of President Lincoln retired from public life; in 1868 counsel for President Johnson in the impeachment case, but withdrew after the answer had been filed; counsel for Tilden before the electoral commission (1877).

BLACKSTONE, SIR WILLIAM (1723–1780). A celebrated commentator on English law, born in London; educated at Oxford; admitted to the bar (1746); lecturer on law at Oxford (1753–1758) when he became first professor of English law; successively (1761–1780) king's counsel, member of Parliament, bencher of Middle Temple, solicitor general to the queen, and judge in the court of Common Pleas. He published (1765–1769) the lectures which form the famous *Commentaries of the Laws of England*, upon which his fame chiefly rests. This most influential treatise is the foundation of all legal education in America and England.

BLAIR, HENRY WILLIAM (1834–1920). American lawyer; born in Campton, N. H.; admitted to bar (1859); served in Civil War; in New Hampshire house of representatives and in state senate (1866–1868); Republican member of Congress (1875–1879); United States senator (1879–1891); framed Blair Common School Bill, and that for U. S. Labor Department.

BLUNTSCHLI (*blŭnch'lē*), **JOHANN KASPAR** (1808–1881). Swiss statesman and jurist, educated at the *Politische Institute* at Zürich and in Germany, and became a conservative. In 1848 he was elected professor of constitutional law at Munich, where his work on contracts gained international recognition. Afterward he turned to international law and was one of the founders of Institute of International Law.

BONAPARTE, CHARLES JOSEPH (1851–1921). American lawyer and cabinet officer; born in Baltimore. A graduate of Harvard (1871) and Harvard Law School (1874); secretary of the navy (1905–1906), and attorney general (1907–1909). He was the son of Jerome Napoleon Bonaparte, and grandson of Jerome, king of Westphalia, a descendent of the sister of Napoleon I.

BORCHARD (*bŏr'shärd*), **EDWIN MONTEFIORE** (1884–). Born in New York, educated at the College of the City of New York, he became an authority on international law, law librarian of Congress (1911–16), serving meanwhile for a year as assistant solicitor of the department of state, and professor of law at Yale from 1917. Wrote *Guide to Law and Legal Literature of Germany, Latin-American Commercial Law,* and translated Fiore's *International Law Codified.*

BORDEN, R. L. See under STATESMEN.

BOWEN, CHARLES SYNGE CHRISTOPHER (1835–1894). Born in Gloucester, educated at Rugby and Oxford, Bowen became a fellow at Balliol College in 1858, and was called to the bar three years later. In the celebrated Tichborne case, arguing as junior counsel against the claimant, he gained great applause, later being made counsel to the treasury and in 1872 a judge of the queen's bench division, and in 1882 a member of the court of appeals. A year before his death he was made lord chief justice of appeals, and was created Baron Bowen of Colwood. Besides various important legal briefs, and a pamphlet on the *Alabama Claims,* he made a notable translation of Virgil.

BRADFORD, WILLIAM (1755–1795). Jurist; born in Philadelphia, Pa.; was admitted to the bar of the Supreme Court (1779); served in the Revolution; appointed attorney general of Pennsylvania (1780); appointed a judge of the Supreme Court under the new constitution of Pennsylvania (1791); U. S. attorney general (1794–1795).

BRADLEY, JOSEPH PHILO (1813–1892). Associate justice of the Supreme Court from 1870 to his death. He studied theology, gave this up for law, and in New Jersey conducted notable cases, including the Passaic bridge litigation, the New Jersey zinc trials, and the Hardin murder prosecution. Noted for knowledge of the law and clever application to human affairs, having but few reversals while he practiced.

BRANDEIS (*brăn'dīs*), **LOUIS DEMBITZ** (1856–). Associate justice of the Supreme Court, appointed in 1916. Born in Louisville, Kentucky, he was educated at Harvard, practiced in St. Louis and Boston, acting as special counsel in many notable cases, such as freight rate investigations, constitutionality of the Oregon minimum wage law, the Ohio nine hour law, Boston subway cases, and New York garment workers strikes. Noted for his progressive views in social and economic controversies.

BRECKENRIDGE, JOHN (1760–1806). Jurist; born in Virginia; admitted to the bar in Charlottesville (1785); said to have been the author of the Kentucky resolutions of 1798; introduced them into the Kentucky legislature; entered the United States Senate (1801); attorney general (1805–1807).

BREWER, DAVID JOSIAH (1837–1910). An American jurist; born in Smyrna, Asia Minor; graduated at Yale (1856) and at Albany Law School (1858); was a United States commissioner (1861–1862); judge of the probate and criminal courts of Kansas; judge of the district court of First Kansas District; justice of the state supreme court (1870–1884); judge of the circuit court of United States (1884–1889); associate justice of the United States Supreme Court (1889–1910); in 1896 appointed a member of the Venezuelan Boundary Commission; affirmed the right of liquor manufacturers to compensation—this was the decision rendered on the Kansas Prohibition Law; member of British-Venezuelan Arbitration Tribunal (1899); president Universal Congress of Lawyers and Jurists, Louisiana Purchase Exposition, St. Louis (1904).

BROWN, HENRY BILLINGS (1836–1913). Associate justice of the Supreme Court, by appointment of President Harrison in 1890. At Yale he was a classmate (1856) with Justice Brewer and Chauncey M. Depew. After locating in Detroit in 1859, he was made deputy U. S. Marshall, judge of the county court, and circuit judge (1875), specializing in admiralty and criminal law. As a public speaker on legal questions, he gained considerable note, expressly for his defense of a permanent judiciary (1889) at the meeting of The American Bar Association in Chicago, and later by an address on *The Distribution of Property.*

BURTON, T. E. See under STATESMEN.

BUSTAMANTE (*bös-tä-män'tā*), **ANTONIO SANCHEZ DE** (1865–). Prominent Cuban lawyer, educated at the University of Havana in law and professor of international law there from 1884. He was elected the sole man of his country to the Institute of International Law, a member of the permanent court of The Hague, and in 1928 was president of the sixth Pan-American Congress. Among his works are *Le Canal de Panama et le Droit International* (1895) and *La Autarquia Personal,* a treatise on international private law.

BUTLER, BENJAMIN FRANKLIN (1795–1858). An American lawyer and politician; born at Kinderhook Landing, N. Y.; studied law and was admitted to the bar (1817); district attorney of Albany County (1821–1824); elected to the state legislature (1827); appointed attorney general by Jackson (1833), and by Van Buren in 1837; secretary of war (1836–1837); organized the department of law in the College of the City of New York, and was the principal professor (1837); United States district attorney at New York City from 1838–1841; served at the head of the electoral college in New York (1844); district attorney from 1845 to 1848.

BUTLER, PIERCE (1866–1939). Born in Minnesota, a graduate of Carleton College, he joined the Minneapolis bar in 1888. Some of his notable cases were in connection with railway arbitrations, especially those in Canada in regard to the Canadian Northern and Grand Trunk cases. He became an associate justice of the Supreme Court in 1922.

CADWALADER, JOHN (1805–1879). After graduation from the University of Pennsylvania, he became a lawyer at 20, taking part very soon in important trials. He was of counsel in the Girard will case, litigation arising out of failure of the Bank of the United States, and acted as counsel to President Buchanan, who appointed him judge of the Eastern District of Pennsylvania, where he served for 21 years. During the Civil War he declared that Congress possessed the legal power to blockade southern ports, a decision that had a far-reaching effect. In the use of precedents in law he was a master.

CARDOZO (*kär-dō'zō*), **BENJAMIN NATHAN** (1870–1938). Justice of the New York Supreme Court, beginning in 1914, and designated in the same year to serve as judge of the Court of Appeals. Author of *Jurisdiction of New York Court of Appeals, The Nature of the Judicial Process,* and *The Growth of Law.*

CARPENTER, MATTHEW HALE (1824–1881). Brilliant constitutional lawyer, brought up in the office of Rufus Choate (q. v.), who furnished money for him to settle in Beloit, Wisconsin (1848). In 1869 and again in 1879 he was elected to the United States Senate. Among other celebrated cases, including some railway litigation, he acted for the government in the suit to test the validity of the reconstruction act of 1867, in the defense of Belknap, Secretary of War, impeached by the Senate, and in behalf of Samuel J. Tilden in the contested presidential election, decided finally in favor of R. B. Hayes. In this last case both sides of the controversy intended to bid for his services. Both as a master in arranging the facts of a case, and in actual persuasive argument, few men of his time equalled him.

CHANDLER, WILLIAM EATON (1835–1917). Lawyer; born at Concord, N. H. Graduated from

Harvard Law School (1854); admitted to the bar (1855); reporter of decisions supreme court of New Hampshire (1859); member New Hampshire legislature (1862, 1863, 1864, 1881); solicitor and judge advocate general navy department (1865); first assistant secretary of treasury (1865–1867); secretary of the navy (1882–1885); United States senator (1887–1901); president Spanish Treaty Claims Commission (1901–1907).

CHASE, SALMON PORTLAND (1808–1873). American statesman and jurist; born in Cornish, N. H.; graduated at Dartmouth College (1826); admitted to the bar (1830); celebrated for his defense in the Matilda case (1837); leader of the political anti-slavery men; senator from Ohio (1849); withdrew from the Democratic party when they adopted a pro-slavery platform (1852); leader of the Republicans in Ohio, and governor of that state (1856–1860); secretary of the treasury (1861); chief justice of the Supreme Court (1864–1873); presided at the impeachment trial of President Johnson (1868).

CHOATE, JOSEPH HODGES (1832–1917). An American lawyer and diplomat. After 1865 Choate conducted many famous trials, both national and international. He defended General Fitz-John Porter, prosecuted the Tweed ring, conducted the Tilden will case, the Chinese exclusion cases, and represented the Canadian government in the Bering Sea dispute. Ambassador to England (1899–1906), after which he resumed his law practice in New York City.

CHOATE, RUFUS (1799–1859). A famous American lawyer and statesman; born in Ipswich, Mass.; graduated at Dartmouth College (1819); studied law and was admitted to the bar (1823); served in lower house of Massachusetts legislature (1826); in state senate (1826); in the national House of Representatives (1831–1834); in United States Senate (1841–1845); ranked high as a debater and able lawyer.

CLARK, JOHN HESSIN (1857–). Engaged in the practice of law in Ohio in 1878; United States District Judge (1914–16), and associate justice of the United States Supreme Court till 1922. He resigned to give all his attention to fostering international good-will and peace; president of the League of Nations Non-partisan Association of the United States, and trustee of the World Peace Society.

CLIFFORD, NATHAN (1803–1881). American jurist; admitted to the bar (1827), in New Hampshire legislature (1830–1834), speaker (1832–1834); attorney general (1834–1838); congressman (1839–1843); attorney general of United States (1846); envoy to Mexico to arrange treaty of peace (1848); associate justice of United States Supreme Court (1858); president of electoral commission (1877).

COKE, SIR EDWARD (1552–1634). A distinguished English lawyer and judge; born in Norfork; called to the bar (1578); recorder of Norwich and London (1586–1592); member of Parliament and speaker of the House of Commons (1593); attorney general (1594–1606); conducted famous trials of Southampton and Essex (1601), of Sir Walter Raleigh (1603), of Gunpowder Plotters (1605); chief justice of the Common Pleas (1606–1613); chief justice of the King's Bench (1613); removed (1616) for opposing the king's unlawful intrusion; imprisoned in the Tower (1621–1622); active in securing Petition of Rights. His best-known work, *Coke upon Littleton, or the First Institute*, is still an authoritative treatise. Others are *Second, Third, and Fourth Institutes; The Complete Copyholder;* and *Reading on Fines.* His law reports mark a period in legal history invaluable to the profession.

COLBY, BAINBRIDGE (1869–). Engaged in the practice of law in New York in 1892. Counsel for Mark Twain in settlement of his business as a publisher, in the Equitable Insurance cases, and in the Northern Securities case. He was one of the founders with Theodore Roosevelt of the Progressive Party, and for the last year of President Wilson's administration acted as secretary of state.

COLLIER, WILLIAM MILLER (1867–). American educator, legal authority, and diplomatist, born near Auburn, New York. He was educated at Hamilton College, became referee in bankruptcy in 1898, and an authority on the subject. He edited American Bankruptcy Reports, 1–12, from 1899 to 1905, and wrote Collier's *Annotated Rules in Bankruptcy*, served also as a lecturer on bankruptcy in the New York Law School for two years. In 1904 he entered the department of commerce as solicitor; served as U. S. Minister to Spain from 1905 to 1909; lectured on international law at the New York Law School from 1912 to 1918; was president of George Washington University, Washington, from 1917 to 1921, when he was appointed Minister to Chili.

CONKLING, ROSCOE (1829–1888). The son of a United States judge, after a common school education, Conkling began the practice of law, was elected mayor of Utica, New York, 1858, and also the same year a member of the United States House. From 1867 to 1881 he was a senator from New York. Afterward in private practice he gained great distinction for skill as a cross-examiner, quickness in meeting the unusual in suits, and good speaking in court. President Grant (1873) offered him the chief justiceship of the United States Supreme Court, and President Arthur (1882), an associate justiceship. He declined these and appointments as secretary of state and minister to England. Among his celebrated cases was the masterly defense of the Rev. Henry Budge, accused of murder, who against the testimony of physicians, was proved innocent beyond doubt by the technical study by Conkling of the case. See also under RULERS AND STATESMEN.

CUJAS, JACQUES DE (1522–1590). One of the most distinguished French jurists of the sixteenth century; successfully taught law at Cohors, Valence, Bruges, and Paris (1554–1590). He made diligent study of Roman law from original manuscripts, of which he owned 500 on Roman law. His treatment of it and the feudal system was profound.

CURRAN, JOHN PHILPOT (1750–1817). One of the greatest jury advocates of his age in Great Britain. He was born in Ireland, called to the bar in 1775, after a course at Trinity College, Dublin, and at last became a great court lawyer, winning many criminal cases, including some notable ones of political offenses. In mastery of humor and pathos he was supreme. Byron said of Curran, "I have heard him speak more poetry than I have ever seen written."

CURTIS, BENJAMIN ROBBINS (1809–1874). An associate justice of the Supreme Court for six years (1851–57); resigned because of disagreement with Chief Justice Taney over changes written into the opinion in the celebrated Dred Scott case. At 20 he was graduated from Harvard, built up a large practice in Boston, and was elevated to the bench by President Pierce. He was one of the counsel for President Johnson in the impeachment trial. Besides two volumes of his own decisions, he issued a condensed collection (22 volumes) of the findings of the Supreme Court to 1854.

CUSHING, CALEB (1800–1879). American politician and jurist; born in Salisbury, Mass. Commissioner to China (1843–1845); concluded the first treaty of the United States with that country; attorney general of the United States (1853–1857), and one of the counsel in the *Alabama* case before the Geneva Arbitration Tribunal (1871); was minister to Spain (1874–1877). He is the author of *Reminiscences of Spain, The Practical Principles of Political Economy*, and *The Growth and Territorial Progress of the United States.*

DANA, FRANCIS (1743–1811). An American jurist and statesman; born in Charlestown, Mass. Elected to the Continental Congress (1776); chairman of the committee to submit plans for the reorganization of the army (1778); member of the committee to consider the conciliatory proposals from Lord North (1778); official secretary abroad to John Adams (1779–1781); minister to Russia, but not recognized by Catherine (1781–1783); elected to the Continental Congress (1784); justice of the Supreme Court of Massachusetts (1785); delegate to the Annapolis Convention (1786); delegate to the Constitutional Convention at Philadelphia (1787); chief justice of Massachusetts Supreme Court (1791–1806).

DANA, RICHARD HENRY. See under AUTHORS.

DAVIS, DAVID (1815–1886). An American jurist, born in Cecil County, Md.; graduated at Kenyon College, Ohio (1832); studied law; admitted to the bar (1835); appointed (1862) associate justice of the United States Supreme Court, by President Lincoln; resigned in 1877, having been elected to the United States Senate, where he served from 1881–1883 as president pro tem., after Vice-President Arthur became president; in 1872 he was a prominent candidate for the presidential nomination.

DAVIS, JOHN WILLIAM (1873–). Lawyer and public official, a West Virginian by birth, received

his college training at Washington and Lee University, taught there for a year, and was a member of a prominent law firm in Clarksburg, West Va., from 1897 to 1913. Having been a member from West Virginia in Congress from 1911 to 1913, he resigned to become solicitor general of the United States, a position he held from 1913 to 1918. He was Ambassador to Great Britain from 1918 to 1921; counsellor of the Red Cross from 1913 to 1918; and a member of the commission appointed to negotiate with the Germans for the exchange of prisoners after the World War. President of the American Bar Association, 1922. Mr. Davis, as Democratic candidate for the presidency in 1924, received 136 electoral votes to 382 for Mr. Coolidge.

DENNIS, WILLIAM CULLEN (1878–). American legal adviser and arbitrator, who was born in Indiana, educated at Harvard, and acted as secretary of the Lake Mohonk Conference on International Arbitration (1902–03). He taught law at George Washington University, acted as assistant solicitor of the department of state (1906–10), as agent of the United States in the Venezuela Arbitration case in the Chemizal Arbitration with Mexico, the Costa-Rica and Panama boundary case, and as adviser to the American members of the commission in the Tacna-Arica boundary dispute. He was also legal adviser to the Chinese government (1917–19), and acted in many other capacities.

DEVENS, CHARLES (1820–1891). An American jurist; born at Charlestown, Mass.; graduated at Harvard, and was admitted to the bar (1841); member of the state senate (1848–1849); was United States marshal for the district of Massachusetts (1849–53); served on the Federal side in the Civil War, attaining the rank of brigadier general, and that of major general; served in the superior and supreme courts of Massachusetts from 1867–1877 as associate justice; appointed United States attorney general by President Hayes, serving from 1877–1881; was again in the state supreme court from 1881 till his death.

DICKINSON, DONALD McDONALD (1846–1917). An American lawyer; born at Port Ontario, New York; was graduated from the University of Michigan (1866); admitted to the bar (1867); in 1888 was appointed postmaster general; was chairman of the National Democratic campaign committee (1892); acted as United States senior counsel before the Bering Sea claims commission (1896); member of court of arbitration to adjust controversy between United States and Republic of Salvador (1902).

DOUGLAS, STEPHEN A. See under STATESMEN.

DRACO. See under STATESMEN.

ELDON, JOHN SCOTT, EARL OF (1751–1838). Lord high chancellor. Born at Newcastle-upon-Tyne; admitted to the bar (1776); made attorney general, and knighted (1793); appointed chief justice of the Court of Common Pleas (1799); created lord chancellor (1801); as a reward for services rendered the king, George IV., he received the title of Earl of Eldon (1821); retired to private life (1827); was a common-law judge of the highest order.

ELKUS, ABRAM I. (1867–). American lawyer, educated at Columbia University, acted as ambassador to Turkey (1916–19), judge of the Court of Appeals of New York, 1919, commissioner to the League of Nations in the Aaland Islands dispute, and special United States attorney in fraudulent bankrupt cases.

ELLENBOROUGH, EDWARD LAW, FIRST BARON (1750–1818). Having been a special pleader for five years, he was called to the bar in 1780, and in 1787 was chosen to lead the defense of Warren Hastings in the impeachment trial, which continued till 1795. He made his first great effort for his distinguished client in 1792, and at the end his reputation in England was second only to that of Erskine. In 1801 he was appointed attorney general, the next year became chief justice and Baron Ellenborough, and in 1806 declined the chancellorship. Though inferior to Erskine as a speaker, he probably excelled him in knowledge of the law and in research. He was opposed to more humane modifications of the criminal code.

ELLSWORTH, OLIVER (1745–1807). An American statesman and jurist; born at Windsor, Conn.; admitted to the bar (1771); elected to the Connecticut legislature (1775); sent as a delegate from Connecticut to the Continental Congress (1778–1783); became a judge of the Connecticut superior court (1784); represented Connecticut in the constitutional convention of 1787 at Philadelphia, where he secured the adoption of the Connecticut compromise; instrumental in the organization of the national government (1789); appointed chief justice of the Supreme Court of the United States (1796–1800); sent with Murray and Davie as commissioner to France (1799); was a member of the governor's council in Connecticut from 1802 until his death; received the appointment of chief justice of the state in 1807, but he died before taking office.

ERSKINE, THOMAS, FIRST BARON (1750–1823). By many considered the greatest advocate of his period, especially in the cause of freedom. He was born in Edinburgh, the third son of the tenth earl of Buchan, and for several years served in the navy. Having entered Lincoln's Inn in 1775, in three years he was called to the bar. As youngest counsel in his first trial, he won a tremendous ovation in court, and immediately numerous cases. In 1781 he made his second great speech in defense of Lord George Gordon, accused of treason. He also defended the dean of St. Asaph from the charge of seditious libel, Lieutenant Bourne for having challenged Sir James Wallace, Hadfield for attempting to kill George III., and Stockdale in the trial involving freedom of the press—the last considered his greatest court effort. In 1806 he was made chancellor and a peer, but for a time lost favor, which was restored by his defense in the trial of Queen Caroline.

EVARTS, WILLIAM MAXWELL (1818–1901). A famous American lawyer and statesman; born in Boston; studied law, and was admitted to the bar (1841); became leading counsel for President Johnson in the impeachment trial before the Senate (1868); was attorney general of the United States (1869); became chief counsel for the United States before the court of arbitration at Geneva, convened to pass on the *Alabama* claims (1872); leading counsel for Hayes before the electoral commission in 1877; appointed secretary of state by President Hayes (1877–1881); United States delegate to the international monetary conference at Paris (1881); member of the United States Senate (1885–1891).

FAIRCHILD, CHARLES STEBBINS (1842–1924). Lawyer, banker; born at Cazenovia, N. Y. Graduated from Harvard (1863); Harvard Law School (1865); admitted to New York bar same year, beginning practice at Albany. Became deputy attorney general of New York (1874); attorney general (1876–1877); secretary of the treasury United States (1887–1889); member monetary commission, appointed by executive committee of Indianapolis monetary conference of 1897. Afterwards practiced in New York City.

FARMAN, ELBERT ELI (1831–1911). Jurist; born in New Haven, N. Y.; graduated from Amherst College (1855); admitted to bar (1858); to United States courts (1862); district attorney, Wyoming County, N. Y. (1868–1875); United States diplomatic agent and consul general at Cairo, Egypt (1876–1881); judge mixed tribunals of Egypt (1881–1884); United States member international commission (1883–1884), to determine amount to be paid the inhabitants of Alexandria for losses in bombardment of 1882; secured gift of Cleopatra's Needle, an Egyptian obelisk, now set up in Central Park, New York City.

FERGUSON, WILLIAM NASSAU (1869–). Justice of appeal, Ontario Supreme Court, from 1916; educated in law at Osgoode Hall, Toronto. Called to the bar in 1894, he became a bencher of the Law Society of Upper Canada in 1916, having been made a King's Counsel in 1908. Identified with charitable and athletic activities.

FEUERBACH, PAUL JOHANN ANSELM, RITTER VON (1775–1833). German judge and writer on law, born near Jena and educated at Frankfort. He became a foremost advocate of reform in criminal law, drafted a new penal code for Bavaria (1813), where he was appointed a judge and ennobled. For a time he held that trial by jury is not proof of crime, but also that the judge should not be given unlimited powers. Later he became president of the court of appeals at Anspach (1817), and four years later was commissioned to study judicial systems of neighboring countries, after which he published important treatises on reforms in legal proceeding.

FIELD, DAVID DUDLEY (1805–1894). A celebrated American jurist; born in Haddam, Conn.; studied law, and was admitted to the bar (1828); appointed a commissioner on practice and pleading by the New

York legislature; he prepared Codes of Civil and Criminal Procedure, which were adopted in New York and subsequently in many other states (1848–1850); placed at the head of a new commission to prepare political, penal, and civil codes (1875); suggested to the British Association for the Promotion of Social Science, a plan for the revision and reform of the law of nations; elected president of an association formed at Brussels for the reform and codification of the law of nations (1873); appointed to fill a vacancy in Congress (1876); presided over the Peace Congress in London in 1890.

FIELD, STEPHEN JOHNSON (1816–1899). A distinguished American judge; born in Haddam, Conn. He was a brother of David Dudley Field and of Cyrus W. Field. Went to California in 1849 and practised law; judge of the supreme court of California (1857) and chief justice (1859). Through his decisions regarding titles to lands the law of real property was placed upon a firm basis. In 1863 Lincoln made him an associate justice of the Supreme Court of the United States, where he contributed greatly to American constitutional law by his famous decisions. He was a member of the Hayes-Tilden electoral commission of 1877 and voted in favor of Tilden.

FRY, EDWARD (1827–1918). English advocate noted in equity and for his careful interpretations of law. He was raised to the bench in 1877 and knighted, from 1883 to 1892 was lord justice of appeals, and acted in many important arbitration cases for England. In 1900 he was made a judge on the Hague Tribunal.

FRYE, WILLIAM PIERCE. See under RULERS AND STATESMEN.

FULLER, MELVILLE WESTON (1833–1910). Jurist; born in Augusta, Me.; removed to Chicago, Ill. (1856); sat in the Illinois state legislature (1864, 1872, 1876, and 1880); chief justice of the United States Supreme Court (1888–1910) to succeed M. R. Waite; member of the arbitration commission at Paris to adjust the Anglo-Venezuelan difficulty (1899).

GAIUS (fl. 150). Celebrated Roman jurist, author of the *Institutes*, which was lost to modern times till 1816, when a manuscript was discovered by Niebuhr at Verona. This work, which falls into four parts, elucidates much of the nature and history of Roman law in later times.

GALT, HON. SIR THOMAS (1815–1910). Born in England; came to Canada (1833); studied law; called to bar (1845); elected bencher of Law Society (1855); created queen's counsel (1858); judge Court of Common Pleas (1869); chief justice (1887); knighted (1888) and retired from judicial life in 1894.

GARLAND, AUGUSTUS HILL (1832–1899). An American politician; born in Tipton County, Tenn.; admitted to the bar (1853); although opposed to secession, he joined the Southern cause; was elected to the Confederate Congress (1861); and afterward elected to the Confederate Senate, which position he held until the close of the war; governor of Arkansas (1874) under the new constitution; U. S. senator (1877–1885); U. S. attorney general (1885–1889).

GERARD, JAMES WATSON (1867–). American diplomatist and attorney, educated at Columbia University practised in New York, and was elected to the Court of Appeals, 1908. He resigned in 1913 to become ambassador to Germany, retiring on the entrance of the United States into the World War in 1917. He wrote *My Four Years in Germany* and *Face to Face with Kaiserism.*

GILPIN, HENRY DILWOOD (1801–1860). Jurist; born in Lancaster, England; educated in England up to 1816, when he removed to America, completing his education at the University of Pennsylvania (1819); admitted to the bar (1822); appointed district attorney for Pennsylvania (1832); appointed solicitor of United States treasury (1837); attorney general of the United States (1840–1841).

GIROUARD, HON. DESIRE (1836–1911). Born at St. Timothée, P. Q.; educated at Montreal College; studied law; B.C.L. (1860); D.C.L. (1874); called to bar (1860); created queen's counsel (1880); entered political life (1874) representing Jacques Cartier from 1878 to 1896; retired from politics. Distinguished himself in connection with Deceased Wife's Sister bill; was one of group of 16 French Conservative men known as "The Bolters." Contributor to Canadian history, receiving the Confederation Medal from Lord Aberdeen. Judge of Supreme Court of Canada (1895–1911).

GOODNOW, FRANK JOHNSON (1859–1939). American professor of law and president of Johns Hopkins, from 1914. Educated at Amherst, Columbia, and in Paris and Berlin. Associated with Columbia University from 1883 to 1914. Among his books are *Comparative Administrative Law, Selected Cases on the Law of Taxation, Principles of Constitutional Government.*

GRAY, HORACE (1828–1902). Appointed associate justice of the Supreme Court in 1881, he wrote many notable opinions, including the decision that United States treasury notes are legal tender in time of peace, that the Great Lakes are not "high seas," and the majority opinion in the Chinese Exclusion Act. He was educated at Harvard, as Court Reporter of Massachusetts published sixteen volumes of Supreme Court reports, acted seventeen years as justice of the Massachusetts Supreme Court, eight of them as chief justice.

GRESHAM, WALTER QUINTON (1832–1895). American jurist; born near Lanesville, Ind.; admitted to bar (1853); elected to state legislature (1860); brevetted major general Civil War (1865); United States district judge for Indiana (1869); postmaster general (1882); secretary of treasury (1884); United States circuit judge (1884); secretary of state (1893).

GROTIUS (*grō-shē'ŭs*) (1583–1645). Dutch philosopher and jurist, who lived for some years in Rotterdam, was imprisoned in 1618, but escaped the next year to France. Known for his studies in philosophy, religion, and for his *De Jure Belli et Pacis*, one of the first books on jurisprudence in modern times. Beginning with the foundations of the Roman law, he built up a structure of law out of nature and reason.

HALE, SIR MATTHEW (1609–1676). Lord chief justice of England; born at Alderley, Gloucestershire; called to the bar (1637); judge of the Court of Common Pleas 1654 till the Restoration, when he was made chief baron of the exchequer, and knighted; chief justice of the King's Bench (1671–1676).

HARLAN, JOHN MARSHALL (1833–1911). American jurist; born in Boyle County, Ky. Studied law at Transylvania University; practised at Frankfort; county judge (1858); elector on Bell and Everett ticket (1860); in Union army (1861–1863); attorney general Kentucky (1863–1867); practised law in Louisville (1867); associate justice United States Supreme Court (1877–1911); one of the American arbitrators of Bering Sea tribunal (1893).

HARMON, JUDSON. See under STATESMEN.

HENEY, FRANCIS JOSEPH (1859–1937). Though born in New York, he lived in San Francisco and Arizona after 1864. Educated at the University of California and the Hastings Law School, Mr. Heney began practice in 1885, but for a number of years after 1885 engaged in the cattle business in Arizona, resuming the practice of law at Tucson in 1889. Engaged as attorney in numerous cases involving titles of land under Mexican grants. Then became attorney general of Arizona for a year, and returned to civil practice in San Francisco in 1895. Having gained a national reputation as a fearless counsel, he was urged by the attorney general of the United States, Philander C. Knox, to represent the government in certain land fraud cases in Oregon. Several persons were indicted, and most of them were convicted. He was also attorney in the San Francisco cases involving Mayor Eugene Schmitz and Abe Ruef, serving for nearly three years without compensation. He was Progressive candidate for senator from California in 1912 and Democratic candidate for governor in 1918, but was prevented by legal technicality from having his name on the official ballot. Appointed special counsel of the U. S. Senate in 1924 for the investigation of the Internal Revenue Bureau.

HOAR, EBENEZER ROCKWOOD (1816–1895). Jurist; born at Concord, Mass.; studied law, and was admitted to the bar (1835); judge of the court of Common Pleas (1849–1855); judge of the state supreme court (1859–1869); appointed attorney general of the United States (1869), serving till 1870; member of the Joint High Commission that framed the Treaty of Washington (1871); member of Congress (1873–1875).

HOLMES, OLIVER WENDELL (1841–1935). Jurist; born at Boston, Mass. Graduated from Harvard (1861), Harvard Law School (1866); served in Civil War, being mustered out with rank of captain. Admitted to Massachusetts bar (1867); practised in Boston; taught constitutional law at Harvard Law School (1870–1871); editor *American Law Review*

(1870–1873); member Shattuck, Holmes & Monroe, law firm (1873–1882); professor Harvard Law School (1882); associate justice (1882–1889), chief justice supreme judicial court of Massachusetts (1899–1902); associate justice United States Supreme Court since 1902.

HOLT, JOHN (1642–1710). Chief justice of England for 22 years. At 21 he was called to the bar, gaining almost immediate fame and success. Among his celebrated cases were the defense of the Earl of Danby for impeachment, Lord John Russell for conspiracy in the Rye House Plot, and for the prosecution in the West India Company against Sandys for trade infringement. He discontinued the practice of bringing prisoners into court in irons and provided counsel for those unable to obtain their own lawyers.

HUBER, MAX (1874–). Swiss professor of law (1902–21) at the University of Zürich. Consulted by the government on many important questions, and acted as representative to various countries on special missions. Swiss representative at the Hague Conference of 1907; judge of the Permanent Court of International Justice in 1922, and a member of the committee of the Council of the League of Nations dealing with the question of the Aaland Islands.

HUDSON, MANLEY OTTMER (1886–). Elected professor of International law at Harvard (1923), after teaching at Missouri and acting in various capacities for the government in international negotiations. Interested in international peace and the League of Nations. Some of his works are *The Permanent Court of International Justice, The Next War,* and *Current International Coöperation* (1927).

HUGHES, CHARLES EVANS. See under STATESMEN.

IMPEY, SIR ELIJAH (1732–1809). An English jurist. First chief justice of Bengal (1774–1783); recalled and impeached for condemning to death the famous forger, Raja Nanda Kumar. He was acquitted with honor as an amiable and upright judge.

JACKSON, HOWELL EDMUNDS (1832–1895). Associate justice of the Supreme Court, by appointment of President Harrison in 1893. He had previously served as judge of the state Supreme Court, and as judge of the Sixth Circuit by appointment of President Cleveland. Though he was a Democrat appointed by a Republican president, he was unanimously confirmed by the Senate as a member of the highest tribunal.

JAY, JOHN (1745–1829). American statesman and jurist; born in New York City. Was admitted to the bar (1768); was a delegate to the first continental congress (1774), a member of the provincial congress of New York, and president of the continental congress (1778–1779). From 1779 to 1782 he represented his country in Spain; was one of the American peace negotiators in Paris (1782–1783), and helped in securing the ratification of the Federal constitution in New York. From 1789 until 1795 he was the first chief justice of the United States Supreme Court, and in 1794 concluded the Jay treaty with the British government. Was governor of New York (1795–1801).

JEFFREYS or JEFFERIES, GEORGE, LORD (1648–1689). Lord high chancellor of England; born at Acton, near Wrexham, Denbighshire; admitted to the bar (1668); was appointed common sergeant of the city of London (1671); became recorder of London (1678); was appointed chief justice of Chester (1680); a baron in 1681; and chief justice of England (1683); presided at the trials of those who had a part in the Rye House and Popish plots, and condemned without mercy; conducted the "Bloody Assizes," after the battle of Sedgemoor, when he ordered 320 executions for high treason (1685); made lord chancellor and keeper of the great seal by James II. (1685); instrumental in consigning the seven bishops to the Tower (1688); attempted flight with his master, James II., but was caught and placed in the Tower, where he died.

JOHNSON, REVERDY (1796–1876). American jurist and statesman; born in Annapolis, Md.; admitted to the bar (1815); state senator (1821–1825); United States senator (1845–1849, and 1863); attorney general (1850); minister to Great Britain (1868).

JUSTINIAN. See under STATESMEN.

KELLOGG, FRANK BILLINGS. See under STATESMEN.

KENT, JAMES (1763–1847). An American jurist; author of the famous *Commentaries on American Law* which holds in this country a position similar to that occupied by Blackstone's *Commentaries* in Great Britain.

KENYON, WILLIAM SQUIRE (1869–1933). Born in Ohio, educated in Iowa at the state university at Fort Dodge, was district attorney, district judge, assistant to the United States attorney general (1910–11), and United States senator until he resigned in 1922 to become judge of the Circuit Court of the eighth district. He acquired a notable reputation as a pleader and interpreter of the law.

KNOX, PHILANDER CHASE (1853–1921). American lawyer and cabinet officer; born at Brownsville, Pa.; admitted to the bar (1875); United States district attorney for Western District of Pennsylvania (1876); partner in a Pittsburgh law firm in 1877, and devoted his time especially to corporation law; president of Pennsylvania Bar Association (1897); attorney general (1901–1904); member of United States Senate (1904–1909); secretary of state (1909).

LaFLAMME (*lä-flăm'*), **RUDOLPHE** (1827–1893). For a generation a distinguished member of the bar in Quebec, Canada, professor of law at McGill University, and counsel in important cases, such as the Guibord burial litigation, the libel case of the Toronto *Mail,* and the defense of the St. Albans raiders. He sat in the House of Commons (1872–8), was minister of inland revenue (1873) and declined a supreme judgship, but became minister of justice in the Mackenzie cabinet (1877–78).

LaFONTAINE, LOUIS HIPPOLYTE. See under STATESMEN.

LAMAR, LUCIUS QUINTUS CINCINNATUS (1825–1893). Statesman; born in Putnam County, Ga.; admitted to bar (1847); elected to Congress (1857–1859); colonel in Confederate army; professor of ethics and metaphysics, University of Mississippi (1866–1867); of law (1867–1870); member of House of Representatives (1873–1877); of Senate (1877–1885); secretary of interior (1885–1888); associate justice United States Supreme Court (1888–1893).

LANGDELL, CHRISTOPHER COLUMBUS (1826–1906). From 1870 to 1900 professor of law at Harvard, and dean of the Law School, 1871–1895. He was born at New Boston, N. H., educated at Phillips Exeter, and Harvard College and Law School, and practised law in New York from 1854 to 1870. At Harvard he introduced the case system, now widely used in American law schools. His *Cases on the Law of Contracts* (1870) was the first book of its type. He made case books also on Sales and Equity Pleading. Through his influence and that of his successor, Dean James Barr Ames, the Harvard Law School became a leader in legal teaching.

LANSING, ROBERT (1864–1928). Authority on international law, and former secretary of state, who received his A. B. at Amherst in 1886. For much of his life he was an attorney, representing the United States in the Bering Sea Arbitration and in the Alaskan boundry dispute with Canada, the Chinese government, and the republic of Chili in the Tacna-Arica arbitration in 1923–4. He was solicitor in the department of state at Washington from 1914 to 1915, when he was appointed in June to the portfolio of state, which he held till Feb. 13, 1920, when he was forced to withdraw because of differences with President Wilson. As one of the commissioners to the Peace Conference in 1919, he wielded a considerable influence in events after the World War. After his retirement he wrote *The Peace Negotiations,* 1921, *The Big Four and Others at the Peace Conference,* 1921, *Notes on Sovereignty,* 1921.

LEE, CHARLES (1758–1815). Jurist; born in Fauquier County, Va.; admitted to the bar; served in the Virginia assembly; naval officer of the Potomac district (1795); attorney general of the United States (1795–1801).

LEGARE, HUGH SWINTON (1797–1843). Jurist; born in Charleston, S. C.; studied law, completing his education in Edinburgh; elected to the state legislature (1824–1830); appointed attorney general of the state of South Carolina; opposed extreme measures during the nullification crisis, although in favor of states right; served as chargé d'affaires at Brussels (1832–1838); elected to Congress; appointed attorney general of the United States by President Tyler (1841); on the retirement of Webster conducted the state department.

LINCOLN, LEVI (1749–1820). A political leader; born in Hingham, Mass.; graduated at Harvard

(1772); made clerk of the court in Worcester County (1775); later becoming probate judge; entered state house of representatives (1796); became a member of state senate (1797); elected to Congress (1800); appointed by Jefferson attorney general of the United States (1801); was acting secretary of state for some months during the same year; was lieutenant governor (1807–1808), and governor of Massachusetts (1808–1809).

LINCOLN, ROBERT T. See under RULERS AND STATESMEN.

LITTLE, HON. PHILIP FRANCIS (1824–1897). Born and educated in Prince Edward Island; went to Newfoundland (1844); entered legislature (1850); leader of Liberal party in the colony and largely responsible for vital changes in old system of irresponsible rule, advocating self-government for the colony; enlisted John Bright and others until he won his cause (1854). Formed ministry of first government; attorney general (1855); senior judge of the supreme court (1858); retired to Ireland (1867).

LITTLETON, THOMAS (c. 1407–1481). English judge and author of a short treatise on *Tenures*, which the great Justice Coke pronounced "The most perfect and absolute work that ever was written in any known science." Coke made an elaborate commentary on this work, which was originally written in legal French. Littleton was a member of the Inner Temple, was King's Sergeant (1455), and Justice of the Common Pleas (1466). His *Tenures* formed the basis for later law of real estate.

LIVINGSTON, EDWARD (1764–1836). American statesman and jurist, born in New York, educated at Princeton, and practised in New York. He was United States district attorney for New York (1801), and held office as mayor of the city at the same time. In 1804 he removed to Louisiana, and there prepared a model criminal code, which attracted wide attention in Europe, though it was never adopted by any American state. Livingston held several political offices, was secretary of state under Jackson, and later went to France to attempt to secure the fulfilment of the treaty of 1831.

LOCKWOOD, BELVA ANN (1830–1917). First woman lawyer to be admitted to practice before the Supreme Court (1879). She was born in New York, was graduated from Genesee College and taught school from 1857 to 1868. Admitted to the bar in Washington, D. C., in 1873, she became interested in suffrage, temperance, universal peace, and better treatment for the Indian. Appointed to serve on several government commissions

LODER, BERNARD CORNELIUS JOHANNES (1849–1935). Lawyer in Rotterdam, Holland, from 1873 to 1908; judge of the high court, until 1921. First president of the Permanent Court of International Justice from 1922 to 1925. Chairman of a conference of the Scandinavian countries, Switzerland and Holland in 1920.

LURTON, HORACE HARMON (1844–1914). American jurist. Born in Kentucky; graduate of Cumberland University, Tenn., and admitted to the bar (1867); justice of supreme court of Tennessee (1886–1893); judge U. S. circuit court (1893–1909); associate justice U. S. Supreme Court (1909–1914).

LYCURGUS (*lī-kûr'gŭs*). See under RULERS AND STATESMEN.

McKENNA, JOSEPH (1843–1926). An American jurist; born at Philadelphia; removed to California (1855); admitted to the bar (1865); district attorney of Solano County; in California legislature (1875–1876); member of Congress (1885–1893); judge U. S. circuit court (1893–1897); attorney general of the United States (1897–1898); associate justice of U. S. Supreme Court (1898–).

McREYNOLDS, JAMES C. (1862–). Born in Kentucky; graduate of Vanderbilt University (1882); law department of University of Virginia (1884); law professor Vanderbilt University (1900–1903); assistant attorney general of the United States (1903–1907); retained as special assistant to attorney general on trust matters; attorney general in President Wilson's cabinet till September, 1914, when he became an associate justice of the U. S. Supreme Court.

McSWEENEY, JOHN (1824–1890). Eminent criminal lawyer, who for years lived in Wooster, Ohio, and was counsel in many important cases, especially for the state. He was noted for his eloquence and dramatic appeals to juries.

MacVEAGH (*mâk-vā'*), **WAYNE** (1833–1917). Lawyer; born in Pennsylvania; graduate of Yale (1853); admitted to bar (1856); captain in Civil War (1862–1863). Minister to Turkey (1870–1871); attorney general in Garfield's cabinet (1881); ambassador to Italy (1893–1897); U. S. counsel in Venezuelan arbitration before Hague tribunal (1903).

MAINE, HENRY JAMES SUMNER (1822–1888). English historian and jurist, educated at Cambridge, where he held the chair of civil law (1847–54). His book, *Ancient Law*, almost at once became a standard treatise. He was legal representative on the council for India (1863–69), professor of comparative law at Oxford, and in 1887 master of Trinity Hall, Cambridge, and professor of international law. Other works like *Village Communities*, *Early Law and Custom*, and *International Law* for years were standard treatises.

MANSFIELD, WILLIAM MURRAY, EARL OF (1705–1793). British jurist; born at Perth; called to the bar in 1730; appointed solicitor general in 1741; king's attorney (1754); chief justice of the King's Bench (1756); exposed to much abuse and party hatred because of his opinions, his house, with all his valuable books and manuscripts, was burned in the Gordon riots of 1780; with dignity, he refused to be indemnified by Parliament. Created Earl of Mansfield in 1776; resigned chief justiceship in 1778.

MARSHALL, JOHN (1755–1835). American jurist whose work on constitutional law constitutes a record. Born in Fauquier County, Va.; served in Revolution; admitted to bar (1781); member Virginia legislature (1782); member of the convention to ratify the Constitution (1788), its adoption by Virginia being largely due to him; went with Gen. C. Pinckney and Elbridge Gerry to influence the French Directory to remove restrictions laid on American commerce (1797); elected to the lower house of Congress, became an acknowledged leader on constitutional and international law; became secretary of state (1800); chief justice United States Supreme Court (1801–1835), when his great constitutional work was done.

MARSHALL, LOUIS (1856–1929). American lawyer, born in Syracuse, N. Y., educated at Columbia University and practised in New York City. Served in various labor and arbitration boards, and was a member of the New York constitutional conventions in 1890, 1894, and 1915, first United States citizen to serve in three such conventions. Acted in the cloakmakers strike of New York, on the commission to fix the price of bread, the committee that secured important regulations of private and foreign bankers, and the state immigration commission. Counsel for Governor Sulzer in the impeachment proceedings. Secured 75 millions for relief of Jewish war sufferers.

MARSHALL, THOMAS RILEY. See under STATESMEN.

MARTIN, LUTHER (1748–1826). Celebrated lawyer, for 27 years the attorney general of Maryland, judge in Baltimore (1814–16), and as member of the convention of 1787 drafted article VI of the Constitution. He was born in New Jersey, educated at Princeton, but moved to Virginia in 1771. He defended Justice Chase of the Supreme Court in impeachment proceedings, Aaron Burr in the trial for treason, and others in important cases.

MASON, JEREMIAH (1768–1848). Called by Daniel Webster the greatest American lawyer of his time. He was born in Connecticut, educated at Yale, and settled in New Hampshire, of which state he was senator (1813–17), having been previously attorney general of the commonwealth. After 1832 he practised in Boston. In knowledge and interpretation of the law he had few equals.

MASON, JOHN YOUNG (1799–1859). A politician; born at Greensville, Sussex County, Va.; studied law and was admitted to the bar (1819); presided over Federal and state courts; served in the Virginia assembly; member of Congress (1831–1837); judge United States district court for Virginia (1837–1844); made secretary of the navy (1844); appointed attorney general in President Polk's cabinet (1845–1346); minister to France (1853); issued with Buchanan and Soulé, ministers of the United States to England and Spain, respectively, the famous Ostend manifesto.

MEREDITH, WILLIAM MORRIS (1799–1873). Born in Philadelphia, he was graduated second in his class at the University of Pennsylvania in 1812. At 17 he was a lawyer, a legislator at 25, and prominent in the Girard will case at 30. President Taylor ap

pointed him secretary of the treasury, and in 1861 he became attorney general of Pennsylvania, serving with great distinction for six years. President Grant appointed him senior counsel in the Geneva arbitration tribunal in 1870.

MOODY, WILLIAM HENRY (1853–1917). American cabinet officer; born in Newbury, Mass.; member of Congress (1895–1902); in March, 1902, he succeeded John D. Long as secretary of the navy; in 1904 he was made attorney general; associate justice of the United States Supreme Court (1907–1910).

MOORE, JOHN BASSETT (1860–). Member of the Court of Arbitration at The Hague, from 1913, judge of the Permanent Court of International Justice, 1921–28, and distinguished in many arbitration and international cases. He was born in Delaware, educated at the University of Virginia, and was professor of international law at Columbia University from 1891 to 1924. Acted for the United States in various arbitration trials. Of his numerous works on law, more important ones are *Report on Extradition, American Diplomacy, Digest of International Law,* and *Principles of American Diplomacy.*

MURRAY, GEORGE JOHN ROBERT (1863–). Chief justice of the Supreme Court of South Australia and Lieutenant Governor, who was educated at Cambridge University, England, and called to the bar in 1888. He was made a K. C. in 1906 and judge of the Supreme Court six years later.

NELSON, JOHN (1791–1860). Jurist; born in Fredericktown, Md.; was graduated from William and Mary College (1811); studied law and was admitted to the bar; was a member of Congress (1821–1823); appointed United States minister to Naples (1831); attorney general of the United States (1843).

OLNEY, RICHARD. See under RULERS AND STATESMEN.

OSBORN, ALBERT SHERMAN (1858–). American authority on questioned legal documents. Born in Sharon, Michigan; lived in New York City for many years. Author of *Questioned Documents* and *The Problem of Proof,* both standard treatises.

OWEN, ROBERT LATHAM (1856–). Former senator from Virginia, who was instrumental in securing the federal reserve and farm loan acts. He began practice of law in 1880, acted for four years as United States Indian agent to the five civilized tribes, and was senator from 1907 to 1925.

PAINE, ROBERT TREAT (1731–1814). American lawyer and patriot; born in Boston; graduated at Harvard (1749); admitted to the bar (1759); member of the Massachusetts general court (1773–1774), of the Continental Congress (1774–1778), and signed the Declaration of Independence; speaker in the Massachusetts house of representatives (1777); state attorney general (1780–1790); associate justice of the state supreme court (1790–1804).

PAPINIAN (about 150–212). The greatest of Roman jurists; his productions include, mostly, digests of decisions, and his writings were so valuable that they formed a part of the course of law study and were employed in settling disputed questions.

PARKER, ALTON BROOKS (1852–1926). American jurist; born at Cortland, N. Y.; graduated at the Cortland Normal School, and at Albany Law School (1872); surrogate of Ulster County (1877–1885); representative at the Democratic National Convention (1884); chairman of the Democratic state executive committee (1885); in the New York supreme court (1886), and court of appeals (1889); chief judge (1897); Democratic candidate for president (1904); and president of the American Bar Association (1906–1907).

PARKER, JOEL (1795–1875). Eminent New England attorney and professor of law, for fifteen years justice of the Supreme Court of New Hampshire. During this time, in a clash between the state and federal courts over the meaning of the term "lien," the United States Supreme Court decided in favor of the view taken by Judge Parker. He was born in New Hampshire, educated at Dartmouth, became a member of the Supreme Court of his state in 1833, chief justice in 1835, and professor of law at Harvard from 1836 to 1848. For 12 years he was professor of medical jurisprudence at Dartmouth.

PARSONS, THEOPHILUS (1750–1813). American jurist; born in Byfield, Mass.; graduated at Harvard (1769); began practice of law at Falmouth (now Portland, Me.) (1774); member of the constitutional convention which framed a new constitution for Massachusetts (1779–1780); member of the state convention called to ratify the Federal Constitution (1788); in 1801 was attorney general of the United States in John Adams' cabinet; from 1806 till his death he was chief justice of the state supreme court.

PEPPER, GEORGE WHARTON (1867–). Senator from Pennsylvania (1922–1927); professor of law, University of Pennsylvania, his alma mater (1893–1910); Lyman Beecher lecturer at Yale (1915). Pepper distinguished himself as a counsellor and author of several legal texts, including *The Borderland of Federal and State Decisions, Pleading at Common Law and under the Codes, Digest of the Laws of Pennsylvania.*

PINKNEY, WILLIAM (1764–1822). An American statesman and lawyer; born at Annapolis, Md.; studied law with Justice Samuel Chase; admitted to the bar (1786); member of the convention to ratify the Federal Constitution (1788); elected to the house of delegates (1788); secured (1796) a claim of $800,000 for Maryland on the Bank of England as compensation due American merchants under the Jay Treaty; elected attorney general of Maryland (1805); sent as minister extraordinary to England (1806); recalled (1811); elected to Maryland state senate, but was appointed attorney general of the United States by President Madison (1811); entered the national House of Representatives (1815–1816); minister to Russia and special envoy to Naples (1816); elected to United States Senate (1820).

POMERENE, ATLEE (1863–1937). Senator from Ohio (1911–23); lieutenant governor of Ohio (1910–11); attorney in Cleveland. He was appointed by President Coolidge one of the two special attorneys in the oil lease cases (1924–27). He was born in Berlin, Ohio, educated at Princeton, and began practice in Canton in 1887, holding city and county offices for a number of years.

POUND, ROSCOE (1870–). Born in Lincoln, Nebraska, and educated at the University of Nebraska and Harvard, Dr. Pound practised law for a time, was a professor and dean of the College of Law, University of Nebraska, professor at Northwestern, Chicago, and Harvard, and dean of the School of Law at Harvard, from 1916. Member of many legal societies, and author of numerous works on jurisprudence, including *Readings on Roman Law, The Spirit of the Law, Introduction to the Philosophy of Law,* and *Law and Morals.*

QUINCY, JOSIAH (1744–1775). American lawyer, orator, and essayist; born in Boston; graduated at Harvard (1763), and with John Adams conducted (1770) the defense of the British soldiers who took part in the Boston Massacre; went South (1773) and arranged for a system of communication between the patriots of that part of the country and those of the North. In 1774 he went to England in the interests of the Patriot party.

RANDOLPH, EDMUND. See under RULERS AND STATESMEN.

READING, MARQUESS OF. See under STATESMEN.

ROBERT, HENRY MARTYN (1837–1923). Author of standard works on parliamentary law, including *Robert's Rules of Order* (1876, rev. 1915), *Parliamentary Practice* (1919), and his *magnum opus, Parliamentary Law* (1922). He was born in South Carolina, a graduate of West Point, and for many years was in the engineering service of the regular army, attaining the rank of brigadier general. Some of the great engineering works planned by him were various lighthouses, harbor improvements, and the new sea wall at Galveston, Texas.

ROBERTS, OWEN JOSEPHUS (1875–). Special counsel appointed, with Atlee Pomerene (q. v.), by President Coolidge to act for the government in the oil lease cases (1924). He was educated at the University of Pennsylvania, where he taught law (1898–1918), was assistant district attorney (1901–04), and acted as special deputy attorney general in the cases arising out of the espionage act during the World War.

ROGERS, HENRY WADE (1853–1927). American judge, legal authority, and college administrator, received his training at the University of Michigan where he taught law from 1883 to 1890, after which he was president of Northwestern University for ten

years. From 1900 to 1916 he was connected with Yale University as lecturer, professor, and from 1903 as dean. Since 1913 U. S. Circuit Judge, second district. Judge Rogers has held many positions of trust, committee chairmanships, and other offices in college, church, and nation, including the M. E. Church, several legal associations, peace societies, and civic federations. Author of *Illinois Citations, Expert Testimony, Introduction to Constitutional History as Seen in American Law*, and many articles in cyclopedias and legal journals.

ROOT, ELIHU. See under STATESMEN.

ROUTHIER, ADOLPHE BASILE (1839–1920). Born at St. Placide, P. Q. Educated at College Ste. Thérèse and Laval University, taking B. A. (1858); called to bar (1861); created queen's counsel (1873); puisne judge of Superior Court of Province of Quebec. Judge of Vice Admiralty Court (1897); president of St. Jean Baptiste Society. Declined appointment to lieutenant governorship of the Northwest Territories (1897). Routhier wrote several literary works under the name of Jean Piquefort, but he is now recalled chiefly as the author of the national song, *O Canada*.

RUSSELL, CHARLES ARTHUR (1832–1900). Chief justice of England, 1894 to his death. After two years of practice in his home town, Newry in Ireland, he removed to London in 1856. He became Queen's Counsel (1872), member of Parliament (1880–94), attorney general in the Gladstone ministries (1886, 1892), and lord of appeal (1894). Among the great cases were the fisheries dispute between United States and England (the Bering Sea case), the Campbell divorce suit, the Parnell Commission, acting as counsel for Parnell, and the libel action of Dixon against Plimsoll.

RUTLEDGE, JOHN (1739–1800). American politician and jurist; born at Charleston, S. C.; studied law in England, and began to practice in Charleston in 1761; sent as a delegate to the Stamp Act Congress (1765); sat in the South Carolina Convention of 1774 and the Continental Congress of the same year; in 1776 appointed chairman of the committee which framed the new constitution for South Carolina; became first president under that constitution; was governor of South Carolina in 1779; served during the Revolutionary War with the Army of the South; served in Congress from 1782–1783; was chancellor of South Carolina (1784); member of the convention which framed the Federal Constitution (1787); appointed an associate justice of the United States Supreme Court (1789–1791); chief justice of South Carolina (1791–1795).

SANFORD, EDWARD TERRY (1865–1930), judge, was graduated from the University of Tennessee and Harvard. Assistant attorney general of the United States, 1907–08, and judge of the Eastern and Middle Districts of Tennessee, U. S. Courts, from 1908 to 1923, when he was appointed an associate justice of the Supreme Court by President Harding.

SOLEY, JAMES RUSSELL (1850–1911). Lawyer, author; born in Boston, Mass.; educated at Harvard College and Columbia University Law School; professor United States Naval Academy (1872–1882); professor United States navy (1876–1890); department of education Paris Exposition (1878); assistant secretary of the navy (1890–1893); member New York bar after 1893; Venezuelan counsel at Paris Arbitration, Venezuela and British Guiana Boundary (1899); lecturer Naval War College, Newport, R. I.

STANTON, EDWIN McMASTERS. See under RULERS AND STATESMEN.

STONE, HARLAN FISKE (1872–). American jurist, educated at Amherst and Columbia; admitted to the New York bar in 1898; professor of law at Columbia (1899–1905) and dean (1910–24). President Coolidge made him attorney general to succeed H. M. Daugherty (1924), and a year later, associate justice of the Supreme Court.

STIMSON, FREDERIC JESUP. See under AUTHORS.

STORY, JOSEPH (1779–1845). Eminent jurist; graduated from Harvard College (1798); admitted to bar (1801); in state legislature (1805); in Congress (1808); associate justice United States Supreme Court (1811–1845); professor of law, Harvard (1829–1845). His legal writings and decisions are now in use.

STRAUS, OSCAR SOLOMON. See under RULERS AND STATESMEN.

SUTHERLAND, GEORGE (1862–), jurist; born in England, for many years practised law and held local offices in Utah. Member of the Fifty-seventh Congress, 1901–03, Senator from Utah, 1905–17. Associate justice of the Supreme Court from 1922 by appointment of President Harding. President American Bar Association, 1916–17.

SWAN, THOMAS WALTER (1877–). A native of Connecticut and a graduate of Yale, Swan settled in Chicago, where he practised from 1903 to 1916, lecturing at the University of Chicago (1903–04, 1908). He was called to Yale as professor of law and dean of the Law School in 1916, and resigned in 1927, on being appointed judge of the second circuit of the federal district court.

SWAYNE, NOAH HAYES (1804–1884). Associate justice of the Supreme Court from 1862 to 1881. He was born in Virginia, at first studied medicine, but soon turned to the law, being admitted to the bar at 19. Two years later he removed to Ohio, where he sat in the legislature, and for 10 years (1831–41), acted as United States district attorney. As lawyer and judge he gained attention for analysis of cases, and for several vigorous dissents, especially in the "slaughter house" cases. His son, Wager Swayne, became a brigadier general in the Civil War, and later an eminent corporation attorney in New York City.

TAFT, WILLIAM HOWARD. See under STATESMEN.

TANEY (*taw'ni*), **ROGER BROOKE** (1777–1864). A celebrated American jurist; born in Calvert County, Md.; admitted to the bar (1799); attorney general of the United States (1831); succeeded Duane as secretary of the treasury; chief justice of the Supreme Court (1836–1864); rendered his most famous decision in the Dred Scott case; he denied the right of the president to suspend the writ of habeas corpus.

TAYLOR, THOMAS WARDLAW (1833–1917). Born in Scotland; educated at Edinburgh, taking B.A. (1852, and Toronto M.A. (1856); called to Toronto bar (1858); referee under Act for Quieting Titles (1869); master in Chancery (1872); queen's counsel (1881); puisne judge of Queen's Bench (1883); chief justice of Manitoba (1887); administrator to Province (1893); royal commissioner (1886, 1895); knighted (1897); author of important legal treatises.

THOMPSON, JOHN SPARROW DAVID. See under RULERS AND STATESMEN.

UNTERMYER, SAMUEL (1858–1940). A lawyer, who practised in New York City from 1879, and engaged in many personal actions and arbitrations. Some of his important cases were as counsel for the committee on housing in New York; for the secretary of the treasury in the litigation with the Riggs Bank of Washington; income tax legislation; campaign contributions investigation by federal Senate (1924); and for Governor Smith in the water-power controversy in New York. Specialized also in certain divorce and estate cases involving large sums of money.

VAN DEVANTER, WILLIS (1859–1941). American jurist; educated at DePauw University and Cincinnati College; city attorney of Cheyenne, Wyoming; chief justice of Wyoming supreme court; assistant United States attorney general (1897–1903); professor of equity pleading and process (1898–1903); of equity jurisprudence, Columbia University (1902–1903); associate justice United States Supreme Court (1910).

VINOGRADOFF (*vē-nō'grä-dŏff*), **PAUL** (1854–1925). Professor of jurisprudence at Oxford from 1903 to his death. For many years he taught in Russia, where he was born, but came into conflict with bureaucratic management because of his advanced ideas of education. Lectured at many universities, including Harvard in 1907, the University of Leyden, 1921, Columbia, Johns Hopkins, Michigan, and California in 1923. Director of Publications of the British Academy and editor of Russian Section of social and economic history of the War (1914–17) for the Carnegie Foundation of New York. He edited many series of books and wrote several on English social and economic life and history, the article on *Russia* in the 12th edition of *Britannica*, and *Outlines of Historical Jurisprudence*. Knighted in 1917.

WAITE, MORRISON REMICK (1816–1888). American jurist; born at Lyme, Conn.; admitted to the bar (1839); member of Ohio legislature (1849); appointed (1871) to represent the United States at tribunal for arbitration of the *Alabama* and other

claims at Geneva; chief justice of the Supreme Court of the United States (1874–1888).

WEBSTER, DANIEL. See under STATESMEN.

WHITE, EDWARD DOUGLASS (1845–1921). American jurist; educated at Mount St. Mary's Maryland, at New Orleans, and Georgetown College, Washington; served in Confederate army; admitted to bar (1868); state senator (1874); associate justice of Supreme Court, Louisiana (1878); United States senator (1891–1894); associate justice United States Supreme Court (1894–1910); chief justice (1910).

WICKERSHAM, GEORGE WOODWARD. See under RULERS AND STATESMEN.

WIGMORE, JOHN HENRY (1863–). Dean of the faculty of law of Northwestern University, Evanston, Illinois, and author of numerous treatises on law. He was born in San Francisco, educated at Harvard, spent two years in practice in Boston, and then was professor of Anglo-American law at Tokyo, Japan, for three years (1889–92). Some important books are *Treatise on Evidence, Principles of Judicial Proof,* and *Cases on Evidence,* all standard texts.

WILBUR, CURTIS DWIGHT (1867–). Born in Iowa, he was educated at the United States Military Academy, but began the practice of law in Los Angeles in 1890. He acted as judge of the Superior Court of Los Angeles County (1903–18), associate justice of the California Supreme Court (1919–22), and chief justice (1922–24) until appointed secretary of the navy in the Coolidge cabinet. He organized a juvenile court in Los Angeles and helped secure important legislation for this.

WILLIAMS, GEORGE HENRY (1823–1910). Jurist; born in New Lebanon, N. Y.; admitted to the bar (1844); judge of the first judicial district of Iowa (1847–1852); chief justice of Oregon territory (1853–1857); U. S. senator from Oregon (1865–1871); member Joint High Commission to settle *Alabama* claims; attorney general of United States (1782–1875).

WIRT, WILLIAM (1772–1834). American lawyer, statesman, author; born at Bladensburg, Md.; settled in Richmond in 1806, and won distinction for prosecution of Aaron Burr; member of Virginia legislature (1807–1808); United States district attorney (1816); attorney general (1817–1829); nominated for president in 1832 by Anti-Masonic party.

ABBOTT, GRACE (1878–1939). Social worker, born at Grand Island, Nebraska, educated there, at the University of Nebraska, and the University of Chicago. After acting as a teacher till 1907, she directed the Immigrants' Protective League to 1917, living at Hull House, Chicago, 1908–15, afterward engaged in government service. Director of the United States Children's Bureau. Writer on social topics, and author of *The Immigrant and the Community.*

ABBOTT, LYMAN (1835–1922). Clergyman, author, and editor, who was born in Roxbury, Mass., educated in New York, and practiced law (1856–59). He held pastorates in Terre Haute, Indiana, New York City, and succeeded Henry Ward Beecher at Plymouth Church (1888–1899). With Beecher he was editor of *The Christian Union* for five years, becoming sole editor in 1881, renamed the journal *The Outlook* in 1893, and continued in general charge. Influenced many of the reform and social movements of the age. Among his books are *Problems of Life, The Rights of Man, The Christian Ministry,* and *Industrial Problems.*

ADDAMS, JANE (1860–1935). An American social settlement worker and a founder of the Hull House at Chicago (1889); born at Cedarville, Ill. Her work is eminently practical. Great executive ability and utter unselfishness have made her a leader of social workers in America; has written much on sociological matters. Chairman of the International Congress of Women at The Hague (1915), and at four subsequent gatherings. Author of *Democracy and Social Ethics* (1902), *Twenty Years at Hull House* (1910), *Peace and Bread in Time of War* (1922).

AKED, CHARLES FREDERIC (1864–). Clergyman, born and educated at Nottingham, England, held pastorates in England from 1886 to 1907, and in New York, San Francisco, Kansas City, and Los Angeles afterward. Noted as a lecturer and as author of religious works, among them being *Mercies New Every Morning, Old Events and Modern Meanings, The Divine Drama of Job.*

AMBROSE, SAINT (340?–397). Early church father, bishop of Milan, and defender of the faith against Arianism. In 381 he presided at a synod of bishops, and later strongly opposed the resumption of certain pagan rites in the church. He was also instrumental for a time in holding back an invasion from Gaul. As a theologian he emphasized sin and repentance, and Saint Augustine was deeply impressed by his doctrines.

ANAXAGORAS (*ăn-ăk-săg'ô-rŭs*), (c. 500–c. 428 B. C.). Greek philosopher, born in Asia, but lived in Athens about 30 years, and had as pupils Pericles, Euripides, and some believe Socrates. He sought to explain the motions of heavenly bodies, was tried for heresy but saved by Pericles, though he was exiled for the last few years of his life. He taught that all things existed from the start in the mass, but were formed by Reason, which possessed all knowledge and power.

ANSELM, SAINT (c. 1033–1109). Great religious thinker, who was born in Piedmont and lived at the abbey of Bec (1056–1103), acting as prior, later as abbot. William I. of England persuaded him to become archbishop of Canterbury in 1093, but a long struggle ensued over the question of whether the king must acknowledge Pope Urban II. as head of the church. From 1097 to 1107, Anselm lived in Italy, taking up his duties again for the last two years of his life, when Henry, William's successor, had finally given in. Among his works are *De Veritate, Proslogion,* and *Cur Deus Homo,* all of which greatly influenced later thought. He said that faith precedes reason and knowledge. His *Cur Deus Homo* attempts to explain for every man the nature of Christ and the Atonement.

ANTHONY, SAINT (c. 250–350). Earliest Christian monk, who for years secluded himself in waste places of Egypt, coming forth only to consult with those who followed his rule of life, and finally to preach against the Arians. Legends report many combats between him and the spirit of evil in various forms,—temptations of home, food, success, and honor. Certain eastern monks still look to him as their guide.

ANTHONY, SUSAN BROWNELL (1820–1906). An American reformer; born at Adams, Mass. Very active in total abstinence and anti-slavery movements. After the Civil War she devoted her work to woman suffrage; founded (1868) and published for three years *The Revolution,* a journal advocating woman's rights. Voted at an election in 1872, for which she was fined.

ANTISTHENES (*ăn-tĭs'thĕ-nēz*) (fl. fourth cent. B. C.). Pupil of Socrates and founder of the Cynic school of philosophy. Lived in great simplicity, wore only rude garments, and spoke in terms that the common man could comprehend. Reputed to have written several works, but now only a few fragments remain.

AQUINAS (*ă-kwī'năs*), **THOMAS** (1225–1274). Born of a noble Italian family, encountered the strongest opposition when he entered the order of the Dominicans. He became a public teacher at Paris until Pope Urban called him to teach philosophy in Italy. He declined an archbishopric to devote himself to study and lecturing. He was called the "Father of Moral Philosophy," and his *Summa Theologiae* is one of the first attempts at a complete theological system.

ARIUS (*ă-rī'ŭs*) (fl. 325). Ordained a bishop in 311 after he had been educated under Lucian of Antioch, Arius became a profound student of the nature of God in reference to man. He finally concluded that God exists as unique being, and that God on earth as man must be of a somewhat different nature. Arius unconsciously precipitated a controversy regarding the nature of Christ which raged for centuries. He was excommunicated in 319, though some bishops followed his ideas, and Constantine summoned a council at Nicea in 325, which pronounced against Arius, and formulated what is now called the Nicean Creed. Arius died in Alexandria, Egypt.

ARISTOTLE (*ăr'ĭs-tŏt'l*) (384–322 B. C.). Greek philosopher, scientist, and critic, born at Stagira; hence sometimes called the Stagirite. He was the son of a physician, and is said to have practiced himself on first coming to Athens (367), intending to study under Plato, who did not return from a mission to Syracuse till 364. In 342 Philip of Macedon called Aristotle to Macedon to teach his son, Alexander, then a mere youth. He returned to Athens in 335, opened a school at the Lyceum (a gymnasium building), and the followers came to be called Peripatetics, from the custom of walking back and forth while they talked. After 12 years, when Alexander died in 323, Aristotle was accused of heresy, retired to Chalcis, and died there the following season. No philosopher of ancient times, unless he be Plato, has more deeply influenced later thinking. Aristotle's writings fall into three chief groups. First, the dialogs, modeled on the style of Plato, in which several different speakers bring out opposing views of life. Many of these are now lost, but we still have the *Protrepticus,* which is a summons to one to lead a philosophic life; *De Philosophia,* a much later discussion of the nature of thinking; and *Politicus* and *Sophistes* are platonic dialogs, concerned with state and a rival sect of the Sophists. Second, we have the essays on *Monarchy,* which is a late work; the one on *Alexander, or the Colonies;* and the *Constitutions,* accounts of various forms of government. In this group also belong some chronologies and compilations. Third, *Categories,* the *Organon,* or explanations of science; *Historia Animalium* an account of the animal world; a work on *Ethics* and a second, probably due in part to later additions by his son; *Rhetoric* and a short treatise on *Poetics;* and an account of *Politics.* The world of Aristotle is one that is in progress continually; so is man in his historical development. In philosophy he emphasized the mean (called Aristotle's Golden Mean), and shunned all defects and excesses. By contemplation man lays hold of immortality. The state exists for the good life of its citizens; governments are amenable to law. People in the mass may be relied upon to elect rulers wisely. Thus, in many respects, he expressed ideas that later became germs of several systems of thought.

ARMINIUS (*ăr-mĭn'ē-ŭs*), **JACOBUS** (1560–1609). Theologian, born in South Holland, studied theology at Leiden for six years, went to Geneva in 1582, visited Italy, and in 1588 was ordained at Amsterdam. He taught theology at Leiden from 1603 to his death. In his beliefs and theories of the church, he developed opposition to Calvanism, which grew as made more formal by his followers. Personally, he was studious, mild in temper, earnest in his thinking, but not disposed to be quarrelsome.

ASBURY (*az'ber-i*), **FRANCIS** (1745–1816). First bishop of the Methodist Episcopal church to be consecrated in the United States. Born in Staffordshire, England, he completed his study in the common schools, became an apprentice in business, and studied theology at home. In 1772 he was designated by Wesley as "general assistant in America," and during the Revolution he supported the American cause. From 1784 to his death he rode about 6,000 miles each year on horseback in supervising the conferences from Maine to Georgia. When he first came to America, the church numbered a few hundreds, all in New York, Philadelphia, and similar towns; and when he died 42 years later, there were over 200,000 members and 2,000 ministers. It has been claimed that more people saw him than saw any other man of his generation, including Washington.

AUGUSTINE (*ô-gŭs'tĭn*), **SAINT** (354–430). Famous scholar and preacher; born near Carthage; a teacher in Rome and Carthage; in 396 became a priest and was made Bishop of Hippo in Africa. *Confessions* and *City of God* are his best-known books.

AURELIUS (*ā-rē'li-us*), **MARCUS.** See under RULERS AND STATESMEN.

AVERY, RACHEL FOSTER (1858–1919). An American reformer; born at Pittsburgh, Pa. Educated here and abroad, taking a special course in political economy at Zurich. Was always active in woman suffrage movements; had charge of many conventions and the Nebraska campaign; corresponding secretary of the National Suffrage Assembly for over 20 years.

BABBITT, IRVING (1865–1933). Leader of the newer Humanism in America. After giving considerable attention to both the classical and the romantic schools of thought, he decided that the influence of Rousseau and other romanticists has been deleterious and should be counteracted. Exaggeration of the personal in our recent literature also seemed injurious to social and national progress. Babbit was graduated at Harvard, studied also in Europe, taught at Williams, and in 1912 became professor of French at his alma mater.

BACON, FRANCIS (1561–1626). Besides the famous *Essays* in which Bacon tried to reduce many subjects to their lowest terms, or to give the quintessence of his ideas, he composed several works that greatly influenced science and thought. Some of these are *De Augmentis Scientiarum,* or *The Advancement of Learning,* in which he sought to "make the circuit of knowledge" and to fill in some gaps left by previous philosophers; the *Novum Organon,* in which he states that he has turned from mere thought to observation, and so he is often called "the father of modern inductive science"; *Historia Naturalis,* in which he records some results of his observations, still lacking in accuracy and not free from bias; *The New Atlantis,* the description of an island in mid-Atlantic, ruled by wise and just laws of long standing, with a minimum of actual government,—a sort of benevolent Utopia. In order to make real progress, Bacon declares (in the *Novum Organon*) man must get rid of the false notions or "Idols" of society or the "Tribe"; those of the "Cave," errors peculiar to particular men; those of the "Market place" or of democracy; and those of the "Theatre" or of all high-flown and unreal speculations, like so many "stage plays." See INDEX for mention in other sections of this book.

BACON, BENJAMIN WISNER (1860–1932). American theologian, educated at Yale, and became a clergyman in 1884, holding pastorates successively at Old Lyme, Connecticut, and Oswego, New York, until he became an instructor at Yale in 1896, and professor the following year. He directed the American School of Archaeology at Jerusalem (1905–06), and acted as Earl lecturer at the University of California (1911 and 1924). Known as a fruitful scholar, he wrote many books, some of which are *The Genesis of Genesis, The Sermon on the Mount, The Story of St. Paul, The Fourth Gospel in Research and Debate, Christianity Old and New, The Teaching Ministry for Tomorrow.*

BAIN (*bēn*), **ALEXANDER** (1818–1903). Scotch philosopher, educated at Marischal College, Aberdeen, and professor of logic and English in the University of the same city (1860–80). He did much to put the study of grammar on a logical and philosophical basis, but is now probably best known for his *Logic;* later he contributed many valuable articles to the periodical called *Mind.* For most of his life he was a close friend and co-worker of John Stuart Mill. At present Bain is also known as the leader in the new Scotch school of psychology, which he carefully distinguished from metaphysics and based largely on a scientific study of the brain and emotions of man.

BAKER, PURLEY ALBERT (1858–1924). An American clergyman and temperance leader, born in Ohio, and a Methodist pastor for a number of years, from 1884. Beginning as manager of the Anti-Saloon League in Cleveland (1896), he became state superintendent (1897–1903), and national superintendent till his death. Advocating conservative and educational methods, he did much to command respect among all those opposed to the open saloon in America.

BARCLAY, ROBERT (1648–1690). Member of the new sect of Quakers in England, which he ably defended in his *Apology for the True Christian Divinity held by Quakers* (1678). He was born in Scotland, educated in Paris, and in late life is said to have known James II. well. A friend of William Penn, he traveled with him on the Continent, and acted as nominal governor of East New Jersey, given to Penn by royal patent.

BARING-GOULD (*bār'in-gūld'*), **SABINE.** See under AUTHORS.

BARNES (*bärnz*), **HARRY ELMER** (1889–). American sociologist, a graduate of Syracuse and Columbia Universities, teacher at Clark University, New School for Social Research, and professor at Smith College, from 1923. Wrote much on penology, history, and sociology, including *Sociology before Comte, The Social History of the Western World, Progress in American Penology, The Repression of Crime,* and *Sociology and Political Theory.*

BARROWS, JOHN HENRY (1847–1902). Clergyman; successive pastorates in Lawrence and East Boston, Mass., and First Presbyterian Church of Chicago (1881); Christian lecturer in India in 1896 for Chicago University; organizer and president of the World's Parliament of Religions at Chicago (1893); lecturer throughout Indian Empire (1896–1897); president of Oberlin College (1898–1902). He wrote *I Believe in God* and *History of the World's Parliament of Religions.*

BARTON, CLARA (1821–1912). For many years president of the American Red Cross Society. Was born in Massachusetts. She founded a school at Bordentown, N. J., entered the government service in the war department in 1854, and at the outbreak of the Civil War resigned to devote her attention to humanitarian service at the front. She was honored by Lincoln, and after the war marked the graves of some 12,000 Union soldiers who were buried in the South. In the Franco-Prussian War of 1870 she engaged in social service, was decorated by several governments, and in 1881 became president of the American Red Cross, a position she held till 1904. Largely by her suggestions the scope of the Society was changed to include relief work in times of distress other than war, including her services at the time of the Johnstown, Pa., flood, Russian famines, Armenian disasters, and the Galveston flood.

BAXTER, RICHARD (1615–1691). English Non-Conformist divine; educated privately; always strongly religious; became a teacher, then a clergyman. During the Civil War he joined with the Puritans, participating in several sieges. His first and most famous book, *The Saint's Everlasting Rest* (1650), was followed by *Call to the Unconverted,* and then by *Paraphrase of the New Testament,* which book caused his imprisonment for 18 months. Other publications, aggregating 160, appeared while he continued preaching.

BEECHER, HENRY WARD (1813–1887). Protestant pulpit orator; (1837–1847) pastor of Presbyterian churches in Indiana; (1847–1887) pastor of Plymouth Church, Brooklyn, a new Congregational organization, where his fame became world-wide. His speeches delivered in England in 1863 changed English public opinion in favor of the North. Besides influential papers contributed to various religious periodicals, Beecher wrote a number of books, some of which are *Star Papers* (two series), *American Rebellion,* an account of his experiences in England, and *Yale Lectures on Preaching.*

BEECHER, LYMAN (1775–1863). American theologian. Became famous through a sermon on dueling after the killing of Alexander Hamilton by Aaron Burr (1804); pastor of Litchfield, Conn. (1810–1826), of Hanover Street Church, Boston (1826–1832); president of Lane Theological Semi-

nary (1832–1852); tried by his presbytery for teaching false doctrines and acquitted; sided with the New School when the Presbyterian Church divided (1838). Several of his children became famous: Henry Ward, noted just above; Harriet, wife of Professor Stowe and author of *Uncle Tom's Cabin;* Catherine Esther, who wrote much on education, and against woman's suffrage; Edward, celebrated clergyman and college president; Charles, clergyman and musician; and Thomas, who was long a pastor in Elmira, New York.

BELLAMY (*bĕl'ă-mĭ*), **EDWARD** (1850–1898). American author, socialist, and journalist; best known work is *Looking Backward or 2000–1887;* a strong socialistic force which led to the formation of Bellamy clubs and of the National Party; *Equality,* a sequel to the first, is on similar lines; other works include sociological essays and short stories.

BENEDICT XV. (Giacomo Della Chiesa) (1854–1922). Born at Pegli, Italy; ordained priest (1878); secretary to Cardinal Rampolla (1887); adviser to the Holy Office and archbishop of Bologna (1907); made cardinal in May and elected Pope in September (1914).

BERNARD OF CLAIRVAUX, SAINT. See under AUTHORS.

BENTHAM, JEREMY (1748–1832). English economist and natural philosopher, who was educated at Westminster and Oxford, was admitted to the bar, but practised little, and became an antagonist of the system of Blackstone. After living on the continent for a time, he returned, failed to gain recognition in politics, and turned to discourses on economy and statecraft. His *Defensé of Usury* asserts that rates of interest should not be limited artificially, a let-alone theory which he extended to other topics. His *Introduction to Principles of Morals and Legislation* (1789) insisted that legislation should be for "the greatest good of the greatest number." Laws should be judged by their real utility.

BERGSON (*bĕrg'sôn'*), **HENRI** (1859–1941). French philosopher, was educated in Paris, taught school, and then took the doctorate in letters in 1889. In 1900 he became a professor at the College of France; in 1913 he came to America and lectured at Columbia University, New York; and in the same year was elected president of the English Society of Psychical Research, to which he gave considerable attention. Some of his books are *Time and Free Will, Matter and Memory,* and the *Creative Evolution,* upon which his fame securely rests. He also wrote *The Meaning of War.*

BERKELEY (*bûrk'lĭ*), **GEORGE** (1685–1753). Irish philosopher and divine, noted for his doctrine of idealism or conception that nothing can exist apart from mind. Objective and subjective, therefore, are the same; or everything is the manifestation of divine intelligence, which guides and arranges things into objective forms and classes. He became a student and finally a fellow of Trinity College, Dublin; published a celebrated theory of vision (1709), in which he applied his doctrine of the idea; and held various offices in the church, being dean of Derry and in 1734 bishop of Cloyne. Among several practical schemes was one to found a college in the Bermudas. He lived for three years in Rhode Island, while waiting for funds and a royal patent from England, which never came. *Alciphron, or the Minute Philosopher,* issued after his return (1833) to England, sets forth his doctrines in great detail. Other works are his *Commonplace Book,* published in 1871, and the *Three Dialogues,* all of which explain the new doctrines. His influence, even in recent decades, his been tremendous.

BESANT (*bĕz'ănt*), **ANNIE** (1847–1933). An English writer and lecturer on Free Thought; born in London. Was associated with Bradlaugh as lecturer and editor of *The National Reformer.* Carried on work among the poor; associated with Madame Blavatsky, whom she succeeded. Her writings on sociological subjects are very numerous.

BIDDLE, JOHN (1615–1662). Father of the modern Unitarianism; was repeatedly imprisoned for his anti-Trinitarian views. To save his life, Cromwell banished him to one of the Scilly isles in 1655. Here he remained three years, until the Protector liberated him in 1658. He then continued to preach his opinions till the death of Cromwell, and also after the Restoration, when he was committed to jail in 1662, and died a few months after.

BLACK HUGH (1868–). Clergyman and professor of practical theology in Union Seminary, New York, from 1906. He was born in Scotland, studied at the University of Glasgow, and held various pastorates from 1891 to 1906. Lectured and preached to large audiences. Some of his discourses are *Friendship, Culture and Restraint, Edinburgh Sermons, Happiness,* and *According to my Gospel.*

BLACKWELL, ELIZABETH. See under SCIENTISTS.

BLAIR, HUGH (1718–1800). Scotch Presbyterian divine, educated at the University of Edinburgh, where he held the first appointment to the chair of rhetoric and belles-lettres. For many years his *Lectures on Rhetoric* were regarded as the last word in the theory of writing. Some of his sermons were translated into many languages; Dr. Samuel Johnson praised them highly.

BLAVATSKY, (*blä-văts'kĭ*), **HELENA PETROVNA** (1831–1891). Founder of the Theosophical Society (1875), and leader in the movement for the study of spiritism, human brotherhood, and comparative religions. She was born of a noble German family then living in Russia, lived there for part of her life, but spent years traveling in various parts of the world. Many prominent persons became interested in phenomena she seemed to produce without the medium of spirits or "spooks" as called then, though no end of controversy was aroused. Her *Isis Unveiled* contains unique theories of man and society. With Col. H. S. Olcott, and William Q. Judge with whom she had collaborated in New York, she went to India in 1879 and reëstablished the Theosophical Society.

BOETHIUS (*bō-ē'thē-ŭs*). See under AUTHORS.

BONAR (*bŏn'ăr*), **HORATIUS** (1808–1889). Scotch Presbyterian minister, who held appointment at Kelso, turned to the Free Church (1843), and after 1866 preached in Edinburgh. He acted as moderator of his denomination in 1883. Bonar is now recalled chiefly in his hymns, several of which are now found in Protestant hymnals.

BONAVENTURA (*bō-nä-vĕn-tōō'rä*), **SAINT** (1221–1274). Franciscan, who was born in Tuscany, educated in Paris, where he lectured for some years, and made a doctor of divinity in 1257. Having declined election to the see of York, England, he was made a cardinal and bishop of Albano in 1273 by Gregory X. He died while attending the Council at Lyons. Somewhat of a Platonist himself, he followed the tenets of the Franciscans in regard to the nature of matter, of man, and of knowledge.

BOOTH, MAUD BALLINGTON (1865–). With her husband, Ballington Booth (1859–), founder of the Volunteers of America (1896). She was associated in England with the Salvation Army (1887–96), which was founded by General William Booth. Her special field was prison work in the United States, concerning which she wrote extensively, some of her works being *Branded, Look up and Hope,* and *After Prison—What?*

BOOTH, (*bōōth*), **WILLIAM** (1829–1912). Founder of the Salvation Army; born in Nottinghamshire, England. Associated with the Methodist body; started the "Christian Mission" in London, from which the Salvation Army originated in 1878. The success of the movement is largely due to Booth's skill as an organizer and executive. Wrote *Darkest England* in 1890.

BOOTH (*bōōth*), **WILLIAM BRAMWELL** (1856–1929). Son and successor of General William Booth, noted just above. Entering the Salvation Army in 1874, he became chief organizer six years later, and head on the death of his father in 1912. His campaign against the traffic in women led to important legislation in England, especially the Criminal Law Amendment bearing on the subject in 1885. On the ground of illness, he was officially retired and was superseded in 1929 by Edward John Higgins, chief of staff.

BOSSUET (*bō'suā*), **JACQUES BENIGNE** (1627–1704). French prelate and controversialist, and considered the greatest of Christian orators; first attempted philosophical treatment of history. His orations at the funerals of the duchess of Orleans and the great Condé are masterpieces.

BOURDALOUE (*bōr'dälō*), **LOUIS** (1632–1704). A Jesuit and one of the greatest preachers France ever produced. The extreme popularity of his sermons induced his superiors to call him to Paris, and he became the favorite preacher of Louis XIV.

BOURNE (*bōrn*), **HUGH** (1772–1852). Founder of the Primitive Methodist Church (1811). For a time he was a carpenter in Staffordshire, England, and did much preaching in the Wesleyan Methodist Church, from which he was expelled in 1808 for disobeying injunctions. Being a popular outdoor speaker, he gained a large following—100,000 before his death.

BOURNE (*bōrn*), **FRANCIS** (1861–1935). English cardinal, who was ordained in 1884, became a monsignor eleven years later, assistant bishop of Southwark in 1896, bishop the following year, archbishop in 1903, succeeding Cardinal Bourne, and cardinal in 1911. Taking a middle ground, he favored establishment of churches wherever needed, education by the government or in schools already established, and a hostile attitude toward Modernism.

BOWNE, (*bōun*), **BORDEN PARKER** (1847–1910). American philosopher, who was born in New York, educated at New York University, and studied in Germany. After acting as religious editor of *The Independent* (1875–76), he was professor of philosophy at Boston University till his death. For many years he was considered one of the greatest thinkers, especially on religious questions and his *Immanence of God* (1905) created an immense interest.

BRACE (*brēs*), **CHARLES LORING** (1826–1890). An American social worker, largely instrumental in founding the Children's Aid Society for the relief of the poor of New York and other cities (1853). Workshops, industrial schools, homes, and other agencies were fostered. He was a graduate of Yale and of the Union Theological Seminary.

BRENT, CHARLES HENRY (1862–1929). Protestant Episcopalian clergyman, bishop, and humanitarian, who was educated in Toronto, received many degrees from universities of two continents, and served in Boston and Buffalo, until elected Bishop of the Philippines in 1901. After being elected bishop of Washington (twice) and of New Jersey, he became bishop of Western New York in 1918. Being recognized as an authority on the opium traffic, Bishop Brent served on several commissions, including the International Opium Conference, 1908–9; the Opium Conference at The Hague, 1911, being president of the Conference in 1911–12, and adviser to the League of Nations in regard to control of narcotics in 1923. He was one of the chiefs of the chaplain service in France in 1918–19, received decorations, and invitations to lecture before colleges and universities. Among Bishop Brent's books are *With God in the World, Liberty and Other Sermons, Leadership, The Sixth Sense, The Mount of Vision.*

BRIDGET (*brij'et*), **SAINT** (453–523). An Irish saint; born at Dundalk; takes rank in Ireland with St. Patrick and St. Columba. Also the name of a Swedish saint in the fourteenth century; founded a new order and 72 monasteries of the order.

BRIGGS (*brigz*), **CHARLES AUGUSTUS** (1841–1913). American theologian, educated at the University of Virginia, Union Theological Seminary in New York, and the University of Berlin. While a professor at the Union Seminary in 1892, he was tried for heresy by the New York Presbytery, acquitted, but convicted on appeal to the next General Assembly. In 1900 he was ordained a priest in the Protestant Episcopal Church. Some of his books are *Biblical Study, The Bible, The Church and Reason, Church Unity,* and *Fundamentals of Christian Faith.*

BROOKE (*bruk*), **STOPFORD A.** See under AUTHORS.

BROOKS (*bruks*), **PHILLIPS** (1835–1893). Bishop of the Protestant Episcopal Church. Rector of Church of the Advent (1862), and Holy Trinity Church, Philadelphia, till 1869, when he became rector of Trinity Church, Boston; bishop of Massachusetts (1891–1893); published *Lectures on Preaching, The Influence of Jesus,* and several volumes of sermons.

BROWN, JOHN (1800–1859). American abolitionist, who was born in Connecticut, worked at various occupations in Ohio, and in 1849 settled as a farmer at North Elba, New York. After five of his sons moved to Kansas in 1854 he followed and engaged actively in the border warfare incident to the struggle to make the newer territory free from slavery. Having collected some money from eastern friends a year or two before, he formed a plan in 1859 of taking the arsenal at Harper's Ferry, West Virginia, and with the stores there started an insurrection among negroes, whom he sought to help to escape to the north and to Canada. Previously he had set up a form of government among his 22 followers. In the skirmish, following the successful raid, Brown was wounded and captured, and only five of his crew escaped. Two of his own sons were killed. Brown and seven of his companions were tried and executed in December, 1859. He is buried at North Elba, New York. Though his bold but futile plan aroused the entire country, the Harper's Ferry incident had little real effect on immediate events. Brown honestly believed that he was called of God to put down a national crime by force of arms.

BRUNO (*brū'no*), **SAINT** (1030–1101). Born at Cologne; retired to a lonely spot near Grenoble, with 14 others, where they lived in cells apart, and met only on Sundays; founder of the Carthusian Order of Monks, the first house of which was established in the solitude of Chartreuse.

BRUNO (*brū'no*), **GIORDANO** (c. 1548–1600). Italian philosopher and skeptic, forced to leave Italy because of heretical views after having been for a number of years a Dominican. He wandered about Europe, inquiring into every system of thought, until at last he was caught by the Inquisition at Rome and burned "mercifully" at the stake. Of his many treatises, the *Speccio* gives his highly moral views, but opposed the faith of the church. Bruno's philosophy is a modified pantheism.

BUCKLEY, (*buk'li*), **JAMES MONROE** (1836–1920). This editor, parliamentarian, and church historian, was educated at Wesleyan University, and for a number of years, after taking a course in theology, held pastorates in New Hampshire, Michigan, and New York. During his editorship of the New York *Christian Advocate,* 1880–1912, he was recognized as a powerful influence in the Methodist Episcopal Church. As a parliamentarian he was widely recognized for many years. His best known works probably are *Christian Science and Kindred Phenomena, History of Methodism in the United States, Extemporaneous Oratory for Professional and Amateur Speakers.*

BUDDHA (*bud'a*) (d. c. 485 B. C.). Little is known of the founder of the Buddhist religion. Tradition makes him a member of the tribe of Gautama, the son of a king among the warrior casts in the Himalayas. At the age of about 30 he set forth on his wanderings, and six years later was enlightened as he sat under a bo-tree. He founded a school of monks, and for the rest of his life went about preaching. Early teachings seem to indicate a middle way between two extremes, and the attainment of perfection and Nirvana (freedom from feeling and pain). They mention four great truths: Those of pain, craving for a higher state, freedom from pain, and the means of arriving at perfection.

BURDETT-COUTTS (*cŏŏtz*), **ANGELA GEORGINA, BARONESS** (1814–1906). English philanthropist, who inherited the vast fortune of her grandfather Thomas Coutts, added the Burdett to her name, and managed her extensive gifts with great business skill. In 1837 she took up her residence in Piccadilly, in 1871 was created a baroness, and the following year was the first woman to be presented with the freedom of London at the Guildhall. In 1881 she married an American by birth, W. H. Ashmead-Bartlett, who took her name and greatly assisted her in her philanthropies. She built churches, founded many societies to benefit the poor, endowed St. Stephen's Institute, encouraged emigration to the colonies, helped the Irish peasantry, did much to protect children, assisted Florence Nightingale in her work of war relief, and started many trade schools. For many years she was one of the best loved and most distinguished persons in the British Empire.

BURRITT (*bur'it*), **ELIHU** (1810–1879). Organizer of peace societies, especially the Brussels Congress (1848), which was followed by similar yearly gatherings in various cities of Europe. Much of his life he lived in New Britain, Connecticut, acting as a blacksmith for years, but before he was thirty he could read fairly well in over forty languages, including the Greek and Latin classics, and those of modern Europe.

BURTON, ERNEST DeWITT. See under EDUCATORS.

BUTLER, JOSEPH (1692–1752). An eminent English divine; became preacher at the Rolls, where he delivered his celebrated *Sermons;* made dean of St. Paul's and finally bishop of Durham; his great work was *The Analogy of Religion, Natural and Revealed, to the Constitution and Course of Nature.*

CADMAN, SAMUEL PARKES (1864–1936). American clergyman and lecturer, who was born and

educated in England, but emigrated to America in 1890. Pastor of the Metropolitan Temple, New York (1895–1901), and of the Central Congregational Church Brooklyn, after 1901. Lectured and wrote extensively. In 1924 he was elected president of the Federal Council of the Churches of Christ in America, for which he frequently acted as Sunday afternoon radio preacher. Some of his books are *The Religious Uses of Memory, The Three Religious Leaders of Oxford, Christianity and the State,* and *Imagination and Religion.*

CALVIN, JOHN (1509–1564). An eminent reformer of the sixteenth century; for his attempts at reforming theology was compelled to flee from France (1533); settled in Basle where he wrote the *Institutes of the Christian Religion;* went to Geneva (1536) and worked for the Reformation. His religious works fill 59 volumes, published in Berlin (1863–1900). He established the Presbyterian form of church government; the fundamental principle of his theology is that of predestination to eternal happiness or misery by the absolute decree of God.

CALL, ARTHUR DERRIN (1869–). Secretary of the American Peace Society, who was born at Fabius, New York, educated at Cortland Normal School, Brown and Yale Universities, acted as a superintendent of schools until he became connected with the American Peace Society in 1912. Served on several international committees for promotion of peace. Author of *Our Country and World Peace* and various pamphlets on conciliation.

CAMPBELL (*kam'el*), **ALEXANDER** (1788–1866). Founder of the denomination called Disciples of Christ or the Christian Church, sometimes designated as Campbellites. He was born in Ireland, studied for a year at Glasgow University, settled in 1809 with his father at Washington, Pennsylvania, and three years later established his sect on the principle of going back to primitive Christianity and unity of all Christians without special distinctions. He edited the *Christian Baptist* for many years, founded Bethany College, West Virginia, in 1841, and acted as president till his death.

CANNON, JAMES, JR. (1864–). Bishop of the Methodist Episcopal Church South and leader in reform movements. He was educated at Randolph-Macon College and Princeton University, entered the ministry in 1888, and served as president of Blackstone College (1894–1918), and also as editor of the *Christian Advocate* of his church (1904–18), when he was made a bishop. Engaged in varied temperance activities. Acted as chairman, national legislative committee, Anti-Saloon League, and of the executive committee of the World League against Alcoholism.

CARMAN, ALBERT (1833–1917). Bishop of the Methodist Church in Canada, educated at Victoria University, Cobourg, acted as principal and then chancellor of this institution (1858–68–74), and then bishop until 1883, when the title was changed to general superintendent. Bishop Carman for years was a leader in religious and civic life of the Dominion.

CATHERINE, SAINT (1347–1380). Dominican nun of Siena, Italy, who early in life saw many visions, dedicated herself to the church, and for a time lived as an anchorite. In 1376 she persuaded Pope Gregory XI. to return from Avignon to Genoa, and then to Rome, where he died in 1378. She was able to prevent renewal of the schism in the papacy. Canonized by Pius II. in 1461.

CATT, CARRIE CHAPMAN (1859–). After acting as principal of the high school at Mason City, Iowa, she married Leo Chapman (d. 1886), and then George W. Catt (d. 1905). For many years she lectured in many states in favor of woman suffrage, president of the National Suffrage Association, 1900–03, and after 1916, and also president since 1904 of International Woman Suffrage Alliance.

CAVALIER (*ka-va-lyē'*), **JEAN** (1679–1740). Leader of the Camisards; born at Ribaute; fought for religious freedom against Louis XIV.; passed over to England; served against France, and was governor of Jersey.

CAVELL (*kav'l*), **EDITH LOUISA** (1865–1915). Born in Norfolk, England, she became a nurse and was appointed first matron of the Berkendael Medical Institute, Belgium (1907), and in 1914 and 1915 helped many wounded soldiers reach England from the front. She was arrested, convicted of being a spy, and in spite of attempts by Belgian and English friends, and by the American ambassador to Belgium, she was shot by the Germans October 12, 1915. In 1919 a memorial service was held at Westminster Abbey, and she was interred in Norwich Cathedral.

CHALMERS (*chal'marz*), **THOMAS** (1780–1847). First moderator of the Free Church of Scotland, which was organized in 1843 by 470 seceding clergymen; also first principal of the Free Church College. After preaching for some years in Fifeshire, he went to Glasgow, and soon became known far and wide as an eloquent preacher. In 1823 he became professor of moral philosophy at St. Andrews, and five years later went to the chair of theology at Edinburgh.

CHANNING (*chan'in*), **WILLIAM ELLERY** (1780–1842). American religious leader, long considered "the apostle of Unitarianism," but he himself objected to the name Unitarian as being too formal. His chief opposition was more to Calvinism, as then preached in New England, than to the doctrine of the Trinity. Channing was born in Rhode Island, educated at Harvard, taught for a time, and became a minister in Boston in 1803. One of his sermons against war led to the formation of the Massachusetts Peace Society, and his book, *Slavery,* written after a visit to the West Indies (1835) attracted wide attention. Always interested in all public questions, he issued several pamphlets that gained wide currency. Greatly beloved by his friends.

CHAPMAN, J. WILBUR (1859–1918). American religious leader, a graduate of Lake Forest University (1879). For many years he was a pastor in Ohio, Indiana, and New York, making evangelistic tours with D. L. Moody in intervals. For ten years he acted as corresponding secretary of the Presbyterian General Assembly committee on evangelism. After 1910 he made tours to many nations.

CHEMNITZ (*kem'nits*), **MARTIN** (1522–1586). German Protestant theologian; by inducing the Saxon and Swabian churches to adopt the *Concordien formel* as their confession of faith, he consolidated Luther's work.

CHERRINGTON, ERNEST HURST (1877–). Temperance reformer, who was born in Ohio, educated at Ohio Wesleyan, and held several offices in state and national Anti-Saloon League. Edited various publications, including *The American Issue, The American Patriot,* and other periodicals. Delegate to various international congresses on alcoholism. Author of *History of the Anti-Saloon League, The Evolution of Prohibition in America,* and *America and the World Liquor Problem.*

CHEYNE (*shā'nē*), **THOMAS KELLY** (1841–1915). Biblical scholar of England, who did much to introduce new methods of research and interpretation of the Scriptures. He was educated at Oxford and in Germany, took orders in 1864, and held various ecclesiastical offices, including the Oriel professorship of interpretation of Scripture at Oxford. Assisted in revising the Old Testament. Some of his works were *The Prophecies of Isaiah, Jewish Life After the Exile,* and *The Reconciliation of Races and Religions.*

CHOWN, SAMUEL DWIGHT (1853–). Canadian bishop of the Methodist Church. Ordained in 1879, he held pastorates in Montreal and Toronto, acted as financial secretary of the Brockville District (1888–89) and of the Perth District (1891–1902), was chairman of the Toronto Western District (1897–99), and of the Central Toronto District (1900–02). From 1902 to his election as a bishop in 1910, he was secretary of Temperance in the Methodist Church of Canada.

CHRYSOSTOM, JOHN, SAINT ("GOLDEN MOUTHED") (344?–407). A celebrated Greek father of the church; his works consist of *Homilies, Commentaries, Epistles, Treatises,* and *Liturgies.* The *Homilies* are considered to be finer than any other similar early Christian writings.

CLARK, (*klärk*), **FRANCIS EDWARD** (1851–1927). Founder and from 1887 to his death president of the United Society of Christian Endeavor. Born in Quebec of American parentage, and took the name of an uncle when his own father, Charles C. Symmes, died in 1859. He was graduated at Dartmouth College and Andover Seminary, became a pastor in Portland, Maine, where he founded a local young people's society in 1881, and then in Boston. For many years he was chief editor of the *Christian Endeavor World* and wrote several books, of which those best known now are *The Continent of Opportunity, Christ and the Young People,* and *The Gospel of Out-of-Doors.*

CLARKE (*klärk*), **ADAM** (1762–1832). British Wesleyan clergyman and three times (1806, 1814,

1822) president of the conference. The British Bible Society employed him to make an Arabic Bible, and he wrote a great *Commentary on the Holy Scriptures*, which was long a standard work. Besides being also a popular preacher, he edited many works, including a *Bibliographical Dictionary* and *Memories of the Wesley Family*.

CLEMENT (*klem'ent*) **OF ALEXANDRIA** (c. 150–c. 215). Little is known of his early life except that he was born of pagan parents in Athens, knew Greek philosophy and literature thoroughly, and in middle life became a Christian. Origen was his pupil, and Jerome called him "most learned of men." For some years he acted as presbyter, and later teacher, in Alexandria, where trace of him is lost. Of a number of treatises, four have come down to us: *An Address to the Greeks*, which attacks their ideas of the gods; *Miscellanies*, in which occurs a very early hymn, *Shepherd of Tender Youth*, and many notes on contemporary events and ideas; *The Tutor*, a discussion of teaching; and a discussion of riches.

CLOPPER, EDWARD NICHOLAS (1879–). Social worker among children, born and educated in Cincinnati and Bethany College, West Virginia. For several years taught in Porto Rico (1901–08), was Ohio Valley Secretary of Child Labor Committee (1908–12), field secretary of National Child Labor Committee (1913–21), and then engaged in various similar activities. Directed child labor surveys in many states, prepared official reports and legislation, and wrote extensively on child welfare. Author of *Rural Child Welfare*, *Child Labor in City Streets*, and *Course of Study for Graded Schools in Porto Rico*.

CODY, HENRY JOHN (1868–). Canadian clergyman of the Church of England; educated at University of Toronto and Wycliffe College, and elected rector of St. Paul's Church, Toronto (1899). He served on many important boards and commisssions, was archdeacon of York (1909–19), minister of education, Ontario (1918–19), and member of provincial parliament (1918–20). Declined election as bishop of Nova Scotia (1904), and Archbishop of Melbourne, Australia (1921). Preached sermon in English (1926) at Seventh Assembly of League of Nations at Geneva.

COFFIN, HENRY SLOANE (1877–). Religious leader, preacher, and president of Union Theological Seminary, New York. He was graduated from Yale and from Union Seminary, held pastorates in New York from 1900 to 1926, also acting as associate professor at Union (1904–26), when he became president of this institution. Author of *Social Aspects of the Cross*, *Christian Convictions*, *A More Christian Industrial Order*, and other works on religious and social questions.

COLET (*kŏl'ĕt*), **JOHN** (1457?–1510). English biblical scholar who greatly influenced the study of theology. He was educated at Oxford, studied in Paris, where he became friendly with Erasmus, whom he later greatly influenced, and held various ecclesiastical preferments, ending in the deanship of St. Paul's (1505). Though not a ripe scholar, he greatly influenced reform of the period, especially in regard to church policies.

COLLYER (*kel'yar*), **ROBERT** (1823–1912). Unitarian clergyman of English birth; a blacksmith who became a Methodist preacher, changing to Unitarianism in 1859; founded Unity Church, Chicago (1860); from 1879 to his death pastor of Church of Messiah, New York City. Author of *Nature and Life*, *The Simple Truth*, *Talks to Young Men*, and *Things New and Old*.

COLUMBA (*kō-lum'ba*), **SAINT** (521–597). A native of Ireland. About 563 he landed in the island of Hy, now called Iona, and founded his church; traversed the whole of northern Scotland, preaching the Christian faith and founding monasteries. The Columban Church was in some points of doctrine and ceremonial opposed to that of Rome, to which it owed no allegiance. He died in Iona.

COMSTOCK, ANTHONY (1844–1915). Organizer of the New York Society for the Suppression of Vice (1873), he continued an energetic campaign against all forms of immoral books, pictures, and practices, securing several federal laws to support this work. He was born in Connecticut, served in the Civil War, and was connected with New York Christian Associations before 1873.

COMTE (*kônt*), **AUGUSTE** (1798–1857). Celebrated positivist philosopher, who was educated imperfectly at the Polytechnic School of Paris, tried to teach mathematics, but had a hard time making a living. In youth he was deeply influenced by Benjamin Franklin and Saint Simon, with whom he quarreled and separated as a friend in 1824. After lecturing some, he issued the first of his six volumes of the *Positive Philosophy*. Late in life he formed a friendship with J. S. Mill, and spent some years in devising the rituals of what he called the "Religion of Humanity." He completed his first series of volumes in 1842, and between 1851 and 1854 issued four of the *Positive Polity*.

CONFUCIUS (*kŏn-fū'shĭ-ŭs*) (c. 550–478 B. C.). Great teacher of China, born in the state of Lu, and largely self-educated. He acted as keeper of stores and then superintendent of parks of the head of the Ki clan, set up a school, frequented by many followers, and moved this to a neighboring state, when the ruler of Lu was driven out by his subjects. Here he taught for a number of years, rose to hold influential office for a time, and in his fifty-sixth year went forth to wander among various states and cities of China. After thirteen years he returned to his native Lu. Though greatly admired by his friends, pupils, and several rulers during his life, his fame in death grew to inordinate bounds. His wise sayings are treasured to this day.

CONWELL, RUSSELL HERMAN (1842–1925). Beginning as a lawyer and newspaper man in Minneapolis, Boston, and abroad, Conwell became a Baptist clergyman in 1879, was pastor of Grace Church, Philadelphia (1881–91), founded Temple University (1888), and acted as president till his death. He is best known for his lectures, heard by thousands in all parts of the United States, his *Acres of Diamonds* having been delivered, it is claimed, more than any other lecture on this continent. Among his books are *Women and the Law*, *Lives of the Presidents*, and *The New Day*.

COOPER, ANTHONY ASHLEY. See under SHAFTESBURY.

COOPER, PETER (1791–1888). A manufacturer and philanthropist; born in New York City; apprenticed to a carriage maker; engaged in furniture manufacture; mover in laying the Atlantic cable; took great interest in education; founded Cooper Union.

CORNELL, EZRA. See under CAPTAINS OF INDUSTRY.

CRANMER, THOMAS (1489–1556). Archbishop of Canterbury and leader in the Reformation of England. He was educated at Cambridge, where he taught theology for several years. For Henry VIII. he prepared a pamphlet supporting the divorce from Catherine and later that from Anne Boleyn. In 1530 he went abroad on a mission to Germany and the pope, who bestowed honors on him, and in 1533 Cranmer became archbishop. In 1545 he published the *Litany*, which is quite similar to the form used today, in 1548 the *Catechism*, and two years later his great argument against transubstantiation. When Mary came to the throne, he was deposed, recanted at first, but later asserted his old faith, and went cheerfully to the stake.

CROCE (*krō'chā*), **BENEDETTO** (1866–). Italian philosopher, educated in Naples and Rome, and early turned his attention to history and local antiquities. Beginning with a philosophical essay in 1893, he developed his system of thinking to include by 1926 about a score of volumes. He also reviewed the significant literature of Italy for several decades. Though often compared with Hegel, Croce devoted his thought more often to concrete, every-day interpretation of the life of man around him. In his theory of esthetics he developed interesting and picturesque doctrines.

CROSBY, FANNY. See under AUTHORS.

CROSBY, HOWARD (1826–1891). American clergyman and scholar. In 1863 pastor of the Fourth Avenue Presbyterian Church in New York City; in 1877 a delegate to the first Presbyterian General Council, in Edinburgh; one of the founders and president of the Society for the Prevention of Crime.

CUYLER (*kaĭ'lar*), **THEODORE LEDYARD** (1822–1909). American Presbyterian clergyman, after active pastoral work (1848–1890), became minister at large. Active in temperance and philanthropic work; published about 4,000 articles in religious periodicals.

DAMIEN (*dā'myăn*), **FATHER (JOSEPH DE VEUSTER)** (1840–1889). Missionary to the lepers of the colony of Molokai Island of the Sandwich group. He was born in Belgium, went to Honolulu, where he was soon ordained a priest (1864). Realizing the distressing condition of the government colony, he secured permission to live among the lepers, affording

not only spiritual consolation, but assisting in many improvements in their manner of life. He was later joined by other resident priests. Having contracted the disease, he died in 1889. Robert Louis Stevenson wrote an eloquent tribute to Father Damien.

DAVIDSON, RANDALL THOMAS, first BARON (1848–1930). Archbishop of Canterbury (1903–28), and leader in religious and moral teaching for many years. He was progressive, enlightened, and zealous. Known as an advocate of the League of Nations, and preacher at the opening of the third Assembly (1922), opponent of religious persecution in Africa and Russia, and advocate of closer coöperation among all religious groups. As president of the Church Assembly (1920–28), he favored many progressive movements, and much legislation was enacted. In 1920 he also presided over the Lambeth Conference, which was attended by 252 out of 368 Anglican bishops of the world. Yet the chief measure, the revision of the Prayer Book, was twice rejected by the House of Commons. Davidson, therefore, felt that it would be wise to resign his office in 1928, after he had served more than 25 years. At this time he was created a baron.

DAVIS, JEROME (1891–). American sociologist, professor of practical philanthropy at Yale from 1924; born of American parents in Japan. For a number of years he taught, acted as secretary to Dr. Wilfred Grenfell in Labrador, engaged in Russian war work (1917–19), and taught one year at Dartmouth. He investigated conditions in Russia, in the coal fields of West Virginia, and elsewhere. Wrote *The Russian Immigrant, Christian Fellowship among the Nations,* and *Christianity and Social Adventuring.*

DEMING, HORACE EDWARD (1850–). Civic reformer and lawyer, admitted to the New York bar in 1877, and afterwards practiced in New York City. Engaged in ballot and civil service reforms of New York, on committee to suggest a new charter for Greater New York, and later (1901) on the citizens' committee of 250 to secure revisions in the charter.

DEMOCRITUS (*dĕ-mŏk'rĭ-tŭs*) (b. c. 460 B. C.). Greek philosopher, credited with the first clear statement of the Atomic Theory of creation. He was the son of a very wealthy father, but spent his patrimony in travel in Asia, Africa, and Europe, having lived in Egypt for seven years. Of his numerous works, only a few fragments remain. He taught that, although nothing can come out of nothing, there are different beings in the world. He believed that everything can be explained mechanically, but not according to chance. The soul is composed of atoms; life is sustained by breathing in new atoms, and expelling the dead ones. In ethics he believed the greatest good to be freedom from pain, and a maximum of noble pleasure.

DEVINE (*dē-vĭn'*), **EDWARD** (1867–). Social worker and member of various social and industrial agencies; professor of social economy, Columbia University (1905–19). He edited the *Survey* (1912–21), was a member of the United States Coal Commission (1922–23), acted as special agent for Red Cross relief, and in 1926 became professor and dean, Graduate School, American University, Washington, D. C. Some of his many books are *The Practice of Charity, Misery and Its Causes, The Spirit of Social Work,* and *The Disabled Soldiers and Sailors.*

DEWEY, JOHN (1859–). American philosopher and reformer in education, a native of Vermont, and a graduate of the University of Vermont and of Johns Hopkins. While teaching at Minnesota, Michigan, and Chicago (1888–1904), he became widely known as one who turned from the old literary and speculative to a democratic and scientific philosophy of education. Experience is the starting point and shows the need for progress, evolution of the individual and society, and all fine social movements. Dewey looked toward the future. Some of his important volumes are *The School and Society* (1900), *How We Think* (1909), *Democracy in Education* (1913), *Reconstruction in Philosophy* (1920), *Human Nature and Conduct* (1922).

DILKE, CHARLES WENTWORTH (1810–1869). Credited with having secured the municipal vote for women in England (1884–85), Sir Charles W. Dilke also interested himself in municipal reform, housing of the working classes, and in remedial legislation in general. He was a Cambridge graduate represented Chelsea in Parliament (1868–86), and acted as under secretary of foreign affairs (1880–82), and was president of the local government board (1882–85).

DIONYSIUS (*dī'ô-nĭsh'ĭ-ŭs*) **EXIGUUS** (about 470–about 540). A learned monk, a "Scythian by birth, but wholly Roman in other respects." His works include a collection of the first 50 canons of the Apostles, the canons of 10 Councils, and 38 decretals of the popes from 384 to 498; promulgated by Charlemagne in 802. Dionysius completed the paschal year and introduced the system of counting the years from the birth of Christ.

DOMINIC (*dŏm'ĭ-nĭk*), **SAINT** (1170–1221). Founder of the Dominican Order, who was born in Castile, was ordained a priest in 1195 at Osma, went on a mission with the bishop of his diocese, and for ten years (1205–15) preached among the Albigenses in Languedoc. Little progress of lasting kind was made. In 1218, after some waiting, Honorius III., the pope, gave permission for the founding of a new order; by his death the Dominicans had increased amazingly in western Europe, with over 500 friars.

DOW (*dau*), **NEAL** (1804–1897). Author of the Maine law against the manufacture and sale of intoxicants (1851). He was mayor of Portland (1851), member of the legislature (1858–59), and entered the Civil War as colonel of volunteers. In 1862 he became a brigadier general and for a time had charge of federal forces in Florida. Later he devoted much of his time to social movements.

DOWIE (*dau'ĭ*), **JOHN ALEXANDER** (1847–1907). Religious leader, founder of the Christian Catholic Apostolic Church in Zion, which he established in Zion City, Illinois, with industries and strict laws. For many years he went about as a "healer" in Australia and after 1888 in America, making frequent tours. From 1896 he lived as "First Apostle" of the Zion church at Zion City, but a few months before his death was removed from active leadership, being succeeded by Wilbur Glenn Voliva.

DRACHMAN, BERNARD (1861–). Orthodox Jewish rabbi, educated at Breslau and Heidelberg, and professor in the Jewish Theological Seminary of New York (1887–1908). He also acted as rabbi of Zichron Ephraim, and wrote several works on biblical and scholastic subjects.

DUKE, JAMES BUCHANAN. See under CAPTAINS OF INDUSTRY.

DUNANT (*dü'nän*), **JEAN HENRI** (1828–1910). Swiss philanthropist, instrumental in the founding of the Red Cross Society. Having become interested in aiding wounded soldiers, he wrote and lectured extensively on the subject and in the Geneva Convention of 1864 the nations represented took steps to form an international organization. Much of his private fortune went toward the establishment of various social agencies. Half the Nobel peace prize was given to Dunant in 1901.

DUNS SCOTUS (*dŭnz skō'tŭs*), **JOHN** (c. 1265–1308). Celebrated British theologian, a graduate of Oxford, and a valiant defender of the Franciscan doctrines. Before 1302 he spent some years in Paris, and early in 1308 went to Cologne to establish a university, and there died shortly afterward. Because of the acuteness of his mind, he was called "The Subtle Doctor." Opponents later ridiculed him, and the name *dunce* came from his. Many of his doctrines opposed those of the Dominicans. Scotus is credited with a clear statement of the idea of the Immaculate Conception. He taught that reason alone is insufficient to arrive at truth, but this must be supplemented by inspiration.

DUNSTAN (*dŭn'stăn*), **SAINT** (909–988). An English prelate, who was educated at Glastonbury, and in the time of Edmund became abbot there. From the court of King Athelstan he was driven by rivals, and he gained little favor in the reign of Edwig, but under Edgar was made bishop of London and in the same year also archbishop of Canterbury (959). He continued in favor and power till about 980.

ECK (*ĕk*), **JOHANN MAIER** (1486–1543). Opponent of Luther and a great controversial debater. He argued against Carlstadt at Leipzig in 1519, and a few days later with Luther himself. He influenced the German universities to declare against Luther's doctrines; secured from the pope on a visit to Rome (1520) a bull against them; and later issued several violent pamphlets, which Luther ignored. He was present at Worms (1540), seemed willing to compromise between the church and the new elements, but at Regensburg the next year stood firm against all concessions. In 1530–31 he collected his writings against Luther in four volumes.

EDDY, MARY BAKER (1821–1910). Founder and until her death the leader of the Christian Science

movement. She was born in New Hampshire, of a prominent family, educated there, and married George W. Glover, a southerner, in 1841, but he died within six months. Her second marriage to Daniel Patterson, a dentist, turned out unhappily. Asa Gilbert Eddy, her third husband, was an ardent follower, one of her first pupils. For years Mrs. Eddy taught, first in New Hampshire and later in Boston at the Massachusetts Metaphysical College, founded by her (1881). From early life she was deeply interested in spiritual thought. Her belief in healing dated from two experiences of her own, the second in 1866, from which she traced her ideas of Christian Science. With her followers she founded the First Church, Scientist, of Boston in 1892. In 1928 some 2,370 churches were reported. Besides establishing two periodicals, she wrote much, including such books as *Science and Health* (1875), *Unity of Good, Church Manual, Pulpit and Press,* and *Christian Science versus Pantheism.*

EDDY, SHERWOOD (1871–). Religious worker, mainly in Asia, acting as secretary of the Y. M. C. A., from 1911, especially among students of Japan, Korea, India, the Near East, and Russia. Educated at Yale, he went to India for the Christian Association in 1896, and remained there till 1911. With the British Army at first, and after 1917 with the American in France, in the World War. Author of *The Awakening of India* (1911), *Suffering and the War, New Challenges to the Faith,* and *Religion and Social Justice.*

EDWARDS, JONATHAN (1703–1758). American theologian and preacher, who held the pastorate of the church at Northampton, Massachusetts, from 1727 to 1748, when he was dismissed by his congregation. During much of the time he seldom visited his people, worked in his study for at least twelve hours a day, and apparently did not like to mingle with men. His powerful sermons, Calvinistic in nature, long held his congregations breathless when they heard him preach. In 1750 he went to Stockbridge, Massachusetts, and there preached and did some mission work among the Indians. When his son-in-law, Aaron Burr, president of Princeton College, died in 1757, Edwards reluctantly agreed to succeed him. Smallpox cut him off, however, less than two months after he formally took office. His *Freedom of the Will,* once regarded as a great polemic work, hardly commands much respect among biblical scholars or philosophers today.

ELIOT, JOHN. See under AUTHORS.

EMPEDOCLES (*ĕm-pĕd'ō-klēz*) (c. 490–430 B. C.). Greek philosopher and poet, whose family was distinguished in Sicily, and he refused the kingship, according to tradition. Of a poem on nature of 5,000 lines, but 400 survive, and only a few lines of his hymns. He seems to have been a mystic and scientist at the same time. He believed the universe is composed of but four elements, earth, air, fire, and water,—fire being the essence of life, the rest that of forms and objects in different proportions. He said the world was created out of a conflict of two opposing forces, Hate and Love, when the latter predominated.

EPEE (*ā'pā*), **CHARLES-MICHEL, ABBE DE L'** (1712–1789). Leader in the education of deaf mutes. He was a clergyman, deprived of his offices because of heterodoxy. Then he turned attention to education, from the Spaniard Pereira learned much, and at his own cost founded a school (1755). In 1791 the National Assembly continued his work.

EPICTETUS (*ĕp-ĭk-tē'tŭs*) (b. c. 60). Greek philosopher, probably born in Phrygia, who took the name meaning "acquired"; hence, his original one is unknown. Evidently he was once a slave and of weak constitution. Domitian expelled him and others for their Stoical doctrines, and he afterward lived at Nicopolis. Much of his teaching was reported by his pupils in the *Discourses of Epictetus.* Both Socrates and Diogenes influenced his ideas, which are of high seriousness. Man is a conscious being, responsible to society, and accountable for what he does with his thought life.

EPICURUS (*ĕp-ĭ-kū'rŭs*) (241–270 B. C.). Early Greek philosopher, who spent the first 15 years of his life in Samos, began to teach in Mytilene and later in Lampracus, in 306 going to Athens, where he established a famous school. In habit he was temperate, in ideals moderate, and in teaching inspired. Only a series of maxims now remain of his writings. From the fact that he taught that happiness is the greatest human good, in later times his doctrine was developed into a theory of mere pleasure. He really taught that one's peace of mind is the greatest good.

ERASMUS, DESIDERIUS (1466–1536). This great leader of the Renaissance in western Europe was born in Holland and educated at Gouda and Deventer, taking orders in 1492. He resided in England in 1499, 1505 to 1514, and 1517. Thereafter his chief seat was at Basle, until he was driven to Freiburg for six years returning to Basle in 1535. He taught at Paris, Louvain, Cambridge and elsewhere. Much of his time was given to the edition of the New Testament, the Letters of Jerome and Seneca. His counsel was sought by scholars and monarchs, yet he refused to become allied too strongly with any school of thought. Erasmus left a deep imprint on later thought, as a humanist scholar, a man of letters and a churchman. At Cambridge he knew Colet and lived with More for a time. He advocated primitive doctrines, avoided controversy between church and state, and shunned dogmatism more than most men of his age. Erasmus also acted as a link between Latin and the new learning devoted mainly to Greek studies.

EUCKEN (*oi'ken*), **RUDOLF CHRISTOLPH** (1846–1926). German theologian and author, educated under Lotze and Trendelburg. He held chairs of philosophy at Basle (1871–74) and at Jena (1874–1920). Turning from his early studies in Aristotle and other Greek writers, he developed the idea that man is the meeting place between spirit and nature, and hence should develop his powers of thought, will, and inspiration.

EUSEBIUS (*yu-sī'bi-us*) **OF CAESAREA** (c. 260–c. 340). Called the father of ecclesiastical history and bishop of Caesarea, was known at first for taking a middle ground between the Arians and their opponents. Realizing later that Arius practically denied the divinity of Christ, he cast his lot with the Alexandrians. Becoming bishop in 313, he took part in the Council of Nice, and was widely known as the most learned man of his generation. Constantine greatly admired his abilities and moderation. An edition of all his works was printed in 1542 at Basle. Some of his writings are valuable today, the *Preparation* and the *Demonstration,* for their doctrines of the Church; *History of the Church to 323;* and the *Chronicon,* which contains references to authors not now extant.

FABER (*fā'bĕr*), **FREDERICK** (1814–1863). English theologian and hymn-writer, who gave up his early Calvinistic views, became a warm admirer of John Henry Newman, and joined the Roman church in 1845. He founded a religious community at Birmingham, and in 1849 came to London, where he established a branch. Though he wrote various theological works, he is now known chiefly for his hymns like *O Paradise, O Paradise, Hark, Hark, my Soul, O Gift of Gifts,* and *Sweet Saviour, Bless Us Ere We Go.*

FALCONIO (*făl-kō'nē-ō*), **DIOMEDE** (1842–1917). Roman Catholic archbishop and Apostolic Delegate; held various positions in educational institutions in United States and Newfoundland till 1883; returned to Italy, holding high ecclesiastical offices until 1892, when he became bishop, archbishop (1895), Apostolic Delegate to Canada and the United States (1902); cardinal (1911).

FALK, JOHANN DANIEL (1768–1826). German author and philanthropist, who was a close friend of Goethe, and wrote a number of satirical and other works. Today he is best known as the founder of a philanthropic association (1813), one of the earliest, and also as the organizer of an institution for the care of orphan children.

FARLEY (*fār'li*), **JOHN MURPHY** (1842–1918). Roman Catholic archbishop of New York, a native of Ireland, graduate of St. John's College, Fordham, New York, and later a student of the American College, Rome. Secretary to Archbishop McCloskey (1872–84), vicar general of New York (1891–95), assistant bishop (1895–1902), and bishop on the death of Archbishop Corrigan. In 1911 he became a cardinal. Known for his aid to education.

FARRAR (*far'ăr*), **FREDERICK WILLIAM** (1831–1903). An English clergyman, dean of Canterbury; 16 years master at Harrow; canon and archdeacon of Westminister, and chaplain to the queen. His *Life of Christ* passed through many editions; his sermons in volumes like *Eternal Hope* did much to soften the theology of the age; and *The Life and Works of St. Paul* and *The Early Days of Christianity* did much to

spread the interest in the foundations of the church.

FENELON (*fē-na-lēn'*). See under AUTHORS.

FENWICK (*fen'wik*), **ETHEL GORDON** (1857–). Wife of Dr. Bedford Fenwick, who did much to raise the status of the profession of nursing in Great Britain. Largely through her influence Parliament passed an act regulating nursing (1919). Previously she had founded the Royal British Nurses' Association (1887), and two years later an international body of like character. She also took part in journalism, becoming honorary editor of *The British Journal of Nursing*.

FICHTE (*fich'tē*), **JOHANN GOTTLIEB** (1762–1814). German idealistic philosopher, who developed the ideas of Kant. He taught that subject and object are the same, and all things are merely appearances, phenomena related to spirit, the only real being in the universe. His influence on later philosophy has been tremendous, especially on men like Emerson, Hegel, and Schopenhauer. Of Swedish descent, he was educated at Jena, where he became professor of philosophy in 1794, and rector of the University of Berlin in 1810. Following Kant's great work, Fichte published *A Critique of Revelation* (1792), which turned away from the early influences of Spinoza. Other important works are *Theory of Knowledge, System of Moral Philosophy*—his greatest treatise—and *The Way to a Blessed Life*.

FILENE, EDWARD A. (1860–1937). Boston merchant who became a leader in organized coöperative movements of various kinds. Beginning with attempts to secure greater efficiency among the employees of his retail stores, he offered them shares in the business. Later he founded the Twentieth Century Fund to promote better industrial and economic conditions. Served on numerous national and international committees and foundations. During the World War assisted the United States at home and abroad. Active in organizing the United States Chamber of Commerce, National Credit Union Extension Bureau, Boston Planning Commission, and the Public Franchise League. He was decorated by France, Austria, and Italy.

FISHER, GEORGE PARK (1827–1909). American theologian, who was educated at Andover Theological Seminary, and was a professor at Yale from 1854,—first till 1861 of divinity, and then of ecclesiastical history. His influence on thought was widely exerted. Some of his books are *History of the Reformation* (1873), *Grounds of Theistic and Christian Belief* (1883), and *History of Christian Doctrine* (1896).

FOLKS, HOMER (1867–). Social worker, educated at Albion College and Harvard; engaged in various capacities in New York,—superintendent of the Children's Aid Society (1890–93); State Charities Aid Society (1892–1902, and after 1904); president of New York State Probation Commission (1907–17); chief of American Red Cross Survey Mission to Italy, Serbia, and other lands (1918–19). Served in many other civic and national movements. Wrote *Care of Destitute, Neglected, and Delinquent Children* and *The Human Cost of War*.

FOSDICK, HARRY EMERSON (1878–). American clergyman, educated at Colgate University and Union Theological Seminary, New York. He was pastor of the First Baptist Church, Montclair, New Jersey (1904–15), instructor in Union Seminary, and professor of practical theology from 1915, and in 1918 became minister of the First Presbyterian Church, New York. In 1925, on being required to become a member of the Presbyterian Church, he resigned the pastorate, and immediately was installed as pastor of the Park Avenue Baptist Church, which agreed to admit to membership all Christians without insisting on baptism or credal declarations. Fosdick was a popular preacher among universities. Some of his books are *The Second Mile, The Manhood of the Master, The Meaning of Faith*, and *Twelve Tests of Character*.

FOURIER (*fū-ri-ā'*), **FRANCOIS MARIE CHARLES** (1772–1837). A French social economist; at first in trade, then in the army. After seeing a cargo of rice thrown into the sea to raise the price he was led to attempt a reform abolishing the competitive system, by means of associated production and life in "phalansteries." He died in Paris.

FOWLER, CHARLES HENRY (1837–1908). Bishop of the Methodist Episcopal Church from 1884. He was president of Northwestern University (1872–76), as bishop made important visits in various lands, organizing conferences in China and Russia, universities at Peking and Nanking, China, and mission st tions elsewhere. For years he delivered an extreme popular lecture on Abraham Lincoln.

FOX, GEORGE (1624–1691). An Englishma founder of the Society of Friends, or Quakers. Whe 19 years old he believed himself called to preach, ar wandered about England doing so; his numerous fo lowers gained their name Quakers in 1650, becau Fox had bidden the magistrates, who frequently a rested him, "to tremble (quake) at the word of t Lord."

FRANCIS OF ASSISI (*äs-sē'zē*), **SAINT** (1182 1226). Founder of the Order of the Friars Minor, Franciscans. Born in Assisi, Italy; in business wi his father until 24, when he retired to lead a life lik Christ's; with 11 others he received the approval Pope Innocent III. to form the order (1209). H rule of life consisted of 23 chapters, prescribi poverty, obedience, chastity, giving up of propert and obligation to live upon alms. The order w formally sanctioned in 1216.

FRANCIS OF SALES (*sālz*), **SAINT** (1567–1622 Swiss prelate who founded the order of the Visit tion, as he said, to favor those of "strong souls wi weak bodies." Acting under orders of Bishop Granier, he went (1535) to win back some Swi subjects to the church from the heresy of Calvanis This commission he rigorously pushed to success. 1602, after a second visit to Paris, he succeeded Granier at Geneva, spending the rest of his life zealous works of the spirit. In 1665 he was made saint.

FRY, ELIZABETH (1780–1845). Daughter John Gurney, a wealthy British merchant, she marri Joseph Fry, a merchant of London. Brought up Quaker, in 1811 she was admitted to preach, b turned her attention to prison reform through Europe. Beginning at Newgate Prison in London, s secured various reforms in segregation of the sex in prisons, providing employment, sanitation, and oth necessities. At times she visited France, Switzerlan Germany in addition to Scotland and Ireland. H work had definite and immediate effect in all the lands.

FUNK, ISAAC KAUFMAN (1839–1912). Ame can clergyman, who held various Lutheran pastorat (1867–1878), when he joined with A. W. Wagna in organizing a publishing house. Besides foundi the *Standard Dictionary*, the *Jewish Cyclopedia*, t *Homiletic Review*, and the *Literary Digest*, he pu lished or wrote many religious and reference work

GAILOR (*gāl'ŏr*), **THOMAS FRANK** (185 1935). Bishop of the Protestant Episcopal Church America; chairman of the House of Bishops fr 1916. He was graduated from Racine College, W consin, and the General Theological Seminary of N York; was rector at Pulaski, Tennessee (1879–8 professor of ecclesiastical history, and then vi chancellor of the University of the South (1882–9 coadjutor bishop till 1898 and bishop since then. his books, *The Trust of the Episcopate, The Maste Word and the Church Act, The Communion of Sain* and *The Christian Church* may be mentioned.

GANDHI (*gänd'hē*), **MOHANDAS KARAMCHA** (1869–). Indian social and political lead known for asceticism and self-sacrifice. He was bo of a cult that refuses to harm any living thing. Co pleted his education in England in 1891. Decidi that the law was distasteful to him, he gave up a l thousand dollar practice, took vows of virtual pover and spent much time from 1893 to 1914 in So Africa quietly inciting revolt against some laws, s eral of which were finally repealed. Returning India, by 1921 he reached the climax of his fa advocating passive resistance to British rule. prisoned for a time, but released early in 1924, found his power somewhat eclipsed. In 1930, h ever, he adopted a more active policy of resista and was again thrown into jail.

GARRISON, WILLIAM LLOYD (1805–187 Abolitionist leader, journalist, and philanthropist, established the Newburyport, Massachusetts, *P Press*, edited the *National Philanthropist* (1827), the *Liberator* (1831–65). Founded the New Engl Anti-slavery Society (1832), and for years lectu widely. He was often threatened, more than o mobbed, but never flinched in advocating the aboli of human slavery. Garrison, however, did not lieve in war even to suppress slavery. He also oppo the use of alcohol and tobacco, capital punishm

freemasonry, imprisonment for debt, and restrictions of the suffrage because of sex.

GEORGE, SAINT (died c. 300). Little is known of his life, save that he was an early churchman, perhaps a martyr at Lydda in Palestine. Much legend grew up around his name, including the story of the slaying of a dragon by him, described at some length in the *Golden Legend* of Jacobus de Voragine and traced back to about 500 A. D. Yet he became the patron saint of England, Aragon, and Portugal. The Oxford Council in 1222 made his feast a national affair and Edward III. made him a patron saint.

GEORGE, WILLIAM REUBEN (1866–1936). Founder of the George Junior Republic at Freeville, New York (1895). While living in New York City, he became interested in young boys and girls, conceived the idea that they could support themselves and live in a model community away from city influences. His group of 150 at Freeville govern themselves and engage in ordinary adult pursuits, while also being trained in schools and industrial shops. Many similar republics have been founded by others in various states.

GIBBONS (*gĭb'ŏnz*), **JAMES** (1834–1911). Cardinal and Archbishop of Baltimore. He was ordained a priest in 1861, was bishop of North Carolina (1868–72); of Richmond, Virginia (1872–77); and succeeded Archbishop James R. Bailey of Baltimore in the latter year. He held important offices in the councils of the church, took a thoroughly American attitude, and was greatly beloved by all classes. *The Faith of our Fathers*, statement of Roman Catholic beliefs mainly for Protestants, passed through over a hundred editions in America and England. Other works were *Our Christian Heritage*, *The Ambassador of Christ*, and *A Retrospect of Fifty Years*.

GIRARD (*jĭ-rärd'*), **STEPHEN** (1750–1831). American philanthropist, born in France, but came to Philadelphia when he was 26. Becoming wealthy he helped the government in 1810 by investing a million in the depreciated securities of the United States Bank, and in 1814 by subscribing for nearly all of a government loan of five millions. In 1793 and 1798 he did valiant service in the yellow fever epidemic of the city. The bulk of his estate went to Philadelphia for the establishment of a school (named Girard College) for orphan boys, where they are prepared for college and taught useful occupations and trades. Owing to litigation the school was not opened till 1848.

GLADDEN, WASHINGTON (1836–1918). American clergyman and social reformer, for 30 years pastor of the First Congregational Church at Columbus, Ohio. Born in Pennsylvania and educated at Williams, he held several pastorates before going to Columbus in 1882. Among his influential books are *The Young Men and the Churches*, *Art and Morality*, *Social Salvation*, and *Christianity and Socialism*.

GOKHALE, GOPAL KRISHNA (1866–1915). Indian political and religious leader, holding offices in the Indian National Congress, and striving for constitutional reforms. He founded the Servants of India Society (1905), a group which took upon themselves vows of poverty and service. In financial reform his influence was considerable.

GORDON, CHARLES W. See RALPH CONNOR under AUTHORS.

GORDON, GEORGE ANGIER (1853–1929). Clergyman and university preacher, who was born in Scotland, came to the United States in 1871, and was minister of the Old South Church, Boston, from 1884 to 1927. For years he preached to large congregations at Harvard, Yale, and other universities, also acting as lecturer on special foundations at both. Some of his books are *The Witness to Immortality*, *Ultimate Conceptions of Faith*, *Humanism in New England Theology*, and *My Education and Religion*.

GOUCH (*gŏff*), **JOHN BARTHOLOMEW** (1817–1886). Celebrated temperance reformer, who was born in Kent, England, but came to the United States at 12. He lived on a farm and became a bookbinder in western New York, but in 1835 lost his position through drunkenness. In 1842 he took the pledge, and, after some lapses, decided to give his life to lecturing on the evils of drink, becoming a powerful speaker in great demand on the public platform.

GRANT, HEBER JEDEDIAH (1856–). Elected head of the Mormon Church in 1918, the first native son of Utah to hold the office, in succession to Joseph F. Smith, nephew of the founder. Engaged in successful mercantile enterprises as head of his own insurance company and Zion Coöperative Mercantile Association, banking, and insurance companies. He became one of the Council of Twelve (1882), went on missions to Japan (1901–03), and presided over the European Mission (1904–06).

GREELEY, HORACE. See under RULERS AND STATESMEN.

GREGORY (*greg'o-ri*) **I.** (c. 540–604). First of sixteen popes of that designation and one of the last great scholars of the Latin Church, born in Rome, and became a monk after holding a political office. He founded six monasteries in Sicily and one in Rome, of which he later became abbot. He started on a mission to Britain, was recalled, and in 590 was elected pope. In almost every way he advanced the interests of the church.

GREGORY (*greg'o-ri*) **VII., SAINT** (c. 1021–1085). Pope from 1073 to 1085 as successor to Alexander II., known now chiefly for his quarrel with Henry IV. of Germany. He was born in Tuscany, studied at Cluny, and took holy orders in 1049. Because he forbade investiture and certain other church practices, Henry deposed the pope in 1076, but one year later went to Canossa and penitently humiliated himself before Gregory. Yet in 1080 Henry succeeded in driving Gregory from Rome to Salerno, where he died five years later.

GREGORY (*greg'o-ri*) **XIII.** (1502–1585). A native of Bologna, who succeeded Pope Pius V. in 1572. He was deeply versed in the canon and civil law and had distinguished himself at the Council of Trent. He ornamented Rome with many fine buildings and fountains; but his pontificate is chiefly memorable for the reformation of the calendar which bore his name. Gregory omitted 10 days in the calendar to correct a cumulative error, and made another minor change affecting century years.

GREGORY NAZIANZUS (*nā-zi-ăn'ŭs*), **SAINT** (329–390). Bishop of Constantinople; excelled all his contemporaries in pulpit eloquence. Many of his works are extant, and consist of orations, letters, and poems. His theological system is best set forth in his *Theological Orations*.

GRENFELL (*gren'fel*), **WILFRED THOMASON** (1865–1940). British medical missionary and sociologist, educated at Oxford, and in London under Sir Frederick Treves. Spent three years (1889–1891) with deep sea fishermen cruising in the north Atlantic; in 1892 settled in Labrador, where he organized hospitals, founded industries, and did much otherwise to improve conditions of the people; and in 1912 united various enterprises by the formation of the International Grenfell Association. Served in the World War with the Harvard Surgical Unit. Knighted by King George in 1927.

GUISE (*gīz'*), **HENRY OF LORRAINE, 3d DUKE OF** (1550–88). Sometimes called Balafré, because of a scar received in battle. He took up the quarrel against the Huguenots, countenanced the massacre of St. Bartholomew, and had political ambitions, which were cut off by his murder at the instigation of Henry III.

GULICK, SIDNEY LEWIS (1860–). Missionary in Japan, who did much to promote international friendships. He was born in the Marshall Islands, educated at Dartmouth College, and Union Theological Seminary of New York, was in the mission field from 1887 to 1914, and then served as secretary of the committee on international good will of the Federal Council of Churches of Christ in America. Connected with other social and missionary societies. Wrote numerous books, including *The White Peril in the Far East*, *The American-Japanese Problem*, *American Democracy and Asiatic Citizenship*, and *The Christian Crusade for a Warless World*.

HAMILTON, JOHN WILLIAM (1845–1934). American Methodist Episcopal bishop, born in Virginia, educated at Mt. Union College, Ohio, and held pastorates in Ohio and Massachusetts until 1892. Secretary Freedman's Aid Society (1892–1900), elected bishop in 1900, chancellor American University (1916–22). Organized missions in Alaska, acted as one of the commission for unification of Methodist denominations, and of the committee on organic union with the Presbyterian and other church bodies.

HARRISON, FREDERIC (1831–1923). English leader in the positivist movement, founded originally by Comte, editor of the *Positivist Review*. Harrison was a graduate of Oxford, for many years practiced as a lawyer in equity cases, assisted Lord Westbury in

the codification of law, turned his attention to social and literary movement, and exerted a great influence upon world thought. Though he was a liberal, he never became an agnostic; though he was a trade unionist, he did not join any social or political group. For years he warned against the disaster which a conflict like the World War might produce. As a literary historian he wrote many biographies of statesmen and several books like *Meaning of History, Byzantine History in the Early Middle Ages,* and *George Washington.* As a literary critic of sane and discriminating judgment, he wrote works like *Memories and Thoughts, Tennyson, Ruskin, Mill, and other Literary Estimates.*

HARRISON, LEON (1866–1929). Rabbi of the Temple Israel of the Reformed Jewish faith in St. Louis from 1891 to his death. Honor graduate of the New York public schools and of Columbia University (1886). Known as an orator at the funeral of Henry Ward Beecher and for the city of St. Louis at the McKinley memorial services. Founded the Sisterhood of Personal Service, St. Louis, and interested in various peace and reform movements.

HART, HASTINGS HORNELL (1851–1932). Reform worker and sociologist, educated at Oberlin, and a pastor from 1880 to 1883. Then secretary of Minnesota State Board of Charities (1883–98), superintendent of Illinois Children's Home and Aid Society (1898–1908); and director of child-helping (1908–24), and then consultant of the Russell Sage Foundation, New York City. Among other books, he wrote *Preventive Treatment of Neglected Children, Social Problems of Alabama, How to Give Wisely $25,000 to $1,000,000, The Third Degree,* and *Restoration of the Criminal.*

HARTMANN (*härt'män*), **KARL ROBERT EDUARD VON** (1842–1906). German philosopher, educated at Rostock and lived mainly in Berlin. His reputation is based chiefly on his *Philosophy of the Unconscious,* a clear exposition of the idea that Will and Reason are in conflict and the end should be to exert the powers of will so strongly as to bring on unconsciousness of the troubles of life.

HARTZELL, JOSEPH CRANE (1842–1928). Methodist Episcopal missionary bishop to Africa (1896–1916). He was a graduate of Illinois Wesleyan University, held pastorates in Illinois and in New Orleans from 1870 to 1873 and then till 1882 was in charge of educational work in New Orleans, and was assistant secretary and secretary of the Freedman's Aid Society till elected bishop in 1896. Founded the *Southwestern Christian Advocate* and acted on various committees, especially as envoy from the United States to England for settlement of troubles in Liberia.

HARVARD (*här'vard*), **JOHN** (1607–1638). By a gift of half his estate or a sum of £780 and 260 books, he became the first benefactor of the new school, named Harvard College in his honor, at Cambridge, Massachusetts. He was a Puritan minister, a graduate of Emmanuel College of Cambridge University, England, who settled as minister in Charlestown, Massachusetts, and died there at an early age. The first commencement was held in 1642, but the foundation had been laid in 1637, and the college named two years later.

HAYES (*hāz*), **PATRICK JOSEPH** (1867–1938). American cardinal, ordained a priest in 1884, chancellor of New York, 1903, president of the Cathedral College, 1903–17, auxiliary bishop of New York, 1914, archbishop of New York, 1919, and cardinal, 1924.

HEARST (*hûrst*), **PHEBE APPERSON** (1842–1919). Wife of George Hearst, once United States Senator from California, who managed large mining and business affairs after the death of her husband. Noted for her philanthropies, she organized kindergarten classes at various places, established libraries at Lead, South Dakota, and Anaconda Minnesota, gave $250,000 to the Cathedral School for Girls at Washington, D. C., built a mining building at the University of California and paid for elaborate plans for improvement of this.

HEBER (*hē'bẽr*), **REGINALD** (1783–1826). English bishop and writer of hymns, a native of Cheshire, a graduate of Oxford, and admitted to orders (1807). After being prebendary of St. Asaph, and minister at Lincoln's Inn, he was elected Bishop of Calcutta, where he did notable work, but suffered from the climate. His influence as a hymnist has been tremendous, especially for *Holy, Holy, Holy, God Almighty, From Greenland's Icy Mountains, The Son of God Goes Forth To War,* and *Brightest and Best of the Sons of the Morning.*

HECKER (*hĕk'ẽr*), **ISAAC THOMAS** (1819–1888). Founder of the Paulist Fathers, noted for his zeal and piety. He was born of German parentage in New York City, lived at the Brook Farm colony for six months, and in 1844 became a Roman Catholic. After acting as a Redemptorist priest for many years he sought unsuccessfully to found a novitiate of the order in the United States. Later, however, Pius IX (1858) authorized him to organize a new community of Paulist Fathers, which he supervised till his death. He also organized the Catholic Publication Society.

HEGEL (*hā'gĕl*), **GEORG WILHELM FRIEDRICH** (1770–1831). German philosopher, one of the four idealistic thinkers of his age, with Kant, Fichte, and Schelling, the last of whom influenced him greatly. He was a professor at Jena (1801–06), acted as editor after the Napoleonic campaign closed the university, and then taught for a time at Nuremberg. His chief works are *The Phenomenology of the Spirit, Science of Logic,* a very important work, *Philosophy of Right,* and a great *Encyclopedia of Philosophic Sciences.* Hegel emphasized the relation of perception to objects themselves. His study of art is interesting.

HENNEPIN (*en-paN'*), **LOUIS** (1640– ?). Belgian missionary and explorer of territory in the United States, who was a member of the Franciscan order and came to Canada in 1675. With La Salle he journeyed westward (1678), penetrated as far as the modern Peoria, Illinois, when La Salle had to return for supplies, and Hennepin went on north as far as the present site of Minneapolis. Captured by the Indians, he was rescued after 11 months, returned to France (1683), and published an account of his travels.

HEPBURN (*hep'bûrn*), **JAMES CURTIS** (1815–1911). Missionary to China and Japan and translator. From 1840 to 1846 he labored as a medical man in China, and from 1859 to 1892 in Japan. He compiled the first English dictionary of Japanese, made a Japanese grammar, translated the Bible into Japanese (1872–88), and compiled other works.

HERZL (*hĕrtz'l*), **THEODOR** (1860–1904). Founder of Zionism or the return of the Jews to Palestine under conditions of political autonomy. He was born in Budapest, published a celebrated pamphlet in 1896 entitled *Der Judenstaat,* and from then on was a zealous advocate of the cause he favored. Though he gained the enthusiastic support of countless Jews, and of some men of wealth, who were not especially interested in the religious feature of the movement, he failed to gain the support of prominent church leaders. In 1903 the British offered him land in East Africa for an autonomous colony, but nothing short of a return to Palestine was favored by many Zionists.

HERACLITUS (*her-a-klai'tus*) (c. 540–475 B. C.). Called the "Dark Philosopher" by his fellow Greeks, he founded the study of metaphysics. He believed that all things are one in essence, but that fire is the uniting or primary substance of the world. Reason should control but most men act as if they had a reason of their own.

HICKS (*hĭks*), **ELIAS** (1748–1830). Founder of the Unitarian or Hicksite branch of the Quakers or Society of Friends; born in New York and in 1778 became an itinerant preacher. He was instrumental in securing an act in the New York Legislature (1817) freeing in ten years all negroes born in the state and not emancipated under the act of 1799. His theology he advocated no set creed, but favored the doctrines of Unitarians in regard to the divinity of Christ. In 1828 his followers formed a new organization.

HILARIUS (*hĭl'ā-rĭ-ŭs*), **SAINT** (c. 300–367). Opponent of the Arians while bishop of Poitiers, he was banished by the synod of 356 to Phrygia. He joined with certain bishops in the East, wrote a letter to those in western Europe, and on petition to Constantine was allowed to return to his see. His *De Trinitate* expounds his Trinitarian views as opposed to the Unitarian of the Arians.

HILL, ROWLAND (1795–1879). Father of penny postage in England, interested in education and invention, suggested first in 1837 that postal revenue might be increased by reducing the rate, by using stamps, and by prepayment of postage. Commons adopted the rate of twopence the half ounce in 183

and in 1840 the rate became a penny. Hill served for a time in the Treasury department, but was dismissed by a change in government, though in 1846 he returned with the Liberals as secretary to the postmaster general, in which he did valuable service till 1864, when he retired.

HILLIS (*hĭl'is*), **NEWELL DWIGHT** (1858–1929). American clergyman, author, and lecturer, educated at Lake Forest University and McCormick Seminary, Chicago, and acted as pastor in Illinois till 1899, after which time he served in the Plymouth Church in Brooklyn, until he retired in 1924.

HOBBES (*hŏbz*), **THOMAS** (1588–1679). English philosopher, who studied at Oxford, and became the friend of many notable men in England and of Galileo while in Italy. Acted as tutor to the Prince of Wales, later Charles II., but was dismissed after Hobbes published his *Leviathan* (1651), yet was pensioned by Charles in 1660. Hobbes stood for an independent spirit of inquiry in matters of thought and faith, and so his chief works were condemned by Parliament in 1666. He argued that the end of thought is social, and the government supreme in law and also in matters of faith. Both in the applications of science to knowledge and as an early student of psychology, Hobbes had a profound influence on later generations.

HOLMES (*hōmz*), **JOHN HAYNES** (1879–). Clergyman and social reformer, pastor in Dorchester, Massachusetts, and after 1907 of the Church of the Messiah, which was renamed the Community Church of New York. President Unitarian Fellowship for Social Justice (1908–11), Free Religious Association (1914–19), director Civil Liberties Bureau from 1917, and of the American Union Against Militarism (1917–19). Author of *Is Death the End?* (1915), *New Wars for Old* (1916), *New Churches for Old* (1922), *Patriotism is not Enough* (1925), and other works.

HOFFDING (*hĕf'dĭng*), **HARALD** (1843–1931). Danish philosopher, educated at Copenhagen, and a professor there from 1883. Knowledge, being, and ethics were his special fields, the latter of which derives from religion and is based mainly on sense of values. Of his numerous works, the best-known perhaps are the *History of Philosophy*, *The Problems of a Philosopher*, *Philosophy of Religion*, and *Modern Philosophers*.

HOLYOKE (*hōl'yōk*), **GEORGE JACOB** (1817–1906). English social reformer, who devoted much of his life to the coöperative movement among laboring classes. He was convicted (1841) for blasphemy in a public address, the last trial of its kind under old statutes, and he was also the last person to be indicted for publishing a newspaper without sanction just before the law was repealed.

HOOKER, RICHARD (1553–1600). British theologian, educated at Oxford, and at first a tutor to sons of prominent persons. He was a rector in Buckinghamshire (1581–85), master of the Temple (1585–91), rector at Boscombe (1591–95), and finally at Bishopbourne (1595–97). During these years he completed four books of his masterpieces, *Laws of Ecclesiastical Polity*. After his death four additional books were issued, but some portions at least are doubted as being his. Hooker wrote a fine prose, showing his broad interests. He connects reason and law, the latter ultimately being the offshoot of reason itself, which proceeds from God. Thus the laws of God are discovered only through reason. He advocated close union of church and state, but insisted that powers of government derive from the will of the governed. See also under AUTHORS.

HOOKER, THOMAS (1586–1647). English clergyman, who was forced to emigrate to Holland and then (1633) to America because he persisted in delivering moral and other addresses not sanctioned by church authorities. He settled in what is now Cambridge, Massachusetts, but took a party of emigrants to Connecticut, where they founded the present city of Hartford. He declared to the Legislature in a sermon (1638) that those who have power to appoint magistrates and officers also have the power "to set the bounds and limitations of the power and place unto which they call them." For this and similar statements, he has been called the father of the modern American ideas of democracy. All authority and right go back to God ultimately, according to Hooker.

HOPKINS (*hop'kinz*), **JOHNS** (1795–1873). An American philanthropist; born in Anne Arundel County, Md. In 1873 he gave property worth $4,500,000 to found a free hospital. He presented Baltimore with a public park and he also gave over $3,000,000 to found the Johns Hopkins University in Baltimore.

HORR, GEORGE EDWIN (1856–1927). Theologian, who was president of Newton Theological Institution, from 1908 to his death. A graduate of Brown University, he entered the Baptist ministry, preached at Tarrytown, New York (1879–84), at Charlestown, Massachusetts (1884–91), edited *The Watchman* (1891–1903), and then became professor at Newton. In his denomination his influence was profound, and he also delivered religious lectures at Harvard (1913 and 1923).

HOSS, ELIJAH EMBREE (1849–1919). Bishop of Methodist Episcopal Church, South, since 1902; pastor at Knoxville, Tenn., San Francisco, Cal., and Asheville, N. C.; professor and president of Martha Washington College, Va. (1876–1881); vice-president and later president of Emory and Henry College (1881–1885); on theological faculty of Vanderbilt University (1885–1902); editor of Nashville *Christian Advocate* (1890–1902).

HOWARD, JOHN (1726–1790). English prison reformer, who in 1773 became high sheriff of Bedford, and immediately began a movement for improving the conditions and discipline in prisons. The following year he gave evidence before Commons, resulting in an act which abolished many abuses. At various times he traveled widely on the continent, dying of camp fever in Russia on his last visit. Much of his information was used in building and conducting new prisons. His chief works are *The State of Prisons in England and Wales* (1777) and *Account of the Principal Lazarettos in Europe* (1789).

HOUGH (*hŭff*), **LYNN HAROLD** (1877–). American minister, author, and university president, who entered the Methodist Episcopal pastorate in 1898, held appointments at Arcola and Cranford, New Jersey, King's Park and Long Island City, New York, and at Baltimore until called to the chair of historical theology, Garrett Biblical Institute, Evanston, Illinois, in 1914. He acted as president of Northwestern University for one year, went to the Central church of Detroit (1920–28) and then to the American Presbyterian Church in Montreal, Canada. Of his many books on practical theology are the *Theology of a Preacher*, *Living Book in a Living Age*, *Synthetic Christianity*, and *Evangelical Humanism*. Lectured at various universities on special foundations.

HOWE, SAMUEL GRIDLEY. See under EDUCATORS.

HUME (*hūm*), **DAVID** (1711–1776). British philosopher and historian, who gave up the law as a career because of poor health, and who developed a system of rationalism which doubted much of the mental experience of mankind. As a philosopher he is still regarded, but at present Hume's historical writings are known to be lacking in results of scholarship and research. He was unsuccessful in attempts to gain a chair of ethics at Edinburgh, and one of logic at Glasgow, but in 1752 became librarian of the Advocates Library at Edinburgh, a position that gave time for study and reading. The volumes of history were published between 1754 and 1761. Now known for his *Essays on Human Understanding*, *Enquiry concerning the Principles of Morals*, and *Political Discourses*.

HURLBUT (*hŭrl'but*), **JESSE LYMAN** (1843–1930). Methodist Episcopal clergyman and editor. Pastor from 1865–1879; agent of Sunday School Union, to 1884; assistant and finally editor of *Sunday School Literature* (1884–1900); pastor in New Jersey since 1901; counselor of Chautauqua Society; author of *Manual of Biblical Geography*, *Revised Normal Lesons*, *Organizing and Building up the Sunday School*, *Story of the Christian Church*.

HUSS (*hus*), **JOHANN** (1373–1415). A distinguished religious reformer; born in Bohemia; convicted of heresy by the Council of Constance, and by the secular authorities burned at the stake. His followers, called Hussites, inaugurated a war for religous freedom (1419), continued until the emperor Sigismund granted acceptable terms and peace was restored.

HUTCHINSON (*huch'in-son*), **ANNE** (c. 1600–1643). Religious leader, who came to Massachusetts from England (1634), asserted that she, John Cotton, and a few others were inspired by the Holy Ghost, whereas most of the clergy were given to a "covenant of works." Opinion became divided, and at last she was tried and excommunicated, after which (1638)

she withdrew to what is now Rhode Island, and finally to a point on Long Island Sound near the modern New Rochelle, New York, where she was killed by Indians.

INGE (*ĭng*), **WILLIAM RALPH** (1860–). Elected dean of St. Paul's in London in 1911, Dr. Inge came to be known as the "gloomy dean" because of certain pessimism and criticism of modern life, yet his preaching was highly popular. He was educated at Cambridge University, acted as master of Eton College (1884–88), was fellow of Hertford College, Oxford (1889–1904), and professor of divinity at Cambridge (1907–11). He lectured several times in American cities, especially in 1906 and 1925.

IGNATIUS (*ĭg-nā'shĭ-ŭs*), **SAINT** (first century). Called Theophorus or "Godbearer." Little is known of his biography, except that he was a bishop, and probably was martyred at Rome. Yet his letters give a vivid picture of his hatred of heresy, zeal for the church, and conditions of early Christianity. He seems to have first used the term "eucharist" of the Lord's Supper, and the phrase "the Catholic Church," in the sense of the church universal.

INNOCENT (*in'o-sent*) **III. (Lotario de Conti).** Pope from 1198–1216, who was not even a priest when he was unanimously elected to succeed Celestine III. His education had been completed in Paris, and he was a great scholar. His fame now rests, however, on his wise and firm extension of the powers of the papal office. He made his influence felt in the temporal affairs of Spain, France, and England, forcing King John to receive Stephen Langton as archbishop of Canterbury. All his acts, however, were free from self-interest or guile.

IRELAND, JOHN (1838–1918). Roman Catholic archbishop of St. Paul since 1888; priest (1861); rector cathedral, St. Paul; coadjutor Bishop of Saint Paul (1875), succeeded Bishop Grace (1884) with the title of archbishop (1888); important figure in movements for total abstinence, colonization in the Northwest, and the establishment of the Catholic University at Washington; author of *The Church and Modern Society*.

IRENAEUS (*ī-rē-nē'ŭs*), **SAINT** (second century). Bishop of Lyons for the last quarter of the second century, he may have suffered martyrdom. Known for his preaching among the Gauls, his attempts to unite the two factions of the church in dispute over the date of Easter, and a work against heretics, only a few fragments of which in the original remain.

JACKS, LAWRENCE PEARSALL. See under AUTHORS.

JAMES, WILLIAM (1842–1910). Philosopher and leader in the movement known as Pragmatism. He was born of the distinguished James family of New York City, being a brother of Henry James, the author, and a son of Henry James, the elder, noted as a thinker. James received a varied and somewhat desultory schooling, studied art, and then entered the Lawrence Scientific School at Harvard. From medicine and science he turned, after study in Germany, to psychology, but James suffered from ill health. His *Principles of Psychology* (1891) began his study of various phases of physiology, psychology, and thought in general.

JANSEN (*jăn'sĕn*), **CORNELIUS** (1585–1638). For the last two years of his life Bishop of Ypres, and leader of the sect which opposed the Jesuit order of the Roman Catholic Church. He studied in Paris, was in charge of a college for theological students at Louvain, went to Spain twice on missions, and became a professor at the University of Louvain in 1630. His chief work, *Augustinus*, explains the theology and work of the Augustinians.

JEROME (*jĕ-rōm'*), **SAINT** (c. 340–420). Church father, educated in the Roman schools, visited the East, where he lived for a number of years, especially at Antioch as an ascetic after a severe illness. Jerome resolved to abandon secular for sacred literature. He was made a priest at Antioch in 379, went to Constantinople, and then to Rome where he remained until 385. Urged to use his scholarship in translating the Scriptures, he compiled and made a Latin translation still in use. For a number of years he lived at Bethlehem, where he died.

JOAN OF ARC (*jōn ŭv ärk'*) (1412–1431). French patriotic leader and martyr, who was born at Domremy; from her earliest years professed to hear voices and experience visions. Gradually she conceived the idea that she was chosen of God to deliver the French from the English forces then encamped Orleans. Dressed in male attire and a suit of wh armor and riding a black charger, she rode at the he of 6,000 soldiers, who took the city in April, 142 In a month over two years, she fell into the han of the English, claimed to obey the voice of God o and not that of the church, and was allowed to go the stake on May 30, 1431. After an exhaustive quiry (1456), the original judgment against Jo was annulled. She was beatified in 1909 and ca onized ten years later by Pope Benedict XV.

JOHN OF DAMASCUS (about 700–754). A fath of the church; the author of the standard text-bo on dogmatic theology in the Greek Church; canoniz by both the Latin and Greek churches; one of t doctors of the Latin Church; the ablest philosoph of his time; wrote three *Operations* or letters on imag worship.

JOHNSON, TOM LOFTIN. See under RULERS AN STATESMEN.

JOHNSON, WILLIAM EUGENE (1862– World temperance leader, known as Pussyfoot Joh son. He was born in New York and became journalist in Lincoln, Nebraska, New York, an Chicago (1884–1905). Then acted in various capa ties: As government enforcement agent in India Territory and Oklahoma, member of Internation Temperance Committee of Fifty, director of publicatio of Anti-Saloon League, and director of the Lond office, World League against Alcoholism. Lectur thousands of times all over the world. Lost an e at Essex Hall, London, in 1919 when struck missile thrown by member of the audience.

JONES, ELI STANLEY (1884–). Missiona leader, who was born in Maryland, educated at th City College of Baltimore and Asbury College, Ke tucky. In 1907 he wished to go to Africa, but w sent to India instead by the Methodist Episcop Board of Missions. Here he formed contacts wi most of the native religious leaders, including Gandh Decided to center his attention on Christ and less o theology. Resigned election as bishop in 192 Wrote *Christ of the Indian Road*, *Christ of the Roun Table*, and *Christ of Every Road*.

JONES, SAMUEL MILTON. See RULERS AN STATESMEN.

JOWETT (*jou'ĕt*), **JOHN HENRY** (1864–1923 British minister, pastor of the Fifth Avenue Presb terian Church (1911–18). He was born in Yor shire, educated at Edinburgh and Oxford Univers ties, and held pastorates at Newcastle-upon-Tyne an Birmingham (1889–1911). Known far and wide a an eloquent preacher.

JUDD, CHARLES HUBBARD. See unde EDUCATORS.

JUDSON, ADONIRAM (1788–1850). An America missionary; born in Malden, Mass. In Februar 1812, he sailed with his wife for Asia. During th voyage he was converted from the Congregational fait to that of the Baptist church. In 1814, when th Baptists of the United States organized a missionar union, he was taken under its care. He settled i Burma, mastered the language, and labored there fo nearly forty years. He died at sea.

JULIUS II. (Giuliano della Rovere) (1443–1513 Able pope, the nephew of Sixtus IV. Twenty yea before he was chosen, he exerted a powerful politic influence in France, where he persuaded Charles VII to proceed against Naples. He abolished nepotism i the church, condemned duelling by a papal bull, se missionaries to various parts of the world, and mad alliances, the last being with Aragon and Venic against France. He laid the foundations of S Peter's at Rome, started the Vatican museum, an patronized the arts and letters.

JUSTIN, surnamed **THE MARTYR** (about 100 about 165). An early Christian apologist; studie philosophy in the Stoic and Platonic schools, and wa converted to Christianity; was the author of *Apologie for the Christians* and *Dialogue with Tryphon the Jew* suffered martyrdom.

KANT (*kănt*), **IMMANUEL** (1724–1804). Em nent modern philosopher and greatest metaphysicia who was educated at the University of Königsber in East Prussia. From 1746 until he was appointe a professor in 1770, he earned his living by tutorin and acting as librarian. He was early influenced b Leibnitz and Wolff, but later turned way from them He divided the mind into intellect, feeling, and will

rejected the old doctrines of rationalism and the English empiricism of men like Hume; and placed mind above the material or the subjective over the objective forces. Thus he is the father of modern idealism. *Dreams of a Visionary, Prolegomena, Metaphysic of Ethics,* and his great masterpiece, *The Critique of Pure Reason,* which probably had a deeper and wider influence than any other work on philosophy in recent decades, are his great books.

KEBLE (*kē'b'l*), **JOHN** (1792–1866). English religious leader, regarded by many as the founder of the Oxford or High Church movement in England. He won honors at Oxford, was fellow and tutor at Oriel College (1811–23), professor of poetry at Oxford (1831–41), and then till his death rector at Hursley, Hampshire. His sermon, *National Apostacy* (1831), aroused great interest which was fanned by the tracts which Keble and others issued from time to time; hence, the name Tractarian Movement applied to their work. The tracts ended in 1841 with one in which John Henry Newman (q. v.) declared in favor of the Roman Catholic faith. Keble continued to maintain the High Church doctrines he had espoused. As a literary man, if not altogether, he is known now largely for his *Christian Year* (1827), a collection of poems appropriate for all Sundays, saints' days, and festivals of the Church of England.

KINGSLEY, CHARLES. See under AUTHORS.

KLOPSCH (*klŏpsh*), **LOUIS** (1852–1910). American editor and philanthropist of German birth. After engaging in the business of publishing the New York *Daily Reporter* (1877–90), and other journals, he acquired a principal interest in the *Christian Herald,* and made this weekly religious paper a power. Through its columns and free service in soliciting funds, more than $4,000,000 were raised and distributed for relief in Armenia, China, India, and many other lands including America.

KNOX, JOHN (1505–1572). A Scotch religious reformer; pioneer of Puritanism; prisoner of war, for 19 months, in French galleys; friend of Calvin and Beza; a preacher of sermons that moved his hearers to demolish convents; arrested for treason, and armed "congregation" at his heels; burned in effigy; for years a dictator—he spent his life forwarding the Reformation in Scotland. His great work distinguished in Scottish prose was his *History of the Reformation of Religion within the Realm of Scotland.*

KOHLER (*kōlar*), **KAUFMANN** (1843–1926). Leader of Reformed Judaism in the United States. In 1885 called a Rabbinical Conference at Pittsburgh, at which a platform was adopted for Reformed Judaism. President of Hebrew Union College from 1903; pastor in Detroit, Chicago, and New York; editor of *Jewish Reformer* and *Sabbath Visitor.*

KYRLE (*kurl*), **JOHN** (1637–1724). Philanthropist; born in Gloucestershire; was distinguished for his benefactions; has given name to a society founded, among other things, for the betterment of the homes of the people.

LACORDAIRE (*lă-kôr-dâr'*), **JEAN BAPTISTE HENRI** (1802–1861). French religious leader and orator, educated as a doctor of medicine, and for a time practised law. Deeply influenced by the *Essay upon Indifference* of Lamennais, he became a priest. With Montalembert, he opened a school, which the authorities immediately closed. His series of conferences at the Collége Stanislas (1834) gained great favor, as did his sermons at Notre Dame. From 1838 to 1841 he was in Rome, where he became a priest under the name Dominique; but his later conferences, sermons, and orations at Notre Dame in Paris (1843–51) gained him an election to the Academy. Some of these were published.

LACTANTIUS (*lak-tan'shus*), **FIRMIANUS** (c. 260–c. 340). Early Christian teacher, converted in middle life, and evidently acted as tutor to the son of Constantine the Great. For a time he lived at Nicomedia in Bithynia, where he at least started his great work on the *Divine Institutions.* Author of *The Death of Persecutors,* which may not be genuine, but greatly influenced similar writings in the Middle Ages.

LAMENNAIS (*la-me-nē'*), **HUGHES FELICITE ROBERT** (1782–1854). French religious and philosophic writer, whose *Essay on Indifference* (1817) violently attacked toleration and liberality in religion. His paper *L'Avenir* standing for "liberty and God," was disapproved by the Pope, and Lamennais grew indifferent to the church, turned toward the extreme side of the democratic party, and in the revolution of 1848 sat in Parliament as a member of the extreme Left.

LANG, COSMO GORDON (1864–). Archbishop of Canterbury in 1928, in succession to Dr. R. T. Davidson (q. v.). He was the son of the moderator of the Church of Scotland, was educated at St. Andrews and Oxford, preached at Leeds, St. Mary's at Oxford University, and Portsea, was fellow and divinity dean at Magdalen College, Oxford, suffragan bishop of Stepney, and from 1908 to 1928 archbishop of York. He interested himself in social work in London, advocated reception by the Commons of the Revised Prayer Book, and was a member of the royal commission on divorce.

LANGE, CHRISTIAN (1869–1939). Norwegian peace advocate, for a time secretary of the Nobel Committee in the Parliament. He represented his nation at The Hague (1907), in the Assembly of the League of Nations (1921), and in the same year was awarded half the Nobel Peace Prize. Author of numerous articles and discussions of peace.

LASSALLE (*lă-sal'*), **FERDINAND** (1825–1864). Leader of the Social Democratic Party, a brilliant thinker and student of politics and world affairs. Though he followed Karl Marx in the main, he differed in some essentials. Heine called him "the Messiah of the nineteenth century." By letters, addresses, and writings he attempted to incite the workers to assert their rights. Some of his propaganda tracts are *The Working Man's Programme* and *The Open Letter.* He died from a wound received in a duel with the husband of his sweetheart, Fräulein von Dönniges, who evidently had been forced to marry against her best wishes. His fate led George Meredith to write his *Tragic Comedians.* Other works are *Heraclitus the Obscure,* an able work in philosophical interpretation; *The Italian War and Prussia's Mission,* which anticipates the doctrines of Bismarck; and *Das System des erworbenen Rechts,* a legal treatise on the rights of property.

LATIMER, HUGH (c. 1485–1555). Forerunner of the Reformation in England, who suffered martyrdom in the reign of Mary along with Ridley and others. He was born near Leicester, educated at Cambridge, and was fellow of Clare College (1510), university preacher (1522), Bishop of Winchester (1535–39), for a time was imprisoned in the Tower (1546), and was known far and wide as a powerful preacher. Foxe in the *Acts and Monuments* vividly described his death.

LAUD, WILLIAM (1573–1645). An English prelate; archbishop of Canterbury in the reign of Charles I. His endeavors to introduce the liturgy into Scotland made him numerous enemies; therefore he was impeached by the Commons and sent to the Tower. After lying there nearly three years he was declared guilty of treason, and was beheaded on Tower Hill. Laud enriched the University of Oxford with over 1,300 manuscripts; wrote a *Diary* and a few other works published in collected form in 1887.

LAVAL-MONTMORENCY (*lă-vāl'-mōn-mo-raN-sī'*), **FRANCOIS XAVIER DE** (1622–1708). French bishop, born at Laval; received the tonsure at nine years of age, becoming a priest at twenty-three and at thirty-one Archdeacon of Evreux; sent to Canada as vicar of Pope Alexander VII., with title of Bishop of Petra (1659); established Seminary of Quebec (1663); titular Bishop of Quebec (1674–1683). His name is perpetuated in Laval University, Quebec, founded in 1852.

LAWRENCE, WILLIAM (1850–). Episcopalian bishop of Massachusetts (1893–1926) and bishop of the American Churches in Europe, 1928. He was a graduate of Harvard, rector at Lawrence, (1876–84), then professor and dean of the Episcopal Theological School, Cambridge, till consecrated bishop. He was closely identified with all forward movements of his diocese, took an active part as an Overseer of Harvard University, and was president of the Church Pension Fund, and a member of the National Council of the Protestant Episcopal Church.

LEE, ANN (1736–1784). Founder of the Society of Shakers in America; born in Manchester, England. She was poor and uneducated, and in 1758 joined the Shakers, a sect allied in their belief to the Friends, but who were peculiar in their form of worship. She believed herself inspired, and was imprisoned in 1770 for preaching the new doctrine of celibacy. In 1774 she emigrated to America and founded the Society of Shakers in 1776.

LEIBNITZ (*līp'nĭts*) **or LEIBNIZ, GOTTFRIED WILHELM** (1646–1716). German philosopher and mathematician, a native of Leipzig, and graduate of the local university. On being refused his doctorate because of his youth (1666), he was invited to Nuremberg, given his degree, and a chair of philosophy. He served the Elector of Mainz for a time, went to France with a proposal for the conquest of Egypt, a plan which later (1806) attracted Napoleon. There Huygens persuaded him to study mathematics more deeply, and in London he knew Newton, Boyle, and other scientists. Later he served under Duke Frederick of Brunswick, who founded at his suggestion (1700) the Academy of Sciences, of which Leibnitz was elected president. Leibnitz said that the world is made up of a considerable number of monads, each being somewhat independent, but also in harmony with the rest and with God, the cause of all things.

LICK, JAMES (1796–1876). An American philanthropist; born in Fredericksburg, Pa. In 1847 he emigrated to California, taking with him $30,000, which he invested in real estate in San Francisco, and its rapid advance in value made him wealthy. In 1874 he placed his entire property in the hands of trustees, to be devoted to public and charitable purposes. The total amount thus given was $13,000,000, of which $700,000 was for Lick Observatory, to be connected with the University of California; $150,000 for free public baths in San Francisco, and $540,000 for an institution to be called the California School of Mechanical Arts. He died in San Francisco, Cal.

LIDDON (*lĭd'an*), **HENRY PARRY** (1829–1890). English leader in the High-Church Party after Newman left the Anglican Church (1845). He was prebendary of Salisbury Cathedral, canon of St. Paul's, professor at Oxford, and chancellor of St. Paul's (1886). His preaching in London attracted immense audiences, and he succeeded in spreading the doctrines of the Tractarians as nobody had since the early days of the Movement.

LINDSAY, SAMUEL McCUNE (1869–). American sociologist, formerly a professor at the University of Pennsylvania, and then at Columbia University. Acted as special agent of the United States in labor investigations, studied the school system of Porto Rico, and corresponded with various foreign social agencies. Author of several books, including *Social Aspects of Philadelphia Relief Work, Inauguration of the Public School System in Porto Rico*, and joint author of *Financial Administration of Great Britain*.

LINDSEY, BENJAMIN BARR (1869–). Judge of the juvenile court of Denver, Colorado, from 1900 to 1927. Made many changes in the procedure of the court, notably in the nature of putting boys on their honor. Later secured legislation making parents responsible in part for delinquency of their children. Advocated companionship marriage and other changes in domestic relations. Author of *Problems of the Children, The Revolt of Modern Youth*, and *Companionate Marriage*.

LIVERMORE, MARY ASHTON RICE (1821–1905). American reformer, who served with the United States Sanitary Commission in the Civil War, and afterward devoted much time to agitation and lecturing on suffrage and temperance. In 1845 she married a Universalist minister, Daniel P. Livermore, who died in 1899. Some of her books are *The Children's Army, My Story of the War*, and *What Shall We Do with our Daughters?*

LIVINGSTONE, DAVID. See under STATESMEN.

LOCKE, JOHN (1632–1704). English philosopher, who took his M. A. at Christ Church College, Oxford, and became a tutor there (1658). For 15 years after 1667 he acted as confidential secretary to the Earl of Shaftesbury, during which time he studied many subjects. His *Essay Concerning Toleration* (1666) had already attracted much notice, for Locke argued that no limits should be placed on individual freedom of belief and doctrine. He spent some years in France and Holland and from 1691 to his death in Essex, England. Other works also have greatly influenced English philosophy, such as the *Essay Concerning Human Understanding* (1690), which seeks to fix the limits of speculation; *Thoughts on Education* (1693); two more letters to meet attacks on his opinions as to toleration; and finally some religious treatises.

LODGE, SIR OLIVER. See under SCIENTISTS.

LUTHER, MARTIN (1483–1546). German reformer, translator, and leader in the Protestant Reformation. He was born of peasant parents in Saxo struggled through school, and received his first deg at Erfurt in 1503, and his doctorate two years la Then he became an Augustinian priest (1507), p fessor at Wittenberg (1508), made a visit to Ro and after his return attracted immense crowds by preaching. In 1517 he nailed to the church door Wittenberg his 95 theses or propositions against sale indulgences, for which he was summoned to Ro but refused to go. Gradually he became more a more advanced in his views. In 1521 he attend the diet at Worms, made his confession, but was plac under a ban, and for a time was secluded by power friends. In 1524 he discarded his monk's dress, following year he married Catherine von Bora, former nun, and from this time he gradually wi drew from public controversy. Luther's numero works had a profound influence on his age. So of them are *On the Liberty of a Christian Man*, va ous commentaries on books of the *Bible*, and his *Re lutions*, or the 95 theses.

MacARTHUR, MARY REID (1880–1921). Briti leader among laboring women and founder of the N tional Federation of Women Workers (1903). Throu her efforts laws were passed regulating sweat sho assisting women workers during the World War, a providing better employment conditions. In 1911 s married W. C. Anderson (died 1919), who was cha man of the Labour Party and M. P. from 1915 1918. In 1919 she lectured in the United States.

McCABE, CHARLES CARDWELL (1836–1909 A Methodist Episcopal bishop; pastor (1860–1862) Ohio; chaplain in the army till 1866; prominent Methodist Church extension movement and raised ov a million dollars a year for missions; became bish in 1896 and chancellor of American University Washington, D. C., in 1902.

McCLOSKY, JOHN (1810–1885). First Americ cardinal, born in Brooklyn, New York, educated Emmitsburg, Maryland, and first president of what now Fordham University, bishop of Albany (1847 64), archbishop of New York (1864–75), and card nal from 1875. He was instrumental in building th cathedral at Albany and a theological school at Tro New York.

McCONNELL, FRANCIS JOHN (1871– Methodist Episcopal bishop, educated at Ohio We leyan University, held various pastorates (1894 1909), was president of DePauw University (1909 12), and elected bishop in 1912. Leader in soci and reform movements. Some of his works are *Th Increase of Faith, Democratic Christianity, Th Preacher and the People*, and *Is God Limited?*

McDOWELL, WILLIAM FRASER (1858–1937) Methodist Episcopal bishop, pastor in Ohio after gra uation from Ohio Wesleyan (1882–90), chancellor the University of Denver (1890–99), and secretar of the Board of Education of the M. E. Church (1899 1904), when he was elected a bishop. Lectured -o special foundations at Yale, DePauw, University Illinois, and other universities. President of th Board of Temperance of the M. E. Church.

McPHERSON, AIMEE SEMPLE (1890–) Evangelist and founder of the Foursquare Gosp movement. She was born in Canada, at 17 bega her evangelistic labors; settled in Los Angeles in 1918 and built a huge auditorium, named Angelus Temple and established other activities. Known as a magneti preacher of the simple gospel. Wrote *The Bridal Ca* (1915), *Divine Healing Sermons* (1920) and th *Second Coming of Christ* (1920).

MALTHUS (*măl'thŭs*), **THOMAS ROBERT** (1766 1834). English economist, whose *Essay on Populatio* expressed the idea that population increases muc faster than the means of subsistence. He was bor in Surrey, was a fellow student of Coleridge at Cam bridge, and acted as curate for a time. During hi lifetime six editions of his *Essay* were published fro 1798 to 1826. Malthus gradually came to the con clusion that wars, pestilence, vice, and other mean do not sufficiently hold the population within bounds He advocated moral restraints, postponing the age o marriage, and improvement in living conditions a checks on over-population. It is said that Darwin wa greatly influenced by Malthus.

MANI or **MANES** (*mā'nēz*) (215 or 216–276) Babylonian religious leader, who founded a sect whe he was about 25. Favored by the Persian monarch then in power, he spread his teaching abroad and made journeys to other lands as a missionary of the new

faith. He taught that the world was subjected to two influences, good and bad, the first man being created by the latter. Gradually the good tended to predominate. Mani believed that he was the last great prophet, but he had only a confused or shadowy idea of Christ. When a new king came to the throne of Persia, Mani was arrested by fanatics and put to a cruel death. Yet his religion spread rapidly.

MANNING, HENRY EDWARD (1808–1892). English cardinal and social reformer, educated at Harrow and Oxford, and noted for many years as an eloquent preacher. In 1851 he became a Roman Catholic, was made Roman archbishop of Westminster in 1865, and a cardinal in 1875. Led in the movement for definition of infallibility by Pius IX. Later he gave much attention to the cause of labor, favored the formation of certain unions, and did much to settle several strikes.

MANNING, WILLIAM THOMAS (1866–). Episcopalian bishop of New York since 1921. Born in England, he became a priest in California (1891), and acted as rector at Lansdown, Pennsylvania, Nashville, Tennessee, St. Agnes's Chapel of Trinity Church, New York, and then assistant rector, and rector (1908–21), of Trinity Church. Through his efforts the Cathedral of St. John the Divine in New York was pushed toward completion.

MARQUETTE (*mär-kĕt'*), **JACQUES** (1637–1675). French missionary to the region of the Great Lakes and one of the re-discoverers of the Mississippi River. He came to Canada in 1666, two years later explored the upper St. Lawrence, and in 1673 followed the Mississippi to the point of union with the Arkansas. While trying to plant a mission among the Illinois Indians (1675), he was stricken and died.

MARSHMAN, JOSHUA (1768–1837). English Baptist missionary, a native of Wiltshire, sent to India in 1799, where at Serampur he had Carey, Ward, and others as companions. He translated the Bible into native dialects, certain important parts into Chinese, and with his son founded Serampur College. His son, John Clark Marshman, published the first English weekly newspaper in India.

MARTINEAU (*mär'tĕ-nō*), **JAMES** (1805–1900). English Unitarian theologian, who turned from mathematics and engineering to the ministry in 1828. After preaching in various places, he was elected professor of philosophy at Manchester New College (1840), which was removed to London in 1853. In 1858 he also became minister of the Little Portland Street Chapel in London. From 1869 to 1885 he acted as principal of New College. Even without his denomination and circle of admirers, his influence was profound. Some of his chief works are *The Rationale of Religious Enquiry*, *The Study of Religion*, and *The Seat of Authority in Religion*.

MARX, KARL (1818–1883). A German socialist; born at Treves, of Jewish descent; was at first a student of philosophy and a disciple of Hegel, but soon abandoned philosophy for social economy; early adopted socialistic opinions, for his zeal in which he was driven from Germany and France, to settle in London, where he spent the last 30 years of his life; one of the founders of the "Internationale," and wrote a work, *Das Kapital*, which has become the text-book of Socialism.

MASSILLON (*ma-sï-yōn'*), **JEAN BAPTISTE** (1663–1742). A distinguished French pulpit orator; called to the Church of the Oratory in Paris (1699) and preached the *Advent Sermons* before Louis XIV. at Versailles. Among his celebrated works are *Le petit carême*, a course of 10 Lenten sermons (1718), and his earlier *Advent Sermons* and *Le grand carême*; won distinction through his many brilliant funeral orations; named bishop of Clermont (1717); consecrated in 1719; academician (1719).

MATHER (*măTH'ẽr*), **COTTON** (1663–1728). Congregational minister of Boston, the son of Increase Mather, noted just below. He took his degree at Harvard in 1678 and was at the Second Church from 1685 to his death. Once active in politics, he later was rejected because of his conservatism, which may also have prevented his election as president of Harvard. He advocated inoculation for smallpox. Author of some 400 works on various subjects, he gained an international reputation. Several books of his on witchcraft probably stimulated the belief in this, but he told the judges at Salem (1692), that some of their acts were unfair and some of their victims innocent. Now known chiefly for his *Magnalia, Wonders of the Invisible World*, and *Essays to Do Good*.

MATHER, INCREASE (1639–1723). Congregational minister, and president of Harvard College (1684–1701). After graduation from Harvard, he took his A. M. at Trinity College, Dublin (1658), and remained in England three years. From 1690 to 1692 he lived in England in an attempt to get a renewal of the old charter for the colony. King William gave him a modified form, allowed him to nominate a governor for Massachusetts, but both these became unpopular, and he was forced from the presidency of Harvard. From then he took less interest in affairs, wrote more than 125 books, and helped end the witchcraft persecutions. In 1683 he organized a scientific society in Boston.

MATHEW, THEOBALD (1790–1856). Known on both continents as Father Mathew, a powerful advocate of total abstinence. He was born near Cashel, Ireland, joined the Franciscan order, and after 1838, when he took the pledge, exerted his influence against all forms of crime and intoxication. Under his example, thousands of total abstinence societies were formed in Great Britain and America.

MATHEWS, SHAILER (1863–). American theologian and educator, professor of history at Colby College, Maine (1889–94), and professor at the University of Chicago from 1897. He became dean of the Chicago Divinity School in 1908. For four years (1912–16), he acted as president of the Federal Council of Churches in America, visiting Japan on a mission in 1915. Besides various articles he wrote a number of books, including *The Social Teachings of Jesus*, *The Spiritual Interpretation of History*, and *The Faith of Modernism* (1924).

MELANCHTHON (*mĕ-lăngk'thŭn*), **PHILIP** (1479–1560). An eminent German theologian and reformer; was the contemporary, friend, and the successor of Luther as the head of the German Reformation; the foremost teacher of his time; and according to Hallam "far above all others the founder of general learning throughout Europe." His writings fill 28 volumes. At 19 he published an edition of Terence that ran through 73 editions.

MENDES (*men'dez*), **HENRY PEREIRA** (1852–1937). Born and educated in England and at University Medical College, New York (1885). Minister of the Spanish and Portuguese Congregation, New York, 1877–1920. A founder of the Jewish Theological Seminary, New York Board of Jewish Ministers, School for Jewish Crippled Children, School for Jewish Deaf Mutes, and the Montefiore Home for Chronic Invalids. Writer on ethical and religious topics.

MERCIER (*mĕr'syā'*), **DESIRE** (1851–1926). Belgian cardinal, who studied at the University of Louvain, was professor at Malines and afterward at Louvain. He became archbishop of Malines in 1906, and a cardinal the following year. During the World War Cardinal Mercier gained the respect of the nations by his heroic proclamation of spiritual independence of the Belgians, and later he was a leader in the conferences on religion that took place at Malines in 1920 and 1923.

MERRY DEL VAL (*mĕr'rē dĕl väl'*), **RAPHAEL** (1865–1930). Spanish cardinal and diplomatist, born and educated in England. Beginning as private chamberlain to Pope Leo XIII., he rose soon to eminence, went on a mission to Canada to settle the school dispute in Manitoba, in 1900 became archbishop of Nicea, cardinal in 1903, and secretary of state till 1914. Afterward acted as secretary of the Supreme Congregation and (1920) camerlengo of the Holy Roman Church.

MILMAN, HENRY HART (1791–1868). English ecclesiastic, author, and church historian. In 1812 he won the Newdigate prize for a poem, and four years later the English prize at Oxford for his *Comparative Estimate of Sculpture and Painting*, and in 1821 he was elected professor of poetry at Oxford. Becoming dean of St. Paul's in 1849, he acquired the title of the "Great Dean." Much of his work after 1829, however, was historical. Histories of the Jews, of early Christianity, and an edition of Gibbon's *Decline and Fall of the Roman Empire* secured him wide recognition. His *Latin Christianity* passed through many reprintings.

MOHAMMED (*mo-ham'ed*) or **MAHOMET** (c. 571–632). Founder of the religion of Islam or Mohammedanism, as called by others. He was a poor boy, left

an orphan at an early age, and brought up by his uncle. At the age of 25 he married a rich widow, much older than himself, but she had a great influence over him. He began to study religion, and for a time lived in a cave, where he had visions and formed the rudiments of his faith in one God. His saying was "There is no God but God, and Mohammed is his prophet." Beginning at his native place, Mecca, he preached his doctrine, at first with moderation, and then with fiery eloquence. Later he engaged in various conquests, bringing his neighbors to the faith by the sword. The first mosque was erected at Medina. He denounced idolatry, preached the ideas of heaven and hell, fasting, praying five times daily, use of no wine, and special favors for soldiers of the faith. After his death his sayings formed the basis of the *Koran*, sacred book of Islam.

MONTEFIORE (*mon-ti-fi-ō'ri*), **MOSES HAIM** (1784–1885). Jewish banker and philanthropist, born in Italy, but became a member of the London Stock Exchange, and in 1824 retired with a large fortune. By marriage he entered into business relations with the Rothschilds. He made seven journeys to Palestine, interviewed the sultan, and various European monarchs to secure better treatment of the Jews. Much of his money was spent in relief of those of his faith. Queen Victoria made him a baronet in 1846; he had been knighted and made Sheriff of London in 1837.

MONTESSORI, MARIA. See under EDUCATORS.

MOODY, DWIGHT LYMAN (1837–1899). American evangelist of great power. He received a scanty education, worked in a shoe store in Boston at 17, went to Chicago (1856), and built up a Sunday School class, which gradually became a church, and in 1860 he gave up business. During the Civil War he worked among the soldiers, from 1865 to 1869 was president of the Chicago Y. M. C. A., engaged with Ira D. Sankey (q. v.) in world-wide evangelism. A school for girls was started at Northfield, Massachusetts, in 1879, followed by one for boys two years later, a Bible Institute in Chicago in 1889, and summer conferences for Christian workers at Northfield in 1880, and for students in 1887. Moody gained his power by brushing aside all theological quibbling, by refusing to attack the faith of others, by his sincerity, honesty, and singleness of purpose in winning souls.

MOORE, GEORGE FOOTE (1851–1931). American Biblical scholar and theologian, a graduate of Yale and Union Seminary of New York, and a professor at Harvard from 1902. His field lay in the examination of the Old Testament and in the history of religions.

MOTT, JOHN R. (1865–). Religious leader, since 1888 connected with the International Y. M. C. A. He made many tours to various parts of the world in the interests of young people; member of the commission sent to Mexico in 1916 by President Wilson; and the mission to Russia in 1917. Served in World War as general secretary of the War Work Council of the Y. M. C. A. Wrote *The Future Leadership of the Church.*

MOTT, LUCRETIA (1793–1880). An American reformer; born in Nantucket, Mass. In 1818 she joined the Friends. In 1833 she assisted in the formation of the American Anti-Slavery Society, and in 1840 went to London as its delegate to the World's Anti-Slavery Convention; was one of the four promoters of the Woman's Rights Convention in the United States, an active exponent of the cause of equal suffrage, temperance, and universal peace.

MUHLENBERG (*mū'lĕn-bĕrg*), **HENRY MELCHIOR** (1711–1787). German Lutheran clergyman, a graduate of Göttingen and in theology of Halle. In 1742 he came to America, where he organized the first Synod in this country, and acted as superintendent of many of the Lutheran churches from New York to Maryland.

MUHLENBERG, WILLIAM AUGUSTUS (1796–1877). American philanthropist and clergyman, noted for making the service of the Episcopal church more flexible, for encouraging a new type of hymnody, and the founding of several schools. He was a graduate of the University of Pennsylvania (1814), preached at Lancaster, Pennsylvania, Flushing, Long Island, and the Church of the Holy Communion, New York City. The last of these was built by his sister, and was made the center of experiments in practical Christianity. He founded the Flushing Institute, the refuge for the poor called St. Johnland, on Long Island, and the Sisterhood of the Church of the Holy Communion, the first order of Protestant Episcopal deaconesses. He was a great-grandson of H. M. Muhlenberg, noted above.

MUNDELEIN (*mŭn'dĕ-līn*), **GEORGE WILLIAM** (1872–1939). American cardinal, born in New York City, educated there and at Rome, Italy. He served as secretary of Bishop McDonnell, pastor of a Lithuanian church, chancellor of the diocese, auxiliary bishop of Brooklyn, and archbishop of Chicago, until created a cardinal in 1924.

MUNSTERBERG (*mŭn'stĕr-bĕrg*), **HUGO** (1863–1916). German psychologist, who was called to Harvard University in 1892 and taught there till his death. He was an expert in the new psychology, which he tried to popularize by his own experiments and by numerous articles and books. He was born at Dantzig, studied there and at Geneva, and took his Ph. D. at Leipzig and an M. A. at Heidelberg. While teaching at Freiburg, he established a laboratory in his own house, one of the first of its type. Later he was called by William James to Harvard to develop the work in practical psychology. Of his many books, some of which were issued in both German and English versions, are *American Traits, Psychology and the Teacher, Psychology and Industrial Efficiency, The War in America* (1914), and *The Eternal Values*, the last being designed as a summary of his thinking.

MURPHY, FRANCIS (1839–1907). American temperance reformer, born in Wexford, Ireland; came to the United States as a child; lectured in America and England on total abstinence; 10,000,000 people are said to have signed the pledge through his influence; chaplain in the Spanish-American War (1898).

NEWMAN, JOHN HENRY (1801–1890). English religious leader, first in Church of England, later in Roman Catholic Church; vicar of St. Mary's, Oxford (1828); published *Tracts for the Times* (1833–1841); leader in "Oxford movement"; ordained Roman Catholic priest (1846); rector of University of Dublin (1854–1858); made a cardinal (1879); writer of marked ability; poem *Dream of Gerontius* and hymn *Lead, Kindly Light*, most famous; wrote much relating to affairs of the church.

NEWTON, JOHN (1725–1807). English clergyman and author of hymns with the poet, William Cowper. Having had little education, he engaged in sea trade from 1737 to 1755. Then he took up the study of Latin and Greek, and in 1764 settled as curate at Olney. Here he and Cowper issued the *Olney Hymns* in 1779. His fame now rests on hymns like *Glorious Things of Thee are Spoken* and *How Sweet the Name of Jesus Sounds*, noted for their fervor and genuine inspiration.

NEWTON, JOSEPH FORT (1876–). American clergyman and orator, who held important pastorates in Dixon, Illinois (1901–08); Cedar Rapids, Iowa (1908–16); City Temple, London, England (1916–19); Church of the Divine Paternity, New York (1919–25); and of the Memorial Church of St. Paul, Overbrook, Pennsylvania. Some of his books are *Wesley and Woolman* (1914), *The Sword of the Spirit* (1918), *Some Living Masters of the Pulpit* (1922), and *The Religion of Masonry* (1926).

NEWTON, RICHARD HEBER (1840–1914). An American clergyman. In 1869 he became rector of All Souls' Church, New York. Among his works are *The Children's Church, The Morals of Trade, Womanhood, Studies of Jesus, Right and Wrong Uses of the Bible, Book of the Beginnings, Philistinism, Social Studies, Church and Creed*, and *Christian Science.*

NIGHTINGALE, FLORENCE (1820–1910). An English philanthropist; born in Florence, Italy. During the Crimean War she promptly volunteered to organize a select band of nurses at Scutari. The offer was accepted by the British War Office, and within a week Miss Nightingale was on her way to the East, where she rendered invaluable service. She was consulted during the American Civil War and the Franco-German War. From 1872 much of her life was passed in her own home, where she studied Greek and theology, received callers, and maintained an immense correspondence. In 1907 the Order of Merit was conferred upon her.

NOYES, JOHN HUMPHREY (1811–1886). Founder of the Oneida Community, a religious cult, in central New York, where goods were held in common and a peculiar system of marriages obtained. Opposition of the community and the laws led Noyes and most of his own followers to withdraw to Canada, where he died at Niagara Falls, Ontario. Some re-

mained at Oneida, formed a purely business organization without any religious features, and perpetuated the name to our time.

OASTLER, RICHARD (1789–1861). English reformer and advocate of shorter hours for working people. For over fifteen years he agitated on every opportunity, but in 1838 he lost his position as steward of a large estate in Yorkshire. Being unable to pay his old employer a debt of £2,000, he was imprisoned for three years for debt, until friends raised a fund and secured his release. Meanwhile, he issued *Fleet Papers* from prison, advocating reforms in industry.

OBERLIN (*ō'bĕr-lĭn*), **JEAN FREDERIC** (1740–1826). A benevolent Alsatian Lutheran pastor; labored all his life at Ban de la Roche, a wild mountain district of Alsace, and devoted himself with untiring zeal to the spiritual and material welfare of the people. Oberlin College, Ohio, was named in his honor.

O'CONNELL, WILLIAM HENRY (1859–). American cardinal, bishop of Portland, Maine (1901), archbishop of Constance and assistant bishop of Boston (1906), and archbishop of Boston (1907). Made a cardinal in 1911. He was educated at Boston College and in Rome.

OECOLAMPADIUS (*ĕk'ō-lăm-pā-dĭ-ŭs*), **JOHANNES** (1482–1531). One of the leaders of the Reformation; born at Weinsberg, in Württemberg; became preacher at Basel; assisted Erasmus in his edition of the New Testament; entered a convent at Augsburg; came under Luther's influence and adopted the reformed doctrine.

OGLETHORPE (*ō'gl-thôrp*), **JAMES EDWARD** (1696–1785). An English military officer and philanthropist; born in London, England. It was through his efforts that a colony was formed of insolvent debtors and persecuted Protestants, whom he brought to America and settled in Georgia in 1733. He remained in America till 1743, when he returned to England. He died in Cranham Hall, Essex, England.

OLDHAM (*ōld'ăm*), **WILLIAM FITZJAMES** (1854–1937). American Methodist Episcopal bishop, who was born at Bengalore, India, the son of missionary parents, and was educated partly at the Madras Christian College. In America he completed his studies at Allegheny College and Boston University. Entering the ministry in 1883, he labored for years in Asia, founding the Malaysian Mission and the Anglo-Chinese School at Singapore. Professor of Missions at Ohio Wesleyan University (1895–1900), missionary bishop of Asia (1904–12), corresponding secretary of the Board of Missions (1912–16), and bishop of the M. E. Church from 1916.

ORIGEN (*ŏr'ĭ-jĕn*) (c. 185–c. 254). Learned church father, most eminent teacher of his age, a native of Alexandria, where his father suffered martyrdom (202). He survived several persecutions himself, made journeys to Palestine (216 and 231 or 232), and settled there after he was virtually excommunicated at Alexandria. He built up a flourishing school, traveled widely to Arabia, Greece, and perhaps farther, and did much to preserve the Scriptures. Before he left Alexandria, he had issued his Old Testament. Most of his writings, which were very numerous, have been lost. In theology he opposed the Greek teachings and the heretical sects, but was influenced in turn by Platonism.

OTTERBEIN (*ŏt'ĕr-bīn*), **PHILIP WILLIAM** (1726–1813). Founder of the Church of the United Brethren in Christ; came as missionary to America in 1752; was a powerful preacher, and started a great revival in 1766.

OWEN, ROBERT (1771–1858). Social reformer; called "the father of modern communism"; born in Newtown, North Wales; at the age of 19 he was manager of a large cotton mill in Manchester; 10 years later bought the New Lanark Mills on the Clyde, where he at once proceeded to improve the condition of the mill employees, by providing better homes and good food at cost prices; transferred children from the factory to the schools which he had established; he worked for better factory laws. Owen started some communistic schemes, no one of which succeeded, particularly the one at New Harmony, Indiana, in which he lost much of his personal fortune. His ideas on punishment, on religion, and social customs also alienated many who really believed in his economic program. Four of his sons became American citizens.

PAINE, ROBERT TREAT (1835–1910). American philanthropist, born in Boston; although a member of the bar he retired from the practice of his profession in order to promote his benevolent enterprises; one of the founders and, after 1878, president of the Associated Charities of Boston; organizer of the Workingmen's Loan Association and many similar societies; was in favor of lower tariff and free raw material. He wrote extensively upon themes in which he is interested.

PALEY (*pā'lĕ*), **WILLIAM** (1743–1805). An English divine and author; in 1775 became rector of Musgrave, and in 1782 was made archdeacon of Carlisle. It is said that he would have received a bishopric had not King George III. taken offense at a paragraph on "Property" in one of his writings. The principal works of Paley are *The Principles of Moral and Political Philosophy, Horae Paulinae, A View of the Evidences of Christianity,* and *Natural Theology.*

PALMER, RAY (1808–1887). An American hymnologist; taught in New York City and at New Haven, Conn.; occupied a pastorate in Bath, Me., until 1850, and then in Albany, N. Y. Among his hymns are *Jesus, the Very Thought of Thee* and *My Faith Looks Up to Thee;* the latter has been translated into twenty languages. His chief collections are *Hymns and Sacred Pieces, Hymns of My Holy Hours,* and *Voices of Hope and Gladness.*

PANKHURST, EMMELINE GOULDEN (1858–1928). English suffrage leader who married Richard M. Pankhurst. When the Liberal party failed to include suffrage in its platform, Mrs. Pankhurst (1903) started the Women's Social and Political Union. She was imprisoned several times for offensive agitation, particularly in 1912 for breaking windows and inciting to violence. In 1910 and 1911 she lectured in America. During the World War she remained loyal and did much to recruit men in both England and America. For a time afterward she lived in Canada and Bermuda. Late in life she joined the Conservative ranks, being a candidate for Parliament at the time of her death. In many of her early struggles she was joined by her daughter, Christabel (b. 1880), who retired from agitation, and by another, Sylvia (b. 1882), who became a Communist.

PARKER, MATTHEW (1504–1575). Archbishop of Canterbury; born in Norwich. In 1544 he was appointed master of Corpus Christi College, Cambridge, and elected vice chancellor of Cambridge University the following year. When Queen Mary succeeded to the throne Parker was deprived of his offices, and remained in concealment till the accession of Elizabeth in 1558. By royal command he was summoned to Lambeth and appointed archbishop of Canterbury.

PARKER, THEODORE (1810–1860). American preacher, scholar, and reformer; pastor of the West Roxbury Unitarian Church (1837–1842). His sermon, *The Transient and Permanent in Christianity* (1841), ranks with Channing's *Baltimore Sermon* of 1819 and Emerson's *Divinity School Address* of 1838; published *A Discourse on Matters Pertaining to Religion, Lessons from the World of Matter and the World of Man,* and *Experiences As a Minister.*

PARKHURST, CHARLES HENRY (1842–1933). Clergyman and reformer, who was born in Massachusetts, educated at Amherst, studied further in Germany, and taught for a time. Pastor at Lenox, Mass. (1874–80) and at the Fifth Avenue Presbyterian Church, New York (1880–1918). President of the Society for Prevention of Crime. His accusations against officialdom in New York City led to a legislative investigation, which largely substantiated the charges. Dr. Parkhurst wrote a number of books, of which those now best known are *Our Fight with Tammany,* and *What Would the World Be Without Religion?*

PARMENIDES (*păr-măn'ĭ-dēz*) (b. c. 515 B. C.). Native of Elea in Italy and a follower of Xenophanes (q. v.), founder of the Eleatic school of philosophers. In 448 he visited Athens and became a friend of Socrates. His poem *On Nature* advances the theory that sense is decisive and only through mental application may one know what is the ultimate reality. Both Plato and Aristotle admired his teachings.

PATON (*pā'tŭn*), **JOHN GIBSON** (1824–1907). Missionary for ten years in Glasgow, Scotland, and in 1858 sailed for the New Hebrides, where he worked four years among the cannibals. In 1862 he began at Aniwa, all the inhabitants of which he had converted by 1882. One of the most successful foreign missionaries in recent times

PATRICK, SAINT (fifth century). Much doubt clouds the life-story of this missionary to the Irish,

and some regard his entire history as a fiction of a later romance. Two documents purporting to be his have come down to us, the *Confession* and a *Letter* to Coroticus, a British king. Legend states that he was held captive for a time, spent some years in a monastery in southern Europe, and about 432 set out for Ireland, where he challenged idol worship, visited various points, founding churches, and was bishop of Armagh.

PATTON, FRANCIS LANDEY (1843–1932). Theologian and educator; pastorates in New York and Chicago till 1881, when he became professor of theology in Princeton Seminary and of ethics in the University; president of the University (1888–1902); president of Princeton Seminary (1902–1913). Known as a staunch defender of the older theology in books like *The Inspiration of the Scriptures, Summary of Christian Doctrine,* and *Fundamental Christianity.* After he retired from Princeton, he lived at his old home at Warwick, Bermuda.

PAUL, SAINT (originally called Saul) (flourished first century). The great Apostle of the Gentiles; born at Tarsus, in Cilicia; by birth a Jew and a Roman citizen. He did more for the extension, if not the exposition, of the Christian faith at its first promulgation than any of the Apostles, and perhaps all of them together, and it is questionable if but for him it would have become, as it has become, the professed religion of the most civilized section of the world.

PEABODY, FRANCIS GREENWOOD (1847–1936). Theologian, from 1881 a professor at Harvard University; acting dean and dean at various times. His lectures and sermons for a generation were famous. Some of his books are *Short Addresses to Young Men on Personal Religion, Jesus Christ and the Social Question, The Christian Life in the Modern World,* and *Religious Life of an American Citizen.*

PEABODY, GEORGE (1795–1869). American philanthropist, who made a huge fortune as a merchant in Washington, D. C., Baltimore, Maryland, and in London, England, where he lived from 1837 to his death. His benefactions amounted to $8,000,000, including sums to his native town of Danvers, Massachusetts; about $1,000,000 for the Institute in Baltimore that bears his name; large sums to Harvard University; and a great fund for education in the South. He also contributed a half million pounds to build houses for working men in London. Queen Victoria offered him a title, which he declined.

PEARSONS, DANIEL KIMBALL (1820–1910). American philanthropist, who accumulated a fortune in real estate in Chicago, and gave over $4,000,000 in all to some two score American colleges. His plan was to require an equal or larger sum to be raised by other friends of a college within a specified time. He was a native of Vermont, became a physician in Chicopee, Massachusetts, but went west in 1857, where he settled in Hinsdale, Illinois, moving to Chicago three years later.

PEASE, EDWARD R. (1857–). Secretary of the Fabian Society from 1890 to 1913. After acting as a merchant, and member of the Stock Exchange, he became a cabinet maker, founded the Fabian Society (with others) in 1883, and was one of the governors from the start of the London School of Economics. Wrote on socialism.

PERIN, HENRI XAVIER CHARLES (1815–1905). Belgian Christian socialist and economist, born at Mons; held the chair of political economy and law in the Catholic University at Louvain for 37 years, when he retired, as professor emeritus (1881). Perin bases his hopes for the success of an ideal society upon the moral influence of the church.

PERRY, JAMES DE WOLF (1872–). Son of the noted clergyman of the same name (1839–1927). He was educated in Germantown, Pennsylvania, at the University of Pennsylvania and Harvard, became a priest in 1896 in the Protestant Episcopal Church, holding pastorates in Springfield and Fitchburg, Massachusetts, and New Haven, Connecticut, until chosen bishop of Rhode Island in 1911. Elected presiding bishop of the church in 1930.

PETER (–64?). The Greek surname of an apostle of Jesus. Peter's real name was Simon, his father's Jonas, his brother's Andrew. Peter was of an impulsive temperament, generous, but too forward in speech and rash in action. After the Ascension, he was for a time the most prominent of the Apostles. Tradition makes him die as a martyr at Rome, crucified with his head downward. Roman Catholics claim him as the first bishop of Rome, and consider that the authority delegated him by Jesus appertains also to his successors, the popes of Rome.

PETER THE HERMIT (c. 1050–1115). Preacher of the First Crusade and one of those who went to Jerusalem in 1096. He was a priest at Amiens, France, gained great fame for his eloquence, and led a great horde to Constantinople in 1096, where he awaited other divisions of the Crusade. His followers suffered defeat in Asia Minor while he was absent at Constantinople. He joined the other princes in 1097, but evidently played a minor part, and reached home about 1100 or 1101.

PHILLIPS, WENDELL (1811–1884). American reformer, of a prominent family, his father being the first mayor of Boston in 1822. To follow the career of an agitator, led by William Lloyd Garrison, he gave up a lucrative law practice, made his first great speech at a meeting in Faneuil Hall, Boston in 1837, after the murder of Elijah P. Lovejoy at Alton, Illinois, and from that time to 1870 was unsparing in his efforts. He gained great fame as a platform orator and agitator, being able to handle large hostile crowds by his magnetism and eloquence. After the Civil War, Garrison said the Anti-Slavery Society had accomplished its end, and should be disbanded. Phillips rejected this doctrine, and continued after Garrison as the president until 1870. He also favored woman suffrage, prison and court reforms, and prohibition of the liquor traffic.

PINGREE, HAZEN S. (1842–1901). American municipal reformer, born in Denmark, Me.; served in the Civil War and was six months in Andersonville prison (1864); afterwards started a shoe factory in Detroit, having previously been employed in a shoe factory; was mayor of Detroit (1890–1896), and threw himself into the work of fighting political corruption; was the advocate of municipal ownership of street railways, free water, the eight-hour law, and other reforms; he secured a reduction in the price of gas; in 1896 he became the Republican governor of Michigan.

PIUS IX. (GIOVANNI MARIA MASTAI FERRETTI) (1792–1878). Chosen to the pontificate (1846). During his incumbency the dogmas of the immaculate conception and of papal infallibility were promulgated, temporal power overthrown (1870), and the papal states annexed to Italy.

PIUS X. (GIUSEPPE SARTO) (1835–1914). Ordained (1858); parish priest until 1875, when made episcopal chancelor; bishop of Mantua (1884–1893); cardinal (1893); chosen to the pontificate (1903). Pius X. abhorred conflict of all sorts, war most of all. One of his last acts was to refuse to bless the cause of Austria in the World War. It is said the pope exclaimed "I do not bless war: I bless peace."

PIUS XI. (ACHILLE RATTI) (1857–1939). Pope since 1922, known as a great scholar, lover of nature, especially of mountain climbing in Switzerland, and as an astute and patient diplomatist. Perhaps the chief event of his reign was the agreement with the king of Italy in closing the Roman Question (1929). He was born near Milan, took doctors degrees at the Lombard college, studied at the Great Seminary, becoming professor of theology for a time in the latter, and for 30 years in Milan directed the work of the Cenacle. His knowledge of languages and books suggested his appointment as classifier of the books in the Ambrosian Library and later as sub-perfect of the Vatican Library. Benedict XV. was his friend and adviser, appointing him a difficult mission to Poland. In 1921 he became archbishop and cardinal of Milan, succeeding Benedict as pope on February 6, 1922.

PLATO (*plā'to*) (c. 428–c. 348 B. C.). Greek philosopher, with Aristotle and Socrates the greatest of ancient times, founder of the celebrated school at the Academy, and the most influential philosophical writer of all times. He came from excellent families in Athens, aspired to be a politician, and in 367 was commissioned to educate the heir to the throne of Sicily. His immediate influence in statecraft, however, was not potent. About 387 he started the Academy, where students were trained in reason, mathematics, and science. Many of the great thinkers of the next age were his pupils; such as Eudoxus, the celebrated mathematician; Speucippus, the scientist (Plato's nephew and successor); Delius, who greatly influenced Alexander the Great; and Archytus, the inventor, a close friend—but possibly not a pupil. Thus Plato was in touch with all learning of his day, both with his predecessors and with his contemporaries. In

all he wrote 40 works on many subjects. The chief treatises have greatly modified or have directed the thinking of the ages. Much of our knowledge of Socrates comes from dialogs of Plato, in which the master appears as one of the speakers. Some of the chief dialogs are: *The Republic,* in which Justice is considered ethically; *Symposium,* a collection of ideas on love; *Phaedrus,* a discussion of rhetoric; *Parmenides,* an argument on philosophy of Parmenides; *Timaeus,* an explanation of the natural world. His longest work, the *Laws,* is a discussion of an ideal state, social relations, and theology. Plato developed the philosophy of idealism of Forms or Ideas, as variously called. All visible things, for instance, are reflections of abstract or ideal forms. We know individual men, but still we have the conception of man in general. We see trees, but have an idea of tree, or the nature of every tree. We have experiences with all sorts of chairs, but have an idea of a chair generally. Thus, for all concrete objects there are ideas, ideal patterns, or spiritual entities. Spirit or the ideal form is the only ultimate reality. Aristotle studied under Plato, but eventually founded the Lyceum, and neglected the philosophy of ideas. Plato ruled in the early ages, till about the thirteenth century, when Aristotle became more and more a formative influence. Augustine continued the doctrines of Plato through the church. In both the sixteenth and seventeenth centuries other Platonic revivals occurred. Plato's Academy continued as a school till 529 A. D., when it was suppressed by Justinian. In literature Plutarch followed Plato. See also under AUTHORS.

PLOTINUS (*plō-tī'nŭs*) (c. 204–270). Leader in Neoplatonism, or the revival of interest in Platonic idealism. His youth was spent in Alexandria, at 39 he accompanied Gordius on an expedition to the East, where Plotinus hoped to study, but his leader was killed, and he barely escaped with his life. After 244 he lived in Rome. Porphyry, who collected the sayings of Plotinus, states that his master was generally beloved. His influence on Christian thinking could not be exaggerated, nor is it extinct today. Emerson was deeply influenced by Plotinus. The latter taught that "There is nothing Yonder which is not also Here.,' All things proceed from spirit, and no soul can be extinguished, though the individual soul may fall into sin. Our world reflects the eternal nature of the world beyond. Truth, Goodness, and Beauty are final values. Plotinus trained many pupils.

POLING, DANIEL ALFRED (1884–). Religious leader, president of the International Society of Christian Endeavor, pastor of the Marble Collegiate Reformed Church of New York from 1923, and editor of the *Christian Herald.* Secretary of the Flying Squadron, which covered every state (1914–15), and leader in various temperance and social service organizations. Wrote, among other works and novels, *What Men Need Most* (1923), *Radio Talks to Young People* (1926), and *Huts in Hell* (1918).

POTTER, HENRY CODMAN (1834–1908). American bishop of the Protestant Episcopal Church and social reformer. He was the son of Bishop Alonzo Potter and nephew of Bishop Horatio Potter, whom he assisted (1883–87), and then succeeded. Previously he held appointments at Greensburg, Pennsylvania, Troy, New York, Trinity Church, Boston, and Grace Church, New York City. At Grace Church he founded clubs for working people, nurseries, and kindergartens, being a leader in the "institutional church movement." He also sponsored the Subway Tavern, which was designed to promote temperance by encouraging the use of light drinks instead of those of heavy alcoholic content. During his administration the cornerstone of the Cathedral of St. John the Divine was laid in 1892. Some of his books like *The Religion of To-day* attracted wide attention.

POWDERLY, TERENCE VINCENT (1849–1924). American labor leader, a native of Pennsylvania, where he worked as a machinist, became president of the Machinists and Blacksmiths Union, and was four times mayor of Scranton on a labor ticket. In 1901 he was admitted to the bar, having been United States Commissioner of Immigration (1897–1902), and from that time was chief of information of the Bureau of Immigration. He wrote *Thirty Years of Labor* and *History of Labor Day.*

PROTAGORAS (*prō-tăg'ō-răs*) (c. 481–411 B. C.). Greek philosopher, leader of the Sophists, those who taught for pay. Pericles commissioned him to frame laws for a new dependency of Athens. In his old age he was convicted of atheism, banished, and lost at sea. He was about the first to organize the study of grammar in a regular system. Sophists at first differed from other educators in striving to prepare their pupils for political and active life. Followers of Protagoras organized learning for the purpose of practical instruction, not merely to ascertain truth, as the philosophers aimed.

PROUDHON (*prö-hôn'*), **PIERRE JOSEPH** (1809–1865). French socialist, who advocated a reduction of government activities, taxes on rent and interest, equality of labor and compensation, and ŏther plans to even the social scales of justice. Though sometimes called an anarchist, he did not believe in violence, but merely what he termed /'a union of order and anarchy." He disagreed with other socialists of France in that he believed changes could be brought out only by long effort and patience, not by sudden or revolutionary schemes. In Paris he was imprisoned for three years for his speeches and agitation.

PUSEY (*pū'zĭ*), **EDWARD BOUVERIE** (1800–1882). English religious leader of the Anglo-Catholic party of the Church of England. Though he did not initiate the *Tracts for the Times* (a series of short papers on doctrine published at intervals), he joined with men like J. H. Newman (q. v.) and Keble in a profound study of the history and principles of the early church. His sermon, *The Holy Eucharist* (1843), raised a tremendous storm, and Pusey was suspended from preaching for two years, but 18,000 copies of the tract were sold. Pusey sought to reconcile the English and Roman Catholic churches. Thus he was a leader of the High Church party, or Tractarianism, or Puseyism, or the Oxford Movement, as the influence was variously called. In 1828 he was appointed professor of Hebrew and Canon of Christ Church, Oxford, holding the latter office for 54 years, till his death. His sermons on absolution, on the real presence in the communion, and on certain portions of Scriptures had important influence on later English theology.

QUAYLE (*quā'l*), **WILLIAM ALFRED** (1860–1925). Methodist Episcopal bishop and author of poems and nature books. He was born in Missouri, educated at Baker University, of which he acted as president from 1890 to 1924. He held important pastorates in Kansas City and Indianapolis, and was elected bishop in 1908. As a preacher and author, he was justly famous for the beauty of his thought and language. Some of his chief books are *The Poet's Poet, Prairie and Sea, The Climb to God,* and *Beside Lake Beautiful.*

QUELCH, HENRY (1858–1913). English socialist, editor, and author; born in Hungerford, Berkshire; organizer of the South Side Labor Protection League; he was prosecuted for connection with strikes; member of Social Democratic Federation; editor of *Justice.*

QUESNEL (*kĕ-nĕl'*), **PASQUIER** (1634–1719). French theologian, one of the followers of Jansen (q. v.), banished from Paris in 1681, lived with the bishop of Orleans four years, and then in Brussels and Amsterdam the rest of his life. In 1703 he escaped from prison at Brussels after being incarcerated for three months. His *Moral Reflections on the New Testament* called forth a papal bull condemning certain passages of that work.

RAIFFEISEN (*raĭf'aĭ-zeŋ*), **FRIEDRICH WILHELM** (1818–1888), German economist; established coöperative savings and loan associations in the country districts of Germany, to save the peasants from the clutches of usurers.

RAIKES (*rāks*), **ROBERT** (1735–1811). English reformer and organizer of the first Sunday Schools. In 1757 he succeeded his father as publisher of the *Gloucester Journal,* and in 1780 started a school at Gloucester, his native town, for the study of the Scriptures and church doctrines. Before his death every corner of England had a Sabbath School.

RASPUTIN (*räs-pō'tēn*), **GREGORY EFIMOVITCH** (1871–1916). Russian peasant religious devotee, who greatly influenced the court of the tsar in the last years of the old régime. He was illiterate, but had a powerful imagination, dominating personality, and magnetic hold over many classes of people. Though he spent some time in various monasteries, he never became learned, had little knowledge of politics, or of the world of culture. Yet his mysticism, doctrine that repentence is at the basis of religion, and freedom from all conventional restraints gained many adherents. He was murdered by a group of men who professed to be actuated by a desire to rid Russia of a dangerous fanatical influence.

REYNOLDS, JAMES BRONSON (1861–1924). American social reformer; born at Kiantone, New York; educated in the leading universities of America and Europe; head worker in the New York University settlement; member of the State Tenement House Commission; afterward special adviser to President Roosevelt on Washington municipal affairs. Reynolds also did important work as a member of the committee appointed to investigate the Chicago stock yards, after Upton Sinclair published his indictment of them in *The Jungle* (1906). He served also as assistant district attorney (1910–13) in New York City, where he practiced law for many years.

RICHELIEU (*rish'ĕ-lō*), **CARDINAL.** See under STATESMEN.

RICHMOND, LEGH (1772–1827). An English divine and religious writer; active in the reforms of his day; best known by his *Annals of the Poor;* his *Dairyman's Daughter* reached, within 20 years after his death, a circulation of 4,000,000 copies in 19 languages; he edited a series of *Fathers of the English Church.*

RIDLEY, NICHOLAS (c. 1500–1555). English martyr, a graduate of Pembroke Hall, Cambridge, of which he became assistant treasurer, after study on the continent. In 1540 he became master of Pembroke Hall, and the following year chaplain to Henry VIII. Two years later he was tried and acquitted on a charge of heresy, in 1547 became bishop of Rochester, and helped to compile the Prayer Book. Having taken the side of Lady Jane Grey, Ridley tried to escape punishment when Mary came to the throne. In prison he defended himself for his religious opinions, refused to recant and was burned at Oxford, with Cranmer and Latimer, on October 16, 1555.

RIIS (*rēs*), **JACOB** (1849–1914). Danish-American philanthropist, journalist, and author. Come to New York in 1868, and became police reporter for daily newspapers, and the experience gained in this occupation led him to devote himself to all phases of social uplift and betterment. Among his literary works, by which he accomplished much, were: *How the Other Half Lives, The Children of the Poor, Out of Mulberry Street, The Battle with the Slums, The Making of an American.*

RIPLEY, GEORGE (1802–1880). American reformer, scholar, and Unitarian minister; a graduate of Harvard. Influenced deeply by the Transcendental movement and a desire to conserve some of the practical results, he founded the Brook Farm social experiment at West Roxbury, Massachusetts, in 1841. Here artists, scholars, poets, and others proposed to devote half-time to their regular pursuits and half to working on the estate with their hands. This was one of many socialistic enterprises in America between 1825 and 1875. Ripley later lived in New York City, and with Charles A. Dana edited *Appleton's Cyclopedia.*

ROBERTSON, FREDERICK WILLIAM (1816–1853). A distinguished English preacher; curate at Winchester, at Cheltenham, and Brighton, is widely known for his printed sermons.

ROGERS, AMES EDWIN THOROLD (1823–1890). English economist; professor of political economy at Oxford; devoted himself to historical research on economic subjects; his *History of Agriculture and Prices* necessitated 20 years of patient study among all kinds of old records.

ROYCE (*rŏis*), **JOSIAH** (1855–1916). American philosopher, educated at the new University of California, where he came under the influence of LeConte, the geologist, and Sill, the poet, turning to literature and philosophy instead of engineering. He completed his education in Germany and at Johns Hopkins, Baltimore. From 1892 to his death he taught philosophy at Harvard, where he became noted for monistic idealism, with highly ethical scientific bearings. Royce deeply influenced many pupils, standing with William James, whose philosophy differed from his, in the relation of close friend and collaborator.

RUSH, BENJAMIN (1745–1813). American physician and one of the founders (1774) of the first anti-slavery society in America. He obtained a medical degree at Edinburgh and spent some time in the hospitals of London and Paris. Started the first dispensary in Philadelphia, and in the yellow fever scourge of 1793 is said to have saved 6,000 lives. Rush Medical College, Chicago, took its name from Dr. Rush. He was one of the signers of the Declaration of Independence, and was a member of the convention which adopted the Federal Constitution. For years he taught medicine at the Philadelphia Medical College and later at the University of Pennsylvania.

RUSSELL, BERTRAND ARTHUR WILLIAM (1872–). English philosopher, who in his *Principles of Mathematics* (1903) sought to prove the similarity or identity of formal logic and pure mathematics. He has also written much on other phases of philosophy and on more practical subjects, always applying the principles of logical relations. He was a graduate of Cambridge University, served a term in jail for obstruction during the World War, lectured in China in 1920, and with his wife later established a school. In 1922 and 1923 he stood for Labour as a parliamentary candidate. Some of his other studies are *Practice and Theory of Bolshevism* (1920), *On Education* (1926), and *Outline of Philosophy* (1928).

RUSSELL, HOWARD HYDE (1855–). American reformer, one of the founders of the Anti-Saloon League, which he served in various capacities. For several years he was a lawyer, a school superintendent, and a pastor. Between 1893 and 1905 organized the League in 36 states. Also founded the Lincoln-Lee Legion, which attained a membership of six millions; was one of the organizers of the World League Against Alcoholism; and visited various countries of Europe in the interest of the temperance movement.

SAGE, MARGARET OLIVIA SLOCUM (1828–1918). American philanthropist, the wife of Russell Sage, the financier, who left her a fortune of nearly $65,000,000 to distribute as she saw fit. During her lifetime she gave away $40,000,000, and at her death left $36,000,000 to be divided among 52 public enterprises. She established the Russell Sage Foundation for the improvement of social conditions of the United States, giving $10,000,000 for this purpose.

SANKEY, IRA DAVID (1840–1908). An American evangelist; associated with the late Dwight L. Moody for some years, attracting and holding the attention of great audiences by singing hymns composed by himself, which are published as *Gospel Hymns, Sacred Songs,* and *Sacred Songs and Solos.*

SAVAGE, MINOT JUDSON (1841–1918). Unitarian clergyman; Congregational pastor from 1864–1873; Unitarian pastorates in Chicago; Church of the Unity, Boston (1874–1896); Church of the Messiah, New York (1896–1906). A voluminous writer on ethical topics as well as editor.

SAVONAROLA (*sa-vō-nä-rō'lä*), **GIROLAMO** (1452–1497). Famous Italian religious and political reformer of noble birth, a member of the Dominican order; by his intense religious zeal and powerful oratory became a prophet to his followers. Political disturbances within Italy followed by French invasion resulted in its control by Savonarola and his party, who aimed to establish a Christian commonwealth. Through too high a standard and his attacks upon the pope, he was forbidden to preach; was imprisoned and tried for heresy and sedition; finally hanged and his body burned. His numerous writings include sermons, poems, religious and political essays.

SCHELLING, FRIEDRICH WILHELM JOSEPH VON (1775–1854). German philosopher, who lectured at Yena (1798–1803), while still under the influence of Fichte and Hegel. Shortly afterward he broke with them and with the idealistic philosophy they advocated. Schelling sought to combine the subject and object, or material and ideal in philosophy. Both nature and spirit he considered equal factors, whereas the followers of Kant, for the most part, considered nature to be a manifestation of spirit. Schelling said that the Infinite is the source of both; so real nature and spiritual or transcendental are both common attributes. From 1806 for a number of years he was secretary of the Academies of Munich, lecturing meanwhile (1820–27) at Erlangen. Later he lectured at Berlin.

SCHLEIERMACHER (*slī'ĕr-mäkĕr*), **FRIEDRICH DANIEL ERNST** (1768–1834). German theologian, who sought to reconcile the diverse systems of Kant and Spinoza. He also opposed strongly the rationalism of his day. For two years he taught at Halle (1804–06), and was one of those instrumental in organizing the University of Berlin, where he held a chair of theology from 1810 to his death. He taught that self-perfection is necessary to social progress, which is the end after all. Moral values are judged by social good or necessity. The highest good is the complete man, all his interests harmonized. Attempting to combine variant and opposing ideas, he is not always convincing, but still aroused no little sympathy.

SCHOPENHAUER (*shō'pĕn-hŏw-ĕr*), **ARTHUR** (1788–1860). German philosopher, the father of modern philosophical Pessimism. His birth, early education, relations with his mother, and solitary life all gave rise to a mental squint that seemed incurable. In Göttingen he read Plato and Kant, heard Fichte and Schleiermacher, but turned within himself for the answer of the riddle of the universe. He at last tried lecturing in Berlin, but Hegel held the favor, and empty benches were his only auditors. *The World as Will and Idea* (1819) is his greatest work. An earlier one, *The Fourfold Root of the Principles of Sufficient Reason* (1813) gained only meager notice. Schopenhauer disputes the claims of both reason and science. Though he began with a realistic foundation, he rose to idealism, in that man can break the bonds of nature and custom. He can indeed free himself by two mean: art and renunciation. By contemplating only the beautiful, man can rise above his ordinary nature, and by refusing to expect too much from life, man can learn to modify his losses and forget many of his pains.

SEBASTIAN (*si-bas'tian*), **SAINT.** A Roman soldier at Narbonne, and martyred under Diocletian when it was discovered he was a Christian; is depicted in art bound naked to a tree and pierced with arrows; and sometimes, with arrows in his hand, offering them to heaven on his knees, he having been first shot with arrows and then beaten to death.

SERRA JUNIPERO (*sĕr'rā*), **MIGUEL JOSE** (1713–1784). Spanish missionary, founder of the first mission in California at San Diego (1769). He was a Franciscan who arrived at Mexico City in 1750, labored among the Indians till he went to California, where he also founded missions at Monterey, which became his headquarters, at San Antonio, San Gabriel, and other places. These he visited on foot, his last journey being about a year before his death at Monterey.

SERVETUS (*sĕr-vē'tŭs*), **MICHAEL** (c. 1509–1553). Spanish doctor and theologian, burned at the stake as a heretic at Champel in Switzerland. He appeared first at Basle in 1530, and published his doctrine of the Trinity the following year. In 1553 he was accused of writing an anonymous book, tried, imprisoned at Geneva, but escaped for several months, and later was recognized and burned. In denying the divinity of Christ and the nature of the Trinity, Servetus offended both Catholics and Protestants. Calvin seems to have furnished evidence that convicted Servetus, but whether with malice or not is not entirely clear.

SHAFTESBURY, ANTHONY ASHLEY COOPER, 7th EARL OF (1801–1885). English reformer and statesman, who was educated at Harrow and at Oxford, entered Parliament in 1826, and succeeded his father as earl in 1851. Throughout his busy life he took a zealous interest in securing better working and social conditions for laborers. In 1846 he resigned his seat as representative from Dorset, largely because of opposition to the bills relating to the Corn Laws. He favored Catholic emancipation, for years fought for a bill limiting hours of labor in factories to ten hours a day, and succeeded at last in 1874 in getting the desired relief. Measures for reform of the coal mining industry were also sponsored by Lord Shaftesbury. He founded some of the Ragged Schools for children in the poor districts of London, several reformatories, Young Men's Christian Associations, philanthropic, and missionary societies. For nearly 60 years he engaged in these and other public and social movements.

SHELDON, CHARLES MONROE (1857–). American clergyman and author, known for his books advocating practical Christianity in daily life. He was a pastor in Vermont, at Topeka, Kansas (1889–1919), save for three years of general preaching, and was chief editor of the *Christian Herald* (1920–25). In 1900 he edited the Topeka *Capital* for one week to show that a daily could be conducted as Christ would wish. Of his many books, some that reached large circulations are: *In His Steps* (1896), *Lend a Hand, A Little Book for Every Day*, and *In His Steps Today* (1923).

SHEPARD, HELEN MILLER (1868–1938). American philanthropist, the daughter of the late Jay Gould, great financier; married Prof. Finley J. Shepard (1913). Identified with various religious and philanthropic works for many years. She gave a library and the Hall of Fame to New York University; $100,000 to the government for war relief (1898), and engaged personally in service in camps; a dormitory to Northfield Seminary; and a building to the naval branch of the Y. M. C. A. in Brooklyn.

SHEPARD, THOMAS (1605–1649). English Puritan divine; silenced for non-conformity, he went to Boston (1635); pastor at Cambridge, where he took active part in founding Harvard College and in Indian missionary work.

SIMPSON, ALBERT B. (1846–1919). Canadian clergyman, founder of the Christian Alliance (1887); incorporated with the International Missionary Alliance (1897) under the name, Christian and Missionary Alliance, of which he was president and superintendent; equipped hundreds of foreign missionaries and maintains a missionary training institute; pastor of Gospel Tabernacle in New York City.

SIMPSON, MATTHEW (1811–1884). Bishop of the Methodist Episcopal Church, known for his oratory and logical preaching. Beginning as a physician in 1833, he was soon licensed to preach; held pastorates until in 1837 he was called to Allegheny College as professor of science; and from 1839 to 1848 acted as president of what is now DePauw University. After editing the *Western Christian Advocate* (1848–52), he was made a bishop, and was always in great demand in American Methodism as preacher, orator, and counsellor. He wrote *A Hundred Years of Methodism* (1876), *Lectures on Preaching* (1879) and edited a *Cyclopedia of Methodism* (1878).

SIXTUS V. (FELICE PERETTI) (1521–1590). Pope from 1585 to 1590 in succession to Gregory XIII., for whom he had conceived a violent dislike, and hence lived in retirement while Gregory was pope. He brought hundreds of robbers to justice, completed or began many important public works, and did much to improve the physical features of Rome. During his reign the dome of St. Peter's was completed, the papal palaces repaired, the aqueduct of Severus restored, and the Pontine marshes partly drained. In diplomacy he was not so skilled, but managed to prevent Philip II. of Spain from causing open rupture with France.

SLATTERY, CHARLES LEWIS (1867–1930). Bishop of Massachusetts since 1927, Protestant Episcopal Church. He was born in Pittsburgh, educated at Harvard, became a priest in 1895, was dean of the Cathedral at Faribault, Minnesota (1896–1907), rector in Springfield, Massachusetts (1907–10), and of Grace Church, New York City (1910–22), when elected coadjutor bishop of Massachusetts. Acted as general chairman, Church Congress, and of the Commission on Revision of the Book of Common Prayer. Lectured and preached at various colleges. Among numerous books, he wrote especially *The Authority of Religious Experience, The Gift of Immortality*, and *Following Christ*.

SMITH, JOSEPH (1805–1844). Founder of Mormonism, was born in Vermont, went with his parents when he was ten to Palmyra, New York, where in 1827 Smith claimed to have unearthed two gold plates on which the *Book of Mormon* was written in "reformed *Egyptian*" characters. Other revelations came from time to time. In 1830 he started his new sect. They moved to Kirtland, Ohio, then Missouri, then to Nauvoo, Illinois, where Smith incited his followers to destroy the plant of a newspaper which had published derogatory statements about the Mormons. He was imprisoned in the jail at Carthage, Illinois, but a mob stormed the place and shot Smith and his brother Hyrum. In 1845 the Mormons moved to Utah.

SMYTH, WILLIAM NEWMAN (1843–1925). American clergyman and author, who raised a stir in 1908 with his book *Passing Protestantism and Coming Catholicism*, in which he favored one great universal church. He was born at Brunswick, Maine, educated at Bowdoin, and studied at Andover Theological Seminary. From 1882 he was pastor of the First Congregational Church of New Haven, Connecticut.

SOCINUS (*sō-sī'nŭs*) **(SOZINI, SOZZINI).** Two theologians, born in Siena, Italy, and precursors of a form of Unitarianism. Lelio (1525–1562), who spelled his name Sozini, visited various cities of central Europe, studied the Bible carefully, and encountered various difficulties as to the resurrection, predestination, and the authority of the original Scriptures. In 1555 he declared himself orthodox. His nephew, Fausto Sozzini (1539–1604) took a more advanced ground, but did not profess to found a sect or school. He lived at Siena, Lyons, Rome, Basle, and (1579–1604) in Poland. For 12 years (1563–75) he conformed to the Roman Catholic Church. During his last years he

wielded a great influence in the anti-Trinitarian movement. Though he drew the line closely between orthodoxy and heresy, he said that Christians had no right to act as civil judges. He opposed all taking of human life, favored a natural instead of a supernatural view of religion, and claimed that the work of Christ is tested in human individuals more than in doctrines.

SODERBLOM (*sō dĕr-blŭm*), **NATHAN** (1866–1931). Archbishop of Uppsala, where he was educated in the university. He was a leader in church unity and prepared the way for the general Christian conference at Stockholm in 1925.

SOLLY, HENRY (1813–1903). Unitarian clergyman (1840); feeling need of social intercourse among workmen, he set himself the task of establishing clubs; traversed entire country to further his idea; formed nearly 3,000 clubs with almost a million members.

SOMERSET, LADY HENRY (1851–1921). British philanthropist and leader in reform movements. She devoted much time to improving the condition of her tenants, many thousands in number. With Frances E. Willard, president of the American Temperance Union, she founded the World Women's Christian Temperance Union and advocated not only temperance but social purity and woman's suffrage. In 1894 she founded the *Woman's Signal*, of which she for years was chief editor.

SPALDING, JOHN LANCASTER (1840–1916). Roman Catholic bishop of Peoria (1877–1908); built St. Augustine's Church for Catholic negroes of Louisville (1869); secretary and chancellor diocese of Louisville (1871); of New York (1872–1877); appointed in 1902 by the president arbitrator in coal strike; author of many essays and reviews upon social, educational, and ethical questions, also poetry of a high order.

SPARGO (*spär'gō*), **JOHN.** See under AUTHORS.

SPEER, ROBERT ELLIOTT (1867–). Religious leader, the secretary of the Presbyterian Board of Missions. He was educated at Princeton, studied at the Princeton Seminary, and took up missionary service in 1891. Visited many parts of the world in the interest of Christian missions, acted on many boards, including the Federal Council of Churches and the Wartime Committee of the Churches.

SPENCER, HERBERT (1820–1903). British philosopher and scientist, educated by relatives, and from early life independent in all his thinking. After a brief period as an engineer and attempts at invention (1837–46), he began to write for the *Nonconformist*, and acted as one of the editors of *The Economist* until freed by a bequest in 1853. During the next few years his philosophy took definite and positive shape. His *Principles of Psychology* (1855), *Essays* (1857), and other occasional writings brought friends who saw to his ordinary needs in life. For years, however, ill health and writing alternated. Of his numerous works, *First Principles* (1862), *Principles of Biology* (1864, 1899) *Principles of Psychology* (1855, 1876), and *Principles of Ethics* (1879, 1882) are of most importance. All Spencer's work is marked by the excess of his virtues—those of clear thinking, freedom from emotion, stolidity, and confidence in his own powers of reason. He was little touched by ordinary life, its affairs, or its emotions. Toward the end, when leaders of all movements had shunned him, he said wistfully, "I am more Tory than any Tory and more radical than any Radical." Perhaps this is why he was at last allowed to fall into neglect: The leaders could see the faults of their own systems magnified in the candid glass that Spencer set up before the public. No man ever remained more true to his own convictions. Though he is incorrigibly logical, his writings often leave one with a sense of special pleading, in which the world is ransacked for "proofs," but rather obvious exceptions and counter indications right at home are generously ignored. Yet his service in trying to survey various realms of scientific speculation can hardly be undervalued.

SPINOZA (*spĭ-nō'zä*), **BARUCH** (1632–1677). Pantheistic philosopher, called by the poet Novelis "the god-intoxicated man." He was a great disciple of the Cartesian system of thought, and even went so far as to state some of his ideas in form of proposition and answer as in mathematics. In 1656 he was excommunicated for heresy. His living came from the trade of grinding optical glass, and his free hours were given to speculation and study. The chief items in his doctrine are: 1, two substances, mind and matter, are attributes of one infinity or God; 2, man is but a mode of that infinity. From these two propositions developed his idea that individual differences should be suspected and probably repressed. The intellectual love of God should eliminate all personal passions, griefs, and anything out of the ordinary.

SPURGEON (*spĕr'jŏn*), **CHARLES HADDON** (1834–1892). English popular preacher, who was ordained in the Baptist denomination in 1851, but late in life (1887) severed his formal connection with the Baptist Union. Beginning at New Park Street Chapel (1853), he soon needed a larger room, and Exeter Hall also proved inadequate, and so in 1861 a huge "Tabernacle" was erected in Newington Causeway, where he preached on Sundays and Thursdays. His discourses sold by hundreds of thousands in printed form. Annual volumes were collected for about fifty years. *John Plowman's Talks* (1869), a book of sayings for "plain people," also gained a wide reading. His sermon on *Baptismal Regeneration* (1864) emphasized his belief that baptism of any type is a mere outward sign of an inward conversion.

STANFORD, JANE LATHROP (1825–1905). American philanthropist, wife of Leland Stanford (1824–1893), business man and political leader in the early days of California. She was born at Albany, New York, where she endowed a hospital for children. Before the death of Mr. Stanford, they had founded a university at Palo Alto, California, in memory of their deceased son, Leland Stanford Junior. Altogether they gave over $30,000,000 in cash, lands, and securities to the endowment of Stanford, which at the time (1901) was the wealthiest in America.

STANLEY, ARTHUR PENRHYN (1815–1881). Widely known as Dean Stanley. An English scholar and divine; professor of ecclesiastical history in Oxford, and published lectures on the Eastern Church, the Jewish Church, the Athanasian Creed, and the Church of Scotland; accompanied the Prince of Wales to the East in 1862, and became dean of Westminster (1864); wrote *Historical Monuments of Westminster Abbey* and *Christian Institutions*.

STANTON, ELIZABETH CADY (1815–1902). Leader of the woman's rights movement in the United States. While studying in the law office of her father, Judge Daniel Cady, at Johnstown, New York she earned of many disabilities falling upon women in regard to the holding of property, rights over children, and other legal limitations. By petition (1848) she secured a law in New York giving women property rights. In the same year she called the first woman's rights convention at Seneca Falls, New York. At this time she labored with Mrs. Lucretia Mott, and later with Susan B. Anthony. From 1865 to 1893 she was president of the National Woman Rights Association. With Miss Anthony and Matilda Gage, she wrote *History of Woman Suffrage* (1887–1902).

STEAD, WILLIAM THOMAS (1849–1912). English journalist and reformer, editor of the Darlington *Northern Echo* (1871–80), assistant (1880–83) and editor (1883–89) of the *Pall Mall Gazette*, and then founder and editor of the *Review of Reviews* till his death. He went down in the ship *Titanic*. For years he carried on an energetic campaign, one result of which was a modification of the Criminal Law in England. He was also interested in spiritualism, advocated universal peace, better working conditions in industry, and numerous other causes. Besides his journalistic articles, he wrote many books which caught the popular attention, like *The Truth about Russia* (1888), *If Christ Came to Chicago* (1893), and *The Americanization of the World* (1902).

STELZLE, CHARLES (1869–). Clergyman and leader of movements toward conciliation in industry. From 1885 to 1893 he was in the mechanical department of R. Hoe and Company, manufacturers, New York City, then he entered the ministry, and held pastorates for ten years. Superintendent of church and labor department, Presbyterian Church (1903–13); field secretary Federal Churches of Christ in America (1916–18); organizer of the Labor Temple, New York (1910–12); arbitrator of disputes in New York newspaper offices from 1913; and publicity director for many religious and social agencies. Some of his works are *Boys of the Street* (1904), *Principles of Successful Church Advertising* (1909), *American Social and Religious Conditions* (1912), and *Why Prohibition?* (1918).

STONE, LUCY (BLACKWELL). American reformer, who married Dr. Henry B. Blackwell (1824–1909), who agreed with her that she should retain her original name Through her own efforts she worked her way through Oberlin College, and immediately went

on the lecture platform in favor of woman's suffrage and against slavery. For years she was a powerful lecturer. Her husband assisted her in starting and editing the *Woman's Journal* of Boston. Campaigned in various states for a suffrage amendment.

SUNDAY, WILLIAM ASHLEY (1863–1935). Evangelist. Billy Sunday, as he has usually been known, was born in Ames, Iowa, and was educated at the Nevada High School, Iowa. From 1883 to 1890 he played professional baseball with the Chicago, Pittsburgh, and Philadelphia National League team; from 1891 to 1895 he was assistant Y. M. C. A. secretary in Chicago; after which he engaged continually in evangelistic campaigns. His earnest, unconventional attitude toward sin and salvation made him wonderfully successful in mass campaigns, and for several years over 1,000 persons a month expressed themselves as making decisions in his meetings.

SUTTNER, BERTHA, BARONESS VON (1843–1914). Austrian writer and peace advocate, daughter of Count Franz Kinsky, and wife of the novelist Arthur von Suttner. Many of her tales and articles denounce war, and she founded the Austrian Society of Peace-Lovers (1891), which had a powerful influence in her country. Awarded the Nobel peace prize in 1905.

SWENDENBORG (*swē'dĕn-bôrg*), **EMANUEL** (1688–1772). Swedish natural philosopher and mystic, the founder of the Church of the New Jerusalem or Swedenborgian sect. His writings, mainly in Latin, only in the last few decades have been duly appreciated. In science and speculation he was much in advance of his age, especially in certain theories of the physiology of the brain and its functions. Toward middle life he left scientific research and was inspired by many "visions" as he believed them to be. He studied Hebrew anew, spent much time in deep meditation, and wrote commentaries on the Scriptures. He believed that love is a chief attribute of God, who dwells in man individually, and that there are three degrees,—love, wisdom, and end. In his theology he sought to combine love and wisdom, but he did not design to found a separate denomination. *Divine Love and Wisdom* is the most read now of his numerous volumes.

TALMAGE, THOMAS DE WITT (1832–1902). American minister and religious writer, a graduate of what is now New York University and of the Reformed Dutch Seminary at New Brunswick, New Jersey. He held pastorates in Syracuse, Philadelphia, Brooklyn, and finally Washington, D. C. For years he exerted a wide influence as editor of the *Christian Herald*.

TAYLOR, GRAHAM (1851–). Founder and resident warden of the Chicago Commons Social Settlement, professor of social economics, Chicago Theological Seminary, from 1892, president of the Chicago School of Civics and Philanthropy (1903–20). He was born in New York, graduated at Rutgers College and at the Reformed Theological Seminary, Rutgers, New Jersey. From 1873 to 1892 he was a pastor, and from 1888 to 1892 professor of practical theology at Hartford Theological Seminary Interested in many social and reform movements. Author of *Religion in Social Action* (1913) *Pioneering on Social Frontiers* (1930).

TAYLOR, JEREMY. See under AUTHORS.

TAYLOR, WILLIAM (1821–1902). Bishop of Africa in the Methodist Episcopal Church (1884–1902). He was born in Virginia, ordained in 1842, went to California in 1849, and spent five years (1856–1861) in Canada and the East, before going to Africa a pioneer missionary. He served at various stations and after he became bishop established 36 mission centers in Central Africa. On his official tours he also visited every English-speaking people in the world.

THERESA, SAINT (TERESA DE CEPEDA) (1515–1582). Spanish nun, founder of the order of the Descalzos or Barefoot division of the Carmelites. She sought to restore the older austerities, had many visions, and lived a life of extreme piety and self-renunciation. She founded 16 convents and 14 monasteries of her order, and by request of her superiors wrote an interesting autobiography. *The Way to Perfection* and *The Castle of the Soul* are two accounts of aspiration toward God.

TINGLEY, KATHERINE (1852–1929). Theosophist leader and head for life of the Universal Brotherhood and Theosophical Society, with branches throughout the world. Successor of Madame Blavatsky and W. Q. Judge. Traveled in various parts of the earth, founding schools at Point Loma, California, in Cuba, and in Sweden, hospitals at Spring Valley, New York, Montauk Point, New York, Manila, and Cuba, especially during the Spanish-American War. Editor of the *Theosophical Path* and other publications. Founded a university at Point Loma, California (1919).

THALES (*thā'lēz*) (c. 650 B. C.). Called the father of Greek philosophy and one of the seven sages of Greece. Much of his thought came from Egypt and the East, but he made many advances over the science of the older ages. In geometry, navigation, and astronomy he made interesting calculations and theories. He believed that all things come from water.

THOMAS, NORMAN MATTOON (1884–). Christian socialist leader, who was born at Marion, Ohio, educated at the Union Theological Seminary in New York, and for a number of years (1910–18) held pastorates in the Presbyterian Church. Founder and editor of *The World To-Morrow;* secretary of the Fellowship of Reconciliation; associate editor of *The Nation* (1921–22), and director of the League for Industrial Democracy. He is perhaps better known for his speeches as a candidate for governor of New York on the socialist ticket (1924), for mayor of New York City (1925) and for president of the United States (1928).

TOME, JACOB (1810–1898). An American philanthropist, born in Manheim township, York County, Pa.; went to Port Deposit, Md., in 1833. In 1884 he presented to Dickinson College a valuable building for scientific uses. His largest gift was for the foundation of the Jacob Tome Institute, at Port Deposit, $1,600,000, a sum that was increased by his will more than $3,500,000. He died in Port Deposit, Md.

TRUEBLOOD, BENJAMIN FRANKLIN (1847–1916). A graduate of Earlham College, who was president of Wilmington, Ohio, College (1874–79) and then of Penn College of Oskaloosa, Iowa (1879–90). For 19 years secretary of the American Peace Society, Boston and Washington, D. C., and editor during the same period (1892–1915) of the *Advocate of Peace*. Active in many reform movements, and wrote *The Federation of the World* (1899).

TUCKWELL, GERTRUDE MARY (1862–). English Christian socialist, a justice of the peace and advisor to the government on list of suitable women to act as justices. She was an elementary schoolmistress (1885–92), honorary secretary to the Woman's Trade Union League (1892–1904), and served on various committees of the Ministry of Reconstruction (1905–23). Edited *Life of Sir Charles Dilke* and wrote *The State and its Children* and *Workers' Handbook*.

TYSON, ROBERT (1845–1917). English political economist and social reformer; born in Canterbury; removed to Toronto, Canada, in 1870; worked in a machine shop as a boy; advocated vigorously in the cause of single tax, then for direct legislation and proportional representation; was the advocate of electoral reform; newspaper reporter and editor; writer.

ULFILAS (*ŭl'fĭ-lăs*) (about 311–about 381). The apostle and bishop of the Goths; labored among the Goths for over 30 years; preached and wrote in Greek, Latin, and Gothic; his translation of the Bible into Gothic is the beginning of all German literature; he omitted the books of Samuel and Kings, for he considered that they were too vivid a picture of war to present to his fierce countrymen.

VINCENT DE PAUL, SAINT (1576–1660). French priest, the founder of the Congregation of Missions and of the Sisters of Charity. He became a priest in 1600, was captured and held as a slave in Tunis by Barbary pirates, until he converted one of his masters, an Italian, with whom he escaped to Europe. After acting as a tutor, he obtained great success in his missions among the peasants of France. In Marseilles he founded a hospital for galley slaves and two orphanages in Paris. Clement XII. canonized him in 1737.

VINCENT, JOHN HEYL (1832–1920). Bishop of the Methodist Episcopal Church and principal founder of the Chautauqua movement at Chautauqua Lake, New York (1874), of which he acted as president for many years. He was aided by Lewis Miller and the Studebakers of South Bend, Indiana. Bishop Vincent was also a leader in the Sunday Schools of his denomination, acting as editor at various times of important publications in this field.

WATTS, ISAAC (1674–1748). English clergyman and writer of 600 hymns. From 1702 to 1712 he was pastor of Mark Lane Chapel, but was forced to retire because of poor health. Afterward he wrote a good deal on educational and religious subjects. Some of

his books are *Logick* (1725), *The First Principles of Geography and Astronomy* (1726), *Doctrine of the Trinity* (1722), *Essays on the Freedom of the Will* (1732).

WEBB, BEATRICE (1858–). English social economist, daughter of Richard Potter, once president of the Great Western Railway of England and the Grand Trunk Railway of Canada, and wife of Honorable Sidney Webb (q. v. below). She has served on many labor and government boards, investigated conditions in industry, and written numerous works. Justice of the Peace for London (1919–27). Author, besides others, of *The Coöperative Movement in England* (1891), *Men's and Women's Wages: Should they be Equal?*, and seven standard books, with her husband, on various phases of labor and industry.

WEBB, SIDNEY (1859–). English economist and sociologist, educated at City College, London. Held various city and government offices (1875–91), member of the Faculty of London University; of the Royal Commission under Development Act (1910–12), serving without salary; Coal Commission and various others at different times (1903–20). Author of many books, all treating on labor and industry, some of which are *Socialism in England* (1890), *The Eight Hours' Day* (1891), *Grants in Aid* (1911), *The Works Manager Today* (1917), and with his wife, Beatrice Potter Webb (q. v.), *The History of Trades Unionism* (1894), *History of Liquor Licensing* (1903), *English Prisons under Local Government* (1922), *Consumers Coöperative Movement* (1921), and others. See also under AUTHORS.

WESLEY (*wĕs'lĭ*), **JOHN** (1703–1791). English clergyman whose work and influence led to the establishment of the Wesleyan or Methodist Church of England and the Methodist Churches of America. He was the son of Samuel Wesley, rector of the church of England at Epworth. He was educated at Charterhouse School in London, Christ Church College, Oxford, and ordained in 1725. After acting as curate to his father (1727–29), he spent six years as a tutor at Lincoln College, Oxford. Here, Charles, a younger brother (1707–88), had been leader in a small undergraduate group, who observed all rules of the church, and were dubbed "Methodists" because of their strict methods. John became a leader of this small company, which numbered about a score, including the celebrated Whitefield (q. v.). After his father's death in 1735, both brothers were sent to Georgia of the American Colonies by the Society for the Propagation of the Gospel. Here they labored with great zeal. Charles there published the first of his great hymns (1737), the *Collection of Psalms and Hymns*. In 1738 Wesley came for a time under the influence of the Moravians and visited a settlement at Herrnhut, and in 1838 his second "conversion" occurred at Aldergate Street Church in London. From this time Wesley went about everywhere preaching, growing more and more popular till his death. He spent more than six years in Ireland, and made 22 journeys to Scotland. In 1784 Wesley declared in favor of a new conference, and hence Methodism arose. Previously (1768) a church had been started in New York City, and three years later Asbury went out to America. In 1784 Wesley ordained his assistant, Dr. Coke, superintendent or bishop in America. Wesley's *Journal*, reëdited in 1909, throws much light on his life and times.

WHITMAN, MARCUS (1802–1847). American pioneer and missionary; with his wife and three other missionaries took the first wagon across the Rocky Mountains to Washington (1836). He secured the Oregon territory for the United States (1842–1843).

WHITEFIELD (*hwhĭt'fēld*), **GEORGE** (1714–1770). English religious leader, associated with Charles Wesley at Oxford, and with John Wesley in the Georgia mission (1738). After remaining in America three months, he returned to England and received orders, but many clergymen shut him from their churches, whereupon he took to preaching before great audiences in the fields. At times ten thousand or more persons heard him; for his voice was powerful and his manner exceedingly dramatic and forceful. He toured England, Scotland, and Ireland several times, and established a preaching center in London (1756). He was in America from 1744 to 1748, and in 1769 came for the seventh time. He died suddenly and is buried at Newburyport, Massachusetts.

WILBERFORCE, WILLIAM (1759–1833). Founder of the English anti-slavery society; born at Hull, England; member of the House of Commons; framed the abolition of slavery bill which was passed one month after his death; was interested in many other reforms and philanthropies.

WILLARD, FRANCES ELIZABETH (1839–1898). An American temperance reformer; born in Churchville, near Rochester, N. Y. After some years spent in teaching she became professor of esthetics in the Northwestern University, and was made dean of the Woman's College in February, 1871. She began her active temperance work in 1874, and was made secretary of the National Woman's Christian Temperance Union. In 1879 she was made president of that organization and held the office till her death. She was chosen as president of the World's Christian Temperance Union in 1888, and in 1892 visited England as the guest of Lady Somerset, the well known temperance worker. She was an orator of great eloquence, humor and power. Her executive ability and genius for organization were wonderful, and her work for temperance and social purity will live in the history of her country. She died in New York City.

WILLIAMS, GEORGE (1821–1905). Founder of the Young Men's Christian Association, an English merchant, was born in Somersetshire, but after 1841 lived in London. He entered the dry goods business; persuaded some of his employees to organize a prayer meeting; and in 1844 he and eleven others named their group the Young Men's Christian Association. Through his good offices Exeter Hall became headquarters. From 1863 to 1885 he was treasurer and then president of the Association. Queen Victoria made him a knight in 1894.

WISE, STEPHEN SAMUEL (1872–). Rabbi and sociologist, a graduate of the College of the City of New York, and pastor of the Fifth Avenue Synagogue (1893–1900), then at Portland, Oregon (1900–06), and founded the Free Synagogue, New York, in 1907. He was a leader in the Zion movement, commissioner of child labor of Oregon, member of many Jewish relief committees, director of the Peace Society of New York, and an inspiring preacher. Besides volumes of sermons he wrote *How to Face Life* and *Child Versus Parent*.

WISEMAN (*wĭz'măn*), **NICHOLAS PATRICK STEPHEN** (1802–1865). An English Roman Catholic prelate; ordained to the priesthood in 1825; made professor of oriental languages in the University, and rector of the English College of Rome until 1835, when he returned to England, where he became noted as a preacher and lecturer; created by the pope a bishop in partibus (1840); made vicar apostolic of the London district (1849); and in 1850 Roman Catholic Archbishop of Westminster and a cardinal. His principal works are *Lectures on the Connection between Science and Revealed Religion*, *The Real Presence*, *Lectures on the Catholic Hierarchy*, *Recollections of the Last Four Popes*, and *Sermons on Our Lord Jesus Christ and His Blessed Mother*.

WOLFF, CHRISTIAN (1679–1754). German philosopher and scientist, who advocated the testing of religious dogma by mathematical and strictly logical formulas. His statement that the doctrines of Confucius show how human reason can rise through its own efforts to morality brought forth a storm from the orthodox Lutherans; he was expelled from Prussia, but established himself at Marburg, where he became popular. Frederick the Great recalled him to Halle (1740), but his influence no longer was potent.

WOLFF, HENRY WILLIAM (1840–). Leader in the coöperative movement, especially in agriculture and industry, one of the founders and president until 1907 of the International Coöperative Alliance. Adviser to the Indian and Irish governments on agricultural organization. Some of his writings are *Employers' Liability*, *Coöperation Banking*, and *Coöperative Credit in the United States*.

WOLSEY (*wŏŏl'zĭ*), **THOMAS** (c. 1475–1530). English cardinal and statesman, who rose rapidly (1500 to 1514) through various offices until he became Archbishop of York. Leo X. created him a cardinal in 1515. As adviser to Henry VIII. he is best known now. Wolsey directed the plans for the war against France, went on embassies, acted as a private prime minister to the king, and went to Amiens in 1527 to conclude peace. He incurred the displeasure of Henry in 1529 because of delays in obtaining the king's divorce from Catherine of Aragon, was indicted but pardoned, and in the following year was arrested for high treason. Wolsey died on the way to London to answer the charges.

WOOLLEY, JOHN GRANVILLE (1850–1922). American reformer, candidate for the presidency on the

Prohibition ticket (1900), and later prominently identified with the Anti-Saloon League. He was a graduate of Ohio Wesleyan University (1871) and practiced law (1871–86). Once an intemperate man, he felt impelled (1888) to give most of his time to lecturing and campaigning against strong drink. Edited the *New Voice* (1899), and wrote, among other works, *Temperance Progress in the 19th Century* (1903).

WOOLMAN, JOHN (1720–1772). Philanthropist; abolitionist; Quaker; began by teaching the neglected children of the poor; his journal has been published with an introduction by Whittier; he died of smallpox in England.

WORCESTER (*wo͝os'tĕr*), **ELWOOD** (1863–1940). Originator of the Emmanuel Movement in religious therapy. He obtained a Ph. D. at Leipzig (1889), was professor of philosophy at Lehigh University (1890–96), and then rector in Episcopalian Churches, mainly in Philadelphia (1896–1904), and subsequently in Boston at Emmanuel Church. There he instituted clinics for the discouraged, depressed, and ill, on the theory that such troubles are almost wholly mental, yet he sent to physicians those suffering from severe maladies. Some of his works are *Religion and Medicine* (1907), *The Christian Religion as a Healing Power* (1909), *The Issues of Life* (1915).

WUNDT (*vunt*), **WILHELM MAX** (1832–1920). German philosopher and scientist, who studied medicine at Tübingen, Heidelberg, and Berlin, began to lecture at Heidelberg in 1857, became assistant professor there in 1864, and professor at Leipzig in 1875. Combining his knowledge of anatomy with his training as a thinker, he established a laboratory for experimental psychology, which was a leader in this field. He was the author of many books.

WYCLIF (WYCLIFFE), JOHN (c. 1320–1384). An English patriot and reformer; in 1360 became master of Balliol College, and for a while was royal chaplain; translated the Bible into English; was repeatedly arraigned for heresy, and finally prohibited from teaching in the University; retired to his rectory of Lutterworth. His buried remains, by order of the rival pope, Clement VIII., were disinterred, burned, and the ashes cast into the Swift, a branch of the Avon River.

XAVIER (*zăv'ĭ-ẽr*), **SAINT FRANCISCO DE** (1506–1552). With Ignatius Loyola the founder of the Society of Jesuits (1534). Three years later he became a priest, remained in Rome for several years, and then went for ten years on missionary journeys to Malaysia, Japan (1549–51), and other eastern countries. China refused him admission. He won thousands to Christianity.

XENOPHANES (*zẽ-nŏf'ă-nẽz*) (fl. 540–480 B. C.). Founder of the Eleatic school of philosophers, for a time lived in exile in Sicily, having been driven from his home in Ionia, and then went to Elea in southern Italy. In poetic hexameters he sang of reason as opposed to mere athletic prowess, declared in favor of unity in the world, a unity like God in the modern thought. He also emphasized the smallness of man and the importance of the earth in growth.

YALE, ELIHU (1648–1721). A native of Boston, he went to the East Indies as a trader (1672), and was governor of Ft. Saint George, Madras (1687–92). In 1701 a collegiate institute had been founded at Killingly and Saybrook, Connecticut. After it was decided to move this to New Haven, Yale contributed a cargo of goods from India, which was sold for nearly $4,000 at Boston, and the college for the first time at commencement 1718 was given his name.

YERKES, ROBERT MEANS (1876–). American experimental psychologist, who developed various theories as to the behavior of animals; specialized in the anthropoid apes, and published many research papers on a variety of topics. He was educated at Ursinus College and at Harvard, taught at Harvard and Minnesota, and in 1923 became professor of psychology in the Institute of Psychology at Yale University. From 1919 to 1924 he acted as chairman of research service of the National Research Council.

YOUNG, BRIGHAM (1801–1877). Second president of the Mormon Church, or Church of Jesus Christ of the Latter Day Saints, and founder of the state of Utah. He was active in promoting agriculture; founded the University of Deseret and other schools; was interested in the construction of railroads and the prime mover in building the celebrated Mormon Temple. He displayed remarkable efficiency in organizing and consolidating the Mormon Church.

ZENO (*zẽ'nō*) (c. 340–270 B. C.). Founder of the Stoic philosophy, so named because he taught in the painted porch, a place where the poets had met, *stoa* being the Greek name for porch. He studied in all schools, allied himself with the Cynics, but looked back to Socrates as a master. He emphasized reason, but in general was materialistic.

ZENO OF ELEA (fl. 500 B. C.). Greek philosopher, a native of Elea in Italy, and a disciple of Parmenides, with whom he went to Athens. Through a series of paradoxes, he sought to prove that the doctrine of "the Many" is impossible, and that "the One" is the only infinite being. Plato and later philosophers were deeply impressed by his teachings.

ZINZENDORF (*tsĕn'tsĕn-dôrf*), **NIKOLAUS LUDWIG VON, COUNT** (1700–1760). A German count; established the religious community of Herrnhut on his estate in Saxony, consisting chiefly of a body of Moravian brethren who had been driven out of Bohemia and Moravia, called Herrnhuters, of which he became one of the leaders and chief apostles; author of more than 100 works in prose and verse.

ZOROASTER (*zō'rō-ăs-tẽr*), **ZARATHUS'TRA** or **ZER'DUSHT** (660–583 B. C.). The founder or reformer of the Parsee religion. Though certainly a historical personage, nothing whatever is known except that his family name was Spitama, that he was born in Bactria, and that he could not have flourished later than 580 B. C.

ZWINGLI (*ts-wĭng'lẽ*), **ULRICH** (1484–1531). Swiss reformer, who preached the simple Gospel, opposed many of the older forms of the church, and gained a great following. Becoming a priest in 1506, he ministered at Glarus, was chaplain of Swiss troops, then was at Einsiedeln, and in 1518 went to Zürich. This district through his preaching, public debates, and interpretations of Scripture, became Protestant, though he strongly disagreed with Luther, mainly over the communion. In 1531 civil war broke out between his canton and the five others of Switzerland, and he died in battle.

ABBAS I. (*ăb-bas'*), **THE GREAT** (1557–1628). Persian monarch; came to the throne (1586); victorious over the Uzbeks at Herat (1597); won many battles from the Turks (1601–1609); drove the Portuguese from Ormuz (1622). He is noted for his many important reforms.

ABD-UL-HAMID II. (*ăb'dul hä-mĭd*) (1842–1918). Thirty-fourth sultan of the Ottoman Empire (1876–1909). In 1877 Russia declared war on account of the Bulgarian outrages. England alone saved Turkey. The Treaty of San Stefano was modified by the Berlin Congress, but Turkey lost Montenegro, Serbia, Roumania, Bulgaria, and Herzegovina. The Armenian outrages (1895–1896) again roused Europe, but the sultan skillfully played off one European power against another and nothing was done. In 1897 Crete rebelled, and secured by the aid of foreign powers some degree of autonomy. In 1908 the sultan was forced by the "Young Turk" party, whom hitherto he had treated as rebels, to sign a constitution assuring representative government in place of autocratic rule. Deposed April 26, 1909.

ADAMS, CHARLES FRANCIS (1807–1886). American diplomatist, son of John Quincy Adams; was graduated at Harvard (1825); editor the Boston *Whig* (1846–1848); Free Soil candidate for vice-president (1848); minister to England (1861–1868); member of Geneva Court of Arbitration to settle Alabama Claims.

ADAMS, JOHN (1735–1826). Second president of the United States, born of Scotch ancestry at Braintree (now Quincy), Mass., was graduated from Harvard in 1755; taught school for a time, and entered politics as a leader of the Whigs of his state after he had been admitted to the bar. He opposed the Stamp Act in writings and speeches in 1765. Moving to Boston in 1768 he served in the House of Representatives of Mass., in the Revolutionary Congress, where he stoutly defended the rights of his countrymen, and finally was one of the signers of the Declaration of Independence. He took the unpopular side in defending the British captain and soldiers who fired on and killed four of the people in the "Boston Massacre" (1770). With Franklin and Arthur Lee, he served as a commissioner to France in 1778, and as minister to Holland, helping to secure recognition in both countries. Adams was minister to England (1785–88); vice president (1788–96); and president for one term, till 1800. Failing of reëlection he retired to Quincy, and died July 4, 1825, on the fiftieth anniversary of the signing of the Declaration of Independence. His opponent, Thomas Jefferson, died on the same day. Adams was an able statesman, patriotic and energetic, but subject to limitations which made his own party distrust him.

ADAMS, JOHN QUINCY (1767–1848). Sixth president of the United States, son of John Adams, second president (q.v.). Born in Quincy, Mass., he was named for his maternal grandfather, John Quincy, who for years sat in the state legislature. In 1778 and in 1780 he accompanied his father to Europe, studying a year in Paris and for a time at the University of Leyden, Holland. He then began to keep the diary which remains as a monument of many years of his life and throws much light on contemporary men and manners. In 1787 he finished his course at Harvard, became a lawyer in 1790, wrote some papers in reply to Thomas Paine's *Rights of Man*, supported the government in a neutral policy toward Europe, and in reward was made minister to the Hague by Washington in 1794 and in 1796 to Portugal, but his father sent him to Berlin (1797), before he began his residence at Lisbon. On the election of Jefferson to succeed the elder Adams, John Quincy was recalled at the close of his father's term as president. After a year in the Massachusetts senate, Adams went to the U. S. Senate in 1803, but because he left the Federalists and voted with the Republicans he was not reëlected in 1808, resigning before the end of his term. He was among those who nominated Madison, a Republican, for the presidency. J. Q. Adams served as professor of rhetoric at Harvard for a time; then was minister to Russia, and later helped negotiate the treaty of Ghent in 1814; acted as secretary of state from 1817 and did much to formulate the Monroe Doctrine and to purchase Florida from Spain. With Clay, Crawford, and Jackson he was a candidate in 1824, receiving only 84 votes to 99 for Jackson, 41 for Crawford, and 37 for Clay. Yet the Clay votes were turned in his favor in the election by the House, and he became president. His term of four years was not notable, owing to opposition and lack of opportunity. The most notable part of his career is his term in the House from 1831 to his death in 1848. He opposed slavery for many years, succeeded in getting the House rules made more liberal, and engaged in many fiery debates. His eloquence was proverbial, and he served ably till he fell insensible on the floor of the House on Feb. 21, 1848, dying two days later.

ADAMS, SAMUEL (1722–1803). Called the Father of the Revolution, and the Man of the Town Meeting. Through his influence the idea of resisting the legislation of parliament with regard to the Colonies took shape; he engineered the Boston Tea Party, and by his speeches and letters to the press, he gained a wide following. General Gage attempted to capture him and Hancock at Lexington, on April 18 and 19, 1775, and his proclamation of amnesty of all rebels on June 12 excepted these two men. In the Continental Congress, 1774–1781, he sought unity against the British government. He was a member of the Massachusetts Constitutional Convention, signed the Declaration, was lieutenant governor five years, and governor of Massachusetts from 1794 to 1797.

AGESILAUS (*ă-jĕs-ĭ-lā'ŭs*) (about 444–360 B. C.). King of Sparta (401–360). Commander-in-chief of Spartan forces in Asia Minor during the Persian War (397); led the forces against Athens, Thebes, and other states in Greece (394); led an expedition against Egypt (361), and died on his way home.

ALBERT or ALBERT FRANCIS AUGUSTUS CHARLES EMMANUEL, PRINCE OF SAXE-COBURG-GOTHA (1819–1861). Husband of Queen Victoria and known as the Prince Consort; married Victoria, February 10, 1840. He attained an important place as a statesman and accomplished much good. His last official act was the prevention of war between England and the United States over the Trent affair.

ALBERT I. (1250?–1308). Archduke of Austria and emperor of Germany; was the son of Rudolph I. On the death of Rudolph in 1291 Albert hoped to succeed to the throne, but on account of his reputation for tyranny was passed over and Adolph was chosen. In 1298 Adolph so disgusted the princes that he was dethroned and Albert was made king. They met in battle near Worms and Adolph was slain. Pope Boniface VIII. claimed that he alone was emperor, but Albert forced him to terms and conducted several foreign wars unsuccessfully. Albert was assassinated by his nephew, John, in 1308.

ALBERT I. (1875–1934). Third king of the Belgians, nephew of King Leopold II. of Belgium, became king on the death of Prince Leopold and Prince Baldwin, his cousin and his brother respectively. He was carefully educated, traveled widely, became king on Dec. 1, 1909. He said then "Our prosperity depends on the prosperity of the masses," and he sought to preserve peace. At the opening of the World War he reminded Germany of the neutrality of Belgium, and, when this was violated, he took the field in person, and later served as commander of the French and Belgian northern army corps. After the War he fostered colonial development, education, and the happiness of his people. He and the queen, Princess Elizabeth of Bavaria, from 1914 to 1918 and later, notably in the great flood of 1925, gave heroic service to their people.

ALBERT II. OF GERMANY AND V. OF AUSTRIA (1397–1439). In 1437 he was elected king of Bohemia and of Hungary to succeed his father-in-law, Emperor Sigismund. In March, 1438, he was elected ruler of Germany. Wars with the Turks and rebellions in Bohemia and Hungary marked his short reign.

ALEXANDER THE GREAT (356–323 B. C.). Known as the Great. King of Macedon and conqueror of Greece, having laid waste the city of Thebes, crossed into Asia with about 35,000 men, defeated the strong Persian armies, and made himself master of most of the East. After his first success at Granicus, he lay for a time at Gordium in Northern Phrygia, where he cut the "Gordian knot" on the chariot of the Phrygian king Gordius as a symbol that he would proceed in his victorious march. Then he passed through Cilia, where he narrowly escaped death of fever, marched past the Persians in the mountains, who sought to cut his rear, but he defeated and scattered them at the battle of Issus. Then he occupied Syria and Phoenicia, and finally Egypt in 332, where he was hailed as a god by the priests of Ammon. In the spring of 331 he marched across

Mesopotamia to meet Darius, the Persian monarch, at the battle of Arbela, and finally he reached India in 327, after various minor campaigns en route. Leaving the conquered part of India to others, he started to return to his base, encountering opposition and discontent of his troops. Finally, on reaching Babylon, intending to make further explorations and conquests near by, he suddenly took a fever, and after about 11 days died. His kingdom split up soon, and the conquered nations again resumed their former independence. Later he became the subject of many legends, poems, and prose stories.

ALEXANDER I., PAULOVITCH (1777–1825). Czar of Russia (1801–1825). Son and successor of Paul I., who was the son of Catherine II. At first friendly to Napoleon, he later opposed him; made peace with him in 1807; broke it and Napoleon invaded Russia in 1812. Alexander then joined England and Prussia and with them invaded Paris (March 31, 1814); joined Austria and Prussia in the "Holy Alliance" after Waterloo (1815). He was succeeded by Nicholas I.

ALEXANDER II., NIKOLAYEVITCH (1818–1881). Czar of Russia (1855–1881). Son and successor of Nicholas I. Ascended the throne during the Crimean War; compelled to sign the humiliating Treaty of Paris (1856); freed all the slaves or serfs in his kingdom (1858–1861), over 23,000,000 people; sold Alaska to the United States (1867); fought a successful war against Turkey (1877–1878); had great trouble with Nihilists and was assassinated by them in the streets of St. Petersburg (1881). Alexander III. succeeded him.

ALEXANDER III., ALEXANDROVITCH (1845–1894). Czar of Russia (1881–1894); not crowned until 1883 for fear of the Nihilists, against whom he made strict and severe laws; the persecutions of the Jews began in his reign; Russia and France were forced into friendship in opposition to the Triple Alliance of Germany, Austria, and Italy. He did much to strengthen the army and navy. Nicholas II. succeeded him.

ALEXANDER I. (1876–1903). King of Serbia, succeeded his father, King Milan, who abdicated in 1889, acting as regent till he was in his 17th year. In 1894 he abolished the liberal constitution by restoring a conservative one of 1869. He married a widow, Draga Mashin, while his father was negotiating an alliance with a German princess, and in 1901 granted a liberal constitution. While rumors persisted that he was to proclaim his brother-in-law heir apparent, he suspended the constitution for half an hour, turned out the old ministers, and appointed a new set favorable to his policies. A conspiracy was formed, and the king and queen were killed in their palace on June 11, 1903. King Peter, of another dynasty, succeeded.

ALEXANDER SEVERUS (208–235). Last of the Syrian emperors of the Romans, who was adopted by Heliogabalus and made his heir. Though a lad he showed considerable insight, encouraged reforms, religious toleration, building of public works, reduction of taxes, and curbing of luxury and vice. In a war against the Persians he gained some successes, returned to Rome for a triumph in 233, but was called to Gaul to suppress a revolt the next year and in 235 was killed by mutinous troops.

ALFONSO X. (1221–1284). "The Astronomer," "the Philosopher," or "the Wise"; king of Leon and Castile. Succeeded his father, Ferdinand III. (1252); elected king of the Germans (1257), but was excluded by Rudolph of Hapsburg (1273); defeated the Moors (1262); deprived of his throne by his son, Sancho (1282); noted in literature.

ALFONSO XIII. (1886–). King of Spain. His mother, Maria Christina, Archduchess of Austria, acted as regent until his majority. His reign has been marked by mutinies abroad and cabinet crises and anarchistic disturbances at home. In 1894 and 1895 rebellion broke out in Cuba and the Philippines. In 1898 the United States declared war on Spain, and in the treaty of Paris, December 10, 1898, Spain lost Cuba, the Philippines, and Porto Rico. In 1906 the king married Princess Ena of Battenberg, niece of Edward VII. of England. Alfonso gained the respect of his people by his coolness, especially during several attempts on his life, and by his democracy. Under Premier Maura (q.v.) Spain seemed destined for a new era of union and prosperity, but succeeding troubles, the World War,—during which Spain remained impartial,—the troubles in Morocco, and labor disturbances intervened. Finally, Primo de Rivera (q.v.) organized a directorate and suspended all constitutional guarantees, acting as a virtual dictator, gradually relaxing his hold during 1927–1930. Upon the resignation of Primo de Rivera in 1930 and the restoration of parliament more governmental power was assumed by Alfonso.

ALFRED THE GREAT (848?–901). King of Wessex (871–901), was a son of King Aethelwulf, and began to reign after his three older brothers had preceded him in trying to stabilize the kingdom and repel the Danes. When he was five his father took him to Rome, where he was honored by Pope Leo IV. He spent one year there (855–856). During the reign of his third brother, Aethelred, Alfred fought nine great battles (870), one at Reading being a great victory for the English. Aethelred died in 871, Alfred succeeding him to the delight of the nation. Several battles followed in 876, but in 878 Alfred decisively defeated the invaders, and Guthrum, the Danish king, and his nobles accepted baptism. After fourteen years of peace, the Danes again came in 893, and for three years the issue was in doubt. Alfred succeeded in blocking their ships in the Thames, and at last the Danes, for the most part, settled peacefully in Northumbria and East Anglia. Alfred spent much of his time encouraging learning; he gathered at his court various scholars, some of them translating noted works of the church. His publications include the *Dialogues of Gregory*, by Bishop Werfurth, Gregory's *Pastoral Care*, evidently by Alfred himself, and then the *History of Orosius*, made into an almost new work by him, and Bede's *Ecclesiastical History*, which some scholars think is not by Alfred. The most influential work, however, was Boethius's *Consolation of Philosophy*, translated from the Latin, a standard work in the Middle Ages.

ALGER, RUSSELL ALEXANDER (1836–1907). American soldier and politician; born in Lafayette, Ohio; served through the Civil War and rose to the rank of major general; governor of Michigan (1885–1886); commander-in-chief of the G. A. R. (1889), secretary of war in McKinley's cabinet (1897–1899) and as such he met vigorous criticism for conditions during the Spanish-American War; United States senator (1902–1907).

AMES, FISHER (1758–1808). American statesman and orator, born at Dedham, Mass., educated at Harvard College and the Law School, but gave up practice for politics. During Washington's two terms he was a foremost Federalist in the House of Representatives, becoming famous as a parliamentary orator. His great speech came in support of the Jay Treaty in 1796, when the Republicans tried in vain against his persuasive eloquence to defeat the ratification. He delivered the eulogy of Congress when Washington retired. He led in opposing the French policy of President John Adams.

AMURATH or **MURAD II.** (1401–1451). Tenth sultan of the Turks (1421–1451). Son and successor of Mohammed I.; took Salonica from Venice (1430); defeated several times by Hunyadi, the Hungarian patriot; overwhelmed the Hungarians at Varna (1444), where Ladislas, king of Hungary and Poland, fell; defeated Hunyadi at Kossovo (1448). Succeeded by his son, Mohammed II., the conqueror of Constantinople.

ANDRASSY (*on'drăh-shĕ*), **JULIUS (GYULA), COUNT** (1823–1890). Hungarian statesman. Advocated the popular cause in the revolution of 1848; exiled in France and England (1849–1857); member of the Diet (1861); vice-president (1865–1866); prime minister of Hungary (1867); minister of foreign affairs of Austria-Hungary (1871); chief representative of Austria-Hungary at Berlin Congress (1878). He was the first great Magyar statesman, noble in private life, resourceful, amiable, and greatly loved by the public. After 1879 he lived in retirement, but took an active interest in politics.

ANDROS (*ăn'drŏs*), **SIR EDMUND** (1637–1714). In 1674 he was made British colonial governor of New York. In 1686 he was made governor of New England. He carried on an administration of tyranny which lasted for three years; declared all marriages unlawful unless celebrated by Episcopal clergymen; levied exorbitant taxes, etc., until imprisoned by the people of Boston in 1689, and sent to England; afterwards made governor of Virginia and then of Guernsey.

ANNA COMNENA (1083–1148). Byzantine princess and historian, daughter of Alexius I Comnenus. She tried in vain to persuade the emperor to disinherit his son and grant the crown to her own husband, who spoiled the plot by refusing to join. Her property was forfeited, she retired to a convent, and spent her time writing the *Alexiad*, a history of her father's reign, but this is more an interesting literary production and defense of her family than a solid history. Her husband, Nicephorus Bryennius, wrote some reliable history, however.

ANNE (1665–1714). Queen of Great Britain and Ireland, last of the Stuarts. Second daughter of James II. and Anne Hyde. Married Prince George of Denmark. Lady Churchill (Duchess of Marlborough) gained an ascendency over her, as did, later, Mrs. Masham. She was succeeded by George I. After the deaths of her husband and children in 1700, and the removal of some of her favorites, she lived a lonely life, with no hope of any direct successor. She was a dull woman, obstinate, opposed to extremes of all kinds, and content to enjoy her last years in eating and the common joys of life. Yet she tried honestly to serve the country and her subjects well. Her time has been called "The age of prose and reason," for it was the time of Addison, Bolingbroke, Swift, and Steele. Anne favored the clergy, building of churches, and to some degree patronized literature.

ANNE OF AUSTRIA (1601–1666). Daughter of Philip III. of Spain and wife of Louis XIII. of France. Mother of Louis XIV. Though neglected and cruelly treated by her husband, she became regent on his death (1643). Cardinal Mazarin ruled well for her and prepared a great kingdom for Louis XIV.

ANNE (1693–1740). Empress of Russia, second daughter of Ivan V., married Frederick William, duke of Courland, but he died almost at once, leaving her to rule his lands. During her reign as empress, she was ruled by a brilliant favorite, Biren, who did all he could to humiliate the Russian nobles. During the War of the Polish Succession and the second Crimean War, she lost many thousands of men and acquired only a little territorial advantage, but Russia a bit later made her wishes known in European affairs. Her last days were occupied in strengthening the position of the heir, Ivan VI., the son of Anne's niece.

ANTALCIDAS (*ăn-tăl'çi-dăs*). Great Spartan statesman; son of Leon. Sent by his government to Tiribazus, the Persian satrap at Sardis (393 B. C.), to break up the understanding between Athens and Persia. He succeeded, but agreed that Sparta should recognize Persian supremacy over the Greek cities of Asia Minor. This displeased the Persian king, Artaxerxes, and Tiribazus was recalled; to be restored (388 B. C.). Encouraged by this fact Antalcidas was sent again as a Spartan admiral to treat again with the Persian court; received an interview and carried his point; thus breaking the blockade of the Athenians and shutting them out from the Aegean Sea. He compelled the resultant peace known as the "Peace of Antalcidas," its final ratification taking place at Sparta (386 B. C.). Persian support was held until after the battle of Leuctra, when he lost favor and is said to have starved himself to death in disappointment.

ANTIOCHUS III. (*an-tī'ō-kus*), **THE GREAT,** King of Syria (223–187 B. C.). Son and successor of Seleucus II. He made war on Ptolemy IV. of Egypt; quelled a rebellion at home; extended his empire to the east; made war with Philip of Macedon, as an ally, upon Ptolemy V. of Egypt; took some of his territory, but was forced by Rome to return it; made war upon Greece; was defeated at Thermopylae in 191 B. C., and again at Magnesia in 190 B. C.; after which he was forced to give up a part of his territory in Asia Minor and to pay a tribute of 15,000 talents. To get this vast sum he pillaged a temple, and was murdered in 187 B. C.

ANTIOCHUS IV., EPIPHANES. King of Syria from 175 to 164 B. C., known for his hostility to the Jewish faith, defeated the Egyptians who tried to conquer Palestine, and in turn held part of their territory till checked by the Romans. He sacked Jerusalem, plundered the Temple, and instituted persecutions which led to the rising of the Maccabees.

ANTONINUS (*ăn'tō-nī-nŭs*) **PIUS** (86–161). A famous Roman emperor (138–161). Consul in 120; adopted by the emperor Hadrian (138); emperor the same year; his reign was peaceful and happy; persecution of Christians was greatly lessened; conducted a campaign in Britain and built a wall from the Forth to the Clyde.

ANTONY, MARK or **MARCUS ANTONIUS** (83–30 B. C.). A Roman triumvir. He fought under Gabinius in Palestine and Egypt, and with Caesar in Gaul. Thence he went to Rome in 50 B. C. to advance the interests of Caesar. He was elected a tribune in that year, but was expelled the next for his zeal in Caesar's interests. He fled to Caesar, who on the outbreak of the war with Pompey, made Antonius commander of the army in Italy. He commanded the left wing of Caesar's army at the battle of Pharsalia, and, during Caesar's absence in Africa, governed Italy. He was made consul in 44 B. C. After the assassination of Caesar in that year, he compelled the conspirators to leave Rome. Cicero denounced him, and Octavianus now appeared as a rival. Antony fled to the camp of Lepidus in Gaul, and with the army of Lepidus and his own scattered forces marched on Rome. Octavianus made an alliance with him and formed with Lepidus the second triumvirate. Then began the slaughter of Roman citizens, including Cicero. Appian says that 300 senators and 2,000 knights were assassinated. Antony and Octavianus then went to Macedonia and defeated the forces of Brutus and Cassius at Philippi in 42 B. C. Antony went to Athens, thence to Egypt to contend with Cleopatra, who captivated him by her beauty. A dispute over the division of the empire caused a new arrangement. Antony took the East, Octavianus the West, and Lepidus, Africa. Antony returned to Egypt and Octavianus incited the Romans against him. He was deprived of his power and war was declared on Cleopatra. A naval engagement took place at Actium in 31 B. C., where Antony and Cleopatra were completely defeated. Antony returned to Egypt and Octavianus followed him. Antony was told falsely that Cleopatra was dead, and he committed suicide in 30 B. C.

APPONYI (*ŏp'pō-nyē*), **COUNT ALBERT** (1846–1933). Hungarian statesman, son of Count George Apponyi (1808–1899), who did much to reconcile Austria and Hungary, was born in Pest, educated at Vienna and Pest, and was influenced by French and Roman Catholic traditions. He was a member of the opposition parties till he joined the Wekerle ministry in 1905, and in 1906 to 1910 became minister of education. He succeeded Kossuth as a member of the Hungarian independence party, and after the World War retired to private life, having accomplished his main objectives. Yet as a member of the League of Nations councils, he made a profound impression by his sincerity and his oratory, and afterward was acknowledged as a great moral leader in his native land.

ARABI PASHA (1839?–1911). Leader of the national party in Egypt in 1882. From a private he rose to be colonel in the Egyptian army; organized a rebellion under the rally of "Egypt for the Egyptians"; became minister of war in 1882; set aside the French-English control in finances of Egypt. England intervened; war was declared; Alexandria bombarded (July 11 and 12, 1882); Arabi was defeated at Tel-el-Kebir (September 13, 1882). He surrendered next day; sentenced to life exile in Ceylon; pardoned in 1900, and returned to Egypt.

ARCADIUS (378–408). First emperor of the East (395–408). He was the eldest son of the emperor Theodosius, after whose death the empire was divided into the West and East. He lived a life of luxury and indifference, the affairs being in the hands of Rufinus, the Gaul; Eutropius, the eunuch; and Eudoxia, the wife of Arcadius. The only really great man of the times was Chrysostom, patriarch of Constantinople, whom Arcadius became powerful enough to banish in 404.

ARIOVISTUS (*ă-rī-ō-vĭs'tŭs*) (1st. cent.), chief of a German tribe defeated by Caesar in 58 at Vesontium, the modern Besancon, after he had crossed the Rhine to help the tribes of Gaul. He escaped from Caesar by flight into his own country.

ARISTIDES (*ăr-ĭs-tī'dēz*) called **THE JUST** (550–468 B. C.). Athenian patriot, noted for an unswerving integrity, a trait that led to his banishment in 483 B. C.; was next highest in command at the battle of Marathon, after which he was made archon of Athens; recalled from exile to oppose the Persians under Xerxes, he commanded at the battles of Salamis and Plataea. He exerted himself to save from banishment his rival, Themistocles, and died so poor that he was buried at public cost.

ARMINIUS (*ăr-mĭn'ŭs*) (17 B. C.–A. D. 21). Otherwise Hermann or Armin. Of the tribe of Che-

rusci, he served in Roman armies, but returned home to find that the Roman governor, Varus, had badly treated his people. In A. D. 9 he ambushed Varus in Teutoburger Wald, utterly cut down three Roman legions, and forced the invaders to withdraw to the Rhine from the Elbe. Later he was defeated by Germanicus Caesar, after the latter barely escaped the fate of Varus, but the campaign was so costly that the Romans ceased their efforts to win back what they had given up. Arminius became the national hero, but his last days were troubled with disputes and civil war, and at last he was murdered.

ARTAXERXES (*är-taks-ürk'sēz*) **I.**, called Longhand, because his right was longer than his left hand, ruled Persia from 465 B. C. to 424 B. C. When he found his vizier Artabanus had killed his father, he put him and his sons to death in a fight in the palace. His reign was benevolent, but Nehemiah, his cupbearer, testifies that he was weak and indulged his wife beyond reason in her political schemes. Two insurrections were put down by him, the latter in Egypt. Two other rulers of the same name followed, the first his grandson, who was defeated by Cyrus at the great battle of Cunaxa, and his great-grandson, who put most of his own relatives to death, met with considerable resistance in Greece and Egypt, but finally subdued all opposition, though he was at last killed by his favorite vizier

ARTEMISIA (*är-tē-mĭsh'ĭ-ȧ*) (about 350 B. C.). A queen of Caria; wife and successor of Mausolus. She is noted for her love for her husband, her extraordinary grief at his death, and the splendid monument she built to his memory; hence the word "mausoleum." Portions of some of the fine sculptures which adorned this tomb were discovered in 1857 and are now in the British Museum.

ARTHUR, CHESTER ALAN (1830–1886). Twenty-first president of the United States, succeeding when President Garfield died in 1881. He was born in Vermont, educated at Union College, from which he was graduated with honor in 1848, became a noted lawyer, especially in defending the rights of slaves, did much to equip troops as quartermaster general of New York in the Civil War, and in 1871 became collector of the port of New York. Though in person opposed somewhat to the spoils system in politics, he did not actively seek to remedy conditions, and so in 1878 was removed from office. Having supported Grant in 1880 for a third term, when Hayes was nominated, to appease the followers of Grant, Arthur was nominated for vice presidency. Though he won the favor of the public slowly, Arthur made a conscientious and able president, free from undue bias or partisanship. When Blaine became the successful candidate against him in 1884, Arthur supported Blaine, even though for many years he had been a warm friend of Conklin, who actively opposed Blaine.

ASHBURTON, ALEXANDER BARING, BARON (1774–1848). For many years the head of the great Baring banking house. He began life as a Whig. In 1835 he was raised to the peerage; in 1842 he was appointed by Sir Robert Peel as special commissioner to negotiate the Ashburton Treaty between Great Britain and the United States, concerning the disputed Maine territory, which threatened to involve the two countries in a war; in 1798 he married the daughter of William Bingham of Philadelphia. He was a liberal patron of the fine arts.

ASOKA (ruled 264–c. 227 B. C.). Celebrated Buddhist emperor of India, who did much to establish certain doctrines, and to conquer men by "religion" rather than by the sword. His rule embraced an empire almost as large as modern India. He set up many pillars on which religious and ethical inscriptions are found today.

ASQUITH, HERBERT HENRY (1852–1928). Prime minister of England, 1908–16, was born in Yorkshire, educated at Oxford, became a barrister in 1876, and represented East Fife in Parliament from 1886 to 1918, and Paisley from 1920 to 1924, when he was created first Earl of Oxford and Asquith, and took his seat in the House of Lords. Some of his important offices were queen's counsel, secretary of state for the home department, chancellor of the exchequer (1905–08), and then premier for 8 years. He was extremely skilful in conciliating elements in his own party, the Laborites, and the Irish nationalists. In May, 1915, he formed a coalition ministry, which continued till December of the next year, when Lloyd-George forced the issue and was asked to form a special war council, or virtual dictatorship. Asquith's *Genesis of the War* is an important account of events, and his wife's *Autobiography of Margot Asquith* created a sensation by its frank discussion of men and measures while her husband was in public life.

ASTOR, NANCY WITCHER, VISCOUNTESS (1879–). First woman to sit in the British Parliament, was an American lady born at Greenwood, Virginia, the daughter of Chriswell D. Langhorne. After the death of her husband, Viscount William Waldorf Astor, in 1919, she entered the House of Commons. Among other reform measures she sponsored and secured the passage of a bill forbidding the sale of liquor to minors.

ATAHUALLPA (*ä-tä-wäl'pa"*) (c. 1502–1533). Called the last of the Incas or native rulers of Peru, on the death of his father received the kingdom of Quito, part of the empire, since he was not a descendant on both sides of the house from the ancient rulers. In a quarrel with his half-brother, Huascar, ruler of part of the empire, the latter was thrown into prison. Pizzaro, the Spanish conqueror, appeared at this time (1532), captured him by strategy, killed many defenseless Peruvians, and after accepting a ransom of $4,000,000 in silver, on a trumped-up charge put Atahuallpa to death in 1533.

ATHELSTAN (895–940). Grandson of Alfred the Great. The first ruler to take the title of King of England. He was crowned in 925. Athelstan seized Northumbria, and a league of Scots, Welsh, and English was formed against him. This was followed by a more formidable revolt, which was crushed at the battle of Brunanburh (937). He made good laws and improved the condition of his people.

ATTILA. King of the Huns; by Christians called "the Scourge of God." Became king (434), sharing the vast empire in Asia and Europe with his brother, whom he killed (444 or 445); devastated the coasts of the Black and Mediterranean seas. Defeated Theodosius thrice; took 70 cities from Rome; vast possessions south of the Danube paid him tribute; Aetius and Theodoric defeated him in Gaul; the Romans and allies defeated him at Chalons, he losing 300,000 men; he invaded Italy, and Rome was saved only by the intervention of Pope Leo I. When planning a second invasion he died of dysentery (453).

AUGUSTUS (63 B. C.–14 A. D.). At birth his name was Gaius Octavius; when adopted by Julius Caesar, he was called Gaius Julius Caesar Octavianus; by decree of the Senate in 27 B. C. he was named Augustus. The first Roman emperor and grandnephew of Caesar, who adopted him. When Caesar was assassinated in 44 B. C., Octavianus returned to Rome from his studies abroad and found Antony in control. War ensued, and Antony was beaten and fled across the Alps. Supported by Cicero and others Octavianus rose to such power that on the return of Antony he formed the second triumvirate with him and Lepidus. He took Italy, Africa, and Sicily; Antonius took Gaul; and Lepidus, Spain. After the battle of Philippi, a new division was made. Octavianus obtained Italy, and Lepidus, Africa. While Antony was in the power of Cleopatra, Octavianus was building himself up, and war was finally declared against Cleopatra. Octavianus was victorious at Actium, and became sole ruler of the Roman world. He declared universal peace in 29 B. C. In his eleventh consulship (23 B. C.) the Senate made him tribune for life. On the death of Lepidus (12 B. C.) he was made Pontifex Maximus and was supreme ruler of Rome. His reforms were beneficent and he beautified the city of Rome. His was the Augustan age of literature.

AURELIAN (LUCIUS DOMITIUS AURELIANUS) (about 212–275). Roman emperor (270–275). Successor of Claudius. Captured Palmyra, the capital of Queen Zenobia. Aurelian was killed by his own soldiers, near Byzantium, while on his way to Persia. He was called by the Senate "The Restorer of the Roman Empire."

AURELIUS, MARCUS (121–180). His surname was Antoninus, but he is better known as Aurelius. The emperor Hadrian befriended him, and Antoninus Pius adopted him and Commodus. When Pius died in 161, Marcus Aurelius succeeded him, but gave half the rule to his foster brother Commodus, who married his daughter, as Marcus had married the daughter of Pius. After the death of Commodus (169) Marcus Aurelius ruled alone. Though he was a great lover of peace and philosophy, several wars kept him away from Rome much of the time, during which he gained

the complete respect of his soldiers for the austere simplicity of his life. His *Meditations* profoundly influenced later ages and the Christian church, though Aurelius himself allowed persecution of early Christians. Among the later Stoic philosophers he takes very high rank, and the people for a long time regarded him as a god.

BABER (1483–1530). Descendant of Tamerlane, grandfather of the great Akbar; founded the Mogul Empire in Hindustan in 1527. His dynasty lasted for three centuries. He invaded India several times, finally in 1525 defeating the sultan of the Afghans and becoming master of the country. He was an able sovereign and soldier, made many improvements, and left a valuable autobiography.

BACON, FRANCIS (1561–1626). Statesman and philosopher, born of fine London family, educated at Cambridge, became convinced that the philosophy taught in the schools was not effective, studied hard at law, and became the most learned man of his day. His various political offices under James I include that of solicitor general, judge, attorney general, lord keeper of the great seal, lord high chancellor, and he was finally made Baron Verulam in 1618. During the next year he was called before Parliament, convicted of taking bribes, deprived of the speakership of the House, fined heavily, and sent to the Tower in disgrace, but soon was pardoned. His later life was spent in investigation and writing, but he had already published several notable works. (See *Index* for mention of Bacon in other sections of this book.)

BAEZ (*bah'eth*), **BUENAVENTURA** (1820–1884). President for four terms of the Republic of Santo Domingo (1849–1853); driven out by Santa Anna; president from 1856 to 1858; driven out again; president from 1865 to 1866; again exiled (1867). In 1869 the United States Senate refused to ratify the treaty which he and President Grant drew up for annexation of Santo Domingo. He was the son of a wealthy mulatto.

BAGOT, SIR CHARLES (1781–1843). Governor general of Canada (1842–1843); minister to the United States (1819); ambassador to Russia (1820); to Holland (1824); special ambassador to Austria (1834).

BAILLY, JEAN SYLVAIN (1736–1793). French political leader and scientist. He was president of the third estate, 1789, mayor of Paris, 1789–1791, but became unpopular because he had the guard disperse a mob, retired to Nantes, visited Leplace at Melun in 1793, was arrested, tried and guillotined. See under SCIENTISTS.

BAJAZET (*bay-a-zet'*) or **BAYAZID I.** (1347–1403). Sultan of the Ottomans; succeeded his father, Amurath I., in 1389. His vast energy and the swiftness of his movements gained for him the surname "Ilderim" or "lightning"; conquered Asia Minor, considerable of Turkey in Europe, and carried his campaign into Bulgaria, Hungary, Wallachia, and part of Greece; was first in his family to assume the title of sultan. He was desirous of taking Constantinople and defeated a league of the Christian powers commanded by Sigismund, King of Hungary, on the banks of the Danube at Nicopolis, in September, 1396. He is said to have made the boast that his horse would eat on the altar of St. Peter's at Rome. In 1402 he was defeated and made prisoner by Tamerlane just as he was preparing to attack Constantinople. Shut up in an iron cage, he was carried in the train of his conqueror, and about nine months later died in the Tatar camp in Pisidia.

BALDWIN I. (1058–1118). King of Jerusalem; succeeded his elder brother, Godfrey of Bouillon, in 1100; obtained many victories over the Turks, Persians, and Saracens; made himself master of all the important towns on the coast of Syria; distinguished himself in the First Crusade. He was buried on Mount Calvary.

BALDWIN II. Seventh Latin emperor of Constantinople (1228–1261). The son of Pierre de Courtenay and nephew of Baldwin I. His reign was disastrous. He spent much of his time in the West seeking aid for his capital. He sold to St. Louis of France some of the most sacred relics of Constantinople. In 1261 his capital was taken by one of the generals of Michael Palaeologus, ruler of Nicaea, and Baldwin fled to Italy. He was the last of the Latin emperors, and was succeeded by the Nicaean emperors.

BALDWIN, ROBERT (1804–1858). Canadian statesman, born in York (now part of Toronto), was called to the bar in 1825, in 1829–30 sat in the parliament of Upper Canada, became a member of the executive council in 1841, formed the first liberal administration the next year, and from 1848 to 1851 with Louis Lafontaine formed a ministry. Though a reformer, he refused to take his stand with the radical elements, and in 1854 refused to stand for the upper house. Responsible government, for which he struggled for years, finally became a reality in his lifetime.

BALDWIN, STANLEY (1867–). British prime minister, was educated at Cambridge, went into business, became wonderfully successful, attracting the attention of Bonar Law in 1916, eight years after he had entered Parliament. Then he became in succession junior lord of the Treasury, joint financial secretary, member of the privy council, president of the British Board of Trade, chancellor of the exchequer, and at last in May, 1923, took charge of the government, after Bonar Law, with Baldwin, had revived certain Conservative elements the year before. In the fall elections his party met defeat, and he was compelled in November to relinquish the premiership to Ramsay MacDonald early in 1924, but after nine months again he became premier until June 5, 1929, when he was once more succeeded by MacDonald. Baldwin proved an able, conscientious, persistent, and patriotic statesman. In 1919 he gave about 20 per cent of his fortune to the British Treasury to help pay the war debts.

BALFOUR, ARTHUR JAMES (1848–1930). A British statesman. In 1874 he entered Parliament, first representing Hertford, and in 1886 the east division of Manchester; president of the local government board (1885); secretary for Scotland (1886); secretary for Ireland (1887–1891); lord rector of Glasgow University (1890); in 1891, chancellor of Edinburgh University, and first lord of the treasury, then leader of the House of Commons. In 1895 he again became first lord of the treasury and leader of the House. He passed the crimes and law acts, secured a free grant for railways, and created the Congested Districts Board; became prime minister July 12, 1902, upon the resignation of Lord Salisbury, but failed to secure a majority in the general election of 1905; resigned leadership (1911). Joined coalition cabinet of Lloyd-George as first lord of the admiralty, 1915–1918; foreign secretary, 1916–1919; and head of the British Mission to America in 1917, and member of the delegation to the Washington Conference, 1921–1922.

BALMACEDA (*bäl-mä-sā'thä*), **JOSE MANUEL** (1838–1891). A Chilian statesman. Early in life he distinguished himself as an orator. In Congress he was foremost advocate of the separation of church and state in 1884; while premier, he introduced civil marriage; in 1886 he was elected president. He was accused of cruelty and dishonesty in office, and through the efforts of Señor Fuentes, who wished to supplant him and his supporters, he was overthrown (1891) and committed suicide September 18 of same year.

BANKS, NATHANIEL PRENTISS (1816–1894). Born in Waltham, Mass., he became a bobbin boy in the mills there, and was so called all his life. He served as speaker of the House of Representatives in 1856, having been elected on the 133d ballot, the first great Republican victory, was governor of Massachusetts from 1858 to 1861, general in the Civil War, member of Congress from 1865 to 1877, was U. S. marshal for Massachusetts for nine years, and again sat in Congress. In turn he allied himself with the Free Soil, coalition, American, Republican, Liberal-Republican supporting Greeley, Democrat, and then again Republican party.

BARNEVELDT, JOHN VAN OLDEN. See under DICTIONARY OF HISTORY.

BARRETT, JOHN (1866–1938). Statesman; minister to Siam (1894–1898). Special diplomatic and commercial envoy to Japan, Siam, Korea, Siberia, and India; American plenipotentiary to International Confederation of American Republics at Mexico (1901–1902); minister to Argentina (1903–1904), Panama (1904–1905), Colombia (1905–1906); director International Bureau of American Republics, 1907–1920, and afterward acted as adviser and arbitrator in disputes.

BATU KHAN (? –about 1255). Leader of the Mongols or Tatars in their invasion of Europe in the thirteenth century. Grandson of Genghis Khan; crossed the Volga (1235); took Riazan (1237); Moscow, Vladimir, and Kiev (1240); perpetrated horrible

massacres and atrocities; invaded Hungary (1241); conquered the Siberian Duke and Teutonic Knights at Wahlstatt. His army was named the Golden Horde from the richly embroidered tent of the Khan. His khanate was Kipchak, from the Jaxartes in Turkestan to the limits of Russia.

BEACONSFIELD (*bĕk'ŏns-fēld*), **BENJAMIN DISRAELI, EARL OF** (1804–1881). An English statesman and author; born in London. The crown of his ambition was to become premier. He attained that honor in 1868 at the resignation of Lord Derby, but at the general election he was not returned to power; again elected prime minister in 1874 with a strong majority, he retained the office for six years. During this period he was raised to the peerage. Parliament was abruptly dissolved in 1880, and the new Parliament had an overwhelming liberal majority; Beaconsfield remained leader of the Conservative party. *Endymion*, published shortly after this time, is probably the best known of his literary works.

BEBEL (*bā'bĕl*), **AUGUST** (1840–1913). Leader of the German Social Democratic Party, was born near Cologne, became a wood turner by trade, and in 1871 became a member of the Reichstag. He opposed the war of 1870 and the annexation of Alsace. In 1872 he was imprisoned for high treason, serving his term in comfort in a castle, and also a second in 1874. With Liebknecht he organized the Social Democratic Party and was connected with the party paper for a time. As a party orator he attained great power. Just before the World War he announced that the great increase of the German navy was a real menace to the peace of England, and that nothing could be more disastrous than a quarrel between Germany and England.

BEDFORD, JOHN PLANTAGENET, DUKE OF (1390–1435). Brother of King Henry V.; made constable of England in 1403; created Duke of Bedford in 1415. Henry V. wanted him made regent of France, but by act of Parliament he was made protector of the kingdom. His claim for Henry VI., as king of France upon the death of Charles VI., in 1422, involved the two countries in war for some years, but the tide turned against him at the siege of Orléans, which was raised by Joan of Arc. Disappointment hastened his death. Bedford was a patron of literature.

BELL, JOHN (1797–1869). Actively engaged in American politics until 1860, when he was nominated for the presidency by the Constitutional Union Party; member of Congress (1827–1841); speaker of the House in 1834; secretary of war under Harrison in 1841, and was a member of the United States Senate (1847–1859); joined the Confederacy and advised Tennessee to withdraw from the Union in 1861.

BENES (*bĕ'nĕsh*), **EDWARD** (1884–). Statesman of Czechoslovakia rose from poverty, after a course at Prague University, to a position of leadership. With Mesaryk and Stefanik during the World War he acted as a journalist and adviser in Paris seeking the independence of the district now called Czechoslovakia. In 1918 he became minister of foreign affairs in his government and premier in 1922–23. He was also a member of the peace delegation at Paris, of the council of the League of Nations, 1924–26, one of the framers of the Geneva Protocol, and prominent in the Little Entente.

BENTON, THOMAS HART (1782–1858). An American statesman and soldier. He was born near Hillsboro, N. C.; made his home in Tennessee. There he studied law and was made a member of the Legislature. In the War of 1812 he raised a regiment of volunteers. He also served on General Jackson's staff. His St. Louis newspaper, which he started after the war, entangled him in several duels. After Missouri was admitted as a state he was chosen United States senator in 1820, and during 30 years of continuous service took a prominent part in public affairs.

BERGER, VICTOR L. (1860–1929). Socialist congressman from Wisconsin, born in Austria, lived in Wisconsin mainly after 1878. Edited various socialist papers in Milwaukee, notably the daily *Leader* from 1911 till his death. He was the first Socialist ever elected to Congress (1911–13), but was twice refused admission after being convicted of disloyalty during the World War, but was seated after third election when the Supreme Court had made it necessary to quash all indictments against him. He was one of the moderate socialists, the author of several articles and papers, and an able speaker.

BERKELEY, SIR WILLIAM (1610–1677). Colonial governor of Virginia (1641–1650). He was superseded by Cromwell's appointee, Richard Bennet, in 1651; remained in the colony; chosen governor by the General Assembly in 1660. Lost favor with the people and suffered by Bacon's rebellion; was forced to resign in 1660.

BERNADOTTE (*bĕr-nä-dŏt'*), **JEAN BAPTISTE JULES.** See CHARLES XIV. CHARLES JOHN.

BETHMANN-HOLLWEG (*bāt'män-hŏl'vāk*), **THEOBALD VON** (1856–1921). A German statesman, born near Berlin, educated at Strasbourg, Berlin, and Leipzig, and rose to the rank of chancellor in 1909. He was successful in dealing with a number of acute problems, but failed to conciliate some of the minor parties. In 1914 he told the British ambassador at Berlin that the treaty to respect the sovereign rights of Belgium was "a scrap of paper," and this phrase at once was echoed round the world. He refused to sanction or reject the plan for unrestricted submarine warfare, lost the support of the reichstag, and resigned in July 1917, when Hindenburg and Ludendorff came to Berlin from the war lines to consider the peace resolution offered in the reichstag by Erzberger.

BISMARCK, KARL OTTO EDUARD LEOPOLD, PRINCE VON (1815–1898). Born at Schönhausen. He early entered political life, being always a strong imperialist. The idea of Germany's freedom from foreign control and union under the crown of Prussia originated with Bismarck, but his sincerity and judgment were doubted at first. In 1862 he was made minister of foreign affairs. In 1864 he won general approbation by the conquest and annexation of Schleswig. Next he brought Austria to terms in 1866, in consequence of which his long cherished plan was made possible, and the establishment of a German confederation with Prussia at its head made him the idol of his compatriots. Exasperated by his treatment, Napoleon III. declared war and advanced upon Berlin. To the surprise of all Europe, the French were ignominiously driven back. The threatening powers of France and Austria helpless, the German Empire restored under a Hohenzollern king, Bismarck was installed as chancellor. He reformed the coinage, increased the army, established protection, and repressed socialism. But no deed of his equaled the stupendous feat of reorganizing and building up the empire. After numerous quarrels with William II., he resigned (March 20, 1890). He was the greatest European statesman of the nineteenth century.

BLAINE, JAMES GILLESPIE (1830–1893). An American statesman; born in Brownsville, Penn.; one of the founders of the Republican Party. In 1862 he became a member of the House of Representatives. In 1869 he took the chair as speaker of the House, which office he retained for six years. From 1876 to 1881 he was a member of the Senate. He was secretary of state under Garfield (1880 to 1884). In 1884 he was the Republican candidate for the presidency, but was defeated by Grover Cleveland. He wrote *Twenty Years in Congress*, a work of lasting value to history. Besides this, his best known literary work, we have many others of his writings and speeches on the most important public questions of his day. He removed to Augusta, Maine (1854), and engaged in journalism.

BLAND, RICHARD PARKS (1835–1899). American legislator; born near Hartford, Ky.; practiced law in Missouri, California, and Utah, and was interested for some time in mining. From 1873 to 1895 he was a member of Congress, and again from 1897 till his death. In 1896 he was one of the foremost candidates for the presidential nomination in the Democratic National Convention; was noted as the leader of the free silver movement in national House of Representatives. He was the author of the Bland Silver Bill, which was introduced by him in 1878. This bill provided for the coinage of not more than $4,000,000 nor less than $2,000,000 worth of silver bullion a month. The bill was passed in spite of the veto of President Hayes and remained in force until 1890, when it was nullified by the passage of the Sherman act.

BOABDIL (*bō-äb-dēl'*) (? –1536). The last Moorish king of Granada. He dethroned his father, Abu-l-hassan, in 1481, and two years after that was overthrown and taken prisoner by the Castilians in the vicinity of Lucena. He bought his freedom and returned to Granada, where he struggled with his father and with his warrior uncle, El-Zazhal, for the

throne. He was expelled from Granada for the last time in 1491 by Ferdinand of Castile and Aragon, and after that lived in Africa, where he was killed in battle in the service of the king of Fez.

BOADICEA, QUEEN OF THE ICENI. A British queen, who, in 60, rose in rebellion against the Romans. Prasutagus, her husband, died in 60 and left his wealth to the Roman emperor and to his own two daughters, thus hoping to protect his kingdom from the rapacity of the Roman emperor; but the plan failed, and the kingdom was plundered and the queen and her daughters were insulted. Boadicea was at first victorious, destroyed over 70,000 Romans, and captured several towns. In a battle the Romans, led by Suetonius Paulinus, were completely victorious, and over 80,000 Britons were slain in 62. Boadicea, in despair, committed suicide.

BONAPARTE, CHARLES LOUIS NAPOLEON, NAPOLEON III. (1808–1873). French emperor, son of Louis Bonaparte; born in Paris. Failed completely in an attempt to take Strassburg (1836); imprisoned in Ham for attempt to bring about an uprising in his favor; escaped (1846) and made his way to England, but returned (1848) and was elected president; re-elected for 10 years in 1851. He married Eugénie, Countess de Montijo, in 1853. During the Franco-German War the emperor took the field and, after his capture at Sedan, was deposed and spent the remainder of his life at Chiselhurst, England.

BONAPARTE, JOSEPH (1768–1844). Eldest brother of Napoleon; born at Corte, in Corsica; elected a member of the Council of Five Hundred (1797); was appointed commander-in-chief of the army of Naples (1804); ruler of the Two Sicilies (1805); king of Naples (1806); transferred to the throne of Spain (1808), but, being unable to suppress the insurgents there, returned to France after the defeat of the French at Vittoria (1813). Joseph came to the United States after the battle of Waterloo, where for many years he engaged in agriculture at Bordentown, N. J. He returned to Europe (1832), and in 1841 went to Florence, where he died.

BONAPARTE, NAPOLEON, NAPOLEON I. (1769–1821). The most consummate master of generalship of modern times; born at Ajaccio, Corsica; attended military school (1779–1784) and at the age of 16 began his military career as sub-lieutenant in the army. At 23 he had advanced to the rank of captain of artillery. The following year he was commandant of artillery, in which position he distinguished himself at the reduction of Toulon, held by the Spanish and English. This success won him a commission as brigadier general. The army was remodeled in the summer of 1794, and he was suspended and put on half pay, the authorities giving as a reason his youth, considering 25 too young for a commander of artillery. However, when an insurrection led by the National Guard broke out in the fall, Napoleon was recalled, and won a brilliant victory after a short but bloody engagement. This made him practically commander-in-chief of the army of the interior. In 1796 he held the commander-in-chief of the army of Italy. That same year he married Josephine de Beauharnais. In his first campaign Napoleon displayed a genius for generalship, gaining four victories in a few weeks, conquering Lombardy and capturing Mantua, and almost annihilating three Austrian armies. He then turned his efforts against the pope and compelled him to pay 15,000,000 francs and give up many valuable works of art. After defeating another army from Austria, Napoleon finally concluded a treaty with that country making his success secure. In 1798 he took command of a powerful expedition sent into Egypt for the purpose of striking at the power of Great Britain. There he gained important victories over the Mamelukes and Turkish auxiliaries. Returning to France he overthrew the Directory and was elected first consul. He gained the great victory of Marengo in 1800. In 1801 he reorganized the government, reconstructed the educational system, established the Legion of Honor, and codified the laws. He became emperor in 1804 and opened war with England, Russia, Sweden, and Prussia. In 1809 he was divorced from Josephine and a year later married Maria Louisa, daughter of the emperor of Austria. The tide turned against him in 1812, when in the famous Russian campaign he is said to have lost 380,000 men. In 1813 he made a disastrous retreat at Leipzig. In 1814 the combined allies entered Paris, forced him to abdicate, and sent him to Elba, where although held as a prisoner he was granted the sovereignty of that island. However, he returned to France and succeeded in exciting such unbounded enthusiasm that he was able to raise an army of 125,000. But his insatiable ambition had finally overreached itself; and his overwhelming defeat at the hands of the duke of Wellington at Waterloo put an end to his career (1815); sentenced by the allies to banishment, he died a state prisoner on the island of St. Helena. The life of Napoleon presents probably the most noteworthy example in history of military genius guided by a great intellect, spurred by a powerful, indomitable will, and entirely unrestrained by any principles of honor. He was preëminently great in all matters pertaining to government and the art of war. His greatness lies not only in the inception of his colossal schemes, but in the titanic force he threw into their accomplishment. The man who curbed the Revolution and refashioned the life of France, who rolled back the West toward the East in the greatest movement since the Crusades, and who, by the splendor of his daring, drew the admiration of all and won the hearts of millions, must stand for all time a majestic figure among the great immortals.

BONIVARD (*bō-nē-vär'*), **FRANCOIS DE** (1496?–1570). Known as the hero of Byron's poem, *The Prisoner of Chillon*, but his life and character differ materially from the account by Byron. Bonivard came of an old Savoy family, succeeding his uncle as prior at St. Victor in 1510. Because he resisted the encroachments of Duke Charles III. of Savoy, Bonivard was twice imprisoned, at first for nearly two years, and later for four years in a dungeon underground. In 1536 the Bernese seized the castle where he was confined, released him, and took Vaud from the duke. Bonivard became a Protestant and wrote an official history of Geneva, not published till 1831.

BORAH, WILLIAM EDGAR (1865–1940). Born in Illinois, educated at the University of Kansas, practiced at Lyons, Kan., 1890–91, and then at Boise, Idaho. United States senator from Idaho since 1907; chairman of Foreign Relations committee, and known as an advocate of United States independence of foreign entanglements. A captivating orator and logician.

BORDEN, FREDERICK WILLIAM (1847–1917). Canadian minister of militia from 1896 to 1911, and from 1874 to 1891, except for three years, a representative from Nova Scotia in the Dominion Parliament. Served for several years as a surgeon in the Canadian forces, having taken a medical degree at Harvard. He also became a zealous advocate of national defense. He was made a knight in 1902.

BORDEN, ROBERT LAIRD (1874–1937). Canadian premier, born in Nova Scotia, premier from 1911, in succession to Laurier, to 1920. Entering Parliament in 1896 as a Conservative, he succeeded Sir Charles Tupper as leader of that party, and advocated a contribution of money to Great Britain in lieu of establishing a Canadian navy, a plan which failed to carry the Senate. During the World War and later he was able to secure a separate representation for Canada in important ways.

BOURASSA, HENRI (1868–). French-Canadian statesman, after a term as editor, became a Liberal in the House of Commons in 1896, but resigned three years later in disagreement with Sir Wilfrid Laurier, becoming leader and member of the Nationalist party in 1900 and 1904, and then resigned to become a member of the Quebec Assembly from 1908 to 1912. During the World War he opposed conscription. In 1925 he returned to Parliament as an independent, favored Mr. Mackenzie King, but refused a seat in his cabinet.

BOURGEOIS (*bōōr-zhwä'*), **LEON VICTOR AUGUSTE** (1851–1925). French statesman who held several offices at times after 1888, including the leadership of a Radical ministry in 1895, which fell over a disagreement regarding the right of the senate to veto certain supply items. He also acted as minister of exterior in the Sarrain cabinet in 1906, of foreign affairs in the Ribot cabinet in 1914, and as minister without portfolio in the Briand cabinet during the World War. From 1920 to 1923 he was president of the senate. Always a zealous advocate of peace, he gained some fame at the Hague conference in 1899, and became a member of the Permanent Court of Arbitration in 1903. He was also one of the first advocates of the League of Nations, representing France until 1924, serving in both the Assembly and the Council. Bourgeois won the Nobel prize for peace in 1920.

BOUTWELL, GEORGE SEWALL (1818–1905). American politician and Cabinet officer; born in Brookline, Mass. Leader of the Democratic Party in his state; governor (1851) and reëlected; left the Democratic Party on the repeal of the Missouri Compromise and helped to form the Republican Party (1854); organized the new Department of Internal Revenue (1862); elected to Congress (1863), and twice reelected; one of the managers for the impeachment of President Johnson; secretary of the treasury (1869–1873); United States senator (1873).

BRADFORD, WILLIAM (1590–1657). An American author; second governor of the Plymouth colony and one of the first settlers of New England; born in Yorkshire, England. The famous compact drawn up on the *Mayflower* bears his name as one of the signers. He was governor of Plymouth from 1621 until his death, except for five years when he declined the office. He was trusted and honored by all who knew him, and his administration was remarkable for efficiency. His tact in dealing with the Indians deserves special mention. He died in Plymouth, Mass.

BRANTNG, KARL HJALMAR (1860–1925). Statesman born in Stockholm, who early became a socialist, edited the *Social Democrat*, and acquired a great influence as leader of suffrage movement, an advocate of peaceful separation of Sweden and Norway in 1905, and of strict neutrality in the World War, though he favored the Allies. He acted as peace delegate from Sweden and was the first representative of his country in the League Assembly, and in 1922 served as a member of the Council. He was premier of Sweden in 1920, from 1921 to 1923, and again a third time from the election of 1924 to the close of Jan. 1925, when he had to resign because of ill-health. He won the Nobel peace prize in 1921.

BRECKINRIDGE, JOHN CARELL (1821–1875), Vice-president of the United States when James Buchanan was president (1856–1860); born near Lexington, Ky. From 1851 to 1855 he occupied a seat in Congress. In 1860 he ran for the presidency against Lincoln. In 1861 he was in the national Senate; served in the Confederate army through the war; second in command under Early at Shenandoah (1864); secretary of war in the cabinet of Jefferson Davis (January to April, 1865); escaped to Europe; returned in 1868 and practised law.

BRIAN, surnamed **BOROIMHE** (926–1014). King of Ireland; a beloved Irish hero. He ruled for many years with vigor and justice. His reign was one of the most prosperous Ireland had ever seen, but he became involved in war with the king of Leinster, who revolted and asked the Danes to aid him in his uprising. Brian gained a brilliant victory over the combined forces at the battle of Clontarf (April 23, 1014), but was slain in the engagement.

BRIAND (*brē-äṅ'*), **ARISTIDE** (1862–1932). French statesman, who became successively a lawyer, journalist, and politician of pronounced liberal theories, but his fairness gained the respect of all parties. He held the portfolio of public instruction in 1906, minister of justice 1912 and 1914–16, premier and minister of the interior and worship in 1909–1910, when his cabinet fell over a question of a workmen's strike, but he at once formed a new cabinet, which terminated in 1911. Then he became minister of justice under Poincaré, and premier when the latter became president, but this cabinet lasted about six months only. Again he became minister of justice under Viviani, and premier in 1915 to March 1917, January 1921 to June 1922, and November 1925 to March 1926, acting usually as his own minister of foreign affairs. Briand had an important part in negotiating the Locarno treaty in 1925, receiving with Chamberlain and Stresemann the Nobel peace prize for his efforts with them. He acted as spokesman for France in the Washington Conference in 1922, and represented France at the London Conference in 1930.

BRIGHT, JOHN (1811–1889). British statesman; the greatest English orator of modern times. His father was a Quaker cotton spinner. He was one of the foremost members of the Anti-Corn Law League in 1839, and, associated with Cobden, was a champion of free trade. His influence upon the conduct of public affairs both in England and abroad is said to have been greater than that of any other man of his time. This was largely due to his great moral power, for his life was exemplary, and his sense of justice keen. He was a vigorous advocate of the northern cause in the American Civil War. In 1885 he and Gladstone disagreed on the question of Home Rule, which led to an open rupture between them.

BROUGHAM (*brōō'ăm* or *brōōm*), **HENRY PETER** (1778–1868). Born in Edinburgh and educated there, he became a Scotch and later an English barrister. In 1810 he entered Parliament, became interested in reform, defended Queen Carolina in her trial in 1821, became a peer in 1830, and was lord chancellor till 1834. For thirty years he continued to advocate many causes, introducing many bills and making countless speeches. His present reputation rests on his advocacy of reforms in education, electorate, suffrage, and law.

BROWN, GEORGE (1818–1880). A Canadian statesman; member of Parliament (1852); formed the Brown-Dorian ministry (1858); resigned in three days; member of the Senate (1873); negotiated a commercial treaty with the United States (1874); shot by a discharged employee. Founded the Toronto *Globe* newspaper (1844).

BROWN, JOHN (1800–1859). One of the foremost American opponents of slavery. He bore a conspicuous part in the murderous feuds of the Kansas struggle, having moved to Ossawattomie of that state in 1855 from Torrington, Conn., where he was born. In 1858 he planned to liberate the slaves by seizing the arsenal at Harper's Ferry, Virginia. Having only 18 men he was, of course, soon overcome and captured by the regular troops. He was tried and executed at Charlestown, W. Va. His grave is at North Elba, N. Y. The Harper's Ferry incident, which occurred October 16, 1858, made the name of John Brown famous.

BRUCE, ROBERT (1274–1329). King of Scotland. He submitted for a time to Edward I. In 1299 a regency was appointed, Bruce and his rival, Comyn, at the head. For several years Bruce pretended loyalty to Edward, but in 1306 he murdered Comyn, and after several battles with the English, in some of which he was defeated, he won his cause, the freedom of Scotland, at the battle of Bannockburn (June 24, 1314), against Edward II.

BRUCE, STANLEY MELBOURNE (1883–). Statesman born in Melbourne, Australia, served in the World War, was wounded and invalided back home, where he managed the affairs of a mercantile firm, but did much to keep up the spirit of his countrymen. In 1921 he represented his commonwealth in the League of Nations, became treasurer of Australia in 1922, and premier on the fall of the Hughes ministry in 1923 as a Liberal leader in a coalition with the Nationalists. In 1925 he was given a vote of confidence in a general election. Bruce advocated the status of Australia as one of the "autonomous" parts of the British empire.

BRUTUS, LUCIUS JUNIUS (flourished 500 B. C.). Roman patriot who overthrew the Tarquins, destroyed the monarchial and substituted the republican form of government in Rome. His character was that of the stern old Roman hero. His sons, detected in a conspiracy, were sentenced to death by him. He fell in battle against the sons of Tarquin.

BRUTUS, MARCUS JUNIUS (85–42 B. C.). A prominent Roman; one of the conspirators against Caesar. His father was slain by Pompey's orders, yet he supported Pompey rather than Caesar. Caesar, after the victory of Pharsalia, pardoned Brutus and made him governor of a part of Gaul. He was made praetor by Caesar in 44 B. C. While holding this office he entered into a conspiracy against Caesar. After the murder of Caesar, Brutus fled to Athens and became powerful in Macedonia. Cassius raised an army in Asia Minor and together they made a stand against Octavianus and Antony at Philippi. The wing commanded by Brutus was victorious over that of Octavianus; while Cassius was beaten back by Antony. Cassius killed himself in despair. When this was reported to Brutus, he took his own life.

BRYAN, WILLIAM JENNINGS (1860–1925). A prominent American political leader. His birthplace is Salem, Ill. In 1881 he was graduated from Illinois College, after which he studied law at Union College, Chicago. In 1887 he made his home in Lincoln, Nebraska, and in 1921 in Florida. From 1891 to 1895 he was a member of Congress. In 1896 he was the Democratic candidate for the presidential chair against McKinley. He was the advocate of free and unlimited coinage of silver by the United States in the proportion of 16 to 1 without regard to the action of any other nation. The silver question, in fact, was the

dominating feature of this campaign, in which Bryan was defeated. In the Spanish War he was colonel of a regiment of volunteers with headquarters in Florida. In 1900 he again came forward as presidential candidate for the Democratic party. Their platform in this campaign was opposition to trusts, anti-imperialism, and free silver. McKinley again defeated him. When he once more ran for the presidency in 1908, he was defeated by William H. Taft, the Republican candidate. Thus he had the distinction of having led his party three times in a presidential campaign. While acting as secretary of state in the Wilson cabinet from 1913 to 1915, Bryan negotiated some 30 odd treaties of arbitration, but he resigned because of disagreement as to policy. In 1925 he acted as advisory counsel in the Scopes trial at Dayton, Tenn., acting for the so-called Fundamentalists. He also published two works on religious controversy, *The Menace of Darwinism* and *The Bible and its Enemies.* He died at Dayton suddenly after the conclusion of the trial.

BRYCE, JAMES (1838–1922). An eminent English statesman and writer; a barrister; professor of law at Oxford (1870–1893); member of Gladstone's Cabinet (1886); again in 1892; fellow of the Royal Society; Liberal in politics; visited the United States in 1870, 1881, 1883; British ambassador to the United States (1906–1913). In 1913 he was appointed a member of the permanent Court of Arbitration at The Hague, and in 1914 he was created a viscount. His extensive fame as a statesman was augmented by several books, chief of which is the *American Commonwealth,* a standard work. Others are *The Holy Roman Empire, Studies in History and Jurisprudence,* and *Modern Democracies.*

BUCHANAN, JAMES (1791–1868). Fifteenth president of the United States, born in Pennsylvania, educated at Dickinson College, he was a lawyer, congressman (1821–31), ambassador to Russia (1832–33), Democratic member of the U. S. Senate (1834–45), having been first a member of the dissolved Federalist Party, and secretary of state (1845–49), during which time Texas was annexed and the war with Mexico was fought. In 1853 he became minister to Great Britain and in 1856 became president. He lost favor by vacillation in regard to slavery, having insisted that it was wrong for a state to withdraw from the Union, but the Federal government could not prevent it. During the Civil War he supported the Union, after his term as president ended March 4, 1861.

BULWER (*bo͝ol'wēr*), **WILLIAM HENRY LYTTON EARLE, BARON DALLING and BULWER** (1810–1872). English diplomatist who was instrumental in negotiating a commercial treaty with Turkey, while acting as secretary of the English embassy there. He also concluded peace between Spain and Morocco in 1843 and secured the Clayton-Bulwer treaty with the United States in 1849.

BURGHLEY, LORD. See CECIL, WILLIAM.

BURKE, EDMUND (1729–1797). A British statesman, parliamentary orator, and author, was born in Dublin and educated there at Trinity College. He was successively secretary to W. G. Hamilton, who was Irish secretary, and Lord Rockingham, when the latter became prime minister. During his term in Parliament, which began in 1766, Burke continued to speak for the rights of the American colonists. In 1782 he became paymaster of the forces, and afterward acted in the ministry of the duke of Portland. His great effort as an orator was in the speech against Warren Hastings during the impeachment proceedings. Burke found himself out of sympathy with the Revolution in France, withdrew finally in 1794 from the Whig party because many of his old friends supported the events across the English Channel, and lived in political retirement till his death. His great talents in statesmanship were cramped because he belonged to the minority and never had a fair chance to show them in any great office. (For Burke as a writer, see DICTIONARY OF AUTHORS.)

BURR, AARON (1756–1836). American political leader, the son of Rev. Aaron Burr, president of what is now Princeton University, and of a daughter of Jonathan Edwards. He was educated at Princeton, distinguished himself during the Arnold expedition against Quebec, and also as commander of American lines protecting New York from the British. Resigning from the army in 1779, he was admitted to the bar in 1782, elected to the state assembly in 1784, became attorney general of New York in 1789, U. S. Senator in 1791, defeating the father-in-law of Alexander Hamilton, General Colfax, and in 1800 was nominated for the vice-presidency with Jefferson. Through his friends in the Federalist party, he received more votes, but the house gave the presidency to Jefferson, making Burr the vice-president. In 1804 he ran for the governorship in New York. Resenting remarks made by Hamilton, who for years opposed him, Burr challenged Hamilton to a duel, in which the latter was mortally wounded. Burr became almost an outcast for several years. He acquired some land in Louisiana, joined with Harmon Blennerhasset in a scheme for founding a state west of the Mississippi, was arrested, tried for treason, but was acquitted. After some years in England, he settled in New York in the practice of law.

BURTON, THEODORE E. (1851–1929). One of few men to serve in the House after being in the Senate. Educated at Oberlin. Served in U. S. House, 1889–1891, 1895–1909, then in Senate, 1909–1915, again in House for term 1921–1929, when elected again to Senate in 1928. On important commissions, including the Foreign Debt and Interparliamentary Union, Chairman of Waterways Commissions, member National Monetary Commission. President of American Peace Society. Author of *Financial Crises, The Constitution, Life of John Sherman, Corporations and the State.* College lecturer.

BUTLER, BENJAMIN FRANKLIN (1818–1893). An American politician and general; born in New Hampshire; was educated for the bar. In 1862 he was military governor of New Orleans, his administration being singularly efficient, the success with which he combated the scourge of yellow fever being specially noteworthy. In 1866 he became a Republican member of Congress, which position he held for several terms. In 1862 he was elected Democratic governor of Massachusetts, but was defeated the following year for the same office. He was the Greenback-Labor and the Anti-Monopolist candidate for the presidential chair in 1884, but was defeated.

CAESAR, CAIUS JULIUS (100–44 B. C.). A Roman general, statesman, and writer. One of the most remarkable men of all time. He left Rome in 81 B. C. through fear of Sulla, but returned on his death in 78 B. C. After some study he joined Pompey. He held several minor offices in succession and with growing popularity. In 60 B. C. he was elected consul and succeeded in bringing together Pompey and Crassus and formed with them the first triumvirate in that year. In 58 B. C. he went to the provinces of Gaul, which the Senate gave to him, and for nine years conducted those brilliant campaigns upon which so much of his fame rests. He conquered the Helvetii, the Germans under Ariovistus, in 58 B. C.; the Belgae in 57 B. C.; and the Veneti in 56 B. C. In 55 B. C. Crassus went to the East, where he was slain in 53 B. C.; Pompey went to Spain; and Caesar's control of his provinces was extended for five years. He defeated Vercingetorix at Alesia in 52 B. C., and in 51 B. C. reduced the whole of the Aquitani. Pompey had returned from Spain and grew jealous of Caesar's fame, and induced the Senate to order Caesar to lay down his command. Caesar refused unless Pompey did likewise. The Senate would make no conditions and Caesar marched his army across the Rubicon river into Italy, thus defying the Senate. Pompey fled to Brundusium and Caesar followed. Pompey escaped to Greece and in three months Caesar was master of Italy. In the battle of Pharsalia, in 48 B. C., Pompey was defeated and fled to Egypt, where he was murdered. Caesar was made dictator for one year, consul for five years, and tribune for life. He went to Egypt; assisted Cleopatra successfully in the Alexandrine War; overthrew Pharnaces, son of Mithridates; thence to Africa and defeated Scipio and Cato in the battle of Thapsus (46 B. C.). In 46 B. C. he revised the calendar. In 45 B. C. he defeated Gneius and Sextus, sons of Pompey, in the battle of Munda. He was made dictator and prefect for life and consul for 10 years. He entered upon vast designs for the improvement of Rome, but was assassinated on the Ides (15th) of March, 44 B. C., by conspirators led by Brutus, Cassius, and others who were fearful of his growing power and that he might be made king.

CALHOUN, JOHN CALDWELL (1782–1850). An American statesman; born in Abbeville District, S. C.; was graduated from Yale (1804); admitted to the bar (1807); elected to Congress (1811); secretary of war (1817); vice-president (1825–1832); secretary of state (1844); returned to Senate (1845). He was an upholder of slavery, and champion of the

rights of individual states against the central government.

CALIGULA, GAIUS CAESAR GERMANICUS (12–41). Third emperor of Rome (37–41). He first adopted a policy of reckless extravagance. In one year he spent the enormous wealth left by Tiberius of 720,000,000 sesterces, or about $28,000,000. He banished or murdered his relatives, excepting his uncle, Claudius, and his sister, Drusilla. He filled Rome with executions and scenes of torture. He declared himself a god and had temples erected to himself. A conspiracy was formed among his guards and he was assassinated in 41.

CALONNE, CHARLES ALEXANDRE DE (1734–1802). French minister of finance for Louis XVI. He tried to finance the nation on unstable principles, for which he was dismissed and exiled.

CALVERT, LEONARD (about 1606–1647). First colonial governor of Maryland (1634–1647); appointed by his brother, Cecil Calvert, Lord Baltimore; they were sons of George Calvert, first Lord Baltimore.

CAMBYSES (? –522 B. C.). King of the united Medes and Persians. He was the son of Cyrus the Great. On the death of his father he made his brother, Smerdis, governor or viceroy of the eastern part of Persia or Iran. He defeated Psamethik III., king of Egypt, in 525 B. C., and made Egypt a Persian province. He conquered Nubia, but failed in his attack upon Ethiopia. An impostor in the meantime appeared as Smerdis, who had been secretly murdered by order of Cambyses, and the latter hastened home to punish him, but Cambyses died at Ecbatana in 522 B. C. He subjected the Egyptians to outrages, rifling the tombs and slaying the sacred bull, Apis.

CAMERON, SIMON (1799–1889). American political leader; born at Maytown (now Donegal), Penn. From 1845 to 1849 he was a Democratic member of the United States Senate, and as a Republican he was again a member of the Senate (1857–1861); in 1861 was appointed secretary of war in Lincoln's Cabinet; United States minister to Russia from January to November, 1862. In 1866 he was again elected to the Senate, but retired in 1877 in favor of his son, James Donald Cameron.

CANNING, GEORGE (1770–1827). British statesman and orator; born in London; entered Parliament (1794); under-secretary for foreign affairs (1796–1801); refused office in the ministry of "all the Talents" (1806), but became foreign secretary in the Tory administration succeeding it (1807). The retirement of Lord Liverpool placed him at the head of the government, but unsupported by Wellington, Peel, and the leading Tories, his premiership lasted only four months.

CANNON, JOSEPH GURNEY (1836–1926). American official, who was for many years a member of the U. S. House of Representatives, was born in Guilford, N. C., but lived most of his life in Illinois. After seven years as a states attorney, he entered the House in 1873, retired in 1891, and again from 1893 to 1913 served continuously. From 1903 to 1911 he was Speaker of the House during the 58th to 61st Congresses. He again served, this time the 18th district of Illinois, from 1915 to 1917, having served previously the 12th district.

CANUTE (*kă-nūt'*) or **KNUT** (about 995–1035). King of England, Denmark, and Norway; son of Sweyn of Denmark. On the death of Edmund Ironside, with whom he had divided the country, he was proclaimed king of England. On the death of his brother, Harold, he also became king of Denmark (1019). He secured his position by the creation of a standing army. In 1028 he invaded and annexed Norway. He died suddenly at Shaftesbury, England, and was buried in St. Peter's Abbey Church in Winchester.

CAPET (*ka-pay'*), **HUGH** (938?–996). Founder of the third Frankish dynasty, which ruled France in the direct line from 987 to 1328 and through collateral branches till the Revolution (1789). The son of a Neustrian noble, he was elected king (987) by the feudal barons in opposition to Karl of Lorraine, the last of the Carlovingians. The Capet kings ruled for 341 years. They eventually conserved the kingdom by abandoning the practice of dividing it among the sons of a deceased king, and they also by the Salic law, as they interpreted it, shut out all female rulers.

CARNOT (*kar-nō'*), **MARIE FRANCOIS SADI** (1837–1894). President of the French Republic; born at Limoges; minister of public works (1880) and finance (1885); elected president (1887); assassinated at Lyons by an Italian anarchist (1894).

CARON, HON. SIR JOSEPH PHILIPPE RENE ADOLPHE (1843–1908). Born in Quebec; B.C.L. McGill University (1865); called to bar (1865); queen's counsel (1879); member of Parliament for Quebec (1873–1891), after which he was returned for Rimouski; represented Three Rivers and St. Maurice (1896); minister of militia (1880–1892); postmaster general (1892–1896). Knight of St. Michael and St. George for services during Riel rebellion (1885).

CARRANZA (*kär-rän'sä*), **VENUSTIANO** (1859–1920). President of Mexico. For many years he was a senator for Coahuila, his native state, and in 1914, on the resignation of Huerta, he assumed the important functions of government, being elected president by a large vote in 1917, though he had been recognized by many nations two years before. Differences with Zapata, Villa, and Obregon arose, and he fled after a revolt in 1920, crossed into the United States, and died on American soil.

CARROLL, CHARLES (1737–1832). American patriot; born at Annapolis, Md. He was the last survivor of the 56 signers of the Declaration of Independence. During the Revolution he was a member of the Continental Congress (1776–1779); Federalist member of the United States Senate (1789–1791).

CARTWRIGHT, SIR RICHARD JOHN (1835–1912). Canadian statesman, lawyer, and banker; born at Kingston, Ontario. Member of Parliament (1863) as a Conservative; Liberal in 1870; minister of finance in the Mackenzie Cabinet (1873–1878); minister of trade and commerce in the Laurier Cabinet (1896); member of the Anglo-American Joint High Commission (1898).

CARVER, JOHN (1575?–1621). Leader of the Pilgrim Fathers who took refuge in Holland (1607–1608). He came to Massachusetts on the Mayflower and was the first governor of the Plymouth Colony (1620–1621). He was re-elected (1621), but died of sunstroke one month afterwards.

CASS, LEWIS (1782–1866). American statesman; born in New Hampshire, acted 18 years as governor of the Territory of Michigan, where he had served in the campaign of 1812 under Hull, whose loss of Detroit he strongly condemned. He conceived a dislike for England because of the refusal to abandon the principle of right of search, and while ambassador to France later succeeded in getting the Quintuple Treaty defeated. Later as secretary of state in Buchanan's cabinet he saw the attitude of England changed. He resigned in 1860 because he thought Buchanan not firm enough as to slavery.

CASSIUS LONGINUS (*kăsh'ĭ-ŭs*), **GAIUS.** One of the assassins of Caesar. In 44 B. C. he sided with Pompey against Caesar though holding the office of pretor from Caesar. He was promised the governorship of Syria for the following year. Fretting under the beneficence of Caesar, he planned his murder. He won over Brutus to his views and on the Ides (15th) of March, 44 B. C., murdered Caesar in the Senate. He fled to Asia Minor, made himself master of Syria, joined forces with Brutus, and met the army of Octavianus and Antony in Philippi, Macedonia. In the battle the wing commanded by Cassius was beaten by that of Antony, and Cassius in despair committed suicide (42 B. C.). His example was followed by Brutus.

CASTELAR (*kăs-tă-lär'*), **EMILIO** (1832–1899). Spanish statesman, orator and professor of history at Madrid, and leader of revolt against King Amadeus. He lived in exile for two years (1866–1868), until the king abdicated and a republic was proclaimed, but this lasted only a few months. Then he became virtually dictator, reformed the army, stopped the encroachments of the church, adopted a firm policy toward Cuba. He resigned after an adverse vote on Jan. 2, 1874, spent fifteen months in exile later, and finally sat in several parliaments.

CASTRO, CYPRIANO (1863–1924). President of Venezuela from 1899 to 1908. Founded a political party, succeeded in displacing Pres. Andrade, after the latter had served one year in office, and in holding the reins till a successful revolution, one of two or three, displaced him in Dec. 1908 in favor of Gomez. Castro tried to avoid claims presented by Great Britain and Germany after the revolution of 1902, and the case was finally taken to the Hague Court of Arbitration.

CATHERINE I. (1682–1727). Empress of Russia. Succeeded her husband, Peter the Great, in 1725. She established a privy council, opposed England indirectly, so that a squadron was sent to the Baltic in 1726, but the queen died before granting any demands.

CATHERINE II., THE GREAT (1729–1796). Empress of Russia; daughter of a Prussian field marshal; born at Stettin; became sole ruler on the death of her husband, Peter III. She was an energetic sovereign and her reign is only second in importance to that of Peter the Great. She founded the Academy and wrote several comedies. She waged war with Turkey (1772–1792) and with Sweden (1790), and as a result of these and the three partitions of Poland she extended her dominions.

CATHERINE OF ARAGON (1485–1536). Queen of Henry VIII. of England, and daughter of Ferdinand and Isabella of Spain; divorced (1533). She was an important factor in the Reformation in England. Since the Pope, after elaborate negotiations, refused to accept the divorce of Catherine as valid, Henry turned away from the Roman church.

CATHERINE DE MEDICI (1519–1589). Queen of France; daughter of Lorenzo de Medici; married Henry, Duc d'Orleans, afterwards Henry II. of France. She attempted to marry one of her sons, the Duke of Anjou, to Queen Elizabeth of England. Failing to gain her ends by moderate means, she countenanced the plot which led to the massacre of St. Bartholomew. Three of her sons ruled France.

CATILINE (*kăt'i-lin*), **(LUCIUS SERGIUS CATILINA)** (about 108–62 B. C.). A Roman noble who conspired against the republic. Governor of Africa in 67 B. C., he aspired for the consulship but was disqualified for maladministration of affairs in his province. He formed a conspiracy of young Roman nobles. This was revealed to Cicero, then consul, by Fulvia. Cicero was to be assassinated as a first step. He was kept so well informed of every step that he was able to protect himself. On November 6, 63 B. C., a meeting of the conspirators was held and new plans evolved. Cicero frustrated them. On November 8, Catiline appeared in the Senate and Cicero launched forth the famous oration against Catiline, exposing the minutest details of the plot. Catiline tried to answer but was mocked. He fled, his fellow conspirators were arrested, and, in the following year, Catiline was defeated and slain by a Roman army.

CATO, MARCUS PORCIUS, THE ELDER (234–149 B. C.). A Roman statesman. Son of a plebeian farmer, he remained a farmer till induced to go to Rome, where he quickly distinguished himself as a lawyer and was finally elected consul (195 B. C.). In 184 B. C. he was chosen censor and given the surname Censor for his thorough work in instituting reforms. In 175 B. C. he was sent to Carthage as mediator but returned, declaring that city Rome's most formidable rival. Thereafter all his speeches in the Senate concluded with "Carthage must be destroyed."

CATO, MARCUS PORCIUS, THE YOUNGER (95–46 B. C.). Roman statesman; in youth a soldier; became questor (65 B. C.); elected tribune (63 B. C.); delivered a famous speech against Cæsar's influence in the conspiracy of Catiline; always an enemy of Cæsar.

CAVOUR (*ká-vōōr'*), **CAMILLO BENSO, COUNT** (1810–1861). Italian statesman, largely responsible for the unification of all Italy. In his early life he turned from a military career to agriculture, but a sojourn in England led him to propose to the king of Sardinia a liberal constitution similar to that of England. It was adopted in 1848, and Cavour held in turn several ministries, culminating in the premiership in 1852. His alliance with Napoleon III. was broken by the latter after Sardinia and Austria went to war. Yet the forces of Austria were forced out of Italy. Cavour, after a year of retirement, joined with Garibaldi in the struggle for unification and freedom from Austria for several smaller states. This culminated shortly before his death, when the first Italian parliament met at Turin.

CECIL (*sĕs'il* or *sĭs'il*), **WILLIAM, LORD BURGHLEY** (1521–1598). Born of yeoman rank in Lincolnshire, he was graduated from Cambridge, with an unusual knowledge of Greek, became an astute courtier and politician, and finally rose to high favor with Elizabeth. He held minor offices with Edward VI. and with Mary, always avoiding extremes of religion and policy. Elizabeth made him secretary of state, a peer in 1571, and the next year lord high treasurer, a position he continued to hold till his death. No man was better fitted in his age to carry out the queen's policy of shrewd intelligence of affairs, watchful waiting, and conciliation of important elements in the realm, at the same time being harsh toward manifest offenders.

CHAMBERLAIN, AUSTEN (1863–1937). Eldest son of Joseph Chamberlain, noted below. Educated at Cambridge, and became in turn civil lord of the Admiralty, financial secretary to the treasury, postmaster general, chancellor of the exchequer, secretary of state for India, member of the war cabinet, 1918, chancellor of the exchequer again, leader of the House of Commons, and then secretary of state for foreign affairs. Thus his influence was felt from 1895 in both politics and affairs of state in England.

CHAMBERLAIN, JOSEPH (1836–1914). English statesman; born in London; thrice mayor of Birmingham before he was returned for Parliament in 1876. Thereafter he was a conspicuous figure in English public life. After the split in the Liberal ranks over Gladstone's Home Rule Bill, he coöperated with the Conservative government. In 1887 he was one of the commissioners sent to Washington in connection with the Canadian fisheries dispute. In 1895 he was appointed colonial secretary, and saw the passing of the Australian Commonwealth Act (1900). His visit to South Africa after the Boer War produced good results. His chief legislative successes are the Bankruptcy Act (1883) and the Workmen's Compensation Act (1897). He retired from the Cabinet in 1903. He was instrumental in founding the Birmingham University (1900), and became its first chancellor. In the defeat of the Unionist party in 1906, Chamberlain returned amazingly triumphant as a member from West Birmingham. In the middle of the session for that year, however, he was stricken with paralysis, and though again elected in 1910 never was able to take any prominent part in affairs. He strongly advocated a preferential tariff for the British dominions.

CHARLEMAGNE (*shär'lĕ-mān*), **or CHARLES THE GREAT** (742–814). King of the Franks after 768 and emperor of Rome from 800 to 814. He was the son of Pipin the Short. He took the eastern or Germanic parts of his father's empire in 768 and his brother took the western part. The brother, Karlman, died in 771 and Charlemagne took the whole empire. He thus shut out the young sons of his brother. Their mother fled to Desiderius, king of the Lombards. This brought on war and after a 10 months' siege of Pavia Desiderius was compelled to retire to a monastery. In 777 Charlemagne proclaimed himself king of the Lombards; confirmed the donation of lands by Pipin to the pope. He had crossed the Alps twice into Italy to reach his enemies. He invaded Spain in 778 and while returning to put down a rebellion of the Saxons his rear guard was attacked and almost annihilated in the pass of Roncesvalles, where Roland, the hero of a voluminous literary legend, fell. He completed the conquest of Spain and in 800 was crowned emperor of the West by the pope at Rome. In 787 he completed the conquest of Lombardy. In 804 he conquered the Saxons, with whom he had waged a long war. His attainments in the promotion of art, literature, religion, and civilization mark him as one of the most illustrious men of the Middle Ages and of all time. He was buried at Aix-la-Chapelle and was succeeded by his son, Louis the Pious.

CHARLES I., CHARLES STUART (1600–1649). King of Great Britain and Ireland; married the French princess, Henrietta Maria; succeeded to the throne (1625). For 11 years he governed without Parliament, levying "tonnage and poundage" (1629), granting monopolies, and exacting fines. His two chief advisers were Laud (archbishop of Canterbury) and Strafford. The latter was impeached by the Long Parliament (1640). The long struggle between the king and Parliament ended in civil war, and the final trial and execution of the king.

CHARLES II., CHARLES STUART (1630–1685). King of Great Britain and Ireland; crowned at Scone, January 1, 1651; invaded England in August, but was routed by Cromwell at Worcester. He was recalled to the throne of his father (1660). In 1662 he married Catherine of Braganza. The Test Act of 1673 was aimed at the king's favoritism of Catholics. The trumped-up plot of Titus Oates (1678–1680) and the Rye House Plot (1683) brought many to the block.

CHARLES V. (1500–1558). Emperor of Germany; king of Spain as Charles I. He summoned the Diet

of Worms (1521) to check the advance of Luther's teachings. He soon was at war with his great rival, Francis I. of France and Pope Clement VII., and in 1527 sacked Rome and took the pope prisoner. The Diet of Augsburg (1530) led to the formation of the Smalkaldic league of Protestant princes. A threatened invasion by the Turks compelled him to conciliate the Protestants. He defeated Barbarossa and captured Tunis (1535), setting free thousands of Christian slaves. Defeated by the Protestants under Maurice of Saxony, he agreed to the treaty of Passau (1552) and to the peace of Augsburg in 1555. In the following year he abdicated in favor of his son Philip.

CHARLES VI. (1368–1422). King of France (1380–1422). Son and successor of Charles V. During his minority he was in the care of his four uncles, of whom the duke of Anjou was regent. In 1388 Charles took the government into his own hands and ruled well until he became insane. A regent was appointed and civil war broke out again. The nation was divided into the parties of Orléans and Burgundy. They each at times called in the aid of the English. Henry V. took advantage of the conflict and won the victory of Agincourt that left France almost helpless in 1415. Massacres and civil war waged until 1420, when, by the treaty of Troyes, Charles disinherited his son and accepted Henry V. as his successor. On his death in 1422 most of France was in the hands of the English.

CHARLES VII. (1403–1461). King of France (1422–1461). Son and successor of Charles VI. All France north of Paris was in the hands of the English, who proclaimed as king Henry VI. of England, then only 18 months old, with the duke of Bedford as regent. In 1427 the French obtained their first successes. In October, 1428, the English besieged Orléans, the most important city held by Charles. In 1429 the French were defeated at Harengs. Then Joan of Arc appeared and raised the siege of Orléans in 1429; Charles was consecrated king at Rheims in the same year; the English gradually lost their possessions; and the duke of Burgundy, their ally, went over to Charles. In 1436 Charles entered Paris and the English gradually lost all of the French possessions except Calais. Charles, during the rest of his reign, vastly improved the condition of his empire.

CHARLES X. (1622–1660). King of Sweden, nephew of Gustavus Adolphus (q. v.), succeeding when Queen Christiana abdicated in 1654. With an immense army he subdued Warsaw and Cracow in Poland, but was forced to retire from the siege of Czenstochow. He made an alliance with Brandenburg, roused the Danes to declare war, and crushed them in 1658 after crossing two arms of the sea on ice, an unheard-of feat up to that time. The Danes had great difficulty to get him to suspend hostilities long enough to grant them an humiliating peace, by which they lost much territory on the Swedish peninsula. Having intended a war against Norway, he died on a journey back to Sweden to get his parliament to grant supplies.

CHARLES XII. (1682–1718). King of Sweden from 1697. Russia, Denmark, and Poland combining against him, he besieged Copenhagen, compelled Denmark to sue for peace, and defeated the Russians. Invading Poland, he forced King Augustus to abdicate. He then marched into Russia, but was routed at Pultowa, and fled for a time to Turkey. He next attacked Norway, but was slain at the siege of Frederikshald.

CHARLES XIV., CHARLES JOHN (1763–1844). King of Sweden and later of Norway and Sweden. As one of Napoleon's generals he was known as Jean Baptiste (Jules) Bernadotte, the son of a French attorney. After a series of brilliant successes in the French wars he became a general in 1794 and minister of war in 1798. On being elected crown prince of Sweden in 1810, he went to Stockholm, changed his name to Charles John, turned against Napoleon, and helped the allies defeat him at Leipzig in 1813. Then he compelled the Danes to give up Norway, which became part of the Swedish kingdom. In 1818 he succeeded Charles XIII., and his reign was peaceful and uncommonly prosperous. Of several attempts by generals of Napoleon to establish a royal house in some foreign land, Bernadotte was the only one who succeeded.

CHARLES MARTEL or **CHARLES THE HAMMER** (689–741). Son of Pipin of Heristal and mayor of the palace under the last of the Merovingian kings of the Franks. He was made mayor of the palace on the death of his father in 714. He conquered the West Franks and became ruler of all the Franks. He is most famous for his wars against the Saracens, who settled in Spain and attempted to cross the Pyrenees and conquer the rest of Europe. He overthrew them in 732 in a great battle near Poitiers in which their chief, Abd-er-Rahman, fell. He defeated them again in 738 and took Languedoc from them. He left his kingdom to his two sons, Karlman and Pipin the Short.

CHARLES THE BOLD (1433–1477). Last duke of Burgundy, son of Philip the Good, in early youth showed military prowess and assumed virtual control with his father's consent in 1465. Much of his reign was taken up with a conflict with Louis XI., the crafty monarch of France, with whom Charles made a brief truce in return for exchange of some of the privileges gained by Louis from Philip. From 1470 on tried to extend his power, but died in battle with the Swiss and Lorraine men before Nancy. Walter Scott's *Quentin Durward* gives a fictional, but picturesque account of these two men, Charles and Louis XI. Charles the Bold has often been called the last representative of the feudal spirit. In private he favored arts and learning, and had a marvelous way of winning his subjects.

CHARLOTTE (1840–1927). Last empress of Mexico, daughter of Leopold I. of Belgium, married to Archduke Maximilian of Austria in 1857, and accepted with him the Mexican crown in 1864. When her husband needed alliance, on the withdrawal of the French troops of Napoleon III. from Mexico, she went to Europe for help, but became insane in 1866, the year before Maximilian was shot, and the rest of her long life was clouded.

CHRISTIAN IX. (1818–1906). He became king after Frederick VII. (who left no direct heirs), by decree of the powers at a meeting in London in 1852, ascending the throne the next year. His reign was troubled with the war with Germany by which Schleswig and Holstein were lost for the time to Denmark, and by troubles with the radical elements, which finally came into power in 1901. Christian is better known now as the father of monarchs: His son became Frederick VIII.; his second son George became king of Greece; his grandson Charles became King Haakon VII. of Norway in 1905 and another became prince and later king Constantine of Greece; his daughter Alexandra became wife of Edward VII. of England, and another, Dagmar, became wife of tsar Alexander III. of Russia.

CHRISTIAN X. (1870–). Became king of Denmark and Iceland on the death of his father Frederick VIII. in 1912. He was immensely popular with his subjects, acknowledged Iceland as an independent kingdom, with crown joined to that of Norway in 1919, and did much to unite the kings of Sweden, Norway, and Denmark in a defensive neutrality during the World War. Slesvig Nord was given back to Denmark after the World War.

CHRISTINA (1626–1689). The daughter of the great Gustavus Adolphus, became queen of Sweden in 1650, but lost her interest in state affairs in favor of literature, relinquished the throne to her cousin Charles Gustavus in 1654, became a Roman Catholic, and lived abroad most of her remaining years. She tried in vain to reclaim the throne after the death of Charles in 1660.

CHURCHILL, WINSTON LEONARD SPENCER (1874–). Entered the army in 1895, and served as war correspondent with the forces of Spain in Cuba, 1895; then in India; and next in South Africa during the Boer War, when he was captured but escaped in about a month, witnessing many important engagements in 1900. Elected to Parliament in 1900; president of the board of trade, 1908–10; home secretary, 1910–11; first lord of the admiralty, 1911–15. Served in France in 1916, and became minister of munitions the next year. Wrote books describing his experiences in various campaigns. He again entered the cabinet as secretary of state for war, 1918–21, was in the Colonial Office the next year, and chancellor of the exchequer, a post held once by his father, in 1924. Later he did much to secure an understanding on international war debts.

CICERO, MARCUS TULLIUS (106–43 B. C.). The greatest orator of Rome and one of the most famous statesmen. Studied law and oratory and traveled abroad; elected questor in 76 B. C.; delivered his six orations against Verres, and was elected consul in

63 B. C. He frustrated the conspiracy of Catiline (see CATILINE); was charged by his enemies with putting citizens to death without trial and was obliged to leave Rome and live in Thessalonica in 58 B. C. He was recalled in 16 months, and, while opposed by his own party, was courted by Pompey and Cæsar. After the battle of Pharsalia he joined Cæsar. In the civil war he supported Octavianus, and denounced Antony in his Philippics. When the triumvirate of Octavianus, Lepidus, and Antonius was formed, Cicero was proscribed and his life was sought. While trying to escape in a covered litter, old and infirm, he was overtaken by soldiers and, without resistance, offered his neck to the executioners.

CINCINNATUS (*sĭn-sĭ-nā'tŭs*), **LUCIUS QUINCTIUS.** A famous Roman patrician. When the consul, Lucius Minucius, was surrounded by the Aequi, Cincinnatus was called from his simple farm life to act a dictator. He saved the consul, and, after a dictatorship of 16 days, retired again and took up his simple life. He was again, at the age of 80, called as dictator in an emergency and suppressed a threatened uprising of the plebeians (439 B. C.).

CLARK, CHAMP (1850–1921). After serving as president of Marshall College, West Virginia, Clark entered the practice of law at Bowling Green, Missouri, where he held several minor offices, served from 1889 to 1892 in the Missouri House, and then from 1893 to 1895 and 1897 to 1919 in the United States House, where he was speaker from 1911 to 1919. He proved himself an impartial and able presiding officer, beloved by all members. In 1912 he led in the Democratic convention for 8 ballots as candidate for president, but finally had to give way before the growing strength of Woodrow Wilson.

CLAUDIUS (*klâ'dĭ-ŭs*) **(10 B. C.–54 A. D.).** Roman emperor after 41, the first one so raised by the soldiers to that rank. He did many things to encourage soldiers, including pay for them, to give more power to his officials, and to build public works, which for 11 years kept 30,000 laborers engaged. He took personal command of the Roman campaign in Britain, but relied too much on advice of his wives, the second of whom finally poisoned him with mushrooms, because she feared Claudius was going to disinherit her son Nero.

CLAY, HENRY (1777–1852). American orator and statesman; born in Hanover County, Va.; admitted to the bar (1797); elected to Kentucky legislature (1803); filled out the unexpired term of John Adair in the United States Senate (1806–1807); elected to the House of Representatives (1811) and was re-elected speaker four times. In 1824 he was a candidate for the presidency, and in 1832 was again defeated as the candidate of the Anti-Jackson Party; was again in the Senate (1831–1842); presidential candidate (1844); re-elected senator (1848). He was known as "The Great Pacificator," and was one of the greatest orators America ever produced.

CLEMENCEAU (*klā-măn-sō'*), **GEORGES** (1841–1929). French journalist, physician, and statesman, born in Vendée, spent four years after 1865 in the United States as a teacher and journalist. He was in the army of Grant at Richmond. Returning to France, he practiced as a physician at Montmartre, of which he served as mayor. He was a member of the Chamber of Deputies from 1876 to 1893 and from 1902 to the close of World War. With Zola he espoused the cause of Alfred Dreyfus, and to defend him founded a daily in 1903, in which Zola's celebrated letter "I Accuse" was printed. For many years Clemenceau had been known as the destroyer of ministries by his oratory, his brilliant editorials, and sympathies for the cause of justice. During his first term as premier from 1906 to 1909, the law separating church and state in France was put into effective operation. In November 1917, after the fall of the ministry of M. Painlevé, Clemenceau again became premier, at the age of 76, and succeeded in uniting the various political elements of France in one grand effort toward victory. Always a dominant figure during these last years, during the Peace Conference his influence was felt as president and spokesman for all of France. Having achieved most of his own ideals, especially in the defeat of Germany and the restoration of Alsace-Lorraine, M. Clemenceau retired to a well earned rest from public life. He spent the last years in writing, just before his death having virtually completed his comments on the World War, especially with regard to the United States.

CLEOMENES III. (*clē-ŏm'e-nēs*) (? –220 B. C.). The last great statesman of Greece. He became king of Sparta about 235 B. C. His efforts toward reform were directed to abolish the office of ephors, restore the kingship, and by reforms to make Sparta the leading power in Greece. Defeated in battle, he fled to Egypt, and finally took his own life.

CLEOPATRA VI. (*klē-ô-pā'trà*) (68–30 B. C.). Queen of Egypt and the most fascinating woman of all time. She was the daughter of Ptolemy XIII., Auletes. She succeeded to the throne in 51 B. C. and shared the government with her younger brother, whom she afterwards poisoned. She captivated Cæsar and, later, Antony. Rome declared war on her and she and Antony were defeated in the sea fight of Actium in 31 B. C. She fled to Egypt and Antony followed. Octavianus, afterwards Augustus, went to Egypt. Cleopatra failed to captivate him and after the death of Antony, fearing that Octavianus would take her to Rome in triumph, she poisoned herself.

CLEVELAND, GROVER (1837–1908). Twice president of the United States, was the son of a Presbyterian minister, Rev. Richard F. Cleveland, stationed at Caldwell, N. J., and later at Fayetteville and Clinton, N. Y. His plan of attending Hamilton College was frustrated when he was sixteen by the death of his father. For a time he taught in the N. Y. Institution for the Blind, where he formed a life-long friendship with Fanny J. Crosby, the eminent hymnist. Later he went to Buffalo, was admitted to the bar, and held several local offices, including that of assistant district attorney, sheriff, and mayor. After two years as governor of New York, in 1884 he was elected president and again for a second term in 1892, serving till 1897. Both as governor and mayor he attained fame for independence, civil service reforms, vetoes of many appropriation bills (especially pension grants), and attempts to place the country on sound financial foundations. When Great Britain seemed to him to interfere too much in affairs of Venezuela, President Cleveland invoked the Monroe Doctrine, and war was narrowly averted.

CLINTON, DE WITT (1769–1828). American political leader; born at Little Britain, N. Y.; admitted to the bar in 1789; member of the United States Senate (1802–1803); thrice mayor of New York, and again state senator (1806–1811); lieutenant governor of New York (1811–1813). He was the chief promoter of the Erie Canal, which for long was derisively known as "Clinton's Ditch."

CLINTON, GEORGE (1739–1812). At first a sea man, a lawyer and assemblyman, a member of the second Continental Congress, he served as a general in the Revolution, first governor of New York, for 18 years in succession, and finally as vice president from 1808 to his death. He was defeated for the presidency by Madison, did all he could to prevent the ratification of the Constitution by New York, because he objected to certain articles, and as president of the Senate in 1811 cast the deciding vote which killed the charter of the Bank of the United States.

CLIVE (*klīv*), **ROBERT LORD** (1725–1774). The creator of the Indian Empire; born at Styche, near Market Drayton. At 18 he went to India and entered the service of the East India Company. He rose from ensign to general by his marvelous energy and skill; won several victories over the French; and in 1757, at the head of only 3,000 British troops, he routed Siraj-ud-Daula and his army of 65,000. He was appointed governor general of India (1765). Two years later he returned to England in broken health.

CLOVIS (*klō'vĭs*), or **CHLODWIG** (about 481–511). Founder of the kingdom of the Franks. He overthrew the Romans and the Gauls in 486, near Soissons, and extended his conquests to the Loire. In 493 he married Clotilda of Burgundy, a Christian princess. In 496, in battle with the Alemanni, being hard pushed, he vowed to accept Christianity if successful. On his victory he kept his vow, and on Christmas Day he and 3,000 followers were baptized. He defeated and slew Alaric II., king of the Visigoths, at Vouillé and added much to his dominions (507–510). He made Paris his capital and died there in 511. His kingdom was divided among his four sons.

COBDEN, RICHARD (1804–1865). An English statesman and economist, known as the apostle of free trade. First brought into public notice by his efforts to abolish the Corn Laws in which, after seven years' hard work, he was successful; elected member of Parliament (1841). His uprightness of character gained for him the respect of continental nations, as

well as of his own country, but he declined all civic honors.

COLLINS, MICHAEL (1892–1922). Irish leader and advocate for freedom. In 1916 he was one of the party at Easter which seized the post office at Dublin, and in 1918 he was imprisoned briefly for treason. Later he was elected to the Dail Eireann, became finance minister, and after the treaty of adjustment with Great Britain, became commander in chief of the forces of the Irish Free State, but was killed in a skirmish with irregulars in 1922.

CONEYBEER (*kŏn'ē-beer*), **FREDERICK WILLIAM** (1859–). South Australian statesman and labor leader. Emigrated from his birthplace, Bristol, England, with his father in 1865; lived in New South Wales till 1881; and then in South Australia became identified with many reform movements, and minister of education, 1908–9, and 1910–12; M. P. for East Torrens, from 1893, except for 1921–24, and speaker of the Assembly for South Australia, 1915–21.

CONKLING, ROSCOE (1829–1888). American political leader, orator, and lawyer; born at Albany, N. Y.; was a representative in Congress (1859–1863 and 1865–1867), and was a member of the Senate (1867–1881). He and his colleague, Thomas C. Platt, resigned in 1881 because President Garfield appointed William H. Robertson, an anti-Conkling man, collector of the port of New York, without consulting them.

CONRAD III. (1093–1152). First German emperor of the house of Hohenstaufen; elected by the anti-papal faction of the German princes (1138); son of Frederick of Swabia. The duchy of Franconia was given to him by Henry V. in return for his help during the civil war. Internecine troubles between the Ghibellines, of which he was the head, and the Guelfs under Henry the Proud of Bavaria and Saxony, never gave him leisure to be crowned in Rome. In 1147, as a result of St. Bernard's preaching, a vast crusade with Conrad at its head set out for the Holy Land, but it ended disastrously.

CONSTANTINE I. (*kŏn'stăn-tĭn*) (1868–1923). King of the Hellenes, succeeded his father George I. in 1913. He was educated in Germany, formed connections with the dynasty there, and in later Balkan wars became very popular at home. Affecting neutrality in 1914, he was influenced by Venezelos (q. v.), to declare sympathy for the western allies in the Dardanelles campaign, and later he was forced to demobilize his army in large part and in 1917 to abdicate, but late in 1920 he returned, though he was forced to abdicate finally in September 1922, retiring to Palermo, where he died.

CONSTANTINE I., THE GREAT (FLAVIUS VALERIUS AURELIUS CONSTANTINUS) (272–337). A Roman emperor (306–337) who served under Diocletian in Egypt, and Galerius in Persia; the latter was jealous of Constantine's father, Chlorus, who had succeeded Diocletian in 305, and attempted to get rid of Constantine, who joined his father in the West and succeeded him (306). This caused a quarrel in which six emperors participated at once. Constantine conquered the West and after Galerius's death (311) defeated Licinius in the East and became sole ruler of the Roman world of which he made Constantinople the capital. He became a Christian and was baptized just before his death. He presided at the first sitting of the Council of Nice (Nicæa) in 325.

CONSTANTINE XI., PALAEOLOGUS. Last of the Byzantine emperors and last of the Palaeologi (1394–1453). The son of Manuel II. Though an intelligent and capable ruler his position was hopeless. Mohammed II. was preparing for the final assault on Constantinople and Constantine's appeal to Christendom was unavailing. After a long siege the city was captured on May 29, 1453. Constantine was slain. Mohammed gave his body fitting burial.

COOLIDGE, CALVIN (1872–1933). Thirtieth president of the United States, was born at Plymouth, Vermont, on July 4, 1872, the son of John Coolidge, farmer and storekeeper. After his graduation from Amherst in 1895 he entered into the study and practice of law at Northampton, Mass., and held various city and state offices. He was city solicitor, mayor, member of the state senate (1912–15, and president, 1914–15), governor for two terms (1919–20), and became vice-president on March 4, 1921. On Aug. 3, 1923, he took the oath of office as president on the death of Warren G. Harding. After completing the Harding term, he was elected president to serve from 1925 to 1929. He retired to Northampton, Mass. resumed his old life there on March 5, 1929, and later did considerable writing. In 1930 Mr. and Mrs. Coolidge made a trip to California and dedicated the Coolidge dam in Arizona.

COOPER, ANTHONY ASHLEY. See SHAFTESBURY.

CORIOLANUS (*kō-rĭō-lē'nŭs*), **GAIUS** or **GNAEUS MARCIUS.** A famous Roman patrician who for his opposition to the plebeians and their tribunes was impeached and banished. He went to live with the Volsci, a neighboring tribe. He led them against Rome (491 B. C.), and at the moment of victory yielded to the prayers of the Roman matrons, headed by his mother and his wife, Volumnia, and her two children. He withdrew his forces and retired to private life.

CORTELYOU, GEORGE BRUCE (1862–1940). After graduating from the Westfield, Mass., Normal school and some years as a principal in New York, and some in business he became assistant secretary and later secretary to Presidents McKinley and Roosevelt, the latter of whom advanced him to three cabinet positions in turn, the new department of commerce and labor, post office, and treasury (1903–09). He was chairman of the Republican Committee from 1904 to 1907, and after 1909 was president of the Consolidated Gas Company of New York, and a director in various other corporations.

CORWIN, THOMAS (1794–1865). American political leader and orator; born in Bourbon County, Ky.; successively a member of Congress (1830–1840), governor of Ohio, United States senator (1844–1850), secretary of the treasury (1850–1853), and United States minister to Mexico (1861–1864). "The most famous stump-speaker of his time."

COSGROVE, WILLIAM THOMAS (1880–). President of the Irish Free State, was born in Dublin, became one of those who refused to follow John Redmond as a leader in 1914, was elected to represent Kilkenny in 1917, and minister of local government later. On the death of Griffith and assassination of Collins, provisional presidents, Cosgrove rose to become head of the Irish State. His administration organized order out of chaos in Ireland.

COSTIGAN, JOHN (1835–1916). Canadian statesman, who served in the House of Commons from 1867 to 1898. He was active in securing more liberal educational privileges for those of Catholic faith. Minister of inland revenue, secretary of state, and minister of fisheries and marine, 1882–1896. Afterward identified with large business enterprises.

COX, JAMES MIDDLETON (1870–). American governor and presidential candidate, became a journalist on the Cincinnati *Inquirer* and later purchased several papers in Ohio and the Miami, Fla., *Metropolis*. He served in Congress from 1909 to 1913, was governor of Ohio from 1913 to 1915 and 1917 to 1921. Many important reform measures were passed while he was chief executive of Ohio, including some of benefit to labor. In 1920 as Democratic candidate, he received 127 electoral votes to 404 for Harding, and a popular vote of nine millions compared with sixteen for his rival.

CRASSUS (*krăs'ŭs*), **MARCUS LICINIUS** (? –53 B. C.). A Roman triumvir. He helped Sulla at the battle of the Colline Gate in 82 B. C., when the fate of the Marian party was sealed. He crushed Spartacus and the gladiators in 71 B. C., and in 70 B. C. was made consul with Pompey, whom he hated. Crassus was the most wealthy of the Roman citizens and Caesar courted him. While consul, Crassus gave a dinner to the people, which was spread on 10,000 tables, and distributed to each person a supply of corn for three months. Plutarch says Crassus had 7,000 talents (about $8,260,000); Pliny says his lands were worth 8,000 talents ($9,440,000). In 60 B. C. he formed with Pompey and Caesar the first triumvirate. In 55 B. C. as consul with Pompey he obtained the province of Syria, and prepared a campaign there. He was defeated by the Parthians and betrayed into a conference with the general, Surenas, by whom he was slain.

CRISPI (*krēs'pē*), **FRANCESCO** (1819–1901). Italian statesman and one of the leaders in the movement for a united Italy. He became a journalist, a lawyer, a revolutionary leader, but had to flee from Sicily to France, to England, and other countries. At first a republican, he became a monarchist that Italy might be united. With Garibaldi and others

he entered Sicily in 1859–60, and later became deputy, president of the chamber, and premier of the new Italy. After 1898 he lived in retirement. He did much to increase the prestige of Italy abroad and strongly favored an entente with Germany and Austria.

CROCKETT, DAVID (1786–1836). American pioneer, politician, and humorist; born at Limestone, Tenn.; member of Congress (1827–1829 and 1831); took part in the Texan War and was killed in the Alamo (March 6, 1836). His oft-quoted motto was, "Be sure you are right, then go ahead." He is said to have written or dictated *A Life of David Crockett*, which was published in 1835, but two or three other continuations are probably forgeries.

CROESUS (*krē'sus*) (590–546 B. C.). Last king of Lydia; son of Alyattes; renowned for his vast wealth; declared war on Cyrus, king of Persia, the oracle of Delphi assuring him that he would destroy a great empire, but his own empire paid the penalty. He was defeated and captured.

CROKER, RICHARD (1843–1922). New York politician and leader of Tammany (1886–1902); succeeded John Kelly; conducted mayoralty campaigns of Hugh Grant (1889), Thomas F. Gilroy (1893), and Robert Van Wyck (1897); supported Bryan for president (1900); retired after Seth Low's election (1902); freeman of Dublin (1908).

CROMER, EVELYN BARING, first Earl of (1841–1917). British soldier and statesman, often called the "maker of Egypt." After a brief military career, he became secretary to the earl of Northbrook, commissioner of the debt of Egypt, placing the finances of that disordered land on a firm basis, controller-general, and finally consul general for England from 1883 to 1907, in which position he attained power next to that of a viceroy.

CROMWELL, OLIVER (1599–1658). The great protector; born in Huntingdon, England. At the outbreak of the Civil War he joined the Parliamentary forces as a cavalry captain (1642) and rose to be the greatest English military leader of the time, as was demonstrated at Marston Moor (1644), Newbury (1644), Naseby (1645), Preston (1648), Dunbar (1650), and Worcester (1651). He was equally distinguished as a statesman, and safeguarded English liberties. He signed the death warrant of Charles I. (1649), and was elected protector. Summoned to Scotland, when Charles II. had been proclaimed king, he defeated the Scots at Dunbar (1650) and at Worcester (1651). He dissolved Parliament in 1653 and relied upon the support of the army.

CROMWELL, THOMAS (c. 1485–1540). Influential minister and confidant of Henry VIII., Cromwell succeeded in getting several notable men degraded or dismissed, but he finally went too far and was executed after he lost the favor of the king. He served Wolsey till the latter's fall, as one of the chief agents in the Reformation, and in the dismantling of some of the monasteries, Lord Privy Seal, Lord Chamberlain, and Earl of Essex. Shakespeare's **Henry VIII.,** Act 3, has reference to Wolsey and Cromwell.

CURZON (*kûr'zŏn*), **GEORGE NATHANIEL** (1859–1925), first Baron Curzon of Kedelstone. During the earlier part of his career, he traveled widely in Asia, writing as a result three important books on the Far East. He became secretary of foreign affairs in 1895, governor general of India from 1899 to 1905, an ally of Lord Lansdowne, gave much attention to reform at Oxford as chancellor, joined the Asquith cabinet as lord privy seal, and was president of the Air Board. Later he showed great ability in trying to adjust the troubles over Turkey and Russia, but was disappointed that he did not receive an important post in either of the Baldwin cabinets. Lord Curzon married twice, each time an American lady.

CYRUS THE GREAT. The founder of the Persian Empire and the conqueror of Babylon (600–529 B. C.). He was the son of Cambyses and grandson of Astyages, whose kingdom he overthrew, and gained the mastery of Media before 550 B. C. He vanquished Crœsus, king of Lydia, in 546 B. C.; conquered Babylon, sending Nabonidus into exile and putting his son, Belshazzar, to death in 539 B. C. He set the captive Jews at liberty in 537 B. C. He fell, fighting, in 529 B. C. in a war against either the Scythians or an Indian tribe. The details of his reign are recorded upon the famous cuneiform cylinder found a few years ago. Xenophon made him the hero of his *Cyropædia*, a famous historical romance.

DALE, SIR THOMAS (? –1619). A colonial governor of Virginia (1611, 1614–1616), whose administration was noted for pitiless severity. His laws were known as "Dale's Code," and the colonists referred to the years 1611–1616 as their "five years of slavery." As commander of the English fleet, he defeated the Dutch near Batavia in the East Indies in 1618, and died the next year at Masulipatam.

DALLAS, ALEXANDER JAMES (1759–1817). An American politician; born in the island of Jamaica; educated in Great Britain, and removed to Philadelphia (1783). Secretary of the treasury in Madison's cabinet (1814–1816); secured the passage of an act to incorporate a new United States bank (1816); was secretary of war as well as of the treasury (1815–1816).

DALLAS, GEORGE MIFFLIN (1792–1864). American statesman and diplomat; United States senator from Pennsylvania (1831–1833); attorney general of Pennsylvania (1833–1835); American minister to St. Petersburg (1837–1839); vice-president of the United States (1845–1849); cast the deciding vote for the tariff bill (1846); minister to England (1856–1861).

DAN'DOLO, ENRICO (1108–1205). Doge of Venice (1192); member of one of the 12 great families of Venice. He helped the Fourth Crusade with money and ships, and was present at the siege of Constantinople. He is the "blind old Dandolo, the octogenarian chief, Byzantium's conquering foe" of Byron's *Childe Harold.*

DANIELS, JOSEPHUS (1862–). Secretary of the Navy under Wilson, 1913–1921. Trained for the law, but entered journalism instead and became editor of Raleigh, N. C., *State Chronicle* in 1885, which was consolidated with three other papers eventually, under the name of *News and Observer.* Member Democratic National Committee from 1896 to 1916. He advocated a large and effective navy.

DARIUS I. (*dā-rī'ŭs*), or **DARIUS HYSTASPES.** Darius is the title of several Persian kings and is used much the same as Pharaoh or Cæsar by the Egyptians and the Romans respectively. Darius Hystaspes, the first of the line, reigned from 522 to 486 B. C. He led a plot to murder Smerdis and gained the throne. Under him the kingdom was divided into 20 satrapies or provinces ruled over by satraps. Inscriptions record nine or ten rebellions against Darius. He besieged Babylon unsuccessfully for two years, after which his general, Zopyrus, took it in 516 B. C. by stratagem. He began the great rock inscription at Behistun in 514 B. C. and thus recorded the chief events of his reign. In 513 B. C. he crossed the Bosporus with 700,000 men on a bridge of boats and reached the Danube in an unsuccessful campaign against the Scythians. He sent 80,000 men to conquer Thrace. In 501 B. C. the Ionian cities in Asia Minor revolted; the Athenian forces helped them; Sardis was burned and Darius resolved to invade Greece to punish them. In 492 B. C. he sent Mardonius with a fleet to attack Thrace and Macedonia and at the same time directed a fleet against Greece. The fleet was shipwrecked and dispersed. In 490 B. C. he tried again, but his army was defeated by the Athenian force under Miltiades at Marathon and the fleet was also beaten. While preparing for a third attempt, Darius died in 486 B. C., and was succeeded by his son, Xerxes.

DARIUS III., CODOMANNUS. The great-grandson of Darius II. He came to the throne in 336 B. C. Early in his reign Alexander the Great of Macedon defeated him at Issus (333 B. C.), capturing his mother, wife, and three children. He was again beaten by Alexander at the battle of Gaugamela near Arbela in 331 B. C., after which Darius fled to Ecbatana; thence he went to the northern provinces, where he was seized by Bessus, the satrap of Bactria. Alexander in a fit of generosity went to attack Bessus and to relieve Darius. Bessus fled, and, on the refusal of Darius to accompany him, stabbed him. The scouts of Alexander found Darius dying. Alexander had him buried in the royal tomb. With his death the Persian Empire came to an end.

DAUNOU, PIERRE CLAUDE FRANCOIS (1761–1840). French statesman; born at Boulogne-sur-mer; entered the Congregation of the Oratory (1777); member of National Convention (1792); opposed execution of Louis XVI.; refused to support proscribing of Girondists. Imprisoned and narrowly escaped death. First president of the Council of Five Hundred.

DAVIES, LOUIS HENRY (1845–1924). Canadian statesman and authority on fisheries. In 1882 he en-

tered Parliament, in 1896 became minister of fisheries, in 1901 a judge of the supreme court of Canada. In 1877 he was counsel for Great Britain in the fisheries arbitration at Halifax, in 1897 with Sir Wilfrid Laurier represented his country in the Bering sea case, and in 1898–1899 was a member of the Anglo-American commission. In 1918 he became chief justice and a member of the council of Canada.

DAVIS, JEFFERSON (1808–1889), An American statesman and president of the Confederate States; born in Kentucky; was graduated at West Point (1828); took part in the Black Hawk and Mexican wars; Mississippi member of the United States Senate (1847–1851). In 1851 he ran unsuccessfully for the governorship of Mississippi; was secretary of war in Pierce's Cabinet (1853–1857); reëlected to Senate (1857). He was preëminently the spokesman of the Southern States, of which he was elected provisional president (1861) and definitely elected for six years (1862). He held office throughout the Civil War; was captured near Irwinville, Ga., on May 10, 1865, and for two years imprisoned at Fortress Monroe, where he awaited trial for treason. He was released on bail, and though indicted for treason proceedings against him were abandoned. After 1879 he retired to an estate in Mississippi, where he passed the remainder of his life. He published the *Rise and Fall of the Confederate States* (1881).

DAVIS, JOHN WILLIAM (1873–). American lawyer and public official, a West Virginian by birth, received his college training at Washington and Lee University, taught law there for a year, and was a member of a prominent law firm in Clarksburg, West Va., from 1897 to 1913. Having been a member from West Virginia in Congress from 1911 to 1913, he resigned to become solicitor general of the United States, a position he held from 1913 to 1918. He was Ambassador to Great Britain from 1918 to 1921; counsellor of the Red Cross from 1913 to 1918; and a member of the commission appointed to negotiate with the Germans for the exchange of prisoners after the World War. President of the American Bar Association, 1922. Mr. Davis, as Democratic candidate for the presidency in 1924, received 136 electoral votes to 382 for Mr. Coolidge.

DAVITT (*dăv'ĭt*), **MICHAEL** (1846–1906). Irish nationalist leader. At eleven years of age he lost his right arm in a cotton mill accident while at work there. Becoming a Fenian in 1865, he was arrested in 1870, convicted, and served seven of a fifteen-year sentence for treason, and afterward he served two short terms for similar offenses. After residing in the United States, he persuaded Parnell to join in the land and the freedom questions, but later they divided on questions of policy. Later he helped form the United Irish League. Davitt was an energetic, sincere and able advocate of freedom by peaceful and constitutional means. In later life he allied himself with some of the socialists.

DAWES, CHARLES GATES (1865–). American financier and vice-president, was graduated from Marietta College, practiced law in Lincoln, Nebr., from 1887 to 1892; and then engaged in business and banking interests in Evanston and Chicago, Illinois. Assisted in the movement resulting in the nomination of William McKinley for the presidency in 1896. Controller of the Currency, 1897–1902. Since 1902 served as chairman of the board, Central Trust Company of Illinois. Served in the engineering corps during the World War, attaining the rank of brigadier general in October, 1918, but resigned from the Army in 1919, and returned to the United States. Director of the Federal Budget in 1921 and president of commission to inquire into the ability of the Germans to manage a budget. Elected vice-president in 1924. Awarded half of the Nobel peace prize with Austen Chamberlain in 1925, Dawes gave his portion toward the endowment of the Walter Hinds Page School of International Relations. In 1929 he became Ambassador to Great Britain.

DAY, WILLIAM RUFUS (1849–1923). American statesman; born at Ravenna, Ohio. Judge of the Court of Common Pleas (1886); secretary of state to succeed John Sherman (1898); chairman of the United States Peace Commission at Paris to arrange terms of peace with Spain (1898); judge of the United States Circuit Court (1899); associate justice of the Supreme Court 1903–1922, when he resigned.

DEAK (*dā'ăk*), **FRANCIS** (1803–1876). Hungarian statesman who counseled moderate measures in the stormy days of the struggle with Austria. He always opposed the extremes of Kossuth and his party. In 1848 he became minister of justice, but resigned when he saw conciliation doomed to fail. From 1848 on he lived in Pest, and it was chiefly through his efforts from 1857 on that at last, ten years later, secured Hungary a rightful place in the union with Austria. As an orator and logician he had few equals in Europe in his age.

DEAKIN (*dē'kĭn*), **ALFRED** (1856–1919). Australian statesman who served from 1883 in various important posts in the government. In Victoria he advocated various reforms, always stood by the British idea of the dominions, and served thrice as premier of the Federated commonwealth, at times from 1903 and 1910, after which he became opposition leader. He advocated an Australian navy.

DELAWARE or **DE LA WARR, THOMAS WEST, THIRD BARON** (1577–1618). Colonial governor of Virginia; born in Hampshire, England; succeeded to the peerage in 1602; in 1610 was appointed the first governor of Virginia and captain general for life. The state, bay, and river of Delaware perpetuate his memory.

DENNISON, WILLIAM (1815–1882). An American politician, "War Governor" of Ohio; born in Cincinnati. Governor of Ohio (1860–1864). At one time when 11,000 troops were called for, Governor Dennison raised over 30,000. From 1864 until 1866 he was postmaster general in the cabinets of Lincoln and Johnson. One of the earliest of the prominent politicians to join the Republican Party and was chairman of the Republican National Convention in 1864.

DEPEW, CHAUNCEY MITCHELL (1834–1928). American lawyer, railroad president, politician, and orator; born in Peekskill, N. Y. In the State Assembly (1861–1862); secretary of state for New York (1863–1865); president of the New York Central (1885–1898); United States senator (1899–1911). After his retirement he spent his remaining years in business.

DERBY, EDWARD GEOFFREY SMITH STANLEY, FOURTEENTH EARL OF (1799–1869). A celebrated English orator and statesman, "The Rupert of debate"; was Irish secretary in Earl Grey's ministry. When Peel proposed to amend the Corn Laws he became leader of the Protectionists and the Conservative Party; was premier in 1852, 1858, and again in 1866; resigned in favor of Disraeli (1868).

DE VALERA (*dĕv-ă-lē'rà*), **EAMON** (1882–). Irish leader, born in New York of a Spanish father and Irish mother, he taught in Dublin, was one of the insurgents in 1916, was condemned to long imprisonment, but pardoned in the general amnesty of 1917. Later he formed a Republican party, became its first president, and escaped from prison to raise money for the cause in the United States. In 1921 he refused to sign the treaty granting an Irish Free State, endorsed by his two colleagues, resigned from the Dail, continued to agitate as a Republican, but in 1924, with some of the former party men, took the oath of allegiance.

DE WET (*dē vĕt'*), **CHRISTIAN** (1854–1922). Boer general in the South African War of 1899–1902, during which he ably led a party of natives in various raids, and always eluded the English forces. He was a peace commissioner in 1902, visited England with the other generals, in 1907 became a member of the legislature of the Orange River colony, serving as minister of agriculture. After acting as a unionist, he became a separatist in the negotiations regarding the Union of South Africa, and in 1914 refused to coöperate. He was finally convicted of treason, but his fine and sentence were commuted when he agreed to cease obstructive activities.

DE WITT (*dē vĭt'*), **JAN** (1625–1672). Dutch statesman; born at Dort; became grand pensionary of the United Provinces of the Netherlands (1653). During the war with England his influence waned, and the Orange party he had so strenuously opposed elected Prince William of Orange as Stadtholder. With his brother, Cornelius, he was murdered during a popular tumult.

DIAZ (*dē'ăs*), **PORFIRIO** (1830–1915). Mexican soldier and statesman; born at Oaxaca; enlisted in the army during the war with the United States, but saw no active service; studied law in the Institute of Arts and Sciences, Oaxaca, where he afterwards became professor of Roman law. He commanded a battalion in the revolt against Santa Anna (1854);

became chief of a brigade in the War of the Reform (1859); was promoted to general during the War of the Intervention, and was taken prisoner on the capture of Puebla by the French (May, 1863). He escaped and was made commander in chief; defeated Marquez and secured the surrender of Mexico City (June 21, 1867), which marked the end of Maximilian's Empire. In 1872 and 1876 he led the revolutionary forces or "Porfiristas" against the government. In November, 1876, he was made provisional president, and in April, 1877, was elected for a term ending 1880. Ineligible for immediate re-election, he gave place to his secretary, General Gonzalez, but was again made president (1884), and the constitution having been amended he was continuously re-elected without opposition until 1910; a revolution followed and he resigned May 26, 1911. He gave Mexico a new international standing, and his presidency marked an epoch of progress and pacification.

DIDO. A queen of Carthage in the north of Africa. She was the daughter of Agenor or Belus, a king of Tyre. His successor, Pygmalion, brother of Dido, murdered her husband, Sichaeus. She fled from Tyre with her husband's treasure, accompanied by many Tyrians, and founded the city of Carthage. Vergil makes Aeneas stop at Carthage and relate to Dido his misfortunes at Troy. She is there represented as killing herself on a funeral pyre through grief at her unrequited love for Aeneas. It is now believed that Carthage was built more than 150 years before the founding of Rome.

DIEMEN, ANTON VAN (1593–1645). A Dutch administrator; rendered conspicuous service in the Dutch Indies and was made governor general. The name Van Diemen's Land (Tasmania) was given by Abel Tasman to the island discovered by him in 1642, while voyaging on behalf of Van Diemen.

DILLON, JOHN (1851–1927). Irish leader, born in Dublin, represented Tipperary at first and then continuously East Mayo in Parliament. In 1889 he collected funds in New Zealand and Australia, but, on returning to Ireland, was arrested, escaped with W. O'Brien, and went to the United States. When Healy withdrew from the Irish National Federation, Dillon became chairman. In 1905 he advised his followers to vote to support the English Liberal government, and in 1912 to center their attack on the House of Lords. During the World War he actively supported the British government, becoming leader of his party to replace Redmond, but in 1918 he shared the defeat of the Nationalists.

DINGLEY, NELSON, JR. (1832–1899). American congressman; born in Durham, Maine. Editor of the Lewiston *Journal* (1856–1886); in the state Legislature (1862–1873); speaker (1863–1864); governor (1874–1875); in Congress from 1881 until his death. He was the framer of the tariff bill of 1897, which bears his name.

DIOCLETIAN (*dī-ō-klē'shăn*) (245–313). Roman emperor, elevated by the soldiers after the murder of Numerianus. He virtually deprived the senate of power, established a huge bureaucracy, divided the empire into four parts, confirming a ruler in three to act with himself, but after nine years (305) he retired and lived at Salona. Terrible persecutions marked the last of his reign, his object being to try to revive the old religion.

DIONYSIUS (*dī-ō-nĭsh'us*) **THE ELDER** (431–367 B. C.). Tyrant of Syracuse; made himself tyrant of the city in 406 B. C.; captured Rhegium (387 B. C.) and ruled the southern corner of Italy. Under his rule Syracuse became one of the most brilliant of the Grecian cities.

DIX, JOHN ADAMS (1798–1879). American statesman and soldier; born at Boscawen, N. H. Served through the War of 1812; was a prominent member of the Albany Regency; member of the Assembly of New York (1842); United States senator (1845–1849); secretary of the treasury under Buchanan (January to March, 1861); major general of volunteers (1861); minister to France (1866–1869); governor of New York (1873–1875).

DOLE, SANFORD BALLARD (1844–1926). A Hawaiian statesman; born of American parents in Honolulu; admitted to the bar in Boston, Mass.; judge of the Supreme Court of Hawaii (1887–1893); when the kingdom was overthrown (1893) he became president of the provisional government; president of the Hawaiian Republic (1894). President Cleveland's intention of restoring Queen Liliuokalani was defeated by Dole. In 1898 he was a member of the commission for suggesting legislation for Hawaii; and in 1900, after annexation, was governor. From 1903 to 1915, when he retired, he was United States district judge of Hawaii.

DOLLIVER, JONATHAN PRENTISS (1858–1910). American senator, born in West Virginia and graduated at the state university, established a law practice at Fort Dodge, Iowa, in 1878. He served in Congress from 1889 to 1910, when he became senator, known for his independence and great ability in speaking. With A. B. Cummins, his colleague, he opposed several administration policies, mainly the Payne-Aldrich tariff.

DOMITIAN (*do-mĭsh'ăn*) **(TITUS FLAVIUS DOMITIANUS)** (51–96). Roman emperor (81–96); was the son of Vespasian and younger brother of Titus. The earlier years of his rule were marked by beneficence and wisdom; but through the failure of campaigns, especially against the Dacians, he grew embittered and ruled cruelly and tyrannically. He drove nearly all good men from Rome; paid the soldiers enormously; and pacified the people with expensive games and gladiatorial combats. He was stabbed to death in his bedroom by a freeman named Stephanus.

DONGAN, THOMAS, EARL OF LIMERICK (1634–1715). A colonial governor of New York; born in County Kildare, Ireland. Appointed governor of New York (1682); granted a charter to the city of New York and another to Albany, which remains the basis of municipal rights.

DORION, SIR ANTOINE AIME (1818–1891). A Canadian politician; born in Sainte Anne de la Perade. Member of the Canadian Assembly for Montreal (1854–1861) and for Hochelaga (1862–1867); member of the Dominion Parliament (1867–1874); leader of the Rouge or French-Canadian Liberals; held several cabinet offices; after 1874 was chief justice of Quebec; knighted in 1877.

DOUGLAS, STEPHEN ARNOLD (1813–1861). American statesman; born in Brandon, Vt. He represented Illinois in both houses of Congress, and was a member of the Senate from 1847 to his death. His re-election in 1858 was unsuccessfully contested by Lincoln. In 1860 the democratic Convention being divided on the slavery question, he was nominated by the moderates while John C. Breckinridge represented the extremists, he obtaining the largest popular vote next to Lincoln. When the South seceded he came to the support of Lincoln's government. "There can be no neutrals in this war," he said. His small stature and indomitable pluck gained him the title of "The Little Giant."

DOUMERGUE (*dōō'mĕrg'*), **GASTON** (1863–1937). Twelfth president of the third French Republic, held appointments in Cochin China and other places, was minister of colonies in 1902–05, and vice president of the Chamber. After holding several cabinet posts, including the ministry of education in the Briand and Clemenceau cabinets, he became a senator, and in 1913 premier, but his government fell a year later on the issue of military service for three years. During the first three years of the World War, he was again minister of colonies, and after an interval, again president of the senate, and finally in 1924 president of France.

DRACO. An Athenian legislator who put into form, about 621 B. C., the common law of Athens. As the penalties seemed severe to later ages it has been said that his laws were written not in ink but in blood. Draco is said to have died in a theater in Aegina from suffocation by the garments of the people thrown upon him as a mark of respect.

DUDLEY, THOMAS (1576–1653). Second colonial governor of Massachusetts; born in Northampton, England. Came to the Massachusetts Bay Colony (1630) as deputy governor under Winthrop (1630–1643); governor of the colony four times (1634, 1640, 1645, and 1650); was the chief founder of Newtown (now Cambridge, Mass.), and took an active part in founding Harvard (1636). His daughter was Anne Bradstreet, the poetess.

DUFFERIN (*duf'ĕr-in*) **AND AVA, FREDERICK TEMPLE HAMILTON BLACKWOOD, MARQUIS OF** (1826–1902). British statesman and diplomat. Governor general of Canada (1872–1878); ambassador to Russia (1878–1881); to Turkey (1881–1884); governor general of India (1884–1888); ambassador to Italy (1888–1891); to France (1891–1896). His

last years, spent largely on his Irish estate, were rendered unhappy by the death of his eldest son and by business reverses.

DUNMORE, JOHN MURRAY, EARL OF (1732–1809). English governor of New York in 1770, of Virginia 1771–1776. He dissolved the native assembly on three occasions, and in 1775 removed the powder from the magazine at Williamsburg, followed by his removal of the government to a warship in the harbor of Yorktown. He was charged with stirring up an Indian war largely for profit. From 1787 to 1796 he was governor of the Bahamas.

DURHAM, JOHN GEORGE LAMBTON, FIRST EARL OF (1792–1840). English statesman who was lord privy seal in the cabinet of Lord Grey, his father-in-law in 1830. Did much to secure the passage of the Reform Act in 1832, and accomplished a difficult mission to Russia shortly afterward. He was made governor-general of Canada in 1837 shortly after Papineau's rebellion had been quelled. For granting amnesty to all but 15 persons besides Papineau, he was censured, and then resigned, but attempted to justify his conduct while still in Canada. His *Report* to Parliament is a great state document. Then rejected, it later formed the basis for the colonial government of Great Britain. Durham also was instrumental in securing English claims to New Zealand in 1839.

EDMUND IRONSIDE (about 981–1016). English king; son of Ethelred II.; great opponent of Canute and the Danes. At his father's death the Danes proclaimed Canute king, but the people favored Edmund; defeated by Canute at Assandun or Ethandun. The kingdom was divided, but, Edmund dying, Canute became sole king.

EDMUNDS, GEORGE FRANKLIN (1828–1919). American legislator, and author of the "Edmunds Act," or Anti-Polygamy Act of 1882, and another similar act of 1887. Member of the Electoral Commission (Hayes-Tilden) of 1877; United States senator from Vermont (1866–1891); president pro tem during Arthur's administration. Afterward he attained considerable fame in Philadelphia as a constitutional lawyer.

EDWARD THE CONFESSOR (about 1004–1066). King of England. He was the elder son of Ethelred the Unready. His mother, Emma, was married to Canute and thus Edward was the half-brother of Hardecanute, the last of the Danish kings of England. Edward lived in Normandy during the Danish possession of England. On the death of Hardecanute in 1042, Edward was chosen king. Earl Godwin was the real power during the reign. Edward passed his time in study and in religious works. He caused Westminster Abbey to be built. As his life had been spent in Normandy, his reign really prepared England for the Norman Conquest which immediately followed.

EDWARD I. (1239–1307). King of England (1272–1307). The eldest son and successor of Henry III. He was taken prisoner with his father at the battle of Lewes (1264), but escaped and defeated his enemies at the battle of Evesham (1265). He went to the Crusades (1270), and reached home in 1274, two years after his father's death. He waged war for 10 years with the Welsh, during which the famous Prince Llewellyn was slain. It ended in the annexation of Wales (1282). He next undertook the conquest of Scotland, in which he was opposed by Robert Bruce and Sir William Wallace. He carried off from the castle of Scone the famous stone upon which kings were crowned and which now stands in Westminster Abbey. While the king was on his way to chastise Bruce, he was taken ill and died. Edward was a great ruler and introduced sound financial, legal, and legislative reforms.

EDWARD II. (1284–1327). King of England (1307–1327). Son and successor of Edward I. On his father's death he gave up the conquest of Scotland. His early reign was contemptible and he became involved in a quarrel with his nobles over unworthy favorites. In 1314 Edward invaded Scotland with a large army and was met and defeated by Bruce with a small army at Bannockburn. In 1319 he concluded a peace with the Scotch for two years. He then became involved in another quarrel with his nobles and was taken prisoner. After a period of imprisonment he was murdered in Berkeley Castle in 1327. Edward II. was the first Prince of Wales, created in 1301.

EDWARD III. (1312–1377). King of England (1327–1377). Son and successor of Edward II. His mother and Mortimer ruled the kingdom until 1330, when Edward seized Mortimer and put him to death and imprisoned his mother, Queen Isabella. The Scots were defeated at Halidon Hill (1333). The Hundred Years' War began in 1337. Edward claimed the throne of France through descent from his mother, Isabella, daughter of Philip the Fair, whose sons were all dead. The French pleaded the Salic law and war began. The French were defeated at Cressy or Crécy (1346), where Edward the Black Prince showed remarkable bravery. Calais was reduced by the English and a nine months' truce concluded. In England the Scots were defeated at Neville's Cross (1346) and David II. taken prisoner. In 1356, at Poitiers, the English under the Black Prince defeated the French, and King John of France was taken prisoner.

EDWARD IV. (about 1442–1483). King of England (1461–1483). Son of Richard, Duke of York, who was the grandson of Edward III. His father was killed in the battle of Wakefield Green (1460). After routing the Lancastrian forces at the battle of Mortimer's Cross (1461), he marched to London and was crowned king. He defeated the Lancastrians at Towton (1461). He gave offense to the nobles by his marriage and Warwick raised an army which drove him out of England and Henry VI. was restored (1469). Edward returned in 1471 and met Warwick's forces at Barnet, where Warwick was defeated and slain. There was a steady growth of the constitution in this reign. Printing and silk making were introduced. Direct pleading in courts was adopted.

EDWARD V. (1470–1483). King of England (though never crowned). He was the son of Edward IV. and was 13 when his father died. He was taken care of by his uncle, Richard, Duke of Gloucester, who made himself protector of the kingdom. He confined Edward and his younger brother, the duke of York, in the Tower, where they were smothered by the uncle's commands. In the reign of Charles II., skeletons were found at the foot of the White Staircase in the Tower which were recognized as those of the young princes.

EDWARD VII. (1841–1910). King of Great Britain, Ireland, and British Dominions beyond the Seas (1901–1910); emperor of India; eldest son of Queen Victoria and the Prince Consort; born at Buckingham Palace, November 9, 1841. In 1860 he visited Canada and the United States, his visit to Washington's tomb creating a deep impression. Two years later he visited the Holy Land, and on March 10, 1863, married Princess Alexandra of Denmark. During his mother's long reign the Prince's career was one of great public activity and usefulness, while he frequently acted for the Queen in ceremonial and other public duties. In 1869 he visited Egypt and Ireland. In November, 1871, he was stricken with typhoid fever, and his life was for a time despaired of. He visited India in 1875 and Ireland in 1885. On the death of Queen Victoria (January 22, 1901) he became king. His numerous visits to the Continent did much to foster international good will. The Anglo-French *entente cordiale* is mainly due to his personal efforts, while his visit to Germany in the beginning of 1909 did much to bring about a better understanding between the two nations. The king's unfailing tactfulness and diplomacy obtained for him the title of "Edward the Peacemaker."

EGBERT (? –839). A king of the English. In 802 he became king of the West Saxons (Wessex). Between 825 and 829 he conquered the other kingdoms of England and compelled them to acknowledge him as their overlord. He thus became the first king of all England. Toward the latter part of his reign he was involved in war with the Danes. He was defeated by them in 835, but in 837 was victorious over them.

ELGIN, JAMES BRUCE, EIGHTH EARL OF (1811–1863). An English statesman; governor general of Canada (1847–1854); settled the free trade and fishery questions with the United States; consummated the Tientsin Treaty with China (1858); postmaster general of England; viceroy of India (1862 until his death).

ELIZABETH (1533–1603). Queen of England; daughter of Henry VIII. and Anne Boleyn; ascended the throne on the death of Mary (November 17, 1558). Her reign was one of the greatest in history. She placed the Protestant religion on a sure footing,

repulsed the Armada, promoted exploration and colonization, and was a great patron of letters. Mary, Queen of Scots, was executed, having been proved privy to a plot against Elizabeth. The reign is celebrated for the mighty outburst of intellectual energy, represented by the immortal names of Shakespeare, Spenser, Marlowe, Raleigh, Sidney, and Bacon. The personal character of Elizabeth has puzzled the historians. She was widely learned, brilliant, witty, but capricious, headstrong, and at times cruel. Vanity in dress was one of her great weaknesses. As a diplomatist she showed great acumen, keeping even the wisest guessing as to her intentions, especially in early years as to whom she might marry. By playing one interest against another and one suitor against the rival, she kept things in suspense, and likewise by steering a middle course in state craft, she kept factions down and herself, the court, and the land in the foreground.

ELIZABETH PETROVNA (1709–1762). Empress of Russia; daughter of Peter the Great and Catherine I.; succeeded to the throne (1741). She aided Maria Theresa in the War of the Spanish Succession, and in the Seven Years' War frequently defeated Frederick the Great. She was able, and on occasion energetic, literature and art owing much to her patronage. She formed an offensive alliance with Austria against Prussia, but played France against Austria without knowledge of the latter.

ELLENBOROUGH, EDWARD LAW, FIRST EARL OF (1790–1871). An English statesman; entered Parliament (1813); appointed governor general of India (1841), but recalled in 1844. Subsequently he was made first lord of the Admiralty and Indian minister by Lord Derby. He was one of the most distinguished orators of his day.

ENDICOTT, JOHN (1588–1665). One of the founders, and for many years a governor, of the colony of Massachusetts; born at Dorchester, England. In 1628 he led a band of settlers to Naumkeag (Salem), Mass. He gave way in 1630 to John Winthrop, and led an expedition to Block Island against the Pequots (1636); was deputy governor in 1641–1643, 1650, and 1654; governor in 1644, 1649, 1651–1654, and 1655–1665; elected president of the United Colonies of New England in 1658. He was a Puritan of the extreme type, but an able administrator.

EPAMINONDAS (*ĕ-păm-ĭ-nŏn'dăs*) (about 418–362 B. C.). A Greek statesman and general; born in Thebes. He was commander in chief of the Theban army in the Theban war with Sparta. With 6,000 men he defeated a much larger force of Spartans at the battle of Leuctra (371 B. C.), and overthrew the supremacy of Sparta. In 370 B. C. Epaminondas and Pelopidas unsuccessfullly invaded Sparta. This expedition was followed by another in 368 B. C. and by a third in 366 B. C. Again in 362 B. C. he led a fourth against Sparta supported by strong allies, yet in the face of great odds Sparta was defeated in the battle of Mantinea, though Epaminondas fell in this battle. He was one of the best and noblest of all Greek characters.

ERIC EDWARDSON or **SAINT ERIC.** King of Sweden (1150–1160). Christianized upper Sweden and built a number of churches and monasteries. He undertook a crusade against the Finns, which was the beginning of the long feuds between the countries. He compiled laws known as Saint Eric's Lag in which the rights of women were set forth.

ERIC OF POMERANIA (1382–1459). King of Norway, Sweden, and Denmark. (See MARGARET.) On the death of Margaret, Eric's utter disregard for treaties, oaths, and promises led to dissensions among his subjects. In 1438 the Danes renounced their allegiance and chose Christopher of Bavaria as their king. In 1439 Sweden withdrew and Scandinavia was a scene of rebellion and bloodshed for many years. Eric fled to Gothland and for 10 years was a pirate. He had married Philippa, daughter of Henry IV. of England, and treated her cruelly.

ESPARTERO (*ĕs-păr-tā'rō*), **JOAQUIN BALDOMERO, DUKE OF VITTORIA** (1792–1879). A Spanish statesman and general who operated most successfully against the Carlist forces, and for his expulsion of Don Carlos from Spain (1839) became Duke of Vittoria and Morella and grandee of Spain; became military dictator (1841). His government was marked by great ability and energy, but was overthrown (1843), and Espartero driven into exile. Upon the abdication of Queen Isabella, he refused to become a candidate for the throne of Spain (1870).

ESTERHAZY (*ĕs'tĕr-hä-zē*), **PRINCE NICHOLAS** (1765–1833). Famous Hungarian patron of arts and letters. Lived for several years in the centers of culture in Europe. Napoleon in 1809 offered him the crown of Hungary, but Esterhazy declined. In two branches this family traces back to the thirteenth century, and many distinguished statesmen made the name celebrated in all parts of Europe.

ETHELBERT (552?–616). King of Kent; converted to Christianity by Augustine (597); drew up the first written Saxon code of laws, and so brought about a successful rebellion against himself under Raedwald.

ETHELRED II. (c. 968–1016). Called the Unready. From the beginning of his reign in 979 the Danes harried England year after year. In 1000 he was defeated by Richard II., Duke of Normandy, and also made peace with the invaders. Yet he treacherously slew many Danes in time of peace. For this Sveyn compelled him to pay large tribute for peace in 1007–1012, and in 1013 parts of England acknowledged Sveyn as king, while Ethelred fled to Normandy. He reigned two years after Sveyn died before his own death, having defeated Canute the year before.

EUGENIE (*ū-zhā-nē'*) **(EUGENIE MARIA DE MONTIJO)** (1826–1920). Ex-empress of the French and wife of Napoleon III.; born in Granada, Spain; filled the office of regent at three different times in absence of Napoleon in the army (1859, 1865, 1870). In the eyes of many historians she was the sole cause of the downfall of the Second Empire. During the Franco-German War she was forced to flee to England (1870). Her only son, the Prince Imperial, was slain in the Zulu War.

EVERETT, EDWARD (1794–1865). American statesman and educator; born at Dorchester, Mass.; was appointed Eliot professor of Greek in Harvard (1815); was editor of the *North American Review* (1820–1824). He became successively a representative in Congress, governor of Massachusetts, and United States minister to Great Britain. In 1846 he became president of Harvard, and in 1852 secretary of state. He resigned in June, 1854. He was a celebrated orator of the old school, his best-known orations being the one on Washington and the Gettysburg Oration (delivered November 15, 1863).

EWING (*ū'ĭng*), **THOMAS** (1789–1871). American jurist and political leader; born near West Liberty, Virginia; was a whig member of the United States Senate from 1831 to 1837; secretary of the treasury (1841); first secretary of the interior (1849–1850); again elected to the Senate in 1850–1851. He was a supporter of Lincoln's war policy in 1861–1865.

FABIUS MAXIMUS (*fā'bĭ-ŭs*) **QUINTUS CUNCTATOR** or **"THE DELAYER"** (? –203 B. C.). Roman consul five times and censor twice; was appointed dictator after the defeat of the Romans by Hannibal at Lake Trasimenus (217 B. C.). His tactics of harassing the enemy during the Second Punic War while avoiding a general engagement and so allowing Rome to strengthen her forces gave rise to the term "Fabian policy."

FAIRBANKS, CHARLES WARREN (1852–1918). American lawyer and politician; vice-president of the United States (1905–1909); born in Union County, Ohio; was graduated from Ohio Wesleyan University (1872); removed to Indianapolis, Ind. (1874); United States senator (1897–1905); member of United States and British Joint High Commission which met at Quebec (1898) to adjust Canadian questions.

FALLIERES (*fȧl-yȧr'*), **CLEMENT ARMAND** (1841–1931). Eighth president of France (1906–1913). Of peasant parentage; became a lawyer; elected to Chamber of Deputies (1876); minister of the interior (1882, 1883, and 1887); minister of public instruction (1883–1885 and 1889–1890); minister of justice (1887–1888 and 1890–1892); senator (1890) and reëlected (1897); president of the Senate (1899); reëlected for eight successive terms.

FARINI (*fa-rē'nē*), **LUIGI CARLO** (1812–1866). Italian statesman and historian. Exiled to France (1843); general secretary in Liberal Cabinet (1847); director general of sanitary department; minister of public instruction (1851); proclaimed dictator at Modena (1859); influenced strongly a united Italy (1860), ranking with Garibaldi and Cavour in the long struggle; minister of the interior; asked to form

a new ministry (1862). His history of the *Roman State* (1853) established his reputation as a historian.

FAWCETT (*fô'sĕt*), **HENRY** (1833–1884). Though blinded in 1858 by accident, two years after his graduation from Cambridge, he continued his studies and became professor of political economy in 1863. He wrote several notable books. Both he and his wife, Millicent Garret, advocated removal of restrictions upon women in industry and granting the suffrage. Fawcett is best recalled, however, by his introduction of parcel post, cheap sending of telegrams, and banking by post, while he acted as postmaster-general.

FERDINAND III. (1199–1252). Called "the Saint," king of Castile and son of Alphonso IX. of Leon, and Berengaria, daughter of Alphonso VIII. of Castile. When the king of Castile died suddenly, Berengaria renounced the crown in favor of her son. His father considered himself outwitted, and the son had to fight him. In 1231 he succeeded his father peacefully to the throne of Leon. He reduced the Mohammedan rule in Spain to Granada only, revived the old university and placed it at Salamanca, and proved a wise and just ruler. He was canonized by Pope Clement X. in 1671.

FERDINAND V. (1452–1516). Founded the Spanish monarchy. Joint sovereign with his wife, Isabella. The year 1492 was the most brilliant of his reign, marking not only the discovery of America by Columbus, but also the entry of Ferdinand and Isabella into Granada and the end of the Moorish occupation.

FERDINAND (1861–). By a series of brilliant victories in 1912–13, Bulgaria pressed past Adrianople into Turkish territory. The Treaty of London failed to acknowledge the rights to conquered territory, and in consequence the second war followed, and Bulgaria was driven by her neighbors to an unwelcome peace. Joining the fortunes of Germany, in the World War, Ferdinand achieved again some great victories, but they were nullified by his defeat by the Allies in 1918, after which Ferdinand abdicated in favor of his son Boris.

FERDINAND I. (1865–1927). King of Rumania, nephew of Charles I., became heir apparent in 1889 and king in 1914. He was a Hohenzollern by birth, but during the World War declared against his native country and was driven with his army into Moldavia. Later after great hardships Rumania achieved victory and added territory, and in 1922 he was crowned king of all Rumanians. During his reign large estates were broken up and given to the people, his own being first of them. All Rumanian Jews were given full rights as citizens.

FERRY, JULES FRANCOIS CAMILLE (1832–1893). Eminent French statesman, was the father of the modern system of free primary education, compulsory, and non-clerical. He also fostered a more extensive colonial policy for economic reasons after the war of 1870. He acted as administrator in Paris during the siege of 1870, was minister to Athens, and minister of instruction and later of foreign affairs from 1879 to 1885, with two slight interruptions, serving twice as premier in the meantime. French influence in Tunis, Madagascar, and Indo-China was arranged by him. He died of a wound from a revolver fired by a crazed man.

FESSENDEN (*fĕs'ĕn-dĕn*), **WILLIAM PITT** (1806–1869). American statesman; born in Boscawen, N. H.; elected United States senator (1854); opposed the Kansas-Nebraska Bill; secretary of the treasury (1864) during the blackest financial period in the history of the country. Gold was at 280, a paper dollar was worth 34 cents, and the government had just withdrawn a loan from the market which it could not float. Fessenden issued the "seven-thirty" bonds. Gold fell to 199 and Fessenden went back to the Senate. He voted in favor of Johnson's acquittal on his impeachment. He was one of the leaders in the Senate during the early Reconstruction period.

FIELDING, HON. WILLIAM STEVENS (1848–1929). Born in Halifax, Nova Scotia. Liberal member for Halifax county (1882); provincial secretary and treasurer (1882); resigned to attend to editorial duties (1884); formed new cabinet and became provincial secretary. Minister of finance and member of House of Commons (1896); introduced new tariff policy, advocating preferential trade with Great Britain (1897), and later the measures imposing a surtax on German products in consequence of German action adverse to Canada. Vice chairman Ottawa Reform Convention (1893); Vice-president Maritime Provinces Liberal Association (1895); president St. George's Society.

FILLMORE, MILLARD (1800–1874). Thirteenth president of the United States, was born in Cayuga County, N. Y., where his father had built a log cabin in 1795. He was apprenticed to a fuller and maker of cloth, later studied law, and attained eminence in practice at Buffalo, N. Y. He served in the state assembly (1829–32), in the national House (1833–35, 1837–43), in 1844 was a candidate of the Whigs for governor of New York, and in 1848 became vice-president with Zachary Taylor as president. At first he entered Congress as an anti-Jackson candidate, and later he became a Whig, and as chairman of the ways and means committee of the House secured a grant of $30,000 to S. F. B. Morse for his electric telegraph. When Taylor died in office on July 9, 1850, Fillmore succeeded him. In both 1852 and 1856 he was an unsuccessful candidate. His tendency to compromise and take mild views alienated his old political friends.

FISH, HAMILTON (1808–1893). American statesman; son of Nicholas Fish (1758–1833), a revolutionary soldier; born in New York City; entered Congress (1842); became governor (1848); member of Senate (1851–1857), first as a whig and then as a republican. He opposed the Kansas-Nebraska Bill of 1854; was secretary of state in Grant's Cabinet (1869–1877), and was one of the Joint High Commission that negotiated the Treaty of Washington (1871), and assisted in the arbitration of the Alabama Claims.

FISHER, CHARLES (1808–1880). A Canadian statesman. Member of the New Brunswick Cabinet (1837); of the Executive Council (1848–1857); consolidated and codified the statutes (1852); attorney general (1854–1861 and 1866); one of the representatives of British North America in London when articles of confederation of the provinces into the Dominion of Canada were arranged (1867); judge of the Supreme Court of New Brunswick until his death.

FISHER, HERBERT ALBERT LAURENS (1865–1940). English educator and statesman, born in London and educated at Oxford, where for a time he lectured. Member of royal commission on public services of India, 1912–15; minister of education and member of parliament for part of Sheffield, 1916, and from 1918 to 1926 as Liberal member for the universities. In 1917 he introduced an education bill which had many important provisions, and in 1925 he was elected warden of New College, Oxford.

FOSTER, GEORGE EULAS (1847–1931). A Canadian politician; born in Carleton, New Brunswick. Professor of history and classics in the University of New Brunswick (1871–1879); public lecturer on temperance and sociology; elected to the House of Commons (1882) from Kings County; minister of marine and fisheries in the Macdonald government (1885) and prepared Canada's brief to present to the commission at Washington on the deep-sea fisheries dispute; minister of finance (1888–1896); minister of marine and fisheries (1911–1917), when elected to the Senate; represented Canada in the Peace Conference, 1919, in the first assembly of the League of Nations was vice-president, and served in the seventh assembly in 1926.

FOSTER, JOHN WATSON (1836–1917). American diplomatist; born in Pike County, Indiana; was graduated at Indiana State University (1855); admitted to the bar; fought in Civil War and became colonel; edited the Evansville *Daily Journal* and was postmaster of that city (1869–1873); minister to Mexico until 1880, to Russia until 1881, and to Spain from 1883–1885; secretary of state in 1892–1893; member of the Anglo-Canadian Commission (1898). He is the author of *A Century of American Diplomacy, American Diplomacy in the Orient,* and *Arbitration and The Hague Court.*

FOX, CHARLES JAMES (1749–1806). English statesman; born in London. Entered Parliament in 1768 as a tory, but from 1774 to 1782 was the leader of the whigs, and strongly opposed to Lord North's American policy. In 1783 he formed a short-lived coalition ministry with Lord North, and from 1784 he was in opposition. Burke describes him as "The most brilliant and accomplished debater that the world ever saw."

FRANCIA (*frän'se-ä*), **JOSE GASPAR RODIQUEZ** (1757–1840). Dictator of Paraguay; born at Asuncion; practised as a barrister; in 1811 became secre

tary to the newly established government of Paraguay. In 1813 he became one of the consuls, and on the death of Yegros, his colleague, sole ruler. From 1817 until his death he was dictator of the republic. He was opposed to all foreign intercourse and to all religion.

FRANCIS I. (1494–1547). King of France; son of Charles of Angoulême; born at Cognac, France; succeeded Louis XII., who died without male issue (1515). He became involved in a series of wars with Germany; was defeated and captured at the battle of Pavia (1525); signed the Treaty of Madrid (1526); and of Crespy (1544). He sided with the Protestants abroad, while persecuting them in his own kingdom. His son, Henry II., succeeded him.

FRANCIS II. (1768–1835). Last Roman emperor; as Francis I. was the first emperor of Austria. The son of Leopold II., he was born in Florence, educated in Vienna. Much of his reign was occupied with various coalitions against Napoleon, until in 1810 Napoleon married his daughter, Marie Louise. He acted as his own prime minister for much of his reign, and in the last part was guided by Metternich in foreign affairs. In 1806 he was obliged to abandon the title of Holy Roman emperor, which had been in existence a thousand years.

FRANCIS, FERDINAND (1863–1914). Archduke of Austria, heir apparent to the throne after the death of Crown Prince Rudolph and of his own father. As time went on he took much interest and part in public affairs. While at Serajevo, Bosnia, on June 28, 1914, he and his wife were killed by assassins. This event led directly to the World War.

FRANCIS, JOSEPH I. (1830–1916). Emperor of Austria from 1848. Son of the Archduke Francis. A revolution was in progress at the time of his accession, and war with Hungary soon broke out. But the emperor subdued the enemy, at the same time defeating the Italian insurgents. Austria lost Lombardy to the Italians (1859), and after Sadowa (1866) was forced to give Venetia to Italy. The differences between Austria and Hungary were settled by forming the Austro-Hungarian state (1867). On the death of his son Rudolph, the Crown Prince, 1889, his nephew, Francis Ferdinand, noted just above, became heir apparent. During the last years, he formed a closer alliance with both Germany and Italy. Under the treaty of 1878, he was allowed to occupy Bosnia and Hercegovina, finally annexing them. Francis Joseph intended fairly well, but the estrangement of his wife, her death by assassination, the suicide of his son, and at last the assassination of his nephew and heir were enough personal misfortunes for any man. Besides, almost his entire reign was occupied with dickerings with his subjects, especially with Hungary.

FRANKLIN, BENJAMIN (1706–1790). An American statesman, diplomatist, and author. He was born at Boston; son of a tallow-chandler; the 15th of 17 children; apprenticed to his brother, James, as a printer (1719); eventually settled in Philadelphia and founded the *Pennsylvania Gazette* (1728), and began to publish *Poor Richard's Almanac* (1732), which for 25 years made "Poor Richard" a household word. In 1730 he married Deborah Read of Philadelphia, who died in 1774. In 1736 he was appointed clerk of the General Assembly of Pennsylvania, and in 1750 was elected a member of the Assembly. He was postmaster of Philadephia (1737), and from 1753–1774 was one of the two deputy postmaster generals for North America. He held many posts of public trust, while his scientific discoveries gained him an international reputation. Honors were showered upon him, both at home and abroad, and he was the most conspicuous figure in the America of his day. His last public act was the signing of an anti-slavery petition to Congress. He died April 17, 1790, mourned by the entire nation. Franklin's literary reputation rests mainly on his unfinished *Autobiography*. His chief contributions to science are his various electrical discoveries and his invention of the lightning conductor. He rendered the greatest service to his country by his skill in diplomacy, especially while acting as plenipotentiary abroad.

FREDERICK I., BARBAROSA or **REDBEARD** (1121–1190). Holy Roman emperor (1152–1190). Nephew and successor of Conrad III. as king of the Germans. After securing order in Germany he sought to reëstablish the imperial power in Italy. On receiving the Lombard crown he went to Rome and set Adrian IV. in the papal chair and was crowned emperor. In 1158 he besieged and took Milan; in 1159 began the long contest between Frederick and the pope, Alexander III., the successor of Adrian IV. In 1160 he took Crema; in 1161 and 1162 he took and razed to the ground Milan. He set up Victor IV. as an antipope. After many triumphs he was defeated at Legnano by the Lombards, and in 1183, by the Peace of Constance, he gave many privileges to the Lombard cities. In 1177 he made peace with Pope Alexander III. and resumed the contests with the Guelphs. In 1189, with a prospect of peace, he resigned his empire to his son, Henry, and set out with 100,000 men for the Holy Land. After some victories he was drowned in a small stream in Cilicia.

FREDERICK II. (1194–1250). King of Sicily (1197–1250) and Holy Roman emperor (1215–1250). Grandson of Frederick I., Barbarossa, and son of Henry VI. He caused the deposition of Otho IV. in 1214 after the battle of Bouvines and was crowned king in 1215, and emperor in 1220. He organized his Italian possessions, founded the University of Naples, and patronized literature and the arts. He set out in 1227 on a crusade, but returning in three days under pretense of illness was excommunicated by the pope. In 1228 he set out again, made a 10 years' truce with Saladin, took Jerusalem and the land about Jaffa and Nazareth, and crowned himself king of Jerusalem. The rest of his reign was spent in a struggle with the Lombards and the papacy.

FREDERICK II., THE GREAT (1712–1786). King of Prussia; born in Berlin; succeeded in 1740; invaded Silesia, almost the whole of which was ceded to him by Maria Theresa (1742). In 1756 he invaded Saxony and so began the Seven Years' War against the allied armies of Austria, France, and Russia. His forces were decimated, and on the death of Elizabeth of Russia, France grew tired of the struggle, and Austria, not caring to continue single-handed, signed the treaty of Hubertsburg in 1763, by which Frederick was allowed to retain his kingdom intact. During the ensuing period of peace he devoted himself to the development of the country. In the first partition of Poland (1772) he managed to acquire West Prussia. He cultivated the French language and authors in preference to German, and was a friend and admirer of Voltaire. He was a voluminous writer himself, but wrote chiefly in French.

FREDERICK WILLIAM (1620–1688). Elector of Brandenburg; known as the "Great Elector"; born at Berlin; succeeded his father (1640). He ranks next to Frederick the Great as the chief founder of the Prussian monarchy; he established the University of Duisburg and the Royal Library at Berlin. On ascending the throne he found an empty exchequer and a country devastated by Swede and Imperial troops during the Thirty Years' War. He brought order out of chaos, and prosperity from ruin; suffered several wars and hard reverses, but by 1680 was at peace and prospering. After the revocation of the Edict of Nantes 20,000 French Protestants were received; he encouraged immigration from Holland; increased population; introduced many industries; opened canals; established a system of posts; beautified Berlin.

FRELINGHUYSEN (*frē'ling-hī-zen*), **FREDERICK THEODORE** (1817–1885). American politician; born in Millstone, N. J.; admitted to the bar (1839); United States senator (1866–1869 and 1871–1877). He was a member of the Electoral Commission and secretary of state under President Arthur (1881–1885).

FREMONT, JOHN CHARLES (1813–1890). American explorer; born at Savannah, Ga.; explored Des Moines River (1841) and the Rocky Mountains (1842). In 1846 he arrived in California and soon afterwards a number of American residents captured the town of Sonoma from the Mexicans. This is known as the "bear-flag revolt." During the war with Mexico he was court-martialed for disobedience and had to leave the service. In 1848 he made his fourth expedition to discover a direct route to California. He was governor of Arizona (1878–1881), and in April, 1890, was made major general and put on the retired list.

FRONTENAC, LOUIS DE BUADE, COMTE DE (about 1621–1698). The greatest French governor of New France (now Canada). Succeeded De Courcelles as governor (1672); convened the clergy, nobles, and commons, and established formal government at Quebec. Quarrels ensued with the Jesuits, Intendant Fafon, and the governor of Montreal. Frontenac was recalled by the king (1682), but was restored in 1689 and held office till his death. He dealt tactfully with the Indians, restrained the Iro-

quois, and defeated Sir William Phips at Quebec (1690).

FRYE, WILLIAM PIERCE (1831–1911). American legislator; born at Lewiston, Maine. Elected to Congress 1871) and reëlected five times; entered the Senate (1881) as Blaine's successor; reëlected in 1883, 1889, 1895, and 1901; president pro tempore (1896); permanent presiding officer after Hobart's death (1899) and again on McKinley's death (1901); member of the Peace Commission at Paris at the close of the Spanish-American War in 1898.

FULLER, GEORGE WARBURTON (1861–). Australian statesman, educated at the University of Sydney. Member of parliament of New South Wales, 1889 to 1894, and in the first three Federal parliaments; chief secretary and acting premier, New South Wales, 1916–20, and premier 1922–25.

GADSDEN (*găd'dĕn*), **CHRISTOPHER** (1724–1805). American patriot; born in Charleston, S. C.; was educated in England; delegate to the international convention held in New York City (1765) to protest against the Stamp Act; member of first Continental Congress, Philadelphia (1774); commissioned colonel at outbreak of the Revolution; made brigadier general (1776); prisoner at Fort Augustine for two months; exchanged (1781); elected governor of South Carolina (1782), but refused to serve because of age and infirmities.

GADSDEN, JAMES (1788–1858). American diplomatist; born in Charleston, S. C.; served with distinction in the War of 1812 and in the Seminole War (1818), in which he was aide-de-camp to General Jackson; United States minister to Mexico (1853); negotiated the Gadsden Purchase, which determined the boundary between Mexico and the United States.

GAGE, LYMAN J. See under FINANCIERS.

GAGE, THOMAS (1721–1787). English general and colonial governor of Massachusetts (1774–1775); in 1763 was made commander in chief of the British forces in America. He returned to England (1772), but in 1774 was ordered to Boston, where he enforced the Boston Port Bill and other obnoxious regulations, thus provoking the rebellion. On news of the battles of Lexington and of Breed's Hill reaching England, he was recalled, and sailed from Boston (October 10, 1775). In April, 1782, he was promoted general.

GALLATIN (*găl'à-tĭn*), **ALBERT** (1761–1849). An American statesman and financier; born at Geneva, Switzerland. In 1789–1790 he was a member of the Pennsylvania Constitutional Convention. In 1793 his election to the United States Senate was declared void; served in the House of Representatives (1795–1801); secretary of the treasury (1801–1813). He was one of the foremost financiers of America. From 1816 to 1823 he was United States minister to France, and in 1826–1827 minister to Great Britain; was president of the National Bank of New York (1829–1839).

GALVANAUSKAS, ERNEST (1882–). Patriot and statesman of Lithuania. For stirring up influence against Russian domination in Lithuania, he was arrested in 1906, escaped to Belgium in 1908, became a leader in the World War, serving in the Serbian and in the French armies. He acted as a member of the Lithuanian delegation at Versailles, served as prime minister and minister of foreign affairs, and led the Lithuanian delegation to the League of Nations, and in 1924 became ambassador to England and also to The Hague.

GAMBETTA (*găm-bĕt'à*), **LEON** (1838–1882). French statesman; born at Cahors. An extreme republican, he was minister of the interior in the first provincial government. Escaping from besieged Paris (1870) in a balloon, he conducted the war from Tours, having full dictatorial powers. He was the most influential man in France, and became premier in 1881, but resigned after 66 days (1882).

GARFIELD, JAMES ABRAM (1831–1881). Twentieth president of the United States, came of a poor Ohio family. He was born at Orange in a log cabin. Having little chance in early life, he became a farm hand, worked on a canal boat, made his way through high school, sometimes doing carpentry, and at last was graduated by Williams College in 1856, after which he became a professor at the Eclectic Institute of Hiram, Ohio, where he had prepared for Williams. Then he became a lawyer, member of the state senate in 1859, rose to the rank of major general in the Civil War, resigning in 1863 to take a seat in the national House, which he held till 1880, when he was elected to the Senate from Ohio. When the partisans of neither Blaine nor of Grant, the latter running for a third nomination, could not secure a majority, Garfield was chosen as a compromise candidate. His term of office, beginning on March 4, 1881, was cut short on July 2 by the bullet of an assassin, a disappointed office seeker named Guiteau. Garfield died on Sept. 19.

GARFIELD, JAMES RUDOLPH (1865–). United States Cabinet officer; born at Hiram, Ohio; son of James A. Garfield, twentieth president of the United States; was graduated at Williams College (1885); admitted to the bar (1888); was a member of the Ohio Senate (1896–1899); and became secretary of the interior (1907–1909). Afterward practiced law in Cleveland. As a cabinet official he instituted several reforms in the granting of government lands.

GEDDES (*gĕd'ĭs*), **AUCKLAND CAMPBELL** (1879–). Born and educated in Edinburgh, professor of anatomy at Edinburgh, Dublin, and McGill. Served in South African and World Wars. Principal of McGill University, 1919–20, and British Ambassador to the United States 1920–24. Director of Recruiting, British War Office, 1916–17, Minister of National Service, 1917, 1918, 1919, Minister of Reconstruction, 1919, and President of the Board of Trade, 1919–20.

GEDDES (*gĕd'ĭs*), **ERIC** (1875–1937). Born in India, engaged in lumbering in United States, held various war offices, 1915–1918, including Inspector-generalship, additional member of the Board of Admiralty, and First Lord of the Admiralty. In 1919 he was minister without portfolio, 1912–22, chairman of committee to advise on national expenditures, president of federation of British industries, 1923 and 1924, and held other positions in business.

GENET (*zhĕ-nĕt'*), **EDMOND CHARLES EDOUARD** (1765–1834). A French diplomat. After service in several French embassies to European courts he was transferred in 1793 as "minister plenipotentiary to the Congress of the United States." He came with the avowed purpose of stirring up war with Great Britain. Encouraged by a warm reception he began to solicit privateers against English commerce and to fit out an expedition to take Louisiana from Spain. Washington and Jefferson refused to be drawn into the affair and warned him to desist. After setting them at defiance they took a firm hand with him and the French government recalled him. He was afraid to return home, and settled in New York.

GENGHIS KHAN (*jĕn'gĭs kän*), (1162–1227). A Mongol chief and conqueror. He succeeded his father when only 13. Some chiefs refused to acknowledge him and a long war resulted, and Genghis was obliged to seek shelter with Ungh Khan, who gave him command of his army and his daughter in marriage. Through his success in arms his master's jealousy was aroused, and Genghis fled back to his own people, where he arrived safely with 5,000 cavalry. He raised an army and defeated Ungh Khan, who in turn fled. After the defeat of some jealous Tatars he became master of all Mongolia. He conquered the northern part of China, scaled the Great Wall in 1211, and entered Peking in 1215. In 1219 he continued his conquest of Asia, and in the following years overran Persia, Russia, and the whole of southern Asia.

GENSERIC (*jĕn'sĕr-ĭk*) (? –477). King of the Vandals. In 429 he invaded Africa, and all Africa west of Carthage fell into his hands in the quarrel between Aetius and Boniface. In 439 he made Carthage the capital of his dominions. He also took Sicily, Sardinia, and Corsica. He encouraged Attila to attack Rome. In 455, at the invitation of Eudoxia, widow of Valentinian, he marched against Rome to avenge her on Maximus. He took the city, gave it up to a 14 days' pillage by his men, and took the empress and her two daughters prisoners. Genseric died in 477 at the height of his power, which gave him the title to the greatest of all of the kings of the Vandals.

GEORGE I. (1660–1727). King of Great Britain and Ireland (1714–1727); son of Ernest Augustus, elector of Hanover, and Sophia, daughter of Frederick, elector of Palatine, who married Elizabeth, daughter of James I. His preference for Hanover made him unpopular in England. The failure of the Jacobite rebellion (1715) and the strong foreign policy of Stanhope, Walpole, and Townshend, strengthened the new dynasty. The development of cabinet government was a feature of his reign.

GEORGE II. (1683–1760). King of Great Britain and Ireland; succeeded his father (1727); during the Austrian Succession War (1740–1748) he fought in the battle of Dettingen (1743). This was the last battle at which an English king was present. He defeated the Young Pretender at Culloden (1746) and secured victories over the French in Canada and India.

GEORGE III. (1738–1820). King of Great Britain and Ireland; son of Frederick Louis, eldest son of George II.; born in London; ascended the throne in 1760. The imposition of the American Stamp Act, and the obstinacy of George and his ministers, drove the American colonies to rebellion. Pitt, the prime minister, formed the triple alliance between England, Holland, and Prussia (1788). In 1793 France declared war with England, which ended in the defeat of Napoleon at Waterloo (1815). The Irish rebellion of 1798 brought about the union of England and Ireland in 1801. The king became insane in 1811 and his son, George IV., acted as regent.

GEORGE V. (1865–1936). "The Sailor King." King of Great Britain, Ireland, and the British possessions beyond the seas; emperor of India; second son of King Edward VII. and Queen Alexandra; born June 3, 1865. Educated at the royal naval academy, he was rapidly promoted, becoming captain in 1893, when his brother's death made him Duke of York; Prince of Wales (1901). He married Princess Mary Victoria of Teck, June 6, 1893; became king May 6, 1910. He was crowned emperor of India at a magnificent durbar at Delhi, Dec. 12, 1911. During the World War he showed his energy and sagacity in many ways. In 1929 he suffered from a long and dangerous illness, during a part of which Great Britain was ruled largely by a council of state.

GEORGE I. (1845–1913). King of Greece (1863–1913). Prince William of Denmark, second son of King Christian IX., was chosen king of the Hellenes, as George I., by the National Parliament of Greece with the consent of the powers in 1863. He was assassinated in Salonica while visiting the Greek army during the Balkan War. The prosperity of Greece was greatly advanced during his reign of fifty years.

GERRY, ELBRIDGE (1744–1816). American statesman, born in Massachusetts, was graduated from Harvard, and took a prominent part in agitation leading to the Declaration of Independence, of which he was a signer. In 1775 he had proposed to Massachusetts a bill to arm American ships engaged in ocean trade. He sat in the Continental Congress (1777–1781), and again later. He was one of three special ambassadors sent to France to settle a number of ticklish questions, but the other two delegates came home soon because they were so badly used by Talleyrand. While he was governor of Massachusetts (1810–12), a law redistricting the state was passed. This resulted in a fanciful likeness to a salamander in one district, of which a newspaper showed a cartoon naming it a "gerrymander." From this the term has been used to indicate moving boundaries to secure a political advantage for a party or individual. Gerry was elected vice-president in 1812, and died in office two years later.

GIBSON, HON. JOHN MORISON (1842–). Educated at Central School, Hamilton, and at Toronto University, gaining Prince of Wales prize, medals in classics and modern languages; LL.B. with gold medal (1869); LL.D. (1903); called to bar of Upper Canada (1867); provincial secretary of Ontario (1889); commissioner of crown lands (1896); attorney general (1899–1905); made queen's counsel (1890); bencher of Law Society of Upper Canada (1899); honorary lieutenant colonel of 13th regiment (1895); colonel commanding 13th brigade Canadian militia (1903); president Dominion Rifle Association 14 years; won Prince of Wales prize at Wimbledon (1879); commander Canadian rifle team to Wimbledon (1881), and to Bisley (1907). President of Canadian branch Red Cross Society; honorary aide-de-camp to Earl of Aberdeen and Earl Minto when governors general of Canada, and very prominent in many other National matters. Lieutenant governor of Ontario 1908–1914.

GILLETT, FREDERICK HUNTINGTON (1851–1935). American statesman, was born in Massachusetts, educated at Amherst and Harvard. From 1877 he practiced law at Springfield, Mass., and was a member of 53d to the 68th Congresses (1893–1924), being speaker of the House from 1919 to 1924. Elected senator to succeed Henry Cabot Lodge of Massachusetts in 1924.

GLADSTONE, WILLIAM EWART (1809–1898). British statesman; born in Liverpool; was educated at Eton and Christ Church; entered Parliament (1833) as member for Newark. His talents and oratorical powers marked him out for leadership and responsibility. He held many ministerial appointments, but none with greater distinction than that of chancellor of the exchequer. From 1867 to his death he was leader of the Liberal party, and his name was always identified with free trade, equitable taxation, manhood suffrage, and popular education. He first became prime minister in 1861, the leader of the opposition being his powerful rival, Disraeli. In 1886, during his third premiership, he introduced and almost carried the Home Rule Bill for Ireland. This caused a split in the Liberal party. In 1892, during his fourth and last ministry, he carried the amended bill through the Commons, but it was thrown out by the lords. He retired from office, March 3, 1894. His works include *Studies on Homer; Gleanings from Past Years*, being eight volumes of literary and political essays contributed to the *Quarterly Review* and other periodicals; and *Speeches* and *Letters*. The best life of Gladstone, is written by John Morley (1902). Gladstone was the greatest of the Victorian statesmen, and his political life was inspired by the loftiest sense of public duty. His foreign policy was weak, and his domestic measures were not always well advised, but no one ever doubted the sincerity of his aim or his devotion to his countrymen. The British working classes in particular owe him a lasting debt of gratitude.

GLASS, CARTER (1858–). American politician, born in Virginia, and served in the state senate for two terms (1899–1903), in the national House from 1902 to 1918, and then as Wilson's secretary of the treasury. In 1924 he was chosen to be senator from Virginia. He took a prominent part in the legislation that led to the founding of the federal reserve banks and floated the fifth Liberty loan in 1919.

GODFREY OF BOUILLON (*bōō'yôn*) (c. 1060–1100). Leader in the first crusade, was a man of great piety, and though not permitted to enjoy all the rights as duke of lower Lorraine as designed by his maternal grandfather, Duke Godfrey II., he fought for King Henry IV. As leader of about 40,000 Germans, he first reached Jerusalem, later determined what course should be taken for the princes, and in 1099 they chose him king of Jerusalem for a year, notable for various conflicts with other tribes. He became the subject of several later stories, poems. and epics in Italian and French, including Tasso's great epic of *Jerusalem Delivered*.

GOETHALS, GEORGE WASHINGTON. See under SCIENTISTS.

GOMEZ Y BAEZ (*gō'mās ē bā'ās*), **MAXIMO** (1826–1905). He was born in Santo Domingo, served in the Spanish army there and in Cuba, saw the conditions in the latter island, and twice led the Cuban patriots, 1868–78, and 1895–1900. When the United States intervened, he put his army at the disposal of the American government, and after the war did valuable service in assisting to establish a sound federal government. Though he spent much of his life as a soldier, he had the abilities of a statesman and political leader.

GONZALEZ (*gōn-zā'lĕs*), **MANUEL** (1833–1893). Mexican soldier and president; fought against the European invaders in 1861, and became brigadier general in 1867. He was secretary of war under Diaz (1878), and became president (1880). In 1884 he resigned in favor of Diaz, and afterwards became governor of Guanajuato.

GORDON, JOHN BROWN (1832–1904). American soldier and politician; born in Upson County, Ga. In the Confederate army he rose to the grade of lieutenant general and was in command of one wing of Lee's army at the surrender at Appomattox. United States senator (1873–1880 and 1891–1897); one of the Democratic leaders and an eloquent speaker; governor of Georgia (1887–1890). He attained great fame for his lecture "Last Days of the Confederacy."

GORMAN, ARTHUR PUE (1839–1906). United States senator; born in Maryland. A conspicuous leader of the Democratic party for over 30 years. Senator (1881–1899 and 1903–1906). Led the opposition to the Force Bill (1889) and was one of the remodelers of the Wilson Tariff Bill (1894). He made a study of the canal projects across the isthmus and favored the Nicaraguan route.

GORTSCHAKOFF (*gôr-chà-kôf'*) **PRINCE ALEXANDER MICHAILOVITCH** (1798–1883). Russian

statesman; born at St. Petersburg; Russian ambassador at Stuttgart and Vienna (1854–1856); appointed chancellor in 1863 and was for many years the most influential minister in Europe. He promoted the Franco-Russian agreement, which Bismarck met by the triple alliance.

GOUIN, LOMER (1861–1929). Canadian politician, educated at Laval and McGill Universities, prime minister of Quebec from 1905 to 1920, declined Borden's invitation to the coalition ministry, and declared as a Liberal. He was minister of justice in the King cabinet in 1921, represented Canada at the fourth meeting of the League of Nations, and attended the imperial and economic councils at London in 1924. Created a knight in 1908.

GOULBURN, HENRY (1784–1856). An English statesman. He held several cabinet positions and was one of the peace commissioners at the close of the War of 1812. He was highly respected by all parties during his honorable career. While chancellor of the exchequer under Peel, he succeeded in reducing the rate of interest on the national debt, and aided in securing the repeal of the corn laws.

GRACCHUS (*grak'us*), **GAIUS SEMPRONIUS.** (159–121 B. C.). Roman statesman. After his brother's murder, he returned from Spain to Italy; made questor (126 B. C.) and began to avenge his brother's death; tribune in 123 B. C. and again in 122 B. C., he sought to enforce his brother's laws and to extend the franchise to the Italian allies. The aristocracy plotted secretly against him and he was pursued. All hope of escape being cut off, he caused his faithful slave to kill him.

GRACCHUS, TIBERIUS SEMPRONIUS (163–133 B. C.). Brother of the preceding. Roman statesman. Took part in the destruction of Carthage (146 B. C.); tribune of the people (133 B. C.), and introduced a land bill to relieve their sufferings and concerning a fairer distribution of wealth. In a riot at the ensuing elections Gracchus was slain.

GRANT, ULYSSES SIMPSON (1822–1885). Eighteenth president of the United States, born in Ohio of Scotch ancestry, for a time helped his father on the farm, was graduated at West Point in 1843, served under General Taylor in the Mexican War, became a farmer at St. Louis, and in 1860 clerked in his father's store at Galena, Ill. When the Civil War opened, he volunteered, was commissioned colonel and by 1862, after the capture of Fort Donelson, was made major general, captured Vicksburg, Miss., after a stubborn and long campaign of waiting, brought the battle of Chattanooga to a success for the North, and virtually forced the surrender of Lee, April 9, 1865. Grant's immense popularity gave him a sure road to the white house in 1868 and again in 1872. After his term of office expired, he made a notable tour of the world. His friends tried to secure a third nomination in 1880, and Grant obtained more than 300 votes in the convention for 36 ballots, when Garfield became a compromise candidate. In 1881 Grant invested his savings in a business venture in New York City, but this failed in 1884, leaving him penniless. Though he was stricken with cancer then, he consented to write his *Memoirs*, which attained an immense fame and fortune after his death on July 23, 1885. Grant was a kindly, sympathetic, and honorable man in all his dealings.

GRATIAN (*grā'shan*) (359–383). Roman emperor from 367 to his death, who assigned most of the eastern, western, and home parts of the Roman empire to others for rule under his direction. He in turn gave his attention to Britain and Gaul, but the Roman general Maximus led a revolt in Britain, which extended to Gaul, and Gratian was assassinated at Lyons, where he had fled from Paris after being deserted by his troups. Christianity became the official religion in his reign, and he refused to observe pagan dress, rights, and the honors due the Vestals. Influenced by Ambrose, bishop of Milan, he persecuted the heathen Romans and renegade Christians, though ordinarily he was a mild and humane ruler.

GRATTAN (*grăt'ăn*), **HENRY** (1746–1820). Irish statesman, born in Dublin, educated at Trinity College there, and was called to the Irish bar. He became a celebrated orator and labored with great zeal to secure an independent parliament for Ireland and for Catholic emancipation. In 1805, indepedence not being attained, he joined the English Parliament, where he was befriended by Fox. Though he took a moderate ground, somewhat thereby alienating many Irish at home, he always worked for the good of his countrymen. For moderation, honor in private life, and all noble sentiments Grattan became widely popular among all parties.

GREELEY, HORACE (1811–1872). American journalist and politician, who with Thurlow Weed engaged in newspaper work in New York. In 1841 he founded the *Tribune* and for years became a great power in national thought. He supported many reform movements like suffrage, abolition of capital punishment, and the tariff. Though he at first admitted the rights of the southern states to withdraw, he became an eager and effective supporter of the union in the war. Later he tried to negotiate with reputed southern leaders for a cessation of hostilities, and after the war he favored mild measures for the southern participants. He signed the bail bond of Jefferson Davis. When he became a presidential candidate against Grant in 1872, Greeley lost much support from his old adherents because of his attitude toward the South. He died a disheartened and broken man three weeks after the election.

GREVY (*grā-vē'*) **FRANCOIS PAUL JULES** (1807–1891). French statesman and third president of France. He was elected a deputy in 1868, and became president of the National Assembly (1873). In 1876 he was made president of the Chamber of Deputies, and succeeded MacMahon as president of the republic in 1879, being reëlected in 1885. He resigned in 1887 on account of the scandal connected with his son-in-law, Wilson, who was charged with trafficking in decorations.

GREY, ALBERT HENRY GEORGE, EARL (1851–1917). British statesman; educated at Harrow and at Trinity College, Cambridge; in Parliament from South Northumberland (1880–1885), from Tyneside (1885–1886); succeeded to the peerage (1894); administrator of Rhodesia (1896–1897); director of British South Africa Company (1898–1904); governor general of Canada (1904–1911). In his later years he labored for imperial federation and proportional representation.

GREY, CHARLES GREY, SECOND EARL OF (1764–1845). He was a Whig member for Northumberland in 1786, assisted Fox, Burke, and Pitt in the impeachment of Warren Hastings, and became one of the "Society of Friends of the People," the object of which was to secure reforms in the franchise system. Grey, now Lord Howick, became first lord of the admiralty in 1806, foreign secretary on the death of Fox that same year, and in 1830 prime minister. His reform bill extending the voting rights met defeat, Parliament was dissolved, but a new one more favorable succeeded. Grey since 1807 had been an earl. His reform bill of 1832 was again rejected, but Grey secured permission to create enough favorable lords to pass it, since the House of Commons had already yielded. The Duke of Wellington, who had led the opposition, now gave up the struggle, and the bill was finally enacted. Another great measure was a law abolishing slavery in British territory.

GREY, EDWARD VISCOUNT (1862–1933). English statesman, educated at Winchester and Oxford, became a baron in 1882, and undersecretary of foreign affairs from 1892 to 1895, and by 1905 had risen to a commanding position in diplomacy. Some of his great achievements were the opposition to the annexation of Bosnia and Hercegovnia by Austria in 1908, though the plan failed; his success in blocking concessions in Morocco to Germany; and his treatment of the Balkan problems in 1914. He did everything possible to promote friendly feeling among the nations in 1914, and proposed that the Austro-Serbian difficulty should be arbitrated. He was created Earl Grey in 1916, in 1919 served as special ambassador to Washington, and in 1928 was elected Chancellor of Oxford University.

GREY, LADY JANE (1537–1554). "The nine days' queen" of England; born at Broadgate, Leicestershire; great-granddaughter of Henry VII.; married Lord Guilford Dudley, son of the duke of Northumberland. The latter proclaimed her queen on the death of Edward VI. (1553), but the usurpation was short-lived and Mary was proclaimed on July 19, 1553. The ill-fated Lady Jane and her husband were beheaded in the Tower (February 12, 1554).

GUSTAVUS (*gŭs-ta'vŭs*) **I. (VASA)** (1496–1560). King of Sweden; ascended the throne (1523); introduced the Reformation into Sweden; freed the country from the monopolies long enjoyed by the Hanseatic League, and established a navy.

GUSTAVUS II. (ADOLPHUS) (1594–1632). King of Sweden (1611–1632); son of Charles IX.; de-

feated the Polish and Russian invaders; went to the aid of the Protestant league in Germany and defeated Tilly at Breitenfeld, near Leipzig (September 17, 1631). He was killed in the hour of victory at the battle of Lützen (November 16, 1632), in which he was opposed to the famous Wallenstein.

GUSTAVUS III. (1746–1792). King of Sweden (1771–1792). He regenerated his country, though his extravagances alienated many of his subjects. He declared war against Russia without consulting Parliament, and in 1790 almost annihilated the Russian fleet at the battle of Svensksund. He was assassinated in 1792.

GUSTAVUS IV. (1778–1837). King of Sweden; came to the throne in 1792, the duke of Sudermania being regent during the king's minority. He lost Finland to the Russians, and his subjects finally deposed him (May, 1809). He died at St. Gall in Switzerland.

GUSTAVUS V. (1858–). King of Sweden since December 8, 1907: born in the Castle of Drottningholm; first son of King Oscar II. Studied law at the University of Uppsala (1877–1878), traveled extensively, and resumed study in the university (1889); entered the army (1875) and gradually rose in rank until he became lieutenant general (1892) and general (1898). From 1884 to 1891 he was vice-king of Norway; married Princess Victoria (1881), daughter of Frederick William Louis, grand duke of Baden. He succeeded Oscar II. as king.

HAAKON VII. (*hô'kŏn*) (1872–). King of Norway (1905–). The second son of Frederick, king of Denmark. Elected king by the Storthing of Norway on the separation from Sweden; married Maud, third daughter of King Edward VII. of England.

HADRIAN (PUBLIUS AELIUS HADRIANUS) (76–138). Roman emperor (117–138). Governor of Syria (117); proclaimed emperor (117); made peace and governed justly. Built Hadrian's Wall in Britain; the Temple of Venus in Rome; the Mausoleum (i.e., Castle of St. Angelo); the Aelian Bridge; founded Adrianople.

HAGGART, HON. JOHN GRAHAM (1836–1913). Born in Perth, Ont.; mayor of Perth (1867–1869–1871); elected for South Lanark to House of Commons in 1872. Postmaster general (1888–1902); department of railways and canals (1892–1896). Leader of Ontario Conservatives in Parliament (1892); completed construction of Sault Ste. Marie Canal, the final link in the mighty chain of Canadian canals connecting the Great Lakes with the St. Lawrence. Haggart led the opposition as a Conservative in parliament during the administration of Sir Wilfrid Laurier.

HALDANE (*ha'dān*), **RICHARD BURTON, VISCOUNT** (1856–1928). British philosopher and statesman, was born in Scotland and educated at Edinburgh and Göttingen, becoming a barrister in 1879. He served as a Liberal in parliament from 1885 to 1911, secretary of state, 1905–12, and then lord chancellor for three years, and again in the ministry of Ramsay Macdonald in 1924, continuing on invitation of Baldwin his connection with the ministry. A report on the machinery of government was adopted by Mr. Baldwin in principle. Haldane wrote several scholarly works, including *The Reign of Relativity* (1921) and in the following year *The Philosophy of Humanism*. His influence in all departments of government was profound.

HALE, JOHN PARKER (1806–1873). Statesman; born in Rochester, N. H.; admitted to bar (1830); elected to state legislature (1832); United States district attorney for New Hampshire (1834–1841); congressman (1843–1845); United States senator (1847–1865), excepting an interval of two years; minister to Spain (1865–1869).

HALIFAX, CHARLES MONTAGU, EARL OF (1661–1715). See under DICTIONARY OF FINANCIERS.

HALIFAX, GEORGE SAVILE (1633–1695). English statesman, created Baron Savile of Halifax in 1667, sat in the Convention parliament of 1660, went on a diplomatic mission to Holland, opposed the Exclusion Bill, but approved the Regency Bill, and so alienated Charles II, but later the king again took him up more actively. James dismissed him from public service, but Halifax returned under William and Mary as lord privy seal. Though his life was made up of several compromises, he tried to serve the best interests of state, and to steer an even course between religious and political factions. Thus as a conciliator he had a great influence.

HAMILTON, ALEXANDER (1757–1804). One of the greatest of American statesmen; born on the island of Nevis, West Indies; entered Columbia University (1773) and early attracted attention by several pamphlets of a political nature. He was a lieutenant colonel under General Washington (1777–1781); was a member of the Continental Congress (1782–1783), of the Annapolis Convention (1786), of the Constitutional Convention in Philadelphia (1787), and of Congress (1787–1788). As United States secretary of the treasury he helped to mold the country's policies. After the definite formation of parties, he became leader of the Federalists. His support of Jefferson in 1800 increased the hatred existing between him and his rival, Aaron Burr. A trivial occasion led to a duel between the two men in which Hamilton was mortally wounded.

HAMLIN, HANNIBAL (1809–1891). An American statesman; born in Paris Hill, Me. Practised law and was a member of the Maine legislature (1836–1840 and 1847), of the lower house of Congress (1843–1847), of the United States Senate (1848–1857); became governor of Maine (1857); was vice-president of the United States (1861–1865); sat in the Senate (1869–1881); and from 1881 to 1883 was minister to Spain.

HAMMURABI (*hä-mu-rä'bi*) (2067–2025 B. C.). Great king of the first Babylonian dynasty, is known for his various works of reorganization and for a code of laws for use in courts of his empire. This code is preserved on an immense diorite stela in 21 columns, a few of which are defaced, and on the other side 28 more columns, containing also an account of the works of the king among other material. In all there are about 250 laws now readable in the Sumerian language in which they were inscribed. Hammurabi seems to have been an able and progressive monarch, given to public improvements and justice.

HANCOCK, JOHN (1737–1793). American statesman; born in Quincy, Mass.; was graduated from Harvard (1754) and inherited a considerable fortune from his uncle (1764); was a member of the Massachusetts general court (1766–1772), of the Continental Congress (1775–1780 and 1785–1786), where he served as president (1775–1777). His name appears in a bold hand on the Declaration of Independence. He was the first governor of Massachusetts under the new constitution (1780–1785 and 1787–1793), and president of the convention (1788) which met to consider the new Federal constitution.

HANNA, MARCUS ALONZO (1837–1904). American politician; born in Lisbon, Ohio. In 1896 he secured the nomination of William McKinley for president and he himself became the chairman of the Republican National Committee. Appointed senator (1897) to succeed the late John Sherman; elected in 1898. One of the most influential advisers of the administration.

HARCOURT, SIR WILLIAM VERNON (1827–1904). English statesman; born at Nuneham Park, Oxford. From 1869 to 1887 he was professor of international law at Cambridge. Was home secretary and cabinet minister (1880–1885), chancellor of the exchequer (1886 and 1892–1895), and leader of the House of Commons (1894) on Gladstone's retirement. His death-duties budget (1894) is his greatest achievement. He was knighted in 1873.

HARDICANUTE (*har-dĭ-că-nūte'*) **(HARDACNUT)** (c. 1019–1042). King of England and Denmark; the son and successor of Canute. At the death of his father (1035) he was under-king of Denmark. The English Witan decided that Harold, half-brother of Hardecanute, should have the south and that Hardecanute should have only Wessex. As Hardecanute was slow in taking his kingdom, it all went to Harold in 1037. On the latter's death, in 1040, it all passed to Hardecanute.

HARDING, WARREN G. (1865–1923). Twenty-ninth president of the United States, born in Morrow County, Ohio, studied at Ohio Central College at Iberia, taught school, read some law, and then entered journalism, which became his permanent profession. From 1884 to shortly before his death he was chief owner, and for many years was editor, of the Marion, Ohio, *Star*. Joseph B. Foraker encouraged him to enter politics, and their friendship continued to the end, even though he replaced Foraker in 1914 as

Republican candidate for senator for Ohio. Harding sat for two terms in the Ohio senate (1900–04), for two years was lieutenant governor of Ohio (1904–06), but was defeated in the race for governor in 1910. Before he had completed his term as senator, which began in 1914, he was elected president by an overwhelming vote in 1920, taking office on March 4 next. Following a trip to Alaska in 1923, an attack of pneumonia and heart disease caused his death at San Francisco on Aug. 2. The outstanding event of his administration was probably President Harding's invitation of the great nations to a Limitation of Armament Conference in Washington in 1921. He opposed the League of Nations, but favored an association with less autocratic powers.

HARDINGE, RT. HON. SIR CHARLES (1858–). Viceroy of India (1910). Entered diplomatic service (1880); served successively as secretary of embassy at Constantinople, Berlin, Washington, Sofia, Bucharest, Paris, Teheran, and St. Petersburg till 1903; assistant under-secretary for foreign affairs (1903–1904); ambassador at St. Petersburg (1904–1906); and permanent under-secretary for foreign affairs (1906–1910). In 1910 he was appointed Viceroy of India and made a peer, remaining abroad till 1916, and from 1920 to 1922 he was ambassador to France.

HARMON, JUDSON. See DICTIONARY OF LEADING JURISTS.

HAROLD. Name of two kings of England. **HAROLD I.** (? –1040), surnamed **HAREFOOT.** Became joint ruler with Hardecanute (1035); but the prolonged absence of Hardecanute in Denmark led the people to give over his share of the kingdom to Harold, who became sole king (1037). **HAROLD II.** (?1021–1066). Became king in 1066; was the second son of Earl Godwin. In 1066 he defeated the Norsemen at Stamford Bridge, but a few days later was defeated and slain by William, duke of Normandy, at Senlac.

HARRISON, BENJAMIN (1833–1901). The twenty-third president of the United States, was a grandson of W. H. Harrison, ninth president and the son of John Scott Harrison, member of Congress from Ohio (1853–57). He worked on a farm, attended school in a log-cabin, completed a course at Miami University, studied law under Bellamy Storer at Cincinnati, and settled at Indianapolis in 1854. After distinguished service in the Civil War, especially in the command of General Sherman and at the battles of Kenesaw Mountain and Nashville, he was breveted brigadier general in 1865. After interrupted practice of the law until 1881 he entered the Senate, having refused a cabinet place offered by Garfield, whom he strongly supported. As chairman of the committee on territories, he wielded a great influence upon the policy of admission of new states. He defeated Grover Cleveland for the presidency in 1889, but was replaced by the latter four years later. Important tariff, peace, and monetary legislation was passed during Harrison's term, but he was defeated because of the attitude of labor on the tariff.

HARRISON, WILLIAM HENRY (1773–1841). Ninth president of the United States, born in Charles County, Virginia, the son of Benjamin Harrison, one of the signers of the Declaration of Independence and governor of Virginia (1781–84). W. H. Harrison was graduated from Hampden-Sidney College, was prevented by the death of his father from completing a medical course, joined the army, and spent many years in treating with the Indians. He acted as secretary of the North-west Territory (1798), and the next year represented the district in Congress. From 1801 to 1812 he was governor of Indiana Territory, much larger than the present state of the same name, made various treaties with the Indians, helped confirm their rights, fixed their boundaries, and secured legislation preventing sale of liquor to them. In the War of 1812 he advanced to the rank of major general, finally defeating the British decisively at the battle of the Thames (1813). He was a member of Congress (1816–19), of the Ohio senate (1819–21), U. S. Senator (1825–28), resigning to be first minister to Colombia, but served only part of a year, returning to his home in North Bend, Ohio. In 1840 he defeated Van Buren for the presidency by an electoral vote of 234 to 60, after a strenuous campaign, many speeches, and endless mass meetings. Harrison died after a month as president. Much of the policy regarding the Indians and new territory dates from Harrison's wise recommendations. His defeat of the Indians at the Tippecanoe near the present Battle Ground, Indiana, was long a source of his popularity and of his hold on Indian affairs.

HARUN-AL-RASCHID (*hä-rōōn'äl-rä'shĕd*) (? – 809). Caliph of Arabia and the fifth of the line of the Abbassides. He succeeded his elder brother, Al-Hadi, in 786. Under him the capital, Bagdad, became the most flourishing city of the times. He is best known as the caliph around whom center the tales of the Arabian Nights. His success was due to the ability of the grand vizier, Yahya, of the family of the Barmecides. The caliph grew envious and distrustful of them, and put the vizier and his four sons to death. After this rebellions spread throughout the caliphate, and while on his way to check a formidable one at Khorassan in 809, he was attacked by apoplexy and died.

HASTINGS, WARREN (1732–1818). An English statesman; governor general of India; born at Churchill, in Oxfordshire. In 1769 he went to India for a second time, and in 1772 became president of the supreme council of Bengal. The administration of Hastings was vigorous and successful, and on his return to England (1785) he was received with acclaim. But the whigs questioned his methods, and his impeachment, which began in 1788, extended over seven years, and finally ended in his acquittal. He devoted the remainder of his life to literature.

HAY, JOHN (1838–1905). American statesman and diplomat; born in Salem, Ind. Law student with and private secretary of President Lincoln; editorial writer of the New York *Tribune* (1870–1875) and later editor-in-chief; first assistant secretary of state under Hayes (1879–1881); ambassador to Great Britain (1897); secretary of state (1898), which office he held until his death. Though a prominent public man he never once held an elective office.

HAYES, RUTHERFORD BIRCHARD (1822–1893). The nineteenth president of the United States, who was born at Delaware, Ohio, attended school at Norwalk, Ohio, and Middletown, Conn., was graduated from Kenyon College and the Harvard Law School (1845). He immediately began the practice of law, after 1848 in Cincinnati, having first settled in Upper Sandusky (now Fremont), Ohio. For three years he acted as city attorney (1858–61), served with distinction and was severely wounded in the Civil War, being made a brevet major general of volunteers. He was elected to Congress (1864 and 1866), was governor of Ohio (1868–72), and began his interest in "sound money," or the coinage of silver at a fixed rate of value and weight rather than the issue of paper or fiat money. In 1876 he was preferred over James G. Blaine, his Republican opponent, as candidate for the presidency, but the Democratic nominee, Samuel J. Tilden, received a majority of the popular votes. Irregularities in four states were settled by an electoral commission of 15 men, who by a vote of 8 to 7 settled the contests so that Hayes was declared elected. The two great accomplishments of his term were the resumption of specie payments and the conciliatory attitude toward the Southern states. After his retirement he returned to Fremont, Ohio, and interested himself in charitable and public movements.

HAYNE, ROBERT YOUNG (1791–1839). American statesman; born in St. Paul's Parish, Colleton District, S. C. He was admitted to the bar (1812); was attorney general of his state (1818–1822); served also in other important positions. He is best remembered for his brilliant debate with Webster on the "States' Rights" question. In 1832 he was elected governor of South Carolina and, though he firmly supported his state, was strongly opposed to the violent methods of the extreme nullifications.

HEAD, SIR EDMUND WALKER (1805–1868). English governor general of Canada; born near Maidstone, Kent; was educated at Winchester and Oxford, was a fellow of Merton College (1830–1837), and in 1847 was made lieutenant governor of New Brunswick. During his term (1854–1861) as governor general of Canada, the clergy reserves and seigneurial tenures were done away with, the Victoria bridge at Montreal built, and Ottawa made the capital.

HEARST (*hûrst*), **WILLIAM RANDOLPH** (1863–). An American journalist and politician; born in San Francisco, Cal. In 1886 he became editor of the San Francisco *Examiner;* bought the New York *Journal* (1895); and in 1900 began to publish the Chicago *American.* Elected to the United States House of Representatives (1902 and 1904). In 1905 he was nominated for mayor of New York City, but was defeated by George B. McClellan. In 1906 Hearst

was nominated for governor of New York, but was defeated by Charles E. Hughes. He was again defeated in 1909.

HEINSIUS (*hain'si-us*), **ANTOON** (1641–1720). Dutch statesman; born at Delft; was the actual governor of Holland under William of Orange. He is remembered for his obstinacy in dealing with Louis XIV, of France, of whom he made humiliating demands in behalf of the alliance of Holland on the one hand, and Great Britain, Denmark, Hanover, Austria, Prussia, and Savoy on the other. He was the last to sign the Peace of Utrecht.

HENDERSON, ARTHUR (1863–1935). British labor leader and politician. He was born in Glasgow, was a moulder and became interested in the labor movement, in 1908 becoming chairman of the labor party. He sat in the first coalition ministry of Asquith as president of the board of education and later as paymaster general, pledged the support of labor, and sat in the cabinet of Lloyd-George. In 1917 he visited Russia and joined in advocating an international labor and socialist congress, but the idea became unpopular, he lost his seat in the House of Commons in 1918, 1922, and 1923, but went in by means of a by-election in each case. Both he and two sons were in parliament in 1924, and he was secretary of state for home affairs in the MacDonald cabinet.

HENDRICKS, THOMAS ANDREWS (1819–1885). American statesman; born near Zanesville, Ohio. Member of Congress from Indiana (1851–1855); United States senator (1863–1869); governor of Indiana (1873–1877); candidate for vice-president with Tilden (1876), and elected vice-president with Grover Cleveland (1884), but died on November 25, 1885.

HENGEST (*hĕn'gĕst*) (? –488). Traditional Jutish chief. It is said that at the invitation of Vortigern, he landed on the Isle of Thanet (449) to aid in the expulsion of the Picts and Scots. He later turned against the Britons, and in 457 became king of Kent.

HENRY I. (1068–1135). King of England (1100–1135). The fourth son of William the Conqueror. In 1091 William Rufus and Robert took his possessions away from him and drove him into exile. When William Rufus was found dead, Henry went at once to England, seized the royal treasure, was crowned king and issued a charter of rights, which was the basis of Magna Charta. He recalled Anselm, archbishop of Canterbury, and married Matilda, daughter of Malcolm Canmore of Scotland, thus greatly pleasing the Saxon people. Robert of Normandy made war upon his brother and Henry was obliged to surrender all of his possessions in Normandy and pay a bounty to Robert in 1101. War broke out between them again in 1104 and they met at Tenchefrai, in France, and Robert was defeated and held as a prisoner in Cardiff Castle until his death. The holding of Robert's possessions in France brought about frequent wars, but these had much to do with the amalgamation of the races in England, and great strides were taken in this reign towards a union of the Saxons and Normans. Henry lost his favorite son, William, in 1120.

HENRY II. (1133–1189). King of England (1154–1189). Son of Matilda and grandson of Henry I. His father was Geoffrey Plantagenet. Henry was the first of the line of Plantagenet kings. He succeeded Stephen by the Treaty of Wallingford. He gained large possessions in France by inheritance and by marriage; in fact, his French territory was greater than that of the French king. Henry sought to repair the damage done by the civil war in Stephen's reign. He soon became involved in quarrels with the clergy. A direct consequence of this was the murder of Thomas à Becket, the archbishop of Canterbury, in 1162. Henry did penance publicly for this crime. Ireland was conquered by him in 1157. The latter part of his life was troubled by the rebellions of his sons. In the course of one of these the king died and was succeeded by his son, Richard Coeur de Lion.

HENRY III. (1207–1272). King of England (1216–1272). The eldest son of John, whom he succeeded when only nine years old. The affairs were administered by the earl of Pembroke until 1219, then by Stephen Langton and Hubert de Burgh. In 1258 the barons, led by Simon de Montfort, rose against him and forced from him concessions known as the Provisions of Oxford. The king got back his power and annulled the provisions in 1264. "The Mise of Lewes" followed the battle of Lewes in 1264, when the king was defeated and captured. By this the king's power was greatly limited and Simon de Montfort tried to secure a new constitution for England. A parliament was summoned, which was attended by knights and representatives of the shires, and is known as the first parliament of England. Statute laws date from Henry's time, the Provisions of Merton being the first enactment on the English statute book.

HENRY IV. (1367–1413). King of England (1399–1413). The eldest son of John of Gaunt, the fourth son of Edward III. He was banished by Richard II. in consequence of a quarrel with the duke of Norfolk in 1398. In 1399 John of Gaunt died and King Richard II., breaking his promise, confiscated all of his estates. The son landed in England and, as Richard was returning from Ireland, took him prisoner, caused his abdication in 1399, and took the throne in his place. He put down a rebellion of the Welsh under Owen Glendower (1400); defeated the Scotch at Homildon Hill in 1402; overthrew the Percy rebellion at Shrewsbury in 1403, when the famous Percy, Harry Hotspur, was slain.

HENRY V. (1387–1422). King of England (1413–1422). Son and successor of Henry IV. Conducted a war with France in which he took the town of Harfleur and gained the battle of Agincourt against enormous odds in 1415; took Normandy in 1417, and Rouen in 1419. While undertaking a third campaign against France he was taken ill and died at Vincennes in 1422. His son, Henry VI., succeeded him.

HENRY VI. (1421–1471). King of England (1422–1461). Son and successor of Henry V. He was declared king of England when only a few months old, and king of France a few weeks later. The duke of Bedford was regent. In 1421 Joan of Arc caused the defeat of the English in France, and the country gradually passed out of English control. By 1451 Calais was the only English possession in France. The king lost his mind at times and affairs were in a bad way. In 1450 the men of Kent, under the leadership of Jack Cade, rose in rebellion and demanded that the duke of York be placed at the head of the government. In 1455 the first battle of St. Albans was fought between the king's forces and those of the duke of York. This was the first battle of the Wars of the Roses, or the long struggle between the House of Lancaster, to which Henry VI. belonged, and that of York, led by Richard, duke of York. Henry was taken prisoner in this battle. He was again captured at the battle of Northampton (1460). It was then agreed that Henry should keep the crown but that York should be his successor. Margaret, the wife of Henry, was angered that her son should be shut out, so she raised forces and the battle of Wakefield Green was fought in 1460 and the duke of York slain. Edward, earl of March, York's son, raised a force and fought the battle of Towton in 1461 and was crowned king as Edward IV. Other engagements followed, and Margaret caused Edward to be driven out of England and Henry restored. Edward returned the same year (1471) and Henry was recaptured and murdered.

HENRY VII. (1457–1509). King of England (1485–1509). He was the son of Edmund Tudor, earl of Richmond, and Margaret, granddaughter of John of Gaunt, from whom he derived his claim to the throne. He defeated Richard III., of the house of York, at Bosworth Field in 1485 and Richard was slain in battle. Several uprisings by Yorkists in his reign accomplished nothing. The royal power increased rapidly in this reign. The Star Chamber was instituted for the detection and punishment secretly of powerful nobles. Henry kept out of foreign wars and devoted himself largely to increasing his power and in amassing a fortune. North America was discovered by John Cabot in this reign.

HENRY VIII. (1491–1547). King of England (1509–1547); second son of Henry VII.; married Catherine of Aragon; defeated the French at Guinegate, and the Scotch at Flodden (1513). Until 1529 Wolsey was a power almost as supreme as the king himself. In actual warfare Henry sided with Francis I. of France, though in diplomatic transactions he often favored Emperor Charles V.; there were many interviews, one of the most noted of which was the "Field of the Cloth of Gold." Failing to receive the pope's consent to a divorce from Catherine, Henry deposed Wolsey, made himself head of the Church of England, and in 1533 married Anne Boleyn. Cranmer was made archbishop of Canterbury, monasteries were abolished, and all subjects made to take oath of allegiance to the king. Henry, actuated only by personal motives, did not realize that he had forever broken papal power in England. Anne Boleyn was executed (1536) and Henry married Jane Seymour, who died

(1537); married Anne of Cleves (1540); divorced shortly after, and married Catherine Howard, who was executed (1542); married Catherine Parr (1543), his sixth wife. During his last years Henry endeavored to establish his authority in Ireland, and was at war with Scotland and France (1542–1546). The succession was granted by Parliament to his children, Edward, Mary, and Elizabeth.

HENRY IV. (1050–1106). Holy Roman emperor (1056–1106). The son and successor of Henry III. He became king when only six years old and the nobles and clergy who had been held in check by Henry III. sought to gain privileges by force. Revolts took place and Germany was in a state of anarchy. In 1073 Hildebrand was elected pope under the title of Gregory VII. A decree was passed by the church claiming sole right of investiture or appointment of bishops and other church dignitaries. Henry contested this right, and after a struggle he went to Canossa and waited as a penitent for three days barefooted in the courtyard for absolution from the pope. This action, while humiliating to Henry, really averted a union of the church and the nobles, and was diplomatic. Henry was afterward taken prisoner in a rebellion and forced to abdicate. He died shortly after.

HENRY V. (1081–1125). Holy Roman emperor (1106–1125). Son and successor of Henry IV. Appointed after Conrad had forfeited his right to the throne by rebellion. Pope Paschal II. demanded that he give up the right of investiture, which Henry refused to do. In 1110 he invaded Italy with 300,000 men. The pope agreed that the church should give up its lands and property in Germany if the emperor would give up the right of investiture. This was agreed to. The Romans opposed the crowning of Henry as emperor and the pope and cardinals were taken prisoners. Then the pope recognized the right of investiture and Henry was crowned. As soon as he had crossed the Alps on his way home, the pope renounced the treaty and Henry was excommunicated. Germany was then plunged in civil war. In 1116 Henry went back to Italy, drove Paschal from Rome, and after his death had Gregory VIII. elected pope. The papal party then set up Gelasius as pope and Henry allayed the opposition to him in Germany. Pope Calixtus II., who succeeded Gelasius in 1119, compromised the situation and the struggle was closed for a time by the Treaty of Worms (1122). Henry was succeeded by Conrad III.

HENRY IV. (1553–1610). King of France, was educated a Protestant, married Margaret of Valois, and by feigning a change of faith escaped the massacre of St. Bartholomew. He engaged in various battles and alliances, sought to weaken the power of the Guises, and finally, on the death of Henry III. became king of France. Yet he had to win his authority, and even to become a Catholic before Paris welcomed him. By the edict of Nantes, however, he allowed freedom of conscience to the Protestants. Henry encouraged industry, sought foreign alliances, especially against the Habsburgs, and entertained at least a kindly feeling toward the common people.

HENRY, PATRICK (1736–1799). American patriot and orator; member of the Continental Congress; twice governor of Virginia. From very humble beginnings, and after failure in business he became a lawyer; won fame for his speech in the "Parsons' Cause"; opposed the Stamp Act, and by his eloquence stirred up Virginia to action in the War of Independence. He was the first speaker of the General Congress at Philadelphia.

HENRY THE FOWLER (876–936). King of the Germans (919–936). The son of Otho, duke of Saxony. He succeeded his father in 912, and on the death of Conrad I., the German king in 919, he was chosen king by the Franconian and Saxon nobles. In 925 Lotharingia, or Lorraine, came over to Henry's side. The Hungarians had long made inroads upon Germany, and in 924 Henry was obliged to buy a truce with them for nine years of peace. He took part of this time to prepare and train his army. When he thought it was ready he tried it against some Danes and Slavs. He then refused payment of the annual tribute to the Hungarians. They made war upon him and he defeated them in Thuringia so badly that they did not venture into Germany for several years thereafter. Henry gathered around him the powerful nobles and made himself secure through their influence.

HEPBURN, WILLIAM PETERS (1833–1916). Congressman in 1881–87 and 1893–1909 of the eighth Iowa district. His parents removed to Iowa in 1841 and he became a printer, later an attorney, and soldier in the Civil War, when he became a lieutenant colonel. He was chairman of the congressional committee on interstate commerce and drafted the act which bears his name for the regulation of interstate carriers.

HERRICK, MYRON T. (1854–1929). Lived much of his life in Ohio as lawyer and business man, holding many local and state political offices, including the governorship of Ohio from 1903 to 1906. He declined appointment, for business reasons, as secretary of the treasury under both McKinley and Taft, but in 1912 was appointed ambassador to France by the latter, serving also under Wilson till 1914. During the first months of the World War he also acted for Austria, Germany, and Turkey at Paris, established an American hospital at Neuilly, and engaged in other relief activities, for which France gave him the cross of the Legion of Honor. He was again United States ambassador to France from 1921 till his death in Paris, March 31, 1929.

HILL, DAVID BENNETT (1843–1910). A Democratic politician, prominent in New York state; born at Havana, N. Y. Lieutenant governor of New York with Cleveland, whom he succeeded (1885) until 1891; United States senator to succeed Evarts (1891); defeated for governor by Levi P. Morton (1894).

HILL, DAVID JAYNE (1850–1932). American diplomatist, scholar, and author, born in Plainfield, New Jersey, was graduated from Bucknell University in Pennsylvania, became professor of rhetoric in his alma mater and president from 1879 to 1888, when he became president of the University of Rochester. Resigning in 1896, he studied law in Europe, in 1898 was appointed assistant secretary of state and also acted as professor of diplomacy at Washington, in 1903 went to Switzerland as minister, in 1905 to Holland, and in 1908–11 was ambassador to Germany. See under DICTIONARY OF AUTHORS.

HOAR, GEORGE FRISBIE (1826–1904). American legislator; born in Concord, Mass. Member of the Free-Soil party and of the Republican party. Congressman (1869–1877); United States senator (1877 till his death); member of the Electoral Commission (1877); presided over the Republican National Convention which nominated Garfield (1880); always opposed "imperialism."

HONORIUS (*hō-nō′ri-us*), **FLAVIUS** (384–423). Emperor of the West, on the division of the Roman empire after the death of Theodosius. He was at first influenced by Stilich, his father-in-law, a Vandal, and later by his general Constantius. Britain, Spain, and Gaul were lost during his reign. He rooted out pagan religious practices, tried to abolish the gladiatorial shows, reduced taxes, and made some improvements in laws. The Visigoths finally sacked Rome in 410.

HOOVER, HERBERT CLARK (1877–). Thirty-first president of the United States, was born at West Branch, Iowa, the son of an implement dealer and village blacksmith and of a mother noted as a Quaker preacher and public speaker. His father died when he was six, his mother when he was nine. Herbert lived with relatives, worked on a farm, studied as he could, and in the fall of 1891 entered the first class registered at Stanford University, California. After intensifying in geology and the study of mining, and working his way as a laboratory and field assistant, he engaged for a time as a workman in a mine, went to Australia in 1897, and to China in 1899,— after his marriage with his old friend, Lou Henry, also a student in mining at Stanford. The Boxer outbreak interned them for four months in the besieged city of Tientsin. For the next 13 years he acted as consulting engineer in several lands of both hemispheres. At the start of the World War the Hoovers were in London, where they and a group of friends arranged and financed the return to America of thousands of stranded countrymen. He organized and carried on the relief work in Belgium and occupied France, in four years collecting and expending about a billion dollars and saving countless lives of non-combatants. In 1917 President Wilson called him to conduct the Food Administration in the United States, after which in 1919 he organized a private corporation which finally fed and clothed nearly two million European children. From 1919 to 1928 he acted as secretary of commerce in the cabinets of Harding and Coolidge. In these years he acted on several relief and industrial commissions. His adherents tried to secure the presidential nomination for him in 1920, and the vice presidential, against his wish, in 1924. On the initial ballot in

1928 he was chosen by 837 out of a possible total of 1,089 votes in the Republican National Convention, and was elected by an electoral vote of 444 to 87 for Alfred E. Smith.

HOUGHTON (*hō'tŭn*), **ALANSON BIGELOW** (1863–). Ambassador to Germany, for many years was connected with the manufacture of glass at Corning, New York. From 1919 to 1922 he represented the 37th New York district in the House of Representatives, resigning to become minister to Germany. In March, 1925, he succeeded Ambassador Kellogg at the Court of St. James.

HOUSE, EDWARD MANDELL (1858–1938). American political leader who never held office himself, but was potent in the counsels of the Democratic party, especially in Texas and in the administration of President Wilson. He refused to take a cabinet position under Wilson, but advised him in the selection of several others, acted as confidential adviser, and served with him as spokesman at the Versailles Peace Conference. House was an astute and enlightened leader.

HOUSTON (*hū'stŭn*), **DAVID** (1866–1940). Born in North Carolina, he taught political science at the University of Texas from 1894 to 1902, acting as dean of the college, 1899–1902. Then he became successively president of the Agricultural and Mechanical College of Texas, University of Texas, and Washington University, St. Louis. He was secretary of agriculture under Wilson from 1913 to 1920 and of the treasury, February 1920 to March 1921, and then president of the Mutual Life Insurance Company, New York.

HOUSTON, SAM (1793–1863). American soldier and statesman; born near Lexington, Virginia. In 1813–1814 he served under General Jackson against the Creek Indians; later studied and practised law in Tennessee, and was a representative in Congress (1823–1827); was governor of Tennessee (1827–1829); removed to Texas and became commander-in-chief of the revolutionary forces there (1835); was president of Texas (1836–1838, 1841–1844). After the annexation of Texas he was United States senator (1846–1859), and governor of Texas (1859–1861), of which position he was deprived because he would not support the Confederacy.

HOWARD, ESME (1863–). A British diplomatist who was born in Cumberland, educated at Harrow, and entered the service in 1885. Attached to embassies at Rome, Berlin, secretary of state for foreign affairs, 1894–95; was in the South African war; served in embassy again at Rome and at Washington, and then became consul-general to Crete and to Hungary, 1903–11. Then was minister to Switzerland, Sweden; ambassador to Spain, and in 1924 to the United States.

HOWICK, LORD. See CHARLES GREY.

HUGH CAPET (*hū kā'pĕt*) (c. 938–996). King of France and founder of the race of sovereigns which has given over a hundred rulers to Europe. His kingdom grew from some fiefs around Paris ruled by his father, to which he added the kingdom of Louis V, through the power of Adalberon, bishop of Laon, who took prisoner the other rival, Charles, duke of Lower Lorraine. When Arnulf, appointed by him bishop of Reims, proved a traitor to Hugh, he had the French bishops elect a successor, but the latter was excommunicated by the Pope. Yet Hugh was a church man, friend of many bishops, and delighted in the services of the church.

HUGHES, CHARLES EVANS (1862–). American lawyer and statesman, born at Glens Falls, New York, educated at Colgate and Brown Universities and the Columbia University Law School, and taught law at Cornell and New York Law Schools. His public career began in 1905 in the investigation by the lighting commission of New York, and afterward in the special investigation of insurance companies, in which he attained wide fame. In 1906 he became governor of New York, being the only Republican elected on the ticket, and his term was characterized by legislative reforms, laws to protect working women and children, to provide a public service commission, and to forbid race-track gambling and betting. He resigned in 1910 to become associate justice of the United States Supreme Court, but withdrew in 1916 to become candidate for the presidency on the Republican ticket, having refused to be considered in 1912. He received 254 votes as to 277 for Woodrow Wilson. From 1917 to 1921 and after 1924 he engaged in practice of law in New York City. During President Harding's administration, 1921 to 1924, he acted with great distinction as secretary of state, his principal accomplishments being the naval limitation conference in Washington, refusal to recognize the Soviet regime, and a tentative principle for the settlement of war debts by Germany, resulting finally in the Dawes and Young plans. In 1924 he acted as chairman of a commission to reorganize the state government of New York, and recommended that about 175 bureaus should be reduced to 18, a plan effected by the Legislature. In 1926 he became a member of the Hague Court of Arbitration; in 1927 a special commissioner appointed by the Supreme Court to study the rights of Chicago in the diversion of water from Lake Michigan, reporting in favor of the city and against the protesting states bordering on the Great Lakes; in 1928 he was chairman of the Pan-American Conference at Havana; and in 1929 a judge of the Permanent Court of International Justice. Thus Hughes has a large hand in molding national and international legislation for many years. In February, 1930, Hughes was nominated by President Hoover to become chief justice of United States. Although considerable opposition developed in the Senate on the part of certain senators his nomination was confirmed by a wide majority.

HUGHES, SAM (1853–1921). Canadian soldier and politician, who was educated at the University of Toronto and taught English and history at a Toronto collegiate institute, afterwards owning and editing the Lindsay *Warder* (1885–1897). He served in the militia during the Fenian raids in 1870, in the South African campaign, rising to the rank of major general in the army in 1914. From 1911 to 1916 he was minister of militia, and as such he raised 350,000 men in Canada for the European service before he resigned, following disagreements with Premier Borden.

HUGHES, WILLIAM MORRIS (1864–). Statesman of Australia, premier from 1915 to 1922. Born in Wales, he went to Australia at the age of 20, engaged in prospecting, herding, teaching, and organizing laborers, till he entered parliament in 1894 for part of Sydney. In 1904 he became minister for external affairs under J. C. Watson; in 1908 he became attorney-general in the Fisher ministry, succeeding him as premier in 1915, when Fisher went to London, having offered Britain every resource and man for the World War. Hughes also became an ardent imperialist, visited England in 1916, after which against great opposition he advocated conscription for Australia. At the peace conference in 1918, he championed independent rights for Australia, including a mandate over Papua, and something in essence like a Pacific Monroe Doctrine. Difficulties arising after the World War led to the formation of a Liberal-Country coalition which forced him from office in 1923 in favor of S. M. Bruce.

HUMBERT I. (*hŭm'bĕrt*) (1844–1900). King of Italy was the son of Victor Emmanuel II. and of Archduchess Adelaide of Austria. His reign was comparatively peaceful, but several attempts were made on Humbert's life, the last of which by the anarchist Bresci was successful at Monza on July 29, 1900. For his charitable donations, notably during the floods of 1882, the earthquake of 1883, and the cholera epidemic of 1884, he gained the esteem of most of his subjects. He firmly stood by the constitution and asserted the independence of Italy of all foreign and ecclesiastical domination, though he favored both the Triple Alliance and a naval understanding with England.

HUNYADI (*hōōn'yŏd-ĭ*), **JANOS (JOHN).** See under DICTIONARY OF HISTORY.

HUSSEIN IBN ALI (1856–1931), first king of the Hedjaz, came of an ancient family and is recognized as the senior descendant of Mohammed. From 1890 to 1908 he was virtually a prisoner in Constantinople, where his four sons were educated in modern customs and ways. After the revolution in Turkey in 1918, Hussein became Grand Sheriff of Mecca. In this position he refused the suggestions that a holy war against Christians should be proclaimed. Then he took the side of the Allies and rendered valuable service in the campaign in Arabia and Mesopotamia. Being proclaimed King of Hedjaz, a new Arab state with Mecca as the capital, on October 29, 1919, Hussein was at once recognized by all the allied powers.

HUTCHINSON, THOMAS (1711–1780). The last royal governor of the Province of Massachusetts Bay (1771–1774). He was acting governor during the "Boston Massacre" (March 5, 1770). He was succeeded by General Gage, who was military governor.

HUYSMANS (*ŭs-man'*), **CAMILLE** (1871–). Belgian statesman, professor at the Liberal College of

Ypres and later at the New College of Brussels. In 1910 he entered the Chamber of Deputies, from 1905 to 1922 he acted as secretary of the Socialist International Bureau, and in 1917 attempted to organize the party conference of the socialists at Stockholm. In June 1925 he began a term as minister of science and arts. Besides works on socialism, he wrote several literary and dramatic compositions.

HYMANS (*ē'män*), **PAUL** (1865–). Belgian statesman, who was born in Brussels, became a lawyer and professor of comparative history of parliaments in the University of Brussels, deputy and liberal leader. He went on a mission to the United States in 1914, then was a representative at London, and from 1918 to 1920, 1924–25, and from 1927 minister of foreign affairs of Belgium. He represented his nation in many of the important international conferences, and in 1920 was the first president of the Assembly of the League of Nations.

IBRAHIM (*ĭb-rā-hēm'*), **PASHA** (1789–1848). Viceroy and general of Egypt; born at Cavalla, Roumelia. In 1810 he crushed a rebellion of the Arabs in upper Egypt, and in Arabia suppressed the Wahabis. In the Greek war of independence he supported the Turks; took Navarino, Tripolitza, and, after a memorable defense, Missolonghi (1826). In 1831 he invaded Syria, soon making himself master of the whole of that country; but he was eventually compelled by the powers to relinquish his claim on the conquered territory. In 1848 he was made viceroy of Egypt.

IGNATIEV (*ĭg-nä'tyĕf*), **NICHOLAS PAVLOVICH** (1832–1908). Russian diplomatist who negotiated a treaty after a difficult mission to Bokhara, another to Peking in 1860, by which he secured large territorial concessions for Russia, and acted as Russian ambassador at Constantinople from 1864 to 1877. He sought to free from Turkish influence the nations in southeastern Europe, but the Russo-Turkish war intervened, though he negotiated the peace of San Stefano afterwards. From 1881 for a year he acted as minister of the interior under Alexander III.

IL KAMON NO KAMI (*ēl kāy'mŏn nō kä-mē*) (1815–1861). A Japanese statesman who was largely instrumental in throwing Japan open to foreign trade and intercourse. He assisted Commodore Perry in 1853 in his diplomatic errand and forced the signing of the treaty with the United States. He was assassinated and his memory was execrated for some years among his own people.

INGALLS, JOHN JAMES (1833–1900). An American statesman; born in Middleton, Mass. Removed to Kansas (1858); member of the state senate (1862); United States senator (1873–1891); president pro tempore of the Senate (1887–1891); defeated by the Democratic-Populist forces. A fluent speaker, brilliant at repartee, and an excellent parliamentarian.

ISAAC I. (COMMENUS) (?–1061). First of the Commeni emperors of Byzantium, who with the nobles deposed Michael VI. in 1057, ruled but two years, and spent two before his death in the monastery of Studion. He revoked many old pensions, repaired the broken fortunes of the empire, took part of the revenues of wealthy monasteries, and sought to restore strict order in the government. His *Scholia* or commentary on the *Iliad* is still extant in manuscript.

ISABELLA I., THE CATHOLIC (1451–1504). Queen of Castile and León; born at Madrigal; succeeded to the throne on the death of Henry IV., in 1474. The war with Portugal ended in her favor (1479); the conquest of Granada was successfully completed; and the Inquisition carried on with fanatical earnestness. The queen is best remembered for her acquiescence in the plans of Columbus.

ISABELLA II. (1830–1904). Queen of Spain (1833–1868). Daughter of Ferdinand VII. The Salic Law was set aside to permit her to succeed her father. Her mother, Maria Christina, was regent. Don Carlos, her uncle, should have succeeded Ferdinand, and a rebellion in his favor raged with violence in 1840. In consequence of a rebellion in 1868, Isabella fled to France and, in 1870, she abdicated in favor of her son, Alfonso XII. He came to the throne in 1875, after the brief reign of Amadeus of Savoy and the failure of the republic under Castelar.

ISABELLE OF FRANCE (1292–1358). Queen of England, wife of Edward II., whom her adherents deposed, and with whose assassination she is charged. Her son, Edward III., ordered her arrest, put her lover, Mortimer, to death in 1330, and imprisoned her for the rest of her life.

ISMAIL PASHA (*ĭs-mä-ēl pä-shä'*) (1830–1895). Viceroy (1863) and khedive (1867) of Egypt. During the American Civil War he amassed great wealth in cotton. He encouraged the building of the Suez Canal. While his schemes for the aggrandizement of Egypt were ambitious, his extravagance plunged the country into such financial distress that France and England interfered (1879) and the sultan deposed Ismail Pasha and Prince Mohammed Tewfik was proclaimed khedive. Ismail received an annual pension of £50,000 and left the country.

ITAGAKI (*ē-tä-gä'kē*) (1838–1919). Japanese statesman known as the "Rousseau of Japan." An ardent advocate of government for his country based upon those of the United States and England; held many Cabinet offices. He opposed the government of Ito based upon that of Germany. A Christian and a church officer. In 1881 he formed the first real political party in Japan, secured the promise of the emperor that constitutional government should begin in 1891, held the office of minister of home affairs in 1898, and retired in 1900.

ITO, HIROBUMI (1840–1909). A Japanese statesman. Studied the coinage of the United States and obtained the adoption of the decimal system in Japan and the establishment of a mint at Osaka (1871). As minister of public works, he had the first railroad of Japan built from Yokohama to Tokyo (1872). He secured the adoption of foreign dress. In 1889 the constitution prepared by him was adopted. As premier (1892–1895) he carried the nation through the Chino-Japanese War; recalled to the premiership in 1898 he directed the Japanese against the Boxer uprising in China. He was active during the Russo-Japanese War. Called the "Bismarck of Japan" and the "Father of the Constitution." Assassinated.

IVAN III., THE GREAT (1440–1505). King of Russia and the founder of the present monarchy. He was the son and successor of Vasili the Blind, and came to the throne in 1462. His achievements were: the consolidation of the Russian Empire; the expulsion of the Tatars; the union with the Byzantine Empire by his marriage with Sophia Palaeologus, niece of the last emperor. In 1481 he defeated the Tatars and began the release from the chain which had bound Russia for two centuries and a half. He opened diplomatic relations with other European countries by the exchange of envoys. He was succeeded by his son, Vasili or Basil.

IVAN IV., THE TERRIBLE (1530–1584). Czar of Russia; was king after 1533, but did not really begin to rule until 1543. He began his reign with many notable improvements, and in the course of about 10 years completely destroyed the Tatar power. The imprisonment of the councilors, Silvester and Adatcheff, led to an uprising in favor of these men. It was 1572 before the country was restored to order, and during this time the punishments inflicted by Ivan justly won him the sobriquet, "The Terrible." In 1582 Ivan was defeated by the Poles, lost Polotsk and his conquests on the Baltic, and completed the conquest of Siberia. His acts of cruelty are unsurpassed in history, though they were often committed during fits of passion, which he afterwards regretted.

JACKSON, ANDREW (1767–1845). Seventh president of the United States, the son of immigrants from Ireland, was born near the North Carolina-Tennessee border (probably on the Carolina side), in a log cabin. At 13 with his brother he took part in operations against the British and he was captured. In 1784 he became a lawyer at Martinsville, N. C., in 1788 prosecuting attorney for the western part of the state, assisted in forming the constitution of Tennessee in 1796, and a part of the year served in the national House, where he became a violent opponent of Washington, and again for a brief time as senator in 1797. He was a judge of the supreme court of Tennessee (1798–1804), defended Burr as a friend after the fatal duel with Hamilton in 1807, defeated the Creek Indians in 1813, and the next year became a major general in the war against the British, defeating them at New Orleans in 1815, as he also did the Seminoles of Florida three years later. He acted in turn as governor of Florida Territory, as U. S. Senator for Tennessee (1823–25), and won 99 electoral votes, the largest number, for president in 1825. J. Q. Adams, however, was chosen by the states in a new combination. Jackson was elected in 1827 and again in 1832. Though his quarrelsome and untactful disposition made him many enemies, and caused several duels, he went out of office much more popular than he had entered public life years before.

JAMES I. OF ENGLAND AND VI. OF SCOTLAND (1566–1625). Son of Mary Queen of Scots, and Darnley; born in Edinburgh Castle. During his minority Moray and Morton were the chief regents. He ruled alone after 1581. In 1603 James succeeded to the crown of England and Ireland. His wish to rule absolutely, and to tolerate the Roman Catholics, soon brought him in opposition to the House of Commons. In 1619 James's son-in-law was made king of Bohemia as Frederick V. In the Thirty Years' War which followed, James refused to aid Frederick and the Protestants on the continent. Hoping now to restore Frederick to the palatinate by diplomatic means, he made every effort to bring about a marriage between the Infanta of Spain and Prince Charles. In this he failed, the outcome of his efforts being war with Spain. James was intolerant, superstitious, believed in the divine right of kings, and could not see the essential weakness of Spain and of his own efforts as a diplomatist. Yet he had a sincere wish to take a middle ground in state and church. He wrote numerous works, some of at least average quality as literature. His *Daemonologie* denounces witchcraft and calls on the civil powers to suppress it, and his *Basilikon Doron* is strongly Protestant. Some wag called him "the wisest fool in Christendom," a verdict in which many of James's own contemporaries would join.

JAMES II. (1633–1701). King of England (1685–1688). Son of Charles I. He was duke of York and Albany, and succeeded his brother, Charles II. Suppressed the rebellion raised by the duke of Monmouth, James's son, and caused his execution. The Bloody Assizes, presided over by the infamous judge, Jeffreys, followed, in which 320 persons were hanged. The Declaration of Indulgence, allowing freedom of worship, was issued in 1687, and was followed by a second in 1688. The clergy disobeyed the command to read the second in churches, and seven bishops entered a protest. James committed them to the Tower, but the court acquitted them. William, prince of Orange, was sent for by leading men to come and take the throne, which he did. James fled after the Battle of the Boyne (1690) and lived in France.

JAMES STUART, THE OLD PRETENDER (1688–1766). He was the son of James II, with whom he lived at the court of St. Germain in France. On the death of his father, he was proclaimed James III. by Louis XIV. of France, but a like ceremony in London met with jeers and violence. In 1702 William signed a bill of attainder against James, and by this Anne, the latter's half-sister, became queen of England. In 1715 a rebellion in his favor in the Scotch Highlands ended disastrously at the battles of Sheriffmuir and Preston, and, after going south as far as Scone, he departed for France. Later in life he lived with his wife Marie Clementina of Poland, in some splendor at Rome, under the patronage of Pope Clement XI, who acknowledged them king and queen of England. His son, Charles, claiming the English throne also, was beaten at the battle of Culloden (1746), and so the active efforts of the Stuarts to reclaim the throne ended.

JEFFERSON, THOMAS (1743–1826). Third president of the United States and founder of what is now called the Democratic Party, was born at Shadwell, Virginia. His mother's family, the Randolphs, belonged to the aristocracy of the state, but the Jeffersons lived in frontier style of democracy. Jefferson studied at William and Mary College and later became a good scholar, a tireless reader, mathematician, violinist, and author of works on government. His personal life and his marriage were most fortunate and happy. He was admitted to the bar in 1767, but left practice to lead the life of a gentleman planter and office holder. He sat in the Virginia house (1769–75), deliberated in many committees and public bodies, helped frame and sign the Declaration of Independence, though he never made a real speech in his life. From 1779 to 1781, he was in Congress, was minister to France from 1785 to 1789, secretary of state for Washington from 1790 to 1793, when he retired to his estate at Monticello, Va. In 1796 he and Adams ran for the presidency, and according to custom, Adams was declared elected on securing the higher number of votes, and so Jefferson became vice-president. He was elected, however, in 1800 and again in 1804, retiring to his estate in 1809, where he died on July 4, 1826, on the day when Adams also died. Jefferson favored a liberal mode of government, states rights, the gradual emancipation of slaves by their masters, and the expansion of the public domain, to promote which he purchased the Louisiana Territory in 1803.

JIMMU TENNO (*jĕm'mŭ tĕn'nō*). The first ruler of Japan; said to have held the throne from 660 to 581 B. C. He is the reputed founder of the present line of rulers. The Japanese reckon from the era of Jimmu, who is said to have lived 137 years.

JOHN, surnamed **LACKLAND** (1167–1216). English king (1199–1216). Hated by the nobles, they and France supported Arthur, his nephew, as rightful heir to the throne. War ensued, England losing Normandy, Touraine, Maine, Anjou, and Poitou. Deposed by the pope (1212); submitted to the pope (1213); defeated at Bouvines (1214); forced by barons to sign the Magna Charta (1215).

JOHN II., THE GOOD (1319–1364). King of France (1350–1364); defeated at Poitiers, captured and taken to London; released under Treaty of Bretigny (1360). When his son, the duke of Anjou, broke his parole, and left England, John voluntarily surrendered; died in London (1364).

JOHN III. or **JOHN SOBIESKI** (1624?–1696). King of Poland; was youngest son of James Sobieski, governor of Cracow. In 1665 he was made grand marshal and general of the Polish armies. He retook several cities from the rebellious Cossacks. In 1673 he gained the memorable battle of Khotin, near the Dniester, in which the Turks lost 28,000 men. On the death of Michael in the same year he was elected king of Poland, and shortly afterward compelled the Turks to sue for peace. He died in Warsaw.

JOHNSON, ANDREW (1808–1875). Seventeenth president of the United States, was a man of little education, who had started life in Raleigh, N. C., and afterward at Greeneville, Tennessee, under great handicap. He became a tailor and finally learned to read and write. From 1834 to 1843 he served in the state house and senate, and in the Federal house from 1843 to 1853, after which he was governor of Tennessee till 1857, and then U. S. senator till 1862. Refusing to leave the senate on the outbreak of the Civil War, as other southern members did, Johnson was appointed military governor of Tennessee, and he did much to hold the sentiment against disunion in his state. Though Johnson had continued to rank himself as a Democrat, he was nominated with Lincoln in 1864, and became vice-president, succeeding when Lincoln was assassinated in April, 1865. Johnson's term accomplished much reconstruction, but it was a long battle with the two houses of Congress, culminating in impeachment, but Johnson escaped being removed from office since the vote lacked one of the necessary two-thirds of the senate. After March 4, 1869, he lived in Tennessee until elected U. S. senator in 1875. He sat among many men who had voted to remove him from the presidency, but died before his efforts to regain his fame could be realized.

JOHNSON, HIRAM WARREN (1866–). Senior Senator from California, studied two years in the University of California before entering on the study of law. From 1888 to 1902 he practiced in Sacramento, removing to San Francisco and becoming a member of the staff of prosecuting attorneys in the graft cases. Assisted in securing the conviction of Abe Ruef and others after Francis J. Heney had been shot down in court. Governor of California from 1911 to 1917 and senator since then. Nominee of Progressives for Vice-President in 1912.

JOHNSON, RICHARD MENTOR (1781–1850). Seventh vice-president of the United States, born in Kentucky, became a lawyer, and entered Congress where he served in the House many years in three different periods and in the Senate from 1819 for ten years. He raised two regiments and served under General Harrison in the Canadian campaign; according to tradition, it was his bullet that killed the Indian chief Tecumseh, battle of the Thames in 1813. The Senate chose him vice-president among four candidates, none of which had a majority, and he served from 1837 to 1841. In the Democratic convention of 1840, no candidate was nominated to succeed him, and he obtained most of the Democratic votes, being defeated by the Whig rival, John Tyler.

JOHNSON, TOM LOFTIN (1854–1911). American capitalist, municipal reformer, and congressman was born in Kentucky, educated in Indiana, and acquired street railway holdings in Indianapolis, Cleveland, Detroit, and Brooklyn. From 1891 to 1895 he was in Congress, was mayor of Cleveland from 1901 to 1910, and advocated a three-cent fare on street railways, besides other municipal changes and reforms.

JOHNSTONE, HARRY HAMILTON (1858–1927). British explorer and administrator in Africa. He was

born in London, educated at King's College, and in 1879–81 visited the wilds of interior Tunisia, in 1882 went to Angola, and in 1883 visited Stanley and explored a tract in central Africa. Later he acted as vice-consul in the Cameroon, was consul in the Niger delta, where he laid the foundation for the British administration later, was consul in Portuguese Africa, and acted as commissioner in Uganda. He also terminated the Arab slave trade in the Nyasa region. Johnstone made scientific discoveries and took much interest in animal life.

JOLY DE LOTBINIERE (*jō'lē dē lŏt'bēn-yĕr*), **HENRI GUSTAVE** (1829–1908). Canadian politician, born in France, adopted the name of his mother in 1888. First elected to the house of the assembly of Canada in 1861, he served also from 1867 to 1874 in the House of Commons, Ottawa. Prime minister of Quebec 1878–79, and led the opposition after his defeat till 1883. He retired from public life in 1885 in protest because of the execution of Louis Riel for treason, but returned again in 1896, accepting later in the Laurier ministry the post of controller of inland revenue, and served from 1900 to 1906 as lieutenant governor of British Columbia.

JONES, ANSON (1798–1858). A president of the republic of Texas; born in Great Barrington, Mass. He settled as a physician in Texas in 1833; member of the second Texan Congress (1834); minister to the United States (1835); secretary of state with Houston (1841); elected president (1844); turned over the government to J. Pinckney Henderson, the first governor under the Constitution of the United States (1846).

JONES, SAMUEL MILTON (1846–1904). Known familiarly as "Golden Rule Jones," four times mayor of Toledo, Ohio, being elected thrice as an independent, and at first as a Republican. He was born in Wales, came to America in 1849, amassed a fortune in manufacturing, and as mayor defeated wrongdoing and championed the rights of the ordinary citizen. He asserted that Christianity could be applied to business and to government.

JONESCU (*yŏn'ĕs-kŭ*), **TAKE** (1858–1922). Rumanian statesman, who for a number of years was minister of education and finance in several cabinets. He organized the Conservative-Democratic party, and became minister of the interior in a cabinet of that group in 1912. During the World War he favored casting the lot of Rumania with the Allies, and in 1918 he went to Paris and did much to secure rights for his country. In 1920 he became foreign minister and helped create the Little Entente.

JOSEPH I. (1678–1711). Holy Roman emperor (1705–1711); born at Vienna; became king of Hungary (1687) and king of the Romans (1690). With the aid of Holland, Savoy, and England, a successful war was carried on against Louis XIV. The duke of Marlborough and Prince Eugène led the allied forces.

JOSEPH II. (1741–1790). Holy Roman emperor (1765–1790). In 1772 he signed, together with the sovereigns of Prussia and Russia, a treaty by which Poland was divided among them, and in 1780, at his mother's death, inherited the Austrian throne. Established religious toleration; abolished feudal serfdom.

JOSEPHINE (1763–1814). French empress; married the Vicomte de Beauharnais, who was executed during the Reign of Terror (1794). Two years later she married Napoleon I., but the union was dissolved (1809) that Napoleon might marry Maria Louisa of Austria, a step taken to further the emperor's political ambitions.

JOUBERT (*you'bĕrt*), **PETRUS JACOBUS** (1834–1900). General and statesman of South Africa, born in Cape Colony, but went to Transvaal, being elected to the assembly and in 1870 attorney-general of the republic, and in 1875 acting president. He fought against annexation to Great Britain twice, in 1880 and in 1898. Three times he was a candidate for the presidency of the Transvaal, representing the progressive Boers. He was a cautious, but beloved statesman.

JUAREZ (*hwä'räs*), **BENITO PABLO** (1806–1872). President of Mexico; born in Oajaca; was governor of the state of Oajaca (1847–1852); secretary of the interior and chief justice (1857); president (1858). A civil war, which completely exhausted the treasury, at once broke out. In 1861 the president's suspension of payment of public debts led to an expedition against Mexico in which England, France, and Spain took part. The result was that Maximilian, of Austria, became emperor of Mexico. Maximilian was shot (1867); Juarez then regained and held the presidency until his death.

JUGURTHA (*ju-gûr'thȧ*) (? –104 B. C.). King of Numidia, influenced by Scipio and other Romans, but he usurped the rights of some of his relatives, including two cousins, who were to share in the rule, according to the will of Jugurtha's father. The Roman senate declared war on him in 111 B. C., but he escaped by stratagems until he fell into ambush in 104, was brought to Rome to grace the triumph of Marius, and died in a subterranean prison. Sallust, the Roman historian, himself afterward governor of Numidia, gives a full account of Jugurtha and his varied exploits.

JULIAN (*jōōl'yăn*) (c. 331–363). Commonly called Julian the Apostate because he forsook Christianity and compelled the Christians of Constantinople to help restore the heathen temples. He claimed to be a neoplatonist, but was mild in his dealings with other faiths. He won victories over the Germans in Gaul, and the troops of the Romans revolted from Constantius in his favor. Julian made a triumphal entry into Constantinople as emperor in 361. Two years later he was killed on an expedition against the Persians.

JUSSERAND (*zhŭ-o-răn'*), **JEAN JULES** (1855–1932). French diplomatist and author. He became consul at London in 1878, served in Tunis, returned to England in 1887, in 1890 went as ambassador to Switzerland, and from 1902 to his retirement in 1925, served with great distinction as ambassador to the United States. For some years he was the eldest in point of service of all foreign ministers at Washington. For his literary work, see the BIOGRAPHICAL DICTIONARY OF AUTHORS.

JUSTINIAN I. (FLAVIUS ANICIUS JUSTINIANUS (483–565). Emperor of the Byzantine or Eastern Roman Empire (527–565). Justin I., his uncle, took him to Constantinople and educated him and rapidly advanced him until in 527 he made him colleague as emperor. A few months after, Justin I. died and Justinian occupied the throne alone. His reign was the most brilliant in the history of the Byzantine Empire. Belisarius and Narses, as the generals, did much to make it so. He conquered the Vandals in Africa; drove the Goths out of Italy; withstood the Persians; and survived the attacks of the Huns on the north. He built extensively, especially the church of St. Sophia, and made a great name through the compilation of laws known as the Code of Justinian and these were published under the name of the Pandects in 534. These were followed by the Institutes of Justinian.

KALAKAUA (*kä-lä-kow'ä*), **DAVID** (1836–1891). Seventh king of the Hawaiians. He received an English training in Honolulu, visited California, and, on the death of King Kalagaua, was elected the successor by the legislative assembly. Followers of Emma, widow of a former king, tried to nullify the election, but English and American ships quelled the riot which ensued. Kalakaua granted a more liberal constitution in 1887.

KALININ (*kȧl-è-nĕn'*), **MICHAEL IVANOVITCH** (1875–). Russian workman, who was several times arrested for his liberal views, sent to Siberia, forbidden to stay in St. Petersburg, and remained in hiding from 1913 to the revolution of 1917. Later he became the peasant representative in the Soviet régime, was elected a member of the central committee, and in 1919 was chosen president of the central executive committee.

KALLIO, KJOSTI (1873–). Statesman of Finland; member of the Diet in 1904 and of the Senate in 1917, minister of agriculture, 1919–22, prime minister, 1922–24. In 1925 he organized a coalition government, moderate in plan, but this gave way late in 1926 to a socialist cabinet.

KALNOKY (*käl'nō-kē*), **GUSTAV SIEGMUND, COUNT** (1832–1898). Statesman of Austria-Hungary, noted for his skill in diplomacy. He was for years in the army, rising to the rank of general in 1879, acted from 1860 for ten years as secretary of the embassy at London, then in Rome and Copenhagen, and finally as ambassador to St. Petersburg, now Leningrad. From 1881 to 1895 he was minister of foreign affairs in Austria-Hungary. He did much to promote an alliance with Germany and Italy, also keeping the balance of power in the Balkan states.

KAMENEV (*käm'ĕ-nĕf*), **LEO BORISOVICH (ROSENFELD)** (1883–1936). Russian leader of the

Soviet régime, for years acted as lecturer and organizer, was banished, and lived from 1908 to 1914 in Paris. He became a follower of Lenin, a representative of the Bolshevik party, but later disagreed with Lenin in the matter of policy. When Lenin died in 1924, he was elected chairman of the council of labor and defense, opposed the plan of Trotsky, but later changed his opinions, and from late in December 1927 to June 1928 was shut out of the communist party.

KAMIMURA (*kä-mē-mōō'rä*), **HIKONOJO, BARON** (1849–1919). A Japanese admiral, born in Satsuma, was active in the Chino-Japanese war in 1894–5, when he commanded the second squadron, and ten years later defeated the Russian squadron and sank the battleship *Rurik* off Korea.

KAROLYI (*kä'rōl-yē*), **MICHAEL, COUNT** (1875–1934). Hungarian leader, at first interested in the agrarian movement, later formed a more radical connection under the influence of Karl Marx, seeking to break the connection between Austria and Hungary and destroy the capitalistic holdings in his country. On Nov. 16, 1918, he became premier and in 1919 president of the People's Republic, but nearly three months later he had to give way to the party of Bela Kun. Later his estates were declared forfeited, and he was forced to remain out of Hungary.

KATO (*kä'tō*), **TAKA-AKIRA** (1859–1926). A gifted Japanese statesman, representative at London, 1894 to 1899, and 1908 to 1913. He served in the brief Ito Cabinet (1900–1901), and again as foreign minister under Saionji in 1906 for a time, but resigned because he opposed the cabinet measure of nationalization of railways. In 1913 he served briefly in Katsura's cabinet and then organized a constitutionalist party, from which he made up all the cabinet positions as premier in 1925. He had served as foreign minister in the Okuma cabinet (1914–15), and as premier of the coalition cabinet in 1924, during which time complete manhood suffrage was voted for Japan. He died in office.

KATSURA (*kä'tsŏŏ-rä*), **TARO, PRINCE** (1847–1913). Japanese soldier and statesman, who twice was sent by his country to Germany to study military tactics, made a remarkable record as a general in the war with China in 1894–95, and acted as secretary of war from 1898 to 1901. He was three times premier, at first from 1901 to 1905, four and a half years, a long term for Japan. Katsura concluded treaties with England and held the peculiar doctrine that he was responsible to the emperor only, and in no sense to the legislative assembly, and still, by his power to conciliate, he was able to hold office.

KELLOGG, FRANK BILLINGS (1856–1937). American lawyer and statesman, was born in New York, emigrated to Minnesota, and became an attorney. He represented the United States in suits against the Standard Oil Company, the so-called Paper Trust, and the attempts to unite the Union and Southern Pacific railways. He was senator from Minnesota, 1917–23, ambassador to England, 1924–25, and secretary of state in the cabinet of Coolidge until 1929. He was active in peace negotiations, and most especially in the multilateral treaty renouncing war, called the Kellogg Treaty. His policy was firm, but conciliatory.

KEMAL PASHA. See MUSTAPHA KEMAL.

KING, RUFUS (1755–1827). American politician; born at Scarborough, Me.; was graduated at Harvard (1777); was member of the Confederation Congress (1784–1787), of the Constitutional Convention (1787), and of the United States Senate from New York (1789–1796, 1813–1825) as a Federalist; served as minister to Great Britain (1796–1803, 1825–1826); was a candidate for the vice-presidency (1804 and 1808), and for the presidency (1816).

KING, WILLIAM LYON MACKENZIE (1874–). Canadian statesman, who was graduated from Toronto, held political science fellowships at Chicago and Harvard, from which latter he received the Ph. D. He served as conciliator in labor disputes, served as deputy minister of labor in Canada, and finally as minister in 1909, and for the Rockefeller Foundation investigated industrial relations from 1914 to 1917, during which time he wrote *Industry and Humanity*. In 1919 he succeeded Sir Wilfrid Laurier as Liberal leader, and from 1921 to 1926 acted as premier, and again after a few months in September of the latter year. In 1928 he signed the Kellogg Treaty at Paris for Canada.

KING, WILLIAM RUFUS (1786–1853). American statesman; born in Sampson County, N. C.; was a member of the North Carolina House of Commons (1808–1809) and Democratic representative in Congress (1811–1816); removed to Alabama (1818); was United States senator from that state (1819–1844); minister to France (1844–1846); again senator (1846–1853); elected vice-president on the ticket with Pierce (1852).

KITCHENER, H. H. See DICTIONARY OF HISTORY.

KOO, VI KUYIN WELLINGTON (1887–). Chinese statesman, was educated in China and at Columbia University, New York. In 1915 he became Chinese minister at Washington, being transferred to Great Britain in 1921. He represented his nation at the Peace Conference, at the first assembly of the League of Nations, and the Washington Conference in 1921–22. From 1922 to 1924 he served as foreign minister of China and as finance minister from 1926.

KOSSUTH (*kŏsh'ŏŏt*), **LOUIS** (1802–1894). Hungarian patriot and statesman; born in Monok, County Zemplin; entered the Diet (1874); became minister of finance (1848) and virtual dictator during the insurrection of 1848–1849; took refuge in Turkey, but visited the United States (1851–1852), where, although enthusiastically received, he failed to accomplish his purpose—to induce the American republic to aid his countrymen. After his American tour he lived for eight years in England, and in 1859 he went to Italy to organize an Hungarian legion for the war in the Crimea, but the end of hostilities frustrated this plan. From that time he lived in Italy, unreconciled to the régime in his native Hungary, and refusing to take advantage of a political amnesty. He died in Turin, but was interred at Pest with great solemnity.

KRUGER (*krōō'ger*), **STEPHANUS JOHANNES PAULUS** (1825–1904). A Boer statesman familiarly known as "Oom Paul"; born near Colesberg, Cape Colony. Took part in several military excursions, and in 1883 was made president of the Transvaal. He was reëlected in 1888, 1893, and 1898. In the Jameson raid (1895), the leader and his associates were captured and eventually given over to Great Britain for trial. This angered the radical Boer element, and the embittered relationship between the Boers and the British soon afterward led to the Boer War (1899). The Transvaal, which had been put into splendid defensive shape in anticipation of such a struggle, stood out longer than it otherwise could have done. With the fall of Pretoria, Kruger left for Europe, finally taking up his residence in Holland.

KUN, BELA (1886–). Hungarian leader, imprisoned in Russia early in the World War, became an enthusiastic communist of extreme stripe, returned to Hungary, and unsuccessfully tried to force the nationalization of all industry and property on his countrymen. Later he spent much of his time in Russia, but in 1928, on a return to Vienna, he was arrested and served several months in prison.

KWANGSU (*kwäng'sū*) (1872–1908). Emperor of China (1875–1908). Son of Prince Chun. Kwangsu was placed upon the throne by his aunt (1875), who forced his marriage with her niece to strengthen her power; he had little active part in actual government, virtually made prisoner in his palace (1898).

LABOUCHERE (*lăb-ōō-shâr'*), **HENRY DUPRE** (1831–1912). English politician and journalist; born in London. Was in diplomatic service (1854–1864), part of which time he served in the United States at Washington. In Parliament for Windsor (1865–1866), and for Middlesex (1867–1868). Labouchere was an advocate of the Irish Home Rule policy, and sympathized with the Boers during the war in the Transvaal. He established the London *Truth* (1876). He favored abolishing the House of Lords. For the last ten years of his life he resided mainly in Italy.

LADISLAUS I. (*lad'is-lōs*), **SAINT** (1040–1095). King of Hungary who enlarged the frontier, founded several cities, supported the pope against Henry IV., is said to have refused the crown of Germany, and secured Croatia for Hungary. He firmly established the Catholic faith, rooted up heathenism, and died suddenly while preparing for the first crusade. No other early Hungarian king was so greatly beloved, and he was long regarded as a saint before his actual canonization.

LAFAYETTE (*lä-fā-yĕt'*), **MARQUIS DE.** See DICTIONARY OF HISTORY.

LA FOLLETTE, (*lah fol'et*), **ROBERT MARION** (1855–1925). An American politician, born in Wisconsin, graduated from the University of Wisconsin, and practiced law in Madison. During his term in Congress (1885–91), he helped draft the McKinley tariff bill, and during his governorship of Wisconsin (1901–05), he secured much reform legislation in regard to taxation and nomination of candidates for office by direct vote of the people. After 1905 he was a member of the senate. Running as a Progressive in 1924 against Coolidge and Davis, he received 34 electoral votes. He was succeeded by his son, R. M. La Follette, Jr.

LAFONTAINE (*lă'fôn-tăn*), **LOUIS HIPPOLYTE** (1807–1864). Canadian statesman, judge, and baronet. He was educated at the College of Montreal under the Sulpicians, became a lawyer, and represented Terrebonne in the Assembly from 1830 to 1837. Lafontaine supported Louis Papineau in principle, but not in rebellion. In 1841 he led the French Canadian Reformers; in 1842–43 and 1848–51, he was attorney-general in the cabinet of Robert Baldwin, after which he retired to private life. From 1853 to his death he presided as chief justice of Lower Canada, during which time the land tenure question was finally adjudicated.

LANDON, ALFRED M. (1887–). Born at West Middlesex, Pa., graduated in law from Kansas University, in 1908. He followed in the footsteps of his father as an independent oil operator, and served in the chemical service in the World War. His first wife died in 1918, leaving one daughter, Peggy Ann. There are two children by his second wife, Theo Cobb. In 1932 he was elected governor of Kansas, and became the only Republican governor to be re-elected in the Democratic landslide of 1934. He put Kansas local units on a cash basis, reduced cost of government from 67.25 in 1932 to 51.32 per capita by 1934 and bonded debts of cities and counties by over 17,000,000. His sensible and economical administration won him the Republican presidential nomination in 1936.

LANSDOWNE (*lanz'down*), **HENRY CHARLES KEITH PETTY-FITZMAURICE, MARQUIS OF** (1845–1927). An English statesman and governor general of Canada (1883–1888). During his rule the Canadian Pacific railway was completed, fisheries dispute settled, and Riel's rebellion suppressed. From Canada he went to India as viceroy and governor general (1888–1893); secretary of war in Salisbury's Cabinet (1895); secretary of state for foreign affairs (1900–1906), during which time the treaty with Japan was signed. In 1903 he became Unionist leader in the House of Lords, in 1915 a member of the Asquith coalition cabinet without portfolio, and in 1917 published a letter asking on what terms the Allies would make an early peace.

LANSING, ROBERT (1864–1928). Secretary of State in the cabinet of President Wilson from June, 1914, to Feb. 13, 1920, when he was compelled to withdraw because of difference with the president. He was educated at Amherst, became a lawyer, representing the United States in the Bering Sea dispute with England over seal fisheries, the Chinese government in important negotiations, and Chili in the Tacna-Arica dispute in 1923–24. During the peace negotiations at Paris in 1918, as one of the American delegation, he wielded a considerable influence. After his retirement from public life, he wrote *The Peace Negotiations*, 1921, *The Big Four and Others at the Peace Conference*, 1921, *Notes on Sovereignty*, 1921.

LAURENS, HENRY (1724–1792). American statesman; born in South Carolina. Was sent on a mission to The Hague (1779), and while en route was captured by the English and kept a prisoner in the Tower of London for 15 months. Concluded with Adams, Jay, and Franklin the preliminary treaty at Paris (1782).

LAURIER (*lō'ri-ā'*), **THE RIGHT HON. SIR WILFRID** (1841–1919). Canadian statesman; born at St. Lin, Quebec. He studied law at McGill University, taking B.C.L. in 1864, and was that year called to the bar; made queen's counsel (1880); member of Royal Commission revising code of civil procedure of province of Quebec; entered the Quebec Legislature (1871), and the Dominion House of Commons (1874); was a member of the Mackenzie ministry in 1877, and in 1891, on the retirement of Blake, he became leader of the Liberal party. Laurier became prime minister (1896), and his government was sustained in 1900, in 1904, and again in 1908; defeated in 1912. He is the first man of French blood to be prime minister. Under Laurier Canada took on national characteristics, but he insisted that the British Empire is "a galaxy of free states."

LAW, ANDREW BONAR (1858–1923). English statesman; born in New Brunswick; an iron merchant of Glasgow, Scotland; parliamentary secretary of board of trade (1902–1906); Unionist member of Parliament from Blackfriars division of Glasgow (1900–1906); member from Dulwich (1906–1910); leader of the Unionist in the Commons (1912–1923), succeeding Balfour. For 209 days (1922–May 20, 1923) he was prime minister, until his health broke down and he was forced to resign.

LAWRENCE, ABBOTT (1792–1855). American merchant and diplomatist, born in Groton, Mass., and gave his name to Lawrence where he had business interests. He sat in Congress from 1835 to 1837 and 1839 to 1840; helped settle with Lord Ashburton of England the north-eastern boundary of the United States, and was minister to Great Britain from 1849 to 1852. He disapproved the course taken by President Tyler, proposed Clay for the presidency, and drew the hostility of Webster in the famous Faneuil Hall address in Boston. He gave $100,000 to found a scientific school at Harvard.

LEE, RICHARD HENRY (1732–1794). Born of a distinguished Virginia family, he was educated in England, returned in 1752, sat in the Virginia House, where he opposed slavery and the encroachments of England. As a delegate to the First Continental Congress, he introduced a resolution, similar in essence and passed two days before the Declaration of Independence. He was a member of the House, 1774–1780, and 1784–1787, and one of the first Senators from his native state. He proposed the Tenth Amendment to the Constitution in virtually its present form.

LENIN (*lyĕ'mĕn*), **NICOLAI (VLADIMIR ILYICH ULYANOV)** (1870–1924). Leader of communists and first ruler of Russia under the Soviet government. He studied law at Kazan University and finally in 1891 became a lawyer at Samara and in 1894 at St. Petersburg. Meanwhile, he had become an ardent Marxian socialist, wrote considerable, and gradually developed a power among the workers, leading after 1903 the radical wing or Bolsheviki. From 1907 to 1917 he lived outside Russia, always studying and preaching his doctrines. When the Revolution of early 1917 broke out, he started to return from Switzerland, but had to travel through Germany, since England opposed any other route. From April till the middle of 1922 he held the chief power in Russia. Paralysis gradually gained on him from then till his death on Jan. 21, 1924. In his honor Petrograd (formerly St. Petersburg, the Germanic form of the name) was changed to Leningrad in 1924, *gorod* being the Russian name for town.

LEONIDAS (*lē-ŏn'ĭ-dăs*) (fl. 500–480 B. C.). King of Sparta, succeeded his half-brother about 488. Sent with about 7,000 men to hold the pass of Thermopylae against the Persians under the great Xerxes in 480, he took his stand in a narrow defile with 300 of his own and about 1,000 other troops. A traitor betrayed the entrance to the Persians, and Leonidas and all his Spartans fell defending the pass. They have been celebrated in song and story for heroism these 2,500 years since their brave stand.

LEOPOLD II. (1835–1909). King of the Belgians (1865–1909). He brought about the organization of the African International Association (1876), and paid out of his own resources a large portion of the expenses for Stanley's exploration of the Congo. In 1885 the Berlin Conference gave him the sovereignty of the Congo Free State. Leopold was very wealthy, and one of Europe's most energetic business men.

LEWIS, CAPT. MERIWEATHER (1774–1809), secretary to Pres. Jefferson, was appointed to lead the Northwest expedition from May, 1804, to Nov., 1806. Later granted 1500 acres of land and was governor of Louisiana. Journals of the Lewis and Clark Expedition were published in 1903–05.

LI HUNG CHANG (*lē' hoong' chäng'*) (1823–1901). Chinese statesman; born in Lu-chow, Nganhwei. He was a friend to Western civilization and culture. With the help of Gordon he put down the Taiping rebellion (1864). He became governor of the Kiang provinces (1864), and from 1870 to 1895 was viceroy of the province of Chi-li. The foreign policy of China during this period was under Li's control. He reorganized the army, was obliged to bear the

burden of defeat in the war with Japan, and afterward negotiated the treaty of peace. In 1896 he began a tour of the world, was everywhere enthusiastically received, and on his return was soon reinstated in his former government position.

LILIUOKALANI (*lē'lē-ō-ō-ka-la'nē*) (1838–1917). Queen of the Hawaiian Islands. She succeeded to the throne in 1891. Her husband, John O. Dominis, who was an American, influenced her in favor of American interests. But he died soon after she became queen, and Liliuokalani attempted to substitute a reactionary constitution for the liberal one of 1887. At this the white population revolted under Sanford B. Dole, established a provisional government, and applied for annexation to the United States. This was not brought about until 1898, and in the meantime Liliuokalani, who had been unsuccessful in pleading her cause in the United States, retired to Honolulu.

LINCOLN, ABRAHAM (1809–1865). Sixteenth president of the United States, came of a poor family that had emigrated from Virginia to Hardin County, Kentucky, where Abraham was born near Hodgenville in a log cabin, now enclosed in a magnificent marble structure. In 1816 the family moved to southern Indiana, near the modern Gentryville, where his mother Nancy Hanks died in 1818. Mr. Lincoln married a capable widow in 1819, who encouraged the son to complete his education, which was almost wholly self-acquired, save for a few months altogether in the country school. In 1830 they again moved to Macon County, Ill., from which point the following year he made a trip with produce to New Orleans on a flat boat down the Mississippi River. Then he enlisted for the Black Hawk war, but saw no active service; conducted a store, but his partner fled leaving Lincoln with debts which it took 17 years to pay. He studied law in 1832, became postmaster a year later, and won an election to the legislature, which had been denied earlier. Again elected in 1836 and admitted to the bar the next season, he established a reputation as a cautious and firm statesman, opposed to extension of slavery into new territory and to all acts of state nullification. From 1839 he lived in Springfield, Ill., where he practiced law until elected president in 1860. He declined election to the U. S. Congress after serving a term from 1846. The high light of his early career was the series of debates with Stephen A. Douglas, his Democratic opponent in the race for the U. S. senate in 1858–59. Though Douglas was elected, Lincoln had forced him to make admissions, which later prevented Douglas from becoming president. Lincoln served from March 4, 1861 to his death April 15, 1865, after being shot by an actor, John Wilkes Booth, at Ford's Theatre, Washington, on the previous evening. While evading capture, Booth was shot nine days later.

LINCOLN, ROBERT TODD (1843–1926). Lawyer, born at Springfield, Ill., son of Abraham Lincoln; graduated from Harvard (1864); served under Grant in Civil War; admitted to Illinois bar (1867); practiced at Chicago; delegate to Republican state convention (1880); presidential elector (1880); secretary of war (1881–1885); United States minister to Great Britain (1889–1893). From 1907 he was president of the Pullman Company.

LIVINGSTON, EDWARD. See under DICTIONARY OF JURISTS.

LIVINGSTON, ROBERT R. (1746–1813). American statesman; born in New York; was graduated at Columbia College (1765); became a member of the Continental Congress, and was member of the committee appointed to draw up the Declaration of Independence; was chancellor of New York from the time of the adoption of the Constitution until 1801, and was made secretary of foreign affairs in 1781. He used his influence to secure the ratification of the Federal Constitution in New York, and in 1801 was appointed minister to France.

LLOYD-GEORGE, DAVID (1863–). Rose from humble circumstances to be premier of England from 1916 to 1923. He was educated in a Welsh school, admitted to practice law in 1884, and was a member of Parliament after 1890, and president of the board of trade from 1905 to 1908. Mr. Lloyd-George helped secure the passage of an old age pension law, a workmen's insurance law, and advocated the minimum wage law which settled the great English strike of coal miners in 1912. He was chancellor of the exchequer from 1908 to 1915; minister of munitions 1916, and secretary of state for war, after the death of Kitchener in June, 1916. On the fall of the Asquith ministry, Lloyd-George formed a coalition cabinet, which continued till after the World War. In the elections of 1918 he was returned to power by a great majority, but gave way to the partisan ministry of Stanley Baldwin, after being refused a vote of confidence in Parliament.

LODGE, HENRY CABOT (1850–1924). American statesman, orator, and writer; born in Boston, Mass. Member of Massachusetts Legislature (1880–1881); delegate to Republican National Conventions (1884, 1888, 1892, 1896, 1900); placed Thomas B. Reed in nomination for the presidency (1896); permanent chairman (1900); chairman of committee on resolutions (1904); member of Alaskan Boundary Commission; member of Congress for Sixth Massachusetts district (1887–1893); United States Senator from 1907 to the time of his death. U. S. Immigration commissioner (1907); at one time editor of *North-American Review*, and of *International Review;* lecturer on American history at Harvard and at Lowell Institute; author of many historical works. Noted for his insistence upon laws to safeguard the franchise, and upon the necessity for the restriction of immigration. Largely through his opposition, and reservations unacceptable to President Wilson, the Versailles Treaty failed of ratification in the Senate. He was one of four American delegates at the Limitation of Arms Conference in Washington in 1921. Later his influence declined, and he was returned to the Senate again by only a narrow margin in 1922.

LONG, JOHN DAVIS (1838–1915). American politician; born in Buckfield, Maine. Governor of Massachusetts (1880–1882); member of Congress (1883–1889); secretary of the navy under McKinley in 1897 and during the Spanish-American War. His administration was exceedingly able during this difficult period.

LONGWORTH, NICHOLAS (1869–1931). American congressman, born in Cincinnati, and educated at Harvard and the Cincinnati Law School. From 1899 to 1901 member of the House of Ohio, then state Senator for two years, and from then member of the U. S. House of Representatives, save for the term from 1913 to 1915. Floor leader of the Republicans, 1923–25, and then speaker of the House. Married Alice Lee, daughter of President Roosevelt, in 1906.

LOUBET (*lōō'bā'*), **EMILE** (1838–1929). French statesman; seventh president of the French Republic; born at Marsanne. In 1876 he was elected to the Chamber of Deputies: re-elected to the Lower House (1877 and 1881), and was chosen senator (1885). In 1887 he became minister of public works in the Cabinet of M. Tirard, and in 1892 President Carnot appointed him premier to succeed M. de Freycinet. Though short, his administration was marked by the successful solution of several important problems. He resigned in the latter part of the same year; was elected president of the Senate (1896 and again in 1898), and on the death of President Felix Faure (1899) was chosen president. During his administration Dreyfus was pardoned, church and state were separated, and France and England joined in an *entente*.

LOUIS IX. or **SAINT LOUIS** (1215–1270). King of France (1226–1270). The son and successor of Louis VIII. His mother, Blanche of Castile, was regent during his minority. In 1242 he became involved in a war with Henry III. of England and defeated him in two battles. During an illness he vowed to go on a crusade if he recovered. Accordingly in 1248 he sailed with 40,000 men on the Seventh Crusade. He was defeated and captured by the Mohammedans and ransomed with 6,000 followers. He returned in 1252 on account of the death of his mother. He embarked on another crusade in 1270, and while in the East a pestilence attacked the camp and carried off the greater part of the army and the king himself. His son, Philip III., made peace and returned to France. Louis was the most distinguished monarch of his time.

LOUIS XI. (1423–1483). King of France (1461–1483). Son and successor of Charles VII. He made several unsuccessful attempts to procure the throne from his father and was obliged to flee to Philip the Good of Burgundy until his father's death in 1461, when he became king. He directed all of his efforts towards cutting down the power of the feudal lords and enlarging his empire. He worked by the most unscrupulous strategy rather than by force of arms. He did much to encourage literature, commerce, and manufacturing.

LOUIS XII. (1462–1515). King of France (1498–1515). Son of Charles, duke of Orleans, and successor of Charles VIII. His reign was marked by mildness and wisdom so that the king was called the "Father of the People." In 1499 he laid claim to the kingdom of Milan and overthrew Ludovico Sforza and took the city. In 1500 he formed the Treaty of Granada with Ferdinand by which the conquest and division of Naples were agreed upon. These monarchs quarreled over the division, and in 1503 the French were driven out of southern Italy. In 1508 Louis joined the pope, Ferdinand, and the emperor Maximilian, in the League of Cambrai against Venice. In 1509 Louis gained the battle of Agnadello and crushed Venice. In 1511 the pope, Venice, Ferdinand, and Henry VIII. of England formed the Holy League against France, which was driven out of Italy in 1512. In 1513 England gained the battle of the Spurs. Louis was succeeded by his son-in-law, Francis I. of Angoulême.

LOUIS XIII. (1601–1643). He was the son of Henry IV. and Marie de' Medici, who during his youth acted as regent. His reign was noted for continued struggles against the Huguenots, who finally in 1628 had to make terms of peace, and for plots of the queen-mother and others with Spain. In all events after 1624 Cardinal Richelieu held a firm hand, retaining to the end his ascendency over the king and being able to weather all storms of opposition. Louis outlived the Cardinal only half a year.

LOUIS XIV., THE GREAT (1638–1715). King of France (1643–1715); born at Saint-Germain-en-Laye; son of Louis XIII. and Anne of Austria. The queen was nominally regent, but affairs were really controlled by Mazarin, the prime minister. In 1660 Louis was married to Maria Theresa of Spain and, on the death of Mazarin (1661), decided to be his own prime minister. He at once brought about him a group of advisers of exceptional ability, restored the finances, and encouraged industries. For 54 years he ruled France with great decision and energy. The wars engaged in brought France much glory, but also completely exhausted her exchequer. At home Louis ruled absolutely. He revoked the Edict of Nantes, and decreed that all children should be educated in the Roman Catholic faith. The later years of Louis's life were occupied with the War of the Spanish Succession. His reign was identified with the zenith of French power, producing Retz and Saint-Simon in history; Pascal in philosophy; Rochefoucauld and Bruyere in morals; Bossuet in oratory, and La Fontaine and Boileau in poetry.

LOUIS XV. (1710–1774). King of France (1715–1774); supported father-in-law in claim on Polish crown (1733); aided in War of Austrian Succession (1745); squandered money on Madame de Pompadour; abolished parliament; banished its members; formed a new ministry. His dissolute life paved the way for the Revolution.

LOUIS XVI. (1754–1793). Born at Versailles; king of France (1774–1792); incompetent ruler; finances in chaos; reforms irritated nobles and people; conditions became intolerable and October, 1789, a Parisian mob marched upon Versailles and conducted the royal family to Paris. The queen (Marie Antoinette) advised the unwise flight to Varennes, confirming rumors of negotiations with foreign powers. The Tuileries stormed (Aug. 10, 1792); the royal family sent prisoners to the Temple; Louis XVI. condemned to death, and died under the guillotine (January 21).

LOUISE (1776–1810). Queen of Prussia; born in Hanover. In 1793 she was married to the crown prince of Prussia (later Frederick William III.). As a queen she was very popular, her dignified conduct and beauty winning those with whom she came in contact. The Order of Louise in Prussia was founded in honor of her memory. She was the mother of Frederick William IV. and William I., afterwards emperor of Germany.

LOUIS PHILIPPE (1773–1850). King of France (1830–1848); eldest son of Philippe, duke of Orléans; born in Paris; entered the National Guard on the outbreak of the Revolution; distinguished himself at Jemappes (November, 1792); but after the battle of Neerwinden was obliged to seek refuge in Switzerland. Traveled in the United States (1796–1800), and in 1809 married Marie Amélie, daughter of Ferdinand I. of the two Sicilies. When the revolution of July, 1830, overthrew Charles X., he accepted the offer of the crown. The corruption of the electoral system, the foreign policy of Louis, together with his attempts to suppress freedom of the press, aroused great dissatisfaction among all classes of people. On February 22, 1848, disturbances occurred in the streets of Paris, and the king, seeing that he would not receive the support of the National Guard, abdicated in favor of his grandson (February 24). The remainder of his life was spent in England.

LOWDEN, FRANK O. (1861–). American congressman and governor, born in Minnesota, educated at University of Iowa and Union College of Law in Chicago. Practiced law in Chicago, 1887 to 1906, member of Congress, 1907 to 1911, and governor of Illinois; 1917 to 1921. Leading candidate for nomination of Republicans for presidency during several ballots in 1920, winning as many as 311½ votes. Mr. Lowden gave much attention to agricultural subjects, especially to certain plans for cooperative marketing of farm products. During the World War as governor of Illinois Lowden exercised every energy toward marshalling the resources of his state.

LUGARD, FREDERICK JOHN DEALTRY (1858–). English administrator, served in colonial wars, 1879–1888, explored parts of Africa, and acted as administrator in Uganda, Bornu, and Nigeria. In 1907 he was appointed governor of Hong-Kong, and in 1912 of both Nigerias, which he amalgamated in 1914, and continued to act as governor-general until 1919. In 1922 he became one of the mandate commission of the League of Nations. He was made a baron in 1928.

LUNACHARSKY, ANATOLY VASILIEVICH (1875–1933). Russian author and democratic leader, who began to speak and write of socialism in 1892, was exiled for three years, joined with Gorky and others in opposing the policies of Lenin, but later allied himself with the Bolsheviki in Russia, after living some years in Italy following the Revolution of 1905. During the World War he assumed an anti-military attitude. Later acted as people's commissar of education in Russia, and did much to further education of the great masses.

LUTHER, HANS (1879–). German statesman, who did much to stabilize the finances of Germany after the World War. He was a local official at Charlottenberg, Magdeburg, and burgomaster of Essen in the Ruhr during the occupation by the Allies after the war. Entering the Cuno cabinet as minister of food and agriculture, he continued in the first Stresemann cabinet, and was minister of finance in the second Stresemann and Marx cabinets. He was called to form a government in 1924, after he had concluded the Dawes loans for Germany. He took prominent part in tax reductions, in the Locarno and other conferences, and signed the Rhine Pact and Arbitration Treaties in 1925. His united cabinet then resigned, but he was soon called again to form a new one without the Social Democrats who refused to coöperate He again resigned on May 13, 1926.

LYCURGUS. A Spartan lawgiver who lived in the ninth century B. C. and was the son of Eunomus. He introduced a constitution and established a new social order in Sparta inuring the people to hardships and developing a nation of warriors (884 B. C.). He exacted a promise from the people not to change any of his laws until his return from a pretended visit, then went away from Sparta forever. His institutions were abandoned by the Spartans in 188 B. C.

LYTTON, EDWARD ROBERT BULWER-LYTTON, EARL OF (1831–1891). English poet and diplomatist. For his literary works, see under his pen-name Owen Meredith in Dictionary of Authors. Beginning as second secretary of the legation at Florence in 1832, Lord Lytton rose by stages until he became ambassador at Paris in 1887, serving till his death four years later. In 1875 having declined to act as governor of Madras, he became governor-general of India under Disraeli. He did everything to conciliate the amir of Afghanistan, who fell under the influence of Russia, but concessions were secured with the amir's son, now ruler in his place in 1879. Later in the year the British Resident or representative in Kabul was murdered. The war which followed had not concluded when Lytton resigned in 1880. His administration was noted for the assumption by Queen Victoria of the title of Empress of India, and by a plan to prevent famines as severe as that of 1876–78.

MACBETH (d. 1058). King of Scotland, who became *mormaer* or hereditary ruler on the death of Malcolm, and who killed Duncan, Malcolm's grandson, in 1040. Duncan's son, Malcolm, in turn fought

against Macbeth, secured the assistance of Siward, King of Northumberland, and Macbeth died in battle at Lumphanan. He generously aided churches, and his reign was prosperous. The view of Macbeth given in Shakespeare's play is founded on old chronicles, which may not be reliable.

MACDONALD, JAMES RAMSAY (1866–1937). British labor leader and politician, born in Scotland, had a limited education, and entered journalism. For 12 years he was secretary of the Labour Party and edited the *Socialist Library*. From 1906 to 1918 he served as a member in Parliament, from 1911 to 1914 acting as leader of his party, but he resigned when his opposition to the entrance of Britain into the World War made him unpopular even with a large portion of the labor elements. In 1918 he lost his seat, but returned in 1922 as leader of the second largest party in the House. Making a motion of lack of confidence in 1924, MacDonald secured a vote against the Conservative government with Liberal support. He formed a cabinet, which fell in October on a minor issue, after he had sought to stabilize conditions at home and negotiations over war debts. In May 1929 MacDonald again came into office when Labour obtained more votes than any other single party. MacDonald advocated reduction of armaments and made a visit to Washington in the fall of 1929 to confer with President Hoover. He took a prominent part in the London Conference of 1930, seeking relief from burdens of preparation for war.

MACDONALD, SIR JOHN ALEXANDER (1815–1891). Canadian statesman; born in Glasgow, Scotland. The father of Canadian confederation; formed the first Canadian government (1867), becoming minister of justice and attorney general; one of the commissioners on the Alabama Claims (1871); a signer of the Washington Treaty (1871); his government was defeated in 1873; formed another government in 1878 and filled several Cabinet positions and was continuously in power until his death.

MACDONALD, JOHN SANDFIELD (1812–1872). Represented Glengarry in the Canadian Parliament for 16 years, from 1852 to 1854 acting as speaker of the house. From 1862 to 1864 he was prime minister. In 1867 he opposed consolidation, but the Conservatives invited him to organize the government of Ontario. For three years, ending in 1871, he headed the provincial cabinet with great ability and economy.

MACHADO (*mä-chä'dō*), **BERNARDINO** (1851–). Portuguese leader, born in Rio de Janeiro, became professor in Goimbra University, and early espoused openly the cause of republicanism. When elected a deputy at Lisbon in 1906, the excitement following led to the fall of the government. In 1910 he was foreign minister in the new provisional republican government; in 1914 for several months he acted as premier, and secured adherence of Portugal to the Allies; and from 1915 to 1917 he was president; but went into exile, returning again to the government as premier in 1921. Once more he was forced to leave the country in 1927.

MACHIAVELLI (*mä'kyä-vĕl'lē*), **NICCOLO** (1469–1527). Italian statesman and writer; born at Florence. From 1498 to 1512 he was secretary of the Florentine Republic, but was dismissed on the victory of the Medici party and imprisoned for a short time (1513). In 1519 the Medici, whose favor he had won, assigned him some minor posts. The remainder of his life, however, was devoted principally to literary work. His most noted production is *The Prince*.

MACKENZIE, ALEXANDER (1822–1892). Canadian statesman; born near Dunkeld, Scotland. Member of first Canadian Parliament (1867) and reform leader; forced the resignation of the Macdonald government (1873) and became the first Liberal premier. He pushed the construction of the Canadian Pacific railway and formed the first Supreme Court of the Dominion. Defeated by the Macdonald party (1878) he led the opposition for two years and retired, though a member of Parliament until his death. He declined the honor of knighthood offered by the queen.

MACKENZIE, WILLIAM LYON (1795–1861). Leader of the Upper Canada Rebellion of 1837–1838; born in Dundee, Scotland. Elected to the legislature (1828); re-elected in 1830 but his seat was refused him for alleged libel; re-elected three times and each time expelled; first mayor of Toronto (1834); elected to legislature and seated (1834). November 25, 1837, he set up a provisional government of Upper Canada and with 800 followers tried to seize the government. Sir Francis Bond Head with a force defeated them at Montgomery's Farm; Mackenzie fled to the United States, was arrested for violating the neutrality act, and imprisoned until 1840 at Rochester, N. Y. Under the amnesty he returned to Canada in 1849 and was elected to Parliament (1850–1858).

MACKINNON, HON. DONALD ALEXANDER (1863–1932). Educated at Prince of Wales College of Charlottetown, and at Dalhousie University of Halifax; made LL.B. Called to bar of Prince Edward Island (1887); made queen's counsel (1900); president of Law Society of P. E. I. (1901); member of House of Assembly, P. E. I. (1893); re-elected for Murray Harbor (1897); attorney general in Provincial Cabinet; member of Parliament for East Queen's, P. E. I., to House of Commons, Canada (1900–1904). Made king's counsel, and was lieutenant governor of Prince Edward Island, 1904–1910.

MADERO (*mä-thā'rō*), **FRANCISCO INDALECIO** (1873–1913). Mexican leader and president, born in the state of Coahuila, educated at the University of California, and lived in France from 1889 to 1895. He sought to introduce more democratic rule in Mexico, and after 1905 opposed the regime of President Diaz. From his refuge in Texas he issued a call to revolution in 1910. After seven months of fighting in Mexico, Diaz sued for peace, and Madero, after acting for six months as provisional president, was elected by a large majority, beginning his full term Nov. 6, 1911. Various forces soon obstructed his plans for land and other reforms, and revolutions broke out in both the north and the south of Mexico, and finally in Mexico City. Madero had to give way to the Huerta forces, and, on Feb. 22, 1913, he was killed on the way to prison.

MADISON, JAMES (1751–1836). Fourth president of the United States, born in Virginia, educated at Princeton, and studied law. He sat in the Virginia convention (1776), favored revision of the state laws as proposed by Jefferson, sat in the Continental Congress (1780–83), helped frame the U. S. Constitution, sat in the Federal house (1789–1797), after which he opposed the Alien and Sedition Laws, as he had opposed the policies of Washington and Hamilton in regard to foreign affairs and the funding of the national debt. As secretary of state under Jefferson (1801–09), Madison did much to fix the policies of the time, including the purchase of Louisiana, the war with the Barbary pirates, and the doctrine of illegality of the search-and-seizure policy of Great Britain. During his presidential term (1809–1817), Madison was hampered by poor advisers, and at last had to abandon a commercial policy for a military one against Great Britain, ending in the War of 1812.

MAHMUD (*mäh-mōōd'*) (979?–1030). Sultan of Ghazni; born in Ghazni, Afghanistan; founder of the Mohammedan Empire in India; took the reins of government (999); took possession of Khorassan (1000); and began a series of inroads into Hindustan (1001). In 1006, 1007, and 1009, Mahmud made other expeditions into Hindustan and, in the years that followed, conquered Ghur, Jurjistan, and Khwarezm. His last expedition against the Hindus took place in 1025. He was a patron of literature and the arts.

MAITLAND, WILLIAM (1528–1573). A Scotch statesman; "Secretary Lethington"; made an extraordinary lord of session (1561); objected to the extreme measures of Knox; and participated in the plot against Rizzio. He fought against Mary's forces at Langside, and is said to have proposed a union between Mary and the duke of Norfolk. In 1569 Maitland was arrested for complicity in the Darnley murder, but later became one of the leaders of the queen's party. This caused him to be regarded as a rebel, and he was besieged in Edinburgh Castle, finally forced to surrender, and imprisoned in Leith Castle, where he died.

MALCOLM, SIR JOHN (1769–1833). Anglo-Indian statesman, one of the founders of modern India. He was born in Scotland, joined the British in India, and in 1799 became envoy to Persia. Made many treaties, and was secretary to Lord Wellesley. In 1817 was in the Deccan; in 1827 was governor of Bombay, and instituted reforms. Malcolm returned to England in 1830. He wrote extensively on Persian, Indian and other historical subjects.

MALCOLM. The name of four kings of Scotland. **MALCOLM III.**, surnamed **CANMORE** (Great Head) (1024?–1093). On the death of his father, Duncan, at the hands of Macbeth, he was aided in the fight for the throne by Siward of Northumbria. Having defeated and killed Macbeth, he was crowned at Scone (1057). In 1070 he married Margaret, sister of

Edgar Atheling, a Saxon nobleman, who had found refuge at the Scottish court. He ravaged Yorkshire and Northumberland the same year, but was obliged to retreat. The greater part of his reign was spent in warfare with England.

MALET (*mäl'ĕt*), **EDWARD BALDWIN** (1837–1908). A British diplomatist, born at The Hague, educated at Eton and Oxford, and held many posts in various lands. Among them were those at Brussels, Rio de Janeiro, Washington, Lisbon, Peking, Athens, and Rome. After acting as consul-general in Egypt in trying times from 1879 to 1883, he became envoy to Brussels and then to Berlin, where he remained for 11 years. In 1899 he was made a member of the court of arbitration at The Hague.

MALVEY, LOUIS JEAN (1875–). French Radical politician and government official, who acted as an under-secretary in the cabinets of Monis and Caillaux, minister of commerce under Doumergue, and minister of interior under Viviani, Briand, and Ribot (1911–1917). Charged by Clemenceau with lax administration, he resigned, was finally tried for treason, acquitted, but banished for five years for certain irregularities in office. After remaining in Spain he again entered the Chamber in 1924, took part in the Morocco negotiations, acted as finance commissioner of the Chamber, and in March 1926 became minister of interior in the Briand cabinet. Through continued opposition, however, he resigned, but again in June 1928 took his old place as finance commissioner.

MANN, JAMES ROBERT (1856–1922). American legislator, was born in Illinois, educated at the University of Illinois and the Union College of Law of Chicago, and entered the House of Representatives in 1897, being elected successively till 1923. He acted as floor leader of the Republicans and vigorously attacked certain policies of the Democratic administration as to canal tolls and the tariff.

MANUEL I., COMNENUS (1120–1180). Byzantine emperor (1143–1180). The youngest son of the emperor Calo-Joannes. His reign was marked by continuous wars with Asia and Europe. In 1144 he reduced Raymond, prince of Antioch, to a state of vassalage. In 1147 the troops of Louis VII. of France and of Conrad III. of Germany marched through Manuel's dominions and came to blows with the Greeks. The German crusaders were falsely led by a guide, and, confronted by starvation, were obliged to retreat, losing nine tenths of their number. Manuel was severely defeated by the Seljuks in 1176 at Myriocephalon. He failed in his efforts to drive Frederick Barbarossa out of Italy. He was unsuccessful in his wars against the Venetians.

MANUEL II., PALAEOLOGUS (1348–1425). Byzantine emperor (1391–1425). Son and successor of John VI., with whom he had been associate ruler since 1373. He applied for aid from the Western princes against the Turks. The combined army was defeated by Bajazet at Nicopolis in 1396. In 1398 his nephew, assisted by the Turks, rebelled and Manuel was forced to make him co-emperor under the title of John VII. In 1402 Bajazet was defeated and taken prisoner by Timur in Angora and died (1403). Manuel reigned in peace then for 18 years. In 1421 Mohammed I. died and the war was renewed with his successor, Amurath II. In 1422 Constantinople was besieged and was saved by a humiliating treaty. Manuel retired in 1423 to a monastery, where he died in 1425.

MANUEL I., THE GREAT (1469–1521). King of Portugal (1495–1521) during the most splendid period of its history. He sent Vasco da Gama around the Cape; Cabral on the voyage which led to the discovery of South America; Cortereal to North America; and Almeida and Albuquerque to the East Indies.

MARCUS AURELIUS. See AURELIUS.

MARCY, WILLIAM LEARNED (1786–1857). An American statesman; born at Southbridge, Mass.; was graduated at Brown University (1808), and began the practice of law at Troy, N. Y.; served in the War of 1812; was made associate of the Supreme Court of New York (1829); elected United States senator (Democrat) (1831); was governor of New York (1832–1838); made secretary of war in President Polk's Cabinet (1845); and was secretary of state (1853–1857) during the administration of President Pierce. The remark, "We can see nothing wrong in the maxim that to the victors belong the spoils," was made by him in the Senate.

MARET (*mä-rāy'*), **HUGUES-BERNARD** (1763–1839). French leader and ambassador, after several years as a barrister, founded a journal for publishing the debates of the National Assembly; later with C. J. Panckoucke he established the *Moniteur universel*, which long was known for accuracy and impartiality. During the French Revolution he served on two missions to England, and on a third one later; was ambassador to Naples, where he was held in prison for a time; and later became the confidant, secretary, and aid of Napoleon in many of his campaigns. He also served as secretary of state for a time, but was exiled during the second regime of the Bourbons, returning in 1820, and in 1830 was named a peer of the realm, having been created duc de Bassano by Napoleon in 1809.

MARGARET (1353–1412). Queen of Denmark, Norway, and Sweden. The daughter of Waldemar IV., king of Denmark, and wife of Haakon VI. of Norway. On the death of Waldemar without direct male heirs, the nobles, after an interregnum, offered the crown, in 1376, to Margaret and her husband in trust for their young son, Olaf. Haakon died in 1380, and Margaret was sole trustee of her son, Olaf, who died in 1387. She was then elected sovereign of both kingdoms. She nominated her grand-nephew, Eric of Pomerania, her successor. The Swedish king, Albert of Mecklenburg, had so alienated his subjects that they declared the throne vacant and offered it to Margaret. She defeated the king's German troops at Falköping in 1395. In 1397 she brought about, by the Union of Kalmar, the union of the crowns of the three Scandinavian kingdoms. In that year Eric, who was only 16, was declared king. Margaret continued to exert her great influence for good until her death in 1412.

MARGARET OF ANJOU (1430–1482). Wife of Henry VI. of England, daughter of René the Good of Anjou, king of Naples. She gained complete control of her weak husband, and the birth of a son to her so disappointed Richard, duke of York, in his hopes for the throne, that he precipitated the Wars of the Roses. Margaret led the Lancastrians in these wars and won the battle of Wakefield Green (1460), where the duke of York was slain. She was defeated at Towton (1461), Hexham (1464), and taken prisoner at Tewkesbury (1471). After five years of imprisonment Louis XI. paid 50,000 crowns for her release. She died in France.

MARIA DE' MEDICI (1573–1642). Queen of France. Second wife of Henry IV. and daughter of Francis, duke of Tuscany. As the mother of Louis XIII., she ruled as regent after Henry's assassination (1610), but was an incapable ruler. Through her influence Richelieu was made cardinal and minister of state, but when she found she could not control him she opposed him. She was imprisoned, escaped to England and Charles I., her son-in-law, was compelled to leave London (1641) and died in destitution.

MARIA THERESA (*mȧ-rī'ȧ tĕ-rē'sȧ*) 1717–1780). Queen of Hungary and Bohemia; archduchess of Austria; born at Vienna; married Francis Stephen (1736), duke of Lorraine (later grand duke of Tuscany). In 1740, on the death of her father, she became queen, nominating her husband joint ruler with herself, as Francis I. Her right of succession was at once disputed. (See AUSTRIAN SUCCESSION, WAR OF.) She brought about many reforms in education, abolished legal torture, and confiscated much church property. Maria Theresa was the mother of Leopold II., Joseph II., and Marie Antoinette.

MARIE ANTOINETTE (*mȧ-rē' ăn-twȧ-nĕt'*) (1775–1793). Wife of Louis XVI. of France; youngest daughter of Emperor Francis I. of Germany and Maria Theresa; born at Vienna; married the French dauphin (1770), who became king of France as Louis XVI. in 1774. Her girlish love of pleasure, and indifference to public opinion and public needs, made her very unpopular, and with the Diamond Necklace affair (1785) the nation lost all faith in her. In the management of both foreign and internal affairs her influence was unwisely exerted and when the Notables met in 1787, she was accused of squandering the finances. From the outbreak of the Revolution until her death, she was the object of the mob's bitter hatred. In October, 1789, the royal family removed from Versailles to the Tuileries. Marie planned the flight of June 20, 1791, to Varennes, a move which only served to confirm the charges brought against her. At last (August 10, 1792) occurred the final storming of the Tuileries, Marie doing all in her power to induce the king to resort to arms. This he refused to do, thinking resistance useless, and both king and queen were taken to the prison of the Temple. In January, 1793, the queen had a parting interview with

Louis, who had been condemned to death. Her trial occurred the following October before the revolutionary tribunal. She was sentenced to death and guillotined the same day.

MARIE (1875–1938). Queen of Roumania, the oldest daughter of the second son of Queen Victoria of England, in 1893 married Ferdinand, and both were crowned rulers of Roumania in 1922. Queen Marie wrote several books, travelled widely, and visited the United States in 1926–27. On the death of the king in 1927, she retired from public life. During the World War she put forth every effort to help her adopted countrymen.

MARSHALL, THOMAS RILEY (1854–1925). Governor of Indiana (1909–1913). He was born at North Manchester, Ind., and attended the common schools there; was graduated from Wabash College in 1873; admitted to the bar (1875) and practiced law in Columbia City until 1909; governor of Indiana, 1909–13; and vice-president in the two terms of Wilson, 1913–1921. Urged neutrality at start of World War, strongly favored the League of Nations, but opposed granting the suffrage to women. He acted as one of the United States coal commission in 1922. His *Recollections* were published in 1925.

MARX, WILLIAM (1863–). Chancellor of Germany from 1922 to 1925, spent several years in earlier life as a lawyer and jurist. For twelve years he was a member of the Reichstag, being one of the leaders of the Clerical Party. During his term as chancellor he engaged in several important conferences with France and England, exerting his influence to secure the adoption of the Dawes Plan in Germany. In the elections of April, 1925, he was defeated for the presidency of Germany by von Hindenburg.

MARY I. (1516–1558). Queen of England; daughter of Henry VIII. and Catherine of Aragon; married Philip II. of Spain. In her efforts to restore the Catholic religion she acted always in a legal manner, first securing the consent of Parliament to all of her acts. The mass was restored in 1553, and the power of the pope reluctantly acknowledged in 1554. During her reign many persons were burned for their religious faith. Calais was lost (1558) in an effort to please her husband by engaging in war with France.

MARY STUART (1542–1587). Queen of Scots; born in Linlithgow Palace; only daughter of James V. and Mary of Guise. The greater part of her early life was spent in France, and in 1558 she was married to the Dauphin, who died in 1560; returned to Scotland (1561) as queen and in 1565 married Darnley, who offended her by aiding the conspiracy for Rizzio's death (1566). The growing intimacy between Bothwell and Mary resulted, after the murder of Darnley, in his marriage with the queen. The Protestants, constantly aware that Bothwell was responsible for Darnley's death, now took up arms to deliver Mary from him; taken as a prisoner to Edinburgh, she refused to be divorced from Bothwell, and (1568) escaped; at Langside her forces were defeated, and she fled to England; for more than 13 years, held a prisoner until her execution (February 8, 1587), after she had been found guilty of countenancing the plot of Babington for the murder of Queen Elizabeth.

MASARYK (*mä'sà-rēk*), **THOMAS GARRIGUE** (1850–1937). President of the republic of Czecho-Slovakia, was born in Moravia, interested himself early in the education of his countrymen. At various times he taught schools and did much literary work, principally in showing that the famous documents of Koeninghof and Gruenberg were forgeries. For a time he sat in parliament, but resigned to devote himself to the moral education of the people of Bohemia, whom he tried to protect from the encroachments of Austria, as he likewise tried to shield Austria from the domination of Germany. During the World War he became an exile in Italy and finally in England, where he taught in King's College. Later he organized the national movement of his people, became their first president, and established a semblance of stability in Czecho-Slovakia. His works include treatises on history, philosophy, and logic.

MASSEY, WILLIAM FERGUSON (1856–1925). Statesman of New Zealand, emigrated from Ireland to that country in 1870. For many years he held various positions in the government, being a member of Parliament from 1894. In 1912 Massey was Prime Minister and later held portfolios of finance and other departments, until 1917 when he represented his land in the Imperial War Conference, in 1919 in the Peace Conference at Versailles, and in 1921 in the British Imperial Conference.

MATTHIAS I. (1440–1490). King of Hungary, the second son of János Hunyadi, was elected king by a large vote in 1458 after some opposition on the part of nobles and his own father-in-law, against whom later he waged unsuccessfully a war to prevent Ladislaus, king of Poland, from becoming king of Bohemia. Matthias succeeded in keeping the Turks and other surrounding nations from encroaching too much on his domains, while he extended his frontiers, especially toward the south. For military and administrative abilities he has been compared with Napoleon.

MAURA, ANTONIO MONTANER (1853–1925). A Spanish statesman, educated at Valencia and Madrid, studied law, and became a great parliamentary orator. Elected a deputy of his native city, Palma de Mallorca, in 1881, he was at first a Liberal, but 20 years later turned to the Conservatives. In 1903 he became a reform prime minister and during the next few years made important negotiations with France in regard to Tangier and Morocco and with England in regard to rights of the seas. In 1913 he declined to continue as leader of his party, but again in 1918, 1919, and 1921 he organized a cabinet. He could not wholly sympathize with Primo de Rivera, though he agreed with him that certain changes and reforms were urgent, and to the end maintained his interest in constitutional government of a progressive type.

MAXIMILIAN I. (1459–1519). Holy Roman emperor (1493–1519); son and successor of Frederick III.; at war with Louis XI. of France over Burgundy, which Maximilian had obtained with his wife; was victorious at Guinegate (1479), but was obliged to surrender his possessions to Louis by the treaty of Arras (1482); Maximilian was elected king of the Romans (1486); the Flemings rose in rebellion and he was taken prisoner for a time (1488); joined the League of Cambrai against Venice (1508) and the Holy League against France (1513); after the great victory of Francis I. at Melegnano (1515) was forced to give up Milan. The marriage of Philip, son of Maximilian, to the Infanta Joan, daughter of Ferdinand and Isabella, placed the House of Habsburg on the throne of Spain in the person of Charles I., afterwards Charles V. The marriage of the two grandchildren of Maximilian to the son and daughter of the king of Bohemia and Hungary brought these two countries into the hands of the House of Habsburg.

MAXIMIL'IAN (FERDINAND MAXIMILIAN JOSEPH) (1832–1867). Archduke of Austria and emperor of Mexico; executed by the Mexicans. He was brother of Emperor Francis Joseph of Austria. While the French troops were in possession of the greater part of Mexico the throne was offered to him. On their withdrawal (1866), at the request of the United States, his support was gone and he alienated the loyalty of the people, who rebelled against him. He was courtmartialed, convicted, and shot on June 19, 1867. (See Charlotte in this section.)

MAZARIN (*mà-zà-răn'*), **JULES** (1602–1661). A prime minister of France; born at Piscina, in the Abruzzi, Italy. His diplomatic talents having been demonstrated, he was sent to France on a papal mission, where he made an agreement with Richelieu to further French interests in Italy. This he did, and openly entered the service of France (1639). Received a cardinal's hat (1641); succeeded Richelieu as prime minister (1642); and ruled almost as absolutely as his predecessor had done. Mazarin was avaricious, and at his country's expense acquired a fortune of $6,000,000.

McADOO, WILLIAM GIBBS (1863–1941). Secretary of the Treasury under his father-in-law, President Wilson, and candidate for the presidency on the Democratic ticket in 1924, when John W. Davis was nominated, began his law practice in Tennessee, but removed to New York in 1892. As president of the Hudson and Manhattan Railway, he constructed the first tunnel across to New Jersey under the Hudson River, opened for traffic in 1908. From March 6, 1913 to Dec. 16, 1918 he acted as head of the U. S. Treasury Department, and also as director general of railways, 1917–1919.

McCARTHY, JUSTIN (1830–1912). Irish leader and man of letters, who was born in Cork, engaged in journalism in Ireland and later in London, acting as editor of the *Morning Star* for four years. He sat in parliament as a Liberal and Home Rule member from

several different districts of Ireland in succession from 1879 to 1900. He was the nominal leader of the Anti-Parnellites from 1890 to 1896. Of several historical works by McCarthy, *History of our Own Times* established his present reputation; he also wrote several dramas.

McKINLEY, WILLIAM (1843–1901). Twenty-fifth president of the United States, born at Niles, Ohio, attended Allegheny College, but withdrew to make his living as a school teacher, and enlisted in the Union army for the Civil War, from which he emerged a major. In 1867 he began the practice of law at Canton, O., which became his permanent home. He spoke many times for Hayes in the campaign of 1875, and the following year was elected to the national house from a normally Democratic district of Ohio. In spite of great opposition at home, he continued to hold the voters until 1890, except for the election of 1882. From 1891 to 1895 he served as governor of Ohio, always keeping up his close connection with the Republican organization. He had long advocated a higher protective tariff, and so in 1896 McKinley was the natural candidate for the presidency. The campaign turned upon the policy of the free coinage of silver at the ratio of sixteen to one, a plan advocated by the opposition nominee, William J. Bryan. During McKinley's term other changes were made in the tariff. After he had commenced his second term he was fatally wounded by an anarchist at the Pan-American Exposition, Buffalo, N. Y., Sept. 6, 1901, dying eight days later.

McMILLAN, HIS HONOR SIR DANIEL HUNTER (1846–1933). Born at Whitby, Ontario. Served with Canadian volunteers (1864); during Fenian raid (1866); Red River expedition (1870); Northwest rebellion, gaining medal (1885); returned member for Winnipeg in Manitoba legislature (1880); member of Manitoba government (1889). Created Knight Commander of St. Michael and St. George, and from 1900 to 1911 lieutenant governor of Manitoba and Keewatin.

MEDICI, CATHERINE DE'. See under CATHERINE DE' MEDICI.

MEDICI, COSIMO DE', THE GREAT (1519–1574). First grand duke of Tuscany; raised to the ducal chair (1537), on the death of Alessandro de' Medici; was a patron of literature, science, and the arts; founded academies, made collections of paintings, statuary, etc. The title of grand duke of Tuscany was conferred upon him (1569) by Pius V.

MEDICI, (*mā'dē-chē*), LORENZO DE', THE MAGNIFICENT (1448–1492). The virtual head of the Florentine state; succeeded in winning the favor of the lower classes and thus making his own power absolute; was himself a poet of great ability; encouraged the arts and literature. Envious of the growing power of the house of De' Medici, some of the malcontents formed a conspiracy (of the Pazzi) to overthrow them (1478); the brother of Lorenzo fell, but the latter escaped. The policy of advancing only the members of his own family left Florence a prey to her enemies. Other members of this celebrated family, the male line of which became extinct in 1737, were Salvestro, Giovanni, and Pietro. The family furnished two popes, Leo X. and Clement VII. and a long line of dukes of Tuscany. Salvestro was the real founder of the family, but Giovanni was its earliest man of wealth, and he acquired a great reputation for trying to relieve the poor of Florence from the burden of taxation by levying more heavily on the rich.

MEIGHEN (*mē'un*), ARTHUR (1874–). Canadian political leader, who was born in Ontario, educated at Toronto University, and trained for the law. He was successively solicitor-general in the government of Sir Robert Borden, secretary of state, minister of interior, and in July 1920, premier, holding the office till the defeat of his Conservative party in 1921, and also for a brief time in 1926, in succession to W. L. Mackenzie King. During the World War he vigorously fought for a conscription act, and so alienated much of his possible support in Quebec, failing thereby to win a victory in 1925, though greatly in favor in Ontario and some other provinces. He advocated a higher tariff and protection of Canadian resources against encroachment from outside.

MEIJI TENNO (1852–1912). Emperor of Japan, succeeding his father in 1868. Among the acts of his reign were the suppression of the old shogunate, the opening of Japan to foreign influence, the gain in personal power of the emperor as ruler, the end of the feudal regime, building of railways, and the winning of new treaties from other nations now more favorable to Japan. Wars with China in 1894 and with Russia in 1904, as well as three serious revolts, also marked his reign, yet his popularity increased year by year. For his reign he adopted the motto Meiji, meaning "Enlightened Peace." His son, Yoshihito (q. v.), succeeded him.

MENELEK II. (*měn'ĕ-lēk*) (1844–1913). Emperor or negus negusti (king of kings) of Abyssinia; born in Ankobar; son of Ailu Malaketh, king of Shoa; defeated the son of John, king of Tigre (1889), and was crowned (1890); brought the army to a high standard of efficiency and completely defeated the Italians at Adowa (1896), thus putting an end to Italian claims upon Abyssinian territory. He extended his territory, introduced European ways, and thwarted rebellion. He was succeeded by his grandson, Lij Yasu, who later was deposed.

METTERNICH (*mĕt'ĕr-nĭk*), CLEMENS WENZEL NEPOMUK LOTHAR VON (1773–1859). Austrian statesman; ambassador at Dresden (1801); at Prussia (1803); at Paris (1806); minister foreign affairs (1809); conducted war against Napoleon; brought about Quadruple Alliance; Austrian chancellor (1821). From 1809 he molded the diplomacy and firmly administered the affairs of Austria for 40 years, until forced into exile by the revolution of 1848. He lived in England and Brussels for three years, and then settled down in retirement once more in Austria.

MEYER, GEORGE VON LENGERKE (1858–1918). Born in Boston, Mass.; in Massachusetts legislature (1892); speaker of House (1894–1900); ambassador to Italy (1900–1905); to Russia (1905–1907); postmaster general (1907); secretary of navy (1909–1913).

MICHAELIS (*mē'kĕl-ĕt*), GEORG (1857–1936). German statesman, who succeeded Bethman Hollweg as chancellor, in July 1917 and continued till November 1, when he gave way to Count Hertling. Advanced to power as a compromise by the military party, he failed to take a firm stand and soon lost support.

MICHALAKOPOULOS (*mē-käl-ä-kôp'ŏō-lŏs*), ANDREAS (1875–). Greek statesman who entered politics in 1910 as an independent, but joined the Liberals and served under Venizelos in 1912 and 1915. He was in Paris for the peace conference, from 1920–23 was out of the government, and in 1923 returned, holding the premiership for eight months in 1924–25, when he was exiled during the military coup of General Panglos, but in 1926 again returned as minister of foreign affairs. His moderate and enlightened views made him a valuable force for order in troublesome times in Greece.

MIFFLIN, THOMAS (1744–1800). An American statesman; born of Quaker parentage in Philadelphia, Penn.; was graduated at the University of Pennsylvania (1760); member of the Pennsylvania legislature (1772–1773), and served as quartermaster general of the Continental army (1775–1777); was a member of the Continental Congress (1774–1776) and 1782–1784), being president from November, 1783, to November, 1784; was involved in the "Conway Cabal"; was speaker of the Pennsylvania legislature (1785); president of the supreme executive council of Pennsylvania (1788–1790), and first governor of his native state (1790–1799).

MILLERAND (*mĭl-răn'*), ALEXANDRE (1859–). French president from 1920 to 1924. Millerand asserted the right of the president to take a more active part than customary in affairs of state, but he was blocked by the liberal elements, and in consequence resigned after serving but four years of a seven-year term. In 1885 he had entered the chamber of deputies as a radical socialist, but broke with some of the party later. He was minister of public works in the Briand cabinet, 1910; minister of war under Poincare in 1912–13, and again under Viviani, 1914–15, and in 1919 was appointed commissioner-general of Alsace-Lorraine. During the war he did much to increase the military efficiency of France.

MINTO, THE RT. HON. GILBERT JOHN, EARL OF (1845–1914). Born in England; educated at Eton College and Cambridge University. Received his B.A. degree, and entered the Scots Guards (1867); appointed captain of Roxburgh Rifles, captain in army Reserve, and colonel, with rank of brigadier general, commanding South of Scotland volunteer brigade. Was war correspondent in Carlist War (1874); assistant military secretary with Turkish army on Danube (1877); staff volunteer in Afghan cam-

paign (1879); private secretary to Lord Roberts in South Africa (1881); wounded in Egyptian campaign (1882); military secretary of Lord Lansdowne in Canada (1883–1886), and chief of staff in Northwest rebellion, Canada (1885). Awarded Afghan and Egyptian medals; Medjidie; Khedive star; Northwest medal and clasp; defeated at Hexham, England, for member of Parliament (1886). Assumed title (1892) at death of his father, the second Earl of Minto. Governor general of Canada (1898–1904). Viceroy of India (1905–1910).

MIRABEAU (*mē-rȧ-bō'*), **HONORE GABRIEL DE RIQUETTI, COMTE DE** (1749–1791). A French statesman, orator, and writer; born at Bignon, near Nemours. He was imprisoned for debt, and was afterwards sentenced to death. This sentence was subsequently revoked, and Mirabeau in 1784 withdrew to London. Returning to Paris nine months later, he was twice sent on government missions to Prussia (1785 and 1787), and vigorously attacked Necker's financial methods. In 1789 he was elected to the States-General and, from this time until his death, was one of the most important figures in the public affairs of France. He was chosen president of the Jacobin Club (1791) and shortly after elected president of the National Assembly. He was one of the greatest French statesmen.

MITHRIDATES (*mĭth-ri-dā'tez*) **THE GREAT** (135?–63 B. C.). King of Pontus; born at Sinope; succeeded his father as king about 120 B. C. He waged three wars against the Romans—the First, Second, and Third Mithridatic wars. Mithridates made favorable progress against the Romans until, in 66 B. C., Pompey completely defeated him. He committed suicide. He failed because it was impossible for him to raise and train an army capable of conquering the Romans.

MONROE, JAMES (1758–1831). The fifth president of the United States was born in Westmoreland County, Virginia, of Scotch-Welsh descent. He left the College of William and Mary to enlist in the Revolutionary War, in which he was a lieutenant, and in 1780 began the study of law with Jefferson, then governor of Virginia. Monroe became successively a member of the Virginia house, of the Congress of the Confederation (1783–86), of the Virginia house of delegates, of the U. S. senate (1790–94), when he was appointed minister to France by Washington, but his failure to conciliate the French led to his recall in 1796. He served as governor of Virginia (1799–1802 and Jan. to Nov. 1811), acted in France, Spain, and England (1803–07), after which he again sat in the Virginia house of delegates. In Nov. 1811 he became secretary of state for Madison, and became in addition secretary of war (1814–15). In 1816 he received 183 votes to 34 for Rufus King, his Federalist opponent, for the presidency, and in 1820 he received all but one vote for a second term. Monroe is best known as the first sponsor of the American "Doctrine" which bears his name, and which resents undue interference by foreign nations in the internal affairs of any part of the three Americas.

MORGENTHAU (*môr'gĕn-tow*), **HENRY** (1856–). American lawyer, financier, and diplomatist. He was educated at the College of New York and Columbia University, engaged in law practice for 20 years, and then in financial enterprises. Ambassador to Turkey, 1913–1916, and acted for Great Britain, France, Italy, Russia, and other countries at Constantinople during the World War. Served on the mission appointed in 1919 to investigate conditions in Poland. Chairman of finance committee of Democratic party, 1912 and 1916.

MORLEY, JOHN. See DICTIONARY OF AUTHORS.

MORRILL, JUSTIN SMITH (1810–1898). American statesman who represented Vermont in the House from 1855 to 1867 and in the Senate from 1867 to his death. He is known as the author of a vigorous tariff bill in 1860, designed for revenue as well as for protection, and in 1862 as the father of the bill which established the land grant colleges in various states. The act reads that the "leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts." A second bill in 1890 gave $25,000 yearly to each land grant college.

MORRIS, GOUVERNEUR (1752–1816). Born at Morrisania, N. Y.; admitted to bar (1771); member Continental Congress (1777–1780); superintendent of finance (1781–1785); outlined present system of coinage; minister to France (1792–1794); United States senator (1800–1803).

MORROW, DWIGHT WHITNEY (1873–1931). American diplomatist and financier, educated at Amherst, became an attorney, and entered the firm of J. P. Morgan and Company as a partner in 1914. Morrow did important work in arranging finances and in connection with shipping during the World War; and he also served as chief aide to General Pershing at Chaumont, France. In 1925 he was made chairman of the aircraft board and in 1927 ambassador to Mexico. In 1930 was made one of the delegates to the London Conference on naval limitation.

MORTON, LEVI PARSONS (1824–1920). American banker and public official, after several years of business in New Hampshire and Massachusetts, went to New York and established a firm, which in 1873–84 acted as fiscal agents of the government in several important transactions, including the reception of the $15,500,000 awarded in settlement by England of the "Alabama Claims." He sat in Congress, 1879–81, was U. S. minister to France, 1881–85, vice president, 1889–93, and governor of New York, 1895–96.

MOWAT (*mou'ȧt*), **SIR OLIVER** (1820–1903). Held the high office of premier of Ontario province for 24 years (1872–1896), the longest continuous term. Born in Kingston, Ont. Educated at private school; called to bar (1841), practising in Toronto as Burns, Mowat, & Vankoughnet. Created queen's counsel (1855) and bencher of Law Society. Served on commission consolidating the public general statutes of Canada and Upper Canada (1856–1859). Elected to Parliament, representing South Ontario (1856–1864). Was provincial secretary (1858); postmaster general (1863); appointed representative of Liberal party of Upper Canada; active in framing constitution of "Fathers of Confederation," and a vice chancellor of Ontario (1864); premier of Ontario (1872–1896); attorney general (1896), then retired. He may be said to have lived down all opposition. The story of his achievements is a romance of statesmanship. He was eminently a man to be trusted; 24 years of power with stainless integrity. Appointed lieutenant governor of Ontario (1897); and in 1899 entered the Senate and became minister of justice in the Laurier cabinet. Created Knight Commander of the Most Distinguished Order of St. Michael and St. George, and Knight Grand Cross of same order.

MULCAHY, RICHARD JAMES (1886–). Politician born in Ireland and first entered Parliament in 1918, representing part of Dublin till 1922. He assisted in organizing the Irish Volunteers with Michael Collins, and became chief-of-staff in 1918, minister of defense in 1922, and commander-in-chief after the death of Collins. From 1924 to 1927 he was out of the government, returning as minister for local government.

MULLER (*mül'ĕr*), **HERMANN** (1876–1931). German statesman, who for several years edited a socialist newspaper and sat in the Reichstag from 1916 to 1918, having tried in vain to avert the World War by a visit to the socialists of France and Germany. As minister of foreign affairs, he signed the Peace Treaty at Paris, in 1920 was chancellor for a time, and in 1928 formed as chancellor a new ministry representing all important parties.

MURRAY, JAMES STUART, EARL OF (1531?–1570). Scotch statesman; son of James V. of Scotland. When Mary was invited to become queen of Scotland, Lord James Stuart was for a few years her chief minister. Seeing that the marriage of Mary with Darnley meant Catholic supremacy, he took up arms to oppose the union, was defeated, and forced to take refuge in England (1565). In 1568 he defeated Mary's forces at Langside, near Glasgow. He met his death by assassination.

MUSSOLINI, BENITO (1883–). Leader of the Italian Fascisti and Premier of Italy, for several years was journalist, teacher and traveler. For much of his life he was an adherent of a somewhat radical form of socialism, which he gradually abandoned after 1908. During the World War he was detached from the socialist party altogether and turned his attention toward the ideals of Italian nationalism. Discipline for all is the main principle of Fascism. Through the exhortation of Mussolini this group, enlarged to a party in 1921, became the dominant factor suddenly in Italy, and assumed power with Mussolini as Premier or virtual dictator of Italy.

MUSTAFA KEMAL (*mŏŏs'tä-fä*) (1880–1938). Turkish leader and first president of the republic. His name Kemal (meaning *perfection*), was given him by his teacher of mathematics in a Turkish military school. From 1904 to 1907 he spent in exile in Asia Minor, in 1908 he felt that the new party in power was not progressive enough, and so he gave much of his time to his military career, going to Tripoli *incognito*, and there he became a major, after which he fought in the Balkan wars, and in the World War finally acted in defense of the Dardanelles. When the Turks were defeated in Palestine in 1918, Mustapha continued the resistance, established himself at Angora, declared his opposition to the abject peace terms of Turkey, and in 1920 became president of the new Nationalist Assembly at Angora. The next year he was the chief figure in the Greco-Turkish War, as he was in the foundation of the republic, of which on Oct. 29, 1923, he became first president. After bitter opposition in 1926, he was again elected president on Nov. 1, 1927.

MUTSUHITO. See MEIJI TENNO.

NADIR (1688–1747). King of Persia; born near Kelat; aided Tahmasp II. in driving out the Afghans (1725–1727); deposed Tahmasp, and was proclaimed Shah (1736) on the death of Abbas III. He was beaten by the Turks (1733), but recovered (1734–1735) Georgia, Armenia, Kars, and Erivan. In 1738–1739 he captured Delhi, and carried off the Koh-i-nur diamond; subdued Bokhara and Khiva (1741).

NAPOLEON. See BONAPARTE.

NASI, JOSEPH (d. 1579). Jewish leader in Turkey, who was born in Portugal, emigrated to Antwerp, where he became wealthy but restless in a Catholic regime, and so he settled in Turkey. The sultans promoted him to high office, he founded a Jewish colony at Tiberias, and in 1566 became duke of Naxos, having won Cyprus for the emperor Selim. Foreign powers often approached the Turkish ruler through Nasi, and potentates conferred with him. When Selim died in 1574, Nasi retired from active affairs, retaining his titles and wealth.

NEBUCHADNEZZAR (*nĕb-ū-kăd-nĕz'ar*) (d. c. 560 B. C.). More properly Nebuchadrezzar, king of Babylon, who apparently was a Chaldee. He defeated Necho (q. v.) of Egypt, and annexed Syria to his empire, making his capital city one of the wonders of the ancient world. He besieged Tyre for 13 years after a revolt, twice proceeded against Jerusalem, and finally destroyed the city in 586 B. C., when king Zedekiah was carried with many other Hebrews to Babylon. He seems to have been a progressive and religious monarch.

NECHO (*nē'kō*) (d. 594 B. C.). Called in the Bible Pharaoh-necoh. During the attempt to conquer Syria, he slew Josiah, the ruler of Judah, and deposed his son Jehoahaz. After extending his boundaries to the Euphrates River, he was defeated by Nebuchadnezzar (q. v.). Then he confined his attention to the development of Egypt, trying even to build a canal from the Nile to the Red Sea.

NECKER (*nĕk'ĕr*), **JACQUES** (1732–1804). French statesman and financier; born at Geneva; became well known for his publications on political economy and finance, and was made director general of finances (1777). His publication on the finances of France caused his dismissal (1781); recalled in 1788; dismissed in 1789; shortly recalled, but again dismissed (1790).

NELSON, KNUTE (1843–1923). American statesman, who became instrumental in establishing the department of commerce and labor at Washington. He was born in Norway, lived for 21 years in Wisconsin, and fought in the Civil War. After settling in Minnesota, he served in the state senate, was regent of the University of Minnesota for 11 years, 6 years a representative in Congress, and from 1895 to his death was U. S. Senator. Though nominally a Republican, he often went outside party lines to vote for progressive measures he thought worthy.

NERO (37–68). Roman emperor (54–68). He was the son of Agrippina, the wife of Claudius, who adopted him and made him his heir. On the murder of Claudius by Agrippina, the soldiers proclaimed Nero emperor in 54. He caused Britannicus, son of Claudius, to be poisoned, as he feared him as a rival; poisoned his own mother to please Poppaea Sabina. To marry the latter he divorced and put to death his wife, Octavia, in 62. In 61 a rebellion broke out in Britain under Boadicea, which was suppressed by Suetonius Paulinus. Rome itself was on the verge of a rebellion. In 64 two thirds of the city of Rome was consumed in a great fire which it is believed was caused by Nero. He blamed the Christians and began a persecution of them. He rebuilt the city in great magnificence, including the palace known as the Golden House. All Italy was plundered to supply the money for his extravagance. A conspiracy against him failed in 65 and Seneca and Lucian fell victims to his vengeance. He killed his wife, Poppaea Sabina, in a rage. His soldiers rose against him and he fled from Rome and ended his life by suicide in 68.

NEWLANDS, FRANCIS GRIFFITH (1848–1917). American legislator, who was born in Mississippi, educated at Yale, and the Columbian Law School at Washington, practiced in San Francisco, and settled in Nevada. He served as a Democrat in the House from 1893 to 1903 and as senator until his death. Important legislation sponsored by him includes the Newlands Act for settling railway labor disputes by arbitration.

NICHOLAS I., PAVLOVITCH (1796–1855). Emperor of Russia; born at St. Petersburg; third son of Paul I. He married in 1817 Charlotte, the eldest daughter of Frederick William III. of Prussia, and in 1825, on the death of Alexander I., Nicholas became emperor. He revived capital punishment; codified Russian law (1827–1846); converted Poland into a Russian province, and completely Russianized the foreign element in the country. In 1828 a successful war with Turkey gave Russia more territory. Intent upon forcing his hereditary designs upon Constantinople, Nicholas involved the country in the Crimean War, during which struggle he died at St. Petersburg.

NICHOLAS II. (1868–1918). Emperor of Russia; born at St. Petersburg; eldest son of Emperor Alexander III. and Maria Feodorovna. In 1891, during the famine, he was president of the committee of succor; held several military commands in his own country, and in 1893 the Order of the Garter was conferred upon him in England. He traveled extensively in the Russian Empire in order to become better acquainted with its problems and, on the death of his father (1894), succeeded to the throne. Although he had previously seemed to lack the qualities essential to a ruler, Nicholas now began a reign which exhibited both energy and decision. Perhaps his most important act was to issue a peace edict, which in 1899 led to the first Peace Conference at The Hague and the Court of International Justice. He gave up his crown without resistance on demand in 1917. Later he and his family were sent to Ekaterinburg, where they were slain on July 16, 1918.

NICHOLAS I. (1841–1921). King of Montenegro in succession to his uncle in 1860. He took part in wars against Turkey, visited Russia where Alexander III. spoke of Nicholas as his "only friend," granted a constitution in 1905, and in 1910 assumed the title of king as an independent sovereign. Meanwhile plans had been considered for a union with Serbia, and in the Balkan wars additional territory came to his little kingdom. He joined with Serbia in the World War, but kept in touch with Austria, suing for a separate peace, which move increased his unpopularity at home and on Jan. 19, 1916 caused him to flee to Italy. In 1918 the Assembly deposed him and his dynasty, and he lived in Italy till his death. Nicholas was a poet and dramatist of some ability.

NITTI (*nēt'tē*), **FRANCESCO SAVERIO** (1868–). Italian statesman and authority on economics, who, after several years as a professor of finance at Naples, entered Parliament in 1904. He was minister of agriculture, industry, and trade from 1911 to 1914, came to the United States on a financial mission in 1917, was minister of the treasury in the Orlando cabinet, 1917 to 1919, and then premier till June, 1920. He was elected again to parliament in 1921, but did not become a candidate in 1924, being out of sympathy with the Fascist regime. He afterwards left Italy.

NORRIS, GEORGE WILLIAM (1861–). American legislator, who was born in Ohio, admitted to the bar in 1883 and moved to McCook, Nebraska, where he became prosecuting county attorney, district judge from 1895 to 1902, after which he was a representative in Congress till 1912, when he was elected senator from Nebraska. In the House he championed revision of the rules and in the Senate direct legislation of senators; he opposed entrance into the World War, the selective draft, and the Versailles Treaty. He fostered a bill for government control of Muscle

Shoals power development and for protection of natural resources. Though nominally a Republican, he often voted with the opposition, supported Smith in 1928, and the Democratic candidate for senator in Pennsylvania in 1926.

NORTH, FREDERICK, EIGHTH LORD NORTH AND SECOND EARL OF GUILFORD (1732–1792). English statesman; was educated at Eton and at Trinity College, Oxford. He was sent to the House of Commons for Banbury (1754); was a junior lord of the treasury (1759–1765), and chancellor of the exchequer (1767). North succeeded to the duke of Grafton as prime minister (1770) and, although he was aware that his policy in regard to the American colonies must in the end fail, he nevertheless set aside his own convictions to please the king's obstinacy. Being unable longer to continue his policies, Lord North resigned (1782); succeeded as earl of Guilford (1790).

NORTHCOTE, SIR STAFFORD HENRY, EARL OF IDDESLEIGH (1818–1887). An English statesman. Chairman of Hudson Bay Company (1869–1874) and caused the transfer to Canada of Prince Rupert's Land; member of the Joint High Commission which signed the Treaty of Washington (1871); chancellor of the exchequer in Disraeli's Cabinet (1874); first lord of the treasury in Salisbury's Cabinet (1885–1886); foreign secretary (1886).

NUBAR, PASHA (1825–1899). An Egyptian statesman, born of Armenian parentage at Smyrna. He was educated in Europe, became a Christian, acted as secretary to Mehemet Ali, Ibrahim Pasha, Abbas Pasha, and Said, all rulers in Egypt. Under Ismail Pasha, he acted in diplomatic and other capacities, as minister of public works, and premier. He served as premier under Raiz Pasha also. Altogether he had much to do with Egyptian diplomacy for fifty years, retiring in 1895.

OBREGON (*ō'brā-gōn'*), **ALVARO** (1880–1928). Mexican leader and president, who for a number of years acted as a scientific farmer and stockman. To aid President Madero in 1912 he recruited some thousands of Indians, and later he lent important aid to Carranza, defeating Zapata, Villa, and other bandit chiefs who were warring against the stability of Mexico. In the battle of Celaya he lost an arm, 1915. Later he quarreled with Carranza and sought to replace him. Obregon became president of Mexico in 1920 and served four years, doing much to promote peace and stability in the country, in spite of counter movements. He was killed by an assassin near Mexico City, after being elected president once more.

O'CONNOR, THOMAS POWER (1848–1929). Irish leader known familiarly as "Tay Pay." He was at first a strong supporter of Parnell and the Irish Nationalist Party. After graduation from Galway College, he became a journalist in Dublin, then on the London *Daily Telegraph*, and finally in the London office of the New York *Herald*. Elected from Galway in 1880 and from Galway and Liverpool both in 1885, he chose to represent the latter, and was reëlected for a quarter of a century. He toured the United States to secure aid for the Irish cause.

ODOACER (*ō-dō-ā'sẽr*) (c. 434–493). The first barbarian ruler of Italy, who put his old commander, Orestes, to death in 476, took the crown from Augustulus, son of Orestes. He gave the eastern part of the empire to Zeno, who finally rose against him in response to a call from Nepos, a deposed Roman emperor. He was defeated in 493 at his capital, Ravenna, and later was slain treacherously by Theodoric the Ostrogoth.

O'HIGGINS, BERNARDO (1776–1842). Head of the first native government of Chili. He was the son of an Irishman, who was governor of Chili (1778–95), and viceroy of Peru (1795–1801). He fought in the revolution in 1810, and in 1813 succeeded Carrera as commander, but was forced the next year to take refuge across the mountains, where he consented to serve under San Martín. They gained a decisive victory at Chasabuco in 1817 and at Maipú in 1818. O'Higgins acted as ruler of Chili from 1817 to Jan. 1823 under the title of director-general. Though he gave a liberal constitution in 1822, he was unpopular, and retired to an estate in Peru.

O'HIGGINS, KEVIN CHRISTOPHER (1892–1927). Irish patriot, educated at the National University, joined the Sein Fein in 1916, and was minister of justice from 1923. In 1927 he also became minister of external affairs. O'Higgins was waylaid by three men and shot near Dublin on July 10, 1927.

OKUMA (*ō'kōō-mȧ*), **SHIGENOBU, MARQUIS** (1838–1922). Japanese statesman and educator. Learning English and Dutch, he changed his plans from a military career to become a leader in reform movements, but took no direct part in the revolution of 1868. He served in turn in the department of foreign affairs, as secretary of the departments of interior and finance, and as minister of finance. A dozen years later he became a member of the cabinet and premier in 1898 on Ito's retirement, but resigned after a few months. In 1914 he became prime minister, but retired because of poor health two years later. While not in office he cultivated his beautiful estate at Waseda, near Tokyo, founding also several schools, including Waseda University, of which he acted as president.

OLDENBARNEVELDT (*ōl'dĕn-bär'nĕ-vĕlt*), **JOHAN VAN** (1547–1619). Dutch patriot, statesman, and religious leader. See DICTIONARY OF HISTORY UNDER BARNEVELDT, p. 235.

OLNEY, RICHARD (1835–1917). American statesman, educated at Brown and the Harvard Law School. He practiced in Boston, sat in the Massachusetts legislature, served in the Cabinet of President Cleveland as attorney-general, 1893–95, and as secretary of state, after the death of Gresham, 1895–97. His state papers were models of clear reasoning and trenchant style. In a note to Great Britain concerning the dispute between the British and Venezuelan governments, Olney wrote an interpretation of the Monroe Doctrine which was firmer and more inclusive than any previous statement.

ORANGE, WILLIAM THE SILENT, PRINCE OF (1533–1584). Founder of the Dutch Republic; born at Dillenburg. He was the leader of the insurrection which resulted from the attempt of Philip II. of Spain to stamp out Protestantism and establish Catholicism in the Netherlands. He succeeded in bringing about, in 1579, the Union of Utrecht (q. v.). This marked the birth of the Dutch Republic, but in 1580 Philip put a price on William's head, and he was assassinated at Delft.

ORLANDO, VITTORIO EMANUELE (1860–). Italian statesman and war premier, was minister of justice in the Salandra cabinet and minister of the interior in the Boselli ministry. When the Italian armies met disaster at the battle of Corporetto in 1917, Orlando became premier, retaining this post till the time of the Peace Conference in 1919. During his administration the power of the Austrian armies in Italy and surrounding countries was broken by resisting the great attack of the enemy in June, 1918, and launching a tremendous counter offensive late in October of the same year.

OSCAR I., JOSEPH FRANCOIS BERNADOTTE (1799–1859). King of Sweden and Norway; born in Paris; son of Marshall Bernadotte; (q. v.) married Josephine Beauharnais (1823), by whom he had five children. He became king in 1844, and began a reign noted for its justice and beneficent measures. When Oscar's health failed in 1857, his eldest son (later Charles XV.) was appointed regent.

OSCAR II. (1829–1907). King of Sweden and until 1905 king of Norway; born in Stockholm; third son of Oscar I.; succeeded his brother, Charles XV., on the throne in 1872, and proved a most successful ruler. In 1857 he married the Princess Sophie of Nassau, by whom he had four sons. Oscar attained some note as a writer, and patronized industry, science, and the arts. Though he opposed the separation of Norway from the joint kingdom in 1905, his patience and good will prevented any serious disturbances.

OTTO I., THE GREAT (912–973). Founder of the Holy Roman Empire of the German nation. The eldest son of Henry the Fowler, king of Germany, and succeeded him in 936 as king of Germany. He overcame the revolutions in his kingdom and the incursions of the Huns. The latter were defeated at Lechfeld in 955 and never after renewed their raids. He took northern Italy and in 962 he was crowned by Pope John XII., and thus founded the Holy Roman Empire.

OTIS, JAMES (1725–1783). American statesman; born at West Barnstable, Mass. He was brought into notice by his speech against the writs of assistance, and by the publication of several pamphlets against Parliamentary taxation; was instrumental in bringing about the Stamp Act Congress (1765) and in effecting other measures for the defense of American liberties.

OXENSTIERNA (*ok'sen-shär-nä*), **AXEL, COUNT** (1583–1654). A Swedish statesman; born at Fanö, in Upland; made imperial chancellor (1611). During the Polish War (1621–1625) he was regent in everything but name and, on the death of Gustavus Adolphus (1632), became director of the Swedish policy in Germany; concluded the advantageous peace of Brömsebro with Denmark (1645).

OYAMA (*ō'yä-mä*), **IWAO, PRINCE** (1842–1916). A Japanese general, who rose from the rank of colonel in 1871 to that of general in 1898. During the war with Russia, as chief of staff of the Japanese army, he became the active leader of all forces in the field and won the important battles of Liao-Yang, the Shako, and Mukden. In the Franco-Prussian war of 1870 he acted as observer with the German forces. At different times he held important posts in the Nippon military organization, resigning as chief of staff in 1906.

PAGE, WALTER HINES (1855–1918). An American writer and diplomatist, who was born in North Carolina, was educated in Virginia and at Johns Hopkins, and for several years was a journalist in New York and North Carolina. In 1887 he became editor of the *Forum*, in 1895 connected himself with a Boston publishing house, edited the *Atlantic Monthly* for a year, and then helped organize Doubleday, Page, and Company, founding also the *World's Work* of which he was editor from 1900 to 1913. President appointed him ambassador to Great Britain. Here Page did much to promote friendly relations, and during the World War to assist the Allies in every way he could. Though remaining officially neutral before the War, he had personally urged President Wilson to declare against Germany when the *Lusitania* was sunk. In 1918 ill health forced his retirement.

PAINLEVE (*păn-lè-vā'*), **PAUL** (1863–1933). French political leader, at first a professor of mathematics in the Sorbonne, who took the portfolio of public instruction and inventions in the Briand cabinet in 1915, resigning in 1916, when a new cabinet was formed. In 1917 he became minister of war, then on Sept. 12 premier, but on Nov. 13 gave way to Clemenceau, having in the meantime joined in forming the supreme Allied command with Foch as chief for France. From April to November 1925, he again acted as premier, and then as minister of war and also of finance, or as minister of war alone, in several succeeding cabinets.

PALMA (*päl'mä*), **THOMAS ESTRADA** (1836–1908). Cuban statesman; born near Bayamo; in the Ten Years' War (1868–1878); conducted school at Central Valley, New York; president of new Cuban republic (1902); but on Sept. 6, 1906 resigned, and the United States took over the government for the time being. Palma was an honest and faithful leader of the Cubans.

PALMERSTON, HENRY JOHN TEMPLE, VISCOUNT (1784–1865). Born at Broadlands; succeeded to title (1802); member House of Commons (1807); secretary of war (1809–1828); secretary of state for foreign affairs (1830–1841 and 1846–1851); home secretary (1852); prime minister (1855–1857, 1859–1865). Palmerston refused to ally himself permanently with any group or party, trying to serve all elements in Great Britain alike. In private life he was accomplished and popular, and as a leader he favored many progressive causes.

PANIN (*pä'nĭĭĕn*), **NIKITA IVANOVICH** (1718–1783). Russian count and statesman, who played an important part in the diplomacy of Europe for many years. After a few months as minister to Copenhagen, 1747, he was sent to Stockholm, where he exerted a considerable influence as opponent of the French for 12 years. He was the chief adviser of Catherine the Great for a longer period, and also of Paul, the grand duke. Favoring a guarantee of Polish solidarity, he virtually caused the surrounding nations to combine against him, the result being the Turkish War. He sought with what he called a "Northern Accord" to unite various nations against Austria and France, but in the end so lost the favor of Catherine in 1781. Panin, however, was a learned, conscientious, and able statesman.

PAPINEAU, LOUIS JOSEPH (1789–1871). Born at Montreal. Elected to Legislative Assembly of Lower Canada (1809). As leader of French Canadian party was chosen speaker (1817–1837). Quarreled with royal governors repeatedly; Lord Dalhousie declined to accept him as speaker, but the Assembly insisted and Lord Dalhousie resigned. The Assembly under his lead transmitted to England the famous "Ninety-two Resolutions." Affairs became more critical (1835); Papineau arranged with William Lyon Mackenzie, the leader of the revolutionary party in Upper Canada, to coöperate in forcing England to make the Provincial Council elective, instead of appointive. His violent speeches produced ultimate rebellion (1837); he fled to the United States and (1839) to France, returning under general amnesty to Canada (1847). Elected to Lower House of the now united Canadian Parliament, but his influence was gone.

PARKES, HENRY (1815–1896). Often called the father of the Australian Commonwealth. He was born of a very poor family in Warwickshire, England, emigrated to Australia in 1839, settled in Sydney, and from 1849 to 1858 conducted the *Empire*, a paper which opposed sending criminals to Australia and favored responsible government. After a term in the legislative council, he went to England to promote emigration to Australia, remaining there for two years (1861–63). He was colonial secretary (1866–68), prime minister (1872–75), prime minister and colonial secretary for several months in 1877, and once more from Dec., 1878 to Jan., 1883, and 1887 to 1889. He presided over the Sydney convention (1891) and largely wrote the constitution then proposed.

PARNELL, CHARLES STEWART (1846–1891). Irish leader, born at Avondale, Wicklow, entered Parliament first in 1875, and adopted a policy of obstruction rather than of force to get England to grant Home Rule to Ireland. Much of the legislation of benefit during the term of Gladstone and later was through his influence. After some hesitation he approved the Land League in 1879, and under a special Coercion Act he was arrested in 1881 for advising tenants in a course of obstruction, or even of boycott. Following certain acts of violence, in 1882, Parnell remained away from Parliament largely because of ill health, but in 1883 he was accused of complicacy. A special commission exonerated him. He finally lost his influence in 1889 through a divorce suit filed by the husband of a Mrs. O'Shea, whom Parnell afterward married. Refusing to resign his leadership, he was followed by only a part of his former adherents.

PASIC, NICHOLAS (1846?–1926). Serbian leader, several times premier, from 1891–92, his first term, to his last, 1921–26. He held office during both Balkan wars, did much to unite neighboring states with Serbia against Russia and Turkey, refused stubbornly for a time some of the plans for a united Yugoslavia, until his opponents under Radić granted certain concessions.

PAUNCEFOTE (*pâns'frĭt*), **LORD JULIAN** (1828–1902). Minister to United States (1889); first "ambassador" (1893); arbitrated Venezuelan, Bering Sea, and other difficulties between England and United States; revised Clayton-Bulwer Treaty; party to Hay-Pauncefote Treaty; delegate to Hague Conference (1899). Among his important accomplishments was an Anglo-American arbitration treaty.

PEDRO I. (DOM ANTONIO PEDRO DE ALCANTARA BOURBON) (1798–1834). Regent of Brazil (1821); supported Independents; recognized by Portugal; emperor (1825–1831). Abdicated in favor of his son, Pedro II.; proclaimed king of Portugal (1826), but transferred throne to daughter, Donna Maria.

PEDRO II. (DOM PEDRO DE ALCANTARA) (1825–1891). Emperor of Brazil (1831–1889). Crowned (1841), his reign marked by rebellions and insurrections. Opened the Amazon to international trade (1867); abolished slavery (1888); forced to abdicate by a revolution (1889).

PEEL, SIR ROBERT (1788–1850). English statesman; Irish secretary (1812–1818); home secretary (1822–1827) and again under Wellington (1828–1830); introduced the Catholic Emancipation Bill (1829); prime minister (1834–1835) and again (1841–1846); repealed the corn laws (1846). Gladstone and Disraeli began their careers under his direction. Peel was a conscientious, able, and determined administrator, slow to form opinions, but remarkably tenacious of what he considered right. His fall from power followed the disruption of the Conservatives after the repeal of the corn laws, which they had long made almost a fetish.

PEPIN. See PIPPIN.

PERICLES. The greatest statesman of ancient Greece (? –429 B. C.). His father, Xanthippus, conquered the Persians at Mycale in 479 B. C. Peri-

cles championed the democratic party of Athens and made it supreme during what is known as the "Age of Pericles" (465–429 B. C.), the most brilliant epoch in Athenian history, not only in its political power, its trade and commerce, but in art and literature. He was the foremost orator, statesman, and general of his time. He introduced many reforms, carried Athens safely through several wars, formed the Confederacy of Delos, restored the buildings of Athens destroyed by the Persians, made Athens the most beautiful city in the world, and erected the Parthenon. After the defeat of the Peloponnesian War and the outbreak of a plague, the fame of Pericles waned. He was deposed from office, fined, and imprisoned. Though restored, he died soon after from a lingering disease.

PETER I., THE GREAT (1672–1725). Czar of Russia; founder of the modern Russian monarchy; born at Moscow; crowned joint emperor with Ivan (1682), under the regency of Princess Sophia; became sole ruler (1689); went to war with Turkey (1695); and in 1696 conquered Azov; in 1697 traveled in western Europe to acquire the knowledge necessary for developing his empire; founded St. Petersburg (1703), renamed Petrograd (1914). Russia, Denmark, and Poland united in war against Charles XII. of Sweden (1699), in which the latter was victorious till 1709, when Peter defeated him at Pultowa; the Russians conquered Finland (1713); Peter assumed title of Emperor of all the Russias (1721), when peace was concluded with Sweden; was the first to introduce into his country the reforms of other European nations.

PHILIP II. or **PHILIP AUGUSTUS** (1165–1223). King of France (1180–1223). The son and successor of Louis VII. and one of the greatest monarchs of the Capetian dynasty. In 1181 he despoiled the count of Flanders of two rich districts. In 1182 he drove the Jews out of his territories and confiscated their wealth. In 1187 he helped the English in their attack on Languedoc. In 1190. he went to the Third Crusade with Richard Coeur de Lion of England, but quarreled and returned home. He promised Richard to respect his lands; but at once on his return entered into a conspiracy with John of England to divide up Richard's possessions in France. Richard's return caused a war which was carried on against John after the death of Richard in 1199 and much of his land was lost to France. In 1214 Philip defeated the allied Germans, English, and Flemish at Bouvines. He improved and built up the large cities, and gave the first charter to the University of Paris. France obtained a commanding position in Europe in this reign.

PHILIP IV., THE FAIR (1268–1314). King of France (1285–1314). Son and successor of Philip III. The most prominent event of the reign was the struggle with the papacy. The French undertook to tax the clergy, whereupon Boniface VIII., the pope, issued the bull *"Clericis laicos"* in 1296, instructing the clergy to resist the attempt. The government issued a decree forbidding the exportation of metals from France. Then the pope gave way at once, as this would have prevented the sending of money to Rome. In 1302 Boniface again attempted to carry his point and issued the famous bull *"Unam Sanctam,"* which set forth the claims of the papacy and was a challenge to all of the monarchs of Europe. To strengthen his position Philip summoned for the first time in the history of France the States-General. In 1303 Boniface died. After a short rule of Benedict XI., Philip obtained, in 1305, the election of Clement V. as pope. In 1309 the pope took up his residence in Avignon and until 1378 the papacy was under the control of France. He became involved in war with England under Edward I. and with Guy of Flanders. He was defeated at Courtrai in 1302 and made peace (1305).

PHILIP VI. (1293–1350). King of France (1328–1350). First king of the House of Valois. The son of Charles of Valois, younger brother of Philip IV. His right to the throne was disputed by Edward III. of England, who claimed it through his mother. This involved France in the Hundred Years' War. He wiped out the disgrace of Courtrai by defeating the Flemish at Cassels (1328). The Hundred Years' War began in 1337. The French fleet was destroyed off Sluis in 1340. Philip was extravagant and the States-General declared in 1338 that their consent was necessary before the imposition of taxes. In 1346 Edward won Crécy, and by the intervention of the pope a peace was made in 1347. The black death broke out in the same year. Philip's extravagance knew no bounds and the country was greatly oppressed.

PHILIP II. (382–336 B. C.). King of Macedonia and father of Alexander the Great. He came to the throne in 359 B. C. and gradually made himself master of all of Greece. His great stand was at Chaeronea, where, in 338, he defeated the allied Thebans and Athenians. In the midst of his preparations to invade Persia, he was assassinated. He was succeeded by his son, Alexander the Great. It was against his efforts to become master of Greece that Demosthenes uttered the famous speeches known as Philippics.

PHILIP II. (1527–1598). King of Spain; born at Valladolid; son of Emperor Charles V. He received the government of the Netherlands (1555); became king of Spain (1556); stamped out Protestantism in Spain, but his attempt to do so in the Netherlands resulted in a disastrous revolt; in 1580 Portugal came under his power, but the "Invincible Armada" equipped for the conquest of England was completely defeated by the English (1588).

PHIPS or **PHIPPS, SIR WILLIAM** (1651–1695). First royal governor of Massachusetts; born at Woolwich, Me. When about 18 years of age he removed to Boston, and in 1687, when he recovered $1,500,000 in treasure from a wrecked Spanish galleon, was knighted and appointed sheriff of New England. Phips captured Port Royal (1690), made an unsuccessful attack on Quebec (1691), and was appointed governor of Massachusetts (1692). As a governor he displayed a rough and arbitrary spirit, and was called to England to answer charges (1694).

PICKERING, TIMOTHY (1745–1829). American statesman; born in Salem, Mass.; was graduated at Harvard (1763), and began the practice of law (1768). He took part in the battle of Lexington (1775); marched with the Essex regiment to join Washington in New Jersey (1776); was made adjutant general by Washington; participated in the campaign against Howe (1777); became quartermaster general (1780), and aided in the campaign resulting in the surrender of Cornwallis. He was a member of the Pennsylvania Constitutional Convention (1789); postmaster general (1791–1795); secretary of state from 1795 to 1800, when trouble with President Adams caused his dismissal. Pickering served as United States senator (1803–1811), and was elected to the House of Representatives (1812 and 1814).

PIERCE, FRANKLIN (1804–1869). Fourteenth president of the United States, was born in New Hampshire, completed his education in 1824 at Bowdoin College, and married the daughter of its president, Jane Means Appleton, after he served his first term in Congress. Pierce was a member of the New Hampshire house (1829–33), of the national house (1833–37), and the senate (1837–42), resigning to resume his law practice. He refused several political appointments, served in the Mexican War, during which he rose to the rank of brigadier general, and in 1852 accepted the nomination as compromise candidate for the presidency. He received the votes of all but four states, appointed a notable cabinet, all of whom remained in office (one of few such examples) during his term of four years. Pierce was a warm friend of Nathaniel Hawthorne who wrote his biography.

PINCHOT, GIFFORD (1865–). Conservation expert and governor of Pennsylvania. He was born in Connecticut, graduated from Yale, where he acted as professor of forestry and founded the school of forestry at New Haven and the summer school at Milford, Pa., and from 1898 to 1910 was chief of the division (later the bureau) of forestry of the U. S. government. He also served on notable commissions. In 1920 he became state forester of Pennsylvania and was governor from 1923 to 1927, during which time he introduced a budget system, paid off the state debt in large part, and helped settle a great coal strike in 1923, largely through arbitration.

PINCKNEY, CHARLES COTESWORTH (1746–1825). American statesman and soldier; born at Charleston, S. C. He was educated in England, and returned to America (1769); served in the first Provincial Congress of South Carolina (1775); was one of Washington's aids-de-camp; prominent member of the United States Constitutional Convention (1787); of the convention which framed a constitution for South Carolina (1790); United States minister to France (1796), where, in answer to the French minister's demand for money, he is said to have given the famous reply, "War be it, then; millions for defense, sir, but not one cent for tribute." Unsuccessful Federalist candidate for vice-president (1800); for president (1804 and 1808).

PIPPIN or **PEPIN.** The name of several mayors of the palace in the kingdom of the Franks and the ancestors of the Carolingian kings. **PIPPIN THE ELDER** (died 639) controlled the policy of the state with Arnwulf, bishop of Metz, under Dagobert I. **PIPPIN OF HERISTAL** (died 714). Son of Pippin the Elder. He had charge as majordomus of the eastern part of the Frankish kingdom known as Austrasia, about 679. He defeated Ebroin, majordomus of the western part. He thus became ruler of all of the Franks in 687. His son was Charles Martel. **PIPPIN THE SHORT** (714–768). King of the Franks (751–768). The second son of Charles Martel. In 741 he and his brother, Karlmann, received the office of mayors of the palace. In 742 they placed Childeric III. upon the throne. In 747 Karlmann abdicated and became a monk. In 751 Pippin was crowned king and Childeric was compelled to enter a monastery. Pippin was the first king of the Carolingian line. He conquered the Lombards, took land from them, giving some of it to the pope, and among other conquests took Aquitaine after eight years of attack. He failed to subdue the Saxons. At his death the territory held by Pippin was divided between his two sons, Carolman and Charles or Charlemagne (q. v.).

PISISTRATUS (*pĭ-sĭs'trà-tŭs*) (d. c. 525 B. C.). In championing the poor people and in the attempt to redress their wrongs he was protected by a bodyguard of 500 armed men (560 B. C.); seized the Acropolis at Athens, made himself tyrant or ruler of Athens, but was driven out; returned but was again banished in 550 B. C.; went to Euboea for 10 years; gathered a force at Marathon, defeated his foes, and was re-established in 540 B. C., holding power until his death. He inaugurated reforms and improved the condition of the people. His family was known as the Pisistratidae.

PITT, WILLIAM (1759–1806). Famous English statesman; born at Hayes. Entering Parliament (1781), he made his first motion for reform in representation in 1782, which, although it failed, made so favorable an impression that Shelburne made him chancellor of the exchequer (1782). In 1783 he became prime minister; was active in the negotiations of peace with the United States; reorganized the finances; attempted to establish free trade between England and Ireland (1785); supported the proposal for the abolition of slave trade; and endeavored to effect a union between England and Ireland, which should also relieve the Catholics of their disabilities. The union act passed, but the Catholic emancipation measures failed because of the king's opposition to them; he resigned in 1801, but was recalled (1804).

PLATT, THOMAS COLLIER (1833–1910). American politician; United States senator (1881). After a few months he and Senator Roscoe Conkling resigned because Garfield did not defer to them in New York appointments. Both were defeated in an appeal to the legislature. Platt was again elected in 1897 and in 1903, retiring in 1909. President of the United States Express Co. (1880–1910).

POINCARE (*pwăn-kà-rā'*), **RAYMOND** (1860–1934). The ninth president of France, and member of the French Academy since 1909; minister of public instruction (1893–1895); of finance in 1894 and 1906; premier (1912–1913); and then president till early 1920; premier again (1922–24) and from July, 1926. Poincaré during the war remained firm and considerate, but never interfered with either the army or the government. Though he differed sharply with Clemenceau, for what he believed the good of France Poincaré placed him in office. He managed the occupation of the Ruhr, at first without English cooperation; survived a financial crisis; and finally in 1926 took measures which restored the franc to something like its value before the World War. Poincaré also attempted an elaborate work describing conditions in France during his terms of office, besides older books like *Contemporary Ideas, Political Studies and Figures,* and *Literary and Artistic Causes.*

POLK, JAMES KNOX (1795–1849). The eleventh president of the United States, was born in North Carolina, received his education in the common schools and the state university, and began the practice of law at Columbia, Tennessee, in 1820. He served in the state house of representatives (1823–25), and in the national (1825–39), acting as speaker during the last four years, after which he became governor of Tennessee (1839–41), being defeated in 1841 and 1843. Put forward as a compromise candidate, Polk easily defeated Henry Clay for the office of president, which he held four years ending in 1849. He died on June 15 following. Polk believed in great national expansion, and during his term the boundary of Oregon was fixed, the Mexican war was fought, and California and other territory acquired.

POMPEY, GNAEUS MAGNUS POMPEIUS or **POMPEY THE GREAT** (106–48 B. C.). A famous Roman general and statesman. He joined Sulla against Marius, and on the death of Marius he was intrusted with the conduct of the war in Africa against the remnants of the Marian party. He drove the followers of Lepidus out of Italy and defeated the Marian party in Spain under Sertorius. He was elected consul in 70 B. C., though under the legal age. In 67 and 66 B. C. he drove the Cilician pirates from the seas; conquered Mithridates and Tigranes in Asia Minor; and formed an alliance with Caesar. Later Crassus was added and the first triumvirate was formed in 60 B. C. Pompey grew jealous of Caesar's successes in Gaul and he induced the Senate to order him to lay down his command. Caesar refused and crossed the Rubicon River into Italy, thus defying the Senate. (See CAESAR.) After the battle of Pharsalia in 48 B. C. Pompey escaped to Egypt, where he was murdered. His head was presented to Caesar on his arrival there, but Caesar ordered the murderer to be put to death.

PORTER, HORACE (1837–1921). Born in Pennsylvania, he served in the Civil War, acted as aide to General Grant (1864–69), and as assistant secretary while Grant was acting as secretary of war (1867–68), and was executive secretary during Grant's presidency. He retired from the army in 1873, went into business, but acted as U. S. ambassador to France (1897–05). At his own expense he carried on a long search to locate the resting place of the body of John Paul Jones, which was finally transferred to America. He was an American delegate to the Hague Conference in 1907.

PORTES GIL (*pōrtes hēēl*), **EMILIO** (1891–). President of Mexico, the first non-military candidate in recent times to be elected. He studied law at the National University, acted as a judge in Sonora state, as provisional governor and as governor of Tamaulipas, as secretary of interior and head of the cabinet of President Calles. On Sept. 25, 1928 he became provisional president of Mexico, being succeeded in 1929 by Rubio. Portes Gil sponsored much legislation of benefit to the labor and farm classes, including a partial prohibition measure.

PRIMO DE RIVERA (*prē'mō dā rē-vā'rà*), **MIGUEL** (1871–1930). Spanish general and dictator, also known as the Marquis of Estella, was trained for an army career, fought in the Philippines in 1897, and in 1915 was governor of Cadiz, but was relieved because he criticised the government policy in Morocco. In 1921, while senator from Cadiz, he urged the necessity of reducing the burden of the Moroccan war, and on Sept. 12, 1923, he issued a manifesto proclaiming a directorate of military and naval officers, with himself as premier and virtual dictator. He organized a group of "citizens of good will" to work out a better destiny for Spain; in 1925 dissolved the directorate, adding civil officers to the government, and in Feb. 1930 resigned all control, withdrawing to Paris, where he died the following month.

PROTIC, STOJAN (1857–1923). Yugoslav leader, at first in government service, then an editor and leader of the Radical party, being sentenced in 1899 to a long term of prison, but pardoned after nine months. He became director of the National Library, was minister of the interior during most of the time from 1903 to 1907, and again 1912–1914, took part in the post-war deliberations, and acted as premier, 1918–19, of the new Yugoslav state, declining office in 1921.

PTOLEMY I., called **"SOTER"** or **PRESERVER** (about 367–283 B. C.) was a native of Macedonia. On the death of Alexander the Great (323 B. C.) the great kingdom was divided and Ptolemy took Egypt as his share. In 306 B. C. he took the name of king and made Egypt a power of the first rank. His capital, Alexandria, became the foremost city of the world in commerce and in culture. He founded a library and a museum there and gathered around him from Greece and elsewhere the greatest men of letters; abdicated in favor of his son, Ptolemy II. (285 B. C.).

PTOLEMY II., PHILADELPHUS (308–247 B. C.). The son and successor of Ptolemy I.; reigned from 285 to 247 B. C. He engaged in no wars, but developed the greatness of his kingdom, built a great

fleet, opened up commerce, built a canal from the head of the Red Sea to the Nile, erected the famous lighthouse, the Pharos, one of the wonders of the world. Manetho wrote the history of Egypt at his suggestion and a translation of the Bible was made.

PTOLEMY III., EUERGETES (THE BENEFACTOR) (reigned 247–221 B. C.). The son and successor of Ptolemy II. He made a three years' war on Syria, Babylon, and Susa, bringing back rich booty and the Egyptian gods taken away by Cambyses, from which act he gained his surname. Egypt reached the highest point of prosperity, wealth, and military glory. He enlarged the library at Alexandria and added buildings at Karnak and elsewhere.

PTOLEMY VII., PHILOMETOR (about 188–146 B. C.). Son of Epiphanes; reigned from 181 to 146 B. C. Antiochus IV. of Syria invaded Egypt and was victorious at Pelusium and proclaimed king at Memphis. Ptolemy was taken prisoner. His brother, afterwards Ptolemy IX., gathered a force and defended Alexandria, proclaiming himself king. Antiochus retired, but on a second invasion would have been victorious had not Rome interfered and ordered him back to his kingdom. The two Ptolemies ruled together until 163, when they quarreled and Philometor fled to Rome. He regained the throne and his brother was made king of Cyrene. In 146 Philometor was slain in battle against the Syrian usurper, Alexander Balas.

PYM (*pĭm*), **JOHN** (1584–1643). English statesman; born at Brymore, Somersetshire; entered Parliament for Calne (1614); supported the Petition of Right (1628); assumed the leadership of the Short Parliament (1640); took a prominent part in drawing up the Grand Remonstrance (1641); and, after the unsatisfactory results of the campaigns (1642), carried out the union with the Scots. Pym was strongly anti-Catholic.

PYRRHUS (*pĭr'ŭs*) (c. 318–272 B. C.). King of Epirus, who, after various exploits in his own land and in Egypt, where he married the step-daughter of the ptolemy, was called in 281 to Tarentum, Italy, to fight against the Romans. By using elephants, but with tremendous losses on his side, Pyrrhus won the battle. On being congratulated he said that one more such victory, and "Pyrrhus is destroyed." Hence, the term now "a Pyrrhic victory," for one gained at cost that leaves no real advantage. He won again at Asculum, helped Sicily against Carthage, and then went back to Macedonia, where he had some success, but was killed while besieging the town of Argos.

QUAY, MATTHEW STANLEY (1833–1904). American politician; born in Dillsburg, Pa.; graduated at Jefferson College (1850); in 1861 he entered the Union army, and served with distinction; was a member of the legislature (1865–1867); secretary of the state of Pennsylvania (1872–1878, 1879–1882); state treasurer (1885–1887); in 1887 he was elected United States senator, and was reëlected in 1893 and 1901.

QUINCY, JOSIAH (1772–1864). American political leader, was born in Boston, educated at Harvard, admitted to the bar, but never practiced actively. He sat in the Massachusetts House in 1804–05, and in the National from 1805 to 1813. From 1813 to 1820 he served in the Massachusetts senate, then in the House, acting as speaker for a time, was mayor of Boston for six years, resigning in 1829 when elected president of Harvard. He retired in 1845. Quincy instituted many reforms both in administration of Boston and of Harvard.

RADIC, STJEPAN (1871–1928). Yugoslav leader, born near Fiume, educated at Zagreb and Prague, acted as a journalist and advocate of the rights of the Croatian peasants, and after a time abroad settled at Zagreb. His group after 1910 became powerful. During the World War he favored the Austrian monarchy, but later turned his party toward republicanism. At times he was held in prison for various oppositions to the party in power. After a year in London, Moscow, and Vienna, he returned to Zagreb, continued his efforts for Panslavism, again was sent to prison, but for a time sat in the Yugoslav cabinet. On June 20, 1928, he was shot in the legislative assembly, dying on Aug. 8. His nephew Pavle Radić (1880–1928), was also shot while seeking to save his uncle.

RAKOVSKY (*rä-kŏf'skē*), **CHRISTIAN GEORGIEVICH** (1873–). Russian diplomatist, born in Rumania of Bulgarian parentage. Finding it unpleasant in the Dobruja, he went to Geneva, Germany, and France, where he acquired pronounced socialist views. He joined the Soviets in the revolution, and then commenced his diplomatic career as head of the delegation in the Ukrainian peace negotiations, and in 1922 he represented Russia at the Genoa conference. Two years later he negotiated a trade treaty with Great Britain, rejected by the Conservatives later. In 1926–27 he represented Russia at Paris, but was recalled, opposed certain elements in the party, and was expelled and exiled.

RALEIGH, SIR WALTER (1552–1618). English statesman, navigator, and author; born at Hayes Barton, in Devonshire; a great favorite of Queen Elizabeth; served in various positions, and in 1585 planted a settlement on Roanoke Island, which proved a failure. It was through his efforts that the potato and tobacco plants were introduced into England. His complicity in a plot against the king being detected, he was sent to the Tower (1603) and, though condemned to death, was reprieved. He made his last voyage in 1616, and on his return was executed by James I.

RAMESES (*răm'ē-sēz*). The name of twelve kings of Egypt in the XIX. and XX. dynasties. **RAMESES I.**, first king of the XIX. dynasty, ruled for a short time about 1355 B. C. He waged war in Nubia, left an inscription there, built a part of Karnak. His mummy was found in 1881 at Deir-el-Bahari.

RAMESES II., son of Seti I. and grandson of Rameses I., reigned in Egypt (1388–1322 B. C.) and is regarded as the Pharaoh of the Hebrew oppression. He conducted foreign wars, built splendid temples at Abou Simbel, Karnak, Luxor, Abydos, Memphis, Thebes, and elsewhere. His mummy was also discovered in 1881.

RAMESES III. (about 1269–1244 B. C.) was the second Pharaoh of the XX. dynasty. His reign was marked by a general decline of Egyptian greatness.

RANDOLPH, EDMUND (1753–1813). Statesman born in Virginia. Became a lawyer, one of the framers of the state constitution, attorney general, representative in the Continental Congress (1779 and 1780–82), and governor (1787–88). He originated the Virginia or Randolph plan in the constitutional convention, favoring a strong centralized government, three executives from different parts of the country, and prohibition of importation of more slaves. He opposed the Constitution, but urged that Virginia should ratify to save the Union. In 1789 he was the first attorney-general of the United States, advocated a Federal code, and in the celebrated suit of Chisholm against Georgia argued that a state could be sued by a citizen of another state. On Jan. 2, 1794, he succeeded Jefferson as secretary of state, but resigned after he had been falsely accused of seeking money from France for his influence against Great Britain.

RANDOLPH, JOHN, OF ROANOKE (1773–1833). American statesman; born at Cawsons, Va.; elected to Congress (1799); and in 1801 was made chairman of the ways and means committee; lost his seat (1813); but was returned (1815); elected to the senate (1825); minister to Russia (1830).

RANKIN, JEANNETTE (1882–). First woman to be elected to the United States Congress. After studying in the University of Montana and other educational institutions, she specialized in advocating woman suffrage and in time headed the state suffrage association in Montana. As such she became well known, and in 1916 was elected a representative at large to the House, but failed to be renominated in 1918.

READING, RUFUS DANIEL ISAACS, FIRST MARQUESS OF (1860–1935). British statesman, who was born in London, educated there and abroad, went to sea, and finally became a great barrister, prosecuting many notable cases, including that of Whitaker Wright for fraud. He entered the House of Commons in 1904, was made attorney-general in 1910 and in 1912 given a seat in the cabinet, the first time the office had been so honored. In 1913 he became lord chief justice, an office he filled till 1921 with great dignity and acumen, serving as special envoy to the United States in 1917 and again in 1918. As viceroy and governor-general of India (1921–26), he promoted reforms, granted further concessions to the natives, and showed firmness when needed, as in forcing the abdication of the maharajah of Indore, who resigned rather than stand trial for murdering a merchant.

REDMOND, JOHN EDWARD (1856–1918). An Irish politician, who was educated at Trinity College, Dublin, followed the minority that stuck by Parnell after the latter's divorce, and in 1891 became virtua

leader of the Parnellites. In 1900 he was made leader of the reunited wings of the party and in 1910 secured enough votes to be able to demand concessions for Ireland. He tried to conciliate the English government, being finally opposed by a small minority of the Irish leaders. Largely through his efforts the Home Rule bill was passed. He greatly regretted the outbreaks of Easter 1916, sought to hold Ulster with south Ireland in the plan for a separate government, and finally in May 1917 accepted the proposal made by Lloyd-George for an Irish convention to settle the form of the new government.

REED, THOMAS BRACKETT (1839–1902). American politician; born at Portland, Me.; graduated at Bowdoin College (1860); was a member of the legislature (1868–1869); state senator (1870); attorney-general of Maine (1870–1872); member of Congress (1877–1899). He was speaker of the fifty-first, fifty-fourth, and fifty-fifth Congresses, where he earned the name of "Czar" Reed for his method of counting a quorum; he was an efficient speaker, and was a prominent candidate for the Republican presidential nomination (1896).

REID, WHITELAW (1837–1912). American diplomatist and journalist; born at Xenia, Ohio. Became editor and proprietor of the New York *Tribune* (1872) on the death of Horace Greeley. Candidate for vice-president (1892); minister to France (1889–1892); special ambassador to Queen Victoria's jubilee (1897); member of the Peace Commission which terminated the Spanish-American War (1898); special ambassador to King Edward VII.'s coronation (1902); ambassador to England to succeed Joseph Choate (1905–1912).

RENNER, KARL (1870–). An Austrian politician, leader of the Social Democratic party, and first chancellor of the Austrian republic. Entering parliament in 1907, he often spoke against the government, engineered the events leading up to the abdication of the emperor, thwarted those who wished to break up the new government, and at Paris in 1919 and later secured terms favorable to Austria in financial and other post-war reconstruction. He refused to grant certain demands of Hungary, lost the votes of the Christian Socialists in his country, and in 1920 resigned as chancellor, but continued as foreign minister until October.

RHODES, CECIL JOHN (1853–1902). African statesman; born in Bishop Stortford, Herefordshire; the one aim of his life was the extension of British rule in South Africa. In 1888 Rhodes obtained from the king of the Matabele a grant of the territory now known as Rhodesia. He was premier of Cape Colony from 1890 to 1896, resigning after the Jameson raid; on the revolt of the Matabele (1896), he went unarmed and alone into the midst of the rebels and concluded permanent peace. One of Rhodes's projects, the building of a Cape-to-Cairo railway, was partly carried out before his death. In his will he bequeathed practically his whole fortune ($30,000,000) to the public service; to his college, Oriel, at Oxford, he left $500,000, while about $10,000,000 was left to found a number of three-year scholarships tenable at Oxford. Two of these were offered to each state and territory in the American Union. The annual income for each scholarship is about $2500. Rhodes is buried in the Matoppo Hills in the territory which bears his name.

RICHARD I, COEUR DE LION (1157–1199). King of England (1189–1199). On the death of his father, Henry II., he was crowned king, but with Philip Augustus of France went on the Third Crusade in 1190. Affairs were handled by William Longchamp, but John obtained more and more power each year. The Crusade was a failure. Richard made enemies, and when he was returning home was taken prisoner by Leopold, duke of Austria, through whose kingdom he was passing, and by him handed over to the emperor, Henry VI., who imprisoned him. He was ransomed and returned to England in 1194. He forgave John, but began a war with the king of France. He was killed while storming a town in France in 1199. Sismondi says of him, "A bad son, a bad brother, a bad husband, and a bad king."

RICHARD II. (1366–1400). Son of Edward, the Black Prince, and the grandson and successor of Edward III. (1377–1399). Affairs were well administered for a time by John of Gaunt, the king's uncle. In 1381 Wat Tyler led an insurrection over a heavy poll tax, which was settled with much skill by the king. Richard had much trouble with the nobles; while he was in Ireland subduing the country, Bolingbroke landed in England with followers. Richard was taken prisoner, having been deserted by his friends, and taken to London, where he formally abdicated in 1399. Bolingbroke took the throne with the title of Henry IV. Richard was imprisoned in Pontefract Castle, where he was murdered in 1400.

RICHARD III. (1452–1485). King of England (1483–1485). Youngest son of Richard, duke of York, and brother of King Edward IV., whom he greatly assisted in the wars of the Roses. On the death of Edward IV. Richard was the foremost man in the kingdom. He caused his two nephews to be smothered in the Tower and took the throne in 1483. Buckingham planned an uprising against Richard in favor of the earl of Richmond of the House of Lancaster. His plans were frustrated and he was executed. The earl of Richmond landed in England with a force and met the king's army on Bosworth Field in 1485, where Richard was defeated and slain. Richmond became king as Henry VII. of the House of Tudor.

RICHELIEU (*rē-shē-lyû'*), **ARMAND JEAN DUPLESSIS, CARDINAL DE** (1585–1642). French statesman; born in Paris of noble family; consecrated bishop of Luçon (1607); in 1622 he received the cardinal's hat from Gregory XV. Louis XIII. called him to the office of prime minister in 1624, and from this time until his death he was the ruler of France in everything but name. His objects were (1) to ruin the Protestants as a political party, (2) to humble the pride of the nobles, (3) to reduce all subjects to their duty, (4) to raise France to its proper position among foreign nations. Richelieu was a patron of letters, the founder of the French Academy, and the author of many important reforms in finance and in the army. He ranks among the greatest statesmen of France.

ROBERT I. OF SCOTLAND. See BRUCE, ROBERT.

ROBESPIERRE (*rō-bĕs-pyâr'*), **MAXIMILIEN MARIE ISIDORE** (1758–1794). French revolutionist of Irish origin; born at Arras. On the death of Mirabeau (1791), he was recognized as revolutionary leader. Was a member of the "Great Committee of Public Safety" (1793), and in this position he put to death many innocent men and women, finally perishing on the guillotine himself. Robespierre was precise, austere, and earnest; his aim was to establish a reign of virtue.

ROOSEVELT (*ro-ze-velt*) **FRANKLIN DELANO** (1882–). Thirty-second president of the United States, a native of New York and educated at Harvard in arts (class of 1904), and at Columbia in law, 1907. He practiced law in New York, until he became a state senator in 1910. After three years he became assistant secretary of the Navy, during the Wilson administration until 1920, when he became a vice-presidential candidate with Cox on the Democratic ticket. An attack of Infantile Paralysis left him badly crippled in 1921. Roosevelt became governor of New York in 1928 and was reelected in 1930. In 1924 and 1928 he supported Alfred E. Smith for president, nominating him as "The Happy Warrior" in the Democratic convention. In 1932 he won the nomination over Smith and others, being elected president by overwhelming majority, taking office in March 1933. He instituted important changes, as the devaluation of the dollar, creation of new bureaus, and many emergency ideas marked his administration. Renominated at Philadelphia in 1936.

ROOSEVELT, THEODORE (1858–1919). Twenty-sixth president of the United States who was born in New York City. During his youth could not engage in sports because of frail health, which continued even during his career at Harvard from which he was graduated in 1880. He had spent some time in the Maine woods, and three years in western Dakota (1884–1887), where he greatly improved his physique. He prepared himself for law at the Columbia University Law School, and in his uncle's office, but really preferred literature and natural history. He was in the New York legislature from 1881 to 1884, and went to Dakota after the death of his first wife, who was Alice H. Lee of Boston. Being defeated for mayor in New York, he became police commissioner, and from 1889 to 1895 one of the U. S. Civil Service Commission. By this time he had adopted his idea of the strenuous life. In 1897–98 he acted as assistant secretary of the navy, helped hasten the preparations for the war with Spain, and then resigned to organize (with Dr. Leonard Wood) a group known as the Rough Riders, of which he became

colonel after Wood was promoted. He was elected governor of New York in 1898, and vice president in 1900, and then became president on the death of McKinley on Sept. 14, 1901. On his retirement after serving the rest of the term, and a single term of his own, Roosevelt went to Africa on a hunting trip in 1909. In 1912 he responded to the demand that he run again, after the Republican Convention had narrowly missed nominating him. In 1913–14 he made a scientific expedition to South America. He sought to assist in every way during the World War, even to the extent of leading an American brigade. Weakened by a fever contracted in Brazil, which returned several times later, he was in ill health in 1918, but recovered and resumed his literary labors, cut short by his death during sleep, Jan. 6, 1919. For his literary work see the DICTIONARY OF AUTHORS.

ROOT, ELIHU (1845–1937). American Cabinet officer; born in Clinton, N. Y.; counsel for William M. Tweed in the "Tweed Ring" trial; also in the Stewart will case and the Fayerweather will case; secretary of war to succeed General Russell A. Alger (1899–1904); member Alaskan Boundary Tribunal (1903); secretary of state to succeed John Hay (1905); president American Society of International Law (1906). U. S. senator (1909–1915). Received Nobel peace prize (1912). As a member of various commissions, Root wielded a stabilizing influence. He presided at the New York Constitutional Convention (1915), advocating the short ballot, reduction of costs and time in litigation, and laws favoring impeachment of incompetent officials. Unofficially, he had much to do with shaping the policies of the League of Nations, and also as one of the committee that planned the Court of International Justice, and as one of the U. S. delegates to the International Conference on Armament Limitation at Washington in 1921.

ROSAS (*rō'sōs*), **JUAN MANUEL DE** (1793–1877). Dictator of the district of Buenos Aires (1835–52). By organizing cowboys he had virtually reduced the province to peace in 1829, after which he acted as governor for three years. He fought with almost all the neighboring states of South America and with France and England, finally being overthrown by a combination against him. Then he fled to Europe where he lived in obscurity till his death.

ROSEBERY, ARCHIBALD PHILIP PRIMROSE, FIFTH EARL OF (1847–1929). English political leader and orator, who held the under-secretaryship of the home office (1881), was first commissioner of works, with cabinet seat (1884), foreign secretary under Gladstone (1886 and 1892), premier (1894–95). He resigned leadership of the Liberal party in 1896, remained aloof for several years, though taking a keen interest in public affairs. In 1910–11 he opposed the measures designed to curb the House of Lords; during the World War he was active in recruiting as lord lieutenant of Midlothian and Linlithgowshire. He was also the author of biographies or appreciations of Gladstone, Pitt, Cromwell, and Randolph Churchill.

ROWELL (*rōu'ĕl*), **NEWTON WESLEY** (1867–). Canadian political leader, born in Ontario, sat in the provincial legislature (1911–17), was president of the council of the Dominion government and member of the lower house (1917–21), and member of the war cabinet of the empire in 1918. He acted as representative for Canada in the International Labor Conference at Washington in 1919, as delegate to the League of Nations Assembly in 1920, and was president of the League of Nations Society in Canada.

RUDOLPH I. (1218–1291). King of Germany and Holy Roman emperor (1273–1291), and founder of the house of Habsburg, for centuries the reigning house of Austria. The Great Interregnum began in 1256 and for many years Germany was without an acknowledged head. In 1272 the pope tried to force the election of an emperor. Rudolph of Habsburg was chosen as the most fitting, and was crowned at Aix-la-Chapelle in 1273. In 1276 he made war on the king of Bohemia, who refused to acknowledge him, and took valuable territory from him. He defeated and slew Ottokar in 1278 at Marchfeld and placed his own sons, Albert and Rudolph, in charge of the forfeited lands. He suppressed the "robber barons" and destroyed their strongholds.

RUDOLPH II. (1552–1612). He was son of Emperor Maximilian II, whom he succeeded as emperor in 1576, having been king of Bohemia and of the Germans for a year, and of Hungary for four years previously. Becoming an increasing reactionary, he lost support of many subjects in 1604, and in 1608 he was forced to cede Hungary and control of Austria and Moravia to his brother Matthias, and also Bohemia in 1611. Matthias succeeded him in 1611. Rudolph, though not progressive in politics, was a well-intentioned and capable ruler. His own tastes, however, were scientific and literary, and his agents collected many fine works of art for the royal museums at Prague.

RUSHDI PASHA (*rōōsh'dē*) (c. 1864–1928). Egyptian leader, educated in France, and made a judge in the mixed courts, in the Egyptian Court of Appeals, and in 1908 minister of justice. From 1914 to 1919 he ably acted as chief justice, accepting the British protectorate when Turkey entered the World War. He joined with Saad Pasha Zaghlul in seeking to get England to pronounce as to the political status of Egypt, and sought till his death to secure terms which the Egyptians might accept.

RUSSELL, LORD JOHN (1792–1878). English statesman; an ardent champion of parliamentary reform; carried the Test and Corporation acts (1828); supported the Catholic Emancipation Bill (1829), Reform Bill (1832); premier (1846–1852 and 1865); secretary of foreign affairs in coalition ministry (1852); foreign secretary under Palmerston (1859).

RYKOV (*rŷ'kôf*), **ALEXEI IVANOVICH** (1881–). A Russian political leader, who was born at Saratov, where he took up revolutionary and democratic propaganda, continued at times till the revolution of 1917. He visited Lenin at Geneva, and in 1905 became a member of the central committee of the Communist party. In 1907 he was banished to Samara, escaped before his term was over, went to Paris, and in 1911 was again in Russia, where he was imprisoned till 1913, and then exiled. In 1917 he took part in the revolution, acted as chief of the economic council, and became after Lenin president of the council of people's commissars.

SAIONJI (*sī'ôn-jē*), **KIMMOCHI, PRINCE** (1849–1940). Japanese statesman, who entered public life in 1881 and accompanied Ito to Europe and the United States in 1882 to learn about foreign governments. He acted as minister to Austria (1885–88), became a member of the privy council in 1894 and was minister of education in the second Ito cabinet. In 1906 and 1911–12 he was prime minister, and in 1919 chief envoy to the Peace Conference at Paris, after which in 1920 he was made a prince. Saionji also acted as foreign minister on three occasions pending appointments.

SALADIN (*săl'ă-dĭn*), **SALAH-ED-DIN YUSUF** (1137–1193). Sultan of Egypt and Syria; born at Tekrit; became ruler of Egypt (1174); conquered Syria and the greater part of Mesopotamia (1174–1183); crushed the kingdom of Jerusalem (1187); Tiberias, Acre, Beirut, and many other places were also taken. Acre was retaken, after a memorable siege (1191), by the armies of the Third Crusade under Philip II. and Richard the Lion-hearted, and a three years' truce between Richard and Saladin (1192) left to the Christians the coast from Jaffa to Tyre.

SALANDRA (*sål-lăn'drà*), **ANTONIO** (1853–1931). Italian statesman, member of the Liberal party, under-secretary of the treasury in 1893, minister of finance (1906), and of the treasury (1909–10). In 1914 he became premier, at first keeping Italy neutral, and finally took the task of bringing Italy into participation on the side of the Allies, but resigned after the Austrian success in 1916, though he supported the next two ministries. He took part in the Assembly and Council of the League of Nations, and in 1928 became senator, after hesitating at times as to giving his whole support to the Fascist régime.

SALISBURY (*sawlz'bury*), **ROBERT ARTHUR TALBOT GASCOYNE CECIL, THIRD MARQUIS OF** (1830–1903). English statesman; born at Hatfield, Hertfordshire; in 1865, on the death of his elder brother, he became heir to the marquisate and assumed the title of Lord Cranborne; he was a member of the House of Lords as Marquis of Salisbury (1868); chancellor of the University of Oxford (1869). When the Disraeli ministry came into power (1874), Salisbury again became secretary of state for India; and his entire sympathy with the new premier's imperialist policy led to his appointment in 1876 as British representative to the Conference of Constantinople. He was appointed secretary of state for foreign affairs (1878), chosen leader of the Conservative party (1881), and on the retirement of the Gladstone ministry (1885)

became head of the government. In 1892 he went out of office, but returned (1895). In 1900 the Unionists were again returned with a large majority under the leadership of Lord Salisbury; in July, 1902, he resigned office, having been premier for a longer period than any other minister since the Reform Act of 1832. He was succeeded by Arthur Balfour, his nephew. His foreign policy was sound and on the whole successful, and no statesman was more alive to the necessity of maintaining the peace of Europe.

SANKARIN NAIR, SIR CHETTUR (1857–1934). Indian politician and jurist, who acted as public prosecutor of Madras, advocate general and judge of the Madras high court. For years he sat in the legislature of Madras, held the education portfolio (1915–19). In 1925 he became a member of the Council of State for India, and in 1928, chairman of a committee representing all India to coöperate with the Statutory Commission.

SANTA ANNA or **SANTA ANA, ANTONIO LOPEZ DE** (1795–1876). Mexican politician and general; born at Jalapa, Mexico; in 1828 he took the field as a supporter of Guerrero for the presidency. On becoming commander in chief (1829), he defeated the last attempt of Spain to re-establish authority in Mexico, and was chosen president (1833). His tendencies toward monarchism led to a rebellion (1835), in the suppression of which he was taken prisoner. He defended Vera Cruz against a French fleet (1838), and was president (1841–1845). Was Mexican general in the war with the United States (1846–1848); president of Mexico (1853–1855). He died in poverty.

SARDANAPALUS (*sär'dā-na-pē-lŭs*) (corrupted from Assyrian *Asshur-bani-pal*) (668–626 B. C.). Last great Assyrian monarch; son of Esarhaddon. The weakness of Assyrian forces resulted in the loss of Egypt about 653 B. C.; and a siege of Tyre ended, finally, in capitulation. Sardanapalus is noted, not for his conquests, but for his magnificent building plans carried out in the cities of Babylonia and in Nineveh. It is from his great library at Nineveh that much of the modern knowledge of Babylonian literature and religion is obtained. He died on a great funeral pyre, if the classical story is to be relied upon.

SASTRI, V. S. SRINIVASA (1869–). Indian leader, who joined the Servants of India Society in 1907 and succeeded Gokhale as president in 1915. As member of the viceregal legislature, he attracted attention as an orator and conciliator, serving on various committees, was at London for the Imperial Conference, at the League of Nations Assembly, and the Washington Conference on reduction of naval armaments. Later he did much to promote a better feeling with the Union of South Africa while acting as agent-general of India.

SAZONOV, SERGHEI DMITRIEVICH (1866–1927). A Russian leader and diplomatist, who served at Rome, London, and the Vatican in various capacities (1900–10). He sought to promote peace in the Balkans, a better understanding with Germans, where his sincerity was suspected, and a delay at the start of the World War. He tried to conciliate Austria and to restrain the Serbians, and to prevent complete Russian mobilization, though these efforts failed. As foreign minister (1909–17), he exerted a great influence over the czarist policies.

SCHEIDEMANN (*schī'dé-mȧn*), **PHILIPP** (1865–1939). German Socialistic leader, who exerted a lively influence in the government both before and after the fall of the kaiser. In 1918 he became vice-president of the Reichstag, later secretary of state in the cabinet headed by Max of Baden, and active in organizing the new republican form of government, being elected in 1919 president of the first ministry under the new assembly at Weimar. He resigned when the government decided to adhere to the Versailles Treaty, and then resumed the leadership of the Socialistic group.

SCHOBER, JOHANN (1874–1932). Austrian president of police, who did much to protect the royal family and maintain peace during the bloodless revolution in 1918. For his great abilities and frankness, he was chosen as the man best suited to negotiate with the Allies for a favorable loan to Austria and to form a union ministry in 1921. Yet when he negotiated a pact with Czechoslovakia, the leaders who planned eventual union with Germany withdrew support, and Schober was forced to resign the chancellorship, afterwards returning to his old position as president of police.

SCHURMAN (*shoŏr'mȧn*), **JACOB GOULD** (1854–). Was born on Prince Edward Island, Canada, and won the Canadian Gilchrist scholarship to the University of London, from which he was graduated in 1877, with further studies in Germany and Italy. He was professor of philosophy at Acadia College, and Dalhousie College, Nova Scotia, for six years and then went to Cornell, where he was Sage Professor of Philosophy from 1886 to 1892, and president from 1892 to 1920. Dr. Schurman spent much of 1899 in the Philippines as president of the U. S. Commission; from 1912 to 1913, he was minister to Greece and Montenegro; from 1921 to 1925 envoy to China; and then ambassador to Germany till 1930.

SCHURZ (*shoŏrts*), **CARL** (1829–1906). American statesman; born in Liblar, Prussia; he came to the United States in 1852, and practised law in Milwaukee (1859). President Lincoln appointed him minister to Spain (1861), but he shortly resigned to join the Union army; served as United States senator from Missouri (1869–1875), and was secretary of the interior in Hayes's Cabinet. He subsequently engaged in literary work, writing several books, among which may be mentioned biographies of Clay and Lincoln.

SEITZ (*sī'tz*), **KARL** (1869–). Austrian member of the Social Democratic party,—in 1901 to the dissolution vice president of the Reichsrat, and from 1918 to 1921, president of the assembly, and acting federal president for a time in 1920, becoming vice president of the national assembly or Nationalrat in 1921.

SELEUCUS I. (*sī-liū'kŭs*) (c. 312–281 B. C.). A son of Antiochus, one of the generals of Alexander the Great, obtained eventually by far the lion's share in the division of the empire, until at last his kingdom extended from Babylon to the Mediterranean on the west. From 316 to 312 he was a refugee in Egypt, while Antigonus held Babylonia. His return to power in the east, 312, was afterward regarded as the date for the reckoning of time till the fifteenth century A. D. By defeating Antigonus he gained additional territory in Asia Minor, and he founded a new capital at Antioch in Syria, allowing his son to rule in the eastern part of his empire. After some success in Thrace, he was assassinated in Macedonia in 281. See Seleucus II. and Antiochus III. in this DICTIONARY OF STATESMEN AND RULERS.

SELEUCUS II. King of Syria (246–226 B. C.). He gained the throne by assassinating Antiochus II. He was driven from his kingdom by Ptolemy Euergetes. On the withdrawal of the latter he regained his throne, and succeeded in holding Syria and most of Asia Minor. He conducted an expedition against the revolted provinces of Parthia and Bactria. He was routed by Arsaces the Great, the deliverer of Parthia. He was succeeded by his sons, Seleucus III. and Antiochus III., the Great.

SEMIRAMIS. Mythical queen of Assyria, supposed to have been of divine parentage. She married Ninus, king of Assyria and founder of Nineveh. After his death she ruled as regent for her son. She invaded India and made many foreign conquests. She built the city of Babylon in all of its magnificent grandeur, and all great works were attributed to her. In her sixty-second year she mysteriously disappeared,—some say she was transformed into a dove. Much fable is mingled in the stories and it is doubted by many that she ever lived, although according to Herodotus there was a Semiramis in Assyria in the first half of the eighth century B. C.

SERVIUS TULLIUS (*sŭr'vi-us*) (578–434 B. C.). Sixth Roman emperor or king, who married the daughter of Tarquinius the Elder and succeeded him. His reign of 44 years is notable for an alliance made with the Latins, including the formation of a league with Rome, and for the granting of a new constitution which in time gained rights for the plebeians. He died during a revolt led by his son-in-law, Tarquinius Superbus.

SEVERING, WILHELM KARL (1875–). German republican leader, who acted as commissioner for the Rhineland and negotiated with the striking workmen in the Ruhr, was minister of interior of Prussia almost continuously from 1920 to 1925 and again under Müller in 1927, and was largely responsible for curbing the disturbances of 1923.

SEVERUS (*sē-vē'rus*), **LUCIUS SEPTIMIUS** (146–211). Roman emperor (193–211). He was commander of a legion and governor of provinces when, on the murder of Pertinax, he was proclaimed

emperor in 193. Julianus had taken the throne when Severus arrived at Rome, but he was promptly murdered. Severus distributed large donations to the soldiers and assured himself of the power. He captured Byzantium after a three years' siege in 197; plundered the capital of the Parthians, Ctesiphon, in 198. On his return to Rome in 202 he pleased the people with magnificent shows and the distribution of money. He quelled a rebellion in Britain, marching with a large army to the extreme north of the island. He built the Wall of Severus in Britain; died at Eboracom (York).

SEVIER (*sē-vēr'*), **JOHN** (1745–1815). Pioneer, was born in Virginia. He organized companies which fought the Indians, during the Revolution and later, especially against the Creeks in 1793. In 1794 he became governor temporarily of the state of "Franklin," a district subsequently granted to Tennessee, and the inhabitants set up their own government. Brigadier general in 1789, entered Congress 1790, first governor of Tennessee, 1796–1801, 1803–1809, and served also in twelfth and thirteenth Congresses.

SEWARD, WILLIAM HENRY (1801–1872). Famous American statesman; born in Florida, New York; graduated from Union College (1820); a member of the New York state senate (1830); and was governor of his state (1838–1842); he was a member of the United States senate (1849–1861), where his ability made him the undisputed leader of the Whigs. The election of Lincoln to the presidency in 1860 was a great disappointment to Seward, whose hope for the presidential chair had been high. But he nevertheless, on becoming secretary of state in 1861, gave splendid support to the administration. His most important diplomatic achievement was the purchase of Alaska from Russia (1867). An attempt was made on his life simultaneously with the assassination of Lincoln.

SEYMOUR, HORATIO (1810–1886). American politician; born at Pompey Hill, N. Y.; was military secretary to Governor Marcy (1833–1839); mayor of Utica (1842); governor of New York (1853–1855 and 1863–1865); unsuccessful Democratic candidate for the presidency (1868). During the war he gave his support to the Lincoln administration.

SFORZA (*sfôr'tsä*), **CARLO, COUNT** (1872–). Italian diplomatist and foreign minister, secretary of the embassy at London, then in turn minister at Peking, Belgrade, Italian commissioner in Turkey, undersecretary of foreign affairs, and senator. From 1920 to 1922 he was foreign minister, and as such objected to the granting of 12 islands in the eastern Mediterranean to Greece.

SHAFTESBURY, ANTHONY ASHLEY COOPER, SEVENTH EARL OF (1801–1885). See under DICTIONARY OF REFORMERS AND PHILANTHROPISTS.

SHERMAN, JOHN (1823–1900). American statesman and lawyer; born in Lancaster, Ohio; member of Congress (1855–1861) and Senator (1861–1877); member of committee of inquiry sent to Kansas, and participated in the movement for the formation of the Republican party; author of the refunding act (1870); secretary of the treasury (1877–1881) when his able management of the treasury made it possible for the government to resume specie payments (1879); again served as Senator (1881–1897); secretary of state (1897–1898).

SHERMAN, ROGER (1721–1793). Eminent statesman; born in Newton, Mass. He removed to New Milford, Conn. (1743), and in 1754 was admitted to the bar; served as judge of the Connecticut supreme court (1766–1789); was a member of the Connecticut senate (1766–1785); mayor of New Haven (1784–1793). In the Constitutional convention at Philadelphia (1787) he took an active part, and was influential in securing the ratification of the Federal constitution in Connecticut. Sherman is best remembered as being one of the Committee of Five appointed to prepare a draft of the Declaration of Independence.

SIDNEY or SYDNEY, ALGERNON (1622–1683). Famous English statesman; he rendered his first military service against the rebels of Ireland (1642); entered the Long Parliament for Cardiff (1645), and although appointed commissioner (1648) for the trial of Charles I. did not present himself at any of the court sessions. Not approving of concentration of power in Cromwell, he withdrew from politics in the Protectorate, and in 1659 was sent on a political mission to Denmark. Returned to England (1677); plotted with Louis XIV. against Charles II.; for alleged complicity in the Rye House plot (1683), he was summarily sentenced to death.

SIGISMUND (*sij'iz-mund*) (about 1368–1437) Holy Roman emperor (1411–1437). Second son of Charles IV. In 1396 he undertook a crusade against the Turks, but was overwhelmed by Bajazet I. at Nicopolis. In 1387 he came to the throne of Hungary but was deposed in 1401. By the aid of hired troops he regained it. In 1411 he was elected Holy Roman emperor. He was the author and protector of the Council of Constance, and brought about the deposition of Pope John XXIII. His greatest disgrace was the desertion of John Huss, to whom he granted safe conduct to the Council, where he was afterward burned at the stake. In 1419 he succeeded to the throne of Bohemia. The Hussites were in arms and bloody defeats were sustained by the army of Sigismund and the allied Germans. He was the last of the House of Luxemburg.

SKRŻYNSKI (*skr-zĭn'skē*), **ALEXANDER** (1882–). Polish count and statesman who was minister of foreign affairs in 1922–23, and 1924–26, delegate to the League of Nations, and Polish representative in the Locarno conference. He always sought to reconcile the national ideas of his country with the friendship of foreign nations.

SLIDELL, JOHN (1793–1871). American statesman; born in New York City; in 1810 he graduated from Columbia College and, removing to New Orleans (1819), served (1829–1833) as United States district attorney for Louisiana; he was elected to Congress (1843); appointed minister to Mexico (1845); was United States senator (1853–1861); made Confederate commissioner to France, and was taken prisoner by Wilkes. (See TRENT AFFAIR.) Slidell spent the remainder of his life in England.

SMITH, ALFRED EMANUEL (1873–). Received his education in the parochial schools of New York City, where he has lived most of his life. From 1895 to 1903 he served in the office of the commissioner of jurors; from 1903 to 1915, in the New York Assembly, acting as Democratic leader in 1911 and Speaker in 1913. Then he became sheriff of New York county from 1915 to 1917; president of the Board of Aldermen in 1917; and then governor of New York for three terms, beginning in 1919, 1923, and 1925. As Democratic candidate for the presidency in 1928 he received 87 votes to 444 for Hoover, the Republican nominee.

SMOOT, REED (1862–), senator from Utah since 1903; born in Salt Lake City. President of various Utah corporations, including Provo Commercial Bank, Smoot Investment Co., and director of enterprises in Salt Lake City, including Deseret National Bank. He was a member of the World War debt funding commission and chairman of the commission which in 1927 began providing additional public buildings in Washington.

SMUTS (*smŏŏts*), **JAN CHRISTIAN** (1870–). South African statesman. Though an enemy of England during the Boer War, became an ardent ally in the fight against the power of Germany in Africa. In 1916 he broke the hold of Germany on East Africa, and Lloyd George summoned him to England, where he became the only colonial member of the Imperial War Cabinet. In 1919 Smuts was elected premier of the Union of South Africa, but was defeated again in 1920, though he became premier when the South African Party was joined by the Unionists. Smuts continued as premier till a new alignment of parties forced his cabinet out in 1924.

SOBIESKI (*sō-byĕs'kē*). See JOHN III. OF POLAND.

SOLYMAN (*sŏl'ĭ-măn*) **(SULEIMAN).** The name of three Turkish sultans, the most renowned being Solyman II. the Magnificent (about 1495–1566). He began to rule in 1520, and made military preparations for carrying out an extensive scheme of conquest. His armies overran a great part of central Europe, Persia, and Arabia; in 1542 the Turks were supreme in the Mediterranean. At Malta (1565), however, he was repulsed. Under him the Ottoman empire reached the height of its power.

SONNINO (*sôn-nē'nô*), **SIDNEY, BARON** (1847–1922). Italian statesman, financier, and author, served in the legations at Madrid, Vienna, Berlin, and Versailles, entered journalism, but in 1893 as minister of finance saved Italy from a crash. For ten years after 1896 he acted as leader of the opposition or of the parliamentary majority. In 1906 and in 1909–10 he was prime minister, and foreign minister from 1914 to 1919. He was second Italian delegate to the Peace Conference with Premier Orlando till the fall of the ministry, June 1919.

SPOONER, JOHN COIT (1843–1919). American legislator; born in Lawrenceburg, Ind.; settled in Wisconsin; served during the Civil War and was brevetted major at its close; elected to the United States Senate in 1885; defeated for governor by George W. Peck in 1892; again elected to Senate in 1897 and in 1903; a prominent debater and was regarded as the spokesman of the McKinley and Roosevelt administrations; resigned from the Senate (1907) to practice law.

SPRING-RICE, CECIL ARTHUR (1859–1918). British diplomatist, educated at Eton and Oxford, acted as secretary to Lord Granville and then for Lord Rosebery (1884–85), was connected with various diplomatic legations until he became minister to Persia in 1906, then to Sweden in 1908 and finally ambassador to the United States, 1912–18. He died at Ottawa, Canada, on his return journey to England.

STALIN (*stä'lyĕn*), **JOSEPH VISSARIONVITCH** (1879–). Russian communist leader, who after the death of Lenin became the most powerful figure in Soviet Russia. From 1898 to the 1917 revolution he went about agitating among the workers, being arrested and either imprisoned or banished several times. In 1913 he directed the propaganda among members of the Duma, having acted the previous year also as editor of two Bolshevik journals. Afterward he held several positions in the communist government.

STAMBOLISKY (*stăm-bō-lits'kē*), **ALEXANDER** (1879–1923). Bulgarian peasant leader and premier, after finishing his education in Germany, took up the agrarian cause in his country, opposed King Ferdinand more and more till he was able to engineer the abdication of the monarch in 1918. From 1919 to 1923 his influence dominated, until his government was overthrown by a military coup, and after a flight of three days Stambolisky was overtaken by soldiers and put to death on June 12. His ideal was to unite the peasants of all lands and also probably to form a great Balkan state with Bulgaria a central influence.

STANTON, EDWIN McMASTERS (1814–1869). American statesman; born at Steubenville, Ohio; a successful lawyer; attorney general of the United States (1860); secretary of war (1862–1868); made associate justice of the United States Supreme Court (1869), but did not live to assume his new duties.

STEPHEN (1097?–1154). King of England (1135–1154). Nephew of Henry I. and his successor. Although Henry tried to have his daughter, Matilda, succeed him, Stephen, Earl of Blois, by promises to the nobles of permission to build castles on their own estates and the granting of other privileges, obtained their support. David I. of Scotland invaded England to enforce his niece's claims, but was badly defeated at Northallerton, or "the battle of the Standard." For fourteen years the country was in a state of civil war and completely devastated. In 1141 Stephen was taken prisoner at the battle of Lincoln. Matilda was crowned but proved unsatisfactory as a ruler. Stephen was released and crowned again. After much strife a compromise was made whereby Matilda's son, Henry, should succeed Stephen.

STEPHENS, ALEXANDER HAMILTON (1812–1883). American statesman; born near Crawfordville, Ga., was admitted to the bar (1835); state House of Representatives (1836); Congress (1843). He was made vice-president of the Confederacy (1861) and, with Messrs. Campbell and Hunter, met Lincoln and Seward in an effort to end the war by negotiation; member of the House of Representatives (1873–1882); governor of Georgia (1883). Called the "Nestor of the Confederacy."

STEVENS, THADDEUS (1793–1868). American statesman; born at Danville, Vt. In 1816 he was admitted to the bar, and served in Congress from Pennsylvania (1849–1853, 1858–1868). Stevens was probably as bitter an enemy as the South ever had.

STRAUS (*strous*), **OSCAR SOLOMON** (1850–1926). Merchant and diplomatist, member of the importing firm of L. Straus and Sons, pottery and glassware, 1881–1906. U. S. minister to Turkey, 1887–9, 1898–1901, 1909–11; secretary of commerce and labor in cabinet of President Roosevelt, 1906–9; Chairman of Public Service Commission, first district, New York, 1915–18; member of the Court of Arbitration at The Hague, 1902, and reappointed by Presidents Taft and Wilson; member of commissions and boards affecting labor and civic affairs. Author of *Reform in the Consular Service, United States Doctrine of Citizenship, Our Diplomacy with Reference to our Foreign Service, The American Spirit, Under Four Administrations.*

STUYVESANT (*stī'vĕ-sănt*), **PETER** (1592–1672), Dutch governor of New Netherland, a picturesque and strong character. He kept the Indians friendly and helped fix the boundary of New England. Being forced by the English to withdraw in 1664, he went to Holland, but returned and lived for years on his farm, the Bowerij, from which the Bowery, New York, is named.

SULLY (*sü-lē'*), **MAXIMILIEN DE BETHUNE, DUKE DE** (1560–1641). The great minister of Henry IV. of France. He reformed the state affairs and from 1597 to 1609 he trebled the income of the state. After the death of Henry in 1610, Sully was one of the council of regency, but was forced by his colleagues to resign in the following year. He encouraged farming, industry, conservation, and national defense.

SUMNER, CHARLES (1811–1874). An American statesman; born in Boston; was a successful lawyer, but his Fourth of July oration on the "True Grandeur of Nations" (1845) first made him well known. In the formation of the Free Soil party he played an important part; was senator (1854–1874). Sumner's unflinching courage, sincerity, and devotion to duty give him high rank among American statesmen.

TAFT, WILLIAM HOWARD (1857–1930), son of Judge Alphonso Taft, was born in Cincinnati, graduated from Yale in 1878 and Univ. of Cincinnati Law School in 1880. Second in class of 121 at Yale and won half first prize in law in his law class. Served in Cincinnati successively until 1900 as a law reporter, asst. pros. attorney, as private counselor, asst. county solicitor, judge of Superior Ct., solicitor general of U. S., Judge of Circuit Court, and Dean of the Cincinnati Law School. Pres. U. S. Philippine Com. and first civil governor of the islands. Sent by Pres. Roosevelt on several missions, including those to arrange with the Pope for purchase of church lands, to Panama, to Cuba, where he acted as provisional governor, and to the Far East. Sec. of War, 1904–08. Elected president over Bryan in 1908 by 321 to 162 electoral votes. In three-cornered fight was defeated by Wilson and Roosevelt in 1912. Kent Prof. of Law, Yale, 1913–1921, when chosen Chief Justice of Supreme Court. Member of Nat. War Labor Conf. Board, 1918–19; Pres. Amer. Red Cross, 1906–13, Amer. Bar Assoc., 1913, Amer. Acad. of Jurisprudence, 1914, and of League to Enforce Peace; Chancellor Smithsonian Institution, 1923. Early in 1930 he was forced to resign from the chief justice bench because of ill health. Died March 8, 1930. He lectured extensively and was the author of various works, including *Four Aspects of Civic Duty, United States and Peace,* and *Our Chief Magistrate and his Powers.*

TAKAHIRA (*tä-kä-hē'rä*), **KOGORO** (1854–). One of the "elder statesmen" of Japan, baron, and diplomatist, entered the Foreign Office, as a translator in 1877; became connected with the Japanese Embassy at Washington in 1879; was minister there 1901–05, 1908–9. With Baron Komura he signed the Russian Peace Treaty at Portsmouth, N. H., in 1905. Also was minister of Japan in Italy, Austria, and Switzerland at different times.

TALLEYRAND (*tăl'ĭ-rănd*), **DE PERIGORD, CHARLES MAURICE, PRINCE OF BENEVENTO** (1754–1838). French diplomatist and statesman; born in Paris. Having been educated for the church, he was made bishop of Austin (1789). On being excommunicated by the pope some time later, he severed connections with the church and in 1797 was appointed minister of foreign affairs. When Bonaparte became emperor, Talleyrand, who had upheld his ambitious projects, became grand chamberlain and Duke of Benevento. After the peace of Tilsit (1807) he broke off relations with the emperor and became, by degrees, leader of the opposition. He favored Napoleon's deposition, and, on the return of Louis XVIII., became his minister, and was made ambassador to the Congress of Vienna. Talleyrand committed his greatest crime in bringing about the death of the Duc d'Enghien.

TAYLOR, ZACHARY (1784–1850). The twelfth president of the United States was a Virginia man, who took up a military career, which began in 1806 and lasted nearly 40 years with little interruption. Taylor fought in the Indian uprising, in the War of 1812, against Black Hawk in 1832, in the Seminole War of 1837, becoming a brevet brigadier general,

and attained great fame in the Mexican War, especially by his defeat of the chief opposing general, Santa Anna, at Buena Vista. At the beginning of the war, he had left his plantation in Louisiana, had driven the Mexicans out of what is now Texas, but most of his men had been drawn away to join those of General Scott. Partisans who needed a Whig candidate in 1848 spread the idea that Taylor had been virtually shelved through politics, and he was the successful nominee over Clay, Webster, and Scott, all popular with certain factions of the Whig Party. In his brief term of a little over a year and four months, Taylor had small opportunity of proving his executive worth. He favored extension of the domain, the annexation of California, and was on the point of readjusting his cabinet when typhus fever cut him down on July 9, 1850.

THEODORIC (*thē-ŏd'ō-rĭk*) (c. 454–526). King of the Ostrogoths, as a lad spent ten years in Constantinople, and even before the death of his father, Theudemir, he had exacted tribute from Macedonia and Moesia. After his father's death in 474 he waged a long series of fruitless wars with Zeno and with a rival Gothic chieftain. From 488 to 493 he spent in conquering Italy, which for 33 years enjoyed great peace and prosperity under his energetic rule. He did much to improve the land and to encourage agriculture and was mainly neutral in religious controversies.

THEODOSIUS I. (*thē-ō-dō'shĭ-ŭs*), **THE GREAT** (c. 346–395). Roman emperor, son of Theodosius, a general who carried on a successful campaign in Britain, accompanied by his son and namesake. He defeated both the eastern and the western Goths, having been assigned to rule the eastern part of the Roman empire by the emperor Gratianus. He restored Valentinian II. to be ruler of the western part of the empire, and later united both parts, but lived only a short time afterward.

THIERS (*tyâr*), **LOUIS ADOLPHE** (1797–1877). French statesman and historian. After the revolution of 1830, which he countenanced, he became minister of the interior, and remained in the cabinet four years in different positions (1832–36), and for a time in 1840 was president of the council and foreign minister. For 23 years he held no government office, entering political life again in 1863 as deputy from Paris. He led the anti-imperialists, opposed the war with Germany in 1870, and as president of the cabinet made a peace. Then from Aug., 1871, to May, 1873, he was president of France, after which he permanently retired. He wrote an elaborate 10-volume history of the French Revolution and one of the Consulate and the Empire.

THOMAS, ALBERT (1878–1932). French socialist and labor leader, who first entered the government as under-secretary of armaments in 1915, though he had been a member of the Chamber since 1910. In 1916 he was minister of munitions, went to Russia in 1917 to persuade a continuance of the war, and afterward favored the causes of some of the smaller nations like Poland and Serbia. In 1919 he was appointed director of the International Labour Office and performed the duties at Geneva with great distinction.

THOMPSON, JOHN SPARROW (1844–1894). A Canadian statesman, born in Nova Scotia, where he became attorney-general in 1878 and premier in 1882, and a judge of the province supreme court. In 1885 he was appointed minister of justice in the Federal cabinet, and the next year defended with skill and success the execution of Louis Riel. He helped frame a treaty with American delegates for the government of seal fisheries off Newfoundland and elsewhere, but the American government rejected this. From 1892 to his death he was dominion premier, and died at Windsor Castle, England, a few minutes after he had been sworn as a member of the privy council by Queen Victoria.

TILDEN, SAMUEL JONES (1814–1886). American official, who was born in New York, educated at Yale and at the College of New York, became a celebrated lawyer, and held various offices in state and nation. He was in the state assembly in 1846, the constitutional convention of 1846 and 1867, and as a reform Democratic member of the assembly in 1872 was largely instrumental in breaking up the notorious Tweed Ring of politicians. As a result he was made governor in 1874, and Democratic candidate against Hayes for the presidency in 1876. Tilden received a majority of the popular vote, but conflicting returns from four states deprived him of the electoral vote, and finally the contest was decided against him by a special commission. At his death he left the bulk of his estate, reduced by litigation to about $2,000,000, to found a library in New York City. His bequest and the Astor and Lenox foundations were united in 1895 to establish the New York Public Library.

TITUS, FLAVIUS SABINUS VESPASIANUS (c. 40–81). Roman emperor (79–81); captured Jerusalem (70); on death of his father surprised all by his wisdom and justice. He gave money lavishly to all sufferers in the great fire at Rome (80), which destroyed the Temple of Jupiter Capitolinus, and other handsome buildings. At the height of his popularity he suddenly died. He was succeeded by his younger brother, Domitian.

TONISSON, JAAN (1868–). Esthonian statesman, after several years in judicial service in Russia, became editor of *The Postilion*, oldest Esthonian daily at Dorpat. In 1905 he led the moderate constitutional element, and as such sat in the Russian Duma, and after 1917 he took part in every important political movement in Esthonia. In Stockholm, after being expelled from his native land by Russia, he succeeded in getting Allied recognition. In 1919–20 he was prime minister of Esthonia, and in the second parliament became president of the Chamber.

TOUSSAINT (*tōō'sān*), **FRANCOIS DOMINIQUE** called **L'OUVERTURE** (*lōō'vēr-tür'*) (1743–1803). Haitian statesman; full-blooded negro, born in Haiti. He joined the French republicans (1794), and became commander in chief of the island. Supported by the whole body of negroes, he afterward became president. He was treacherously seized by the French (1802), and died in captivity in France; he is a splendid type, intellectually and morally, of the possibilities of the negro.

TRAJAN (*trā'jăn*), **MARCUS ULPIUS** (52–117). Roman emperor (98); born in Spain. Although a great part of his reign was spent in gratifying his warlike ambitions, he by no means neglected internal affairs. He maintained impartial justice, managed the finances successfully, built military roads, bridges, canals, and suppressed the Christians as political enemies. Trajan's column, built in 114, may still be seen in Rome.

TREVELYAN (*trē-vĕl'yăn*), **GEORGE OTTO** (1838–1928). English statesman and historian, from 1864 to 1897 a member of Parliament, in 1868 civil admiralty lord (1868–70), secretary to the admiralty (1880–82), and later secretary for Scotland (1886 and 1892). He sponsored legislation extending the suffrage and abolishing purchase in the army. His *Life* of Lord Macaulay, the historian, who was his uncle, takes high rank among biographies. For years he carried on a correspondence with Theodore Roosevelt.

TROTSKY (*trŏt'shē*), **LEO (LEV DAVIDOVICH)** (1879–). Russian political leader, whose real name was Bronstein, was born in south Russia and educated at the University of Odessa. In 1898 he was deported to Russia, but escaped in 1902 to England by means of a passport made out in the name of Trotsky, which name he then adopted. Later he was again expelled from Russia, in 1910 declared his position as midway between the Bolshevik and Menshevik policies, in 1913 he was a war correspondent in Constantinople, and after the World War began he was imprisoned for publishing a book on the origins of the conflict. He was refused asylum in Germany, France, and Spain for his pacifist and other doctrines, and finally came to New York where he edited *Novy Mir* (The New World), a Russian daily. In 1917 he was sent to Russia by his friends, but was arrested at Halifax and interned, being released on appeal from Russia. He was second only to Lenin in the revolution of late 1917, acting as commissar of foreign affairs, and later as commissar of war, being superseded in 1924. In 1927 he was read out of the party, exiled, and in 1929 went to Constantinople.

TRUMBIC, ANTE (1863–). A statesman of Yugoslavia, member of the Austrian parliament in 1907, leader in attempts to unite the Serbs and the Croats, and a member of the Peace Conference at Versailles. During the World War he sought support in Italy, in England, and elsewhere, which finally culminated in the congress of small groups at Rome in 1918. Later that year he was made foreign minister in the provisional Yugoslav government. After 1920 and the Treaty of Rapallo, he was mainly

in opposition, except for a brief time, and in 1925 he became leader of a smaller group of Croat peasants.

TSANKOFF (*sänk'ŏff*), **ALEXANDRE** (1879–). A Bulgarian professor and statesman, who completed his education in Germany, was professor of economics at Sofia University, and not until 1922 entered politics by forming an educated group into a National Concord. When Stamboliski (q. v.) was driven from office in 1923, Professor Tsankoff formed a coalition government of all parties except the communists, and continued in office till 1925.

TUPPER, SIR CHARLES (1821–1915). Canadian statesman; born in Amherst, Nova Scotia; elected to Provincial Legislature (1855); premier of Nova Scotia (1864–1867); strongly supported confederation; president of Council (1870–1872); minister of inland revenue (1872); of customs (1873); of public works (1878); of railways and canals (1879); high commissioner for Canada in London (1884 and 1888); British plenipotentiary on Fisheries Commission at Washington (1887–1888); premier of Canada for six months (1896) and then leader of opposition till he lost his seat in 1900.

TUPPER, HON. SIR CHARLES HIBBERT (1855–1927). Born at Amherst, Nova Scotia. Educated at Windsor Academy and McGill University, winning Governor General's scholarship. LL.B. Harvard (1876); called to bar of Nova Scotia (1878); queen's counsel (1890); called to bar of Ontario (1895); member executive coucil Canadian Bar Association (1896); returned to House of Commons for Pictou (1882–1904); minister of marine and fisheries (1888–1895); minister of justice and attorney general (1895); solicitor general (1896); assisted in fur seal discussion (1891); representative of Her Majesty as agent for Great Britain at Paris, in Bering Sea Arbitration (1893); Knight Commander of St. Michael and St. George. He carried through Parliament many measures of importance to mercantile and shipping classes, especially acts for improvement in shipping cattle from Canadian ports across the Atlantic.

TUTANKHAMEN (*tōōt-änk-ä'mĕn*) (d. 1350 B. C.). Last king of the celebrated eighteenth dynasty, which reigned from about 1588 to 1350 B. C. He followed his father-in-law, the great Amenhotep IV., and evidently died young and left no descendants. He restored an older worship of Amen to replace the sun-worship instituted by his predecessor, with whom he acted for a few years as co-ruler. When his tomb was discovered in 1922 by Lord Carnarvon and Howard Carter, the interest of the world was aroused by its magnificence.

TWEED, WILLIAM MARCY (1823–1878). American politician and leader of the "Tweed Ring"; born in New York City. The "Ring" conducted the most flagrant system of spoliation of the city ever heard of. The system was exposed by the New York *Times* (1871); a committee of seventy citizens led by Samuel J. Tilden investigated and Tweed was indicted for forgery and grand larceny. He was sentenced to 12 years' imprisonment and a fine of $12,300.18. After two years' imprisonment he was released on a technicality. He was at once rearrested on a civil warrant for over $6,000,000. While out for a drive with an attendant from Ludlow Street jail he escaped and fled to Spain. He was returned (1876) and again imprisoned in Ludlow Street jail, where he died.

TYLER, JOHN (1790–1862). Tenth president of the United States; was another Virginia man, a graduate of William and Mary, and admitted to the bar in 1809. He was a member of the Virginia house three different times (1811–16, 1823–25, 1838–40), of the Federal house (1816–21), governor of Virginia (1825–27), U. S. senator (1827–38), and in 1841 became vice president, succeeding Harrison, when the latter died after a month in office, on April 4. In the changing political complexions of the day, Tyler was the candidate of a faction in 1844, but withdrew in August before the presidential election. L. G. Tyler, his son, was president of the College of William and Mary from 1888 to 1919.

ULMANIS (*ul'män-is*), **KARL** (1877–1940). A Latvian statesman, who was educated in agriculture in Germany and the United States and in 1918 succeeded in unifying all parties into a patriotic group, which on Nov. 18 proclaimed a republic. After the Latvians won a conflict with both Russia and some German irregulars, he formed a government. From the beginning of the republic to 1921, and from Dec. 1925 to May 1926, he was prime minister and then minister of foreign affairs to Dec. 1926. As leader of the middle-class Farmers party, his power was universally recognized in Latvia.

VALENS (c. 328–378). Roman emperor of the East (364–378). The brother of Valentinian I., with whom he shared the empire. Valens reduced taxes by 25 per cent; defeated the Ostrogoths in a war lasting from 367 to 369; defeated the Persians in 372; and permitted the Goths, who were hard pressed by the advancing hordes of the Huns, to settle in Thrace. This brought about war with the Goths themselves, in which the army of Valens was completely routed and he was slain at Adrianople (August 9, 378).

VALENTINIAN (*văl'ĕn-tĭn'ĭ-ăn*), **I.** (321–375). A Roman emperor (364–375) of humble origin; was the successor of Jovian in 364; chose his brother Valens as his colleague and gave the East to him. The foreign possessions suffered from the incursions of the barbarians, but the administration of affairs at home was excellent. He won victories over the Alemanni and Saxons. Valentinian was a strong and able ruler as well as an orthodox and tolerant Christian.

VAN BUREN, MARTIN (1782–1862). Eighth president of the United States was born and died at Kinderhook, N. Y. From 1803 for many years he enjoyed a profitable law practice in New York. He was surrogate of Columbia County (1808–13), a state senator (1812–20), and was also attorney general meanwhile (1815–19). In 1821 he was made a U. S. senator, resigning in 1828 to become governor of New York on Jan. 1, 1829, but he gave up the latter office also to be secretary of state in Jackson's cabinet. He was appointed minister to England in 1831, went abroad in September, but on Jan. 25, 1832, the appointment failed of confirmation by the senate, largely through the influence of Calhoun. This procedure added to his fame and he was elected vice president in 1832 and president four years later. Failing to take definite action in some cases, and seeming to favor the South in some others, lost him support as a nominee in 1840, prevented his nomination in 1844, and gave him only part of the support of the party in 1848. During the Civil War he supported President Lincoln's policies.

VANE, SIR HENRY (1613–1662). English statesman; born at Hadlow, in Kent. Came to America (1635); became governor of Massachusetts (1636); returned to England (1637), where he was joint treasurer of the navy (1639–1641). Vane was knighted in 1640; succeeded Pym as leader in the House (1643); member of the council of state (1649); took part in the negotiations for the union of England and Scotland (1652). He was executed in 1662.

VENIZELOS (*vĕn-ē-zā'lŏs*), **ELEUTHERIOS** (1864–1936). Greek statesman born in Crete, led in the movement uniting Crete and Greece. About 1910 he moved to Athens and formed the league which made war on Turkey in 1912. During the World War, as premier of Greece, he used every method in his power to bring Greece into union with the allies against Germany, but the king of Greece, for family reasons, prevented, and Venizelos resigned in 1915. Following the first abdication of Constantine, he returned to Greece as premier in 1917, and Greece joined the allies. During the Peace Conference he was one of the most enlightened delegates, wielding a large influence. He continued to be premier till Nov. 1920, when his government fell at the very height of his popularity because the war in Asia Minor had displeased the mass of the people. Returning to influence in 1922, he represented Greece in various conferences, as he had at Versailles in 1919. Early in 1924 he was premier for about three weeks, resigning because of poor health, and living abroad till in 1928 his party came back strong, and he once more returned to power. Venizelos did much to promote peace with other nations.

VESPASIAN (*vĕs-pā'zhĭ-ăn*) or **TITUS FLAVIUS VESPASIANUS** (9–79). A Roman emperor of humble origin. He passed through minor military offices until in the reign of Claudius he was made commander of a legion and was sent to Britain in 43, where he conquered the Isle of Wight. In 66 he was chosen to conduct the war against the Jews. When Galba died in 69 he was proclaimed emperor by his soldiers in Alexandria. The Senate meantime proclaimed Otho. Civil war resulted, for the army in Germany had proclaimed their general, Vitellius, emperor. Vespasian, being in Egypt, cut off the grain supply from Rome, gave the Jewish war over to his son, Titus, and remained in the East. Otho died a violent death and the army of Vitellius was routed.

The murder of Vitellius in 69 left Vespasian in control of the Roman world. He reigned for ten years. Jerusalem was captured by Titus (70); Vespasian and Titus shared the grand triumph; the Colosseum was built; Britain was conquered by Agricola in 78 and 79. Vespasian died in 79 and was succeeded by his son, Titus.

VICTOR EMMANUEL II. (1820–1878). Was king of Sardinia (1849–1861); king of Italy from 1861; assisted by Garibaldi, he created a new Italian kingdom. Venice welcomed him in 1866, and with the occupation of Rome in 1871 the unity of Italy was completed.

VICTOR EMMANUEL III. (1869–). King of Italy since August 11, 1900, succeeding his father, King Humbert I. Educated principally under the direction of his mother; entering the army in 1887 as a second lieutenant, rose gradually in rank until in 1897 he was commanding general at Naples. Having represented his father in several affairs of a diplomatic nature, he was well prepared, both as a statesman and as a soldier, to assume the crown on the assassination of his father. The king went into office with the full confidence of his subjects, and has shown himself to be an efficient ruler. In 1896 he married Princess Helena (1873), daughter of Prince Nicholas of Montenegro. From 1915 till Nov. 14, 1918 Victor Emmanuel remained in the war zone and did much to encourage his soldiers. For a time afterward the monarchy was not very popular, but the coming of the Fascist régime rather strengthened the position of the king. In 1929 the king ratified a Treaty with the Holy See and so ended the religious question.

VICTORIA, (1819–1901). Queen of Great Britain, daughter of Edward, Duke of Kent, fourth son of George III.; born at Kensington Palace; she ascended the throne (1837) and, in 1840, married Albert of Saxe-Coburg-Gotha. He died in 1861. Victoria received the title of empress of India by act of Parliament (1876). Her impartiality, unselfishness, and high sense of duty made her beloved by her subjects. She ruled longer than any previous English sovereign, while her reign was one of the most illustrious in the annals of any nation.

VIVIANI (*vē-vyȧ-ne'*), **RENE** (1863–1925). French orator and statesman, held many offices, including that of Minister of Labor, under Clemenceau in 1906, also continuing under Briand in 1910, Minister of Public Instruction, and after the Great War, Minister of Justice. He became Premier in 1914, being succeeded by Briand the next year. Best known for his efforts to prevent the Great War, and for his notable speeches, particularly one in 1914. Known for wealth and imagery and metaphor. After 1917 he took little part in public affairs, except as delegate to the Washington Conference in 1921–22.

VLADIMIR (*vlăd'ĭ-mĭr*) (c. 956–1015). Russian warrior and convert to Christianity after extending the boundaries of the kingdom and engaging in building heathen temples. He sent envoys to various nations in 987 to study the religious conditions, and the report of Christianity at Constantinople was so alluring that he agreed to be baptised. Basil II. gave him his sister Anna as queen in 988, after which Vladimir and many of his people embraced the new faith. Much of his subsequent life was spent in building churches and promoting peace.

WALES, PRINCE OF, EDWARD ALBERT (1894–). Entered the Royal Naval College at Dartmouth, England, in 1909. On his sixteenth birthday was proclaimed Prince of Wales, and in 1911 was presented to the Welsh people at Carnavon Castle. His course at Magdalen College, Oxford, which he began in 1912, was interrupted by the World War, in which he served in various capacities, with Sir John French in France, with the English forces in Egypt, in Italy, and last with the Canadian corps in France. In 1919, 1923, and 1924, he visited Canada, having a ranch in Alberta; in 1920 he visited New Zealand and Australia; and in 1925, South Africa.

WALPOLE, SIR ROBERT, FIRST EARL OF ORFORD (1676–1745). English statesman; born at Houghton in Norfolk; in 1708 he was made secretary of war; in 1710 treasurer of the navy; was paymaster of the forces (1714 and 1720); in 1715, chancellor of the exchequer, and first commissioner of the treasury. He was prime minister from 1715 to 1717, and from 1721 to 1742. Walpole hesitated at no method to advance his own policies and those of the Whigs.

WALSH, THOMAS JAMES (1859–1933). Senator from Montana since 1913, received a law degree from the University of Wisconsin in 1884, was principal of a high school, and then began the practice of law at Redfield, South Dakota. Since 1890 he has resided in Helena, Montana. From 1908 he has been a member of the Democratic national conventions, being on the committee on platform. In 1924 he rose to national prominence by his energetic prosecution of the cases involving the sale or lease of public lands to private companies.

WASHBURNE, ELIHU BENJAMIN (1816–1887). American politician; born at Livermore, Me.; studied law at Harvard, and was admitted to the bar (1840); removed to Galena, Ill., and sat in Congress (1853–1869), being chairman of the committee on commerce (1855–1865). His economical methods in government service won him the name of "Watch Dog of the Treasury." When Grant became president he was made secretary of state, shortly resigned to become minister to France, and returned to the United States (1877).

WASHINGTON, GEORGE (1732–1799). First president of the United States, the son of Augustine Washington, whose ancestors came from England. He was born in Westmoreland County on a plantation near the mouth of the Potomac River. After the meagre schooling the county afforded, he resided at Mount Vernon south of Washington with his brother Lawrence, taking employment in the Fairfax family as a surveyor in western Pennsylvania in 1748–50. The next year he entered the military service, was with Braddock in the disaster at Fort Duquesne in 1755, helping collect the remnant of the scattered troops routed by the Indians. For 15 years after 1759 he spent his time on the large Virginia estates, making Mount Vernon his home after the death of his half-brother in 1752. He increased the estates to more than 4,000 acres. Taking command of the colonial army at Cambridge, Mass., July 3, 1775, he pressed the campaigns to a close, and took leave of the army on Dec. 4, 1783. He acted as president of the Constitutional Convention in 1787, received the unanimous vote for president in 1789, was reëlected in 1793, but declined to be a candidate again in 1797. For two years he lived quietly on his plantation, though Congress again on July 3, 1798 commissioned him General of the armies in anticipation of a war with France which was averted. He died at Mount Vernon, Dec. 14, 1799. It was Congress that declared Washington "First in war, first in peace, and first in the hearts of his countrymen."

WEBSTER, DANIEL (1782–1852), American statesman, lawyer, and orator; born in Salisbury, N. H.; graduated from Dartmouth (1801); admitted to the bar (1805); in House of Representatives (1813–1816, 1823–1828); in Senate (1828–1841, and 1845–1850); made his famous reply to Hayne (1830); received nomination for the presidency (1836), but was defeated; defeated for the presidency by Taylor (1848); secretary of state (1850). In his reply to Hayne, probably the greatest speech made in Congress, Webster showed clearly the nature of the Union.

WENCESLAUS (*wen'sĕs-lăŭs*) (1361–1419). Holy Roman emperor (1378–1400) and king of Bohemia as Wenceslaus IV. (1378–1419). The son and successor of Charles IV. In 1393 he caused John of Nepomuk to be tortured to death for refusing to give up the secrets of the confessional. In 1394 he was arrested and imprisoned by a conspiracy of the nobles, but the German princes secured his release. In 1395 he sold the title of the duke of Milan to Visconti for 100,000 florins. The powerful archbishop of Mainz secured his deposition from the throne in 1400, Rupert of the Palatinate being chosen to succeed him. He still retained the throne of Bohemia. In 1402 his brother, Sigismund, imprisoned Wenceslaus in Vienna for fifteen months. Wenceslaus resigned in favor of his brother, Sigismund.

WHITE, ANDREW DICKSON (1832–1918). American diplomat; born at Homer, N. Y.; attaché of the United States legation at St. Petersburg during the Crimean War; professor of history and English literature, University of Michigan (1857–1863); lecturer on history (1863–1867); New York state senator (1863–1867); president of Cornell (1867–1885), to which he contributed $300,000 and his historical library of 40,000 volumes, founding a school of history and political science; Santo Domingo commissioner (1871); minister to the German Empire (1879–1881); minister to Russia (1892–1894); commissioner on Venezuela-Guiana boundary (1896); ambassador to Germany (1897–1903); chairman of American delegation to The Hague Peace Conference (1899).

WICKERSHAM, GEORGE WOODWARD (1858–1936). He was born in Pittsburgh, Pa., educated at Lehigh and the University of Pennsylvania, practiced for two years in Philadelphia and for many in New York City. He was attorney general in the cabinet of President Taft, a member of several boards and commissions, including those on codification of international law, on reorganization of New York state government, international justice and good will of the Council of Churches in America, president of the American Law Institute, and chairman of the Hoover committee on enforcement of laws in 1930.

WILHELMINA (*vil-hel-mē'nä*) (1880–). Queen of the Netherlands since 1890; only daughter of William III., king of the Netherlands (1849–1890), and Queen Emma, who was regent from the death of King William till the coronation of her daughter in 1898. Wilhelmina married Duke Henry of Mecklenburg-Schwerin, February 7, 1901; a daughter, Princess Juliana, was born April 29, 1909. Queen Wilhelmina's reign has been one of uninterrupted peace and prosperity.

WILLIAM I., THE CONQUEROR (about 1027–1087). King of England (1066–1087). He was the son of Robert II., Duke of Normandy. When his father set out on his pilgrimage to the Holy Land he caused William to be chosen to rule in his absence. On Robert's death in 1035 William became Duke of Normandy. His entire rule in Normandy was a succession of rebellions against him. In 1051 he visited Edward the Confessor in England and was probably promised the throne on the death of Edward. When Edward died in 1066 and Harold, Earl of Wessex, claimed the throne, William landed in Hastings with an army and gave battle to Harold at Senlac Hill. Harold was slain and the Normans were victorious. William then took the throne under the title of William I., the Conqueror. By 1070 the subjugation of England was well-nigh complete. In 1072 William invaded and conquered Scotland. He created the New Forest in 1076. He introduced the Curfew Bell, caused a survey of the whole country to be written out in the Domesday Book in 1085; parceled out the lands of the English to his followers, introduced the Feudal System, whereby the Duke had complete control over all of his subjects.

WILLIAM II., RUFUS (about 1056–1100). King of England (1087–1100). He was the third son of William the Conqueror, who named him as his successor in 1087. Lanfranc, Archbishop of Canterbury, was his guide, and as long as he lived, William's conduct and reign were satisfactory. On Lanfranc's death he began a rule which caused the English chronicle to record on his death that "he was loathsome to well-nigh all his people and abominable to God." He made war upon Scotland and its king did him homage. With his brother, Robert of Normandy, he made war upon his younger brother, Henry (afterward Henry I.), and drove him into exile. He gave Robert 10,000 marks for his kingdom in Normandy to enable him to join the Crusades. He was shot by an arrow from the bow of Sir Walter Tyrrel while hunting in the New Forest, and was buried at Winchester without ceremony.

WILLIAM III. or **WILLIAM HENRY OF NASSAU, PRINCE OF ORANGE** (1650–1702). King of England; born in The Hague, Holland; son of William II. of Orange. He was crowned king in February, 1689. The resistance of the adherents of James II. was broken in Ireland by the battle of the Boyne (1690). In 1691 William led the army in the Netherlands in person; took Namur (1692); signed the treaty of Ryswick (1697), and was acknowledged king of England; he was sole ruler after 1694, on which date Mary, who reigned jointly with him, died.

WILLIAM IV. (1765–1837). King of England (1830–1837). Third son of George III. and uncle of Queen Victoria, who succeeded him. The great event of his reign was the passage of the Reform Bill, which was passed by the House of Lords unwillingly by reason of the king's threat to create a sufficient number of new lords to secure its passage.

WILLIAM I. (1797–1888). King of Prussia and emperor of Germany; born at Berlin; son of Frederick William III. of Prussia. Took part in the campaign against Napoleon I. (1814–1815), and, on the accession of his brother, Frederick William IV., to the Prussian throne (1840), he became governor of Pomerania. His Absolutist attitude at the time of the revolution in Berlin (1848) made it necessary for him to seek refuge in England; but he soon returned, suppressed the revolutionary Badeners (1849), and in 1858 was appointed regent. This position he held until his brother's death in 1861, when he was crowned king of Prussia. In the war of 1866, which proved so humiliating to Austria, William took the field as commander in chief of the Prussian army; he also led the German forces in the war with the French (1870–1871), and received the capitulation of Paris January 28, 1871. His success led the German states to offer him the crown, which he accepted; he was proclaimed emperor at Versailles, January 18, 1871.

WILLIAM II. (1859–). German emperor and king of Prussia, the eldest son of Frederick William, afterwards Frederick III., was born in Berlin. His mother was Victoria of the royal family of Great Britain, but William never quite forgave her for not adapting herself throughout to German manners. After a thorough military training, he rose to the rank of colonel in the Hussars. On the death of his father in 1888, he became emperor, and two years later, Bismarck, the iron chancellor, who had long guided the minds of Germany, felt impelled to resign. William already had arrived at several positive policies: (1) a desire to be regarded as real head of the nation, a semi-absolute ruler at least; (2) the ambition to develop the colonies and increase trade throughout the entire world; (3) the training of an effective army and the building of a powerful navy, equal to that of any European nation; (4) the wish to get rid of growing democratic tendencies, which promised to undermine his power, and which eventually led to his downfall in 1918. He met opposition of England in Africa and the Far East, and France became growingly suspicious. In moments of exaltation he sometimes spoke rather too frankly to the grief of his ministers. Apparently he was forced into the World War, but took no decided stand at important crises. By midsummer 1918 it looked as if he might be forced to abdicate, but he appointed Max of Baden—a man of rather different ideals—as imperial chancellor. At last on Nov. 9, Prince Max proclaimed the end of the reign or at least a regency. Almost immediately a republican government was set up, and the other reigning kings and princes of the German empire also abdicated. William was a versatile man, interested in art, poetry, painting, and religion, but not thorough in his learning or in his ideas of government.

WILMOT, DAVID (1814–1868). American politician; born in Bethany, Pa. Remembered chiefly for the famous "Wilmot Proviso" (1846) declaring slavery unlawful in any territory acquired from Mexico. Although passed by the House, the Senate rejected the bill. Wilmot was admitted to the bar (1834); he was a Democrat and served his state, Pennsylvania, in the House (1844–1851) and in the Senate (1861–1863); supported the Republicans on the slavery issue.

WILSON, JAMES (1835–1920). American cabinet officer; born in Scotland; lived with his parents in Norwich, Conn. (1852–1855), then removed to Tama County, Iowa; member of the state assembly for three terms, during the last of which he was speaker; member of Congress (1873–1877 and 1883–1885); secretary of agriculture (1897–1913). His long tenure of the secretaryship of agriculture, 16 years, introduced many changes and new enterprises. Wilson favored everything practical to help the farmers and to conserve the natural resources of the country. Instruction in the state schools of agriculture was strengthened, a system of crop and soil surveys was instituted, and reports were sent to every corner of the nation.

WILSON, WOODROW (1856–1924). Both by temperament and by training a deep student of national and international affairs, came to the presidency of the United States with fixed views of national and foreign affairs. His father, the Reverend James Wilson, and his mother, Jessie Woodrow, were of good old Scotch-Irish and English stocks. After their marriage in Ohio, and a sojourn of two years in Western Pennsylvania they moved to Virginia, where Woodrow was born, then went to Augusta, Georgia, where he was educated at home and by private tutors. After an academic course at Davidson College and Princeton, ending in 1879, Wilson studied law in the University of Virginia and practiced for about a year in Atlanta, Georgia. Turning to political science as his life work, he took a doctorate at Johns Hopkins, where he acted as instructor, after which time he served as an associate professor of history and politics at Bryn Mawr and professor at Wesleyan University. He was called at Princeton in 1890, remaining till

he assumed the governorship of New Jersey in 1911,—first, as professor of jurisprudence and political science, and then as president from 19^2 to the fall of 1910. Though serving as a Democrat in a Republican stronghold, he was enabled to initiate a number of important changes in the acts relating to primaries, public service commissions, trusts, and administration of public institutions in New Jersey. Thus the natural candidate of his party for the presidency he defeated Taft and Roosevelt in a three-cornered contest. In spite of more or less opposition, his ideals and high sense of duty won Wilson many friends. He based his claim for a second term on his policy of "watchful waiting" as regards Mexico, his views of international obligations, and his holding aloof from the World War, despite a vigorous insistence that America throw off the mask of neutrality. The return of Germany to submarine warfare on a large scale, and other acts, led president Wilson to ask congress to declare war on April 2, 1917. Hereafter he gave himself unstintedly to the prosecution of the war and to the advocacy of the League of Nations. After securing the recognition of his principles in the Versailles Conference, which he attended in person, Wilson returned to America, began a speaking tour, but was stricken in September, 1920. From this time on, he was forced into virtual retirement from all public appearances. After leaving office in 1921, he returned to private life, dying February 3, 1924, in Washington, D. C. President Wilson was twice married, first to Ellen Louise Axton, 1885, who died in the White House in 1914, and then to Mrs. Edith Bolling Galt, who survived him. He left three daughters, all children of the first Mrs. Wilson.

WINGATE, FRANCIS REGINALD (1861–). British colonial administrator, was educated in the Royal Military Academy at Woolwich, served in India (1881–83), in the Gordon relief expedition (1884–85), and in various enterprises in Africa, in December 1899 succeeded Kitchener as governor of the Sudan, and in 1916 became high commissioner to Egypt, remaining in this post till 1919. He was made a baronet in 1920.

WINTHROP, JOHN (1588–1649). First colonial governor of Massachusetts; born at Edwardston, Suffolk, England. In 1630 he left England for America, being among the first Salem colonists; was made governor of the colony and held that position almost continuously till his death. He kept an elaborate journal covering the whole period of his life in Massachusetts, which is of inestimable value.

WIRTH (*vĭrt*), **KARL JOSEPH** (1879–). German statesman, member of the Baden diet in 1913, of the Reichstag in 1914, minister of finance (1919–22), and chancellor (1921–22). At the time of his resignation in November 1922, the value of the mark fell to a low level of 9,000 to the dollar, and Dr. Cuno was called upon to form a cabinet to restore the mark to something like its former level.

WITTE (*vĭt'ĕ*), **SERGEI YULIEVITCH** (1849–1915). Russian statesman; minister of communications (1892) and, soon after, minister of finance until 1903. As such he promoted manufacturers, favored protection, introduced the gold standard, and government monopoly of alcholol. He increased the revenues and negotiated large loans; was appointed president of the Committee of Ministers (1903) and a member of the Council of the Empire; negotiated the Treaty of Portsmouth, N. H., with Japan; took an active part in the Duma; regarded as one of Russia's greatest statesmen.

WOLSEY (*wo͝ol'zĭ*), **THOMAS** (1475–1530). "The Great Cardinal." Graduate of Magdalen College, Oxford (1490); ordained priest (1498); royal chaplain to Henry VII. and special ambassador in important missions; royal almoner to Henry VIII.; member of Privy Council (1511), the practical ruler of England; bishop of Lincoln (1514); archbishop of York (1514); cardinal (1515) and lord warden. Arrogant and imperious, he opposed the king; was charged with high treason but died before his trial.

WORK, HUBERT (1860–). Before entering public life, he was a physician in Greeley, and then in Pueblo, Colorado, where he founded Woodcroft Hospital. He was first assistant postmaster general, 1921–22, postmaster general, 1922–23, and secretary of the interior, 1923–28. Work held several offices in the Republican Party, becoming chairman of the National Committee in 1928.

WU TING FANG (*wŏ tĭng fäng'*) (1842–1922 Chinese diplomatist, who was born in the district Kwangtung, China, educated in Canton, and in la in England (1874–1877). After serving on the sta of Li Hung Chang, he helped negotiate the treaty peace for China after the war with Japan, and acted as vice-president of the war board and aided the construction of railways. He represented Chi in the United States, Spain, and Peru from 1897 1902, and again in the United States, 1907. In 191 he was appointed minister of foreign affairs for Chin

XERXES (*zûrk'sēz*). King of Persia, calle Ahazuerus in the story of *Esther* in the Bible, wh ruled from 485–465 B. C. Son of Darius I. Afte subduing the revolted Egyptians he spent three yea in preparing an attack upon the Greeks. With a army estimated at one million he marched from Sard for the Hellespont in the spring of 480 B. C. He ha also a fleet of 1,200 ships. Successful at Thermopyla he was overwhelmed first at Salamis and then Plataea. He fled from Greece and attacked Babylo on the way home, razing the temples of the city Murdered with his eldest son, Darius, by Artabanus captain of the guard.

YOSHIHITO (*yō-shē-hē'tō*) (1879–1926), 122d em peror of Japan and third son of Emperor Meiji. Edu cated in school of princes. Married Sakada, the fourt daughter of Prince Michitaka, in 1900. Their elde son, Hirohito, now emperor of Japan, was born i 1901. Ruled actively from 1912 to 1921, being su ceeded virtually by his son as regent because Goshihito's ill health, which ended in his death i December, 1926. Reign known as "Era of Grea Righteousness."

YOUNG, OWEN D. (1874–), capitalist an public servant, has been prominent in the Genera Electric, Radio Corporation, Federal Reserve Bank General Motors and other companies. Served on nu merous commissions, including the Industrial Confe ence Board, Expert on Reparations from the Centra Powers, Conference on Unemployment, and Genera Education Board. See DICTIONARY OF FINANCIER

YUAN SHIH-KAI (*yū-än' shē-kī'*) (1859–1916) First president of the Chinese republic. When twenty three years old went to Korea as a minor secretary imperial resident of the Korean court (1885–1894) when he took part in the Chino-Japanese war; judicia commissioner of Chihli (1897); governor of Shantun during the Boxer rebellion, and afforded protection t foreigners; victory of Chihli (1901), and during hi tenure of office laid the foundation of China's moder army; grand councilor (1897), and prominent in go ernment at the death of the emperor and the dowager dismissed by the regent (1909) and soon after took th field as military dictator; after breaking out of rebe lion recalled and made premier, Nov. 8, 1911; Feb. 1 1912, asked to organize a provisional republican go ernment; two days later made provisional presider for 10 months; elected president for five years (1913) the newly elected parliament being impractical an stubborn, Yuan finally dissolved it, and was virtuall dictator. When the elections (Nov., 1915) seeme to favor a return to monarchy and the crown wa offered to Yuan, he finally accepted it. Later, findin the people averse to monarchy so numerous, he with drew his acceptance. A remarkably able statesma

ZAIMIS (*zä'ē-mēs*), **ALEXANDER** (1855–1936) Greek statesman, seven times premier (1897–99, 1901 02, 1915, 1916, 1917, 1926, 1927). From 1906 1911 he was high commissioner of the Powers i Crete. In 1913–15, and twice afterward between pr mierships, he was governor of the National Bank. I 1922, after the second abdication of Constantine, h refused to be premier, but again accepted the office i the group of three ex-premiers and two Royalists i 1926, continuing in 1927 and 1928 in coalition cab nets that succeeded. Though not naturally incline to political life, he accepted office at various critic times because of a sense of duty.

ZENOBIA. Queen of Palmyra from 266 or 267 272, when she was overthrown by the Roman empero Aurelian. She was the wife of Odaenathus until h death, and then made conquests in Egypt, Asia Mino and as far west as Chalcedon opposite Byzantiu When she and her son began to remove the head of th emperor from Roman coins used in Egypt, Aurelia suspected her professed friendship for Rome. In th war which ensued, Zenobia was defeated finally Palmyra, where she had been driven from the wes and for the rest of her life lived near Rome.

DICTIONARY OF SCIENTISTS

Including Modern Explorers and Aviators.

ABBE (*ab'ē*), **CLEVELAND** (1838–1916). Called the father of the U. S. weather bureau. Directed the Cincinnati Observatory (1869–73) and weather forecasts for the U. S. Signal Corps (1870–91), and was senior professor of meteorology in the service after 1891. He introduced the system of standard time now used and placed weather forecasting on a scientific basis.

ABBOTT, CHARLES GREELEY (1872–). Authority on solar research, a graduate of Massachusetts Institute of Technology, and connected with the Smithsonian Institution from 1895, acting as director from 1907. Observed total eclipses, studied spectra, and with others proved the variability of the sun. He won the Draper medal (1910), and the Rumford medal (1916) for his discoveries.

ABEL, JOHN JACOB (1857–1938). Professor at Johns Hopkins, educated at the University of Michigan and abroad, and discovered the constituent part of the suprarenal glands which causes high blood pressure. He also investigated the effects of certain chemical and vegetable poisons on animal tissues and fluids. Won the Willard Gibbs medal for his researches in 1927.

ABRUZZI (*ä-brŭ'sē*), **DUKE OF THE** (1873–1933). Italian explorer who first ascended Mt. St. Elias in Alaska (1897), the Ruwenzori in Africa (1906), peak K2 of the Himalayas (1909), and attained 86° 3′, the point farthest north at the time (1899). During the World War he acted for a time as vice-admiral of the fleet in the Adriatic.

ACHARD (*ähk-ärt*), **FRANZ KARL** (1753–1821). A Prussian chemist who first made sugar from beets in quantity on his estate at Kunern, discovered a way of refining platinum, established a school of chemical research, and published numerous works on science.

ADAMS, JOHN COUCH (1819–1892). A British astronomer, educated at Cambridge, became a professor there and finally director of the Observatory. By astute mathematical calculation he discovered the planet Neptune, which causes certain variations in the motion of Uranus long recognized but until then unexplained. The French scientist Leverrier, working independently, arrived at similar results. Adams also explained certain perturbations of other heavenly bodies and made important researches in magnetism.

AGASSIZ (*ăg'ä-sĭ*), **ALEXANDER** (1835–1910). American naturalist and capitalist, only son of Louis. With his knowledge of geology and engineering he developed the Calumet and Hecla copper mines, south of Lake Superior, bringing him great wealth, which he has devoted to zoölogical research, donating over one million dollars to endowment of the Harvard Museum of Comparative Zoölogy; author of several zoölogical works, mostly on deep sea animals. Interesting books of his are *Seaside Studies in Natural History and Marine Animals of Massachusetts Bay.*

AGASSIZ, LOUIS (1807–1873). Distinguished Swiss-American naturalist; born in Switzerland; studied under Cuvier at Paris; professor of natural history at Harvard (1848–1873); preëminently a teacher of great force, clearness, and enthusiasm, whose lectures, everywhere in demand, were the inspiration of a new era in American biological research; founded the Harvard Museum of Comparative Zoölogy (1858); author of important zoölogical works such as *History of Fresh Water Fishes of Central Europe* and *Contributions to the Natural History of the United States.* As a teacher he relied more on stimulating careful observation than on the use of books or lectures. His favorite saying was "The book of nature is always open."

AIRY, GEORGE BIDDELL (1801–1892). British astronomer, director of the Cambridge Observatory, who calculated the mean density of the earth through experiments in mines and found a new inequality in the motions of Venus and the earth, from which some improvement was made in solar tables. He was astronomer royal from 1835 to 1881.

AMPERE (*ăn-pāyr'*), **ANDRE MARIE** (1775–1836). Distinguished French physicist who for years was professor of mathematics in the École Polytechnique of Paris and who demonstrated the relation between electricity and magnetism. His name is now given to the unit of measure of an electric current.

AMUNDSEN (*ä'mŭnd-sĕn*), **ROALD** (1872–1928). The first man to behold the regions of both the North and South Poles, was born in Norway and educated at Oslo. From his youth determined to explore the frozen zones. At 25 joined the *Belgica* antarctic expedition; went north in 1901 and 1903, and in 1906 located the north magnetic pole and the northwest passage; in 1910 led the Norwegian expedition which reached and crossed the South Pole in 1911; 1918–21, sought northeast passage; in 1925 with Lincoln Ellsworth got by airplane to 87° 44′ North; and with Ellsworth and Umberto Nobile floated in the dirigible *Norge* across the Pole to Teller, Alaska, in 71 hours in May, 1926; on June 18, 1928, set out with Rene Guilbaud and four companions in attempt to rescue the Nobile party after the wreck on May 24 of the *Italia* north of Spitzbergen. After wireless communication ceased at 7 that evening, Amundsen was never heard from. Probably his Latham plane broke from weight of ice on the wings. Thus perished in a last heroism Roald Amundsen, "the greatest polar explorer of all time." In 1927 he published *My Life as an Explorer.*

ANAXIMANDER (*ă-năk-sĭ-măn'dĕr*) (611–c. 547 B. C.). A Greek scientist and philosopher, who showed that the ecliptic is oblique, introduced the sundial into Greece, and some claim made the first map. He taught that all things came from an indestructible substance from which a fiery mass arose enclosing the rings of the sun, moon, and stars, with earth in the center.

ANDREWS, ROY CHAPMAN (1884–). American naturalist, explorer, and author, a graduate of Beloit College, and connected with the American Museum of Natural History in New York City from 1906. After assisting in several expeditions to the Far East and Alaska and specializing in the study of water mammals, he devoted himself to explorations in Asia. His party discovered in Mongolia extensive fossil deposits, new formations, and the first fossil dinosaur eggs known to man, together with other evidence of primitive animal life in Asia. Author of *Whale Hunting, Across Mongolian Plains, and On the Trail of Ancient Man* (1927).

APOLLONIUS OF PERGA (b. c. 260 B. C.). One of the great geometers of antiquity along with Achimedes and Euclid (q. v.). He left an important book on conics, and names of other works, now lost, have come down to us. Apollonius belonged to the great Alexandrian school of learned men.

ARCHIMEDES (*ar-ki-mee'dees*). See in DICTIONARY OF INVENTORS.

ARCHYTAS (c. 428–347 B. C.). A famous Greek philosopher, mathematician, general, and statesman; regarded as the founder of scientific mechanics; distinguished harmonical progression, doubled the cube, invented the pulley, and taught that the earth is a sphere rotating on its axis in 24 hours.

ARISTARCHUS (fl. about 275 B. C.). First to assert that the earth revolves around the sun, and to add to the supposed length of the solar year (365 days) a part of day.

ARISTOTLE. See under DICTIONARY OF PHILOSOPHERS.

ARRHENIUS (*ăr-rā'nĭ-ŭs*), **SVANTE AUGUST** (1859–1927). One of the founders of modern physical chemistry. His thesis at Uppsala in 1884, marked by the examiners lowest in the passing scale for the doctorate, was awarded the Nobel prize in 1903. His work laid the basis for all recent theories of conductivity of solutions. For many years he was a professor at Stockholm, and in 1905 was made head of the Nobel Institute there.

ARTEDI (*ăr-tā'dē*), **PETER** (1705–1735). Swedish naturalist; friend of Linnaeus; author of an important work on fishes, which Cuvier says is the first attempt at a truly scientific classification.

ATWATER, WILBUR OLIN (1844–1907). An American chemist; a leader in the investigation of problems of nutrition; originated methods of experimentation now widely adopted; constructed a respiration calorimeter, and other physiological apparatus. Professor at Wesleyan University, Middletown, Conn., for many years.

ATWOOD, GEORGE (1746–1807). See under DICTIONARY OF INVENTORS.

AUDUBON (*â'dū-bŏn*), **JOHN JAMES** (1785–1851). An American naturalist, born in Haiti, but lived most of his life in the United States, with long professional visits in Europe. He studied and illustrated birds in their native haunts in his *Birds of America*, an important portfolio of 435 hand-colored plates, showing over 1,000 life-size pictures of 489 distinct species. Later he was assisted by his sons, John and Victor, and finally in *The Viviparous Quadrupeds of America* by Rev. John Bachman, father-in-law of both his sons.

AVEBURY, LORD. See LUBBOCK, JOHN.

AVOGADRO (*ä-vō-gä'drō*), **AMADEO** (1776–1856). An Italian physicist; celebrated for first formulating the fundamental principle of chemistry known as Avogadro's Law of the Atomic Theory, in 1811. His law states that equal volumes of gases at the same temperature and pressure contain the same number of molecules. This law is important in fixing the atomic weights of chemical substances.

BABBAGE, CHARLES (1792–1871). An English mathematician noted for his table of logarithms and over 80 other writings.

BACON, FRANCIS (BARON VERULAM) (1561–1626). A celebrated English philosopher. He was the first of his time to make the method of induction the object of investigation, and began the reform of existing sciences and the harmonizing of all knowledge. By his *Essays*, *Advancement of Learning*, and *Novum Organum*, he directed the attention of learned men to the reform of school methods. He exerted a wonderful influence on the scientific thought and teaching of the European scholars who succeeded him. See INDEX for mention in other sections.

BACON, ROGER (1214–1294). An English monk and philosopher; born at Ilchester, Eng. In his *Opus Majus*, an encyclopedia of all sciences, grammar, logic, mathematics, physics and moral philosophy, he shows the need of different methods of study in language and nature. He made remarkable chemical discoveries, invented the magnifying glass, and rectified the calendar.

BAER (*bär*), **KARL ERNST VON** (1792–1876). A German biologist who made important discoveries concerning pre-natal development of man and animals. His works on *History of Development* and *Development of Fishes* have had a wide influence on subsequent theories. Baer could not accept the theories of Darwin and Wallace.

BAFFIN, WILLIAM (1584–1622). English navigator who in 1615 made important observations and discoveries in an attempt to find a Northwest passage. He discovered the large bay that now bears his name, and from 1616 for 236 years no navigator sailed farther north than he, to about 77° 45′. Baffin apparently was the first to show how to take the longitude at sea by lunar observation.

BAILEY, LIBERTY HYDE (1858–). American horticulturist, professor at Cornell University from 1888 to 1913, who made important researches in sedges, blackberries and other fruit, palm trees of this hemisphere, and in rural economics. Edited *The Standard Cyclopedia of Horticulture*.

BAILEY, SOLON IRVING (1854–1931). Harvard University professor who established highest meteorological station in the world at 19,000 feet at El Misti, Peru, where important observations were secured. He was in charge also of the station at Arequippa, Peru, and made investigations in South Africa.

BAILLY (*bä'yē*), **JEAN SYLVAIN** (1736–1793). A French astronomer and orator, who calculated the orbit of Halley's comet and made notable observations of the satellites of Jupiter. At the outbreak of the French Revolution, he was mayor of Paris, retired to Nancy in hiding, but made a visit to Laplace, the French astronomer at Melun, was discovered there, arrested, and executed. See DICTIONARY OF RULERS AND STATESMEN.

BAINBRIDGE, WILLIAM SEAMAN (1870–) An American physician and professor in the New Yor Polyclinic Hospital, who made important investig tions of cancer, and goiter, and developed new metho in abdominal surgery. Consulting physician to man hospitals and for the United States during the Worl War.

BAIRD, SPENSER FULLERTON (1823–1887) Eminent American naturalist, who made an extensiv study of the vertebrates of North America, and wa connected with the Smithsonian Institution of Wash ington from 1850 to his death. His studies of birds reptiles, and mammals were unsurpassed in his ger eration. As head of the U. S. fish commission he de veloped a method of fish culture which has bee widely copied in foreign lands. Baird's writings con prise 13 large folio volumes.

BAKER, S. JOSEPHINE (1873–). America physician and authority on public health, educate at Bellevue Medical College, New York. Under gov ernment auspices she established the first bureau c child hygiene in New York City, which resulted i establishing the lowest baby death rate for large citie in the United States or Europe.

BALFOUR, FRANCIS MAITLAND (1851–1882) A British naturalist and author. He took a leadin part in upbuilding the study of natural science a Cambridge, England, where in 1876 he was appointe lecturer of animal morphology. He received a gol medal from the Royal Society for his discoveries which are embodied in his *Comparative Embryology* remarkable for profound learning and clear stat ment. Perished in attempting to scale a part of Mon Blanc.

BALL, SIR ROBERT STAWELL (1840–1909) English astronomer. He embodied his observations i many popular works on astronomy; in recognition o his ability was appointed to many posts of honor, chie among them being astronomer royal of Ireland.

BALLOU (*bâ-lō'*), **WILLIAM HOSEA.** See unde EDUCATORS.

BANKS, EDGAR JAMES (1866–). America naturalist, educated at Amherst, Harvard, and th University of Breslau. For the University of Chicag he excavated the old city of Bismya in Babylonia, di covering thousands of objects dating from 4500 t 2800 B. C., including the statue of David, an earl Babylonian king, said to be the oldest of its kind i the world.

BANKS, SIR JOSEPH (1743–1820). An Englis naturalist, who was with the first Cook expeditio to study the transit of Venus in the Pacific, havin fitted out a ship at his personal expense. Being un able to attempt the second voyage, he turned his a tention to Iceland (1772) and discovered the gre geysers there. On a previous expedition to Labrad (1766) he collected a large number of plants and i sects.

BANTING, FREDERICK GRANT (1891–1941). Canadian physician, who was born at Allison, Ont and educated at the University of Toronto. Enliste in the ambulance corps in 1914, and was discharge because of wounds received at Cambrai. In 192 settled at London, Ont., as a practicing physician an demonstrator of anatomy at Western University. A the age of 30 he discovered insulin in the laborato of Prof. J. J. McLeod at Toronto, with the assistan of Dr. C. H. Best and with some help also from D J. J. Collip. This remedy, refined from an extract the pancreas of sheep, is used in diabetes, allowin sufferers to live for years in comfort. Banting w awarded the Nobel prize in medicine, which he share with his colleagues. He was Banting-Best Profess at the University of Toronto.

BARANY, ROBERT (1876–1936). Austrian sp cialist in diseases of the ear and of the brain, wh worked out a system of diagnosis of deafness. I 1914 he was awarded the Nobel Prize for medicine b cause of his study of internal surgery.

BARKLA, CHARLES GLOVER (1877– British professor of physics in succession at Liverpo King's College, London, and Edinburgh. He sp cialized in the study of X-rays and electrical ph nomena, and in 1917 won the Nobel prize for physi

BARNARD, EDWARD EMERSON (1857–1923 An American astronomer; was astronomer in Li Observatory, California, in 1887–1895; became pr fessor of astronomy in Chicago University and direct of the Yerkes Observatory. His principal discover

are the fifth satellite of Jupiter in 1892, and 16 comets, and the star having the greatest discovered motion. He was also associate editor of the *Astronomical Journal*.

BARTLETT, ROBERT ABRAM (1875–). An explorer, who was born in Newfoundland; was associated with R. E. Peary as commander of the *Roosevelt*, 1905–09; as captain of the *Karluk*, crushed in the ice in 1914, and succeeded finally in bringing 13 of the 15 survivors to Nome, Alaska; and commanded the third Croker Land expedition in 1915; and subsequently engaged in various exploring voyages. Awarded various medals and honors for heroism. Wrote *Last Voyage of the Karluk* and *The Log of Bob Bartlett*.

BATES, HENRY WALTER (1825–1892). English naturalist and explorer of Orinoco River region in South America, where he collected at least 8,000 specimens of insects unknown before to science. He remained in the tropics 11 years, wrote *The Naturalist on the Amazon*, a delightful book, and explained the protective "mimicry" whereby animals take on the colors of their surroundings and so succeed in hiding. He also made a valuable collection of coleoptera.

BATESON, WILLIAM (1861–1926). A British authority on the determination of sex in animals. He taught at Cambridge, the Royal Institution, and lectured at Yale. The Royal Society conferred the Darwin medal on him in 1904. Bateson's chief books are *Mendel's Principles of Heredity* and *Problems of Genetics*.

BAYLISS, WILLIAM MADDOCK (1866–1924). Eminent British physiologist, who spent 35 years in the exclusive study of science. With Starling he discovered the secretion or harmone which affects the pancreas and helps in the digestive process; studied infected wounds during the World War, and saved scores of lives.

BECQUEREL (*běk'rĕl*), **ANTOINE CESAR** (1788–1878). A French chemist, noted for his researches in biochemistry and electro-chemistry. He invented a process of electrotyping. From 1837 to 1878 he was a professor at the Museum of Natural History in Paris. His son, Alexander Edmond (1820–1891), investigated light, phosphorescence, and perfected an apparatus for the study of the effects of light by prolonging the interval between the exposure to the source and the effect of the light itself. A grandson, Antoine Henri (1852–1908), was codiscoverer with the Curies of radioactivity, and for this in 1903 shared the Nobel prize with Prof. Pierre Curie.

BEEBE, WILLIAM (1877–). An American naturalist, born in Brooklyn, educated at Columbia, and honorary curator of birds in the New York Zoölogical Garden. He brought the collection up to 900 species. On various expeditions he also collected rare marine animals and plants. For his *Pheasants* he was awarded the Elliott Medal, and his other picturesque works were widely read, including his *Jungle Peace, Galapagos*, and *The Arcturus Adventure*.

BEHRING (*bā'rĭng*), **EMIL VON** (1854–1917). A German bacteriologist, the "father of immunology." With a Japanese assistant, Kitasato, he proved in 1890 that an animal could be made immune to tetanus if it was innoculated with blood serum from one having the disease. He continued his research by proving the same in regard to diphtheria in 1891, and in 1892 the antitoxin for this came on the market in Berlin.

BERNOULLI (*bĕr'nōō-yē'*), **DANIEL** (1700–1782). Of a celebrated Swiss family of mathematicians, professor at St. Petersburg, and at Basle. His specialty was hydrodynamics, on which he wrote a book, and studied velocities of various liquids, the problems of propelling vessels, the measurement of time at sea, and the vibration of cords. His uncle, Jacques Bernoulli (1654–1705), determined the "elastic curve," or that of a plate with a weight applied to one end while the other remains fixed, the catenary or curve of a chain suspended at both ends. Jean Bernoulli (1667–1748), another uncle of Daniel, discovered the exponential calculus and the line of most rapid descent, with certain practical applications.

BERTHELOT (*bĕrt-lō'*), **PIERRE EUGENE MARCELLIN** (1827–1907). A French chemist. In 1878 he became president of the committee on explosives which introduced smokeless powder. His labors also led to the discovery of dyes extracted from coal tar.

BERTHOLLET (*bĕr'tō-lā*), **COUNT CLAUDE LOUIS** (1748–1822). A famous French chemist, native of Savoy, to whom we owe the discovery of the bleaching properties of chlorin, the remarkable salt called chlorate of potash, and many improvements in the manufactures. He demonstrated that ammonia is a compound of hydrogen and nitrogen.

BERTILLON (*bĕr-tē-yôn'*), **ALPHONSE** (1853–1914). A French scientist who perfected a system of identification by means of bodily measurements or anthropometry. The Bertillon system has been widely used in America by police officers.

BERZE'LIUS, JOHAN JAKOB, BARON (1779–1848). A celebrated Swedish chemist, one of the creators of modern chemistry; instituted the chemical notation by symbols based on the notion of equivalents; discovered selenium, thorium, and coerium; and shared with Davy the honor of propounding the electro-chemical theory.

BESSEL, FRIEDRICH WILHELM (1784–1846). A German astronomer who perfected many measurements in science, including the length of the pendulum, all stars up to the ninth magnitude in a certain area (—15° to +45° dec.), and the ellipticity of the earth. Modern methods of precise measurements were first attempted by him. He directed the Königsberg observatory from 1813 till his death.

BINET (*bē'nā*), **ALFRED** (1857–1911). A French psychologist and mathematician, studied law and medicine, but soon abandoned thought of either as a profession. Binet may be called the father of the measuring scales to determine intelligence. For many years he worked to devise a series of tests, eventually leading to the celebrated Binet-Simon group, finally perfected in 1909. Altogether more than 90 tests of this nature have been devised in Europe and America since the pioneer work of Binet. He also made studies in hypnotism, fatigue of the brain, and abnormal states of mind.

BLACKWELL, ELIZABETH (1821–1910). She was born in England, came to America in 1832, applied for admission to various medical schools, but was refused by all save the Medical College at Geneva, N. Y., from which she was graduated as a doctor in 1849. After additional study abroad, she founded a medical college staffed by women in New York, and later settled in general practice in England. She was also the first recognized woman M. D. in England.

BLAKE, FRANCIS G. (1887–). Professor of medicine, served on the staffs of various hospitals, after receiving an arts degree at Dartmouth and a medical degree at Harvard. Active war service, 1918–1919. Professor at Yale since 1921. Author of *Studies on Experimental Pneumonia, Studies on Measles, Treatment of Scarlet Fever with Anti-toxin*.

BLUE, RUPERT (1867–). A distinguished American sanitarian, who served in epidemics of bubonic plague in San Francisco (1903–04, 1906–07), yellow fever in New Orleans (1905), and as adviser for the United States in Europe during and since the World War. Chief of the U. S. Health Service, as surgeon-general (1912–20).

BLUMENBACH, JOHANN FRIEDRICH (1752–1840). A German naturalist and founder of the science of anthropology. He advocated the theory of the unity of the human species, which he divided into the five types—Caucasian, Mongolian, Negro, American, and Malay. He published a valuable study of 50 human crania.

BOAS, FRANZ (1858–). American anthropologist of German birth, a professor in several American institutions, and curator of ethnology (1901–05) in the American Museum of Natural History of New York. As a member of the Jesup expedition to the Pacific northwest he discovered important relationships between the culture and people there and those of north Asiatic regions. *Baffin Land, The Central Eskimo, Tsimshian Texts* are among his published works.

BODE, JOHANN ELERT (1747–1826). A German astronomer, who founded and issued 51 yearly volumes of the *Astronomical Year-books*, was a director of the Berlin Observatory from 1786 to 1825, and made 20 star maps, with a catalogue of over 17,000 stars and nebulae, the greatest number listed to that time. He revised and perfected an old theory of the relative distances of planets from the earth.

BOHR (*bōr*), **NIELS** (1885–). A Danish physicist, educated at Copenhagen and in the laboratories in England under J. J. Thomson and Sir Ernest Rutherford, and in 1920 became head of an institute

for theoretical physics at Copenhagen. He did brilliant work in explaining the nature of the stationary and active states of the atom, which had a definite effect on the explanation of X-ray and other phenomena and led to the discovery by others of the element hafnium. In 1922 he was awarded the Nobel prize for physics, in 1921 the Hughes medal of the Royal Society, of which he became a foreign member in 1926.

BORDET, JULES (1870–). A Belgian physiologist, who did important work in distinguishing microbes through sera, and developed a method for diagnosis of fevers, now widely used in locating typhoid, plague, tuberculosis, and other diseases of germ nature. He also discovered the microbe of whooping cough and showed how coagulin is made up of two parts or elements. He published a treatise on immunity acquired through infectious diseases. In 1919 he received the Nobel prize, and was made a professor at the University of Brussels.

BOYLE, ROBERT (1627–1691). A British natural philosopher; devoted his life and contributed greatly to science, especially chemistry and physics, formulating a law of physics known as Boyle's Law. This states that the volume of a gas varies inversely according to or as the pressure. Boyle also made important researches into the nature of gold and silver, the function of the air in the diffusion of sound, the expansive force of freezing water, and various problems of hydrostatics. He also zealously studied chemistry. He left money for lectures in defense of Christianity against false doctrines.

BRADLEY, JAMES (1693–1762). English astronomer, who by developing larger and improved instruments, such as an 8-ft. quadrant, led to modern scientific observations of the heavens. He explained the aberration of light, learned that the inclination of the earth's axis to the ecliptic is not constant, and so explained the precession of the equinoxes. In 1742 he succeeded Edmund Halley as astronomer royal.

BRAGG, WILLIAM HENRY (1862–). British physicist who advanced our knowledge of radio-active substances, and with his son, William Lawrence Bragg (1890–), did much to explain the arrangement of atoms and crystals by use of the X-ray spectrometer, their own invention. Jointly they won the Nobel prize in 1915.

BRAHE (*brä*h), **TYCHO** (1546–1601). A Danish astronomer; discovered a new star in Cassiopeia and the variations of the moon. He also corrected many of the earlier tables and observations. For 21 years he worked in a magnificent observatory on the island of Hveen granted him by the king of Denmark, but later he transferred his instruments to Prague where he enjoyed the patronage of Rudolph II. of Bavaria. Kepler (q. v.) coöperated with him in 1600.

BRAUN (*broun*), **ALEXANDER** (1805–1877). German botanist who made important discoveries concerning the morphology of planets and was long a foremost teacher at Freiburg, Giessen, and Berlin. He was a brother-in-law of Louis Agassiz, the celebrated Swiss-American naturalist.

BRESTED, JAMES HENRY (1865–1935). An American orientalist who occupied a chair at the University of Chicago, and in 1919 established on scientific lines a laboratory for the study of ancient civilizations. He directed several expeditions into Asia Minor and Egypt, translated some ancient inscriptions, and wrote extensively of the early life of man in the Orient.

BREWSTER, SIR DAVID (1781–1868). An eminent Scottish natural philosopher; especially distinguished for his discoveries in light, his studies in optics, and for his optical inventions, such as the kaleidoscope and the sterescope. He was one of the founders of the British Association for the Advancement of Science and was elected one of eight foreign members of the French Institute in succession to Berzelius.

BRIGGS, HENRY (1556–1630). English mathematician, who with the sanction of Napier changed the scale of logarithms so that unity was assumed to be the logarithm of the ratio of ten to one. This decimal arrangement now continues to be the one in general use. He spent many years compiling and making new tables, all of which were printed in his *Trigonometria Britannica* in 1633.

BRIGHT, RICHARD (1789–1858). A physician of Guy's Hospital, London, who discovered that certain diseased conditions of the kidneys are present in cases of dropsy. These are named Bright's disease. Bright also made important studies in tumors of the abdomin region, diseased arteries of the brain, and troubl in the central nervous system.

BRITTON, NATHANIEL LORD (1859–1934) American botanist, professor at Columbia Universit and Director of the New York Botanical Garden. H was one of the leading botanists of America, speciali ing in the flora of North America, the West Indie Paraguay, and Bolivia. With others he compiled th monumental *Illustrated Flora of the Northern Unite States and Canada, The Bahama Flora,* and *Nort American Flora.*

BROOKS, WILLIAM KEITH (1848–1908). Amer can zoölogist; born at Cleveland, Ohio; professor o zoölogy, Johns Hopkins University (1876–1908). H specialized in the study of marine animals, especiall the tunicates, crustaceans, and oysters, and hi theories profoundly influenced the investigation i biology of his age.

BROWN, ROBERT (1773–1858). A Scotch bota nist in 1801 appointed naturalist to Flinders's sur veying expedition to Australia; returned with nearl 4,000 species of plants. His great work did muc to encourage the adoption of the natural classificatio of plants according to Jussieu.

BRUCE, JAMES (1730–1794). Scottish explore and discoverer of the source of the Blue Nile, whic he thought the river known to the ancients, thoug it is smaller than the White Nile. While British con sul in Algiers he studied the ruins of that land, an later explored those at Palmyra, Baalbek, and Thebes His voluminous work, liberally illustrated, is calle *Travels to Discover the Source of the Nile in the Year 1768–73.*

BUCKLAND, FRANCIS TREVELYAN (1826–1880). An English naturalist; an authority on fis culture and an uncompromising opponent of Darwin ism. Among his books are *Fish Hatching, Curiosities of Natural History, Natural History of British Fishes.*

BUDGE, ERNEST ALFRED WALLIS (1875–1934). English archeologist and keeper of antiquitie in the British Museum, who made valuable explorations and excavations at Assuan, Ninevah, in the Sudan, and at Der in Mesopotamia. Of his publications those of immediate interest are *The Gods of Egypt, The Nile, Literature of the Ancient Egyptians.*

BUFFON (*bü'fôn*), **GEORGE LOUIS LECLERC, COMTE DE** (1707–1788). A French naturalist and philosopher. His great work is his *Natural History*, which was the first attempt to gather known facts in that department of knowledge and to present them in a readable, interesting and intelligible form. The original edition in 44 quarto volumes extended over 55 years in time of publication, the last eight appearing in 1804 after the death of Buffon. It was translated into many languages.

BUNSEN, ROBERT WILHELM (1811–1899). A German chemist. Among his many discoveries and inventions are the commercial production of magnesium, magnesium light, spectrum analysis, the electric pile, and the burner which bears his name. He also discovered that ferric oxide is an antidote to arsenic poisoning, devised a method for measuring the volume of gases, prepared magnesium in metallic form for the first time, discovered two new elements in the alkali group, and investigated the geysers in Iceland.

BURBANK, LUTHER (1849–1926). American horticulturist and originator of new varieties of plants and fruits, who was born in Lancaster, Mass., and in education went as far as the local academy. He acquired a tract of land in his home town, and there produced the celebrated Burbank potato (1872). Three years later he settled at Santa Rosa, California, where for a half century he continued to grow new varieties of plums, prunes, berries, corn, squash, peas, and a giant edible cactus good for desert cattle. Some of his show creations were the plumcot, stoneless prunes, the Shasta daisy, a giant amaryllis, and several large callas. He described his work in *Luther Burbank, His Methods and Discoveries* and in the series of descriptive catalogs called *New Creations.*

BURNHAM, FREDERICK RUSSELL (1861–). Explorer born in Minnesota, served in South Africa, where he discovered gold ornaments of great antiquity among old granite ruins, assisted Lord Roberts in the South African War, and made many explorations in Africa. Found a lake of pure carbonate of soda in Africa.

BURR, WILLIAM HUBERT (1851–1934). Civil engineer, born in Connecticut, and member of many commissions, such as that to determine the possibility of building a bridge over the North River in New York City, to report on the possibilities of deep harbor on the coast of Southern California, the Isthmian Canal Commission, the barge canal board of New York, the New York and New Jersey vehicular tunnel commission, and other projects. He was awarded first prize in the competition for a proposed memorial bridge across the Potomac at Washington.

BURROUGHS, JOHN (1837–1921). American naturalist and author, born in the state of New York, where he lived mainly all his life, except for nine years in Washington, D. C. As the successor to H. D. Thoreau, he wrote many papers on outdoor life, full of keen and delightful observations. *Wake-Robin, Birds and Poets, Locusts and Wild Honey*, and *Ways of Nature* are some of his best volumes.

BURTON, RICHARD FRANCIS (1821–1890). English linguist, soldier, and explorer, who was the first of his nation to enter the sacred city of Mecca, to which he made a pilgrimage in disguise after serving in the Indian army under Napier; the first to explore Somaliland, and to discover the great lakes of central Africa. By profound study he acquired Arabic, Hindustani, Persian, and several minor Indian dialects. In some of his expeditions he was accompanied by Capt. J. H. Speke (q. v.). Burton also made the standard Translation of the *Arabian Nights* and a fine rendering of Camoens's *Lusiads*.

BYRD, RICHARD EVELYN (1888–). American explorer, born in Virginia, educated at Annapolis. He made an expedition to Greenland with Macmillan in 1925, flew to the North Pole and back on May 9, 1926, from Spitsbergen, and flew from near New York to France in 1927, but his plane was wrecked in making a forced landing off the coast. In 1928–30 he made an expedition to the Antarctic regions, including a flight to the Pole and back to his base, making also valuable observations and locating land not before charted.

CABOT, JOHN (1450–1498). An Italian navigator, who was born in Genoa, traded with caravans at Mecca, and conceived the idea of reaching Asia by sailing westward. He moved to Bristol, England, and finally set out from there and reached the coast of what is now Cape Breton Island in June 1497. The next year he set out to reach Japan or Cipangu as he called it, but he was driven north to Greenland, and finally to the coast where he had been the previous season, going as far south as the 38th parallel. His son Sebastian (c. 1476–1557) in 1526 discovered the Rio de la Plata in South America, and spent three years looking for silver reported to him by three Spaniards left there by an expedition of 1515.

CAILLETET (*kī-ĕ-tā'*), **LOUIS PAUL** (1832–1913). A French worker in iron who succeeded in liquifying oxygen on Dec. 2, 1877, and hydrogen, nitrogen, and air a little later. The Swiss chemist, Pictet, independently did the same just before or just after Cailletet. The latter also found a way for measuring the height of an airplane.

CAJORI (*cà-yō'rē*), **FLORIAN** (1859–1930). An American mathematician, born in Switzerland, and educated at the University of Wisconsin and Johns Hopkins. After teaching three years at Tulane University (1885–88), he was a professor at Colorado College till 1918 and then at the University of California. He wrote valuable histories of mathematics, physics, the slide rule, and of mathematical notations.

CANDOLLE, AUGUSTIN PYRAME DE (1778–1841). An eminent Swiss botanist; assisted Cuvier and Lamarck; classification of plants was his contribution to botanical science. By request of the government he made a botanical survey of the entire country.

CANNON, ANNIE JUMP (1863–). An American astronomer, educated at Wellesley College, did special work in astronomy at Radcliffe College, and became connected with the Harvard Observatory in 1897. She made observations of variable stars of long period, photographed large portions of the heavens, and discovered 200 variable stars, 4 new stars, and phenomena of bright lines and variable spectra of many stars. Her catalog of 225,000 stellar spectra fills nine quarto volumes.

CARDAN (*kär'dăn*), **JEROME** (1501–1576). Italian mathematician and astrologer, besides interesting works on the origin of animals and plants, and on astrology, in his work *Concerning the Subtlety of Nature* advanced a method for teaching the blind to read through the sense of touch, and the deaf to talk by means of signs.

CARNOT (*kär-nō*), **NICHOLAS LEONHARD SADI** (1796–1832). Eminent French physicist who made important studies in the nature of heat and methods of finding its mechanical equivalent. Some of his discoveries are fundamental in thermodynamics, especially his principle that the efficiency of a reversible engine depends on the temperature. His important researches were printed in 1824, but many remain in manuscript. He died of cholera.

CARREL (*kà'rel*), **ALEXIS** (1873–). French American physician, for many years a resident of France, where he was educated at the University of Lyons, came to America in 1905 and became connected with the Rockefeller Institute of Medical Research in 1906. In 1912 he won the Nobel prize in science for successfully suturing blood vessels and proving that organs may be transplanted in the human body. He served during the World War in medical military service in France. Dr. Carrel is the author of many notable monographs on surgical methods. For a time after his arrival in the United States he taught at McGill and Chicago Universities.

CARTER, HOWARD (1873–1939). Egyptologist born in Norfolk, England, discoverer of various tombs of great historical interest in Egypt; began his professional life as a painter. He was trained as an explorer under Lord Amherst, Professors Griffith, Flinders–Petrie, and Naville, and Sir Gaston Maspero. He was assistant to Professor Petrie in the Amherst expedition of Tel-el-Amarna in 1892; inspector general of antiquities for the Egyptian government, reorganizing the antiquities administration of Upper Egypt. Acting for the Egyptian government. he discovered many tombs, and others as assistant to the Earl of Carnarvon. In 1916 they began an elaborate series of investigations, which led in 1923 to the discovery of the tomb of Tutankamun, of greatest historical and antiquarian value.

CAVENDISH, HENRY (1731–1810). An English natural philosopher and chemist; the first to analyze the air of the atmosphere, determine the mean density of the earth, discover the composition of water, and ascertain the properties of hydrogen; the founder of pneumatic chemistry. Cavendish spent his whole life in study and experiments, being somewhat of a recluse. All his scientific papers were published, some of them for the first time, in 1921. In the course of his work he anticipated something like Ohm's law, the identification of argon, and the properties of arsenic acid as stated a little later by Scheele.

CESCINSKY (*sĕs-sĭn'skĭ*), **HERBERT** (1875–). English authority on furniture, specializing in the restoration of old buildings. He was consulted on many projects, lectured in European and American art galleries, and wrote important works on old furniture, clocks, Chinese styles, and woodwork.

CHAMBERLAIN, THOMAS CHROWDER (1843–1928). American geologist, who served on several state surveys, and was professor at the University of Chicago (1892–1919), having served also as president of the University of Wisconsin (1887–92). He specialized in the study of glaciers, the origin of comets and meteorites, and the development of the earth and of planetoids and satellites.

CHAMPOLLION (*shŏn-pōl-yŏn'*), **JEAN FRANCOIS** (1790–1832). French professor of history, and later of Egyptian antiquities in the College of France. He found a method of deciphering ancient monuments of Egypt, with Rosellini conducted an expedition to the Nile, and is now generally recognized as the father of Egyptology.

CHAPMAN, FRANK M. (1864–). American authority on birds and one of the originators of the use of the camera in bird study in nature; curator of ornithology, American Museum of Natural History, where he arranged the bird groups in habitat style according to nature. He also studied birds in the Andes Mountains.

CHEVREUL (*chĕv-rūl*), **MICHEL EUGENE** (1786–1889). French chemist, known for important discoveries which led to improvement in the making of soap, having found the composition of stearin and olein and isolated certain fats and oils. As director of the Gobelins tapestry works, he made fruitful studies in colors and contrasts in fabrics. On the occasion of his centenary, Harvard and other universities conferred degrees upon him.

CHRISTIAN, EUGENE (1860–). American dietitian and author of numerous books on the regulation and selection of foods. After many years in commercial pursuits, he settled in New York City in 1900, and developed a system of diet. Some of his works are *Uncooked Foods, Encyclopedia of Diet, How to Live 100 Years, 12 Lessons on Weight Control and the Basis of Health.*

CLARK, ALVIN GRAHAM (1832–1897). American astronomer and instrument maker, son of Alvin Clark, who founded the business of making telescope lenses. Many of the great lenses were made by this firm, including those for the U. S. Naval Observatory, the Lick, and the Yerkes, the last being 40 inches in diameter, for years the largest of its kind in the world. He discovered a number of stars.

CLARK, WILLIAM (1770–1838). American explorer, the leader of the first expedition within the United States to cross the continent. In 1803–06, with Meriwether Lewis he made the round trip from St. Louis to the Pacific. He served as governor of the territory of Missouri (1813–20), and as commissioner of Indian affairs at St. Louis (1822–38).

CLAUSIUS, RUDOLF JULIUS EMMANUEL (1822–1888). German mathematical physicist, who held professorships in turn at Zurich, Würzburg and Bonn. Taking advantage of the theory of Carnot, he stated a "second law" that "heat cannot pass from a colder to a hotter body," and ideas later effectively used in the development of steam engines. He made important researches in gases and in electrolysis, some of which were later confirmed by Arrhenius.

COLUMBUS, CHRISTOPHER (c. 1446 or 1451–1506). His name in Spanish is Cristobal Colón. He was apparently born in Genoa, but the date is uncertain. His son, Ferdinand, wrote a *Life of Columbus*, which tells us he was educated at Pavia in the physical sciences, especially in geography and navigation. For a time he followed his father's trade of weaving at Genoa and Savona (1476). He visited at Chios (1474–75), made a voyage to England (1476), when his fleet of four ships was attacked by a privateer, and he may have gone to Iceland early in 1577. On his return to Portugal (about 1478), he married a daughter of the celebrated navigator, Bartholomew Perestrello, whose maps and charts later gave him great aid. Some say he was a maker of charts and maps at Porto Santo, where his father-in-law was the governor (about 1480), and one account tells us that he corresponded with Toscanelli, the great Florentine scientist, about the possibility of reaching India by going westward instead of south and east around the Cape now called Good Hope. Certain evidence of floating objects from the west had indicated possibility of land. During service in Portugal while John II. reigned, Columbus appealed for help; a council reported adversely, but it is said a secret expedition was sent west to try the plans of Columbus. This soon turned back, and Columbus, finding it out, left for Spain (1484). He took with him Diego, the only son of his wife, now dead. Later he married again and had several children. The Duke of Medina Celi favored the project, but lacked the means to carry it out, and he secured an audience with Queen Isabella for Columbus. She and her husband, Ferdinand of Aragon, however, were engaged in wars with the Moors, and the plan was delayed, final decision being made at last that the plan was impracticable. Next he went to Salamanca, where as everywhere he made many friends, who, however, failed to gain enough financial backing for the enterprise. In 1488 he was again invited by the king of Portugal to return, but nothing came of the plans for a westward voyage till, once more in Spain, he began a journey toward the court of France for aid. When he reached a point near Granada, messengers from Isabella recalled him, and on April 17, 1492, agreement was made to equip the expedition. Two private individuals of Palos, however, in the end provided much of the money necessary. In three ships the expedition set sail from Palos on Aug. 3, 1492, and, after threatened mutiny and many false reports of land, they struck an island in the Caribbean Sea early on Oct. 12, 1492. During this first expedition, several other lands were touched upon, including what is now called Cuba and Santo Domingo. The island first sighted was San Salvador or Watling. Whether Columbus really knew that a continent lay to the west has been disputed; some claim he died thinking he had reached the east. He arrived at Palos again on March 15, 1493, and every possible honor was showered upon him in Spain. In the following September, the second voyage began, with three great ships, fourteen smaller ones, and 1,500 men. On th first voyage there had been 88, some of whom wer left to found a colony at Hispaniola (Santo Domingo) He explored the Cuban coast, Porto Rico, Jamaic and skirted several other islands, and lay ill at Isabell for five months, worn out by toil and vigils. On th third voyage in 1498 he discovered Trinidad an skirted the coast of South America, and later visite the colony planted at Santo Domingo. Much troubl with the natives had developed in his absence. Ad miral Boabdilla was sent to relieve him, and Columbu went back to Spain in chains, but he was released an again rose in favor. In Nov. 1504 he set out on hi last voyage to the New World, where he again tried t plant settlements. Returning home desperately ill, h fell for a time into neglect, which was compensated fo by a great state funeral at Valladolid where he died i 1506. His remains were sent to his beloved Seville in 1542 removed to Santo Domingo, in 1796 trans ferred to Havana, when the French took possession o Haiti, and again after the Spanish-American War re moved to Seville. Thus in death he completed a fourt voyage to the world he had discovered. Whether h actually touched the coast of continental United State is doubtful, but he skirted what is now Honduras Though he was actuated partly by dreams of gold colonization, and building up an estate, his mai motives were scientific, patriotic, and religious.

COMPTON, ARTHUR HOLLY (1892–). Amer ican professor of physics, awarded the Nobel prize i 1927, for his investigations of X-rays; also contributed papers on the earth's rotation, and studied the specifi heat of solids. He was educated at the College o Wooster, Ohio, at Princeton, and Cambridge Univer sity, England, and taught at Minnesota, Washingto University of St. Louis and became a professor at th University of Chicago in 1923.

COMSTOCK, JOHN HENRY (1849–1931). Amer ican entomologist, for many years professor at Cornel University, retired in 1914. By his lectures, papers and books he contributed notably to the advance of ou knowledge of insects, birds, and butterflies. His wife Anna Botsford Comstock, assisted him especially i writing *A Manual on the Study of Insects* and *How to Know the Butterflies.*

COOK, JAMES (1728–1779). An English naval captain and explorer, who charted the St. Lawrence River, the coasts of Newfoundland, New Zealand, and Australia. He first discovered or rediscovered several islands in the Pacific including the Sandwich group, New Caledonia, and the Isle of Pines. On his third voyage around the world, he aimed to discover a passage from the Pacific through the Arctic to the coast of Greenland. Stopping at Hawaii he was killed by hostile natives. His work is described in his *Three Voyages Round the World.*

COOPER, ASTLEY PASTON (1768–1841). English surgeon at Guy's Hospital and professor at the Royal College of Surgeons, of which he became president (1827–36). His greatest accomplishments are the attempt to tie the carotid artery, and the tying of the abdominal aorta for aneurism. He was created a baronet in 1820.

COPE, EDWARD DRINKER (1840–1897). American naturalist; born in Philadelphia. His investigations of the ichthyology and herpetology of North America and his contributions to the history of extinct vertebrates laid the foundation for the modern classification of North American fishes, amphibians, and reptiles.

COPERNICUS (KOPPERNIGK), NICHOLAS (1473–1543). German astronomer; father of modern astronomy; disproved the Ptolemaic theory. In his great work, *The Revolution of the Celestial Orbs*, the first copy of which was handed to him on the day of his death, he demonstrated that the sun is the center of the system. The part of the work involving the use of trigonometric tables had been issued in 1542 by his favorite pupil, G. J. Rheticus. Discarding ancient theories that the earth is the center of our universe, Copernicus advanced the theory that the sun is stationary and the planets revolve around it. He explained the changes in seasons, the precession of the equinoxes, and other phenomena, but it remained for later astronomers like Kepler, Galileo, and Newton to account for certain variations, and to place modern astronomy on a definite scientific basis.

CORTEZ, HERNANDO. See DICTIONARY OF HISTORY.

COUES, ELLIOTT (1842–1899). An American ornithologist. He was connected with the Smithsonian

Institution; author of the well-known *Key to North American Birds*, which applied to zoölogy the method already in use for classifications in botany. He did important work on the reports of the Lewis and Clark and the Zebulon Pike explorations of the northwest and the Mississippi regions. His *Fur-Bearing Animals* (1877) is still a standard text for classification and identification of North American species.

COULOMB (*kōō lôm*), **CHARLES AUGUSTIN** (1736–1806). A French electrician whose work laid the foundation for the later mathematical theory of electricity of Poisson. His important work was in the study of electric discharges and verified the law of the inverse square, which Cavendish years before had left in his unpublished manuscripts. His name was given to the unit of measurement of electric quantity. Memoires of his researches appeared successively between 1785 and 1789.

COULTER, JOHN MERLE (1851–1928). American authority on the plants of the Rocky Mountain region and of Texas, who was born of missionary parents in China, educated in Indiana, was professor at Wabash College, president of the University of Indiana (1891–93) and of Lake Forest College (1893–96), and then head of the department of botany, University of Chicago to 1925. He organized graduate courses in botany which were taken by many students now famous botanists.

COURTOIS (*kōōr-twâ'*), **BERNARD** (1777–1838). French chemist who with Séguin found the alkaloids of opium and discovered iodine in the liquor prepared from leaching burnt seaweed. The latter, as developed and named by Gay-Lussac, has had a profound influence on both the arts and on medicine.

CROOKES, WILLIAM (1832–1919). English chemist who for many years in his own laboratory conducted research into rare earth elements, radiation, and vacuum tubes. He was knighted in 1897. Among his discoveries and inventions are the element thallium (1861), the radiometer, the theory of radiant matter, and developed older models into the efficient Crookes tube, which has made the study and use of radium possible. Among his practical inventions was a glass which would shield the eyes of workers from harmful rays sent off from molten glass.

CURIE, PIERRE (1859–1906) and **MARIE** (1867–1934). French scientists, husband and wife, who jointly discovered radium and fixed the atomic weight accurately (1898) after infinite patience and elaborate fractionation of pitchblande rock. Madame Curie was mainly responsible for the discovery of the element polonium. She was born Marie Sklodowska at Warsaw, the daughter of a doctor. She married Professor Curie in 1895. He was instantly killed when run over by a dray in Paris on April 19, 1906. Madame Curie succeeded him as professor at the University of Paris and afterward as director of the radium institute established for her. In 1921, on a visit to the United States, President Harding presented to her one gramme of radium paid for by public subscription. With Henri Becquerel, who had discovered radio-action in uranium, the Curies were awarded the Nobel prize in 1903, and Madame Curie was given the entire award for chemistry in 1911, the first woman to win this and to that date the first person to share in two distinct Nobel awards. She received many other awards, medals, and honors.

CURTISS, GLENN HAMMOND (1878–1930). American aviator and inventor, who constructed a motorcycle which in 1906 went a mile in 26⅖ seconds at Ormond Beach, Florida, and who won the *Scientific American* cup, the international cup and the N. Y. *World's* award of $10,000 for a flight from Albany to New York in a plane of the flier's own construction. He made the first hydro-airplane (1911), and the first flying boat (1912). See also under Aviation.

CUSHING, FRANK HAMILTON (1857–1900). American student of Indian remains who lived for some time among the Zuni Indians, and wrote valuable works on their lore and history. He also discovered remains of ancient peoples on the Florida coast (1896).

CUSHING, HARVEY (1869–1939). American surgeon, educated at Yale, the Harvard Medical School, and Johns Hopkins where he became a professor, and in 1911 went to Harvard. His work and papers on surgery of the brain, especially under local anesthesia, on the pituitary body, and on the conditions of blood pressure established an international fame. His *Life of Sir William Osler* (1925) won the Pulitzer prize for biography.

CUVIER (*cü-vyā'*), **GEORGES LEOPOLD CRETIEN FREDERIC DAGOBERT, BARON** (1769–1832). French naturalist recognized as the founder of modern comparative anatomy; educated at Stuttgart, he was professor in the College of France (1799–1814), and held various offices in the university and state. He made minute studies in the anatomy of the mollusca, fishes, fossil mammals and reptiles, specializing also in osteology. He laid foundations for the later study of paleontology. Natural history became a science under his leadership. Cuvier published several learned works on these subjects.

DALTON, JOHN (1766–1844). An English chemist and natural philosopher; wrote *New System of Chemical Philosophy* (1808–1810). He distinguished himself in the development of the atomic theory, which revolutionized chemistry and contributed more valuable results than any other idea introduced into the study of physics.

DANA, JAMES DWIGHT (1813–1895). An American scientist; born in Utica, N. Y. His researches in geology made him famous; wrote *The System of Mineralogy*, which gained an international reputation; *Manual of Mineralogy, Manual of Geology, Corals and Coral Islands, Text-Book of Geology*, and *The Geological Story Briefly Told.*

DARWIN, CHARLES ROBERT (1809–1882). English naturalist, the grandson of Erasmus Darwin (q. v.), educated at Shrewsbury School and Cambridge. He had spent a time at Edinburg preparing for medicine, the profession of his father and grandfather, and at Cambridge thought some of becoming a clergyman. His associates turned him toward science. From 1831 to 1836 he was on the voyage of the *Beagle* in various parts of the Atlantic and Pacific Oceans. This voyage determined his life interest in human and animal changes, especially as modified by environment. His *Voyage of the Beagle* and *Journal of a Naturalist* bear on this phase of his studies. By this time he had acquired habits of elaborate and painstaking research. Various papers were published at intervals, and in 1858 his theory of variations in species was well formulated, when he received a report from A. R. Wallace of very similar conclusions. Both men share in the honor of the theory. In 1859 he issued his great work *On the Origin of Species by Natural Selection.* Much of his subsequent life was taken up with collecting further illustrations of his theories. Darwin's idea of "the survival of the fittest,"—or that only the best types and specimens continue to survive, —raised a great storm, and led to what was later called Darwinism. The fact is, Darwin was not so much interested in evolution as in the causes for a possible change in species. Later in his *Descent of Man* he sought to apply his theory of natural selection to the human race. His idea was that man might have come from an ancestor related to the ancestors of the man-like apes,—not that man descended from apes and monkeys, as the popular notion has been. His work laid the basis for subsequent investigations of Mendel, Lamarck, De Vries, and other recent scientists.

DARWIN, ERASMUS (1731–1802). English physician and naturalist; grandfather of Charles Darwin. His *Zoönomia*, a prose medical work, received wide notice. It contained many novel and startling ideas, and Samuel Butler says that Paley's *Natural Theology* was written to refute these ideas. Darwin's poem, *Botanic Garden*, developed his idea of the loves of the plants. He suggested that all animals that have warm blood might have come from a primal offshoot of the "First Cause," endowed with ability to add and change organic parts. This theory agrees more with the hypotheses of Lamarck than with those of his celebrated grandson, Charles Darwin.

DAVENPORT, CHARLES BENEDICT (1866–). An American zoölogist, who was educated at the Brooklyn Polytechnic Institute and at Harvard, was a professor at the University of Chicago (1899–1904), and then became director of the laboratory at Cold Spring Harbor, New York, maintained by the Carnegie Institution. He made elaborate investigations of the laws of heredity in animals and man, such as the color of the hair, eye, and skin and temperaments of man, and the feathers, general forms, and reactions of chickens. Some of his works are *Statistical Methods in Biological Variations, Inheritance in Poultry, Eugenics, Defects Found in Drafted Men.*

DAVEY, JOHN (1846–1923). An American tree surgeon who was born in England, where he learned landscape architecture at Torquay (1866–72), and settled finally at Kent, Ohio. He instituted a scientific

method of preserving trees (1890), and continued to develop this until his death. He wrote *The Tree Doctor, A New Era in Tree Growing*, and other valuable books, and was often called upon to preserve ornamental and historic trees.

DAVIS or **DAVYS, JOHN** (1550?–1605). English navigator who made voyages to Greenland trying to find a north-west passage (1785), and again a year or two later, when he pushed into the straits that now bear his name, coasting along west Greenland to 73° N. He seems to have commanded a ship in the attack on the Spanish Armada (1588) and three years later set out to find a way to reach "the back parts of America" around the Strait of Magellan, at which time he discovered the Falkland Islands. He sailed with Raleigh in 1596–97 to the Azores, and three times toward or to the East Indies. On the last return voyage he was killed off Sumatra by Japanese pirates.

DAVY, SIR HUMPHRY (1778–1829). English chemist and natural philosopher; born at Penzance, in Cornwall. The publication of his experiments in science brought him fame. He discovered the effect of nitrous oxid (laughing gas), and the metals sodium, barium, calcium, and magnesium. His work, *On Some Chemical Agencies of Electricity*, was sufficient to establish his reputation as a chemist. He is also remembered as the inventor of the safety-lamp known by his name.

DAWSON, JOHN WILLIAM (1820–1899). Canadian geologist and educator who made a reputation by his researches in the coal-bearing deposits of Canada and the discovery of the remains of an "air-breathing" reptile, first noted of its type. From 1855 to 1893 he was principal and professor of geology at McGill University. He was knighted in 1884. His son, George Mercer Dawson (1849–1901), acted as one of the Bering Sea commissioners in 1891, made an expedition for the government into the Yukon in 1887, where Dawson City was named for him, and wrote many papers on the geology and glaciers of northwestern Canada.

DE MORGAN, AUGUSTUS (1806–1871). An eminent English mathematician; wrote treatises on arithmetic, algebra, trigonometry, and differential and integral calculus. He was author of several works on logic, in which he tried to reconcile this subject with mathematics. He was professor of mathematics for many years at University College, London. William Frend De Morgan, the celebrated English novelist, was his son.

DERCUM, FRANCIS X. (1856–1931). American authority on mental and nervous diseases, who was born in Philadelphia and educated at the University of Pennsylvania, and from 1892 to 1925 was a professor at the Jefferson Medical College. Decorated a chevalier of the Legion of Honor of France. First described the disease now called Dercum's disease (*adiposis dolorosa*). Author of *Rest, Suggestion, and other Therapeutic Measures in Nervous and Mental Diseases, The Biology of the Internal Secretions*, and *The Physiology of Mind*.

DEVRIES (*dĕ-vrēēs'*), **HUGO** (1848–1935). A Dutch botanist who first stated the mutation theory of the origin of species. Instead of observing and interpreting natural specimens, he first noted certain exceptions growing among regular forms of Oenothera or the evening primrose, which had been introduced from America into Holland. He produced many new and striking variations through cultivation and mutation, quite distinct from the natural selection method of Darwin. New species and varieties suddenly appear through sudden change or mutation. His books, *The Mutation Theory* (1901) and *Plant Breeding* (1907) explain his own methods.

DEWAR (*dū'er*), **JAMES** (1842–1923). British chemist and physicist, who was educated at Edinburgh, and served as professor at Cambridge and the Royal Institution of London. He won many medals and honors, including knighthood in 1904. Though his work covers a large range, he is best known for his experiments in liquids at low temperature, his successful liquefaction of hydrogen (1898), and solidification of this (1899), and the use of vacuum-jacketed bottles to preserve liquids—a principle now widely used in thermos bottles and the like.

DICK, GEORGE FREDERICK (1881–), and **GLADYS HENRY** (1881–). American physicians who developed the Dick test for detection of immunity to scarlet fever. Dr. G. F. Dick was born in Indiana and graduated from Rush Medical College, Chicago, where he became a professor in 1918. Gladys Henr Dick was born in Nebraska, educated at the stat university, and received the M. D. at Johns Hopkin She became a fellow of McCormick Institute, Chicag in 1914. They specialized in the study of infectiou diseases.

DICKSON, JAMES DOUGLAS HAMILTON (1849). British physicist who worked with Lord Kelvi in determining the relation between the electrostati and the electromagnetic unit of electricity, assiste in the laying of the French Atlantic cable (1869) and in perfecting Lord Kelvin's siphon recorder.

DIOPHANTUS (*dī-ŏ-fān'tŭs*) (fl. c. 375). A Gree mathematician of Alexandria; called the father o algebra; wrote the *Arithmetica*, of which only 6 book now survive, a treatise of *Polygonal Numbers*, an perhaps one on "Porisms," some interesting problem on the relations among numbers stated in terms o algebra.

DIOSCORIDES (*dī-ŏs-kŏ'rĭ-dēz*), **PEDANIOS** (fl. c 60). A Greek physician who served in the arm under Nero. He compiled a *Materia Medica* in whic the curative properties of several hundred plants ar noted; he also discussed the use of animals in die and medicine. This work held its immense popularit for nearly 1,500 years.

DRAPER, JOHN WILLIAM (1811–1882). Ameri can scientist, who was born in England, educated a the University of Pennsylvania, and taught at Nev York University from 1839 to 1881, acting as presi dent also of the medical school (1850–1873). He im proved the photographic process of Daguerre and wa the first to use light in taking pictures (1839). O his several literary works, *Contributions to Chemistr* and *History of the Conflict between Science and Re ligion* are now best known.

DU CHAILLU (*dū shā'yŭ*), **PAUL BELLON** (1835–1903). An American explorer who visite Africa for the Philadelphia Academy of Sciences. H saw many anthropoid apes, secured the first specime of a gorilla brought from there, and located in the in terior a race of pygmies or little men of which tradi tion for centuries had borne record. He spent fou years in Africa on his first visit (1855–59), returnin again to confirm his early discoveries (1863–65) Some of his books are *The Gorilla Country, The Coun try of the Dwarfs*, and a *Journey to Ashango Lan* (1867), which aroused some doubt and unfavorabl comment.

DUMAS, JEAN BAPTISTE ANDRE (1800–1884) One of the leaders in chemical theory and experimen in the 19th century. He wrote distinguished paper on the atomic theory (1826), on the theory tha hydrogen in certain compounds may be replaced by similar amount of a haloid element without muc change, on certain methods of quantitative analysis and on sulphuric ether. He held several politica offices.

DUNN, GANO (1870–). American electrica engineer and authority on power transmission, presiden of the J. G. White Company, New York, 1913. H has served on many boards and commissions, nationa and international, and was designated chairman of th National Research Council in 1923.

DURHAM, HENRY WELLES (1874–). Civi and sanitary engineer, who was born in Chicago an educated at Columbia, and who served on the Nicara guan Canal Survey (1898–1900), and was in charg of all municipal improvements at Panama (1904–07) and of paving and sanitation in Nicaragua since 1924 He served in forest and sanitary operations in Franc during the World War. Author of books on stree paving and sanitation in Panama.

EHRLICH, PAUL (1854–1915). Eminent au thority on the making of serums, who was born in Silesia, received his M. D. in 1878, and in 1890 be came a professor in Berlin. In 1896 he became at tached to the Royal Institute of Serum Research a Steglitz, which as director he transferred to Frank fort three years later. In 1908 he received half o the Nobel prize in medicine for that year. Though he perfected ways for making and propagating se rums, his greatest discovery was an arsenical prepara tion now called salvarsan (Ehrlich 606) and neosal varsan (Ehrlich 914), now valuable in the treatmen of blood diseases.

EINSTEIN (*īn'stīn*), **ALBERT** (1879–). A German-Swiss physicist, the formulator of the theory of relativity, was born of Jewish parents in Germany

For years he was professor in the technical institute at Zurich, but returned to Germany about the time of the World War, and was a professor in the Kaiser Wilhelm Academy of Research. He refused to sign the manifesto of German men of science denying responsibility of Germans for the war; and afterwards he eagerly championed the cause of the Republic. His theories of relativity were first announced in 1905 and extended in 1915. Certain astronomical tests and observations of total eclipses of the sun by many are said to confirm the main essentials of his theory. He also developed some of the theories of Planck, and formulated the "light-quantum" hypothesis, which states that radiation if prolonged has a quantum-like structure.

EINTHOVEN, WILLEM (1860–1927). A Dutch physiologist who won the Nobel prize for medicine in 1924 for his use of the apparatus for taking electrocardiograms. He also applied the string-galvanometer so as to record the electrical phenomena connected with the human heart.

ENCKE (*en'ke*), **JOHANN FRANZ** (1791–1865). A German astronomer; calculated the orbit of the comet observed by Mechain, Miss Herschel, and Pons, predicted its return, and detected a gradual acceleration of movement ascribed by him to the presence of a resisting medium. The comet is now known as Encke's comet. He also investigated the comet of 1680, properly calculated the return of the comet of 1812 in 71 years, and wrote on the transits of Venus of 1761 and 1769.

ERASISTRATUS (*ĕr-ā-sĭs'trā-tŭs*) (fl. 300 B. C.). Greek physician, who formed a school of anatomy at Alexandria after living for a time at the court of Nicanor Seleucus, king of Syria. He traced the nerves to the brain, distinguished sensory from motor nerves, studied the bile, spleen, liver, and named the trachea.

ERATOSTHENES (*ĕr-ā-tos'thê-nēz*), (c. 275–195 B. C.). A Greek scientist and author who was born at Cyrene and acted as librarian at Alexandria. He wrote on mathematics, geography, and history of the theaters. His *Geographica* reveals that he knew the earth is round and that the circumference is about 25,000 miles. Some of his methods resemble closely those in use today.

ESPY, JAMES POLLARD (1785–1860). A meteorologist; born in Pennsylvania; did notable work in investigating the causes of storms, and in 1841 published *The Philosophy of Storms;* was appointed to the Washington Observatory, where he carried on experiments in the cooling of gases and atmospheric expansion. It was through Espy that the present United States Weather Bureau became a possibility.

EUCLID (*ū'klĭd*) (fl. 300 B. C.). The most famous of the Greek geometricians. He lived at Alexandria in the time of Ptolemy I. (306–283 B. C.). The Greeks called him the "Author of the Elements." His name is even now synonymous with elementary geometry. His *Elements* was known to the Arabs, having been translated in the time of Harun-al-Raschid. It was translated from the Arabic into Latin by Adelard of Bath about 1120, and this translation was printed in Venice in 1482. This was rendered into English by Billingsley in 1570. Euclid's other words are *Data, Phenomena, Optics, Reflections,* and *Division of the Scale.*

EULER (*oĭ'lĕr*), **LEONHARD** (1707–1783). Swiss mathematician, who was born in Basle and studied theology, languages, and medicine. He was at the court of Catherine I. of Russia (1727–41), and at that of Frederick the Great (1741–66), and again in Russia. Much of his later work was done under the handicap of virtual blindness. He developed the theory of equations, treated trigonometry much as it is now, wrote a calculus, and wrote works on lunar motions and on optics, the last in three volumes (1771).

EUSTACHIO (*ay-oos-tah'ke-o*), **BARTOLOMMEO** (about 1500–about 1574). An Italian physician and anatomist. He devoted himself to medical science and in particular to anatomy, which he much enriched by his researches. Among his discoveries were the Eustachian tube of the ear and the Eustachian valve of the heart.

EVANS, ARTHUR JOHN (1851–). English archeologist and keeper of the Ashmolean Museum at Oxford from 1884 to 1908. He made valuable studies of ancient civilizations in Lapland and Finland, the Balkan states, and in the island of Crete. He found remains of early Greek life in Crete, including the pre-Phoenician script and the palace at Knossos. Evans was knighted in 1911.

EWING, JAMES ALFRED (1855–1935). Scottish physicist, who was professor in turn at Tokyo, Dundee, Cambridge, and the University of Edinburgh, of which he became principal and vice chancellor in 1916. He made important discoveries in the magnetic properties of metals and invented several pieces of apparatus for testing them, including the permeability bridge which has been of great value in testing iron and steel used in making electrical apparatus.

FAHRENHEIT (*far'en-hīte*), **GABRIEL DANIEL** (1686–1736). A distinguished German physicist and instrument-maker; improved the accuracy of thermometers by substituting mercury for alcohol; devised the graduated scale for thermometers; discovered the fixed boiling point of other liquids than water, and that the boiling point varies with change in atmospheric pressure.

FALLOPIUS, GABRIELLO (1523–1562). An Italian anatomist who left the priesthood to study medicine at Ferrara and later to act as a professor at Pisa and Padua. He and Vesalius cooperated in some studies. Among his discoveries were certain nerves in the head, the sphenoid sinus, the ovarian tubes, and certain facts of the human embryo.

FARADAY (*făr'ă-dā*), **MICHAEL** (1791–1867). Eminent English chemist and electrician, who began mature life as a bookbinder, and later acted as assistant of Humphry Davy of the Royal Institution, whom he succeeded in 1825. His lectures were models of clear and interesting exposition. In chemistry he discovered two new carbon chlorides, succeeded in liquefying several gases, and perfected laboratory methods. In electricity he discovered a way to produce a continuous rotation of magnets and wires around each other; the induction of electric currents; the identity of electricity no matter how produced; and that different substances act differently in the matter of induction of the electric current. After four years of rest (1841–45), he showed the effects of magnetism on polarized light, and the phenomena of diamagnetism. All his researches had more or less practical effect on development of electrical apparatus.

FIALA, ANTHONY (1869–). American explorer who accompanied the Baldwin-Ziegler Polar Expedition (1901–02), and acted as commanding officer of the Ziegler Expedition (1903–05), reaching 82° 4′ North. He accompanied Theodore Roosevelt in the exploration of the wilderness of Brazil (1913–14), and served in the Mexican border service and in the World War. In early days Fiala was a lithographer and photo-engraver.

FISHER, EMIL (1852–1919). German organic chemist whose researches in the purine and the sugar group of elements have had far-reaching effects on modern chemical methods. He made minute and elaborate researches into the various carbohydrates, defining glucoses, fructoses, and many other forms of sugar. These he followed by experiments in fermentation and finally in proteins. During the World War he was active in producing ammonia, nitrate acid, glycerine, and substitutes for important war chemicals.

FLAMMARION (*flă-măr'rē-ŏn*), **NICOLAS CAMILLE** (1842–1925). French astronomer, noted for his attempts to make science attractive to the general public; educated in theology, but at 16 produced a voluminous work, which he used in part in a later book. After acting as a computer in the Paris Observatory, he settled on an estate given him by a friend and spent the rest of his life in observation and research. He discovered several double stars, made numerous maps of Mars, edited at different times a number of journals, and late in life turned his attention to psychic study. *Popular Astronomy, The Imaginary and the Real World, Celestial Marvels* are some of his books.

FLAMSTEED, JOHN (1646–1719). English astronomer, educated at Cambridge, and made many observations beginning in 1689, some of which were issued by others without his consent, especially the *Historica coelestis* by the great Halley in 1712. The complete edition was issued in three folio volumes in 1725. He made the first notable catalog of stars and compiled data of great service to later astronomers.

FLEMING, JOHN AMBROSE (1849–). An English physicist, who was a lecturer at Cambridge and then professor of electrical engineering at University College, London (1885–1926). As advisor to the Edison and other companies, he did much to apply

theories of physics and mathematics to electric lighting, wireless telegraphy, and the development of thermionics of importance to radio communication.

FLETCHER, HORACE (1849–1919). An American who did much to encourage the selection and proper eating of foods, especially by means of more complete mastication. To "fletcherize" became the term for eating slowly and with thorough chewing. He was born at Lawrence, Mass., educated at Dartmouth, and traveled a great deal. Besides books on other topics, Fletcher wrote *Nature's Food Filter, or When and What to Swallow* and *Fletcherism.*

FLEXNER, SIMON (1863–). American pathologist, who was born in Kentucky, educated at Louisville, Johns Hopkins, several European universities, and the Pasteur Institute, Paris. He was a professor at Johns Hopkins (1889–99), University of Pennsylvania (1899–1903), and then became director of the laboratories of the Rockefeller Institute in New York. Among his notable work was the perfection of a serum for use in cerebrospinal meningitis (1905) which reduced the mortality from 75% to 25%, and for the study of poliomyelitis (infantile paralysis), together with a serum treatment.

FOWLER, CHARLES EVAN (1867–). American engineer who has built many important bridges in various lands, including the Williamsburg in New York, arch bridge at Sydney, Australia, and rebuilt Niagara Railway arch at Niagara Falls. He also acted as engineer in other projects at Seattle, Manila, White Pass, Alaska, Lake Pontchartrain, Louisiana, and at Oakland, California.

FRANKLAND, SIR EDWARD (1825–1899). English chemist. He contributed to science the theory of valency, i.e., the conclusion that each atom of an elementary substance possesses a clearly limited power of saturation, so that only a correspondingly limited number of atoms of other elements can be attached to it. With Sir William Lockyer he discovered helium in the sun. As a member of a royal commission on rivers (1868–74), Frankland learned much about the sources of contamination and means of preventing it.

FRANKLIN, BENJAMIN. See under DICTIONARY OF INVENTORS.

FRANKLIN, JOHN (1786–1847). English explorer, who served in the battle of Copenhagen (1801) and of Trafalgar (1805), and in 1818 and 1825 was with expeditions that tried for the north-west passage through the Arctic Ocean. Each time on land important explorations were made in Canada. He acted as lieutenant governor of Van Dieman's Land (1836–43). He was knighted in 1829. On May 19, 1845, he set out with two ships and 129 officers and men to find a way through the northern ice pack. Nothing more was heard of them until traces were found of a camp at Beechley Island in 1851. Not until the spring of 1859 was the fate of Franklin learned from a record discovered in a cairn at Point Victory. He had died on June 11, 1847, and the survivors left the ship almost a year later never to be found alive. Franklin and his men really deserve the honor of finding the passage.

FRAUNHOFER (*frŏwn'ho-fĕr*), **JOSEPH VON.** See under DICTIONARY OF INVENTORS.

FRAZER, JAMES GEORGE (1854–). English anthropologist, who in 1890 attained great fame by the publication of *The Golden Bough*, a vast collection of information in regard to ancient peoples, cults, and their folk lore. He was born and educated in Glasgow and also studied at Cambridge, and was called to the bar in 1879. Many other books of history and myth have come from his pen.

FREMONT, JOHN CHARLES (1813–1890). Known as the pathfinder of the northwest, was born in South Carolina, educated at Charleston, taught mathematics, and became a practical surveyor. In 1841 he surveyed the Des Moines River, in 1842 found an overland route across the Rocky Mountains, in 1843 went as far as the Columbia River, and in 1845 explored much of the great basin, reaching California in 1846. Gold discovered on land given him in California made him a wealthy man, but he lost all his means in 1870. See also under DICTIONARY OF RULERS AND STATESMEN.

FREMY, EDMOND (1814–1894). French chemist. In 1888 he and Verneuil produced rubies similar in color and chemical composition to the natural stones. Fremy also did important work in the coloring of plants, fermentation, and the manufacture of various practical substances like glass, steel, iron, and soap.

FRENCH, OWEN BERT (1865–). American geodesist, who for the U. S. has determined boundaries, explored coasts, found accurate latitudes and longitudes of observatories, and proved that invar (nickel steel) is the best material for measuring tapes in geodesy. Professor at George Washington University from 1920; assistant in U. S. surveys (1889–1915).

FREUD (*froit*), **SIGMUND** (1856–1939). The originator of psychoanalysis was born of Hebrew parentage at Freiberg, became interested in science, was in the physiological laboratory of Brücke (1876–82) and in 1885 began a course of study in Paris. Receiving the history of a case from the Vienna physician, Breuer, in 1884, Freud persuaded him to collaborate in 1893 in his *Studies of Hysteria.* By 1906 he had made his theories attractive. These have to do with the unrecognized importance of the sub-conscious in mental life. Freud seeks to restore to a normal state certain minds by getting them to recall other experiences, some of which may be "repressions."

FROBISHER, MARTIN (c. 1535–1594). English explorer who made one of the early attempts to find a north-west passage to India. With three vessels from the navy he explored some of the coast of Labrador in 1576, bringing back to England some ore. On the supposition that much gold lay in America, two other expeditions went out in the next and second year following, and more ore was brought back, and some exploring was done. In 1578 the 15 vessels of a larger expedition reached Greenland, explored Frobisher Bay, and attempted to found a settlement. Later he was with Drake in the West Indies, fought against the Armada and was knighted, went to the Spanish coast with Raleigh, and received a wound in the siege of Brest which caused his death. He was a stern and able seaman.

GALEN (130–about 201). Greek physician, medical writer, and philosopher. His works covered anatomy, physiology, dietetics, hygiene, pathology, diagnosis, pharmacy, materia medica, therapeutics, surgery, and philosophy. These were written originally in Greek; some were translated into Latin and Arabic.

GALILEO (*găh-lē-lā'ō*), **GALILEI** (1564–1642). Italian astronomer; discovered about 1582 the isochronism of the vibrations of a pendulum, and in 1590 the law by which the velocity of falling bodies is accelerated; adopted in astronomy the system of Copernicus; constructed his wonderful telescope (1600). Through it he discovered the satellites of Jupiter, and was enabled to explore the surface of the moon and view the phases of Venus. He also ascertained that the "Milky Way" is composed of myriads of stars.

GALL, FRANZ JOSEPH (1758–1828). The founder of phrenology, who was born in Baden and educated at Baden, Strasbourg, and Vienna, attempted to show that the faculties and characteristics of people correspond to external appearance of the skull. In 1802 his lectures were stopped by government order.

GALLE (*gawl'ĕh*), **JOHANN GOTTFRIED** (1812–1910). A German astronomer; wrote extensively on the natural sciences and mathematics. He was the first to observe the planet Neptune (September 23, 1846); discovered three comets (1839–1840).

GALTON, FRANCIS (1822–1911). An English anthropologist whose researches led to the modern science of eugenics, born at Birmingham and educated at King's College, London, and Cambridge. He was one of the first to study the weather and to prove the theory of anticyclones. In connection with his study of eugenics, he advocated the restriction of the birth-rate among the unfit; he originated the scheme of composite photography and developed the idea of taking finger-prints of criminals.

GALVA'NI, LUIGI (1737–1798). An Italian anatomist. He studied theology and, later, medicine at the University of Bologna, and was elected professor of anatomy. Galvani owes the wide celebrity attached to his name to his discoveries in animal electricity.

GAMA, VASCO DA (c. 1460–1524). A Portuguese navigator who first rounded Cape of Good Hope after a tedious journey of four months out from Lisbon (1497), tried to establish a settlement at Calicut, but was driven off by hostile natives. Cabral followed with a large fleet, which, driven westward, discovered Brazil, but finally reached Calicut but those left there were murdered. Da Gama was sent to avenge this treachery in 1502. On his return he was given additional honors and grants. In 1524 he was called from retirement to go

as governor to Cochin China, but died there three months after arrival. His voyage opened trade by water with the east.

GAUSS (*gaŭs*), **KARL FRIEDRICH** (1777–1855). A distinguished German mathematician; wrote *Disquisitiones Arithmeticae* and many other important works on the theory of surfaces, least squares, astronomy, and physics. With Weber he established a laboratory without iron in it for the study of magnetism, and they succeeded in sending telegraph messages over a line they constructed. Gauss also made some discoveries in optics.

GAY-LUSSAC (*gay-lu-sak'*), **JOSEPH LOUIS** (1778–1850). French chemist and physicist; employed himself in chemical and physical research, in connection with which he made two balloon ascents. His name is associated with many notable discoveries in chemistry and physics, e.g., the law of volumes, isolation of cyanogen, etc.

GEGENBAUR (*gay'gen-bower*), **KARL** (1826–1903). A leading comparative anatomist in Germany; the first to place the study of anatomy on an evolutionary basis. His most notable work was to show the origin of the form of the skull.

GEIKIE (*gī'kēy*), **SIR ARCHIBALD** (1835–1924). A British geologist. His researches in all branches of geology have made him an authority on these subjects. While serving on the Geological Survey (1855) he wrote *Scenery of Scotland*, which first brought him to public notice. He acted as director of the Scottish geological survey (1867–1881), was also professor at Edinburgh (1871–1881), and director of the survey of the United Kingdom (1881–1901). For many years Geikie studied various features of the geology of volcanic regions, visiting various parts of Europe and American for evidence. Other books are *The Ancient Volcanoes of Great Britain* and *Outline of Field Geology*.

GEOFFROY SAINT-HILAIRE, ETIENNE (1772–1844). French naturalist; professor of vertebrate zoölogy at Paris; accompanied Bonaparte to Egypt and founded the Institute of Cairo; made teratology, or the study of monstrosities, a science; created the science of embryology. His son, Isidore (1805–1861), continued the works and teachings of his father.

GERHARDT, KARL FRIEDRICH (1816–1856). An eminent French chemist; in collaboration with Cahours, published a memoir on essential oils, embodying new theories; his treatises upon his views of series, theories of types, and researches upon acids and oxids mark an epoch in the history of chemistry.

GESNER, KONRAD VON (1516–1565). German-Swiss botanist and linguist, and a doctor for a time, who made a catalog of plants in four languages (1542), and a four-volume work on the history of animals which has often been called the foundation of modern zoölogy. Gesner also compiled a list of all authors of the past, which he printed in Latin, Greek, and Hebrew, and later a description of 130 languages, with the Lord's Prayer printed in 22 of them.

GIBBS, JOSIAH WILLARD (1839–1903). American mathematical physicist, who was born in New Haven, Conn., and completed his education at Paris, Berlin, and Heidelberg (1866–68). He was a professor at Yale from 1871 to 1903. His paper *On the Equilibrium of Heterogeneous Substances* had much to do with later developments in physical chemistry of men like Ostwald. Vector analysis, the subject of a book compiled from his notes by a pupil, E. B. Wilson; the use of graphical methods in thermodynamics; and the application of the theory of light to certain elastic solids,—are other important subjects investigated by Gibbs. He received the Copley medal of the Royal Society of England and many other honors.

GILBERT, WILLIAM (1544–1603). English physicist, who was born at Colchester, educated at Cambridge, traveled widely, and acted as a physician in London. He was a member of a committee to prepare a pharmacy manual, acted as physician to the Queen and to James I. and held other public offices. For many years he was busy on his monumental work called by him *De Magnete*, which is the earliest treatise on magnets and certain forms of electricity. He said that the earth is a large magnet, and this explains the dip of the needle, and also adopted the Copernican theory, arriving at the idea that the fixed stars are not all at the same distance from the earth.

GLAUBER (*glō'bēr*), **JOHANN RUDOLF** (1604–1668). A German chemist who first explained that hydrochloric acid is prepared by adding sulphuric acid to common salt, and that nitric acid results when nitre is used instead of the salt. He also made many combinations or preparations of chlorides and other salts of various substances such as tin, zinc, arsenic. Glauber's salt (decahydrated sodium sulphate) takes its name from the fact that Glauber first prepared it.

GOETHALS (*gō'thăls*), **GEORGE WASHINGTON** (1858–1928). United States army officer and engineer; born in Brooklyn, N. Y.; graduate of West Point Military Academy (1880), where he was instructor in civil and military engineering until 1888; in charge of construction of Muscle Shoals Canal in the Tennessee River; chief of engineers during Spanish-American War; on the board for coast and harbor defenses; chief engineer of Panama Canal (1907–1914), appointed governor of the Canal Zone, February, 1914.

GOLGI (*gōl'jē*), **CAMILLO** (1844–1926). An Italian physician and chemist who discovered the germs that cause malaria in the human blood. He was the first to use silver nitrate in staining tissue for purposes of observation of the nerves, discovered groups of nerve fibers or endings found in tendons, and wrote important works on these subjects. He was educated at Pavia, and taught there and at Siena.

GOODE, GEORGE BROWN (1851–1896). American naturalist, who was born in Indiana, educated at Wesleyan University at Middletown, Conn., studied under Agassiz at Harvard and from 1874 to his death was connected with the National Museum at Washington. A new scientific system of classification was introduced, new styles of display in museums, and other methods later widely copied. Great interest was aroused by his preparations of exhibits at various fairs and expositions. Of his voluminous writings, *The Fisheries and Fishing Industry in the United States* (7 vols., 1884–87), and *Ocean Ichthyology*, attained a great reputation for scientific exactness.

GORGAS, WILLIAM CRAWFORD (1854–1920). American surgeon and sanitarian, who was educated at the University of the South and in medicine at Bellevue Hospital Medical College in New York City, where he became an M. D. in 1879. From 1898 to 1902 he conducted a series of experiments to show that yellow fever is carried by the mosquito, and at Panama he established remarkably safe and healthful conditions for the digging of the Panama Canal. In 1914 he became surgeon general of the U. S. Army, with rank of brigadier general, and in 1916 was made a major general, retired in 1918. He also investigated the cause of influenza in South African mining camps and yellow fever in Central and South America.

GOSNOLD, BARTHOLOMEW (d. 1607). English navigator who was instrumental in trying to establish colonies in the new world. In 1602 he skirted the coast from Maine to Martha's Vineyard, returning with a cargo of furs, sassafras, and other commodities obtained of the Indians. He was one of the early colonists with John Smith at Jamestown, Virginia.

GOULD, BENJAMIN APTHORP (1824–1896). An American astronomer, noted for having been the first to establish longitude by means of the Atlantic cable (1866), and for having spent 15 years in Argentina, during which time he compiled a catalog of 32,000 stars from meridian observations. Gould was born in Boston and educated at Harvard, with special studies later under Gauss of Göttingen.

GRAHAME-WHITE, CLAUDE (1879–). English aviator, who in 1906 was given a pilot's certificate, the first Englishman to receive one. He entered many races and won the Gordon Bennett cup (1910), founded an English flying school in France (1909), and in the World War was in charge of building planes. Of his several works on aviation, *The Aeroplane* (1911), *The Aeroplane in War* (1912), and *Our First Airways* (1918) are well known.

GRAY, ASA (1810–1888). Eminent American botanist and naturalist, who was born at Paris, New York, studied chemistry under Dr. James Hadley of Yale, and received a degree in medicine at the Fairfield Medical College (1831). Five years later he issued the first of his many works on botany, all of which did much to develop popular interest in plants and flowers. In 1842 he became a professor at Harvard, where he built up the largest herbarium in the country, collected a valuable library, and experimented with flowers in his garden. Journeys to Europe and to various parts of the United States gave him the material for his *Synoptic Flora*. For twenty years he corresponded with Darwin, and often expressed his

belief that present species are not the results of individual creations, but may have developed from earlier forms.

GREELY, ADOLPHUS WASHINGTON (1844–1935). American scientist and explorer, who was born in Massachusetts, served in the Civil War, and reached (1882) the farthest northern point up to the time at 83° 24′ and 42° 25′ W. All but seven of his party perished, and the survivors were rescued by a third relief expedition under Capt. Schley. While serving as chief of the Weather Bureau (1887–1906), many cable and ordinary telegraph lines were built in various lands. Among his books are *Three Years of Arctic Service, Handbook of Polar Discoveries, Polar Regions of the Twentieth Century* (1928).

GRIGNARD (*grē-nyar′*), **VICTOR** (1871–1912). A French chemist who took the degree of doctor of science at Lyon in 1901, and announced in his thesis the discovery of new magnesium compounds. Magnesium dissolves readily in certain solutions containing chlorine, iodine, and the like, making what has been called Grignard reagents. In the preparation of alcohols, unsaturated hydrocarbons, and certain acids his discovery is of great practical value.

GULLSTRAND (*gōōl′strand*), **ALLVAR** (1862–). Swedish doctor, educated at Uppsala, Vienna, and Stockholm, and a professor at Uppsala from 1894. His work has been in the laws of dioptics, giving rise to a new theory of optical images, and the relation of the diffusion of light to the eye. He won the Nobel prize for medicine in 1911.

GUTHRIE, SAMUEL (1782–1848). American physician, who was born in Massachusetts and practiced in New York. He was one of the first to vaccinate patients, made the first good percussion powder, and discovered that distillation of alcohol with chloride of lime would produce chloroform. He published a paper in July 1831, several months before the independent discoveries of Soubeiran and Liebig.

HABER (*hä′ber*), **FRITZ** (1868–1934). A German chemist who did much to explain certain features of electrochemistry, the reactions of gas and methods of preventing gas attacks during war, and with Bosch a method of producing ammonia from nitrogen of the air. The Nobel prize for chemistry went to him in 1918.

HAECKEL (*hĕk′ĕl*), **ERNST HEINRICH** (1834–1919). German biologist, chief exponent of Darwinism in his country, and author of various studies of classes of animals. He believed in the essential unity of all nature, animate and inanimate, and sought to prove the descent of man from early forms through chimpanzee and similar types which resemble man in a general way. He was born in Prussia, educated in medicine at Wurzburg, Berlin, and Vienna, and acted as professor of zoölogy at Jena. Among his books are *The History of Creation, Life in the Deep Seas,* and *Popular Lectures on Evolution.*

HAHNEMANN, SAMUEL CHRISTIAN FRIEDRICH (1755–1843). German physician and originator of the homeopathic system of medical practice. He noted in 1790 that certain effects of quinine on the normal human body resembled the states of diseases that quinine was used to remedy. From this developed his principle *similia similibus curantur*, that is, like cures like. In 1810 he further developed his ideas and called the new theory homeopathy. Opposition drove him to Cöthen and finally to Paris, where he practiced medicine till his death.

HALE, GEORGE ELLERY (1868–1938). An American astronomer, who discovered the principle of the spectro-heliograph at the Kenwood Observatory which he founded in Chicago. Later while a professor at the University of Chicago, he developed the Yerkes Observatory of which he was head till 1904. Then he organized the Mt. Wilson Observatory and directed this till 1913, after which he held various positions in learned societies. In 1927 he perfected the spectro-helioscope for observation of the solar atmosphere.

HALL, ASAPH (1829–1907). An American astronomer, who became a carpenter at 16, but resolved to study astronomy, which plan he accomplished under difficulties. From 1862 to 1891 he was professor of mathematics at the Naval Observatory at Washington, D. C., and then acted as a professor at Harvard (1895–1901). He observed some of the planets and their satellites, orbits of double stars, and sought to determine stellar parallax. His greatest discovery was the two satellites of Mars (1877), the orbits of which he calculated.

HALL, MARSHALL (1790–1857). An English physician and physiologist; specialist in nervous diseases. His name is also associated with a well-known method of restoring suspended respiration. He showed the function of the blood in coming into direct contact with tissues between arteries and veins, and made important studies in diseases due to derangement of the spinal nerve. The method perfected by him of restoring breath has saved thousands from suffocation by drowning.

HALL, G. STANLEY. See under DICTIONARY OF PHILOSOPHERS.

HALL, WINFIELD SCOTT (1861–). American physiologist, who was a professor at Northwestern University from 1895 to 1919. He specialized in the problems of life and of eugenics, making a close study of adolescence, virility, old age, and the influence of narcotics and alcohol on the human body. Some of his books are *From Youth to Manhood, Life Problems, A Physician's Counsel to Parents,* and *Constructive Eugenics.*

HALLER, ALBRECHT VON (1708–1777). A celebrated anatomist, physiologist, botanist, physician, and poet; born at Bern; was a voluminous author. Haller made important discoveries in classification of tissues as to sensibility, and the functions of nerves and muscles as to sensitive and irritative qualities.

HALLEY (*hăl′lēy*), **EDMUND** (1656–1742). English discoverer of the comet that bears his name. He lived at St. Helena for a time for the purpose of making observations in the southern latitudes, obtaining a record of 341 stars, observed a transit of Mercury, and numerous other phenomena. He published at his own expense Newton's great *Principia.* In 1682 he observed a great comet, calculated its orbit, and predicted correctly its return in 1757. In 1720 he became professor of geometry at Oxford. When 64 he attempted to observe the moon during a revolution of all her nodes (18 years in time), and he lived to complete the task. Halley's comet returned within our vision in 1910.

HAMILTON, WILLIAM ROWAN (1805–1865). A Scotch-Irish mathematician whose extensive researches fill many manuscript books. At 22 he was appointed a professor of astronomy at Trinity College, Dublin, and he spent the rest of his life at an observatory near there. Among his numerous problems, those of the quaternions (a new method used by him in higher mathematics), some papers in dynamics, and his solutions of algebraic equations of the fifth degree, have had a profound effect on later study. Only a small part of his work was published, the rest being in various manuscript books now at Trinity College, Dublin.

HAMMER, WILLIAM JOSEPH. See under DICTIONARY OF INVENTORS.

HARVEY, WILLIAM (1578–1657). English physician who practiced at London, observed many animals and human beings, and finally came to the conclusion that the heart is a pump which circulates the blood through the arteries and veins. He was educated at Cambridge and in Italy, and as early as 1615 told his conclusions to his pupils at the London college of surgeons. It was a long time before his views became established. Harvey also made important studies in the origins of life, he being one of the first to trace the relationships among animals so far as organs and functions are concerned. His chief works are *Treatise on the Motion of the Heart and Blood* and *Treatise on Generation of Animals.*

HAYDEN (*hāy′d'n*), **FERDINAND VANDEVEER** (1829–1887). American geologist who explored many of the western states for the U. S. government. He explored the Bad Lands of Dakota, wrote a valuable work on the geology of Colorado, did much to call attention to Yellowstone Park, and made researches in Wyoming, Nebraska, and other states. As the geologist of a United States survey (1867–1879) he collected an immense amount of information.

HEDIN, SVEN (1865–). Swedish explorer has made extensive explorations and discoveries in Asia, particularly in Turkestan, Bokhara, Pamir, and Tibet. His three journeys to Asia (1893–97, 1899–1902, 1906–08) gained much information of the history, geography, and natives of lands not often visited by foreigners. He was made a Swedish noble in 1902 and one of the 18 members of the Swedish Academy.

HEKTOEN, LUDVIG (1863–). American pathologist, who was born in Wisconsin, educated at Chicago and abroad, and became a professor at Rus-

Medical College (1895–1924), and at the University of Chicago in 1901. Member of many learned societies. Made notable investigations in anatomy with reference to disease. His chief scientific work is *Introduction to the Study of Infectious Diseases.*

HELLRIEGEL (*hĕl-rē-gĕl*), **HERMANN** (1831–1895). A German chemist who made a special study of leguminous plants, such as beans, peas, clover, and alfalfa. He discovered that these have tubercles on the roots which allow them to make use of nitrogen from the air. Important applications have been made of this knowledge at agricultural experiment stations and in practical farming.

HELM'HOLTZ, HERMANN LUDWIG FERDINAND VON (1821–1894). A German physicist. His work has been chiefly in acoustics and optics; wrote *Conservation of Force, Sensation of Tone;* proposed the generally accepted theory of color; invented the ophthalmoscope and other useful physical apparatus. His work had important results in the study of color-blindness, in the measurement of tones in music and in speaking, and in electro-dynamics and various theories of electricity.

HENRY, JOSEPH (1797–1878). An American physicist who was born, educated, and first taught at Albany, N. Y. His attention was turned to magnets by an appointment in the Albany Academy. He was the first to discover the principle of the electric coil, the first to insulate wire for magnetic work, and to arrange the "spool" which is the chief part of every type of electric dynamo yet invented. In 1830–31 he demonstrated the idea of sending sounds over a wire, and this idea was used practically by Morse in his electric telegraph. Henry was called to Princeton as a professor in 1832, was made the first secretary of the new Smithsonian Institution in 1846, and for 30 years compiled many valuable works. The Institute made weather investigations which led to the establishment of the U. S. Weather Bureau. His study of sound in connection with signals at sea suggested a practical method of great service in warning ships of danger during fogs and storms. Among his other scientific accomplishments are the explanation of the laws now used in electric transformers, the discharge of gases in a Leyden jar as inductive of other discharges at a distance (a principle now used in wireless), and a new method for calculating the speed of shells fired from guns.

HERSCHEL, CAROLINE LUCRETIA (1750–1848). A German-English astronomer; sister of Sir William Herschel; made important observations of her own, which were published, including a *Catalogue of Stars* containing 561 omitted in the British list.

HERSCHEL, SIR JOHN FREDERICK WILLIAM (1792–1871). English astronomer and chemist; only son of the eminent Sir William Herschel. He conducted his astronomical observations as had his father, discovering 525 nebulae and double stars, thereby making in all between three and four thousand.

HERSCHEL, SIR WILLIAM (1738–1822). A distinguished astronomer; born at Hanover, Germany; went to England in 1757, and held several appointments as an organist; gave his leisure time to the study of astronomy; discovered the planet Uranus in 1781 (which he called *Georgium sidus* in honor of George III.); discovered also the six satellites of Uranus, and drew up a catalogue of 5,000 heavenly bodies or clusters of them.

HERTZ, HEINRICH RUDOLF (1857–1894). German physicist; professor of physics at Karlsruhe, where he made his remarkable experiments with electromagnetic waves, showing their reflection, refraction, diffraction and polarization, which facts have since been developed into wireless telegraphy.

HIPPARCHUS (fl. 161–126 B. C.). A Greek astronomer and mathematician. He was the founder of scientific astronomy and trigonometry; computed a table of chords; discovered the precession of the equinoxes; invented the astrolabe; and made a catalogue of 1,000 stars, which Ptolemy incorporated in the *Almagest.*

HIPPOC'RATES (460?–377? B. C.). The greatest physician of ancient times, usually designated the "Father of Medicine"; born in the island of Cos. Among his authentic writings are *Prognosis; On Epidemics; On Diet in Acute Diseases; On Air, Water, and Place; On Wounds of the Head.* He was distinguished for his remarkable skill in diagnosis, and his accurate and vivid description of morbid symptoms. His works were early translated into Arabic.

HITCHCOCK, EDWARD (1793–1864). American geologist. Was instrumental in popularizing the science of geology in the United States. While acting as state geologist of Massachusetts he conducted the first geological survey of importance, the results being published by the state.

HOFMANN, AUGUST WILHELM VON (1818–1892). German chemist who discovered how to make aniline dyes from coal-tar products, and other secrets which made great changes in the dye industry. He was born at Giessen, was for a time assistant to Liebig, chemist of the mint, after acting as head of the royal college of chemistry in London, from 1845 to 1865, and then returned to the University of Berlin. His *Introduction to Modern Chemistry* changed the teaching of the subject in several ways.

HOLT, LUTHER EMMETT (1855–1924). American physician who was professor of the diseases of children at the New York Polyclinic from 1890 to 1901 and then at the College of Physicians and Surgeons. His books on his specialty became famous, including *The Care and Feeding of Children* and *Diseases of Infancy and Childhood.*

HOOKER, SIR JOSEPH DALTON (1817–1911). Noted British botanist and traveler. He made trips to the Antarctic regions, the Himalayas, Great Atlas Mountains in Morocco, Palestine, Syria, and California, returning each time with thousands of plants which he later classified. *Genera Plantarum* is his greatest work.

HORNADAY (*hôr'nä-dā*), **WILLIAM TEMPLE** (1854–1937). American naturalist, born in Indiana, educated in Iowa, collected specimens in various lands, and was chief taxidermist of the National Museum (1882–90). He directed the New York Zoölogical Garden from 1896 to 1926. Hornaday did much to preserve certain types of wild animals in danger of being hunted out of existence, such as the bison and various birds. Among his interesting books are *Two Years in the Jungle, The Man Who Became a Savage, Our Vanishing Wild Life,* and *A Democracy of Crocodiles.*

HOUDINI (*hō-dē'nē*), **HARRY** (originally **WEISS**) (1874–1927). The son of a Wisconsin minister, very early became interested in tricks and legerdemain. He began as a trapeze performer in 1882, made a number of world tours, and entertained countless thousands in vaudeville and other popular audiences. He popularized certain tricks by using handcuffs and other methods of arrest from which he escaped by clever manipulation. Engaged in making motion pictures and in writing for the press on exposure of ancient tricks and originating new ones. In 1910 the Aeronautic League of Australia awarded him a prize for the first successful airplane flight in that continent. Houdini also wrote on the methods of spiritualistic mediums and the means used by some of them to deceive.

HOWARD, LELAND OSSIAN (1857–). American entomologist, who was born in Illinois, educated at Cornell, and was assistant and then chief entomologist of the U. S. at Washington from 1878 to 1927. He served on several committees, was chairman of the Pan-Pacific Food Conservation Congress, and wrote, among other books, *Mosquitoes—How they Live* and *The House Fly—Disease Carrier.*

HRDLICKA (*hŭrd-lĭts'kä*), **ALES** (1869–). American anthropologist who was born in Bohemia, and educated in medicine in New York City. While a member of many expeditions to study man, he visited a number of countries, making a special study of the American Indian. Dr. Hrdlicka believed the Indian came from Asia and that in Europe, not in the Orient, was the cradle of mankind. Among his books are *Anthropometry, Physical Anthropology,* and *Ancient Man in North America.*

HUBER, FRANCOIS (1750–1831). A Swiss naturalist who for a long period studied the habits of honeybees, after which he explained the habits of the hive, the construction of wax, ventilation, the killing off of certain males, and habits of queen bees, and other useful information. His chief literary work is *New Observations on Bees.*

HUDSON, HENRY. See DICTIONARY OF HISTORY.

HUDSON, WILLIAM HENRY. See under DICTIONARY OF AUTHORS.

HUGGINS (*hŭg'ins*), **WILLIAM** (1824–1910). A British naturalist and astronomer who set up a private observatory near London in 1856, and before long adopted the study of astronomy through photographs

as his lifework. With the coming of the gelatine dry plate (1875), he was able to make long exposures and attain great results. Among the discoveries were that certain nebulae are masses of gas, that comets contain carbon, that calcium prepared in the laboratory contains spectroscopic lines identical with those in the solar spectrum. His *Atlas of Representative Stellar Spectra* (1899) won for him the Actonian prize of the Royal Institution. Lady Huggins, who was born Margaret Lindsay Murray, assisted him in many researches.

HUMBOLDT, ALEXANDER, BARON VON (1769–1859). German naturalist and traveler; contributed to almost every branch of science. His *Kosmos* (1845–1859), a work explaining the physical universe, is his greatest achievement, while his *Voyage aux Regions équinoxiales du Nouveau Continent* embodies his researches in the New World. He founded the modern study of physical geography or physiography. Humboldt sought to improve the lot of miners, to abolish slavery, and to assist young men of science in every way.

HUNTER, JOHN (1728–1798). British surgeon and anatomist, who found important evidence concerning the lymphatic circulation, the nature of blood coagulation, the operation of cutting through tendons to relieve local conditions of joints, methods of recovering persons supposed to be drowned, the operation of tying an artery between a tumor and the heart as a remedy for aneurism. Hunter was born in Lanarkshire, studied at Edinburgh, at Chelsea Hospital in London, served from 1759 to 1763 in the British army as a staff surgeon, and afterward practiced mainly in London. For the *Philosophical Transaction* he wrote many papers on a great variety of subjects. Besides these he published *Natural History of the Human Teeth, Treatise on Blood Inflammation,* and *Gunshot Wounds.*

HUXLEY, THOMAS HENRY (1825–1895). English scientist and comparative anatomist. As a result of four years of research in natural science he published a work *On the Anatomy and the Affinity of the Medusae.* When Darwin's *Origin of Species* was published (1859), Huxley became a zealous advocate of evolution. His masterly work, *Man's Place in Nature,* was based upon the new doctrine.

HUYGENS, CHRISTIAN (1629–1695). A famous Dutch physicist, astronomer, and mathematician; the author of notable researches on the polarization, reflection, and refraction of light. He invented an apparatus for the application of the pendulum to clocks and by its use to determine the acceleration of gravity. He made powerful telescopes which enabled him to discover the ring of Saturn and its fourth satellite.

HYATT, ALPHEUS (1838–1902). An American naturalist; born at Washington, D. C.; professor of zoölogy and paleontology at the Massachusetts Institute of Technology and at Boston University (1881). In the field of invertebrate paleontology his work was masterly and his writings voluminous. Hyatt was largely instrumental in founding the American Society of Naturalists and in starting the marine laboratory of biology at Woods Hole, Mass.

JACOBI, ABRAHAM (1830–1919). German-American doctor, who in 1860 was elected to the first chair of children's diseases in the United States at the New York Medical College and who established the earliest clinic in this country for the treatment of the diseases of children. He acted as consulting surgeon for several hospitals, wrote many medical papers, and is considered as the founder of pediatrics in this country. Some of his books are *Intestinal Diseases of Infancy and Childhood, Infant Diet, and Treatise on Diphtheria.*

JACOBI, MARY PUTNAM (1842–1906). Wife of the preceding and one of the first women physicians in America, who was born in London, became the first woman student at the New York College of Pharmacy, and was graduated in medicine in Philadelphia in 1864. Desiring to enter the School of Medicine of Paris, she was forced to obtain a special order from the Minister of Education to enable the school to break its rule by admitting a woman student. After graduating with high honors, she became professor of diseases of children at the Woman's Medical College of New York.

JELLIFFE, SMITH ELY (1866–). American neurologist, educated at Columbia University, New York, and in European universities, and professor at the New York College of Pharmacy, Columbia, Fordham, and the Post-Graduate Medical School. An authority on diseases of the nervous system, psychology of the unconscious, and certain forms of insanity. Among his works are *Modern Treatment of Nervous and Mental Diseases* (with W. A. White), and *Technique of Psychoanalysis.*

JENNER, EDWARD (1749–1823). English physician. After much experimental study of vaccine lymph as a preventive of smallpox, he succeeded in convincing medical men of the value of the lymph for that purpose so that vaccination has become universal.

JORDAN, DAVID STARR (1851–1931). An American educator and naturalist; studied fishes under Agassiz and became one of the foremost ichthyologists; wrote *A Manual of Vertebrate Animals of the Northern United States, North and Middle America, Food and Game Fishes of North America.* President Leland Stanford Jr. University (1891–1913); chancellor (1913–1916), and then chancellor emeritus. Besides being a member of the U. S. fish commission at different times, he served on other bodies, notably as president of the World Peace Congress (1915) and as vice president of the American Peace Society.

JOULE (*jūl*), **JAMES PRESCOTT** (1818–1889). An English physicist, who discovered many facts concerning electrical energy and heat, the mechanical equivalent of heat, and made important studies in surface condensation that led to improvements in the steam engine. The practical unit of measurement of energy is called a joule.

JUDD, ORANGE (1822–1892). American authority on agriculture, who was a graduate of Wesleyan University at Middletown, Conn., and editor of various farm papers, including the *American Agriculturist* (1853–83). He provided the money for the first agricultural experiment station in the country at Wesleyan (1875), and in this and other ways had a great influence on American agriculture. His encouragement led to the work of W. O. Atwater (q. v.).

KANE, ELISHA KENT (1820–1857). American explorer and scientist, who entered the Navy in 1843 after obtaining his M. D. at Virginia, and made two expeditions to the Arctic regions, the second being financed by Henry Grinnell. Kane passed into the region now known as Kane basin in 1853 in the small brig *Advance,* and for two years the expedition gained much valuable data, but finally had to abandon the ship. The party was rescued at Upernivik. For 16 years the record attained stood as the farthest north (80° 35′ in June, 1854).

KAYSER, HEINRICH GUSTAV JOHANNES (1853–). He was educated at Strasbourg and Berlin and taught physics at Berlin, Hanover, and Bonn (1878–1920). Among his valuable researches are those in the velocity of sound waves, of sound in wood, and spectroscopy. With Runge he made experiments which determined the series in the spectra of the elements.

KEANE, AUGUSTUS HENRY (1833–1912). An Irish anthropologist who was professor of Hindustani at University College in London, and who arranged and classified most of the known languages and from his studies determined a system of ethnology. *The World's People, Man, Past and Present, Ethnology,* and *The Gold of Ophir* are some of his works.

KELLER, HARRY (1849–1922). One of the greatest magicians of all time, who was born in Pennsylvania, educated in Ohio, and traveled in many parts of the world learning various tricks and illusions. He was with Davenport Brothers for several years, and after 1884 appeared on American platforms mainly.

KELLOGG, VERNON LYMAN (1867–1937). American zoölogist and professor at the University of Kansas (1890–94) and at Stanford University (1894–1920). He did much to popularize science, especially as director of the division of educational relations of the national research council. Some of his books are *Darwinism To-day, The Animals and Man, Nuova, or the New Bee, Human Life as a Biologist Sees It.*

KELLY, EDWARD JOSEPH (1876–). American civil engineer and sanitarian connected with the sanitary district of Chicago from 1894. As South Park commissioner he had charge of 70 miles of water front development with an expenditure of many millions of dollars along the Chicago lake front. He also directed other civic improvements and advocated 10,000 cubic feet of water a second as the allowance to go through the main drainage canal of Chicago.

KELLY, HOWARD A. (1858–). Distinguished surgeon, professor at Johns Hopkins University, and author of many works in medicine and

surgery, was graduated from the University of Pennsylvania where he taught surgery for a time. Honored by election of numerous foreign medical associations, and decorated several times, Dr. Kelly became an international figure. Some of his best works are *Vermiform Appendix, Operative Gynecology, Walter Reed and Yellow Fever, Cyclopedia of American Medical Biography, A Scientific Man and the Bible.*

KELVIN, WILLIAM THOMSON, LORD (1824–1907). English scientist and inventor, professor of natural philosophy in the University of Glasgow (1846–1899); electrical engineer for the Atlantic cables of 1857–1858, 1865–1866, making many improvements in signaling apparatus, and also exceedingly valuable theoretical observations. In addition, his many inventions include the mirror galvanometer, siphon recorder, many pieces of electrical apparatus and methods for measurement, an improved form of mariner's compass, a deep-sea sounding apparatus, and a method of arriving at an absolute scale of temperature. Lord Kelvin also made notable discoveries in the mathematical theories of electricity, heat, elasticity, vortex-motion, magnetism; wrote much on scientific subjects.

KEPLER, JOHN (1571–1630). Illustrious German astronomer; by his long study of the motions of Mars he was led to the discovery of the planetary laws known as Kepler's laws and by their means we are enabled to tell the place of any planet in its orbit at any time, past or present.

KIEPERT (*kē'pĕrt*), **HEINRICH** (1818–1899). German geographer and map-maker, from 1854 a professor at the University of Berlin. He visited Asia Minor four times, on the first visit spending two years there (1841–2), and made valuable maps of that and other regions. His historical-geographical atlas of the world is a standard work. Richard Kiepert (1846–1915), his son, continued the work of mapping the ancient and modern world, brought his father's atlas of Asia Minor up to date, made a new atlas of China, and compiled valuable data from the notes of many travelers.

KING, CLARENCE (1842–1901). American geologist, who was graduated from the Sheffield Scientific School of Yale, studied at Harvard under Agassiz, and did much to develop the geological survey of the country. He explored and mapped much of the region of California and Arizona, and of the 40th parallel of latitude. In 1879 he became the first director of the geological survey, and later acted as a consulting engineer in mining. His *Systematic Geology* is still a standard text.

KITASATO (*kē-tä-sä'tō*), **SHIBASABURO** (1856–1931). Japanese bacteriologist, who became a doctor of medicine and studied in Germany under Koch. In 1892 he was made head of the Japanese institute for the study of infectious diseases. After researches in tetanus and diphtheria, he found the bacillus that causes bubonic plague (1894) and that of dysentery (1898), and a second plague bacillus (1900). In 1915 he established his own laboratory.

KLAPROTH, MARTIN HEINRICH (1743–1817). German chemist at the new University of Berlin (1810–17), who discovered several elements and perfected our knowledge of other rare ones already known. Of his original discoveries uranium, zirconium, and cerium are most important; of the others, tellurium, chromium, and strontium. Modern methods in analytical chemistry gained much from his patient and intelligent researches.

KOCH (*kōk*), **ROBERT** (1843–1910). Eminent German bacteriologist, who was born in Hanover, educated at Göttingen, and for a time practiced as a doctor. His work lay, however, in the causes and remedies of certain germ diseases, and investigations attempted by him, some of which reached fruition, greatly modified subsequent methods in bacteriology. Koch discovered the germ of anthrax (1876), succeeded in isolating the bacillus of tuberculosis (1882), perfected tuberculin to treat the disease (1892), but this proved effective only in assisting diagnosis, not in a permanent cure, and found a means of fighting rinderpest (1896), when he was called to South Africa to study the disease. He was also called to Bombay to study bubonic plague, to South Africa again to investigate certain cattle diseases, and to East Africa to combat sleeping sickness. Besides numerous other honors, he was awarded the Nobel prize for medicine (1905). Koch also originated the theory that bovine and human tuberculosis are not the same.

KOCHER (*kō'ker*), **EMIL THEODOR** (1841–1917). Swiss surgeon at the University of Berne, who made important investigations in the physiology and diseases of the thyroid gland. He received the Nobel prize for medicine (1905). *Text Book of Operative Surgery*, translated into English, remains a standard work of his.

KOLBE, ADOLPHE WILHELM HERMANN (1818–1884). German chemist, who succeeded Bunsen as professor of chemistry at Marburg and in 1865 went to Leipzig. He led to the structural theory in chemistry by a series of brilliant experiments, and predicted secondary and tertiary alcohols, which later others discovered. Among his greatest accomplishments were the electrolysis of fats, the preparation of salicylic acid from phenol, and the discovery of methane.

KUNDT (*kŏŏnt*), **AUGUST ADOLPHE** (1839–1894). A German physicist, who taught successively at Zürich, Würtzburg, Strasbourg, and finally took the chair of Helmholz at Berlin. Among other discoveries. he found how to measure the velocity of sound in gases and also in solids, and also how to show the dispersion of light in solids, liquids, and vapors.

LAENNEC, RENE HYACINTHE (1781–1826). French physician, inventor of the stethoscope. His important *Traité de l'auscultation médiate* has greatly influenced the art of diagnosis.

LAGRANGE, JOSEPH LOUIS (1736–1812). A great French mathematician. By his completion of the calculus of variations he established for himself a firm European reputation. His investigations in astronomy are also of value. Of his works the *Mécanique Analytique* (1788) is his masterpiece.

LALANDE, JOSEPH JEROME LEFRANCAIS DE (1732–1807). A French astronomer who at Berlin (1751) determined the parallax of the moon, and (1759) issued a corrected edition of the tables of Halley, and published results of his study of the transit of 1769. Delisle withdrew in his favor from the chair of astronomy at the College of France (1762), which Lalande occupied for 46 years.

LAMARCK (*lä'märk*), **JEAN BAPTISTE PIERRE ANTOINE DE MONET DE** (1744–1829). A French zoölogist who ranked as the greatest between Linnaeus and Cuvier. He was the founder of organic evolution and of invertebrate paleontology. He was the first to draw a strict distinction between the vertebrates and invertebrates, and to attempt a complete grouping of certain living and fossil animals and also of plants.

LAMB, HORACE (1849–1934). English mathematician, who wrote the standard treatise on hydrodynamics, and made other researches in wave propagation, electrical induction, and the motion of the air involved in successful airplane flight.

LANCIANI (*län-chä'nē*), **RODOLFO AMADEO** (1846–1929). An Italian archeologist, who in 1878 became a professor at the University of Rome, and who did much to increase our knowledge of the classical city. Some of his valuable publications are *Ancient Rome in the Light of Recent Discoveries, Pagan and Christian Rome*, and *Wanderings in the Campagna.*

LANGLEY, SAMUEL PIERPONT (1834–1906). American physicist and astronomer, who was born at Roxbury, Mass., educated in Boston, taught at Harvard College Observatory and the Western University of Pennsylvania, and then became secretary of the Smithsonian Institution. He made important discoveries in air and temperature conditions, invented the barometer which is a most accurate instrument for recording very small changes in temperatures, and then turned his attention to aeronautics. In 1896 he placed in the air a steam-driven "aerodrome," which actually stayed up for a minute and a half and flew a half mile. Later attempts to perfect a man-carrying plane ended in disaster to the craft and the abandonment of his researches due to lack of public sympathy. See HISTORY OF AIRCRAFT.

LANGMUIR, IRVING (1881–). American chemist whose research in the discharge of electricity in a vacuum tube led to much of the current development in radio. He discovered the atomic form of simple hydrogen, and from this knowledge developed a better way of welding through the use of flames of hydrogen.

LA PEROUSE (*lá-perūz'*), **JEAN-FRANCOIS DE** (1741–c. 1788). A French navigator and scientist who set out with two ships in 1785 for a voyage of

discovery around the world. He intended to seek the western passage missed by Cook through the Arctic sea, but was driven back from Alaska by poor weather, explored the Pacific coast, crossed the ocean to the Philippines, China, Japan, and Korea. In 1787 he sent home his interpreter with the data discovered up to that time. After he left Australia, Feb. 7, 1788, no further trace was found of his expedition, till in 1826 Capt. Peter Dillon discovered the wreckage of the two ships on the reefs of the New Hebrides.

LAPLACE (*lă-pläs'*), **PIERRE SIMON, MARQUIS DE** (1749–1827). A celebrated French mathematician who attained a position among mathematicians and astronomers almost equal to Newton's. His *Three Laws* demonstrated the stability of the solar system. He published many treatises on lunar and planetary problems, and a nebular hypothesis. Laplace showed the cause of the inequalities of Jupiter and Saturn, made studies in the equilibrium of a rotating fluid, and explained a theory of probabilities.

LA SALLE (*lă-săl'*), **RENE ROBERT CAVELIER, SIEUR DE** (1643–1687). A French explorer, who went to Canada in 1666, explored the region around the great lakes, and finally made a voyage from Chicago through the Illinois down the Mississippi. He took possession of all the land bordering on the river, called it Louisiana, sought to establish forts, and finally was driven back to France for aid. He set out with four ships, but the commander and part of the men returned to France from the West Indies, while the rest went on. La Salle failed to find the Mississippi again, wandered till two of his ships were destroyed, some of his men died, and only a small part went with La Salle across land toward Canada. On the way he was killed by one of his own followers. Though his grand attempts met with failure, he claimed a vast domain for his country.

LAVOISIER (*läh-vwäw-zēāy'*), **ANTOINE LAURENT** (1743–1794). French chemist; founder of modern chemistry; guillotined by French revolutionary tribunal. Lavoisier established the law of the conservation of mass; made important discoveries in chemical union; and devised a system of rational nomenclature.

LAYARD, AUSTIN HENRY (1817–1894). British explorer and author, who traveled much in Asia, spent some time in the political service, and made important excavations in the Mosul district, during which he located the site of ancient Nineveh. Later (1849) he investigated the location of Babylon. His reports, accompanied by many illustrations, are models of fine description and history. *Discoveries in the Ruins of Nineveh and Babylon* (1855) is his most interesting book.

LAZAREV, PETR PETROVICH (1878–). A Russian physicist, who made important investigations in photochemistry, in molecular physics, and the fundamental problems of living tissues. He was made a professor at the technical college of Moscow (1912) and director of biophysics in Moscow (1917).

LE CONTE (*lē-kônt'*), **JOSEPH** (1823–1901). An American geologist, who was born in Georgia, educated at New York College of Physicians and Surgeons, and at Harvard under Agassiz, whom he accompanied (1851) on an expedition to study the Florida reefs. After teaching at Oglethorp University, Franklin College, and South Carolina College, he was called to Leland Stanford, where he remained till his death. Some of his works on optics, vision, and psychology were valuable, but he spent much time on problems of geology, the formation of the earth crust, and the action of volcanoes. His text-books were long popular.

LEEUWENHOEK, ANTHONY VAN (1632–1723). Dutch biologist who demonstrated that the simple microscope was more practical than some compound lenses in use. He made remarkable discoveries in the structure of teeth, bones, muscles and other parts of the body, showed first the nature of the red corpuscles, and distinguished different cellular structure in plants. Bacteria was first represented by him in a drawing (1683).

LEIBNITZ (*lēp'nĭts*), **GOTTFRIED WILHELM FREIHERR VON** (1646–1716). One of the most celebrated scholars and philosophers that Germany has ever produced. Authorities seem generally agreed that he discovered the differential calculus independent of any knowledge of Newton's method of fluxions. He was eminent in history, divinity, philosophy, political science, experimental science, mathematics, mining, engineering and literature. See DICTIONARY OF PHILOSOPHERS.

LEIDY, JOSEPH (1823–1891). American naturalist; born at Philadelphia. Contributed much to natural science, particularly in paleontology. In 1864 he discovered that the parasite *Trichina spiralis* is introduced into the human system in raw or imperfectly cooked pork.

LEVERRIER (*lay-vair-re-ā'*), **URBAIN JEAN JOSEPH** (1811–1877). A French astronomer; distinguished in chemistry before he devoted himself to astronomy; rose to eminence in the latter science by a paper on the variations in the orbits of the planets and *Tables de Mercure;* discovered Neptune.

LEWIS, MERIWETHER (1774–1809). An American explorer, who was born in Virginia, was private secretary to President Jefferson, for whom with Lieut. William Clark he acted in the Louisiana purchase. In 1804 they left St. Louis for a western exploring trip, passed the next winter near the present Bismarck, N. D., and finally they reached the mouth of the Columbia River in the following November. No white man had crossed north of Mexico before. On the return trip from the Pacific coast they reached St. Louis again on Sept. 23, 1806. Many valuable scientific data were obtained.

LIEBIG (*lē'bĭk*), **JUSTUS, BARON VON** (1803–1873). A German chemist; one of the first to apply chemical analysis to the phenomena of organic life. His *Chemistry in its Application to Agriculture and Physiology* and *Researches on the Chemistry of Food* show how he has applied the teachings of science to practical utilities.

LINDBERGH, CHARLES A. (1902–), first man to fly alone across the Atlantic, was born in Detroit, graduated from high school at Little Falls, Minn., and studied at Univ. of Wisconsin. Learned to fly at Lincoln, Nebr., 1922. U. S. Air Reserve, 1923. Made first mail flight Chicago to St. Louis, 1926. Flew across Atlantic in *Spirit of St. Louis*, about 3,600 miles in less than 34 hours, May 20 and 21, 1927. Awarded scores of honors and prizes.

LINDENTHAL (*lĭn'dĕn-tăl*), **GUSTAV** (1850–1935). American engineer, who was born in Austria, emigrated to the United States in 1871, practiced engineering in Philadelphia, Pittsburgh, and New York. He was consulting engineer for the East River bridge at Hell Gate, completed in March 1917, which then had the longest steel arch span in the world (1,017 feet).

LINNAEUS (*lĭn-nē'ŭs*), **CARL VON LINNE** (1707–1778). Swedish botanist who was the first to devise the scheme of genera and species of the three kingdoms of nature. His *Genera Plantarum* has given rise to much of the modern study of botany, including classification, though there has been some departure from his original plans. He visited Lapland, Dalecarlia, and England in search of evidence for his studies. After acting for a time as lecturer in botany at Uppsala, and for one year as professor of medicine, he took the chair of botany in 1742. From this time he gave his main attention to teaching and the perfection of his classifications. Among his other works are *Philosophia Botanica, Species Plantarum*, and *Genera Morborum*. In 1761 he was ennobled and took the name of Carl von Linné.

LISTER, JOSEPH, FIRST BARON (1827–1912). An English surgeon. In addition to important observations on the coagulation of the blood, the early stages of inflammation, and other matters, his great work is known as the antiseptic system of surgery. He was made baronet in 1883 and a peer, as Lord Kinnear, in 1897; wrote largely on antiseptic treatment and the germ theory of putrefaction.

LIVINGSTONE (*lĭv'ĭng-stŭn*), **DAVID** (1813–1873). Scotch missionary and explorer of Central Africa, was born in Lanarkshire, was mainly self-educated, and in 1840 went as a missionary to South Africa. Much of the geography of the central part of the dark continent was blank on the maps until in 1853–54 and again in 1858 he made journeys, the first to the Congo from the Zambezi, and the second to the district north of the Zambezi. He discovered Victoria, Shirwa, and Nyasa lakes, contributed valuable scientific data, and suffered almost untold hardships on these journeys. In 1871 a relief expedition sent out by Gordon Bennett of the *New York Herald* and commanded by Henry M. Stanley found Livingstone at Ujiji, and left there with him stores and provisions. Two years later, after greater trials than

before, Livingstone was attacked by dysentery near Lake Bangweolo and was found dead on May 1. He was carried by faithful natives across Africa to Zanzibar, taken to England, and interred in Westminster Abbey. As missionary and explorer he inspired a generation of intrepid followers.

LOCKYER (*lŏk'yĕr*), **JOSEPH NORMAN** (1836–1920). English astronomer, who acted as director of the solar physics laboratory at Sidmouth, called afterward the Norman Lockyer Laboratory. The government provided facilities for eight expeditions to investigate solar eclipses (1870–1905). He was a pioneer in the use of the spectroscope in the study of the upheavals in the sun,—the "sun spots"—and the chemistry of its composition. Lockyer and Janssen, without collaborating, discovered (1868) that a method could be used to study the prominences of the sun by daylight. Among his books are *The Chemistry of the Sun* and *The Sun's Place in Nature.*

LODGE, OLIVER JOSEPH (1851–1940). English physicist and investigator of spirit phenomena, who was born in Staffordshire, educated at University College of London, was a professor at University College, London, University College, Liverpool, and then principal (1900–20) of Birmingham University. Previous to 1910 he did much work in lightning, electromagnetic waves and wireless, and certain practical applications of electricity. Some of his books in this field are *Signalling without Wires, Electrons,* and *The Ether of Space.* After 1910 he devoted much time to attempts to prove the possibility of communicating with the dead. Books in this field are *The Survival of Man, Raymond, or Life and Death,* in which he gives accounts of supposed conversations with his son, who died in the World War, and *The War and After.* Lodge also wrote a number of popular scientific works such as *The Making of Man, Relativity,* and *Talks about Wireless.* He was knighted in 1902.

LOEB (*lōb*), **JACQUES** (1859–1924). A German biologist, who, after teaching at Würtzburg, Strasbourg, and Naples, emigrated to the United States, and was a professor at the University of Chicago, in 1902 at the University of California, and after 1910 director of the division of general physiology of the Rockefeller Institute. His main labors concern the differences between living and dead tissue, a chemical explanation of life, and the effects of electric, radiant, and heat energy on living matter. Interesting experiments succeeded in producing young from the unfertilized ova of sea-urchins and of frogs.

LONG, CRAWFORD WILLIAMSON (1815–1878). American physician, born in Georgia, educated there, at the University of Pennsylvania, and in New York hospitals. He is now given the credit for the first use of ether on an actual patient, the first recorded use of anesthesia in surgery in modern times (March 30, 1842). Later he performed a number of similar operations. Other doctors who early used some anesthetic in dental or other surgery were Dr. Horace Wells of Hartford, Conn., nitrous oxide in extracting his own tooth (1844), Dr. W. T. G. Morton, a Boston dentist, acting on the suggestion of Dr. C. T. Jackson, used ether vapor (1846), and Dr. J. C. Warren (1846) performed the first public operation using ether at the Mass. General Hospital.

LORENTZ, HENDRIK ANTOON (1853–1928). A Dutch physicist who taught at Leyden and later at the Teyler Institute, Haarlem. Among various attempts to explain electricity and similar forces, he developed the idea of an ether which is always at rest, but containing moving electrons, applied the theory of Maxwell (q. v.) of ether waves, and sought to explain Zeeman's theory of radiating centers, which Lorentz said were electrons. The Nobel prize for physics was divided between him and Zeeman (q. v.) in 1902. Lorentz did much to secure international coöperation in science.

LORENZ (*lō'rĕnts*), **ADOLPH** (1854–). Austrian physician, born in Silesia, educated at Vienna, where he became a professor. He practiced and advocated adjustments of the hip to correct congenital malformations. Dr. Lorenz also operated manually on club feet. In 1902 and 1922 he lectured and practiced in the United States.

LOWELL, PERCIVAL (1855–1916). American astronomer, who was born at Boston, Mass., was graduated from Harvard, entered business and then engaged in literature and travel (1883–1893). He then devoted his time and fortune to the building of an observatory at Flagstaff, Ariz., where he made a study of Mars, among other scientific investigation. He believed that the inhabitants of that planet are trying to keep alive by making a system of canals for irrigation. Professor Lowell predicted the existence of an undiscovered planet which was first seen by the Harvard Observatory in 1930. *Mars and Its Canals, The Evolution of Worlds,* and *Memoir on Saturn's Rings* are some of his highly interesting books.

LUBBOCK, JOHN, FIRST LORD AVEBURY (1834–1913). An English business man and naturalist. In 1865 he succeeded to the baronetcy after the death of his father, and in 1900 was made a peer. As a member of Parliament he introduced various bills of a reform nature. He was best known, however, as the author of both popular and technical scientific books. Of the popular sort were *British Wild Flowers, Ants, Bees, and Wasps,* and *The Pleasures of Life;* of the scientific type *Marriage, Totemism and Religion, The Origin of Civilization and the Primitive Condition of Man,* and *The Origin and Metamorphosis of Insects.*

LYELL, SIR CHARLES (1797–1875). A British geologist. In his *Antiquity of Man* he summarized the evidence in favor of the theory that the race of man was much older than was currently believed. Lyell has been called the founder of modern geology. His *Principles of Geology* taught the continuity of the earth, and ranks with the *Origin of Species* as an epoch-making work.

McBURNEY, CHARLES (1845–1913). American surgeon, who did important work on the diagnosis of appendicitis by pressure at a certain point (now called McBurney's point), and a method of cutting a small incision without harming muscle fiber. He was educated at Harvard, Physicians and Surgeons in New York, and abroad.

McCOLLUM, ELMER VERNER (1879–). American biologist, who was born in Kansas, educated at the University of Kansas and at Yale, and taught at Wisconsin and after 1917 at Johns Hopkins University. At Wisconsin he discovered what is now known as vitamin A, and later had much to do with the finding of others, becoming a recognized authority on the relations between growth and disease.

MACLEOD (*măk-loud'*), **JOHN JAMES RICKARD** (1876–1935). Physiologist, who was born in Scotland, educated at Aberdeen and Leipzig, was connected with the London Hospital, and from 1903 to 1918 was a professor at Western Reserve University, Cleveland. Then he became professor and associate dean at the University of Toronto, where he did important work in metabolism and was one of the discoverers of insulin with Dr. F. G. Banting (q. v.). With Banting he shared the Nobel prize for medicine in 1923.

MAGELLAN, FERDINAND (c. 1480–1521). Portuguese navigator who served in the East Indies and Morocco, and then offered his services to the king of Spain. In 1519 he started for the Moluccas by the western route, reached the Rio de la Plata, and passed finally through the straits now bearing his name, sailed across the Pacific (which he named), and reached the Philippines. He was killed in a skirmish in the Philippines. Having passed from the other side on an eastward journey beyond this point, he thus, in two voyages, completed the circumnavigation of the globe.

MALPIGHI (*mäl'pē-gē*), **MARCELLO** (1628–1694). An Italian anatomist; noted for his important discoveries of the structure of the kidneys, lungs, skin, and spleen, giving his name to various parts of such. He made important discoveries through the use of the microscope, used first to any extent by him.

MALMGREN, FINN (1895–1928). Swedish meteorologist, who in 1922 was with Amundsen in the voyage in the North Polar Basin in the airship *Norge.* Malmgren gave up a post at Vastmanlands Dala College to accompany the Nobile expedition in 1928. When the ship was wrecked on May 24, he was among the ten thrown out on the ice, when he was somewhat wounded. With two others he tried to walk to North Cape, but was unable to continue. He begged his companions to leave him, as they did after doing all they could for him. His companions were picked up by a plane. A professorship at Uppsala has been named for him.

MANCE, HENRY CHRISTOPHER (1840–1926). English scientist, who for several years was in the service of the Persian Gulf Telegraph in the Indian administration, becoming a chief engineer in 1879. He is now known as the inventor of the heliograph, a method of locating breaks in cables, and one of estimating the internal resistance of a battery.

MARGGRAF, ANDRE (1709–1782). German chemist. He added alumina and magnesia to the then known earths—lime and silica—and was the first to extract sugar from beet root.

MARSH, OTHNIEL CHARLES (1831–1899). American zoölogist and paleontologist; born at Lockport, N. Y. Made many important discoveries of fossil vertebrates, and traced the phylogeny of the horse. Left to Yale University his valuable collection of fossil vertebrates.

MAWSON (*mô-sŭn*), **DOUGLAS** (1882–), Australian explorer of the antarctic, professor at the University of Adelaide in 1920, educated at Sydney University, and engaged in various scientific expeditions. As a member of the Shackleton expedition (1908–09), he made an ascent of Mt. Erebus and discovered the magnetic south pole, and on his own expedition (1911–14) he discovered land which he explored on a sledge trip of 800 miles.

MAXWELL, JAMES CLERK (1831–1879). Scottish physicist. His chief researches were into the kinetic theory of gases, the composition and vision of color, and electricity. In the last "he connected the theory of electricity and magnetism, and proved the oneness of the disturbances of the ether caused electrically and by light." Invented the Maxwell discs and color-box.

MAYER, JULIUS ROBERT (1814–1878). A German physicist and surgeon, who in 1840 made discoveries in Java regarding the nature of animal heat, and who claimed credit for stating independently what has been called "the first law of thermodynamics," relating to the conservation of energy, a principle also credited to Helmholtz and Joule.

MAYO, CHARLES HORACE (1865–1939), and **WILLIAM JAMES** (1861–1939). The Mayo brothers, American surgeons, established at Rochester, Minn., a clinic which became celebrated internationally. Together they gave $1,500,000 to establish a hospital at Rochester, which was placed under the control of the graduate department of the University of Minnesota. The Mayo Foundation offered graduate training to thousands of physicians. Charles H. Mayo specialized in surgery of goitre, the nose and throat, bones, and nerves. William J. Mayo specialized in surgery of the stomach, the gall bladder, and cancer, the study of the history of operative cases at the Mayo Institute at Rochester, and held important offices in medical and surgical societies.

MECHNIKOV (*metsh'nĕ-kŏf*), **ILYA** (1845–1916). A Russian biologist, who held the professorship of zoölogy at Odessa (1870–82), became assistant to Pasteur in Paris (1892), and succeeded him three years later. In 1908 he shared the Nobel prize for medicine with Paul Ehrlich. His study by microscope of blood diseases, certain problems of cell assimilation of food, and operations on animals for knowledge of human anatomy developed important results. He developed the theory of phagocytosis, or the study of digestion or rejection of particles by human cells; and this gave much information as to immunity from disease and similar problems.

MENDEL, GREGOR JOHANN (1822–1884). An Austrian abbot at Brunn who studied hybridization in garden peas, and developed a law of heredity which has greatly modified all subsequent theories of genetics. His experiments were carried on for fifteen years while he taught natural science, and he kept an accurate list of the succeeding generations in a given family to trace the similar and the dissimilar offspring. By this means he arrived at a working theory which, with modifications by later scientists, explains both the stable and the apparently variant characteristics in families, such as color of hair, height, shape of body, and other items.

MENDELEEV (*mĕn-dĕl-y-ā'yĕf*), **DIMITRI IVANOVITCH** (1834–1907). A great Russian chemist. He promulgated the theory of the Periodic Law of the elements, known as Mendeleev's Law, by which he was able to foretell the existence, atomic weights, and other properties of elements not then known, but which have since been discovered.

MERCATOR (*mĕr-kā'tĕr*), **GERARDUS (GERHARD KREMER)** (1512–1594). Flemish mathematician, geographer, and cartographer, who developed a system of making maps which determined the form of most later works of this type. The name Mercator is the Latin form of the Flemish word for merchant, *kremer*. He was educated at Louvain, in 1553 went to Antwerp, and five years later became map-maker to the duke of Cleves in Germany. Some important maps by him were those of Flanders (1540), of Europe (1554), of Lorraine (1563), of the world (1587), on which he had the help of a son, and also some terrestrial and at least one celestial globe. Mercator finally broke away from the Ptolmaic conception of geography and corrected many of the former readings of degrees. All his work was accurate and skilfully executed.

MERRIAM, CLINTON HART (1855–). American biologist, who specialized in marine animals and formations (1875–85), and in 1885 took charge of the division of ornithology and mammalogy, later the U. S. biological survey; in 1910 he was connected with the Smithsonian Institution, and from 1917 to 1925 was chairman of the U. S. geographic board. In his numerous papers he described many animals not previously classified.

MESMER, FRIEDRICH ANTON (1733–1815). A German physician; the founder of animal magnetism, called mesmerism after him. Mesmer believed that some force is active in the universe and especially influences the nerves of men and communication between persons. He was driven from Austria by adverse comment, settled in Paris, and became immensely popular in his séances. A commission, of which Franklin and Baillie were members, drew up a long report, admitting some phenomena claimed by Mesmer, but disputing his theory and many of his conclusions.

MICHELSON, ALBERT ABRAHAM (1852–1931). American physicist, who was born in Germany, educated at San Francisco and at the U. S. Naval Academy, studied in Europe, and was professor at Case, Cleveland (1883–89), Clark University (1889–92), and then at the University of Chicago. He achieved important results in determining the velocity of light, the measurement of distances by means of light-waves, and finally calculated (1920) the diameter of Betelgeuse (260 million miles), which was the first accurate determination of the size of a star. During the World War he gave all his time to naval service, perfecting a range-finder that was adopted as standard. Among the many honors showered on him was the Nobel prize for physics (1907) and the designation as "distinguished service professor" by Chicago University (1926).

MILLIKAN, ROBERT ANDREWS (1868–), studied and taught at Oberlin College, went to the University of Chicago in 1896, and was professor of physics there from 1910 to 1921, and then went to California where he became director of the Norman Birge Laboratory and president of the California Institute of Technology at Pasadena. He lectured at other colleges, was first exchange professor to Belgium on the C. R. B. Foundation in 1922, and vice chairman of the National Research Council from 1917. For isolating and measuring the ultimate electrical unit, the electron, Dr. Millikan was awarded the Nobel prize for physics in 1923.

MITCHELL, MARIA (1818–1899). American astronomer; studied particularly comets and nebulae; discovered a new comet (1847); professor of astronomy at Vassar (1865–1888). By means of photographs she made special studies of the sun and of Jupiter and Saturn.

MITCHELL, SILAS WEIR (1829–1914). American physician and author, who practiced for years in Philadelphia, specializing in nervous disorders, and acquiring fame as an advocate of the "rest cure." Dr. Mitchell wrote numerous scientific papers on a great range of topics, besides interesting stories and novels. See also under DICTIONARY OF AUTHORS.

MODJESKI, RALPH (1861–1940). American engineer, who was born at Cracow, Poland, the son of the actress, Helen Modjeska, was educated at the school for bridges at Paris, and then settled in the United States. He became known for distinguished service in the engineering and construction of bridges, especially the government bridge over the Mississippi, at Rock Island, Ill., the McKinley Bridge at St. Louis, the Northern Pacific Bridge at Bismarck, N. D., two bridges in Oregon, railroad bridges at Metropolis, Ill., and New London, Conn., and many others. As chief engineer he saw the construction of the Philadelphia-Camden Bridge over the Delaware River, which when finished (1926) was the longest suspension bridge in the world.

MOISSAN (*mwô-sàn'*), **HENRI** (1852–1907). A French chemist, connected with the Sorbonne, Paris (1889–1907), who made important researches in

oxides of certain metals, chromous salts, fluorene, fluorine gas and its combinations and the electric arc furnace at high temperatures, by means of which he prepared many new compounds.

MOORE, RICHARD BISHOP (1871–1931). Dean of the School of Science and head of the department of chemistry of Purdue University. He was born in Cincinnati, Ohio, went with parents to England in 1878 and was educated at London and Paris, and returned to take a degree at the University of Chicago (1896). After teaching at the University of Missouri (1897–1905), Butler College, Indianapolis (1905–11), he became chemist with the government. His chief work has been in the investigation of rare metals for the U. S. Bureau of Mines (1919–23), and meanwhile he was in charge of all helium experiments for the government. He popularized the use of mesotherium now used in making luminous watch dials, numbers, and airplane instruments. In 1907–08 he studied and experimented with Sir William Ramsay in London.

MORGAN, THOMAS HUNT (1866–). American biologist who made many investigations in the problems of heredity, especially those of sex determination, the physical basis of heredity, and the theory of the "genes," elements that are paired in heredity and give certain characteristics to the individual. Morgan was born in Kentucky, educated there and at Johns Hopkins, and was a professor at Bryn Mawr until called to Columbia University in 1904.

MORTON, WILLIAM THOMAS GREEN (1819–1868). Known as the American dentist who used sulphuric ether in anesthesia for the extraction of a tooth on Sept. 30, 1846, and sixteen days later administered ether to a patient at the Mass. General Hospital for Dr. J. C. Warren to perform a painless operation. Dr. C. W. Long of Georgia (q. v.) had already used ether, but this fact was not known till after Dr. Morton independently discovered a method of administering this as suggested by Dr. C. T. Jackson of Boston, who had made himself unconscious in the laboratory through the use of the gas.

MUIR, JOHN (1838–1914). An American naturalist, whose love of nature and zealous advocacy of a national policy of conservation led to the establishment of the Yosemite National Park and other monuments in the United States. An accident in early life drove him into the open, and he made many journeys on foot, finally settled down in California in a wooded tract, and did much to popularize the love of forests, streams, and animals in their natural haunts. Among his writings are *A Thousand-Mile Walk to the Gulf*, *My First Summer in the Sierras*, and *Steep Trails*.

MÜLLER, MAX (1823–1900). He was named Friedrich Maximilian, but dropped all of this name but the simple Max. Known for years as a learned student of Sanskrit, Müller failed of election to the chair at Oxford (1860), and then turned his attention to the origins of language in general, comparative religions, and especially in later life to the sacred books of the East. In 1868 a special chair of comparative philology was created for him at Oxford, but he held this only till 1875. Hosts of honors were bestowed upon him by learned societies, native and foreign monarchs, for his zealous endeavors to make the study of language popular. Among his works are *Science of Language*, *The Sacred Books of the East*, and *Introduction to the Science of Religion*.

MURPHY, JOHN BENJAMIN (1857–1916). An American surgeon who advanced the facility and success of abdominal operations by his discovery of a simpler method (now called Murphy's button). He also attained great fame by a method of bone grafting and one for tying arteries when severed by accident. After his graduation from Rush Medical College in Chicago, he studied for two years in Europe, and taught at Rush, the College of Physicians and Surgeons, and Northwestern Medical School at Chicago.

NANSEN, FRIDTJOF (1861–1930). Norwegian explorer, professor, and publicist, who was the first to cross the ice-cap of Greenland (1888), and organized the expedition of the *Fram* (Forward) to attempt to work a passage through the polar ice fields, which succeeded (1893–96), and later engaged in scientific and humanitarian labors. He became a professor at Christiana (1896), made another trip to the Arctic (1900) and acted as minister from Norway to England (1906–08). In later years he made other voyages in the North Atlantic. For the League of Nations (1918) he did distinguished service in repatriation of a half-million prisoners of war, and later for the Hoover relief commission helped feed a million and a half starving Russians. In 1923 he was awarded the Nobel Peace Prize, which he used to assist agriculture and the peasants in a district in Russia.

NAPIER, JOHN (1550–1617). A Scottish mathematician, the inventor of logarithms, and evidently the first to use the decimal point in arithmetic, calculating rods or bones, and certain rules in trigonometry. To assist in repelling the attack of Spain, he also invented some secret devices of war. His *Canonis Descriptio* (1614) explains the logarithms, and his *Rabdolgia* explains the use of rods or bones in making multiplications and divisions.

NERNST, WALTER (1864–). German physical chemist, a professor at Göttingen and later at Berlin and elsewhere, who is well known for his electric lamp, theory of solutions—especially in the study of diffusion and other phenomena of electrolytes—and the measurement of heat at low temperatures. In 1920 he was awarded a Nobel prize.

NEWCOMB, SIMON (1835–1909). A Canadian astronomer and mathematician; professor of mathematics U. S. Naval Observatory, 1861; observed transit of Venus at Cape of Good Hope (1882); director of Nautical Almanac (1877–1897); professor mathematics Johns Hopkins (1894–1901); editor *American Journal of Mathematics;* officer of the Legion of Honor in France.

NEWTON, SIR ISAAC (1642–1727). English mathematician and natural philosopher, born at Woolstorp, educated at Cambridge, and early turned to the study of higher mathematics. Some of his early discoveries were the bionomial theorem (1665), the elements of the differential calculus (1665–66) (which he called fluxions), and certain theories of color (1666–72), the latter of which were amplified and corrected later. As early as 1666, while away from London because of the plague, he began to think more seriously about gravitation, his discovery for a time, however, being doubted by him, because he could not account for the motions of the planets. These and some later deductions were published in the celebrated *Principia* (1686–87), in three parts issued at different times. In 1682 he had become familiar with Picard's measurement of the earth's diameter, which hitherto had not been accurate; and this, with Kepler's observations, led Newton to formulate his law of gravitation definitely. Many honors came to him, including a professorship at Cambridge (1669), a seat in Parliament for Cambridge (1689–90), warden of the mint (1696), and master (1700–27). As president of the Royal Society for 25 years, he did much to advance the cause of science and scholars. His work in every way had a far-reaching influence, which still continues.

NOBEL (*nō'bĕl*), **ALFRED BERNHARD**. See under DICTIONARY OF INVENTORS.

NOBILE, UMBERTO (1885–). Italian explorer, who specialized in the building and operation of airships, including the *Norge* and the *Roma*. With Amundsen and an American, Lincoln Ellsworth, in the former of these he made a flight across the Pole in May 1926, landing at Teller, Alaska. Two years later he commanded the ill-fated *Italia*, which crashed on the ice shortly after crossing the Pole on May 24, 1928. Of the 10 thrown from the airship in the collision, all save Malmgren (q. v.) escaped alive in various ways; but 7 were carried away in the craft itself and never traced again. After an elaborate investigation by an Italian commission in 1929, Nobile was declared responsible for the accident, and in consequence he resigned the rank of general and all other honors which had been given him.

NOGUCHI (*nō'gō-chē*), **HIDEYO** (1876–1928). Japanese bacteriologist and martyr to scientific research, who was born in Fukushima, educated at Tokyo, in the United States and Europe, and worked for the Rockefeller Institute from 1904. He succeeded in isolating the germ of syphilis, devised a test for the detection through the skin, discovered the germ of yellow fever (1918), and made a serum for use in combating the disease, but fell a victim to this scourge while making investigations in West Africa in 1928.

NORDAU (*nôr'dou*), **MAX.** See under DICTIONARY OF AUTHORS.

OERSTED (*ur'stèd*), **HANS CHRISTIAN** (1777–1851). A Danish physicist who, in 1806, was elected a professor at the University of Copenhagen. Besides attempts to make science intelligible and popular in lectures and books, he showed that magnetism, galvanism, and electricity are the same. This discovery led the way to important developments in electro-

magnetism. His main results were published (1820) in *Experiments on the Effects of Opposing Electricity Upon the Magnetic Needle.*

OHM, GEORG SIMON (1787–1854). German physicist; discovered the law in electricity bearing his name while studying the relative conductivity of metals. The name "ohms" was established for the unit of electrical resistance in 1881, by the Paris Congress of Physicists.

OMAR KHAYYAM (*kī-yäm'*) (d. 1123). Great Persian mathematician, philosopher, and poet, best known to western nations through the *Rubaiyat,* the best English version of which was made by FitzGerald. (See DICTIONARY OF AUTHORS.) Omar, whose last name means *tentmaker,* was one of the chief scientists of his age. He wrote notable works in Arabic on algebra, revised the astronomical tables, and reformed the calendar.

ONNES, HEIKE KAMERLINGH (1853–1926). Dutch physicist, who occupied the chair of experimental physics at Leyden, and did some notable investigation in the effect of very low temperatures on metals. In all his work he emphasized the need for exact scientific measurements. He liquefied helium (1908) in his famous cryogenic laboratory, but failed to reduce it to a solid state, a task accomplished by his successor. Other important work nas to do with the theory of electrical conduction of solids. Onnes won the Nobel prize for physics in 1913.

OSBORN, HENRY FAIRFIELD (1857–1935). Eminent American paleontologist, who was born in Connecticut, educated at Princeton, taught in his alma mater (1881–91), and at Columbia after 1891. In 1891 he became connected also with the American Museum of Natural History, acting as president from 1908. Besides important work in classification and arrangement of the specimens in the Museum, he published several hundred papers, did much to extend our knowledge of the animals and vertebrates, past and present, and conducted several field expeditions to far-off lands. The most fruitful were the expeditions to the desert of Gobi in Asia, where among other valuable finds, fossil dinosaur eggs were discovered for the first time by scientists.

OSLER, WILLIAM (1849–1919). A celebrated medical authority, who received his scientific training mainly at McGill University, where he was a professor also from 1874 to 1884, after which he held successively professorships in medicine at the University of Pennsylvania, Johns Hopkins, and from 1905 to 1919 at Oxford, England. Popularly Dr. Osler is best known because of his jocose remark, at a banquet of physicians, that the average person should be chloroformed at 58 or 59,—a bit of pleasantry well advertised in the newspapers. Dr. Osler wrote authoritative books on some of the diseases of children, afflictions of the digestive apparatus, and several treatises on the general practice of medicine.

OSTWALD (*ôst'vält*), **WILHELM** (1853–1932). A German chemist, who served as a professor at Riga (1882–87), and at Leipzig (1887–1906), when he retired. Among important contributions to knowledge, he found the affinity constants of acids and bases, made experiments on the viscosity of certain solutions by means of a viscometer he devised, and found a way of oxidizing ammonia to form nitrogen oxides. The Nobel prize for chemistry went to him in 1909.

OWEN, RICHARD (1804–1892). An English biologist, who studied medicine at Edinburgh and London, prepared catalogs of specimens in the museum of the College of Surgeons, and in 1836 was made Hunterian professor, and in 1856 head of the natural history department of the British Museum. Much of his time was spent in dissection of existing forms of animals, in the study of those now extinct in Australia and elsewhere, and in classification of groups, and as a follower of Cuvier in investigating invertebrate osteology. He discovered (1835) the parasite that causes trichinosis.

PACKARD, ALPHEUS SPRING (1839–1905). An American naturalist; best known as an entomologist. His classification of insects has been widely accepted. He studied under Agassiz at the Lawrence Scientific School; curator and, later, director of the Peabody Academy of Sciences, Salem (1867–1878); entomologist of Massachusetts (1871–1873); professor of zoölogy and geology at Brown University (1878), wrote *Guide to the Study of Insects, etc.*

PALLAS, PETER SIMON (1741–1811). German-Russian naturalist. Specimens gathered by him during six years of travel in Siberia formed the nucleu of the museum of the Academy of St. Petersburg. Hi important works include *Elenchus zoöphytorum* an *Flora Russicia.*

PALMER, D. D. (1845–1913). American healer who founded chiropractic, a system developed from hi observations (1895) that certain spinal adjustment cured a patient of defective hearing. With a son h founded a school at Davenport, Iowa, devoted to th study of anatomy and the teaching of the art of adjust ing the bodily frame to correct troubles due to mal adjustments.

PARACELSUS, THEOPHRASTUS (c. 1490–1541) A German empirical physician, lecturer in medicin at Basle, who for a time attracted much attention but was forced to leave because of his arrogant atti tude toward other physicians before and during hi time. He taught simplicity in practice, original ob servation and investigation, experiment, and a phil osophical training for physicians. From 1528 to 154 he went from place to place, later settling at Salzburg Among his extravagant claims, tendency toward al chemy and mysticism, he introduced some new reme dies, used mineral baths, and added certain tincture to the list of prescriptions.

PARK, MUNGO (1771–1806?). An explorer o Africa, who was born in Scotland, and became physician. He discovered (1796) the mouth of th Niger River, explored the stream for 300 miles, en dured great hardships, and at last reached Pisania i June 1797. On a second expedition (1805–06), h was reported killed by hostile natives after explorin hundreds of miles of the Niger, which he thought wa the same as the Congo. His son Thomas (1827) die of a fever in Africa on his way to Bussa to search fo Park, on the theory that he might have been retaine as a prisoner.

PARSONS, WILLIAM BARCLAY (1859–1932) An American engineer of New York City, who acted a designer of the first subway system constructed there was a member of the Isthmian Canal Commission chief engineer of the Cape Cod Canal project, an assisted in many other civic and public enterprises

PASTEUR, LOUIS (1822–1895). A celebrate French scientist. He contributed results of investi gations of the highest importance to nearly ever branch of science; but it is with processes of ferments tion and putrefaction that his name is inseparably con nected. In the germ theory and the treatment o hydrophobia his results are best known.

PAVLOV, IVAN PETROVICH (1849–1936). Russian physiologist who was celebrated for his re searches in problems of digestion, in brain activity circulation of the blood, which he observed in animal under normal conditions, and the physiology of th heart. He was a director of the institute for experi ment in medicine, and from 1897 a professor in th medical academy of St. Petersburg.

PEARY, ROBERT EDWIN (1856–1920). Ameri can Arctic explorer and naval engineer, who mad many trips to the Arctic regions; established the in sularity of Greenland; discovered the noted Eskim meteorites; reached latitude 87 degrees 6 minutes, onl 200 miles from the pole (1906); a new expeditio in 1908; reached the pole April 6, 1909; rear admira (1911).

PETRIE (*pī'tri*), **WILLIAM MATTHEW FLIN DERS** (1853–). English Egyptologist, who dis covered many ancient cities and towns (such a Naucratis in the Nile delta, Am and Daphnae), an explored the pyramids at Giza and the temple o Medum. In 1893 he was appointed a professor Egyptology at University College, London. Amon his many notable works are *Ten Years' Diggings Europe, Hyksos and Israelite Cities, Eastern Explora tion, Social Life in Ancient Egypt,* and *Revolution Civilization.*

PICKERING, WILLIAM HENRY (1858–1938) American astronomer, who was born at Boston, edu cated at the Massachusetts Institute of Technology where he taught from 1880 to 1887, and then becam connected with the Harvard Observatory. Amon many researches, his work in photographing planet was most notable, together with the discovery of th 9th and 10th satellites of Jupiter, and the demonstra tion of the reason why their motions are in the op posite direction from those of the other satellites.

PINCHOT (*pĭn'shō*), **GIFFORD** (1865– American forester and public servant, who was bor

in Connecticut, educated at Yale, and started the first systematic forestry work in the country in the Vanderbilt forest of North Carolina. He was connected with the U. S. forest service from 1896 to 1910, from 1898 acting as chief of the division, later made a bureau. Through energetic publicity the conservation policy of the nation was furthered. In 1920 he was appointed state forester of Pennsylvania, and served as governor from 1923 to 1927, introducing a budget system.

PINKERTON, ALLAN (1819–1884). American detective and founder of the U. S. secret service, who was born in Scotland, emigrated to America in 1842, and settled in Chicago. Among his notable achievements were the capture of a band of counterfeiters in Chicago (1846), the protection of President Lincoln from a plot to assassinate him at Baltimore (1861), the capture of the robbers who stole $700,000 from the Adams Express Company (1866), and the breaking up of the Molly Maguires, a band of terrorists in the mining regions of Pennsylvania. He founded Pinkerton's Detective Agency in 1852.

PLANCK, MAX (1858–). A German physicist who originated the "quantum" theory of radiation of a black body, first published in his Law of Radiation (1901) and later extended (1912) to all forms of energy. Planck asserted that emission is not continuous, while absorption is continuous. He won the Nobel prize for physics in 1918.

POLO, MARCO (c. 1254–1324). An Italian traveler, long a resident at the court of Kubla Khan, emperor of China, with his father and an uncle. After about a score of years at Cathay, the three were chosen to accompany a lady of the empire to Persia, where she was to be the wife of the emperor, and from there they returned to Venice in 1295. Three years afterward, he was imprisoned by the Genoese for nearly a year, after he had been captured in one of the vessels of the Venetian fleet, defeated by the Genoese navy. While in prison he dictated his *Book of Marco Polo* to a fellow prisoner, and it proved one of the most interesting travel books we have.

PONCE DE LEON, JUAN (c. 1460–1521). A Spanish explorer who discovered Florida. He had sailed with Columbus on the second voyage to America, and in 1509 had conquered Porto Rico. Hearing of a land to the westward where there was a fountain of eternal youth, he set out to find this Bimini, as it was named. In 1513 on Easter Sunday, he touched the coast of what he named Florida, explored much of the lower part of the Peninsula, and in 1521 returned from Spain with a commission to conquer and rule the land. In a skirmish with hostile natives he was fatally wounded and died in Cuba.

PRIESTLY, JOSEPH (1733–1804). An English clergyman and chemist, who combined preaching, teaching, acting as a librarian for Lord Shelburne, with studies in various combinations, and after holding other appointments settled at Birmingham. In 1791 several men there met to celebrate the anniversary of the fall of the Bastile, and a mob gathered in opposition, burned Priestly's chapel and sacked his house. He escaped to London, and finally spent the last 10 years of his life at Northumberland, Pennsylvania. He discovered oxygen, hydrochloric acid gas, sulphur dioxide, silicon fluoride, sal ammoniac, and other chemical compositions. In a day when chemistry as we now know it was hardly thought of, he did remarkably well for a man who had received no fundamental training in science.

PRZHEVALSKI (*pĕrz-hĕ-väl'sky*), **NIKOLAI MIKHAILOVITCH** (1839–1888). Russian explorer and naturalist; made extensive explorations in eastern Siberia and Mongolia, where he discovered a true species of wild horse.

PTOLEMY (*tol'e-mee*) **(CLAUDIUS PTOLEMAEUS)** (flourished about 150). Ancient astronomer and geographer; born in Egypt; was the author of the system of astronomy called after him. His works on astronomy (*Almagest*) and geography were the text-books of the world on these subjects until the time of Copernicus and the maritime discoveries of the fifteenth century.

PUPIN (*pū-pēēn'*), **MICHAEL IDVORSKY.** See under DICTIONARY OF INVENTORS.

RALEIGH (*râw'lēē*), or **RALEGH, SIR WALTER** (c. 1552–1618). English courtier and navigator, was educated at Oxford, served in the war in the Netherlands, and went with his half-brother, Humphrey Gilbert, on a trip to America. Later he rose high in favor of the queen, was knighted, and made an expedition to the new world, from which he brought back to England the potato and tobacco. After James came to the throne, Raleigh was suspected and imprisoned for 13 years, during which time he wrote his *History of the World*. He staked his life on the success of an expedition to Guiana in 1616, but failed utterly. He was obliged to remain at Trinidad because of illness, and his son was killed in a skirmish with the Indians. On his return James revived an old sentence against him, and he was executed.

RAMSAY, WILLIAM (1852–1916). English chemist; the leading exponent of physical chemistry in Great Britain. In 1894, jointly with Rayleigh, he discovered the element argon. He afterward isolated xenon, krypton, and neon—three more gaseous elements—and more recently discovered that radium in its apparent disintegration evolves helium.

RASMUSEN (*räs-mö'sĕn*), **KNUD JOHAN VICTOR** (1879–1933). A Danish explorer born in Greenland; on his mother's side he was of Eskimo descent. He visited on various expeditions all tribes in the polar regions and believed that they were originally of Indian ancestry. Among his works is *Greenland by the Polar Sea* (1919).

RAY, JOHN (1628–1705). He wrote his name Wray till about 1670. An English naturalist, who for a time held a fellowship at Trinity College, Cambridge, which, as a non-conformist, he had to resign in 1662. After making a tour of Europe with Willughby, he completed a botanical collection described in his books, the most important of which was a *General History of Plants* (1686–1704). His *Catalog of English Plants* (1670) has been used by most subsequent authors.

REAUMER (*ray-ow'mur*), **RENE ANTOINE FERCHAULT DE** (1683–1757). A French scientist; is best known as the inventor of the thermometer that bears his name. Some of his researches led to practical methods in the manufacture of iron, such as the method of tinning iron which is still in use.

REED, WALTER (1851–1902). American bacteriologist who traced the spread of yellow fever to a certain type of mosquito. Reed was born in Virginia, educated at the University there, and entered the medical corps in the U. S. Army, becoming professor in the Army Medical School in 1893. During the Spanish-American War he studied typhoid fever among soldiers and made important discoveries. From 1895 on he studied yellow fever intensively, arriving at conclusions that existing theories were erroneous, except that he revived the old supposition of Dr. Carlos Finley that a mosquito might cause the spread of the scourge. With companions (two of whom lost their lives), he began experiments, which proved his theory, and this is now well established. Very soon yellow fever was eliminated from Cuba, and since then from other localities.

REMSEN, IRA (1846–1927). An American chemist and university president, who received his A. B. at the College of the City of New York, and his M. D. at the College of Physicians and Surgeons at Columbia University, and his Ph. D. at Göttingen, Germany. After six years as a professor of chemistry at Williams College, he became identified with Johns Hopkins in 1876, as professor and from 1901 to 1912 as president. In 1879 he founded the *American Chemical Journal* and became its editor. Besides many scientific articles and addresses, President Remsen wrote books on chemistry and allied subjects, some of which are *The Principles of Theoretical Chemistry, Elements of Chemistry*, and *Inorganic Chemistry*.

RICHARDS, THEODORE WILLIAM (1868–1928). American chemists, who taught at Harvard from 1894, and who received the Nobel prize for chemistry in 1914. Among his important results are the work in atomic weights, electro-chemistry, and surface tension. Several learned societies elected him to important offices.

ROBINSON, BENJAMIN LINCOLN (1864–1935). American botanist; born at Bloomington, Ill.; Asa Gray professor of systematic botany and curator of Gray herbarium, Harvard; editor *Gray's New Manual of Botany*, 7th Edition.

ROENTGEN or **RONTGEN** (*rĕnt'gen*), **WILLIAM CONRAD VON** (1843–1923). German physicist, who was educated at Zürich, and became a professor at Hohenheim, Strasbourg, Gissen, and Würzburg. In 1895 while experimenting with a vacuum tube in trying to make electricity pass through certain gases,

he noticed that a barium platinocyanide screen near by became luminous. This effect did not seem to be that of light, and he named the new rays X-rays, that is, the unknown rays. He also made discoveries in elasticity, the conduction of heat, polarized light, and similar effects. In 1901 he was awarded the Nobel chemistry prize.

ROSCOE, HENRY ENFIELD (1833–1915). English chemist; professor of chemistry in Owens College, Manchester (1858–1887); with Schorlemmer wrote the exhaustive *Treatise of Chemistry* in 8 volumes. He was among the first to make exact measurements of the chemical action of light. He discovered a method of making vanadium in a pure state, conducted researches in various elements, and proved that certain mixtures are not true compounds since their composition depends on external pressure.

ROSS, JAMES CLARK (1800–1862). British explorer and admiral, who made several voyages to the Arctic, discovered the location of the magnetic pole (1831), and commanded the Antarctic expeditions of the *Erebus* and *Terror* (1839–43). He also was captain in the first party to search for the Franklin expedition.

ROSS, RONALD (1857–1932). A British physician, who studied the causes of malaria, the life history of the parasites causing this disease, and methods of combating it. He later taught tropical medicine in Liverpool University, at King's College in London, and at the Ross Institute. In 1921 he received a Nobel prize.

ROWLAND, HENRY AUGUSTUS (1848–1901). An American physicist, who attempted as a professor at Johns Hopkins University a series of computations of remarkable accuracy and exactness by the use of highly specialized instruments. Among these were the mechanical equivalent of heat, the value of the ohm, diffraction gratings for use in the study of spectrum effects (14,000–20,000 rulings to the inch on a glass surface), and maps of the solar system by means of the use of these gratings. See also under DICTIONARY OF INVENTORS.

RUMFORD, BENJAMIN THOMPSON, COUNT (1753–1814). An American scientist; discovered the principle upon which chimneys and fireplaces are now constructed; established the fact that heat is a form of motion; wrote largely on economics, physics, meteorology, and chemistry.

RUTHERFORD, ERNEST (1871–1937). British scientist, who was born in New Zealand, educated at Cambridge, and was a professor at McGill University, Montreal, at Manchester, and at Cambridge, also accepting a professorship in the Royal Institution in 1920. He was knighted in 1914. Among his extraordinary achievements was the series of investigations into the electrical structure of matter, the nature of the atom, and of certain radio-active transformations. Besides the Nobel prize in 1908, various honors were showered upon him. He published several books on radio-activity.

SACHS (*säks*), **JULIUS VON** (1832–1897). A German botanist, who taught at three schools of agriculture and at Freiburg until in 1868 he became a professor at Würzburg. He did much work on growing plants, to determine their physiology, cell structure, coloring, and powers of assimilation.

SANTOS-DUMONT (*sän-tōs-dü-mōn*), **ALBERTO.** See under DICTIONARY OF INVENTORS.

SARGENT, CHARLES SPRAGUE (1841–1927). An American dentrologist, who for many years was professor of arboriculture and directed the Arnold arboretum at Harvard University. Besides editing the papers left by Asa Gray (1889), he published many studies in forests and trees, including *Catalogue of Forest Trees of the United States, The Woods of the United States,* and *Manual of the Trees of North America.*

SCHEELE, CARL WILHELM (1742–1786). A Swedish chemist; made numerous important discoveries and published many chemical papers; discovered tartaric acid (1770), chlorin (1774), baryta (1774), oxygen (1774), and glycerin (1784); formed the arsenite of copper known as Scheele's green; and separated hydrocyanic acid (1782).

SCHLIEMANN (*shlēē'man*), **HEINRICH** (1822–1890). A German archeologist, the son of a poor clergyman and largely self-educated, eventually learning seven or eight languages; in early youth he conceived a great desire to learn more of ancient Greece. He made a fortune as a military contractor. In 185 he became an American citizen. After travels i Greece, Tunisia, and other lands, he spent much o his fortune in excavating at the alleged site of Tro through which he dug to a much older town lyin below (1873). Three years later he made importan discoveries at ancient Mycenae, where he came acros a great treasure of gold and jewels, and later mad important excavations at ancient Tiryns. Schliemann laid foundations for much of later research int ancient civilizations in the Greek world.

SCHOOLCRAFT, HENRY ROWE. See unde DICTIONARY OF AUTHORS.

SCOTT, ROBERT FALCON (1868–1912). Britis explorer, who from 1900 to 1904 carried on an im portant expedition in the *Discovery;* and then fo six years served in the navy, until another expeditio was arranged. With government and Canadian back ing, the *Nova Terra* set sail in June, 1910, Scott an four companions began the sledge journey in Nov 1911, and reached the Pole on Jan. 18, 1912, onl to find that Roald Amundsen had been there first On the return journey all the members perished befor they reached the base ship, March, 1912.

SHACKLETON, ERNEST H. (1873–1922). Englis naval officer and explorer; leader of British-Antarcti expedition (1908–9) which located the south magneti pole, lat. 72 degrees 25 minutes S., long. 154 degree E.; ascended Mt. Erebus 13,100 feet; on January 9 1909, by sledges over ice at an elevation of abov 10,000 feet, reached lat. 88 degrees 23 minutes, onl 97 geographical miles or 111 common miles from th South Pole.

SHALER, NATHANIEL SOUTHGATE (1841- 1906). An American geologist; author of *Nature an Man in America, The Interpretation of Nature,* an many other notable works.

SILLIMAN, BENJAMIN (1816–1885). An Ameri can chemist. He was graduated at Yale in 1837, an became professor of chemistry in the School of Applie Chemistry (now Sheffield Scientific School); delivere the first series of lectures on agricultural chemistr given in the United States.

SLOSSON, EDWIN EMERY (1865–1929). A grad uate of the University of Kansas, with graduate study at Chicago, who acted as professor at Wyoming, an then as literary editor of *The Independent* (1912- 20). Afterward he became director of Science Service which did much to spread the knowledge of new in ventions, theories, and all developments of science.

SMITH, WILLIAM (1769–1839). English geologist His reputation rests upon his theory of the stratifica tion of rocks. The first published geological maps o England were prepared by him.

SMITHSON, JAMES (1765–1829). An Englis philanthropist; was graduated at Oxford. In 1835 hi property, amounting to $515,169, came into the pos session of the United States government, having bee bequeathed by him "for the purpose of founding a institution at Washington, D. C., to be called th Smithsonian Institution, for the increase and diffusio of knowledge among men."

SODDY, FREDERICK (1877–). A Britis scientist, graduate of Oxford, and professor at th University of Glasgow, Aberdeen University, and a Oxford. With Sir Ernest Rutherford (q. v.) he de veloped the disintegration theory of radio-active ele ments, and alone he demonstrated that certain element have two or more forms, different atomic weights, an some characteristics, but are the same chemically This theory, since confirmed many times, had im portant bearing on certain obscure phenomena i chemistry. In 1921 he was given the Nobel prize fo chemistry.

SPEKE, JOHN HANNING (1827–1864). An Eng lish explorer of Africa; discovered Lake Nyanza i 1858, and in 1862 discovered that it is the source o the Nile. See BURTON, RICHARD F.

SPENSER, HERBERT. See under DICTIONARY O PHILOSOPHERS.

STANLEY, HENRY MORTON (1841–1904) African explorer; sent out in 1869 by the New Yor *Herald* to search for David Livingstone, whom h found at Lake Tanganyika in 1871; continued the ex ploration of Africa; crossed the continent from east t west, followed the Congo river to its mouth; founde the Congo Free State; wrote *How I Found Living stone,* and *In Darkest Africa.*

STEFANSSON (*stĕf'ăn-sŏn*), **VILHJALMUR** (1879–). Was born in Manitoba, educated at the State Universities of North Dakota and Iowa, and at the Harvard Divinity and Graduate Schools. Leader of several expeditions into the frozen north—to Iceland, 1904; to mouth of the Mackenzie River and Northern Alaska, 1906–7, to the Arctic, 1908–12; to Banks Island, 1914; to Prince Patrick Island and to land he discovered, 1915 and again in 1916. Stefansson interviewed several tribes of Eskimos who claimed they never had seen a white man. He has written scientific papers, a number of books on the Arctic regions, including *My Life with the Eskimo*, *The Friendly Arctic*, *Hunters of the Great North*, and has lectured frequently before clubs and popular audiences.

STEINMETZ (*stīn'mĕtz*), **CHARLES PROTEUS** (1865–1923). An electrical expert and inventor, who for many years was connected with the General Electric Company at Schenectady, N. Y., and with Union College as professor of physics. Many problems were worked out under his direction, the results being published in valuable monographs and books.

STILL, ANDREW TAYLOR (1828–1917). An American who was successively farmer, soldier in the Civil War, country doctor, prospector, and discoverer of the principles of osteopathy. For many years he closely studied human anatomy, but the death of four children in 1864 of cerebro-spinal meningitis turned his attention to the spinal cord as the center of osteopathy, or adjustments of bones and other parts of the body which cause disease.

SWEDENBORG, EMANUEL. See under DICTIONARY OF PHILOSOPHERS.

THENARD, LOUIS JACQUES, BARON (1777–1857). French chemist; made the discovery of the peroxid and the persulphid of hydrogen, of boron, hydrofluoric acid, and fluorid of boron.

THOREAU. See DICTIONARY OF AUTHORS.

TORRICELLI (*tŏr-rī-chĕl'lī*), **EVANGELISTA** (1608–1647). An Italian physicist, pupil of Galileo; invented the barometer; improved the telescope; and was the first to construct a simple microscope.

TROWBRIDGE, JOHN (1843–1923). An American professor at Harvard (1866–1923), who introduced laboratory work in physics, and did much to spread information as to electricity and X-rays. Among his efforts to make scientific study popular were the books entitled *The New Physics*, *Three Boys on an Electrical Boat*, *Philip's Experiments in Electrical Science*.

TYNDALL, JOHN (1820–1893). English physicist, who by his lectures did much to popularize science. His treatises on light and sound, and on radiant heat and its action on gases, are the result of his original researches; his work on the motion of glaciers was published in conjunction with Huxley.

VANCOUVER (*văn-kō'vĕr*), **GEORGE** (*c.* 1758–1798). An English navigator and explorer who mapped much of the coast of what is now the United States from San Francisco to Vancouver Island, Canada, which he circumnavigated (1790–94). He had sailed with Cook on the second and third voyages, went from England around Good Hope to Australia, part of the west coast of which he surveyed (1791), visited the Hawaiian Islands, and on the return he observed the southern point of California, the Galapagos Islands, and others.

VAN'T HOFF, JACOBUS HENRICUS (1852–1911). Dutch physical chemist, who taught at Amsterdam (1878–1896), and then in Germany. In 1901 he was awarded the Nobel prize for chemistry. Among his fruitful researches were those in valencies of carbon atoms, from which he developed the knowledge of asymmetric carbon, applied dynamics to chemistry, made a new theory of chemical affinity, and explained ocean salt deposits.

VAUQUELIN, LOUIS NICOLAS (1763–1829). A French chemist, who discovered two elements, beryllium (1798) and chromium (1797), and several compounds like camphoric acid and asparagine. From 1783 to 1791 he worked in the laboratory of Fourcroy, with whom he published some researches, and from 1809 to his death he was professor of the Medical Faculty of Paris. Nearly 400 chemical articles were from his pen.

VERRAZZANO (*vĕr-rät-sä'nō*), **GIOVANNI DA** (*c.* 1480–1527). An Italian navigator of Florence, who (1524) explored the waters of the American coast from Cape Fear as far north as New Hampshire.

VESPUCCI (*vĕs-pōōt'chē*), **AMERIGO** (1451–1512). A sailor and merchant of Florence, Italy, whose name was given to the new world as *America*. According to his own statements, some of which seem improbable, he made four voyages to western waters, one of which would have brought him upon the north Pacific coasts, one to San Domingo, one to the southern arctic waters, and one to the eastern coast. Some doubt this last voyage (1497). If Vespucci's accounts are correct, he saw the coast of America eight days before John Cabot did. His later days were spent as chief pilot in the service of Spain.

VOLTA, ALESSANDRO, COMTE (1745–1827). An eminent Italian physicist; inventor of the voltaic pile, the first electric cell or battery, the electrophorus, the condensing electroscope, the electrometer, the hydrogen lamp, and the electric pistol.

VORONOFF, SERGE (1866–). A Russian surgeon, educated in Paris, and, after holding several posts in his native land, became a professor at the College of France, acting as director of experimental surgery. Following the theories of Brown-Sequard that certain animal and human secretions are quite similar, he grafted healthy animal glands into the human body, and attempted other operations to prolong the gland activity of human beings.

WAALS, JOHANNES DIDERIK VAN DER (1837–1923). Dutch physicist, who acted as professor of physics at Amsterdam from 1877 to 1907. He developed a theory of the continuity of the gaseous and the liquid states, discovered the law of binary mixtures, and did much work which enabled others to liquefy some of the stable gases. In 1910 the Nobel prize for physics was granted to him.

WALCOTT, CHARLES DOOLITTLE (1850–1927). An American paleontologist, who performed an important service in helping unite three government bureaus into the Geological Survey, acted as secretary of the Smithsonian Institution for 20 years (1907–27), and studied the early Cambrian and other fauna. In 1910 he unearthed very extensive and important deposits of Cambrian fossils in British Columbia.

WALLACE, ALFRED RUSSELL (1823–1913). British naturalist, who collected specimens in South America (lost by a fire in the ship that was taking them home), and spent some time in the Malay Archipelago. While at Sarawak, Borneo, 1855, he first conceived the idea of a law regulating species, which he stated as follows: "Every species has come into existence coincident in both time and space with a pre-existent closely-allied species." In Feb., 1858, during a fever, the idea of the survival of the fittest came to him, and he sent his statement to Darwin. The latter found it almost identical with his own views. A joint statement was read to the Linnean Society on July 1, 1858, sharing the credit for the theory. Wallace published several works, including *Speculations on the Origin of Species* (1855), *The Wonderful Century* (1898), *Social Environment and Moral Progress* (1910).

WEBER (*vā'bĕr*), **ERNST HEINRICH** (1795–1878). A German anatomist, for many years after 1840 professor of physiology at Leipzig, where he made important investigations of the sense organs, and expressed the relation of sensation to stimulation in terms now called Weber's law. He was one of the first to apply physics to psychology.

WEBER (*vā'bĕr*), **WILHELM EDUARD** (1804–1891). A German physicist, who developed a method and names for measuring electrical units; he proposed and defined the terms volt, ampere, coulomb, and farad, using names of celebrated physicists. Mathematical physics now owes a great deal to his early applications. After some study of magnetism, he developed a system of electromagnetic telegraphy about 1833.

WEISMANN (*vyse'mahn*), **AUGUST** (1834–1914). A German biologist; leader of the Neo-Darwinian school of evolutionists. The "all sufficiency of natural selection" is the keynote of his teaching in regard to the problems of heredity; he expanded the idea of the continuity of the germ-plasm, and propounded a theory of germinal selection.

WELCH, WILLIAM HENRY (1850–1934). Eminent American bacteriologist and pathologist, who was educated at Yale, and taught at Bellevue Hospital, New York, and Johns Hopkins, Baltimore, for many

years. Among his many contributions were those in relation to diphtheria, a new gas-producing organism or bacillus, and various surgical infections. He was the recipient of many degrees, honors, and offices of trust in medical and other associations. His works include *General Pathology of Fever, Bacteriology of Surgical Infections,* and *Throbosis and Embolism.*

WELLMAN, WALTER (1858–1934). Journalist and explorer; located Columbus's first landing place; led two polar expeditions, to 81 and 82 degrees north; (1906, 1908) attempted polar expeditions by airship.

WHITE, GILBERT. See under DICTIONARY OF AUTHORS.

WILEY, HARVEY WASHINGTON (1844–1930). American chemist, who was largely instrumental in the passage of various national laws protecting the public against misbranded foods and drugs. Having acted as state chemist and professor at Purdue University (1874–83), he became chief of the Bureau of Chemistry of the U. S. Department of Agriculture, resigning in 1912. From 1899 he was professor of agricultural chemistry at George Washington University. Author of *Foods and their Adulteration, Beverages and their Adulteration* and *Health Readers for Schools.*

WILKINS, GEORGE HUBERT (1888–). British explorer, who acted as photographer of the *Karluk* expedition under Stefansson (1913–18) and twice went to the Antarctic (1920–21, 1921–22), and twice from Point Barrow, Alaska, over the Arctic regions. In 1928 on April 21 he flew from Point Barrow to Spitzbergen; on this flight Carl Ben Eielson acted as pilot (d. 1929 in airplane accident near North Cape). Much information was gained, but no land was seen in the hitherto unexplored regions. He was created a baronet in 1928. On Dec. 19 he and Eielson flew over the Antarctic and found some new land there.

WILLISTON, SAMUEL WENDELL (1852–1919). American paleontologist and zoölogist; professor anatomy Yale (1886–1890); professor geology and anatomy University of Kansas (1890–1902); professor of paleontology at University of Chicago from 1902; author o *North American Diptera,* and many scientific paper particularly upon mesozoic reptiles.

WILSON, ALEXANDER (1766–1813). A Scottish American ornithologist. By association with Willia Bartram he became interested in ornithology; pub lished his *American Ornithology,* himself drawing th faithful pictures. In 1814 it was completed in nin volumes. It was issued in two volumes after his deat and, with a continuation by C. L. Bonaparte, in fou volumes in 1833.

WILSON, JAMES. See under DICTIONARY O RULERS AND STATESMEN.

WOHLER, FRIEDRICH (1800–1882). A Germa chemist, who studied at Marburg and with Berzeliu at Stockholm, and for 46 years was professor at Gö tingen. He obtained the metallic aluminum isolate beryllium, made important studies in uric acid, an showed the resemblance between titanium, silicon, an carbon.

WOLLASTON, WILLIAM HYDE (1766–1828). A English chemist and physicist; invented the "camer lucida," the reflecting goniometer, an apparatus fo measuring refractive power of solids; discovered palla dium, rhodium, and a method of making platinu malleable.

WRIGHT, ALMROTH EDWARD (1861–). British bacteriologist, who did important work i parasitic diseases, prepared an anti-typhoid inoculatio and conducted experiments in other substances de signed to make the human blood immune to certai diseases. In 1906 he was knighted, and during th World War acted as consultant to the armies i France.

WUNDT (*vūnt*), **WILHELM MAX.** See unde DICTIONARY OF PHILOSOPHERS.

YOUNG, CHARLES AUGUSTUS (1834–1908) American astronomer; professor of astronomy at Dar mouth (1866); Princeton (1877); discovered the re versing layer in the solar atmosphere and made valu able studies in solar phenomena.

ADAMS, JAMES TRUSLOW (1878–). An historian, born in Brooklyn and educated there and at Yale, with honorary degrees from various colleges. Member of a stock exchange firm until 1912. Served on commission headed by Col. House in the World War, later in the military intelligence, and as adviser in the Peace Conference. In 1921 his *Founding of New England* won the Pulitzer Prize. Other notable books are *Hamilton Principles* (1929), *Tempo of Modern Life* (1931), *America's Tragedy* (1935), *The Epic of America* (1935), translated into European languages, and *The Living Jefferson* (1936). Contributor and editor of various publications.

ADLER, MORTIMER J. (1902–). Advocate of better reading habits among the people. Dr. Adler, who was born in New York, found after taking his Ph. D. that he had no real method in his reading. Growing out of his own studies and experiments, he issued his *How to Read a Book*, which became a best seller. He joined the faculty of the University of Chicago in 1930, and has lectured widely on his specialties, philosophy and law. In *Art and Prudence* (1937), he discusses the relations between art and morals in the light of ancient philosophers, such as Plato, Aristotle, and St. Thomas Aquinas. Among his other works are *Dialectic, Crime, Law*, and *Social Science* (with Prof. Jerome Michael) and *What Man Has Made of Man*. In *Art* and *Prejudice* (1937), one section on motion pictures discusses the question of censorship and regulation.

ALLEN, FLORENCE E. (1884–). She was the first woman assistant prosecutor of a county in Ohio; first woman to sit in a court of general jurisdiction in the United States (Ohio Court of Common Pleas); first woman to preside in a court of last resort (Ohio Supreme Court); and first woman member of a U. S. high court of appeals. She advised persistency, a sense of humor, and "don't be emotional" to any women taking up the study of law. Her father was professor of Latin and Greek in Western Reserve University until compelled by poor health to take up his residence in Utah, where he became the first Congressman from that state and where his daughter was born in Salt Lake City.

Florence Allen could read at four; took up Latin at seven; and Greek at eight, under her father's instruction. She was ready for college at fourteen, but waited to study music for two years; then went to Western Reserve for an arts course; followed by specialization in music with a year in Berlin; taught for three years; and acted as music critic for the Cleveland *Plain Dealer* (1906–09). Then she took up political science, completed a law course at New York University, and was admitted to the bar in 1914. Her progress in Cleveland as a lawyer was steady and rapid. She became assistant prosecutor for the county in 1919; justice of the Supreme Court of Ohio in 1922, and was reelected in 1928 with 350,000 majority; and judge of the Sixth District of the Federal Court of Appeals in 1934. Her book *This Constitution of Ours* was published in 1940.

ANDERSON, MARION (1908–). Since she sang in the junior choir in the Union Baptist Church of her birthplace, Philadelphia, this gifted negro singer has steadily made her way to the heights of fame. Toscanini, the great conductor, said, "A voice like hers comes once in a century." Since 1925 when she won against 300 other singers in the contest at Lewisohn Stadium in New York, some of her chief performances have been those before the kings of Norway and Sweden and the Finnish composer, Sibelius, and at the White House in Washington. She won the Spingarn Medal in 1939. Among her repertoire of over 200 songs in nine languages, she regards the negro spirituals as her favorites.

ANGELL, NORMAN (1874–). Celebrated political scientist, born in England and educated there, in France and in Switzerland. He first came to America in 1891 and worked as a farm hand, waiter, cowboy, prospector, and journalist. He returned to England in 1897; then became editor of an English daily paper in Paris and started the *Paris Daily Mail* for Lord Northcliffe, with whom he was associated for ten years. By 1940 he had to his credit at least 15 books on economic, political and allied topics. He was knighted in 1931 and given the Nobel Prize for literature in 1933. Some of his books are the *Story of Money* (1929), *Preface to Peace* (1935), *Peace with the Dictators?* (1938), and *America's Dilemma* (1940). His *Great Illusion* (first issued in 1908) went through over 100 editions in 20 languages. The thesis of this famous book is that nations are under a great illusion when they think that addition of territory by war means any particular addition of wealth.

ARNOLD, THURMAN W. (1891–). As assistant attorney general in Washington, Arnold showed no favors in the prosecution of cases regarded by the government as violations of the anti-trust laws. He was called from a professorship in law at Yale in March, 1939, to enter the government service in a stiffer enforcement of the existing laws, after a congressional investigation. In a little over a year, in 74 indictments involving 680 individuals, 200 of these were union representatives, 214 corporations, 58 labor unions, 32 trade associations and other associations, and only one partnership. Arnold is a graduate of Princeton and of the Harvard Law School, went west to Laramie, Wyoming, where he was mayor, member of the legislature, and then was called to West Virginia University as dean in law.

BAKER, NEWTON D. (1871–1937). As Secretary of War in the cabinet of Woodrow Wilson, Baker had general charge of the drafting of over four million men, half of whom were sent abroad. He once had said he was such a pronounced pacifist that he would be willing "to fight about it." His fame rests on the skill, energy, and fairness of his department in trying times. He was a graduate of Johns Hopkins and, in law, of Washington and Lee University. After a year as secretary to the postmaster general in 1897, he took up the practice of law in Cleveland, where he soon became an active and notable citizen. From 1905 to 1909 he was City Solicitor, and from 1912 to 1916, Mayor of Cleveland, where his ability attracted Wilson. Baker took a small, untrained, poorly equipped army, chose John J. Pershing to hasten the preparations for active service, and by 1918 was sending 10,000 men a day abroad. In 1921 he returned to Cleveland and became adviser in many important cases. He favored the World Court and United States entrance into the League of Nations. In 1929 he became a member of the Hague tribunal and also chairman of the federal crime commission. In 1933 the National Institute of Social Science gave Baker a medal for distinguished service to humanity, a similar honor having been awarded him by the government in 1928. Baker was a native of West Virginia.

BANKHEAD, WILLIAM B. (1874–1940). Speaker of the House of Representatives, who came from a family of legislators. His father also represented Alabama for years in the House, and his brother, John H., was Senator from that state, having defeated Tom Heflin in 1930. The family was prominent in Alabama industry, in the Methodist church and against the Klan. W. B. Bankhead played fullback on the University of Alabama team, became a member of Phi Beta Kappa, and established a reputation in college theatricals. Two of his daughters, Tallulah and Eugenia, have distinguished themselves on the American stage. After turning from the stage as a career, Bankhead for a time was a lawyer and political speaker in New York, but went back to Alabama to become his brother's law partner in 1900. He represented Madison County in the Legislature, then was City attorney of Huntsville for four years, and also from 1900 to 1914 served as solicitor on the fourteenth Judicial Circuit. He served in Congress from 1917, knew parliamentary law as few have, and so was made chairman of the Rules Committee in 1934. On Jan. 2, 1935 Bankhead became majority leader, and in June, 1936, succeeded his friend Byrnes as Speaker of the House. Bankhead showed considerable strength in the Democratic Convention of 1940, continued to work and speak for his friend, the President, and was stricken suddenly while speaking.

BATES, ERNEST S. (1879–1939). He is known best by his *The Bible Designed To Be Read as Living Literature* (1936), which was a best seller in both America and England. After one year at Columbia, he became a teacher of English at the University of Oregon for 17 years, resigning in 1926 to become a free-lance author. As book reviewer for the New York *Herald Tribune*, he became known for sound and varied learning. Among his other works are *The Story of the Supreme Court, The Story of Congress, This Land of Liberty*, and *Mary Baker Eddy—The Truth and the Traditions* (with J. V. Dittmore). On Dec. 4, 1939, a few minutes after completing his *American Faiths*, a book on religious beliefs, he dropped dead of a heart attack in New York.

BEDIER, JOSEPH (1864–1938). In 1920 he took the chair in the French Academy vacated by the death of the poet Rostand, on the basis of his *Tristram and Iseult*. He was known for many years as a profound student of French and English literature. He was called to lecture at Harvard (1909), Columbia (1923), University of California (1927), and at the College of France, of which he was administrative head from 1929 to 1936. His chief works are *The Fabliaux, Critical Studies, Songs of the Crusades*, and *Epic Legends*.

BENES, EDUARD (1884–). Patriot and former president of Czechoslovakia; educated in Prague, Dijon, and Paris. He was a protégé and assistant to Thomas G. Masaryk, and was Minister of Foreign Affairs of his country (1918–25), premier (1921–22), and president (1935–38), resigning after the Munich pact. He had also been a member

of the Council of the League of Nations. After coming to America, he taught history at the University of Chicago, lectured widely, and counseled his countrymen and other European refugees in the United States.

BEVIN, ERNEST (1884–). British Minister of Labor in the Churchill Cabinet, and formerly secretary of the Transport Workers Union. After the usual education in the schools, Bevin took a post on the *Daily Herald*, organ of the workers of England. In 1937 he was chairman of the General Council of the British Trades Union Congress. He visited the United States and spoke at a dinner with Lord Stanley Baldwin as the chief guest of honor. In the coalition war cabinet, Bevin has as much power as any king of England since the Middle Ages, with authority given him to direct the labor, hours, and wages of any person in the realm. In this position Bevin did much to unify the sentiment of the workers for defense of their homeland.

BIRGE, RAYMOND T. (1887–). Dr. Birge received his education in Brooklyn, New York, and at the University of Wisconsin, where he won the usual degrees. After teaching at Syracuse University from 1913 to 1918, he went to the University of California, where he became a professor in 1920, chairman of the department of physics in 1933, and the discoverer of a radioactive form of carbon which promises to lead to very important results in the study of the germs that cause disintegration of tissues.

BLACK, ALEXANDER (1859–1940). This versatile editor, author, and inventor, known as "the father of the photoplay," brought out the first screen drama, in slow motion, in 1894. He was the first president of the department of photography of the Brooklyn Institute. He began as reporter at 16, was literary editor of the *Brooklyn Times* for 11 years, Sunday editor of the *New York World*, 1905 to 1910, editor of Newspaper Feature Service, 1913 to 1926, and art editor, King Features, 1926 to 1935. Black was also the author of a score of books, including his reminiscences, *Time and Chance* (1937).

BLACK, HUGO L. (1886–). Appointed to the Supreme Court in August, 1937, in the face of considerable opposition and accusations that he had been a member of the Ku Klux Klan. Beginning the practice of law at Birmingham in 1907, he was police judge in 1910–11, prosecuting attorney from 1915 to 1917 in Jefferson County, Alabama, and then from 1919 to 1927 in general practice at Birmingham. When appointed to the court, he was serving in the fourth year of his second term as United States Senator. Black was the first of the so-called New Deal appointees intended to liberalize the theories of the Supreme Court.

BLAKE, JOSEPH A. (1864–1937). Known for his Blake Splint for the reduction of fractures in surgery. During the World War he was asked to supervise hospitals with the French, British, and American armies. At the close of the World War he was in the Sixth Army Corps Hospitals. He was decorated in the French Legion of Honor and given the United States Distinguished Service Medal. Dr. Blake was educated at Yale and at the College of Physicians and Surgeons of New York, later serving as a professor at P. and S. He served at times as surgeon at the Orthopedic, St. Luke's and Roosevelt Hospitals in New York City, at the St. John's in Dobbs Ferry, and in Tarrytown hospitals.

BOOTH, EVANGELINE (1865–). She was the fourth daughter of General William Booth, having been born in the year when the East London Mission, forerunner of the Army, was established. Her training began at an early age and at 20 she was placed in charge of one of the worst districts of London, where she did such noteworthy service that all of London was put under her command in a few years. Acting as a shop girl and servant, she gained much insight into the conditions and ideas of the London poor. She won the right of the Army to hold outdoor meetings, the first of the well-known street corner Salvation Army services. From 1895 to 1904 she was in charge of activities in Canada and from 1904 to 1934 in the United States. She led a party of religious workers in the Klondike gold fields when the great rush was on from 1897 to 1900. During the first World War, Miss Booth established the Salvation Army as a respected agency for good in France. Later a thank offering in appreciation of the work of the Army during that time grew to thirteen million dollars. She felt obliged to oppose her brother, Bramwell Booth, who had succeeded his father as General of the Army. Through her efforts in 1929 it was decided that a new leader should be elected by the chief officers and should not be appointed by the retiring general. Edward J. Higgins became General at that time and served until 1934 when Miss Booth returned to London to take over that position. The United States awarded her a Distinguished Service medal and Sweden gave her the gold medal of the Order of Vasa.

BUCK, PEARL S. (1892–). This gifted author of *The Good Earth* and other books interpreting China to the western world was born Pearl Sydenstricker at Hillsboro, West Virginia. At an early age she went with her missionary parents to China, where she remained until she was 17. The she returned to this country for a course at Randolph-Mac College in 1910, after which she returned to China as a mi sionary until 1933. While on furlough she took her A. M at Cornell in 1926. In China she taught at three colleges Nanking. Her first novel of oriental life was *East Wind West Wind* (1929), which treats of the aspirations of the pea ants of China, as do several of her other books. The chi ones besides her Pulitzer prize *Good Earth* (1933) are *T Mother* (1935), *The Exile* (1936), *Fighting Angel* (1936), a *Other Gods*, an American legend (1940). Some critics hav pronounced Mrs. Buck the first real interpreter of the commo people of China for English-speaking people. In 1917 s married John L. Buck of the state of New York, and in 193 Richard J. Walsh. Afterward she lived in Pennsylvani

BURLIUK, DAVID (1882–). An artist of inte national background, born in the Ukraine, and since 192 a resident of the United States. After military service an study in Odessa, he went to Paris where he fell under th influence of the work of Von Gogh. Later he became one the Blue Riders, a group of young German painters, and al a poet of some fame. After painting in the Urals just aft the World War, he spent two years in Japan. He quickly b came a lover of American scenes, particularly of villages an shores, but he never could forget the homes of the Russia peasantry. His work appeared in various one-man exhibitio in San Francisco, Philadelphia, and Portland, Oregon.

BUTLER, ELLIS P. (1869–1937). From the time he wrot *Pigs Is Pigs*, published in 1906, Butler was known far an wide as an American humorist. His books number over 3 some of the best known ones being *The Incubator Baby* (1906 *Great American Pie Company* (1907), *Adventure of a Subu banite* (1911), *Goat's Feathers* (1919), *Ghosts What Ain't* (1923 and the *Behind Legs of the 'Orse* (1927). Butler was a leade in our modern style of American fun-making.

CARVER, GEORGE W. (1864–). Negro chemist the Tuskegee Institute in Alabama, whose work in assistin agriculture is little short of marvelous. He was born i slavery in Missouri, was stolen by night-riders when a youn baby, ransomed by his master, brought up in his family an given his name. Carver worked his way through schoo at Minneapolis, Kansas, and then through Simpson Colleg and Iowa State College, where he became an assistant i botany. Booker Washington called him from there to Tuske gee. Carver found 300 uses for the peanut, new stains an dyes from common clays, paving squares from cotton, a oil remedy for infantile paralysis, 100 uses for the swee potato, and 60 from the pecan. He won many medals an was made a member of the British Royal Society of Arts, a honor shared by few Americans. Edison once offered hi $50,000 a year to do research for him; a Mississippi compan offered to let him name his own figure to become chemist fo it,—and moved to Tuskegee (to accept free advice from him when Carver refused. In 1940 Dr. Carver gave his life-saving of about $30,000 to provide for research at Tuskegee. I April of that year a special film was made to show his wor and life story.

CASE, ANNA (1889–). She was born at Clinton, N. J. and first sang in public in the choir at Plainfield. In 1931 sh married Clarence H. Mackay. In 1909 Miss Case made he début at the Metropolitan Opera in New York, where sh remained until 1916, playing such important rôles as Sophi in *Der Rosenkavalier*, Olympia in *The Tales of Hoffmann* and Micaela in *Carmen*. For years she was also a favorit soprano on the concert stages of Europe and the Unite States.

CHAMBERLAIN, NEVILLE (1869–1940). His father Joseph Chamberlain, once declared that Neville never coul become a political leader. During the first World War David Lloyd-George asked Chamberlain, then an industria leader in Birmingham, to see if he could coordinate and speed up British industry. His attempt was not a great succes and in seven months he was back at his own business desk again. He declared public office had no charm for him. Ye in 1918 he was elected to parliament and from then on wa active at various times in party councils. In 1937 he wa recognized as leader of the Conservative Party. Meanwhil he had been Postmaster General, 1922–23; Minister of Health 1923, and 1924–29; also Chancellor of the Exchequer fo part of the time, and again from 1931 to 1937. He wa premier from 1937 to 1940 when popular opposition forced him to retire in favor of Winston Churchill, who had been a vigorous leader in the first World War. He was given the nominal position of President of the Council. Few men for a brief period have been more popular in England than Cham berlain and few in recent times have suffered such a quick eclipse. His policy was that of friendly cooperation and appeasement. He reasoned that kindness and conciliation would win friends and soften enmities. When he returned from th conference with Hitler at Munich in 1938, Chamber

lain supposed he had insured the peace of Europe for years to come. His own disillusion was even more bitter, if possible, than that of his countrymen who had relied on his statesmanship to steer them clear of war. After he resigned as premier, his ill health increased and his spirit was completely broken.

CHARCOT, JEAN B. (1867–1936). Eminent French explorer who turned from a brilliant career as the young chief of clinic in the Paris Faculty of Medicine in 1896, and devoted his life to many hardships of polar scientific research and discovery. On two extensive explorations of the antarctic regions (1903–05 and 1908–09) he made many discoveries in the South Shetlands, Weddell Land and Adelaide and Graham Islands in a land of more than 10,000 icebergs. In the World War he won the Distinguished Service Cross and the Croix de Guerre. In 1936, with 38 of his men, he was drowned off western Iceland when their ship the *Pour Quois* was driven on rocks. Some of his notable works are *Around the South Pole* (2 vols.), and *Navigation Made Easy*.

CHIANG KAI-SHEK (1888–). Chiang seems to have been recognized as the natural successor to Dr. Sun Yat-sen, who was called the George Washington of China. He disliked his school, ran away to join the forces, lived for four years in Japan attending military school, and returned to suffer many turns of fortune. He became closely associated with Dr. Sun Yat-sen, founded a military academy, and gradually fought off many of those groups seeking to keep China disunited. After a while in Russia and later under Red influences, he sought to break away at a time when his armies needed help and the people began to demand too much of him. Certain opposition led to his temporary withdrawal, but he was soon asked to take charge again.

Under the influence of his banker friends, he married Soong Mei-ling, a graduate of Wesleyan College and a convert to Christianity. Her influence over him and China has turned affairs into western ways of thinking. The climax of Chiang's career came in December, 1936, when he was a prisoner for two weeks and vigorously threatened by an ally of his, former Marshal Chang Hsueh-liang. As a result of terms agreed upon by these men, Chiang ceased to war against the Russian interests and turned all his forces toward the resistance to Japan. Chiang, recognized as the outstanding military leader of China, was more successful than any other person in uniting all elements. As the Japanese cut off the coast and moved inland, he moved his modern rebuilt capital from Nanking to Hankow, and when Hankow was taken, the capital was moved to Chungking far in the interior. Even here he was beset at times with internal troubles of the 4th and 8th route armies under communistic training and influence.

The outstanding achievement of Chiang is the "Westward Trek" of Chinese thought and culture, whole colleges being moved to the interior provinces which up to then had never been influenced by modern civilization. Here, not only colleges, but thousands of small local cooperatives have been established, making resistance to Japan—with what supplies come overland from Russia and by way of the Burma Road—possible.

CHRYSLER, WALTER P. (1875–1940). At 17 he began work as a wiper of locomotives in a roundhouse at five cents per hour, and at 36 he was manager of the American Locomotive Company in Pittsburgh. Then General Motors Company offered him a position as works manager for the Buick, of which he became president and general manager, 1916–19. Next he was vice-president of the Willys-Overland Company, and chairman of the committee to reorganize the old Maxwell Company. In 1924 he put the Chrysler on the market and sold $500,000 worth the first year. In three years his companies stood among the big three in the automobile world, with the Chrysler, Plymouth, Dodge and DeSoto cars. Chrysler was known for his successful innovations. After 1935 Chrysler organized other companies, one of which built the immense building in New York City which bears his name.

CIERVA, JUAN DE LA (1896–1936). Inventor and developer of the autogiro, born in Spain, but spent much of his life in England where he was killed in an airplane accident. In March, 1924, he made his first helicopter, after which he toured Europe, and finally obtained help to start a factory in England. Some of his early flights were those from London to Paris in 1928; 12,000 feet over Madrid in 1929; and various demonstrations before scientific bodies. He won the chief prizes for development of safer aviation, including International Aviation Gold Prize in 1932, the Franklin Institute prize, and the John Scott Medal. Cierva's chief feat was the development of the rotor blades and of a machine that would move forward, backward, and sidewise, and which could be held in the air for a space of time in almost any desired location.

COMPTON, KARL T. (1887–). He was the son of a Presbyterian minister who became a professor of philosophy at Wooster College in Ohio, where Compton himself obtained his first degree and also where he taught chemistry for a year after obtaining his Master of Science in 1909. He obtained his doctorate from Princeton in 1912; went to Reed College in Oregon for two years and then to Princeton as assistant professor of physics. In 1929 he became head of the department of physics at Princeton, but resigned in 1930 to become president of the Massachusetts Institute of Technology. There he sought a closer relationship between purely scientific subjects and general culture. With the establishment of a new Division of Humanities and a five-year course to permit the student to combine practical work with theoretical courses, the Institute began a new era in scientific progress. As Compton became more interested in social and political movements, he aided the government on several advisory bodies. At the same time, he took much interest in the students in his Cambridge technical university. He served as president of the American Physical Society from 1927 to 1929 and as President of the Association for the Advancement of Science in 1937. Since he became a busy executive, he has taken time out to continue his own research work in atomic physics, in which he is a world authority.

CONANT, JAMES B. (1893–). He was the son of a photoengraver in Dorchester, Mass., obtained his preparation for college at the Roxbury Latin School, and his A. B. at Harvard in 1913, completing his course in three years and taking special work in chemistry. In 1916 he was awarded his Ph. D. in the same field. During World War I he was one of the experts working in the Chemical Welfare Service, where he learned to control one of the deadliest gasses yet manufactured by man. After completing a great plant at Cleveland for the making of chemicals, he was raised to the rank of major in the service. He then returned to Harvard where he became a full professor of chemistry in 1927 and in 1931, chairman of the department. In 1933 he was chosen to succeed Abbott L. Lowell as president of Harvard University because of his progressive ideas in education. At Harvard he has stressed research by members of the faculty, at the same time assisting professors to obtain a broad general background for their work. He established several new University Professorships, the object of which is to allow professors to teach outside the regular routine of their own departments. In 1941, during World War II, he was sent on a government mission to England.

CURTISS, CHARLES (1860–1936). Thirty-first vice-president of the United States, who was born in Topeka, Kansas, admitted to the bar there in 1881, and gained a reputation as a cautious and astute politician. He was county attorney of Shiwasee County, sat in the House of Representatives from 1893 to 1907, and then in the Senate to fill out the term of J. R. Burton. He served until 1912 and again from 1917 to 1929, when he was elected vice-president. On March 4, 1933, he retired to practice law in Washington. Curtiss was known as a genial and impartial presiding officer of the Senate. He was one-eighth Indian of the Kaw Tribe of Kansas, and as a child lived among the redmen for a time.

DALADIER, EDOUARD (1884–). Daladier entered French politics shortly after the first World War. His long popularity came from the fact that he was of peasant stock and appealed to the common run of the French. Military service in the trenches added to his early fame, with three citations for bravery in action. In 1924 he took his first cabinet post, became the leader of the Radical-Socialists, Minister of Public Works in three cabinets, and finally in 1933 Premier, also being Minister of War. He carried on until October 24, 1933, was in office again for 11 days in 1934 and again on April 4, 1938, following the resignation of the leftist Blum cabinet. Daladier followed Chamberlain's policy at Munich. He wanted to help Finland during the Russo-Finnish War, but the immediate crisis at home prevented it. At last, tired of turmoil and opposition, he suddenly resigned on March 19, 1940, but served briefly as Foreign Minister in the next cabinet of Reynaud.

DEWEY, THOMAS E. (1902–). In 1937 Dewey was elected by a margin of over 100,000 the first Republican District Attorney of New York City in about two generations. He was the candidate of the factions opposed to Tammany methods, and was favored by Mayor F. H. LaGuardia. He was born at Owasso, Michigan, son of the county chairman and postmaster of that city. After receiving his A. B. degree at Michigan, 1923, he attended music school at Chicago on a scholarship. He soon entered Columbia Law College and began active practice in 1925. In 1931, after practice with three different firms, he became assistant to George Medaile, United States Attorney for the Southern District of New York. When Medaile resigned; Dewey became his successor during the first important trial of racketeers that he had attempted. From this time on his name was associated with various investigations, trials, and convictions of many figures known to the underworld. In 1936 the case that attracted wide publicity was that of the "King of Vice" in New York, with nine convictions at the end. Dewey ran against Herbert Lehman for the governorship and lost by so close a margin that a shift of 35,000 votes would have elected him. From that day he was carefully groomed as the likely candidate for the presidential nomination by the Republicans. He made

the longest pre-campaign tour of any candidate for this nomination and was highest at the start of the balloting in Philadelphia, but, after suffering a rapid decline of strength, threw his votes to Wendell Willkie. During the campaign which followed he was one of Willkie's most effective campaigners on a great national tour.

DIES, MARTIN (1901–). Born in Texas, son of a former member of Congress, and a man of deep convictions and fearless temper. In 1931, while still under 30 years of age, he became a member of the House. He kept trying until 1936 to start one investigation after another (seven in all), and finally, in 1938, was made chairman of a committee to investigate un-American activities, after Fritz Kuhn and his Bund had been exposed in New York. As a result of their work, Dies and his committee were showered with bouquets and brickbats with almost equal fervor. Early in 1940 the first full report of the committee appeared—a document of 7,000 pages.

DILL, JOHN GREER (1881–). Chief of the British General Imperial Staff, called by some "our greatest general since Marlborough." Dill won his way by kindness and sympathy with all ranks of soldiers, never by harsh and exacting methods. He was always known as a leader of soldiers. His background is that of a family of Irish Protestants of Belfast, Ireland. After a course in the Military College at Sandhurst, he served in the last of the Boer War in South Africa, winning the Queen's Medal for ability and bravery. His promotion in the army was very slow, although twice at least he was jumped over several men of longer service. In 1911 he became a captain and won numerous honors and medals during the first World War, but did not become a colonel until 1920. From 1923–26 he commanded the Second Infantry Brigade. In 1929 he went to India as brigadier on the General Staff; in 1930 he was made a major general; in 1931 commander of the Staff College at Camberley; in 1934 director of Military Operations and Intelligence in the War Office. Later he studied the grounds and results of the World War in central Europe. In 1936 he quelled an uprising in Trans-Jordania with a minimum of bloodshed. Even the rebel Arabs admired his methods. He then became a general and in 1939 was sent to France. In 1940 he succeeded Edmund Ironside as Chief of Staff. Dill was always recognized as a conciliator, not a driver. In London he worked faithfully and heartily with the government of Churchill.

DISNEY, WALTER E. (1901–). What child does not know of the animated cartoons of Walt Disney? The artist grew up in Chicago and was educated there and in Kansas City. During the World War, Disney was an ambulance driver for the Red Cross, and in 1919 became a commercial artist. After two years of general work in Kansas City, he began to draw for the Alice Comedies, a combination of a live girl and animated figures. In 1926 he began to make the pictures of Oswald, the Rabbit, for Universal. In 1928 he formed his own company which produces the Mickey Mouse and Silly Symphony cartoons. In 1938 he presented his *Snow White and the Seven Dwarfs* which was the most ambitious attempt in such productions up to that time, and which became tremendously popular in all parts of the world. As a result of his work, he has received many awards, decorations and other recognitions.

DODD, WILLIAM E. (1869–1940). Because he had been awarded a Ph. D. after graduate work at Leipzig University in Germany in 1900, and knew the people and language well, President Roosevelt in 1933 persuaded Dr. Dodd to exchange a professorship in American History at Chicago for the ambassadorship to Germany. Under the regime of President von Hindenburg much had been done to restore friendly relations between our country and the German people. Dodd found it impossible to serve when Hitler came into power, as Americans were insulted for not saluting the Nazi flag and otherwise humiliated; and so Dodd resigned in 1937. He was a graduate of the Virginia Polytechnic Institute (1895), taught there for two years, and from 1900 to 1908 was a professor at Randolph-Macon College and then was called to the University of Chicago. As Dodd left Germany, he asked, "In a vast region where religious freedom is denied, where intellectual initiative and discovery are not allowed, and where race hatreds are cultivated, what can a representative of the United States do?"

DOUGLAS, WILLIAM O. (1898–). He was the son of a Presbyterian minister who emigrated from Nova Scotia to Minnesota, where the son was born, and where the father died in 1909. Douglas worked his way through Whitman College (A. B., 1920) by doing all sorts of work. In the World War he served as a private. In 1925 he completed a law course at Columbia where he edited the *Law Review* in his senior year, and then entered a law office which specialized in financial business. From 1925 to 1927 he lectured on law at Columbia and was an assistant professor before going to Yale in 1928. In 1932 he became Sterling Professor at Yale, an uncommon distinction for such a young man. On March 20, 1939, he became Associate Justice of the Supreme Court succeeding Louis D. Brandeis, one of the five youngest men ever to hold that position. The chief objection by some against his appointment to the Supreme Court was his youth and limited practice of law. Douglas is the editor and author of several texts and law books.

DURYEA, CHARLES E. (1861–1938). Maker of the first practical automobile in America at Chicopee, Mass., in 1892. Duryea's automobile and one by Haynes are now in the Smithsonian Museum in Washington, D. C. His improved models took prizes for a number of years—in New York in 1895, and the next year in London against foreign makes. By 1896 he was turning out a car a week at $1,000 each in his Springfield, Mass. plant. Two years later he had developed three cylinders, planetary transmission, steering rod, a hand gear for two forward speeds, and a pedal on the car for reversing. The speed was 12 to 15 miles an hour. In 1902 Duryea closed his factory at Reading, Pa., and became interested in other projects and scientific experiments. He was a zealous advocate of a simpler form of spelling.

DYKSTRA, CLARENCE A. (1883–). American educator and business man, born in Cleveland, Ohio, the son of a minister in the Dutch Reformed Church; received his college training at the State University of Iowa, with a year as a fellow in history at Chicago. From 1909 to 1918 he served as a professor of political science at the University of Kansas. From then until called to the University of Wisconsin in 1937, he served as secretary of the city leagues in Cleveland, Chicago and Los Angeles, and then for seven years as city manager of Cincinnati. In this last position he introduced economy and efficiency, with many improvements and no additional cost to the taxpayers, until Cincinnati had the lowest tax-rate of all cities of its kind and class. When he was called to Washington by President Roosevelt, he was granted a leave of absence by the University, and on October 17, 1940 he became director of the Selective Service in Washington with unanimous approval by the Senate.

EDEN, ANTHONY (1897–). British statesman. After winning honors in oriental languages at Eton and Oxford in England, Eden went to France as captain of a rifle corps, and there won the Military Service Cross. From 1923 to 1935 he sat for Leamington in the House of Commons where he soon became known as a thinker and able speaker. From 1926 to 1929 he was secretary to Austen Chamberlain, then Secretary of State for Foreign Affairs, and from 1931 to 1935, under secretary for Foreign Affairs. In 1934–35 he served as Lord Privy Seal, and then minister without portfolio for League of Nations Affairs. Eden succeeded Sir Samuel Hoare as Minister of Foreign Affairs (1935–1938) and in 1939 became Secretary of State for Dominion Affairs. He tried to prevent the war in Ethiopia and won fame for his vigorous efforts to maintain world peace, although advocating a firm policy towards Germany. He was let out of the appeasement cabinet of Chamberlain because of his German attitude. After Churchill became Prime Minister and after Lord Halifax was appointed to Washington, Eden became Minister of Foreign Affairs.

EDWARD VIII (1894–). Succeeding his father George V, Edward Windsor ruled the British Empire and Commonwealth of Nations from January 20 to December 11, 1936. The incidents leading to his abdication caused much uncertainty in the Empire, for he had been an exceedingly popular Prince of Wales, world traveller, and enlightened monarch in the few months of his reign. He was trained for naval service at Osborne College and the Royal Naval College at Dartmouth, England. His father created him Prince of Wales and Earl of Chester following his graduation in 1911. He became a midshipman in the navy, studied French in Paris, and entered Magdalen College, Oxford, in 1912. In 1914 he became aide to Sir John French in the World War, served for 18 months in France, then with the Mediterranean Fleet, at the Italian front, and with military units from Australia and Canada until 1919.

Edward became zealous in sports, travel and learning the ways of diplomacy. No British monarch ever came to the throne better schooled in certain details. His journeys took him to the United States and Canada in 1919; to New Zealand and Australia the next year; to Gibraltar and other parts of the empire in 1921–22; again to Canada in 1924, where he owned a ranch; to East Africa in 1928 and 1930. Yet the details of ruling soon became distasteful and his interest in Mrs. Wallis W. Simpson led him to abdicate the throne in favor of his brother, George, on Dec. 10, 1936. On the following night he went into voluntary exile, later lived in France where he married Mrs. Simpson, and in the first months of the second World War was recalled to military service in France. In 1940 he was appointed governor of the Bahama Islands. One of the first acts of his brother was to create Edward the Duke of Windsor.

ELIOT, GEORGE F. (1894–). Military critic. He was born in Brooklyn, but was taken to Australia at the early

age of eight. He earned his title of major in the service (1922–1930) in the Military Intelligence Reserve. Meanwhile he acted as an accountant in Kansas City where he began to write war narratives. Major Eliot's right to fame as a critic of military affairs and strategy dates from his four-year service with the Australians in the first World War. In 1928 appeared his first military writing of note in *The Infantry Journal* and the *U. S. Naval Institute Proceedings*. His popular books, appearing in yearly succession, are *If War Comes* (1937), *The Ramparts We Watch, Bombs Bursting in Air*, and *Strategy Map of Europe* (May, 1940). As lecturer, writer for magazines, and especially as a radio commentator on the European war, Major Eliot became known to millions of Americans.

FAIRBANKS, DOUGLAS (1883–1939). American actor, born in Denver; died in Santa Monica, California. He was Douglas Ulman, son of H. Charles Ulman, a New York lawyer and Shakespearian scholar, who was at that time interested in mining projects in Colorado. At 12 Douglas could recite whole plays of Shakespeare from memory. He first planned to enter mining after a course at the Colorado School of Mines; he also tried business and law before he finally settled down to acting. Meanwhile, he had first appeared on the stage with the Frederick Warde Company at Richmond, Va., in *The Duke's Jester*. In 1901 he legally changed his name to Douglas Fairbanks. He went to London and first played in *Fantana* under Lee Shubert. For five years he was with the William A. Brady Company, some of his earliest rôles being in *Frenzied Finance, As Ye Sow*, and *Man of the Hour*. In 1911 he began to appear in the Cohan and Harris companies. His first appearance at Hollywood in 1914 was with David W. Griffith; in 1917 he organized his own company, and two years later joined with Mary Pickford, Griffith, Charles Ray, and Charles Chaplin in forming United Artists, which became a great producing company. Some of Fairbanks' popular parts were in *Robin Hood, Thief of Bagdad, Three Musketeers, The Black Pirate, Iron Mask*. In 1934 he acted in his last picture, *Private Life of Don Juan*, and at the time of his death he contemplated returning to the screen. In 1920 he married Mary Pickford from whom he was divorced in 1925. In 1935 he married Lady Ashley, divorced wife of an English lord. This was his third marital venture.

FARLEY, JAMES A. (1888–). American politician. He began his public career in Rockland County, N. Y., where he was town clerk of Stony Point (1912–19), after which he became port warden of the City of New York by appointment of Alfred E. Smith, then governor. Farley was a supervisor in 1920–23, Democratic county chairman, 1919–29, and had one term in the Legislature, being defeated when he ran again because he voted wet. In 1930 he became chairman of the Democratic State Committee of New York. One of the early campaign promoters of President Roosevelt, he was appointed by him as postmaster general in the Cabinet from 1933 to 1940. After the Democratic Convention in 1940, he left the Cabinet and resigned as chairman of the party plans to return to private business. In national affairs, Farley came to be known as a genial, astute, and capable official.

FRANKFURTER, FELIX (1882–). Jurist and politician, born in Austria, educated at the College of the City of New York and in Harvard Law School. Assistant District Attorney for the Southern District of New York, 1906–1910; law officer, Bureau of Insular Affairs until 1914; professor of law at Harvard, 1914–1939. In 1932 he declined appointment to the Massachusetts Supreme Court; was visiting professor of law at Oxford University, 1933–34; later became assistant to the Secretary of War and counsel to the President's Mediation Commission. In 1939 he was appointed to the Supreme Court to succeed Benjamin Cardozo. Author of many articles and books, among them being *Business of the Supreme Court* (with James M. Landis), *The Public and Its Government*, and *The Commerce Clause under Marshall, Taney, and Waite*. Editor of *Cases on Federal Jurisdiction* (with Harry Shulman).

GALLUP, GEORGE H. (1901–). Statistician and founder of the American Institute of Public Opinion, born in an Iowa farming community. He helped earn his way through the State University, and there began the experiments which proved him a master in sensing public opinions. His first survey, it has been related, was to find the most beautiful girl on the college campus; then he married her. For his Ph. D. thesis he studied reactions of readers through questioning a small, selected group of them. Later he taught journalism at Drake and Northwestern Universities. In 1932 he entered a New York advertising firm. Three years later he sent out his first test questions to find the national reactions to some features of the New Deal. Since then he has used questionnaires, but chiefly certain investigators in many parts of the country. The accuracy of his polls is well known; at times when tested, as in national elections, the results vary less than 5% of predictions. Among his published works is the *New Technique for Measuring Reader Interest*.

GAMELIN, MAURICE G. (1872–). He was born across the street from the War Ministry in Paris, of a line of generals on both sides. His mother was a distinguished painter. Gamelin was designed for a literary career, but later was sent to St. Cyr, French school for officers, and ranked first in a class of 449 at graduation. In 1895 he became a lieutenant, a captain of chasseurs in 1904, and a confidential adviser on the staff of General Joffre from 1906 to 1911. Gamelin was credited with the strategy that turned back the Germans from Paris in 1914. Later he was in Brazil, assisting the reorganization of the army there, and then in Syria. In 1931 he became chief of staff at Paris. Between then and the second World War, he advocated preparation, mechanization, and improvement of the French fighting units. During the invasion of France and the Low Countries, Gamelin was allied commander, until replaced by General Maxime Weygand on May 19, 1940. His eventual retirement, when France failed to resist, was then attributed to inaction, of which he had frequently criticized the government.

GARNER, JOHN NANCE (1869–). Vice-president and statesman, born at Red River, Texas. "Texas Jack," as he was familiarly known in Washington, sat in Congress from 1903 to 1933 for the 15th District of Texas, an area as large as New York state. In his 25 years he made few speeches, but was known for his influence, wit, and caustic remarks. He was the favorite son of Texas in 1932 campaign, but he released the Texas delegation in favor of Roosevelt, which together with the California delegation controlled by McAdoo, insured the election of Roosevelt and secured for himself the vice-presidential nomination. Again in 1940 Garner was an avowed candidate, but brought out little strength. He retired to his Texas home, returned in the late days of the session of Congress, and to the inauguration, after which he went to his home in Uvalde, Texas. Garner began his public career as a cow-puncher, then was admitted to the bar in 1890, and soon became a bank owner and large holder of land. He began to serve as a county judge in 1893, and in the Texas legislature from 1898 until elected to the national House in 1902.

GASPARRI, PIETRO (1852–1934). Cardinal of the Roman Catholic Church and Papal Secretary of State. In 1864 he was sent to the Seminary at Nepi, and in 1870 to the Pontificial Seminary, after which he became secretary to Cardinal Mertel. From 1875 to 1879 he taught canon law at the College of the Propaganda, and later in Paris, 1879–1898. Then he was delegate to Peru, Bolivia, and Ecuador. In 1907 Gasparri became a cardinal. He completed in 1916 the immense task of codifying the canon law of the church. From 1914 to 1930 he was Secretary of State, and as such carried forward important diplomatic plans. In 1929 he signed for Pius XI the Lateran Treaty, by which an old dispute between the Vatican and Italy was settled and the Pope emerged from his voluntary imprisonment in the Vatican grounds. Cardinal Gasparri also attempted the codification of the laws of the eastern church, and sought to bring together the two great branches that had been separated for over 1500 years.

GAULLE, CHARLES ANDRE DE (1890–). French General. After graduating with high honors at St. Cyr in 1911, he entered the infantry, served in the World War, was twice wounded, cited three times for bravery, and spent over two years in the enemy concentration camp. Because of his advocacy of a highly mechanized French army, he found small favor among the older generals. In 1935 he urged the Chamber of Deputies to allow mechanization of at least 10 divisions. In his book, *France and the Army* (1938), he argued for modern methods of preparedness. Premier Reynaud made him a special assistant in charge of war department matters in the Cabinet. Then he was sent to England where he was conferring on common defenses when the final breakdown of France occurred. After the fall of France in 1940 the question arose as to whether all units and all colonies were included in the armistice. Charles de Gaulle, formerly an ally and subordinate of Marshal Pétain, then in England, resolved to organize a committee to carry on. After some delay and negotiation, the British agreed to back with money and supplies any Frenchmen who would fight to keep the colonies in Africa out of German hands. De Gaulle succeeded in mustering a considerable force to protect the African possessions and was hailed by Churchill as "the leader of all free Frenchmen."

GAYDA, VIRGINIO (1885–). Chief editorial writer of the *Giornale d'Italia* of Rome, and said to be spokesman of the Mussolini government. After a course in political economy in the University of Turin, Gayda spent some years as a correspondent in European capitals, mainly in the central area. He was in Russia at the end of the Czarist regime in 1917, and was instrumental in getting Italy to join the allied forces in World War I. Then he became writer from London and Paris for the Rome *Messaggio*, of which he was made editor, 1921–26. He was known to all newsmen as a friendly,

quiet, and learned man, and in no sense of the blustering type. He was close to Count Ciano and the Roman foreign office.

GEORGE VI (1895–). As second son of the late George V, George ascended the throne on Dec. 11, 1936, in succession to his oldest brother, Edward VIII, who abdicated the day before. Though never previously as popular as Edward, George was known as a fine and reliable young man, who had been carefully trained in the traditional naval service as a royal scion. Like his brother, he took up the course at the Royal Naval College at Osborne and Dartmouth, England, and then entered Trinity College, Cambridge. He was already in the service of the navy when the first World War broke out; participated in the Battle of Jutland in 1916; and rose to the rank of captain in 1925. In 1920 he was created Duke of York and three years later married Lady Elizabeth Bowes-Lyon, youngest daughter of the Earl of Strathmore. They had two daughters, Elizabeth Alexandra Mary and Margaret Rose. George VI began to reign in a very difficult period of English history, when confidence in the throne had been somewhat shaken, and when his popular brother had abdicated in his favor. He always had been of retiring disposition and suffered from hesitancy in his speech, which he later overcame in large part. As the second son of the reigning house, his main duties had been attending to various social and diplomatic functions to represent his father, while his older brother had been brought up with the idea of reigning. Yet George soon gained the confidence and respect of his people and the support of the chief ecclesiastical authorities.

GOEBBELS, JOSEF (1897–). German propagandist. One of Hitler's chief aides in building up the Nazi party in North Germany, though he did not join the group until 1926. In 1927 he began to edit *The Attack*, a chief German propaganda organ. Two years later, Goebbels began to control some of the sources of news, and Hitler made him chief minister of information in 1933 and in charge of Reich culture elsewhere. Thus he became responsible for radio, press, and public discussion wherever German influence was strong. He himself became a voluminous writer on various topics, after he obtained his doctorate at Heidelberg in 1920. Next to the Fuehrer, Goebbels dominated the thought of his countrymen.

GOERING, HERMAN W. (1893–). In his control over business and the means of production in Germany, this man has carried out the wishes of his chief, with whom he joined in the abortive Beer Hall Putsch in Munich in November, 1923. Goering was an ace in the first World War, and afterward, for two years, in civil aviation in Sweden. After Hitler's attempt to seize power from President von Hindenburg, Goering spent four years in Italy. In 1928 he entered the Reichstag, of which he became president in 1932. After 1933 he became, in turn, minister of air forces, interior, war, and police in Germany. Hitler gave him the title General of Infantry, and, in 1936, put him in charge of the so-called German four-year plan. Control of business was stiffened again in 1937. During the second World War, the power and influence of Goering assumed a wider scope, along with the domination of the neighbors of Germany.

HAILE SELASSIE (1891–). Name assumed by Ras Tafari Makonnen on becoming Emperor of Ethiopia (Abyssinia) in 1930. He was the great grandson of Haile Melekat, King of Shoa, and grand nephew of Emperor Menelik. At the age of seven he was sent to Europe to be educated, and at 14 he became governor of Garamollata, and later studied in the English school at Addis Ababa, Ethiopia. He became governor of Sidonia in 1909, and of Harrar in 1910. Two years later he married his cousin. After the death of Menelik in 1913, the country endured the misrule of his successor, Lij Yasu, for three years, when the new emperor was deposed, imprisoned, and finally was reported to have died as the Italians were beginning to overrun the land in 1935. Lij Yasu was the son of the second daughter of Menelik and of Ras Mikail, father-in-law of Haile Selassie. Zaudita, another daughter of Menelik, succeeded him as empress, with Ras Tafari as regent and King of Shoa,—"King of Kings of Ethiopia." On the death of Zaudita in 1930, Ras Tafari became Emperor Haile Selassie I. He led in many reforms, such as abolishing slavery, freedom of children of former slaves, and establishment of a responsible government. After the invasion by Italy, Haile Selassie took refuge in England. In 1941 he returned to Africa to help his former subjects in their attempts to throw off the Italian yoke.

HALDANE, JOHN B. S. (1892–). Writer on biology of interest to the common man. Haldane completed his course at Oxford before the first World War, in which he became a captain and was twice wounded; from 1919 to 1922 was reader at New College; then professor of biochemistry at Cambridge until 1933; and since 1933 a professor of genetics in London University. In *My Friend, Mr. Leaky*, he indulges in some fanciful accounts of a magician. *Science and Everyd Life* (1940) by this author tells his desire to present, in brief articles, some facts which "a student leaving a universi with an honors degree would not be expected to know Some of his other popular books are *Possible Worlds* (192 *Facts and Faith* (1934), *Heredity and Politics* (1938), a *Adventures of a Biologist* (1940). As early as 1935 Halda urged Britain to prepare gas masks, trenches, and other d fenses against the war which he said was inevitable.

HARKNESS, EDWARD S. (1874–1940). Financier a philanthropist, born in Cleveland, Ohio, the son of Steph V. and Anna M. (Richardson) Harkness. From his father a uncle, original partners of Rockefeller, he received legaci amounting to 96 million dollars. Through a desire to avo publicity and what might seem egotism, Mr. Harkness nev allowed a complete list of his benefactions to be published, b they have been estimated by others as not less than 100 milli dollars. He established a house system of dormitories Harvard; was a generous benefactor to Yale, from which was graduated in 1897; gave funds for medical services and library to Columbia; granted large sums to Phillips Exet and other preparatory schools. St. Andrews, Scotland, a Columbia honored him with the LL. D.

HAWKS, FRANK M. (1897–1938). Holder of many avi tion records and pioneer in improving plane constructio From 1929 to 1937 he held the chief records for transcon nental flight in the United States. From Los Angeles New York, his first record was 18 hrs. and 22 min., lackin one second, with two stops for gas. In 1929 his non-st flight was made in 19 hrs., 10 min., with return to Los Angel the next day in 17 hrs., 36 min. He flew from New York Detroit in 2 hrs., 41 min., an average of 255 miles an hou and from New York to Philadelphia in 20 minutes. Once breakfasted in London, flew to Rome for lunch, and aga had dinner in London in the evening. From 1932 to 193 he withdrew from aviation. One of his last records w Hartford to Miami in 4 hrs., 53 min., and back in 32 minut less. He was killed in a fall while testing an airplane designe for "safety and comfort."

HENDERSON, NEVILE M. (1882–). Statesma and author. "This is the first source book on the Secon World War," says H. V. Kaltenborn. "It will remain one the most important." Mr. Kaltenborn was speaking *Failure of a Mission*, in which Mr. Henderson gives a fran almost unimpassioned account of his efforts, as British Am bassador, to prevent the war with Germany. Between 19 and 1937, when he went to Berlin, he served in the diplomat service in Russia, Japan, Constantinople, Paris and th Argentine. His attempts "to labor for an honourable peace are told in his *Failure of a Mission*, a first form of which a peared in *Life* for March and April, 1940. The English *Bl Book* and the *White Paper* also outline vivid accounts of th last days of diplomacy to avert a second European conflic In the latter occurs a 12,000-word account of Hitler, h government, and German psychology in 1939.

HEPBURN, MITCHELL F. (1896–). Statesma and Premier of Ontario, Canada. After serving in the Can dian Bank of Commerce from 1913 to 1918, he became secr tary of the East Elgin United Farmers of Ontario, 1919–2 Meanwhile, he had taken up residence on his tract of 95 acres in that district. In the general election of 1936 he w chosen to represent the district of West Elgin in the House Commons in Canada, being the first Liberal to be sent fro that area in 30 years. Again in 1930 and 1934 he was r elected. In 1930 he became leader of the Liberal Party Ontario, and on July 10, 1934, became Premier of Ontari During the years that followed he was of great aid to th government of William Lyon Mackenzie King and the part in the dominion.

HILLQUIT, MORRIS (1869–1933). Hillquit was born i Riga, Latvia; came to America in 1886, and for a time worke in the garment industry and then turned to journalism. Aft a three-year law course, he was admitted to the bar in 189 and was the representative of labor in many controversie In 1920 he defended the Socialist members threatened wit expulsion from the New York Legislature. In 1917 and 193 he was a candidate for the mayorality of the City of Ne York. In 1924 he was active in the campaign of Senato Robert La Follette. For nearly 30 years he was a member the International Socialist Bureau. For years, Hillquit wa national chairman of the Socialist Party in the United State and largely responsible for the ideals and influence of th organization. Hillquit fought against the inroads of com munism in the Socialist Party.

HITLER, ADOLF (1889–). An Austrian, son of small customs officer at the frontier, who wanted his son t have a good education. Adolf chafed under the routine an discipline, said he was out of sympathy with Austrian ides and methods, and early expressed his ideas of pan-Germanism

His schooling was routine and his attainments there rather meagre. He worked as a carpenter for five years, and later indulged in painting both houses and pictures, it is said. Objecting to military service in Vienna, he left for Munich in 1912. He gained distinction in the first World War as a dispatch runner. After some years of agitation, and the making of his plans as shown in his book, he joined with others in a revolt at Munich in 1923, known now as the Munich Beer Hall Putsch. He had joined the Nazis in 1919, after listening to a speaker out of curiosity; but, by 1923, he was flaming with zeal for what was called the National Socialistic German Labor Party.

After the revolutionary attempt at Munich, Hitler was condemned to serve five years in prison, but he was released after a year. Gradually gaining power, and cleverly appealing to the wide-spread feeling that the World War settlements had done the Germans great harm, Hitler became more and more of a national figure. In 1932 he opposed von Hindenburg for the presidency, and his national party became the largest in Germany. Hindenburg invited Hitler to form a ministry under certain limitations, but the attempt failed at the time. In 1933, however, Hitler displaced von Schleicher as president, and later proclaimed himself Fuehrer or Leader, assuming dictatorial powers. The government was more and more concentrated, and preparations for the great conflict hastened at full speed. Hitler gained at once the reputation of being a ruthless, clever, and unreliable statesman. He made promises and announced peaceful aims, all apparently (as the world found out later) conditions on other men and other nations giving way without a struggle to national and personal ambitions of the Fuehrer. For subsequent history of Hitler, see the story of the second World War in other parts of the *New Century Book of Facts.*

HOOVER, J. EDGAR (1895–). As director of the Federal Bureau of Investigation since 1924, Mr. Hoover won both praise and blame. General Hugh Johnson declared that he did more than anyone else "for law enforcement," "in this or any other country." Senator Norris asserted, however, that the methods of the FBI "Constitute a serious danger and they ought to be corrected and corrected now." He was born and educated in the national capital, where he was a model student and valedictorian of his class. His chief activities that have won most comment were his stiffening of investigations of all public enemies from racketeers to foreign agents. After arresting ten persons in Detroit for soliciting volunteers to the Spanish Loyalist army, the accused were released when Attorney Jackson quashed the charges against them. In the investigation of the FBI that followed, the government gave the department agents a clean bill. Later it was claimed that the Dies Committee was interfering with the success of the FBI and Department of Justice efforts to get at subversive agents in America. An agreement of the FBI and the Committee for more energetic cooperation was then formulated.

HOPKINS, HARRY L. (1890–). Hopkins was born in Sioux City, Iowa, the son of a harness maker, who moved to Grinnell where the son gained honors and popularity in Grinnell College, from which he was graduated in 1912. He then adopted the profession of a social worker in New York. From 1915 to 1917 he gave out widows' pensions for the Board of Child Welfare. Refused military service, during the World War he acted as director of the Southern Division of the Red Cross at New Orleans. Later he organized for Governor Roosevelt a system for caring for temporary relief in New York State. These two men formed a liking for each other on first meeting in New York during the Smith campaign in 1928, and when Roosevelt asked Hopkins to head the national emergency relief in 1933, he carried some of his plans to Washington. He is credited with several of the relief plans and agencies of spending nature. From May 20, 1933 to July 1, 1938, he disbursed over eight billions of dollars in various projects and relief activities. No man in America ever before handled as much money for such a purpose in so short a time. In 1935 he was put in charge of the WPA and later became Secretary of Commerce. Ill health forced him to resign in August of 1940, although he continued to reside at the White House for some time. In January, 1941, President Roosevelt appointed this personal friend a special envoy to London.

HOPPER, W. De WOLF (1858–1935). This popular American actor first appeared on the stage in *Our Boys* in 1879. Next he made Pittacus Green famous as acted by him in *Hazel Kirke* for the Madison Square Opera Company in New York. In 1891 he took up one of his best parts, as the Regent of Siam. He appeared successively in the Sousa operas, with Weber and Fields, as star in his own companies, in various Gilbert and Sullivan operas, and alone in recitals. In 1888 he first recited the humorous poem, *Casey at the Bat,* in Wallack's Theatre, New York, a piece which he estimated late in life he had spoken not less than 10,000 times. Some of Hopper's famous parts were in *Mr. Pickwick; Pinafore,* revived at the Casion, New York, in 1911, when he played as Dick Deadeye; as Reginald Bunthorne in *Patience;* Edward in *Pirates of Penzance;* and Ko-Ko in *The Mikado.* Hopper was also a favorite in *The Student Prince* and *The Yeoman of the Guard.* In 1933 he played in a revival of *Uncle Tom's Cabin.* His wife, Edna Wallace Hopper, also gained fame on the stage in the Frohman, Lew Fields, De Wolf Hopper and other theatrical and musical companies.

HORE-BELISHA, LESLIE ( ). He received most of his education at Oxford, where he was president of the Oxford Union, or students debating society. Entering Parliament in 1923, he rose to become Minister of Transport, 1934–37, and Secretary of State for War until 1940. He was a strong advocate of a mechanized artillery and infantry of England, and of the organization of new units, and the transfer of older or ineffective officials. Though he met with stiff opposition at times, Hore-Belisha succeeded in reorganizing the air and coast defenses, and in forming groups of territorials into anti-aircraft and other guards. Many volunteers were also gathered for new and expanded preparations for war.

HULL, CORDELL (1871–). American statesman, born in Tennessee, studied at Lebanon, Ohio, and at Cumberland University Law School, and set up in practice in his native state in 1891. During the Spanish-American war he served in the Fourth Tennessee Infantry as captain. After four years in the Legislature, he was in the federal House of Representatives from 1907 to 1921 and 1923 to 1931, when he entered the Senate for the term, 1931–37. He resigned to enter the Cabinet on March 4, 1933. Hull served on various national and international committees, including the important Economic Conference in London in 1933, and the Seventh Conference of American States at Montevideo. In his negotiations with other countries, he acquired a reputation for caution and conservative measures likely to have a permanent effect. In 1941 before a congressional committee he opposed granting unlimited power to the chief executive. Hull is the author of the income tax system of 1913, with its revisions in 1916 and also of the inheritance tax of 1917.

HYDE, DOUGLAS (1860–). President of Eire, or the Irish Free State. Educated at Trinity College in Dublin, from which he received his LL. D. in 1887. In 1891 he taught in the University of New Brunswick in Canada. Hyde became known as the greatest living scholar of Gaelic and the leader in many movements for appreciation of the language and literature of Ireland. In 1909 he became professor of Irish in the University of Ireland. He is the author of many books, including plays, songs, translations from the old Irish, criticisms, and stories. His *Literary History of Ireland* is a standard work. In 1925 he became an Irish senator, and in 1938, when a new president of Eire was sought, they chose him as being the man least influenced by the politics of the last few years.

ICKES, HAROLD L. (1874–). Militant reformer and Secretary of the Interior under Franklin D. Roosevelt. Ickes was born in Frankstown, Pa., became an A. B. at Chicago in 1897 and then entered newspaper work, after which he engaged in many Chicago and Illinois campaigns for what he considered progressive ideas. He first attracted attention outside of Chicago, his adopted city, in the Progressive Campaign of 1912, when he was an ardent member of the third party under the elder Roosevelt. In 1924 he acted as the manager of the campaign for Hiram Johnson. Though a forceful thinker and interesting speaker, Ickes diminished his own influence through an intolerant and harsh way of speaking of individuals and their ideas.

INONU, ISMET (1880–). As Premier of Turkey for 13 of the 19 years that Kemel Ataturk was in power, Ismet was well fitted to succeed to the presidency in November, 1938. During the intervening years he was the force behind the administration, and Kemel once said, "He is my conscience; he criticizes me and tells me what to do." Indeed, the Premier is now given large credit for abolishing the Caliphate, in breaking up the sectarian schools, and in forcing the Turks to abandon their fezes in favor of English hats. He came to be known as a quiet man, fond of his family, but a leader of iron resolution, with none of the flare for high life that weakened Kemel himself. Ismet Inonu was chief of staff against the Greeks in Anatolia, under-secretary of military affairs in the World War, and head of the delegation to the Lausanne Conference. He did much to modernize the Turkish army and to get the people to turn their eyes westward to a different civilization and culture.

IRONSIDE, SIR EDMUND (1880–). Commander of the British Territorial Army, and made chief ot the Imperial Staff in 1939. The son of a Scotch surgeon in the British forces, Ironside studied at the Woolwich military academy in England. He rose rapidly to become a captain in 1908, a major in 1914, a colonel in 1918, and also in 1918, at the age of 38, a major general, one of the youngest men ever to attain such a rank. After service in the army in the Boer War, he

remained in South Africa for 13 years. In World War I he was the first uniformed British officer to serve in France, and was mentioned seven times in the dispatches. He commanded part of the allied forces in 1918–19; served the Greeks and Turks in 1920; commanded in Mesopotamia in 1921; in India in 1933–36; and became commander of British forces in the east.

JACKSON, ROBERT H. (1892–). Before he entered the service of the government in 1934, Mr. Jackson spent nearly all his life in Jamestown, New York, where he was counsel for corporations and local interests that were struggling against some limitation or unfair competition. He was a student in the Albany Law School, and entered law at 21. In 1929 he helped consolidate three banks and became director of the new Bank of Jamestown. He first entered the Bureau of Internal Revenue as general counsel, where he was pronounced one of Uncle Sam's "most zealous tax collectors." As assistant tax attorney general in 1936 he had charge of important litigation growing out of investigations of trusts. In the term of the Supreme Court that ended in June, 1939, Jackson argued 24 cases, and lost but three. In 1940, upon Frank Murphy's appointment to the Supreme Court, Jackson was made Attorney General.

JOHNSON, HUGH S. (1882–). General, radio commentator and columnist, born at Fort Scott, Kansas. A graduate of West Point in 1903, he later took courses in Oklahoma Teachers College, and the University of California (Doctorate in Law, 1916). He rose from the rank of second lieutenant, 1903, to brigadier general in 1918. The following year he resigned from military service and became vice president and general counsel of the Moline Plow Company and Moline Implement Company, which he organized, 1919–29; and then associated himself with Bernard M. Baruch in New York City. In military circles, Johnson was best known as the organizer of the plan for selective draft in 1917 and also of the purchasing, storing, and traffic divisions in use from 1918 to the end of the first World War. He was awarded the Distinguished Service Medal for "work on the selective draft." President Roosevelt put him in charge of the NRA in June, 1933, but Johnson later withdrew and became one of the severest critics of administration plans and methods. Among his numerous military assignments were to the Philippines, 1907–09; Yosemite and Sequoia National Parks, 1910–11; judge advocate to General J. J. Pershing on the Mexican Expedition, 1916; assistant to law officer of the Bureau of Insular Affairs, 1916–17; general staff, 1918; commander of the Eighth Division, 1918 to Jan. 1, 1919.

JONES, JESSE H. (1874–). On recommendation of vice-president elect, Garner, President Hoover made Jesse Jones the director of the new Reconstruction Finance Corporation in 1932. Under his direction this was known as a most efficient government agency. Out of a life of hardship and struggle, with only moderate schooling, he had worked his way up to be a capitalist of note. One of his mottoes was "the greatest disservice you can do a man is to lend him money he can't repay." Billions have been lent in sums ranging from millions to the railroads at a time to $200 to a fisherman on his small craft, always "on the best terms possible to the government and to the borrower." In July, 1939, Jones became Federal Loan administrator, and in August, 1940, was called to the Cabinet to succeed Harry Hopkins as Secretary of Commerce. Before the first World War, Jones had established a lucrative lumber business in Houston, Texas, and at a later time did considerable building in New York City. He served for 18 months as director general of relief of the Red Cross from the United States in France, and was in charge of setting up canteens and recreation centers for the American soldiers. From 1924 to 1928 he directed the finances of the Democratic National Committee. In Washington he succeeded in gaining the friendship of men of all shades of political and economic beliefs.

JUNKERS, HUGO (1859–1935). Famous maker of airplanes, especially of metal construction. He was a graduate of Berlin in technology and also studied in Aix-la-Chapelle, where he later lectured for 14 years. He was active in the making of gasolines from 1899 on. At one time, one-third of all planes were equipped with something made in his immense factories. During the World War his planes made some spectacular flights. After 1933 his factories were newly organized with government control and subsidies. In 1926 his aircraft carried 110,000 passengers and 1,513 tons of mail, a record for that early day in aviation.

KAGAWA, TOYOHIKO (1888–). Christian social leader of Japan. After a complete education in his own land, he continued his studies at Princeton University. From 1908 to 1923 he lived and toiled in the slums of Kobe. He was instrumental in organizing the workers and the farmers of Japan into movements to better their conditions. In 1924 he founded the industrial Y. M. C. A. of Japan, and five years later became a social worker in Tokio. Kagawa has travelled and spoken in most civilized lands, being well known in America. During the war with China, he was put under restraint by the Japanese. Among his many books, some are *A Grain of Wheat* which enjoyed an enormous sale, *Love the Law of Life, Study of the Psychology of the Poor*, and *Songs from the Slums*.

KETTERING, CHARLES F. (1876–). The first task of this noted inventor was to develop a motor that would run cash registers. His early life was a struggle to get an education despite hardships of poverty and poor eyesight. Much of his inspiration came from a country schoolmaster, who in his way was a scientist, from a friend who showed him that many things are related in this world, and from his own courage and determination to do things. After finishing his course at Ohio State University at 27, Kettering went to Dayton. Some of the inventions in which he had a greater or lesser share are Duco paints for cars, Delco lighting, the Diesel engine, ventilation for crankcases of motors, artificial refrigeration, and better gasolines. To him research is a science, not a plaything, and he believes great inventions are yet to be made. In connection with General Motors, he early centered his attention on labor-saving devices, increased production, and ways to put more men into employment.

KIERAN, JOHN (1892–). Best known as the man with an amazing store of knowledge for hearers of the National Broadcasting Company's *Information Please*. He was the eldest son of Dr. James M. Kieran, who was professor and later president of Hunter College, New York City. After studying at the College of the City of New York, he obtained a degree at Fordham in 1912. Then he engaged in farming in Dutchess County for a year and afterward turned to various occupations. In 1915 he began to write in the sports department of the *New York Times*. He was one of a company of volunteer engineers who served during two years of the World War. After several years with the *Herald-Tribune* and the Hearst publications, he again joined the *Times* in 1927, and wrote the first signed daily column of events in sports, which he called "Sports of the Times." Kieran is interested as an amateur in music, art, natural history, chemistry, and literature. Once he remarked "Whenever a new book comes out, I read two old ones."

KNOX, FRANK (1874–). A Bostonian by birth, Knox was educated in Michigan at Alma College, and then was connected with the Grand Rapids *Herald* (1898–1900), with the Sault Ste. Marie *News* as publisher (1910–12), with the Manchester (N. H.) *Union* consolidated with the *Leader* under him, and later with the Hearst papers in Boston until 1931. With Theodore T. Ellis he bought the control of the Chicago *News*, becoming publisher in 1931. War service and politics meanwhile engaged his attention. He was with Theodore Roosevelt in Cuba with the Rough Riders, and became captain and major in the World War with the 78th Division. He was chairman of the Republican State Central Committee and later of the delegation from New Hampshire at the Convention that nominated Harding in 1920. President Taft made him a member of the Board of Indian Commissioners, and Hoover of the Committee to Combat Hoarding, 1932. As vice presidential candidate in 1936, Knox toured the country making speeches. No little stir was caused when President Roosevelt, in 1940, chose Knox to be his Secretary of Navy. For some time, however, Knox had been known as an advocate of a strong military policy for the United States.

KOUSSEVITZKY, SERGE (1874–). Conductor and musician; a champion of recent music, with a rare discrimination for what will live. Men like Sibelius, Honegger, and Walton have been introduced by him to American audiences. Before he gave up trying to live in the new Russia, he was leader of an orchestra of his own, supported by his wife's people, who were wealthy merchants. One of his tours down the Volga in a chartered boat took him and his men 2,300 miles to people who never had heard good music before. He and his wife founded a publishing firm for musical works. With the Revolution, his orchestra and firm were taken over by the state although he was made leader of the Russian Orchestra. In 1920, with little property left, he left his native land, and until his call to Boston in 1924 conducted in various musical centers. Tanglewood, a fine estate in the Berkshires, has been given to the Boston Symphony Orchestra, endowed by the Rockefeller Foundation, and put into service as the summer home of the Symphony. There the Berkshire Music School was started in 1940.

LA GUARDIA, FIORELLO H. (1882–). Politician born in New York City. Elected mayor of New York in 1933 and reelected in 1937. He served in European consulates for the United States from 1901 to 1906, and then as interpreter at Ellis Immigration Headquarters until 1910. Began law practice in 1910 and was a member of the House of Representatives from 1917 to 1921 and 1923 to 1933, after serving two years as deputy attorney general of New York. In the World War he rose to the rank of major in the air corps and for

bravery with a bombing squad was made a Knight Commander of Italy. His administration was notable for economy, reform, and popular appeal. He was first elected as a Fusion candidate. In 1940 he was made chairman of an American delegation to promote cooperation with Canada in regard to certain war preparations.

LAWRENCE, ERNEST O. (1901–). Scientist, born in North Dakota, the son of a normal school teacher. His education was received at St. Olaf College, University of South Dakota, and at Minnesota, Chicago, and Yale, where he obtained his Ph. D. in 1925. As winner of the Nobel Prize in science in 1939 for his building of the cyclotron, Dr. Lawrence sprang into international fame. His invention is a gigantic "Rube Goldberg contraption" of 220 tons for the purpose of smashing atoms. At his laboratory on the campus of the University of California, Lawrence and his staff, through this machine, have succeeded in revealing many secrets of nature. They have artificially created many radio-active substances, such as common salt, and may even have found ways of building up substances like the precious metals. Their methods are being followed in many laboratories all over the world. Through a grant by the Rockefeller Foundation, a new cyclotron of 4,900 tons weight promises to reveal secrets of the composition of substances as yet undreamed of by man.

LEAHY, WILLIAM D. (1875–). American admiral, appointed Ambassador to the Vichy Government of France in 1941 by President Roosevelt. This Iowan was graduated from the Naval Academy in 1897 and rose through the various ranks to become captain in 1918 and rear admiral in 1930. Meanwhile he served in the Spanish-American War, the Philippine Insurrection, Boxer, Nicaraguan, and Haitian campaigns, and as a commander in the World War. Awarded various metals. He commanded the destroyers scouting force, 1931–33; was chief of the Bureau of Navigation, 1933–35; then vice admiral of the Battle Force; and admiral 1936–37, until retirement, after service as Chief of Operations.

LEWIS, MARY SYBIL (1900–). This gifted operatic-singer was born and educated in Hot Springs, Ark. After three years in the Ziegfield Follies, she made her operatic début in Vienna in 1923, with a rôle in *Faust*. Then she appeared at Monte Carlo, London and Paris, returning to the United States in 1925 for an engagement at Carnegie Hall, New York, and three months later, Jan. 1936, at the Metropolitan Opera House as Mimi in *La Bohême*. Some of her principal parts have been those of Juliet, Marguerite, Gilda, Lauretta, Manon, Nedda and Antonia. In 1927 she married Franz Bohnen, and in 1931 Robert L. Hague.

LIN YUTANG (1895–). Author, born of a second-generation Chinese Christian family. He was educated in the mission schools and in St. John's College in Shanghai, at Harvard, and in Germany, where he took his Ph. D. at Leipzig. He then became a professor in Peking for three years, joined a revolutionary movement, but soon concluded he was "better at minding my own business than that of others." This author of *The Importance of Living* (1937) succeeds best in bringing to the western world the flavor and wisdom of China. However, he studied ideas and men a long time before he ventured to write down his conclusions of them. Lin speaks to the world of the China of today in *My Country and My People* (1936); outlines the history of the fight for freedom in *History of the Press and Public Opinion in China* (1937); and in *Moment in Peking* (1939) tells the story of an upper-class family in the years following the Boxers in 1900, down to the flight of China inland in 1938.

LITVINOFF, MAXIM M. (1876–). Commissar for Foreign Affairs of the Russian government, who was born in Bielstock. For interest in revolutionary activities, he was exiled in 1903, before the first World War joined the newly formed Bolshevik party in Switzerland, and for some time lived in England. He returned to Russia in an exchange of political prisoners and then became one of Lenin's chief executives. Litvinoff was an extremely adroit and capable diplomatist, both at home and abroad, taking an active part in debates in the League of Nations for disarmament. He succeeded in avoiding the internal strife which at times divided the Soviets into two hostile camps. In 1933 he spent some time in Washington just before the U. S. government recognized the Russian regime, for which he had zealously worked for a number of years. In 1939, during the war with Finland, Litvinoff was recalled from the front and made chief of the Foreign Information Bureau of the Soviet Party, but in 1941, was relieved by Stalin of all posts in the Soviet Union Council.

MAGINOT, ANDRÉ (1877–1932). At the time of his death French Minister of War, in whose honor the defenses on the eastern borders of France were named. Maginot was always a strong nationalist and leader in efforts to keep his country prepared. He entered politics in 1910, became Deputy of the Department of the Meuse, and was one of the chief supporters of Aristide Briand. At the outbreak of the World War, Maginot refused a commission, enlisted as a private, returned badly wounded, and again entered Parliament. He was a stern critic of the conduct of the war in 1917. He served in various government posts,—as Minister of Colonies in the cabinet of Ribot, and as Minister of Pensions during several government administrations. In 1922 he introduced the bill providing for the creation of an air ministry in France. In 1924 and 1927 he was a candidate for the presidency of the Chamber of Deputies. He was Minister of Colonies, and also of War, during the period of frequent changes in the government of France.

MANLY, JOHN M. (1865–1940). Author and teacher, born and educated in the south, taught at Brown University for seven years, and from 1898 to 1933 was chairman of the English department in the University of Chicago. Besides a great deal of editing and incidental scholarly writing, Manly stimulated interest in early drama with his *Pre-Shakesperian Drama* (1897); in the survey of English literature with his *English Prose and Poetry* (1907, 1909); and his short accounts and bibliographies of contemporary literature in 1919 and later. Though now known best as a teacher and authority on early English literature, Professor Manly in the last years of his life completed, in eight volumes, the restoration of the text of Chaucer's *Canterbury Tales*, a prodigious task on which his fame in the future will rest. For ten years he, together with a staff of students and assistants, carried on research in the manuscripts of Chaucer and at last completed what will doubtless become the standard text.

MANN, THOMAS B. (1875–). German author, born at Lubeck. He began his writing as editor of a school paper in Germany at 15, and later became editor of the famous *Simplicissimus* at Munich. Mann introduced a different type of novel with *Buddenbrooks* (1901), a biography of a whole family, showing a gradual decline. *Magic Mountain* (1924) is thought by many to be his best of many works. Only about 1,000 copies were sold in the first year, but a later edition ran to over two million. It is the story of contemporary life in a sanitarium in Switzerland, where Mann was then living. Mann won the Nobel Prize for literature in 1929. In 1933 he made a speech in which he criticized the Nazi theories and methods, and his friends warned him not to return from Switzerland to Germany. Later Mann came to the United States and made his permanent home in Rhode Island. He holds a Ph. D. from the University of Bonn. Other famous books of his are *Mario and the Magician* (1929) and *Joseph in Egypt* (1937). Mann also did much other writing and some speaking on behalf of democratic ideals after he came to America.

MANNERHEIM, CARL G. E. (1867–). Finnish national hero who declined a crown and could have been a dictator. From 1919 on he was the builder and defender of the defenses of Finland. Mannerheim came of Swedish ancestors who had lived in Finland for some time. He was influerntial at the court of Nicholas of Russia, having gained great distinction as an officer in the war against Japan. During World War I he served at various points and became a lieutenant general, with several decorations and national honors. When Finland at last broke from Russia, he resigned his command, left for Finland, and there soon became regent and the most powerful man in a country that was looking for a king. Mannerheim, instead of accepting the chance as urged by friends, signed a democratic constitution for a time and then resigned as regent. His countrymen gave him a pension of $150,000. He retired to his estate, was known as the Liberator, refused to meddle in politics, and came forth again to aid his people in their war with Russia in 1939 and 1940. As one historian remarked, Baron Mannerheim could have been what neither Hitler nor Mussolini can boast of—a real king.

MARSHALL, GEORGE C. (1880–). General Marshall became Chief of Staff of the U. S. Army on Sept. 1, 1939, a young man to hold this position, and the first since Leonard Wood to attain this rank without being a graduate of West Point. A native of Uniontown, Pa., he received his training at the Virginia Military Institute, 1897–1901; as honor graduate in the U. S. Infantry-Cavalry School, 1907; and Army Staff College, 1908. Commanded second infantry, 1901, and rose to rank of brigadier general in 1936. Some of his important assignments were in the Philippines, 1902–03, 1913–16; instructor in Army War College, 1908–10; general staff of First Division, chief of operations in First Army, and chief of staff of the Eighth Army Corps in the World War; 1918–24, aide to General J. J. Pershing; 1924–27 in China; assistant commander of the Infantry School, 1927–32. From 1933 to 1936, General Marshall was senior officer of the Illinois National Guard; in 1936 he took command of the Fifth Brigade. He was chosen to be Chief of Staff in line with the government policy of selecting younger men for important posts.

MARTINELLI, GIOVANNI (1885–). Celebrated tenor of the Metropolitan and other opera companies in the United

States, with more than 50 rôles in his repertoire. He was born near Venice, Italy, and was educated, married and introduced to the opera in Italy. He came to the United States in 1913, three years after his European début. He sang with opera companies in San Francisco, Chicago, and St. Louis, but mainly with the Metropolitan in New York. Noted for the strength and purity of tone and ability in acting.

MATSUOKA, YOSUKE (1880–). Matsuoka was born of the poor class in Japan and was partly educated in Portland, Oregon, by a family that befriended him after he landed in America in 1893. He was taught the Christian faith, but declares that he is a "Matsuoka Christian." After a high school course in Oakland, California, he entered the Law School of the University of Oregon, from which he was graduated in 1900. It would seem that he learned much of business methods in the United States, for one of his most important positions has been as executive of the South Manchurian Railway, of which he became president in 1935, after having served the same organization in various capacities from 1920 to 1930. In 1904 he became vice-consul at Shanghai, later chief of the foreign section of Kewantung Concession, consul at Mukden, and one of the Japanese secretaries at Washington. He went to the Versailles Conference with the Japanese delegation, and spoke ably for Japan in 1932 before the League of Nations, withdrawing with the Japanese when their demands were not met. Matsuoka is an advocate of direct action in Japan; he has succeeded largely in abolishing the system of political parties, from which efficiency might as well be expected, he declared, as for "a pig to fly." After this man was made foreign minister of Japan in 1940, it was predicted that he might be on the way to become the Hitler of the Orient. He has frequently spoken of the objective of his country as a "determination to fulfil her mission in Asia." Just what this mission is conceived to be was not explained. In March, 1941, the announcement was made that Matsuoka was on the way to confer with Japan's axis partners in Europe. A few days before, the conflict between French Indo-China and Thailand (Siam) had been settled with Japan acting as intermediary. Siam obtained important concessions of territory.

MELCHOIR, LAURITZ (1890–). Operatic singer, a native of Denmark, Melchior was once a member of the Royal Guard. He was decorated by various European countries, being a Knight of Dannebrog of Denmark and a member of the Legion of Honor of France. As a baritone he won his first great fame in Copenhagen in 1913 and then in various capitals of Europe and South America. He sang in Covent Garden, London, for years; at the Wagner festivals at Beyruth; and from 1926 on at the Metropolitan Opera in New York.

MENUHIN, YEHUDI (1917–). While still a child he was acknowledged as one of the world's most finished violinists. He was born in the City of New York, the son of a wandering Russian Jew, who had lived in Palestine and later in San Francisco. When they gave Yehudi a toy violin at three, he threw it on the floor because it sounded so harsh. Then they bought him a real instrument. At four he took his first lesson; at seven became soloist for the San Francisco Orchestra; at eight won great applause at the Manhattan Opera House in New York; and at ten amazed an audience at Carnegie Hall. He was a regular performer with the Berlin Orchestra at eleven. After one concert a great man exclaimed, "Yehudi, today you have once again proved there is a God in Heaven." That man was Albert Einstein.

He was put under training and discipline by George Enesco, the celebrated teacher. After several years of training, long hours of practice, and much criticism, Yehudi made his world tour in 1935, giving 110 performances in all. He retired for two years so that his mother "could have her boy back again." In 1937 he began his career as an adult performer. In 1940 he gave a series of concerts in Australia for the benefit of war sufferers. No artist has worked harder and with better results. Menuhin asked Toscanini why he did not criticize him and tell him when he played badly. The great conductor replied, "It's always perfect, Yehudi." Enesco still guides him, and of late the artist has refused to appear more than 50 times in a season, until his art is better established. Menuhin excels in freedom and perfection of tones. He has never played stunts or difficult pieces just to show off his technical skill.

METAXAS, JOHN (1871–1941). Grecian general and statesman, who was the one man able to bring order out of troubled conditions in Greece, even by methods imitated from Hitler and Mussolini. He was born in Cephalonia of a military line of ancestors. After training in the Greek Military School, he fought against the Turks in 1897, and two years later entered the German school at Potsdam for a four-year course in strategy. From 1903 to 1912 he was in the army, and again fought the Turks in 1912, when he was assistant chief of staff. For having advised King Constantine to ally with Germany, Metaxas was exiled from 1917 to 1921. Then he supported King George II and in 1926 became Minister of Communications in a union cabinet. In 1934 he was blocked at the poll in trying for power. During the second regime of George I he became Vice-premier and War Minister in 1935, and Pre mier in 1936. Four months later, when a general strike threat ened, Metaxas announced himself as dictator, "a sort o modern monk" with nothing but the good of Greece to live fo His methods were rather ruthless, but they appeared effective Metaxas continued to be friendly to the English allies, kep his plans to himself, and at last in 1940, when Italy attacke Greece, proved that his preparations had been thorough an sufficient to defend his country. He died suddenly in January 1941.

MITCHELL, MARGARET ( ). This author o *Gone with the Wind*, after a course in Washington Seminary Atlanta, Georgia, her birthplace, and in Smith College, be came a reporter and special writer for the Atlanta Journal i 1922. Three years later she married John R. Marsh of Atlanta In 1926 she began to write a novel, which ten years later wa acquired by a representative of the Macmillan Company o New York and soon published. Few books have been so suc cessful in both original text and screen version. Her worl sold a million copies in six months, and half that many mor in the next six; it won the Pulitzer prize for 1936, was chose by the Book of the Month Club and by similar groups i England and Germany. By 1940, *Gone with the Wind* ap peared in 16 foreign languages and in Braille for the blind As a portrayal of the old South, it was pleasing to all section and persons of all ranks and creeds. The motion pictur version, taking four hours to show, was produced after elabo rate preparations and the most scrupulous attention to settin and all plans in order to make it true to the period represented It was partly filmed before the leading lady, as Scarlet O'Hara, was found in an English actress, Vivien Leigh. Mis Mitchell's family background is that of lawyers, historians and good old Methodist preachers. In 1939 she was awarde an honorary A. M. degree by Smith College.

MOLATOV, VYACHESLOV (1890–). After the Finn ish war, he was named successor to Litvinof as premier o Russia and also foreign minister under Joseph Stalin. Thi son of a poor clerk named Sciabin assumed the name Molato in 1906. While he was a student, a sentence of two years i prison against him was suspended on condition that he leav his native town. In 1911, during a course at the Petrogra Polytechnic Institute, he did some writing for the organ calle *Pravda*, but in 1913 had to leave the city by official orde Three years later Molatov was sent to Siberia, from whic region he escaped and made his way to London. There h belonged for a time to the circle with Lenin and Stalin. Unti the return of Lenin to Russia from abroad, Molatov acted a secretary of the Bolshevik movement. For many years h was the confident and aid to Stalin, who at last saw that h had a prominent position in his administration.

MONROE, HARRIET (1860–1936). Poet, born in Chicag and educated in Washington, D. C., and leader in the poeti movements of America for a generation. She was commis sioned to write the official *Columbian Ode* for the Chicag Exposition in 1893. The New York *World* paid $5,000 as penalty for publishing this before it was delivered. In 191 she founded the Poetry Magazine, which later was perma nently endowed by contributions of over 100 people, and sinc has been a great force in encouraging young authors. Amon her own volumes were *The Passing Show*, verse plays; *Yo and I*, poems; and *Poets and their Art*, a book of criticism. I 1936 she was called to South America for a literary celebra tion, and died in Peru while returning.

MURPHY, FRANK (1893–). Inheriting his ability a a speaker from his father, a quick-witted Irish attorney, h entered public life in 1912 speaking for Woodrow Wilson in th campaign. In 1914 he obtained a law degree from Michigan and later studied in London and Dublin. For a time he earne his way in America as a law clerk at $13 a week and taugh Hungarians English at $2.00 per lesson. In the World Wa he became a captain of infantry in France and later in Ger many with the Army of Occupation. He was chief assistan U. S. Attorney for the eastern district of Michigan, 1920–23 and after acting as city judge and instructor in law at Detroi University he became Mayor of Detroit, 1930–33. The ability shown in Detroit in the midst of unusually severe condition gained him considerable fame, but he resigned his position a Mayor when President Roosevelt asked him to become gov ernor of the Philippines. He defeated Governor F. D. Fitz gerald of Michigan in 1936, but was defeated by Fitzgerald i 1938. He became Solicitor General of the United States i 1939 and then Attorney-General. In 1940 he was advance to the Supreme Court.

MURRAY, PHILIP (1886–). Labor leader, born i Scotland, who with his family settled in western Pennsylvani in 1902, obtaining a job in the coal mines. He was mainly self educated. At the national meeting of the Congress of Indus trial Organizations held in November, 1940, Murray wa

elected president. For thirty-six years he had been quietly working among the miners of western Pennsylvania as an assistant and friend of John L. Lewis. When Lewis realized that he could not unify the discordant left and right wings of the C. I. O., he was willing that Murray should succeed him. Murray had tried, for some time, to reconcile the two groups—the left-wing favoring Lewis, and the clothing workers who opposed him. Before he would become president of the C. I. O., he demanded and secured a resolution condemning communism, fascism, and nazism in the ranks of labor. In his inaugural address before the C. I. O., Murray mentioned as one objective the unionizing of certain large industrial plants. In 1916 he became head of the Pittsburgh area of the United Mine Workers of America, and in 1919, Vice-President of the national organization under Lewis. President Wilson made him a member of the War Labor Board, and he enjoyed the confidence of President Roosevelt.

PACK, CHARLES L. (1857–1937). Long before President Theodore Roosevelt appointed him a member of the National Conservation Commission, Mr. Pack was widely known as a zealous advocate of better methods of caring for our timber. During the first World War, he led a movement for planning gardens on vacant lots and waste places; over 3,000,000 were developed to produce new supplies worth half a billion dollars. In this and other movements, several small books of his attained enormous sales, such as the *War Garden Primer, School Book of Forestry, Forestry Primer* (1926), and *Forests and Mankind.* After the World War he helped plan the reforestation of France, England, and Italy. He was also the founder of the Cleveland, Ohio, Trust Company, mayor of the city, and leader in various civic movements.

PIUS XII (1876–). Cardinal Eugene Pacelli ascended the papal throne in 1939. He received his early training in the Gregorian University and Roman Seminary, becoming a priest at 23. In succession he was attached to the department of state, a professor, secretary of Extraordinary Ecclesiastical Affairs, and in 1917 Archbishop of Sardes. He was made a cardinal in 1929, and was papal secretary of state, in succession to Gasparri, from 1930 until his elevation to the papal throne. Cardinal Pacelli was known for his accurate and wide knowledge of world diplomacy. He has visited various countries and has represented the church at various gatherings at home and abroad.

PONS, LILY (1904–). This gifted singer was born and educated at Cannes, France, where she won her first ovations. She has always been noted for purity and clearness of tone. In 1928 she made her first appearance in grand opera as Lakmé; and three years later, her first appearance in New York as Lucia at the Metropolitan. Gilda and Rosina are other favorite rôles, but she has appeared on the air and in many different musical settings. In 1923 she married August Mesritz, whom she divorced ten years later, and in 1938 she married Andre Kostalanetz, celebrated orchestra conductor.

POST, WILEY (1900–1935). He gave up farming in his native state of Texas to take up the drilling of oil wells in Oklahoma, and through an accident at a well, lost one eye. With the $2,000 received in insurance, he bought a second-hand plane and became an aviator. In 1930 Post won the Chicago-Los Angeles Air Derby in a time of 9 hrs., 9 mins. and 4 secs. He was always trying for new records. He sought four times to beat the record of Frank Hawks and others from Los Angeles to New York; and on one flight said he attained a ceiling of 49,000 feet, but failure of his baragraph made this an unofficial record. In 1931 he and Harold Gatty completed a flight around the world in 8 days, 15 hrs., and 51 mins. elapsed time. Two years later, and alone, he lowered this record to 7 days, 18 hrs., and 49 mins. This was the first solo flight around the world, and the plane in which he made this flight, the *Winnie Mae,* is now in the Smithsonian Institute in Washington. In 1935 Post, with Will Rogers as a passenger, set out in a new plane to fly to Moscow over his old course, but in a leisurely manner. In taking off at a point 15 miles south of Point Barrow, the plane went out of control, crashed, and both men were killed.

REED, STANLEY F. (1884–). Appointed an associate justice of the Federal Supreme Court in 1938, succeeding Justice Sutherland. Reed was educated at Kentucky Wesleyan, Yale, and in law at Virginia, Columbia, and the Sorbonne in Paris. He entered public life as a member of the Kentucky Legislature (1912–16). Upon appointment of President Hoover, he was counsel for the Federal Farm Board (1929–32), and then of the Reconstruction Finance Corporation. As Solicitor General of the United States (1935–38), he argued successfully many important cases, such as the TVA litigation, second Gold Clause, and the Railway Labor Case. In the Schechter (NRA case) and the U. S. vs. Butler (AAA case) he lost important appeals. The Senate confirmed unanimously his nomination to the Supreme Court.

REEVE, ARTHUR B. (1880–1936). The creator of Craig Kennedy, Scientific Detective, was born in Patchogue, N. Y., and educated at Princeton. For three years (1903–06) he was assistant editor of *Public Opinion.* Four years later he published the first of his 3,000 stories of the solution of crime and of other mysteries, some of which attained an enormous vogue. Reeve also wrote many articles on a variety of subjects for magazines. His *Adventures of Craig Kennedy* ran in the *Cosmopolitan* Magazine from May 1910 to 1918. Of his many collected works, some of the best remembered are *The Silent Bullet* (1912), and *The Radio Detective* (1926). For the N. B. C. he wrote a series for the Radio Crime Prevention Program.

ROBINSON, JOSEPH T. (1872–1937). American politician, native of Arkansas. After graduating from the University of Arkansas and taking a law course at Virginia, Robinson was admitted to the bar of his native state. In 1894 he sat in the Arkansas Legislature. From 1903 to 1913 he served in the House at Washington, and resigned to take the governorship of Arkansas, to which he had been elected in November. Two weeks later the legislature chose him to fill an unexpired Senate term, and Robinson served in Washington for over 25 years. From 1923 until 1932 he was minority leader, and then served as majority leader for his party. In 1928 he was the running mate of Alfred E. Smith in the national campaign. Robinson was a fearless, energetic, and able leader, and one of the administration's most zealous aids after 1933.

ROCKNE, KNUTE K. (1888–1931). He was born in Norway, the son of a stationary engineer, who came to this country in 1893 to exhibit an invention at the Chicago Columbian Exposition. The family followed the father to America 18 months later. Rockne was dismissed from school for cutting classes. He worked four years in the Chicago Post Office as a dispatcher. With money he had saved, he completed a course in chemistry at Notre Dame in 1914. While captain of the football team in 1913, his men defeated the great West Point players, and took the world of sports by surprise. In 1918 he became head coach at Notre Dame. In his 13 years there, his teams won 105 games, lost 12, and tied five. In the 1929 Notre Dame-California game, over 110,000 spectators were in the stands. He developed some of the plays originated by others, such as the forward pass. Rockne also engaged in business, becoming sales manager of the Studebaker Corporation in 1928. In 1929 his health suffered from overwork, but later he recovered his full strength. Rockne was killed with several other prominent people in an airplane crash in eastern Kansas on March 31, 1931. He was survived by a wife and four children. In 1925 he became a Roman Catholic.

ROGERS, WILL (1879–1935). Undoubtedly in many respects the most famous entertainer of his age,—on the stage, screen, air, and in widely circulated news features. Rogers was born in the old Indian Territory, with some Cherokee blood in his veins. As he put it, "My people did not come over on the *Mayflower;* they met that boat as it came in." His people had some little property in land. After an elementary education in Missouri, he bought some land which he later sold for $7,000. With the proceeds he went on a tour taking him to the Argentine, then to South Africa, to Australia, and at last to Japan and China. Part of the time he acted as entertainer in various travelling troupes. For some time he merely showed his skill with the common cowboy's lasso. When he began to accompany this with some humorous patter, his fame grew by wild leaps. In 1914 he joined the Ziegfield Follies as an entertainer, and in 1919 he went first to Hollywood, but in 1922 was back with Ziegfield. His ventures on silent screens were only a moderate success, but in the talking pictures he gained immediate recognition. In the portrayal of quaint, humorous, countrymen, perhaps he had no equal since the late Denman Thompson. Some of his best pictures were *Doubting Thomas, County Chairman, Judge Priest, David Harum, Connecticut Yankee.* His last film was *In Old Kentucky,* and this, with *Steamboat 'round the Bend,* was produced after his death. Rogers was known for his generosity and public spirit. Irving Cobb once remarked that "Rogers was the only man I ever knew who rose to the heights of fame without climbing on the shoulders of other men." After the great floods of 1931, Rogers and Frank Hawks, the aviator, toured the country together giving performances to raise funds for the victims, securing $225,000 in all. Both these men suffered death in later airplane accidents. Rogers and Wiley Post were killed while taking off from a lake 15 miles south of Point Barrow, Alaska.

ROTHAFEL, SAMUEL L. (1882–1936). He will long be remembered as Roxy, prince of entertainers. At 12 he came to New York from Minnesota, and while still in his teens wandered through many lands and many jobs. He was with the United States Marines in Santo Domingo and China. After other attempts to settle down, he became a bartender in Forest City, Pa., married the daughter of his boss, and persuaded his new father-in-law to allow him to try setting up a motion picture house in the rear of the building. It prospered from the start. Roxy was born to entertain people.

He had a great flare for the varied, picturesque, and the decorative. B. F. Keith engaged him to assist in popularizing his chain of theatres. He revived interest in the Regent Theatre in New York City, established the Capital, and later built Roxy's, known for its size and magnificence. There "Roxy and his Gang" established his popularity on even a firmer basis. In 1934 he transferred to the new house in Rockefeller Center and again put on his Gang. After leaving there, he tried to interest British capital in a similar enterprize in London. His last venture in Philadelphia was not a success, and he died a comparatively poor man.

SELFRIDGE, H. GORDON (1864–). Founder and executive of the great mercantile house of Selfridge and Company in London and other cities of England. His life reads like an Arabian Nights tale of American business success; for he was born and trained in the United States, where he accumulated a substantial fortune and decided to retire at the age of 39. In 1939 he again gave up the duties of active business to complete his researches into the life of the Florentine noble and ruler, Cosimo de Medici. Selfridge was born in Ripon, Wisconsin, of New England ancestry. His father died before he was a year old, and his mother made their living by teaching school at Jackson, Michigan. He entered employment in a bank when he was 14, and in 1880 attached himself to the firm now known as Marshall Field and Company of Chicago at $10 a week. Before he was 30, that same house was paying him $20,000 a year, and in 1892 made him a junior partner. He retired first in 1903, but he found club and inactive life too tame for him. Then he bought another company in Chicago, but sold this before long at a profit of $250,000. In 1906 he went to London, and three years later completed an immense store, which was advertised to have 130 departments. One of them was a complete information service that would obtain for inquirers quickly the data on anything from the winners of the national derby in 1906 to the price of cheese in Wisconsin. In 1937 he became a British subject. The store in London is now managed by his only son. One of Selfridge's sayings is "If an employee does not earn advancement in three years, there is something the matter with him,—or with us." Another, "If you speak harshly to a worker in the morning, you will get little real hearty service from him that whole day."

SILLANPAA, FRANS E. (1888–). Finnish interpreter of the life of the common people and winner of the Nobel Prize for literature in 1939. The parents of this gifted man cleared a tract of forest in southwestern Finland, and their youngest child Frans (the only one of three to survive) worked his way through the University of Helsinki. He turned from studying science to writing, with a series of short narratives as his first publications about 1913. After two years of hesitation and writing under forced draft, he completed a novel in 1916, called *Life and the Sun*. For years now his reputation has grown throughout Europe, while his output increased to nine volumes of stories and at least six novels. His *Meek Heritage* in 1919 won him a national pension so that he could devote all his time to writing. This work had a profound influence in shaping the impressions and thoughts among the peasants of Finland after the World War.

SPENGLER, OSWALD (1880–1936). German philosopher, born at Blankenburg, Germany. After finishing his course and graduate work in the universities at Halle, Munich, and Berlin, he taught school. During the World War and after, his chief doctrine was that nations of Europe, and at last those of the New World, were doomed to decline and fall. Some of the chief contributions to this declining civilization are intellectual pride, greed of men, technical and unreasoned efficiency, and present forms of government, all leading swiftly, said Spengler, to our doom. *Decline of the West* by this German author sums up the current pessimistic view of history. "Western Europe has passed its zenith," is his summary of his thesis, "and it must now look forward to a rapid decline, and its civilization must soon range itself with the extinct civilizations of Greece, Egypt, and India. Our over presumptuous pride of intellect is the pride that comes before a fall." Though this man represents what might be called a minority view among historians, his works aroused endless debate and consideration.

STEINBECK, JOHN E. (1902–). Steinbeck's novel, *The Grapes of Wrath*, was awarded the Pulitzer Prize in May, 1940, for the best fiction of the year, after over 450,000 copies had been sold. The author wrote four novels before he won any particular attention. These began with *Cup of Gold* and the others were *Pastures of Heaven*, *To God the Unknown*, and *Tortilla Flat*, with eight editions and the sale of motion picture rights in 1935. Then followed his *In Dubious Battle* and *Mice and Men*, the latter a 1937 best seller. Steinbeck knew the central California region well. Here his father was a county treasurer for many years, and his mother once a country school teacher. The author and his wife lived for a time at Monterey, the scene of *Tortilla Flat*, and they have always preferred simple scenes away from bustle and crowds of people. From *The Grapes of Wrath*, the word Okies (sai to be made up from the words Oklahoma and Kansas) ha come into the American vocabulary. The sad story migrants, with their human emotions, tragedies, and lack success, led to much difference of opinion as to the soci background of the novel itself. Steinbeck illustrates, perhap what Ma Joad, the tough-fibered and tough-witted woman the book, remarked: "We ain't goin' to die out. People goin' on—changin' a little maybe, but goin' right on." Wit some of the latter parts omitted, the story proved the motio picture success of such efforts in recent years.

SWING, RAYMOND G. (1887–). This authorit on European affairs and celebrated news commentator wa born in Cortland, New York, educated in both arts and musi at Oberlin College, and served as apprentice in news writin on several Ohio papers. His introduction to European center came as correspondent for the Chicago *Daily News*. Tw vivid stories from him were the description of the Big Berth gun that shelled Liege during the World War and the sinkin of a Turkish transport on which he was a passenger. Whe the second World War broke out, he was on vacation abroad and later in America he won the medal of the Nationa Educational Conference on Radio for his description o events in Prague when the Germans took possession there He was an examiner for the War Labor Board (1918), corre spondent in Berlin for the New York *Herald* (1919–1922) and later was engaged for about ten years by the *Wall Stree Journal*, the Philadelphia *Public Ledger*, and the New Yor *Evening Post*. In 1935 he began commenting for the Britis Broadcasting Corporation and later for the Mutual Network His long familiarity with affairs abroad, and his peculia discrimination, doubtless made him one of the ablest an most reliable of news commentators. He never appeared fo a fifteen-minute broadcast without long and arduous prepara tion, which sometimes required reading eight or ten paper and ten or more hours of solid work.

THOMAS, JOHN CHARLES ( ). America baritone, favorite in operatic, radio, and motion picture rôle who was born in Pennsylvania and educated there and i Baltimore. He appeared first as a singer in London, Ontario in the Savage Company production of *Everywoman* in 1912 Some of his most familiar parts were in *The Peasant Girl Apple Blossoms*, *Maytime*, *Alone at Last*, and in *Aida* He sang with opera companies in Brussels, Philadelphia San Francisco, Los Angeles, Chicago and the Metropolita of New York. One of the most popular singers on radi programs, with a clear, firm and imaginative expression.

THOMAS, LOWELL (1892–). Known for hi versatility as teacher, historian, war correspondent, lecturer and radio commentator, Lowell Thomas began his busy life on a newspaper at Cripple Creek, Colo., and then i Chicago on the *Journal*. He also acted as professor at Ken College of Law, and instructor in English at Princeton During World War I, he served as observer and reporte with various armies. In 1919 he began to lecture in New York on the Arabian and Palestine campaigns. He wa editor of *Asia Magazine*, 1919–23. Author of many books o travel, recent history, and adventure, such as *With Lawrenc in Arabia* (1924), *Raiders of the Deep* (1928), *Kabluk th Eskimo* (1932), *Spain, the American Traveler's Handboo* (1932), and books on travel in Japan, Mexico, Canada, an India. In 1926–27 Thomas made an airplane flight, th longest journey by a passenger up to that time, coverin much of Europe, Asia, and North Africa to study aviatio developments and possibilities. In 1930 he became a radi news commentator.

TOGO, HEIHACHIRO (1847–1934). Japanese admiral born at Kagoshima. He was largely responsible for th modern Japanese navy; a man who rose gradually fro humble birth and the lowest ranks. He first saw servic in 1863; then from 1871–79 was in England for extensiv study, including a tour around the world with the Britis ships. As commander of the Naniva, in 1894 he ordered th shot fired which started the war with China, when a troo ship was sunk on its way to Korea. He engaged in othe battles, and after the war was made a rear admiral. In 190 he commanded the Japanese squadron that was part of th international force against the Chinese Boxers; in 1904 h was given charge of all sea forces of Japan. In the war wit Russia, he destroyed the Russian Eastern fleet by blockin them in a harbor and firing on them from land batteries On May 27, 1905 he engaged the enemy under Rojestvensk by blockading their path. For these feats he was called th Nelson of Japan and made an Admiral. On his deathbe he was created a marquis. No man, save the emperor, wa more revered in Japan.

TOSCANINI, ARTURO (1867–). Musical conductor born at Parma, Italy; the organizer and leader of the Nationa Broadcasting Company's Symphony Orchestra, 1937. Afte graduating from the Conservatory at Parma, he played th

cello, and at 19 first conducted in Rio de Janeiro. Some of his other engagements were at the Scala in Milan, the Metropolitan in New York (1908–14); New York Philharmonic Orchestra as guest and regular conductor (1926–28; 1928–33), and as general musical director for three years more. He was guest conductor in Philadelphia (1930–31) and at Beyruth and Salzburg in the festivals there. Throughout his long life he has been known for his skill and sympathy as conductor for young artists.

UREY, HAROLD C. (1893–). Discoverer of the heavy atoms of various chemical elements that may lead to important revelations in natural substances. He was born in Indiana, and was educated through the efforts of his mother, after his father died when Urey was only four. From 1911 to 1914 he taught school in Montana where the family home then was located, and in 1917 received his B. S. degree from the state university. During the war he engaged in commercial research in chemistry. In 1923 he took his Ph. D. degree at the University of California, and then adopted teaching as his life work. He went to Columbia University in New York in 1929. In 1931 he announced his success in isolating one "heavy" atom of hydrogen out of a total of 5,000 atoms. In 1934, Dr. Urey won the Willard Gibbs Medal, one of the highest awards for chemical research, and also the Nobel Prize in science for that year. He was then 41, the youngest man to receive the Gibbs award. By 1938 he had also found heavy isotopes of oxygen, nitrogen, and carbon, which three, with hydrogen, make up 75% of the material of the world. In 1940 Urey added sulphur to the list, a discovery which foreshadows important results in biology and medicine.

WALLACE, HENRY AGARD (1888–). Vice-president in the third term of Franklin D. Roosevelt, born in Adair County, Iowa. Wallace came of farming stock of Irish descent. He was the third generation in the family to edit a farm paper, and the second to be Secretary of Agriculture (1933–1940), his father, Henry C. Wallace having held the same post in the administrations of Harding and Coolidge. After his graduation from Iowa State College in 1910, he engaged in experimental farming, and until 1924 assisted his father with *Wallace's Farmer*. From 1924 to 1929 he was main editor, and then editor of the *Iowa Homestead* and *Wallace's Farmer* combined. He sponsored several ideas to help farmers, but is said not to have favored the compulsory feature of the crop control program. Some of his published works are *Corn and Corn Growing*, *America Must Choose*, *New Frontiers*, and *Technology, Corporations, and the General Welfare*.

WAVELL, ARCHIBALD (1883–). Leader of the British forces in the Middle East which crushed the armies of Italy in 1940 and early 1941. He was the son of major general A. S. Wavell and was trained at Winchester College and the Staff College. He served in the Black Watch in 1901, in South Africa, on the Indian frontier, 1908, and in the World War, 1914–18. Seriously wounded in France. Later (1916–17) he served as military observer with the Russian army in the Caucases, and then in Egypt, 1917–20. In 1921 he became a colonel; in 1933 a major general; in 1938, a lieutenant general; and in 1940, a general. During the disturbances between the Arabs and Jews in Palestine, Wavell restored order, but was said to have applied rather stern measures. In 1939 he was put in charge of the British armies in the Middle East, with headquarters at Cairo. Wavell allowed the Italians to advance into Egypt, while he was preparing to strike an effective blow, which at last fell with terrific force on Dec. 8, 1940. All the British forces were engaged in the lightning campaign which followed, sweeping the Italians from place to place, and cutting off, capturing or killing many thousands of picked troops. In this campaign, for the first time in history, land, sea, and air forces combined to strike at the same time along the Libyan coast. Italian strongholds including Sidi Barrani, Bardia, Tobruk, Bengazi were captured, completely destroying Italian power on the Mediterranean. In East Africa, Italian Somaliland and Eritrea were captured, British Somaliland retaken, and Ethiopia overrun. Early 1941 saw Wavell placing large forces in Greece, preparing for the Balkan battles.

WEYGAND, MAXIME (1867–). General Weygand again came into the American newspapers with the beginning of the second World War. When the Germans were overrunning eastern France, he replaced Gamelin as commander of the Allied Armies on May 19, 1940. Born in Belgium of uncertain parentage, Weygand had been a hard-working, close-mouthed, iron-willed man. Leopold of Belgium sent him to St. Cyr, where French officers are trained. Soon he became a remarkable mathematician and seemed destined to excel in tactics. He chose the active life of the cavalry, became a French citizen, and by the beginning of the conflict in 1914 had advanced so far that he became chief-of-staff to Marshal Foch. The two men worked in harmony seldom excelled, and Foch said, "Weygand, il est moi," equivalent in English to "Weygand, he and I are one." So they continued until 1923. When Pilsudski asked for Foch to come and help save Poland against the Bolsheviki in 1920, Weygand was sent instead, and did the task quickly and well. He was regarded by the Germans as representing the obnoxious clauses of the Versailles Treaty. Foch in 1929, before he died, advised France to call on Weygand in time of stress. Being officially retired at 68, he remained adviser and author of books to rouse his countrymen. In 1939, at the age of 72, he was sent to take charge in Syria, returned to France later, and then, after its collapse, went back to save what was left in the French protectorates outside Europe. He took the chair of Joffe in the French Academy in 1931. Weygand is the author of many books, including a *History of the French Army* (1938).

WILLKIE, WENDELL L. (1892–). His father was a successful lawyer at Elwood, Indiana, where both he and his son chose to champion the cause of poor and friendless people. At the University of Indiana, Willkie was a debater of some reputation, and his sister one of the leaders in forming student opinion. Indeed, the whole Willkie family has been noted for independence of thinking and acting. His mother was the first woman to be admitted to the courts of Indiana to practice law. Willkie helped himself in college and later by doing various odd jobs, his travels taking him into several mid-west states. In 1916 he obtained his law degree at Indiana. From the start he placed service above position or salary; when he retired from the presidency of a billion-dollar corporation in 1940, he was receiving $75,000, one of the modest figures for such a position. His law practice with the Firestone Company, and later as chief counsel of the Commonwealth and Southern, gave him a reputation as a close, faithful, and resourceful executive. In 1933, after four years with the corporation, he was chosen to take the place of the retiring head of the Commonwealth and Southern. When he was mentioned as a possibility on the Republican ticket, he insisted that he would not be "dropped into a mold." Nothing illustrates more aptly the nature of democracy in America than the nomination in 1940 of Wendell L. Willkie for the presidency. Prior to 1936 he had been a Democrat, in 1932 and later had fought for some of F. D. Roosevelt's favorite ideas, and as late as the 1938–39 issue of *Who's Who in America* was still listed as a Democrat. During his campaign for the presidency, Willkie travelled more miles and made more talks, it is said, than any man before him in a similar position.

WINANT, JOHN G. (1889–). Statesman and social reformer, born in New York City, educated at St. Paul's School at Concord, N. H., and awarded honorary degrees by Princeton, Dartmouth and New Hampshire Universities. In 1912 he became instructor in English and assistant rector of St. Paul's School; in the World War, rose to the rank of captain in aviation; in 1917–21 sat in the House of New Hampshire, then in the Senate for two years, and back in the House until elected governor in 1925, at the age of 36, the youngest governor then in the United States. He was defeated for governor in 1926, but was again elected in 1931 and continued in that position until 1934. He did much to reorganize the administration and industrial life of the state. President Roosevelt made him chairman of the Social Security Board in 1935, but two years later he again took the post he held in 1935 as assistant director of the international labor office at Geneva. In 1941, President Roosevelt appointed him ambassador to Great Britain. Before his appointment to the Court of St. James, Winant also was vice-president of the National Recreation Association and of the American Labor Association, and president of the National Consumers League.

WRIGHT, FRANK L. (1869–). Architect, born at Richland Center, Wis. Wright's background is that of a large family of farmers, teachers and preachers; his permanent home has been in Wisconsin, though he maintained offices in Chicago, Los Angeles and Tokio. From 1884 to 1887 he studied engineering in the University of Wisconsin, then became a draftsman in Chicago at $8.00 a week. Within one year he was with the largest firm in the city, but designing only small houses, while others planned the skyscrapers. In 1894 he opened his own office. He began to specialize in a new type of house construction, 100 of which appeared in time all over the middle west. In 1905 he first used plate-glass doors and windows for an office building in Buffalo, New York, which was also air conditioned and provided with metal furniture. Next he went to Japan, then to Tuscany, and in 1911 back to the United States, where he built his first model farm home in Wisconsin. He supervised the construction of the Imperial Hotel in Japan which in 1923 proved the first structure of its kind to resist the force of earthquakes. With the publication of his *Modern Architecture* (1931), a series of lectures delivered at Princeton University, his fame began to spread. In 1938 the *Architectural Forum* devoted a whole issue to his work. He was then training some 50 young

students on his Wisconsin estate. At 70, Wright was still producing new and distinctive designs for all sorts of small and large structures. The Museum of Modern Art, New York, concluded on Jan. 5, 1941, the first exhibition in America designed to trace the growth of the art of a single person from year to year. *Time* spoke enthusiastically and called this "as exciting a body of architectural thinking as has come from the brain of anyone since Michelangelo."

ZAHAROFF, BASIL (1849–). Known for years as the mystery man number one of the munitions industry; said to have been born in Turkey or Greece, of Greek or partly Greek parentage. He claimed citizenship in England, France, Greece, and Russia. Stephen Skuludis, the wealthy Greek business man, secured for him a connection with th Nordenfeldt munitions company, and later he became director in Vickers, and head of the Vickers-Maxim industr Sir Basil also had several other business connections in oi mines, and transportation. During the first World Wa the Allies found in him a trusted aid and zealous promote In 1918 he was awarded the Grand Cross of the British Em pire, which was only one of the many decorations fro governments. Zaharoff endowed a chair in French at Oxfor and a chair in English at the University of Paris. Chai of aviation at Paris, Leningrad, and London were als endowed by him. In 1924 he married the Duchess of Villa france de los Caballeros, who died two years later.

FINE ARTS

ARCHITECTURE

SCULPTURE

PAINTING

SCHOOLS OF PAINTING

FAMOUS WORKS OF ARTS

DICTIONARY OF ART TERMS

MUSIC

CONTRIBUTIONS BY COUNTRIES

FAMOUS OPERAS AND ORATORIOS

MUSIC IN PUBLIC SCHOOLS

FAMOUS ORCHESTRAS

GREAT OPERAS

LANDMARKS IN MUSIC

DICTIONARY OF MUSICAL TERMS

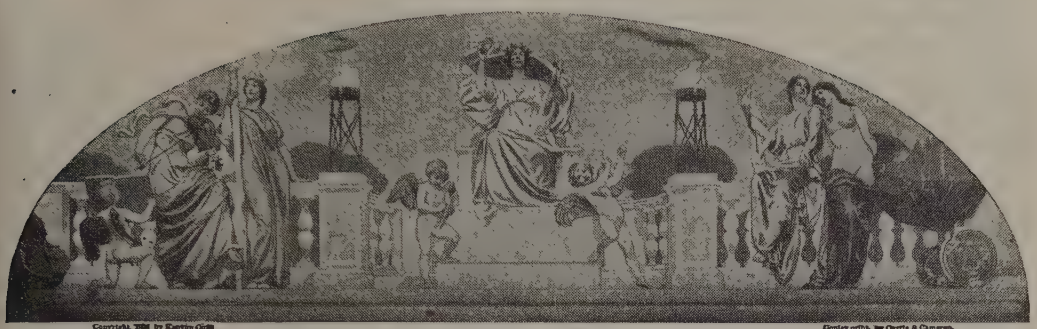
Photo supplied by Episcopal Diocese, N. Y. C.

CATHEDRAL OF ST. JOHN THE DIVINE, New York City

(as it will appear when completed).

BOOK XV.

FINE ARTS.



THE ARTS.
Mural Decoration in the Congressional Library, Washington.
BY KENYON COX.

HISTORY AND DEVELOPMENT OF ANCIENT, MEDIEVAL AND MODERN ART AND ARCHITECTURE. HISTORY AND DEVELOPMENT OF PAINTING. SCHOOLS OF PAINTING. ART TERMS. MUSIC, ANCIENT, MEDIEVAL AND MODERN. THE MODERNISTS. MUSIC IN THE PUBLIC SCHOOLS. ORCHESTRAL INSTRUMENTS. FAMOUS ORCHESTRAS. GREAT OPERAS. LANDMARKS IN THE HISTORY OF MUSIC. FAMOUS OPERAS AND ORATORIOS. FAMOUS HYMNS. MUSICAL TERMS.

BABYLONIAN ART

The credit for the earliest important development of art, though formerly supposed to be Egyptian, is now believed to belong rather to the valley of the Tigris-Euphrates, commonly called Babylonia. In this land, we may see three distinct historical periods. In the first (c. 3000–1275 B. C.) an infinite number of petty wars between the Semitic and non-Semitic tribes are attested by thousands of clay tablets bearing cuneiform inscriptions which have been discovered. Toward the middle of this period, Hammurabi succeeded in welding a mighty empire, which after various vicissitudes was finally overthrown by the Assyrians whose dominance lasted six centuries. From 1275 to 626 B. C. Ashur-Nazir-Pal, Sargon, Sennacherib, and Ashur-Bani-Pal were the greatest of the Assyrian rulers. Finally the Babylonians regained a brief supremacy under Nebuchadnezzar whose brilliant reign lasted from 604 to 561 B.C.

This land lacks the more durable building materials such as stone, but has an abundance of good clay. Hence their structures were built largely of brick, either sun-dried, a perishable form, or the more lasting kiln-baked type. As a result of the materials, Babylonian works are massive in appearance with narrow, oblong rooms, thick walls, few windows. Isolated forms of support like columns are almost unknown for the same reason. In all probability, these rooms were covered by vaults.

One of the earliest palaces yet discovered is that at Tello, but the Palace of Sargon is better for study in that its parts are more completely preserved. This huge structure was set on the city wall some 60 feet above the surrounding plain, and so became part of the defense system. The building is arranged around a series of open courts; one for the king and his men called the seraglio, the harem or women's quarters, and the khan, which was the servants' place. In the platform on which the palace rests, an extensive drainage system employing the vault has been discovered. The decoration of this palace consisted largely of glazed colored bricks (faïence), probably of rugs and tapestries, and finally of friezes of low-relief sculpture. The best of these, coming from such Assyrian palaces as those of Ashur-Naizir-Pal, Sennacherib, and Ashur-Bani-Pal, show scenes of military enterprises or the hunt. The former seem to testify to the ferocity and cruelty of the Assyrians which are so frequently mentioned in the Bible. The work pays great attention to details of the heavy dress which swathes the bodies. Little interest is taken in anatomy, though the Semitic racial features are clearly indicated. Female figures are practically unknown. The portrayal of animals far surpasses that of human beings in vitality, spirit, and observation. The best examples occur in the Palace of Ashur-Bani-Pal.

Tower of Babel.—In the field of religious architecture, these people employed a pyramidal form composed of square masses, generally seven, of diminishing size set on top of each other. Each section was colored, a common system for the upper stages being black, red, blue, orange, silver, and gold, from bottom to top. An early example of the ziggurat was the Tower of Babel which is inseparably connected with Babylonian architecture. According to the account in *Genesis XI*, it was the result of the knowledge that

the people gained who went down into the valley of Shinar, and there learned the art of making buildings of clay bricks cemented with bitumen. Much surmise is indulged in as to its exact location. Among the buildings which seem to have the greatest claim to this distinction is the great temple to Marduk in the city of Babylon, which was seven stages high, and was known to the people as the house of the foundation-stone of heaven and earth. This was the building which Nebuchadnezzar restored. Another seven stage tower opposite Babylon in Borsippa, sacred to Nebo, has claims to this distinction. Many believe that the ziggurat in the city of Babylon may have been the building the writers had in mind.

RECENT EXCAVATIONS IN MESOPOTAMIA

The city of Ur no doubt was founded by the Sumerians more than 6500 years ago, and was raised on the usual mud terrace, partly to guard against rain and periodical floods, and partly for defense purposes. Its most important building was the Ziggurat. This great structure was really a stepped artificial hill on the top of which was built the "Shrine of the Moon God," the deity of the city. This site consisted of two separate and complete units; the sacred and town quarters, the former occupying a quadrangular area in the center, with angles toward the cardinal points; the town, lying outside this, was surrounded by its superincumbent city walls. The enclosure is roughly rectangular and measures 435 yards by 260 yards, and is entered by six gateways.

About 2300 B. C., Ur Nammu and afterwards his son, Dungi, brought the city to the height of her glory with their wonderful architectural work. After this period, the city rose and fell, was sacked and restored, and was forgotten after being conquered by the Persians about 400 B. C.

In excavating, the Third Dynasty level, 2300 B. C., was reached ten feet below the surface, and at thirty feet, bronze objects were found. The tombs are so rich in gold that they recall to mind the treasures of Agamemnon at Mycenae. One royal person was accompanied in death by his retainers, six bearers of the golden lances, his chariot with two asses, three grooms, his women singers and harp players, his gaming board, his wardrobe, and a rich treasury of gold, silver, copper, stone, vessels, weapons and ornaments. Two of the most important tombs discovered are those of King Mes-kalam-dug and Queen Shub-ad. Mes-kalam-dug belongs to a period centuries prior to that of Sargon of the First Dynasty of Ur. This early period about 3500 B. C., before unknown to archaeology, is now illustrated by examples of art unrivaled by those of any later time in Mesopotamia.

Arched roofs were still intact in some of the tombs, and from the excavations at Tello, Kish, and Tell-al-obud, it is now recognized that the column as an architectural form was known and used by the Sumerians. E-dub-lal-mah gives us the form of an arched opening in one of the side walls. The arch is a good example of properly constructed barrel vaulting. Corbel vaulted brick tombs had been found and also one type of very primitive system of barrel vaulting.

The Sumerians were great builders and constructed extensive drainage systems.

For the first time in Babylonian excavation we are able to obtain an idea of the upper par and roof of a temple, and to get complete mate rial for reconstructing its appearance. Thi temple stands upon the ruins of the oldes Sumerian kingdom which antedates 3500 B. C

One of the most important objects discovere in Mesopotamia is the lapis and shell inlai "standard" with its scenes of the court of th king or chief with retainers, in peace and war the "Bayeux Tapestry" of Sumer, as it ha been called. At Kish a sculptured and painte portrait head has just been unearthed; it is a example of a lost art in Mesopotamia from day before the flood. This is a Sumerian hea molded true to life without any trace of Mongolian type. This head presents the prob lem of the origin of civilization.

EGYPTIAN ART AND ARCHITECTURE

The Ancient or Pagan Period extends from the First Dynasty (about 3400 B. C.) to the time of the Roman Empire. The monuments of the first six dynasties were marvelous feats of engineering, but with a simplicity and grandeur of their own. This was an era of gigantic pyramids and mastabas. Over 100 of these ponderous tombs were erected thirty-four centuries before Christ, establishing the existence of the use of metals and a knowledge of mathematics and mechanics of no mean order. The pyramids were the royal tombs of the earlier dynasties; the mastabas, built in rectangular form, were designed for persons not of royal birth. The chapels in the mastabas were richly decorated in low relief sculpture and painted with scenes taken from daily life. During the Middle Empire (c. 2160–1788 B. C.) a great change spread over Egyptian Architecture; non-sepulchral temples of a grand and imposing type first appear, and the mastabas give place to rock-cut tombs rich in design and ornamentation. Of these rock-cut sepulchers, the most celebrated group is at Beni-Hassan on the Nile. The creation of a distinct order of temple architecture is most noteworthy, as not only was a model set for succeeding generations in Egypt, but likewise for the Greeks. The lintel, and not the vault, became the basis of design; quarried blocks were carefully dressed and laid; columns supporting architraves were lavishly used; while color and relief sculpture embellished the whole. The period that followed, known as the New Empire (c. 1580–1080 B. C.), was the golden age of Egyptian art and architecture. The land was covered with temples and palaces of a size and grandeur never before attempted.

Four essential elements appear in the standard temples. The entrance was between two masses of masonry with slightly sloping sides linked together by a lower element, the whole being called a "pylon." This gateway gave access to an open court, the peristyle, whose walls were bordered with a colonnade. The third element was the hypostyle hall, whose roof was supported by colossal columns. Finally the sanctuary at the rear on the long axis of the building was surrounded by a number of small chambers whose use has not yet been surely determined.

Some of the most impressive monuments of

the new Empire were the Amenopheum; the temple of Rameses III., at Medinet Abu; the mausoleum of Queen Hatshepsut at Deir-el-Bahari and the Ramesseum close by; the temples of Abydos, Medinet Abu, and Gurneh; a little temple of Khons at Karnak; and the gigantic temples of Karnak and Luxor. The colossal temple of Karnak was begun during the Middle Empire, succeeding dynasties carrying on the work till its completion in the time of Euergetes, the third of the Ptolemies. Except in matters of scale and ornament, all these monuments conformed to the same general type. The splendid achievements of the reigns of Thothmes I. and III., Amenophis III. and IV., Seti I., and Rameses II., were followed by an era of decline; and not till the time of the Macedonian conquest did architecture revive. The temples of the Ptolemaic and Roman period maintained the best traditions of Egyptian art. The majestic group of temples on the island of Philae near the second cataract rival the splendor of the new Empire. The temples of Denderah and Edfu are still well preserved, while others of less importance may be seen at Esneh, Dakkeh, Kalabshé, and Kardassy. Of secular and military architecture there are few remains of importance. The fortresses of Thebes and Memphis, and the recent investigations at Semna Uronarti; the fortified walls of San, Saïs, and Thebes, besides scattered remains of forts, granaries, and domestic buildings, bear witness to the activity of this period.

The Coptic Period.—From the third to the seventh century Egyptian art fell into decay, and did not revive till the Moslem conquest in 638. The Coptic Christians covered the land with their churches and monasteries, built in a cosmopolitan style which ignored both Egyptian tradition and Byzantine practice. Few traces of Coptic architecture remain, having been swept away by the Arab invaders.

The Copts were the first to introduce into architecture the systematic employment of the pointed arch. The later Coptic churches were basilican in design.

Sculpture.—Unlike architecture, large sculptural works were produced in Egypt at an earlier date than in Babylonia. The aim of the early sculptor was to make a figure as life-like as possible, so that its *ba* (spirit) and *ka* (soul) might easily recognize it after death. The works of the old kingdom are very realistic showing some interest in anatomy. These characteristics are especially prominent in representations of the lower classes. Good examples are the *Seated Scribe* (Louvre) and the *Dwarf Nemhotep*. These sculptures were mostly deposited in tombs, and in the inner chamber of each tomb were placed several statues illustrating different periods of the individual's life, as well as several scenes in low relief, vividly colored. In the middle kingdom, the sculptors, possibly owing to religious control had less freedom than their ancestors of the Fourth and Fifth Dynasties, and as a result, the typical works show marked conventionalizations. Under the New Empire, sculpture became freer and more elegant; two new forms came into use—the sunken outline relievo (*schiacciato*) and the sunken relief (*cavo-relievo*). At this time, sculpture inclined to be either colossal in size or highly decorative in treatment. The beauty of drawing and purity of line in such examples as *Rameses II.* (Turin Museum), *Queen Ti, Queen Nofretete,* and such reliefs as those from the rock cut tomb of Seti at Abydos or the Princess Bintanat are remarkably fine and should be rated with the artistic masterpieces of all time. Finally in the Saite period (Twenty-sixth Dynasty) which is known as the Egyptian Renaissance, a noteworthy return to the realistic aims of the Old Kingdom took place in spite of the very hard materials which were employed. Wooden statues, usually of acacia and sycamore, were very popular during the earlier dynasties.

Color was an essential feature of Egyptian sculpture. Colored stones, such as basalt, red granite, and diorite, were frequently used, or, when softer stones were employed, the colored effect was procured by stucco and paint. In general, sculpture conformed to a rigid conventionality without regard to perspective or realism. In reliefs, the head was in profile and the eye in front view; the shoulders full front; the trunk three quarters; the arms and hands, also the legs and feet in profile. It seems to have been the idea of the artist to present as much as possible to the view; hence these flattened-out representations. The Egyptians placed one row of figures above another to represent different planes. They did not use perspective, but they were lavish in details and decoration. Conventional Egyptian ornament was mainly based on flower-forms such as the lotus and the papyrus.

Side by side with the traditional sculpture peculiar to tombs and temples, there grew up a secular kind, freer and bolder in design and of more varied types. Such is the famous statue of King Khafra, sitting in the conventional attitude with hands on the knees. A familiar type is the seated figures of husband and wife. The celebrated *Sphinx* of Gizeh stands apart from any class. The Egyptian deities were usually represented in a composite form, it being customary to set an animal's head on a human body, or else the god in human form was accompanied by his particular emblem, such for instance as a cat, jackal, ibis, ram, hawk, lion, or crocodile. In its political representation Egyptian art is still more interesting. One of the commonest scenes is that of a gigantic king with captives cowering at his feet; another is that of a triumphant monarch in his chariot overwhelming his foes. These scenes throw great light on the customs and industrial arts of those early periods. Under Ptolemies, sculpture came under the influence of Greek art.

The minor arts developed very early. It is in this field that the greatest contributions have been made by recent archaeological discoveries such as the Tomb of Tutankhamen (Eighteenth Dynasty), and the investigations of Dr. Reisner in the old kingdom. Gold enamel jewelry of delicate workmanship can be traced back even to the Ancient Empire. The traditional designs were applied also to furniture, ornaments, and utensils—wood, ivory, and metals being fashioned with equal skill. The distribution of these articles by Phoenician and Greek traders considerably affected the growth of European design.

Gizeh, Pyramids.—Colossal pyramidal tombs or cairns are a striking feature of Egyptian architecture. They are built of solid masses of stone or of brick; and each pyramid has one or more chambers with concealed passages leading to them, while in the larger pyramids false passages were made to render desecration difficult. The sarcophagus, or mummy case, was placed in the chamber before the superstructure was erected. The pyramids of Gizeh are nine in number, but the six small ones sink into insignificance by the side of the three great pyramids of Khufu (or Cheops), Khafra (or Chefren), and Menkaura (or Mycerinus), which were constructed about 2900 B. C. They are accurately oriented, and that of Khufu and of Khafra are "so proportioned that the perimeter of the base closely approximates the circumference of a circle having the altitude of the pyramid for its radius." The Great Pyramid had a base of 764 feet and was 482 feet high (it is now 450 feet). It has an unfinished subterranean passage from which an upward sloping passage leads to two other rooms, the larger one (the King's) being ventilated by two air flues about nine inches square which lead off to the north and south sides of the pyramid. The King's Chamber is 19 feet 1 inch high, and 34 feet 3 inches, by 17 feet 1 inch in area; the Queen's Chamber is 20 feet 3 inches high, and its area is 17 feet by 18 feet 9 inches. The pyramid of Khafra was 454 feet high on a base of 717 feet; that of Menkaura is steeper, and was 213 feet in height and 253 feet square. Each of these pyramids was originally faced with polished granite. Pyramidal sepulchers are not confined to Egypt; the tomb of Caius Cestius in Rome is in this form.

Karnak and Luxor.—Of the group of temples at Karnak, near the site of ancient Thebes, the most important was the temple of Ammon founded during the Twelfth Dynasty. It stood in an inclosure about 1,500 feet square, and an avenue of ram-headed sphinxes led from the river to the main gateway—a colossal pylon, 370 feet in breadth by 142 feet in height. Within the great court and in a line with the gateway were twelve enormous columns, six on either side; six of these are well preserved. A second pylon gate leads into a magnificent hypostyle hall, 171 feet long by 338 feet broad, its roof supported by 134 columns in 16 rows. This hall is one of the finest works of Egyptian architecture. The columns of the central aisle of this hall are 69 feet high, some of the largest ever employed on the interior of a building. They enable light to be introduced by a clearstory, which projects above the roofs over the lower portions of the hall. At the upper end of the great hall is another pylon gate, now in ruins, leading to an open court, in the center of which is an obelisk 76 feet high. Beyond this again is another court in which stands the tallest obelisk in existence. There are a succession of smaller courts, corridors, pylon gates and halls. To the southwest of Karnak and on the site of Thebes stand Luxor and its famous ruins of palaces and of the temple dedicated to Ammon, Mut, and Khons, the Theban triad. Near the main gateway of the great temple stood two obelisks erected by Rameses II.; one is still there, and the other is now in the Place de la Concorde, Paris. In the great court stood six huge statues of Rameses II., three of which are still in position.

Obelisk (from the Greek ὀβελίσκος, diminutive of ὀβελός, a spit, pointed pillar).—An obelisk is a tall and tapering four-sided pillar terminating in a pyramid and is generally a monolith. The pyramid was invariably capped with metal, usually gilded bronze. These monuments originated in Egypt, and were placed at the entrance of the temples and palaces, both for decorative effect and the recording of royal deeds and victories. Their sides were generally covered with hieroglyphic inscriptions deeply cut into the granite. One of the tallest of obelisks is that of Queen Hatshepsut at Karnak, which rises to 97½ feet, its diameter at the base being 8½ feet; its mass is estimated at 4,873 cubic feet and its weight at 367 tons. An obelisk of red granite, 66 feet high, still stands on the Nile, the solitary monument of the fallen city of Heliopolis. This is the oldest obelisk existing, and is said to have been erected by Usertesen I., the second king of the Twelfth Dynasty. The famous "needles of Cleopatra" were erected originally at Heliopolis by Thothmes III. During the rule of the Ptolemies they were transferred to Alexandria. In 1879 one was taken to London and placed on the Thames embankment; the other was brought to New York, in 1880, at the expense of William H. Vanderbilt, and erected in Central Park, February 22, 1881.

GREEK ART AND ARCHITECTURE

The Greeks carried architectural art to a high degree of excellence. They made no use of the principles of the arch in their important buildings, but confined themselves to the columnar form; yet their architecture combined Egyptian grandeur with a chasteness and symmetry of design unrivaled by any other nation. As architecture is generally influenced by available building materials, Grecian temples were originally made of wood, which largely accounts for the variety of forms found in their more permanent architecture. Stone was gradually introduced, but the traditional forms remained; the architrave represented the girder resting on the columns, which supported the principal rafters; the triglyphs were the beam ends; the small circular ornaments in low relief, called guttae, were the nail heads; the metope slabs filled the former intervals between the beams; the pediments were occasioned by the gables formed by the sloping roofs.

The three distinct orders of architecture developed by the Greeks were the Doric, Ionic, and Corinthian. The distinctive character of the orders is chiefly shown in the column and the entablature. The Romans adopted the Grecian styles, modifying them and adding two others, viz., the Tuscan and the Composite.

The Doric Order.—This is the earliest of the Greek orders, and the one generally used in their temples. The Doric column tapered toward the top and had a strong entasis or curved profile. It had no base, but rested directly upon the stylobate or upper step of the foundation. It had generally twenty shallow flutings separated by a sharp ridge or arris, and in height ranged

from four to six times its lower diameter. The capital was plain, and consisted of (1) the annulated necking, (2) the echinus or ovolo, whose peculiar curve is supposed to have been taken from the sea egg, and (3) the abacus, which was a square flat stone without moldings of any kind. The entablature was divided into (1) the architrave, which was plain and was surrounded by a projecting flat molding, the taenia, below which under each triglyph was a bar (regula) with six guttae; (2) the frieze of triglyphs or blocks suggesting the ends of the beams of the ceiling and divided into three by two vertical cuts, and the metopes which might either be left plain or be adorned with sculpture or painting, and (3) the cornice, the projecting or crowning member of the temple. The cornice is composed of bed moldings, the projecting corona on the under side of which are mutules with guttae over each triglyph and each metope, and finally the cyma molding crowning the whole. The Doric style was used in the greater number of Greek temples known to us, of which the Parthenon at Athens is the finest example.

The Ionic Order.—The more graceful Ionic shaft tapered less, and was taller than the Doric, being from eight and a half to ten diameters in height. It had a slighter entasis, and was ornamented by twenty-four deep flutings separated by narrow fillets. The column had a base consisting of concave moldings (scotia) and convex moldings (torus) in various combinations. The larger moldings were separated by fillets. The so-called Attic base was composed of an upper and lower torus between which was a scotia and two narrow fillets, and was in height one third of the thickness of the column. The capital consisted of (*a*) an ornamented neck, (*b*) two parallel scrolls or volutes occupying opposite sides and supporting (*c*) an abacus. The volutes form the distinctive feature of the Ionic capital, and a side view gives the appearance of a scroll of parchment with the rolls hanging downward on each side. The Ionic entablature consisted of (*a*) an architrave, divided vertically into three parallel and horizontal bands; (*b*) a frieze, which was continuous or unbroken (having neither triglyphs nor metopes) and sometimes ornamented by a band of painted or relief ornament; and (*c*) a molded cornice. Unlike the Dorians, who preferred moldings of simple lines decorated with severe ornament, the Ionians introduced a more refined profile and more delicate decoration. The best examples of the Ionic style were the famous Erechtheum at Athens, and the temples of Ilissus and Minerva Polias, all three of which are in ruins.

The Corinthian Order.—This order was developed later, and there are only two famous remaining specimens in Greece dating from pre-Roman times, viz., the choragic monument of Lysicrates at Athens, and the Tholos, or circular building, at Epidaurus in the Morea. No traces of the order are to be found in the remains of Corinth. The Corinthian was the lightest and most ornamented of the Greek orders, its most important change from the Ionic being in the different capital. The base, an elaborated copy of the Ionic, was two-fifths the diameter of the column in height. The column was 10 diameters high, with flutings like the Ionic. The capital resembled an inverted bell with two rows of acanthus leaves clustered round it, above which were eight pairs of small volutes, surmounted by a molded abacus with concave sides. The entablature was more elaborate than the Ionic, the architrave being divided into three horizontal fillets separated by a narrow molding from the frieze, which latter was decorated with bas-reliefs; while the cornice was both richer and more varied, with the addition of volute-like mutules and modillions.

It is interesting to note that the Greeks usually blocked out their columns before erecting them, and only after the construction of the buildings were the channels, moldings, and the like cut. Until the adoption of marble in the fifth century, the surface of the column was thinly stuccoed.

Caryatids.—A caryatid was a sculptured female figure used as a support in place of a column or the like. Corresponding male figures were called atlantes or telamones. Instances of Caryatids in Greek architecture are rare, the most important remains being the portico called Pandrosium, forming part of the Erechtheum at Athens. In this example the figures take the place of columns, and support the entablature.

What we know of Greek architecture is derived from the remains of ancient temples. Unlike the Egyptians, the Greeks relied for beauty and stateliness on the columns surrounding their structures. Their temples were generally of moderate size consisting merely of an oblong cella surrounded on all four sides by a continuous free-standing colonnade, and being shrines to house the image of the deity rather than places of worship. The sunlight streaming through the main doorway was enough for the purpose of lighting the interior, and windows were unnecessary. Flat-roofed buildings, such as the Telesterion at Eleusis, may have been lighted from the roof, but the ordinary gable-roofed temple had no such device. The Greeks, after having fixed upon the types of their architecture, never departed from them but generation after generation went on refining and perfecting their lines; and no matter whether the temple was great or small, the change of scale did not affect the harmony or simplicity of composition. The life and requirements of the Greeks did not call for large buildings. Even in their largest temples, the chamber or cella barely exceeded 40 feet in width. Buildings for the shelter of the public were called stoas, long galleries of colonnades facing the street or public square, and in these also the column was the chief architectural feature. Color was extensively used to accentuate the architectural forms.

Sculpture.—As a concrete art, sculpture attained supreme perfection at the hands of the Greeks who developed it from the stylized archaism of the Egyptians to the fullest expression of human beauty. Greek art culminated during the Attic Period from about 480 B. C. to 323 B. C.

Up until about 480 B. C., Greek sculpture was in a formative period. The sculptors were learning their technique, improving their knowledge of the human figure and in general providing themselves with the facilities to express

their conceptions. It is therefore, on the whole, a period of experimentation, but a few great works are preserved; the decorative quality of the Hera of Samos, dedicated by Cheramyes, c. 550, and the freshness, vigor, and the naïvete of the pediments of the Temple of Aphaia at Aegina, c. 480, probably carved under the supervision of Onatas. The fine quality of the Parian and Pentelic marbles provided the artists with an ideal material. The influence of the palestra and the Olympic games were considerable. An appreciation of living beauty, combined with the ease of obtaining the finest models, gave an unbounded stimulus to sculpture. Added to this was a great demand for statues of the victorious athletes.

About 480, after the repulse of the Persians, the Greeks realized more and more fully their own possibilities and developed rapidly. The golden age of Pericles in politics, the wealth accruing to Athens as head of the Delian League, and the Periclean policy of rebuilding the city in a more perfect form provided the opportunities for artists to execute great projects. The intellectual activity of the period stimulated noble and ideal conceptions. It is the period in which the great deities of the Olympian Pantheon were put into visible forms. At the very beginning of this period, the figure of Myron, one of the six great Greek sculptors judged by either classic or modern knowledge, is seen. He attained complete freedom in the handling of the body, but attempted no marked expression in the face. His preference for a pose of momentary rest during violent action is illustrated in the *Discobolus* or the group of *Athena* and the satyr *Marsyas*. These works, like many of the Greek masterpieces, were designed to be executed in bronze. The marble copies we possess were generally carved by inferior Roman craftsmen, and can give but a faint reflection of the beauty of the original. The awkward tree trunks used as supports in many of these works are the result made necessary by changing the medium from bronze to marble. Calamis and Pythagoras of Rhegium were the most famous contemporaries of Myron.

Phidias perhaps touched the highest point in Greek sculpture in the chryselephantine statues of the *Athena Parthenos* in the Parthenon and the *Zeus* placed in the Temple of Zeus at Olympia. Although these have both disappeared, we may form some conception of his style from the sculptured decorations of the Parthenon at Athens which he supervised. There we find the most remarkable skill in composition in both pediments and frieze coupled with perfect technical ability. For greater monumentality and breadth of effect, he preferred to eliminate the smaller anatomical details. The figures are idealized to express superhuman natures. It has been truly said of them, "They look like human beings, but where is one to find such models." Other men of this time include Agoracritus of Paros; Alcamenes, the creator of the celebrated *Aphrodite of the Gardens;* Cresilas of Cydon; and Paeonios of Mende, the creator of the famous flying *Nike* (Victory) at Olympia. Toward the end of the fifth century, Polycletus formulated a theory of an ideal human figure expressed in the statue of the *Doryphoros* or Spearbearer.

Up to this time, the sculptors had not attempted to make the heads expressive of emotion, but this desire begins to be felt in the fourth century. At the same time, the idealization of the fifth century is replaced by the slowly growing tendency to realism. The change in the direction of individual patronage rather than the corporate employment of the preceding hundred years due largely to the impoverishment of the city states caused by the disastrous Peloponnesian war also suggested the slighter beauties such as grace and rhythm rather than nobility. Praxiteles illustrates those tendencies in the first half of the fourth century. In him, we find the body thrown into a delicate rhythmic S-curve. In the heads, a dreamy expression is attained by the far-away gaze of the eyes created by delicate transition of the shadow. He was very famous in antiquity for his unequaled beauty of surface finish and differentiation of texture which are well attested to by the *Hermes carrying the Infant Dionysus,* the one sure original fragment we have from the hand of any of the greatest Greek masters. He is commonly condemned of weakness, a charge which is supported by the Roman copies of his works, but not at all by this original. His other most famous works include the *Aphrodite of Cnidos,* the *Eros Centocelle,* the *Satyr* (Marble Faun of Hawthorne), and the *Apollo Sauroktonos.* Scopas tended to the darker sides of life as Praxiteles had to the sunnier. He attained an intensity of expression by wide-open eyes looking upward from under brows which were accented by a roll of flesh in the corners of the eyes, and by lips parted as though for heavy breathing. His best known works are the fragments of the Temple of Athena Alea at Tegea, and the *Meleager.* At the end of the century, Lysippus of Sicyon continued these fourth century characteristics in a somewhat dry fashion. He lightened and made taller the ideal human figure of Polycletus by making the head one-eighth rather than one-seventh the total height of the figure. An expression of slight weariness appears in the *Agias* and the *Apoxyomenos.* His portrait of *Alexander the Great* is known to have been that monarch's favorite. Other fourth century sculptors were Kephisodotus who may have been an older relative of Praxiteles, Timotheus, Bryaxis, and Leochares.

After the death of Alexander and the break up of his empire, Greek ideas became mingled with elements of Eastern sculpture. While there was no falling off in technical skill, taste and the conceptions in general were on a slightly lower plane than those of the great period. Then centers of artistic production moved from Greece to Pergamum, Rhodes, Alexandria, and elsewhere. In Pergamum, celebrating the victories of Attalus I. over the Gauls, a series of extremely realistic works were produced including the famous *Dying Gaul.* The differentiation of racial types is an instance of the realism of the period. The succeeding reign of Eumenes II. saw the great altar of Pergamum with its frieze representing the battle of the Gods and Giants. Although masterful in composition and execution, the excessive muscularity

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HISTORIC RUINS

1 Pont du Gard, Valley Gordon, near Nimes, France. 2 Arch of Constantine, Rome. 3 Mayan Monolith, near Quirigua, Guatemala. 4 Kutb Minar, Delhi, India. 5 Cleopatra's Needle, Central Park, New York City. 6 The Coliseum, Rome, Italy. 7 The Arch of Titus, Rome, Italy. 8 Portico of the Caryatides (Erechtheum), Athens, Greece. 9 Parthenon, Doric Temple of Athene, Athens, Greece.

Photos 1, 2, 3, 4 copyright Ewing Galloway; 5 by Burton Holmes.

FAMOUS TOMBS

1 Tomb of Haroun-El-Raschid, Chief of Bagdad, Bagdad. 2 Tomb of Rachel, wife of Jacob, near Jerusalem. 3 Tomb of Napoleon, Paris. 4 Tomb of Mumtez-i-Mahal, Wife of Shah Jehan, Agra, India. 5 Trench of Bayonets, Verdun, France.

of the figures, the almost pedantic treatment of the subject, and the general restless effect may weary a spectator after his first amazement has been subdued. Portraiture at this time became far more realistic. A similar feeling obtains in the pictorial treatment of reliefs which attempt to treat of landscape and matters which perhaps belong more properly to the art of painting.

Finally in what is known as the Graeco-Roman period, 146–27, we find the Greeks, as it were, training the Roman taste to appreciate Greek ideas. The exaggerated realism of the second Pergamene school and its technical skill are found again not only unabated but increased in the famous *Laocoon* group, which though greatly admired in antiquity and in the Renaissance is now considered as an inferior piece of sculpture. The Neo-Attic school and the school of Pasiteles, in addition to copying the famous Greek originals for the Roman market, attempted to revive the virtues of the great period of Greek sculpture, but without a great deal of success.

Athens, the Erechtheum.—This temple is laid out on an unusual plan in order to house several cults and sacred shrines. It takes its name from Erechtheus, a local divinity, but included the tomb of Cecrops, the rock showing the marks of Poseidon's trident, the salt spring which he created in his contest with Athena for the land of Attica, and Athena's sacred olive tree was just outside to the west. A porch to the east, one to the north, and a small porch on the south of the building were erected. It is possible that the usual symmetry which the Greeks loved was to be obtained by duplicating the building to the west on an axis running through the north and south porches. The north porch uses the richest of Greek Ionic columns with a band of honeysuckle carving around the neck of the capital, and the upper torus of the base decorated with a guilloche molding. The doorway of this porch is famed for the beauty of proportions. In the south porch, the usual columns have been replaced by sculptural maidens bearing on their heads the entablature of the porch; to prevent this member from seeming too heavy for them to carry, the frieze has been omitted. The figures stand upon a parapet; they have been made sturdy and well formed to do their work. All in all, they are probably the most successful caryatids ever executed. The frieze consisted of white figures against a background of black Eleusinian limestone, but it is so damaged that not even the subject can be identified. The work was begun in 435 B. C. and finished in 404 B. C. The building was converted into a church in the fifth century after Christ, and later, in the Turkish period, into a residence. One of the caryatids was removed to the British Museum by Lord Elgin. The building was repaired in 1902–8.

Athens, Parthenon.—The famous Doric temple of the goddess Athena Parthenos is on the Acropolis at Athens. Its architects were Ictinus and Callicrates, and the entire work was done under the supervision of the celebrated sculptor Phidias, during the reign of Pericles (465–439 B. C.). It is 227 feet in length, 101 in breadth, and 65 in height, and was built wholly of Pentelic marble except the roof, which was of Parian marble. In the eastern end of the temple stood the colossal ivory and gold statue of *Athena* by Phidias. It was 39 feet high, and the value of the gold alone is estimated at about $465,000. The edifice was surrounded by columns 34 feet 3 inches in height.

All 92 metopes were decorated with sculpture in relief, probably representing the four epic struggles of civilization against barbarism: The battle of the gods and giants on the east; of the Greeks and Amazons on the west; Centaurs and Lapiths to the south; and on the north perhaps scenes from the sack of Troy, though the work is too mutilated to be sure. Because of their position in the temple, it is likely that the metopes were put in place and finished before the rest of the sculpture. At least they fail to show the uniformity of style which characterizes the rest of the sculpture, especially the pediments, and some of the metopes are distinctly inferior in workmanship. The frieze represents the Pan-Athenaic procession held every four years in honor of the goddess Athena, the patron of Athens. This marvelous work, 3 feet 4 inches high, and 520 feet long shows all the classes of Athenians who took part in the celebration: Maidens, young men on horseback, magistrates, chariots, sacrificial animals, and so on. Marvelous variety of pose results in fine composition and movement. The height of the relief varies from 1¼ inches at the bottom to 2¼ inches at the top to compensate for the sharp angle from which it would normally be seen by a spectator on the ground. An impression of depth is attained by allowing one plane to overlap another. The sculpture on the eastern pediment represents the Birth of Athena, and the Contest of Athena and Poseidon for the land of Attica on the western pediment. Although much has been lost, enough remains to make it evident that these two scenes were unexcelled in skill of composition. The difficult triangular space was perfectly filled by well balanced and symmetrical groups of figures on either side of the pediment. Attention was focused by successively increasing waves of interest from the corners to the center. Any figure is superb in itself, but the group of the *Three Fates* from the East Pediment illustrates the fine qualities of sculpture. Much of the sculpture was removed by Lord Elgin in 1801, and is now in the British Museum.

The Parthenon was transformed into a Christian church about the beginning of the sixth century, and was dedicated first to St. Sophia and later to the Virgin. After the conquest by the Turks (1458) it became a mosque, and a minaret was constructed in the southwest corner. During the siege of Athens (1687) by the Venetians, it was used as a powder magazine, and on September 26, a shell crashed through the roof and destroyed the inner portion of the temple.

Halicarnassus Mausoleum.—This tomb—one of the seven wonders of the ancient world—was erected in 353 B. C. by Queen Artemisia in honor of her husband, Mausolus. It was the work of the sculptors Scopas, Bryaxis, Leochares, and Timotheus. It was built of white marble with Ionic columns. Its total height was 140 feet. The Knights of St. John pillaged it in 1622 to build the citadel of Budrum, and speci-

mens of these "Budrum Marbles" were sent to the British Museum by Sir Stratford Canning (1846) and by Newton (1857).

Olympia, the Heraeum.—This temple was thoroughly investigated by the German scholar Curtius from 1875–1881. Traditionally the temple was founded in 1096 B. C., but very few people accept that date to-day. It is, however, highly probable that the original building may have been erected in the eighth century B. C. This structure was of wood and sun-baked brick. Pausanias tells us that in his day one of the columns was of wood. The rest of the wooden supports seem to have been replaced by stone at varying times from the sixth century B. C. on, which indicates that the Doric order may have originated in wooden construction. Within the ruins of this temple was found the Statue by Praxiteles of *Hermes carrying the infant Dionysus.*

Olympia, Temple of Zeus.—Built by the architect Libon of Elis from 468–456 B. C. The temple is typical of the standard Greek form, now fully developed. It measured 210 feet by 90 feet along the stylobate. The pediments were filled with sculpture. On the east was represented the mythical chariot race of Pelops and Oenomaus, with a number of attendant figures. The subject was appropriate, as the supposed predecessor of the Olympic games. The western pediment, which is more skillful in composition, illustrates the struggle of the Lapiths and Centaurs at the wedding of Pirithous. Many details of the individual figures are eliminated due to the height above the ground from which the figures would be seen, which made detail unnecessary. The conception of the figure of Apollo as arbiter of the battle in the west pediment is one of the most majestic of all time; calm and undisturbed amid violent action, he embodies the Greek ideal of divinity. The twelve metopes placed over the pronaos and opisthodomus, within the encircling colonnade, tell of the labors of Heracles; the composition of many of them is remarkably fine. Within the temple was the great gold and ivory statue of Zeus by Phidias, one of the seven wonders of the ancient world.

ROMAN ART AND ARCHITECTURE

The practical and warlike Romans adopted the art of the vanquished Etruscans and afterwards that of the conquered Greeks. From the Etruscans they acquired the principles of the arch and the vault. At first the Romans preserved the inviolability of the classic orders, retaining the ancient form of the temple with its purity and simplicity of style. But with the growth of Roman power came the necessity for more varied monuments, and architectural traditions were no longer found adequate to growing secular needs. The temple, which in Greece had been the glory of a nation's art, sank into comparative insignificance, and gave place to civic buildings of national importance and splendor of design. At the beginning of the Christian era the introduction of circular-formed structures with majestic domes enabled the Romans to erect buildings of imposing grandeur throughout their vast empire. The arch, lending itself to any scale and supporting any burden, was made the constructive basis of civic architecture. Disdaining convention, the Romans combined the arch and the order, and subordinated chasteness of design to grandeur of conception and effect. They have been blamed for this innovation, as well as for not designing an architecture of their own to harmonize with the arch. But their genius lay in successfully combining these various styles, evolving harmony out of complexity, and giving a splendor to interiors such as had never been known before. The spaciousness of their edifices was made possible by the use of concrete, which became general in the time of Augustus. The Tabularium on the Capitoline is one of the earliest examples of this combination; the Colosseum, the Basilicas and the theater of Marcellus are on a similar principle, and in all of these the Greek orders serve as an addition to the Roman arch and vault. This ornamental use of the orders is illustrated by the employment of superposed orders of engaged columns and by the adaptation of engaged columns and the entablature to enframe an arch. The Romans also employed the segments of circles in place of the freehand profiles of Greek moldings, and carried decoration to a point of unrivaled magnificence. Such were their temples at Baalbek and Palmyra, and those of Castor and Pollux and of Faustina in Rome.

The Doric and Ionic orders of the Greeks were employed to a limited extent in a modified form. The Doric, for example, was thinned down to eight diameters in height and was given a base in addition to other minor changes in the entablature. The more elaborate Corinthian was, however, the favorite of the Romans, though two other orders, the Tuscan and the Composite, were also created and used. The Tuscan, which may have been derived from the Etruscans, was not used very frequently except in domestic buildings in superposed orders in which case it is the lowest. It is similar to the Doric but even more simple with a column seven diameters in height. At the other end of the scale comes the Composite which is even more ornate than the Corinthian. The cornice is enriched by a number of carved moldings, and the capital had the volutes and ovolo of the Ionic order superimposed on the bell-shaped form of the Corinthian with its two rows of acanthus leaves. But the great contribution of the Romans was their skill in planning immense buildings to give a monumental effect. The large halls of such structures as the imperial baths are admirably related to each other by a system of axes. Aided by their knowledge of vaulting and concrete, and the wealth of the emperors, the architects were enabled to produce the most magnificent spacious interiors that the world had seen up to that time.

The Pantheon is the noblest work in Roman architecture, but where the Romans excelled was in their theaters and amphitheaters, their fora and basilicas, their colossal baths and sumptuous palaces. Their triumphal arches set the model for all later generations. Monuments of the Golden Age bear eloquent testimony to the splendor and might of Rome. The ruined Roman cities of Asia Minor and Africa, such as the recent discoveries of Leptis Magna; impressive remains in France and Rhenish Germany; world-

famed ruins in Italy, such as those of Pompeii and Herculaneum, the amphitheaters at Casinum, Capua, Puteoli, and Verona, Hadrian's villa at Tivoli, the arch of Trajan at Benevento, the triumphal arches of Titus, Septimius Severus, and Constantine, the Colosseum, the Roman and imperial Fora, the immense thermal establishments of Titus, Trajan, Caracalla, and Diocletian, the sculptured columns of Trajan and Marcus Aurelius, the imperial palaces on the Palatine, the Tabularium, the Senate House, and the Admiralty (Neptunium), these are the chief among countless remains of a great historic past.

Sculpture.—In sculpture as in architecture, the Romans were the inheritors of Etruscan art and Greek tradition. But the Greek incentive—the decoration of temples—was lacking, and sculpture was for a long time represented by portrait statues of Roman citizens. These statues adorned the bridges, basilicas, baths, theaters, and other edifices of Imperial Rome; while the worship of ancestors called for many statues to set up in the houses, and to carry around in funeral processions. The only development which the Romans gave to the art was in the sculptured reliefs that adorned their architecture. Rome was filled with the art treasures of conquered Greece. Pasiteles, Stephanus, Menelaus, Arcesilaus, and other Greek artists flocked to the Imperial City, and found ready patronage among a luxurious people. The matter-of-fact character of the Roman patrons resulted in the displacement of the ideal treatment of the earlier Greeks by a bold, sensual, and above all, purely realistic treatment which appears most strongly in the portraits, but is obvious in all their work. This led to the idea of illusionism in reliefs in which by many sloping planes an effect of considerable depth is obtained as in the reliefs on the arch of Titus. The Romans also adopted the continuous method of narration in which one scene after another occurs in a given strip with no marked border between. The spiral reliefs of the columns of Trajan and Marcus Aurelius prove that perfect legibility can be attained with this method. With the wane of centralized power, Roman art declined; technique suffered too in the general dearth of creative talent. With the barbarian conquest of Italy, classical art came to an end.

Nimes, Maison Carrée.—A Roman Corinthian temple at Nîmes in southern France, and the most important Roman temple now remaining. It probably dates from the time of the Antonines. The building measures 45 feet by 85 feet, stands on a platform approached by 15 steps, and is surrounded by 30 columns. It is now used as a museum.

Pompeii and Herculaneum.—The two ruined cities of Italy which were overwhelmed by the eruptions of Vesuvius in 63 A. D. and 79 A. D. The ruins of Herculaneum were accidentally discovered about 1710, and excavations have been carried on, more or less intermittently, since 1737. As modern villages are built on the site of the ancient city, excavations can be made only by tunneling. The work of excavation at Pompeii was begun by King Charles III. of Naples in 1748, but not until 1860 was the work carried on systematically. The discoveries have thrown a flood of light on Roman art and customs. Temples, monuments, various civic buildings, statues, paintings (over 3,500 have been found in Pompeii), vases, bronzes, and marble tables, domestic utensils, articles of furniture and adornment, all have been discovered and mostly in a perfect state of preservation, affording a vivid picture of provincial life in the first century of the Christian era.

Rome, Arch of Constantine.—A triumphal arch near the Colosseum in Rome, erected in 312 A. D. by Constantine the Great to commemorate the victory over Maxentius. There are three arches and an attic supported by four piers, in front of which are Corinthian columns. It is partly adorned by sculptures taken from earlier monuments. It was restored in 1731.

Rome, Arch of Septimius Severus.—A triumphal arch in Rome at the northwest end of the Forum, erected in 203 A. D. to commemorate the conquest of the East by Septimius Severus and his sons, Caracalla and Geta. It has three direct arches and one transverse arch.

Rome, Arch of Titus.—A triumphal arch on the Sacred Way in Rome, erected by Domitian (81 A. D.) in commemoration of the conquest of Jerusalem. Its reliefs, representing the victory of Titus, show the Roman soldiers carrying the spoils of the temple, including the seven-branched candle-stick, the table for the shewbread, and the golden trumpets. The arch was taken down and rebuilt in 1822 to insure its safety.

Rome, The Colosseum.—The amphitheater was designed by the Romans for exhibiting gladiatorial combats, wild beast fights, and other spectacles. The Colosseum is the largest Roman amphitheater known, and stands on the site of Nero's palace in Rome. It was begun by Vespasian in 72 A. D. and finished by Domitian in 86 A. D. A fourth story was added by Severus Alexander (died 235 A. D.) and Gordianus (died 238 A. D.). It covers five acres of ground and its seating capacity is variously estimated at from 50,000 to 87,000 besides standing room for about 20,000 more. Externally, the Colosseum has four stories, the three lower with arcades—the lowest Doric; the second Ionic; the third and fourth Corinthian—according to the general Roman usage. Its height is 157 feet. The seats were of marble, the exterior walls and the chief corridors of travertine, the inner walls of tufa and concrete. There were four tiers of seats corresponding to the four stories. The arena measured 280 by 176 feet, and underneath were dens for wild beasts with appliances for hoisting them to the arena. Early Christians were frequently thrown to the wild beasts in this same amphitheater; one of the first of such martyrs being St. Ignatius, who was torn to pieces by lions. The Colosseum was chiefly destroyed in the fifteenth century when it was being used as a quarry for marble and other building materials. An end was put to the spoliation by Pope Benedict XIV. (1740–1758), who consecrated it as a monument to the Christian martyrs who had been persecuted within its walls.

Rome, Column of Marcus Aurelius.—A Roman Doric marble column on a square pedestal. It is now surmounted by a statue of St. Paul which Pope Sixtus V. placed there. The original column, 123 feet high, was erected to commemo-

rate the victories of Marcus Aurelius over the Marcomanni.

Rome, Column of Trajan.—A famous column at Rome erected in 114 A. D. in honor of the emperor Trajan. This noble masterpiece was constructed by the architect, Apollodorus. The pedestal is covered with warlike designs in bas-relief, while a similar decoration representing the victories of Trajan form a spiral round the shaft. These are all well preserved and form a valuable record of ancient costumes. In the interior of the column a spiral staircase leads to the summit of the column, which was originally crowned by a statue of Trajan, but this has been incongruously replaced by one of St. Peter. The height of the column is 132 feet.

Rome, Mausoleum of Hadrian.—This great structure, on the right bank of the Tiber in Rome, was erected in 136 A. D. in memory of the emperor Hadrian. Upon a base 247 feet square was built a circular mass of masonry 230 feet in diameter. The tomb was adorned with marble statues and surrounded by a bronze railing ornamented with gilded peacocks, two of which are now in the Vatican. The reconstructed remains of the mausoleum are now known as the Castel Sant' Angelo.

Rome, Palace of the Caesars.—The term is given to the buildings on the Palatine Hill at Rome, where Augustus first erected his palace on the site of the houses of Cicero and Catiline, succeeding emperors making alterations and additions. The ruins cover an area of 1,500 feet in length and 1,300 feet in breadth. The "Golden House" added by Nero, was of imposing grandeur. It was surrounded by a triple portico a mile in extent, and supported by a thousand columns; and within this was a picturesque lake bordered with stately buildings, each representing a miniature city. A statue of Nero, 120 feet high, stood in the main vestibule.

Rome, Pantheon.—The first Pantheon ("Temple to all the gods") was erected by Valerius of Ostia for M. Vipsanius Agrippa in 27 B. C. It was damaged or destroyed, and Hadrian replaced it in 123 A. D. with the present circular edifice, which is still well preserved. The walls are of immense thickness. The rotunda is 142½ feet in internal diameter and supports a cupola which rises to a height of 142 feet. The one window is circular, 27 feet in diameter, and is in the vault. Since 608 A. D. the Pantheon has been a Christian church, and is known as the Church of Santa Maria Rotunda. The term Pantheon has been applied to a number of domical structures, chief of which is the Church of Sainte Genevieve at Paris, erected 1764–1781.

EARLY CHRISTIAN AND BYZANTINE ART AND ARCHITECTURE

The earliest churches of which we have any record were built in the time of Constantine, who, in 313 A. D. was the first to sanction Christian buildings, and so give an impulse to Christian architecture. Unlike the pagan worship, which was chiefly in the open air, the new religion necessitated large interiors to accommodate large assemblies; hence was evolved the style known as basilican, adapted from the architecture of the Romans. This was the distinctive style of the earlier Western or Latin church, and passed from Italy northward with the spread of Christianity. After the eighth century, it was gradually superseded by the Romanesque, and then by the Gothic.

The basilican church consisted of three, and occasionally five, aisles, divided by columns. The aisle and nave were used by the laity, while the lower clergy found their place to the east end in the transept or bema, a member going at right angles across the aisles and nave. To the east of this again was the semi-circular or polygonal apse in which the altar was frequently, though not always, placed, and which was reserved for the higher clergy. The upper part of the nave, called the clearstory, rose high above the side aisles. The ceilings were flat, surmounted by a low gable roof. Below the clearstory was an unlighted space, the triforium, corresponding to the pent roof over the aisles. Finally below this came the colonnade which divided the nave from the side aisles and which at first carried a flat lintel but later a series of arches. Three enormous churches of this type were erected in Rome by Constantine or shortly after his death, namely, those of St. John Lateran, St. Peter, and St. Paul Without the Walls. The last named is a surviving monument, while in the desert cities of Syria and North Africa are preserved some interesting remains of this style of architecture.

In the East, Christian architecture developed into the Byzantine style, which differed from all earlier forms in its exclusive adoption of vaulted roofs, its rejection of timber, and its substitution of brick for the concrete of the Romans. The solution of placing a dome over a square plan by means of pendentives, or corbelled squinches, wrought a revolution in architectural design, the rest of the structure being subordinated to this dominant feature. The oriental love of color was a characteristic of this style, and the interiors were resplendent with rich mosaics and ornate decorations. The Byzantine style reached its perfection first in the reign of the emperor Justinian whose interest in the church of Hagia Sophia in Byzantium (Constantinople) was largely responsible for its magnificence. Other important churches of the time were St. Irene, and S. Sergius and Bacchus. In the ninth century, beginning with Basil I., a great revival of all the arts took place in Byzantium, resulting in a second wave of church building. The most famous church from this period is that of S. Marks in Venice, where the Eastern influence in artistic matters had long been predominant. It is important to observe that this church is not typical of the second Byzantine period. It still is the distinctive style of the Eastern church, and is prevalent in Russia, the Balkan states, and Asia Minor; from there it spread to Italy dominating Venice and Ravenna, and the South. Though a number of ecclesiastical monuments still remain, few secular examples are in existence; of these the oldest Venetian palaces are thoroughly representative of Byzantine art.

The iconoclasm that characterized the sixth, seventh, and eighth centuries of the Christian era had a calamitous effect on Byzantine art,

especially sculpture and painting; hence few remains have come down to us. The most notable examples of Byzantine figured sculpture are the colossal bronze statue (now in Naples) of the Eastern emperor, from Barletta, the *Madonna* in the cathedral at Ravenna, the reliefs of Christ at the Eski-Djouma mosque in Constantinople, and certain reliefs at the Mount Athos monasteries.

Constantinople, Church of Hagia Sophia.—The original church was built by Constantine, probably on the site of an old pagan temple of Athena, and was dedicated to Hagia Sophia or the Divine Wisdom. The Nika sedition in 532 A. D. destroyed the previous church, thereby giving the Emperor Justinian and his architects, Anthemius of Tralles, and Isidorus of Miletus, their opportunity. In the remarkably short space of six years the present edifice was completed. The central feature is a dome of 107 feet diameter rising to the height of 180 feet. The long axis of the church is emphasized by half domes to the east and west which serve to buttress the main dome, while on the north and south huge masses of masonry have the same function. The interior was provided with a wealth of rich mosaics and costly marbles gathered from all over the Mediterranean region. These create an indescribably rich effect of color while the height of the dome and the soft light from the row of windows at its base give the visitor an inspiring feeling of airy spaciousness. Like the Early Christian basilicas, Hagia Sophia originally had an open court, the atrium, in front, but only the porch or narthex is now preserved. The main dome collapsed in an earthquake in 558 A. D. but was replaced by 562 A. D. When the Turks captured the city in 1453, the church was converted into a mosque, but contrary to a prevailing opinion, they have taken good care of the structure, though the relics and Christian mosaics were profaned or concealed by whitewash. It was renovated in 1847–1849.

Rome, Catacombs.—The groups of subterranean vaults and labyrinths on the Via Appia near Rome are practically the only Christian remains of the first three centuries. It is believed these underground chambers were the meeting places of the early Christians in times of persecution, as well as their burial place. The Roman catacombs consist of long, narrow galleries and chambers cut out of the soft tufa. Some are near the surface, but beneath these are other stories to a depth of seventy feet. Though the superficial area of these catacombs is little over 600 acres, it is estimated that if the galleries could be arranged in a continuous line, they would stretch a distance of 545 miles. Niches or ledges were cut out of the rocky sides to form a resting place for a corpse, each niche being closed with a marble or terra cotta slab on which was inscribed the name of the deceased. The catacombs at Naples are similar to those at Rome, and are covered with Christian symbols as well as relics of pagan art. Many of the frescoes at Naples are distinctly classical in design, while in the catacomb of St. Practextatus, Hermes is represented as the conductor of the dead. The frescoes are for the most part devoted to Scriptural subjects. Similar catacombs have been discovered at Palerino. Syracuse, and Chiusi, as well as in Greece, Asia Minor, Syria, Egypt, Peru, and elsewhere.

Venice, St. Mark's.—The church of San Marco, modeled on its prototype, the church of the Holy Apostles in Constantinople (now destroyed), is the most magnificent example of polychromatic architecture in the world. It was built in 830 A. D. to receive the relics of the apostle Mark, the patron saint of Venice, and rebuilt in 1063 A. D. after a conflagration. From the eleventh to the fifteenth centuries a number of alterations were made till it assumed its present form. The church is cruciform with five massive domes on pendentives and several smaller domes in subordinate positions. The four famous bronze horses set above the central porch originally came from Constantinople. The interior of the church with its soft dim light, its richness and harmonious detail, its idealistic designs and the consummate blending of various styles, and its splendid Byzantine mosaics, is one of the most impressive in Europe. The description of St. Mark's in *The Stones of Venice* by Ruskin will be remembered by all lovers of art.

SARACENIC ARCHITECTURE IN THE WEST

The Moslem religion, founded by Mahomet in 622 A. D., quickly spread over East and West from its center in Arabia; Syria, Egypt, and North Africa being subdued in the seventh century; Sicily and Spain in the eighth. Although they preferred to adopt the native style rather than to introduce new ones, they left their peculiar flavor on whatever buildings they touched. The most important type evolved by the Saracens was the mosque which is generally rectangular in plan. Much of the area is occupied by an open court surrounded by arcades and with a fountain in the center sheltered by a pavilion. The rest of the work is a colonnaded hall, often very extensive. Slender towers called minarets rise from the corners of the rectangle. Other buildings like palaces show the influence of the climate and of the oriental love of seclusion by small windows and delicate grills. The pointed horseshoe and scalloped arches are regularly employed. Few moldings are to be found, but arabesques replace them. The latter, because of the religion, exclude natural forms, but an inconceivable richness of color and geometric patterns is obtained. The decorative Arabic script is frequently used. Domes and other types of vaults may have been inspired by the Byzantines. A peculiar form is the stalactite vault-like rows of small niches rising above each other and each row projecting beyond the lower row. In general, the style in the interior is more one of rich, colorful decoration than structure, tending to intricacy instead of simplicity.

Cairo, Mosque of Amr.—Founded by the caliphs, Abd-el-Melik and Walid, in 642 A. D. The large court is about 250 feet square. As is frequently the case in Early Christian art, columns are taken from Roman and Byzantine buildings.

Cordova, the Great Mosque.—Built in 786 A. D. by the Caliph of Cordova, Abd-el-Rah

man. A rectangular plan 570 feet by 425 feet. The covered portion alone, whose roof is supported by about 1200 columns of varied costly stones, covers a greater area than any Christian cathedral, but the height is only 30 feet to 65 feet. The interior, decorated in part at least by Byzantine craftsmen, is aglow with fine color in mosaics, marbles, gold, and semi-precious stones. It was once lighted by 800 silver lamps. After the capture of Cordova (1236), it became a Christian church.

Granada, the Alhambra.—In order to impress the conquered country with his power, this magnificent palace, one of the best monuments of Moorish architecture, was built by the Caliph Abd-el-Walid from 1309–54. The two main parts are the Court of the Lions and the Court of the Myrtles. The former derives its name from the fountain supported on the backs of twelve lions. The lovely Court of the Myrtles includes a large pool which faithfully reflects the surrounding architecture. The Hall of Judgment has stalactite vaulting as have several other rooms in the palace. Some of the ceilings are of cedar inlaid with mother-of-pearl, silver and ivory, and the decorative scheme of the palace, though carried out in colored plaster designs, is sumptuous to a degree and inclines to astonish the spectator by the appalling magnificence of the whole and by its beauty of details.

Jerusalem, the Dome of the Rock.—The so-called "Mosque of Omar" built in 688 A. D. occupies a site made sacred long before. The most famous previous building on the same location was the temple of Solomon. For Moslems, the site is made sacred because Mahomet is supposed to have ascended to heaven from the rock which has been sheltered for that reason. Certain columns in the building are fragments of late Roman work with Byzantine capitals. The decoration of the exterior by Persian tiles, and of the interior with marble slabs is due to the Turkish sultan, Suleiman the Magnificent, in 1561.

Seville, the Giralda.—This magnificent Moorish tower, erected in 1139, has been somewhat marred by the Renaissance belfry added to it in 1568. The Saracen portion, 45 feet square and 185 feet high, has received the typical Moorish wealth of decoration with scalloped, pointed, and horseshoe arches, interlacing arcades, arabesques, and so on, producing in this instance a design of the greatest beauty.

ROMANESQUE ART AND ARCHITECTURE

This style came into being and flourished in the eleventh and twelfth centuries in Europe. In it we find a number of schools differing widely from one another, but showing for the first time a trace, still very faint, of national differences. The style is generally characterized by the use of massive construction and the round arch. Two broad divisions of the various styles of Romanesque may first be established—the organic and the inorganic. The term organic applies to a vaulted architecture whose structural forces are visibly concentrated and logically resisted. It therefore amounts to revealed structural logic in a vaulted building. It should be observed that the two terms are purely descriptive, and do not confer either commendation or opprobrium on a building.

The inorganic styles may be mentioned first. These probably appeared simultaneously in many parts of Europe. In Central Italy the Tuscan style is characterized by a simple, light structure similar in disposition to an Early Christian basilica. In the cathedral group at Pisa or the Baptistry in Florence, its classical borrowings, as so frequently in Romanesque, are marked. The buildings are characterized by the lavish use of arcades and polychromatic effects. The South of Italy shows its historical background in borrowing detail from the Norman conquerors, slightly pointed arches from the Saracens, and brilliant mosaics from the Byzantine, as well as certain elements from the Romanesque of Lombardy and from classical antiquity. The cathedrals at Monreale and Cefalu, and the church of San Nicola at Bari are typical. Provence, in the south of France, shows the influence of the fine remains of Roman architecture in which the district abounds, as in St. Trophime at Arles. In Acquitaine and Poitou the Byzantine domes on pendentives seen in St. Front at Périgueux combine with façades lavishly decorated with small scale sculpture and ornament, especially a pattern resembling fish scales, at Angoulême Cathedral or Notre Dame la Grande at Poitiers. Burgundy is semi-organic in feeling, with experiments in many types of vaults, such as round and pointed barrel vaults, barrel vaults set at right angles to the long axis of the church, and groined vaulting. Sculpture is lavishly used around the portals of churches. The great abbey at Cluny, now destroyed, and the Church of the Madeleine at Vézelay were among the most famous in Europe.

Probably the first of the organic styles to develop was that of Lombardy in North Italy. Here was evolved the domical groined vault carried on ribs. Six ribs constitute the full complement. The square area of the vault is bounded by two ribs running along the side of the nave known as wall ribs, two crossing the nave called transverse ribs; and two diagonal ribs which divide the square into four triangular compartments. This general rib system persists in later organic Romanesque, and was passed on to Gothic. In the Lombard style all the ribs are semi-circular. Because the length of a diagonal is greater than that of the sides of a square, the diagonal ribs rise higher than either the wall rib or the transverse ribs producing a domical result. The lateral thrust of such a vault is transferred across the gallery over the aisle to the outer wall of the church. Hence no clearstory is possible. The pier to support such a vault is composed of a number of shafts corresponding to each of the ribs of the vault, and facing in the direction of the rib to which it corresponds. Finally, since there were two small vaults in the aisle to one large vault in the nave, we find small piers supporting only the vaults of the aisle alternating with larger piers which carry the vaults of both the aisle and the nave. This produces a rhythm down the nave of the church and is a logical revelation of the structure of the building. Good examples may be found in the churches of Sant' Am-

brogio at Milan and San Michele at Pavia.

The organic Romanesque of the Rhine valley became the national style of Germany. Though a loss of logic results from the elimination of some of the ribs or of some members of the pier, such cathedrals as Mainz, Speyer, and Worms attain a strong monumentality with dignity and grandeur. Normandy continued to develop further structural innovations. Instead of the domical vault of Lombardy, diagonal arches of elliptical form made possible a vault with level crowns. The quadripartite vault is complicated by the addition of a third transverse rib bisecting the two sections of vaulting next to the wall of the church. Among the best examples are the two abbeys at Caen. This style reached its culmination in the Romanesque of England, sometimes called the Anglo-Norman style. Here massive walls and great solid piers create an atmosphere of sedate grandeur, though there is less organic feeling than in the pure Norman of the continent. Most English cathedrals show some portions in the Norman style as in Ely, Norwich, Gloucester, Rochester, Canterbury and Peterborough, but the best and most complete example is Durham Cathedral.

In the sculpture of the period, naturalism finds no place. The Byzantine ideals were spread in Europe by means of manuscripts and ivories, and the hieratic, symbolic spirit of the East is echoed again in the West. Fine architectural feeling and monumentality of effect are produced by these means. The school of Languedoc in Southwestern France is among the most influential. Although completely unrealistic, a certain liveliness is attained by animated postures. One regularly finds the drapery treated in repeated, formal lines ending in zigzag folds of a decorative effect similar to archaic Greek art of the Ionic school, as in the tympanum of the church of St. Pierre at Moissac. The portals in Burgundy exhibit extremely attenuated forms and intricate conceptions, but with no less splendid decorative and architectural effects, illustrated by the Church of the Madeleine at Vézelay or in St. Lazare at Autun. Provence shows a marked classical feeling in the stocky figures with large heads which have the dignity and strength of Roman works even if they lack the delicacy of Languedoc and Burgundy. Such work may be seen at its best in the portal and cloister of St. Trophime at Arles. The production of Northern Spain is closely akin to that of Languedoc and may even deserve priority in the field. The earlier work may be seen in the Puerta de Platerias, while the Portico de la Gloria, also at Santiago de Compostela evinces an influence from Burgundy and Languedoc.

Caen, Abbeys.—A pair of churches founded by William the Conqueror and Matilda, his wife, daughter of Count Baldwin of Flanders, in expiation for their marriage. Inasmuch as the two were relatives, this union would normally have been forbidden by the church. St. Etienne, called the Abbaye aux Hommes, was begun in 1064 though the sexpartite vaults were not added till about 1135. Ste. Trinité, the Abbaye aux Dames, was two years older than its companion, but received its present vaults a few years after the other church. In general, though less logical, the proportions of Ste. Trinité are somewhat finer than those of St. Etienne, and exhibit an almost feminine grace as compared with the virility of the Abbaye aux Hommes.

Cluny, Abbey.—The great mother church of the Cluniac order. Founded 910, but important rebuildings took place from 1088–1110 and subsequently. The church was the finest example of Burgundian Romanesque with a long nave still further increased by an ante-nave of the late twelfth and thirteenth centuries. The church was sold for building materials at the time of the French Revolution, though it had remained in almost perfect condition down to that time. Parts of the monastic buildings have been preserved, and are now in use for other purposes. The whole site is being thoroughly investigated at present by Professor Conant of Harvard university.

Durham Cathedral.—The most complete large example of English Romanesque. The building was begun in 1093 by William of S. Carilef who completed the east side of the transepts and the choir which originally had three apses. The nave and transepts are due to Bishop Ralph Flambard's building campaign from 1099–1128. His work is more developed than the earlier style, but less so than that used under Bishop Pudsey from 1153–95, during which period the vault was probably erected as was the Galilee porch. For the rest, the apses at the east end were converted into the chapel of the nine altars in the Early English style of the thirteenth century; the tower is fifteenth century perpendicular Gothic; the refectory is seventeenth century; and the whole has suffered somewhat from unfortunate restorations by Wyatt and Sir George Gilbert Scott. The fine location above the banks of the Wear river makes the superb pile doubly impressive.

Ely Cathedral.—The Bishops of Ely and Durham were the most powerful of the English ecclesiastics in the middle ages in secular affairs. The present church was begun in 1081 by Prior Simeon, and the nave and western tower were completed under Bishop Reddell at the end of the twelfth century. The choir is Early English, and the octagon over the crossing is Decorated. The magnificent form of the latter is due to its architect, Alan of Walsingham, and is unique. The uninterrupted length of the church is 520 feet. Its bulk rising far over the surrounding country has earned the title of the "ship of the fens."

Monreale Cathedral.—This building, the best of Sicilian Romanesque, was founded by William the Good in 1176. The exterior of the east end is richly treated with interlacing arcades of pointed arches creating an indescribably gorgeous effect. The towers of the west end are an instance of Norman influence. The interior of the church is resplendent with polished marble in the lower story, and the whole wall surface of the upper portion including the soffits of the arches and the jambs of the windows are covered with an incrustation of mosaic. The subjects are taken from the *Bible*. In the semi-dome of the apse appears Christ as Judge of the World, a stern conception akin rather to the *Old Testament* than to the *New*. The beautiful cloister is composed of arcades of pointed arches

supported by paired colonnettes which are enriched by carving or mosaic inlays.

Pisa, Cathedral Group.—The Pisan victory over the Saracens and the capture of Palermo in 1062 provided funds with which to erect a great cathedral. This was begun in 1063 by the architect Boschetto who may possibly have been a Greek. The church is basilican in construction with Corinthian columns, but the wide transepts and the dome over the crossing are perhaps due to Lombard influence. The famous Leaning Tower begun in 1174 uses again the motive of repeated arcades which make the Cathedral itself noteworthy. The foundations have sunk so that the tower leans 14 feet to one side. This settlement had already begun when the tower was in process of construction, and attempts to correct this inclination were made. The baptistry in front of the Cathedral was begun in 1153, but the original scheme was most unfortunately altered in the Gothic period. It houses the famous pulpit of Nicola d'Apulia, executed in 1260. The group was completed with the erection of the Campo Santo during the Gothic Period. Its walls are decorated with frescoes by such men as Benozzo Gozzoli. The *Triumph of Death* by a Sienese follower of the Lorenzetti brothers is the most famous.

Santiago de Compostela, Cathedral.—In the middle ages the three most important pilgrimages were the Holy Land, Rome, and the shrine of St. James at Compostela where the bones of St. James the Major were supposed to rest. The latter pilgrimage was fostered by the Cluniac order, and along the route there were a number of churches of a design so similar that they must have at least influenced one another. The church of St. James at Compostela begun in 1078 was the most important. The style is characterized by broad transepts, the barrel vault of the nave supported on transverse arches, and groined vaults in the aisles. Other important members of the group were S. Sernin at Toulouse and S. Foy at Conques, while those of S. Martial at Limoges and S. Martin at Tours are now destroyed. The façade of the cathedral of Santiago de Compostela is baroque by Fernando Casas y Novas. This church is 308 feet long, and 207 feet wide across the transepts. The Puerta de Platerias and the Portico de la Gloria exhibit some of the finest extant sculpture of their respective periods.

GOTHIC ART AND ARCHITECTURE

It is said that the term "Gothic" was first applied to this style of architecture by Raphael in a report to Leo X., concerning some projected building in Rome. It was meant to convey the idea of barbarous as opposed to Roman. The name is misleading, for the style did not originate in Germany as the name implies, but in France. Some have tried to substitute "Pointed Architecture," but that is insufficient, for the use of the pointed window is only an incident, and not a fundamental characteristic. Others have used the term "French Art" but to convey the exact idea, one must add "of the last third of the Middle Ages" which makes an unwieldy name. It seems therefore that the error must be perpetuated. The strongest impressions which a Gothic building conveys are those of height and lightness. Such a building seems to be made up of windows, rose-windows, pinnacles, and lace-like traceries of stone. Vertical lines and pointed arches abound. The flying buttress is peculiar to Gothic architecture. The added height of the walls, and the additional weakening of them by the use of many and large windows, required that they be reinforced from the outside by means of stone arches supported by buttresses designed to carry the lateral thrust of the lofty interior vaults.

The essential problem of Gothic builders in France was to transform the rigid, rather heavy Romanesque vaults into lighter construction, and to concentrate the thrusts of these vaults at small isolated points in the wall which could easily be met by a flying buttress. By a series of perfectly logical steps which can be traced in detail, an oblong form of vault with level crowns was evolved. The logic of the French mind reveals itself in the manner in which the vault itself is reflected in the membered pier, and indeed in most of even the smaller elements of the building, which were first designed to be satisfactory from a structural point of view, and then were made beautiful. Everywhere in the great French Cathedrals, the structure is revealed. The period of cathedral building in France was brought to an end by the political disturbances of the Hundred Years' War, but in the fifteenth century, a new style, the Flamboyant Gothic, was evolved. At this time, exuberant architectural decorations freely using the flame-like reversed curve in its tracery was combined with extremely light construction and astonishing technical skill. Although no large cathedrals were undertaken, most of the earlier buildings show the Flamboyant style in part, and thousands of small churches attest the vigor of the time.

In England, Gothic architecture developed on distinct lines, while retaining some of the features of the traditional Norman style. The Early English or Lancet style, so named from the shape of the windows, was marked by simplicity and sparing use of buttresses. The choir of Canterbury cathedral, and the cathedrals of Salisbury, Lincoln, Lichfield, and Wells are notable examples of this style. This period was followed by the Decorated (1280–1400), which is distinguished by profuse ornamentation and lighter construction, as illustrated by the cathedrals of Winchester, Exeter, York, and Carlisle. The Perpendicular style extended to the middle of the sixteenth century, when it became known as the Tudor. Its main features were the vertical character of the buildings, and an elaborate system of vaulting, particularly fan-shaped vaulting. Many of the college buildings at Oxford and Cambridge are representative of this style; so also are St. George's Chapel, Windsor, and the chapel of Henry VII., in Westminster Abbey. Towers and spires were always characteristic of English Archiecture, and attained their greatest perfection in the fifteenth century.

Sculpture was more and more introduced into the decorations of Gothic structures, the use of statuary reaching its climax in the thirteenth century. In France exteriors were lavishly ornamented, and still further to accommodate such

ornamentation, portals were developed into porches. Although no interest in the nude is manifested, the nobility of conception, the marked idealization, and the ability to adapt the sculpture to the lines of the building deserves favorable comparison with the glories of Parthenon at Athens. In the fourteenth century, sculpture was dissociated from the building, and a tendency to extreme elegance appeared, whereas in the fifteenth century, the realistic development sometimes attained such monumental results as the figure at Champmol near Dijon by Claux Sluter. English Gothic did not lend itself so well to sculpture and the moist climate has seriously damaged much of the carving that was done. However, the German work of the fifteenth century in bronze, and especially in wood carving, attaind perhaps the highest technical facility that the western world has seen coupled with strength, originality, and splendid regard for the possibilities of the material. Such names as Veit Stoss, Adam Krafft, Tilman Riemenschneider, and Jorg Syrlin from various parts of the Germanic lands will always be remembered with honor by woodcarvers. In Italy the sculpture of this period at first is of a different character. The style of Nicola d'Apulia shows such marked affinities to Roman work in its massiveness and features that one must conclude a considerable acquaintance and sympathy with the extant monuments of antiquity. He seemed to foretell a revival of interest in the past which was submerged by the wave of Gothic influence from France which made itself felt in his son Giovanni Pisano and which persisted through the fourteenth century in the works of Andrea Pisano, Giotto, Orcagna, and Lorenzo Maitani.

Albi Cathedral.—The town was, as its name indicates, a center of the Albigensian heresy. After its suppression by a crusade the cathedral of Ste. Cécile was erected, 1282–1397. This splendid edifice is a fortified church with windows far above the ground, battlements, and the lower part of the wall is of battered construction. The church has the normal side aisles replaced by chapels on either side. The nave is one of the widest single spans in Europe. The choir screen and the porch are fine examples of Flamboyant Gothic.

Amiens Cathedral.—The largest ecclesiastical edifice in France, and one of the finest specimens of Gothic Architecture in Europe. It was begun in 1220, and finished in 1288. While many additions have since been made, the two side towers of the western façade are unfinished. It is 470 feet long, the transept is 213 feet long, and the nave is 144 feet wide. The very slender spire over the crossing is 360 feet high.

Beauvais Cathedral.—Only the choir and transepts of this project were carried out. The present nave, called the Basse Oeuvre, is a modest Romanesque structure which was being replaced by the Gothic building founded in 1225. The vaulting of the choir rises 157 feet above the pavement, the loftiest of all Gothic vaults. The transepts were not completed till the sixteenth century. At the same time, a spire almost 500 feet high of light construction partly in wood was erected over the crossing, but owing to lack of abutment where the nave should have been, the tower fell in 1573, only four years after its completion.

Bourges Cathedral.—Begun in 1193, this building is an example of a five aisled church. The lofty piers of the nave and the narrow aisles are extremely impressive. Around the five doorways to the west end of the church, much fine Gothic sculpture is to be seen, and the interior contains some of the best stained glass of the thirteenth century.

Burgos Cathedral.—Founded in 1221, this magnificent structure was due in large part to an English and a German bishop, but retained a Spanish flavor nevertheless. The interior, 300 feet long, is mostly of the thirteenth century, and is flanked with rich chapels. The spires of the exterior betray their German origin in the open work tracery of which they are composed, while the florid lantern is supported on a star shaped pattern of ribs.

Canterbury Cathedral.—Founded in the eleventh century, the choir was greatly enlarged in 1174 and was one of the first examples of the Gothic style in England. This is raised several feet above the nave and separated from it by a fifteenth century screen. The building is long and narrow; the interior is high and impressive; it is 514 feet long, and 71 feet wide. The vaulting of the nave is 80 feet high, and the great central tower, dating from the fifteenth century, is 235 feet high. Some of the glass in the choir dates from the thirteenth century.

Chartres Cathedral.—This very old site in all probability has been steadily in use during pagan times, but the present building was begun in 1120. Most of the twelfth century church disappeared in the disastrous fire of 1194, but parts of the façade including the old sculpture, the southern tower, and the lower part of the north tower show the earlier work. The sculpture of the west front is the best example of the transition from Romanesque to Gothic having stylized treatment which reflects perfectly its architectural lines. The thirteenth century interior has some 160 stained glass windows, the most beautiful and complete set in Europe.

Cologne Cathedral.—One of the great buildings of the world; begun in 1248, completed in 1880, after being neglected from the fifteenth century until 1823. It was suggested by the Cathedral of Amiens. The building has double aisles, with two enormous towers and spires at the west end. The vast cathedral loses a great deal of its immensity by the dominating size of the towers. It is 468 feet long and covers 91,464 square feet. The spires are 512 feet high and are surpassed only by those of Ulm.

Lichfield Cathedral.—A large and impressive church dating from the thirteenth century, and one of the most beautiful ecclesiastical buildings in England. Its proportions are exquisite and its ornamentation is of great beauty. It has three lofty spires, the central one being 260 feet high.

Lincoln Cathedral.—This grand building was founded in the eleventh century and rebuilt in the end of the twelfth and the beginning of the thirteenth centuries. It is an example of the thoroughly English Gothic style, showing no trace of the French influence so noticeable in

Westminster Abbey. It has three square towers. The central one is 262 feet high, the two on the west front are 200 feet high. The choir, with its decorated screen, is Early English, except the five bays, called the Angel Choir from its reliefs in the spandrels of the arches of the nave arcade; this is one of the best examples of the Decorated period. The building is 430 feet by 80 feet, and the height of the vaulting in 82 feet.

London, Westminster Abbey.—Founded on the site of an earlier church by Edward the Confessor, and rebuilt in the thirteenth century by Henry III. and Edward I. Early in the sixteenth century the chapel of Henry VII. was added. Including the chapel the building is 513 feet long and 75 feet wide; the transepts are 200 feet long; the height to the vaulting is 102 feet. The three portals, graceful arcade, and large wheel window on the north transept façade are very fine. The square west towers were designed by Sir Christopher Wren. The Abbey is world-famous as the burial place of Great Britain's distinguished dead. The famous poet's corner is in the south transept. Here are found memorials to most of the great names honored in English literature, including a bust of Longfellow. The famous metal tomb of Henry VII. by Torrigiano is the most notable which the building contains.

Melrose Abbey.—This famous ruin on the Tweed, 29 miles from Edinburgh, dates from the fifteenth century. It is regarded as the finest ruin of Scotland. The choir is noted for its rich capitals. The large traceried windows are notable. A few of the bays retain their vaulting.

Milan Cathedral.—This famous building is of the Gothic Architecture, but the façade is marred by classic doors and windows, and the altars within are in the same style. The edifice is nearly 500 feet long, and 250 feet wide through the transepts, and the height of the nave is about 150 feet. The central spire is more than 350 feet high. The throng of statues (some 4,500 in all) and the many pinnacles are marked features of the exterior.

Paris, Cathedral of Notre Dame.—The famous cathedral church of Paris, situated on the site of a Roman temple on the Ile de la Cité. Though begun in 1163 it dates from the early thirteenth century. It is one of two or three of the finest examples of early Gothic architecture. It measures 156 feet by 420 feet and is 110 feet high. The two western towers are 224 feet high. The spire, erected in 1845 by Viollet-le-Duc, is 385 feet high. The cathedral became the "Temple of Reason" during the Revolution, and not till Hugo's *Notre Dame de Paris* had drawn attention to the venerable edifice was it restored (1844–45).

Rheims Cathedral.—Begun in 1212, it is noted for its vast interior (466 feet long and 124 feet high) of perfect symmetry and imposing majesty. Its gorgeous rose window is filled with exquisite amber-colored glass of the thirteenth century. Six hundred statues adorn the triple portal of the western front. Rheims was the coronation place of the kings of France from the earliest times down to 1830. The façade of the church is one of the finest produced in the Middle Ages. There were originally seven lofty spires, but these were destroyed in the fire of 1480.

Rouen Cathedral.—One of the most impressive in existence. It is 447 feet long, the nave is 92 feet high, and a tower, built to replace an old one struck by lightning, is of iron, 500 feet high. The front varies in date from the Romanesque to the Flamboyant Gothic. The fine rose windows and the sculpture about the rich gabled portals are remarkable. The whole building is noted for its lightness.

Salisbury Cathedral.—One of the most beautiful of English ecclesiastical structures, begun in 1220 and finished in 1260. The superb central tower with its spire is 406 feet high. The building is 473 by 99 feet, and the height of the vaulting is 81 feet. It is a consistent example of early Gothic.

Seville Cathedral.—This gigantic structure is the second largest church, in area, in the world, being surpassed only by St. Peters in Rome. The work was begun in 1402, and was continued throughout the century. The interior length is 380 feet, the width 250 feet. The five aisled plan of the church, the omission of an apse, and the rather flat roofs suggest an influence from Saracenic architecture which is made more likely since a mosque was long used as a cathedral by this city.

Strassburg Cathedral.—An interesting monument begun in the eleventh century, and finished in the fifteenth. It is famous for the spire,—468 feet high—the west front, very delicately and richly decorated with traceried windows and arcading, fine sculptured portals, and a magnificent rose window. The openwork tower is also remarkable. The nave is thirteenth century and 100 feet high. The east end is massive Romanesque. The glass is extremely gorgeous in color. The huge astronomical clock, conceived in the early part of the sixteenth century and rebuilt in 1842, is one of the great curiosities.

Ulm Cathedral.—A fine example of late Gothic in Germany; it is the largest church edifice in Germany excepting the Cathedral at Cologne. It was begun in 1377 and finished in the sixteenth century. The splendid triple portal at the west end, the tower terminating in an octagonal form, and the spire, which is 529 feet high, and the tallest church spire in the world, are the chief points of interest. The building is 420 feet by 165 feet and the height of the nave to the vaulting is 141 feet.

Venice, Doge's Palace.—Begun in 1309, the lovely exterior of this building is Gothic, and is nobly composed. Its use of color is typical of Venetian architecture. The interior has undergone many restorations during the period of the Renaissance of which the courtyard and the Giants' staircase are the most interesting. Within its walls, stunning decorations by such great Venetian painters as Tintoretto and Veronese may be seen.

RENAISSANCE ART AND ARCHITECTURE

The division known as the Renaissance in architecture is subdivided into three periods; the Early or Free Renaissance (1420–1500), the High or Classical Renaissance (1500–1575), and the Declining Renaissance or Baroque

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FAMOUS CATHEDRALS—I

St. Patrick's Cathedral, New York. Westminster Abbey, London. Milan Cathedral, Milan, Italy.

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FAMOUS CATHEDRALS—II

1 Cathedral of St. Jean, Lyons, France. 2 St. Peter's Church and Piazza di San Pietro, Rome, Italy. 3 Mosque of Omar, Jerusalem. 4 Notre Dame Cathedral, Paris, France. 5 Wells Cathedral, Somersetshire, England.

(1575–1780). The style was a result of the study of classical models of antiquity and the effort to adapt the old styles to meet the new conditions. It was personal rather than national, decorative rather than constructive, and depended more than any previous style of architecture upon the individuality of the architect.

The architect to whom the credit for the start of this movement belongs is Filippo Brunelleschi who deserted the pointed arches, pinnacles, and tracery of Gothic architecture, which Italy had never really understood, in favor of the classic round arch, and horizontal lines, when in 1421 he designed the loggia of the Ospedale degli Innocenti in Florence. In his greatest works such as the church of San Lorenzo, the Pazzi Chapel, and dome of the Cathedral at Florence, he adopts the classic vocabulary completely, but not always correctly according to ancient principles. Furthermore, as indeed, throughout the period, certain structural innovations of the middle ages were employed, notably the dome on pendentives. Leon Battista Alberti, a great student of antiquity, directed architecture into more rigidly classic forms in Sant' Andrea at Mantua or in the Rucellai Palace in Florence in which the classic orders were for the first time applied to the exterior of a palace. Other architects of the fifteenth century were Michelozzo, B. Rossellino, G. da San Gallo, Amadeó, and Laurana.

The sixteenth century was ushered in by the highly classic work of Bramante, and adopted the more massive structure of the Romans, but even then kept the dome on pendentives. In spite of the purity of the period, a certain dryness and stiffness were apparent. Raphael, Perruzzi, Antonio da San Gallo, the elder, Antonio da San Gallo, the younger, Palladio, and Sansovino stand out in the high Renaissance. This period gradually changed, turning to greater freedom, an ideal which was stimulated by the example of Michelangelo himself. His forceful and restless energy made him prefer the colossal in design and made unendurable "the bonds and chains which architecture hath laid upon herself" for so he termed the rigid canons of classic art in vogue at that time. These he broke to suit his own sense of design in his work on St. Peters, Rome, or in the Farnese Palace. The freedom which he inaugurated grew steadily till the middle of the seventeenth century, reaching its height in Bernini and Borromini in architecture, and in the decorative extravagances of Gherardi, Pietro da Cortona, Fratel Pozzo, and other lesser men. This liberty in turn provoked a reaction in the eighteenth century to classicism once more in the works of Vanvitelli whose immense palace for the Dukes of Naples at Caserta is one of the most magnificent in Europe.

The ideals of the Renaissance were first adopted in France as a fashion by the aristocracy just as Gothic had been adopted in Italy. The slighter decorative features like moldings and arabesques were at first simply added to fundamentally medieval structures, producing the charming châteaux of Touraine. Under Henry II., a stricter classicism prevailed, due in part to certain minor Italians who were induced by royal patronage to make France their home. However, the great period of the French Renaissance in architecture did not occur till the disturbances caused by the wars of religion had subsided in the reign of Henry IV. This style was at first quite free, but gradually became more classic in tendency, reaching its climax at Versailles, built largely in the reign of Louis XIV. Here LeVau, Mansart, and other architects collaborated to produce an ensemble which expressed the formality, the power, the magnificence of the court of Le Roi Soleil. Other buildings designed by J. H. Mansart include the Dome des Invalides, and Marly. Among the other distinguished architects of the seventeenth century, Salomon de Brosse, F. Mansart, uncle of J. H. Mansart, and architect of the Sorbonne, the Val de Grace, and part of the Château at Blois, and Claude Perrault. Such a formal style could not but be modified during the freedom of the reign of Louis XV. when the rococo style came into being. The extremely freehand character of the style which delighted in eccentric forms was adapted to a lady's gilded boudoir, and in France may be said to have been confined to interiors, though in Germany, architects applied it to the exteriors with rather poor results. In the latter half of the century under the influence of new discoveries of classic antiquity made known by the publication of works on the Athenian Acropolis, Palmyra, Spalato, and above all, by the recent discoveries at Herculaneum and Pompeii, a more archaeological style began to come in, though at first this was free from the defect of dry imitations of antiquity. The work of A. J. Gabriel in the Petit Trianon at Versailles, the École Militaire, and the Place de la Concorde at Paris is supremely beautiful because of Gabriel's refined taste, his sense of proportion, and the extreme delicacy of all details. Other architects of the time, like Soufflot, tended to be a little more rigid.

In England the Renaissance did not arrive till the seventeenth century in the work of Inigo Jones whose purity was derived from a study of the precepts and works of Palladio. Christopher Wren dominates the field with the bigness and impressive quality of his work and with the evolution of the classic spire, an essentially Gothic element now translated, as it were, into Renaissance forms. In the eighteenth century the classic ideals of Palladio produced the Georgian style which was to be the basis of the American Colonial. Wood, Gibbs, and Vanbrugh are among the great architects of the period.

In sculpture, the Renaissance manifested itself by a return to nature. So we find the outworn conventions of late Italian Gothic supplanted by the fresh naturalism of a Donatello which places its emphasis rather on the Christian beauties of thought than on the classic beauties of the body. Nevertheless, nude figures do begin to come in as may be seen in the *David* of Donatello. So, too, does expression of emotion find its place in his work. The *Gattamelata* is the first large equestrian statue since antiquity. In fact, Donatello has the distinction of starting many of the lines of Renaissance work. More delicate work appears in such a man as Desiderio da Settignano whose child portraits will always charm, and his follower,

Mino da Fiesole, is sometimes over-refined and too subtle. Verrocchio sums up the fifteenth century, trying his hand at many of the subjects which Donatello had attempted and generally improving them slightly. His *Colleoni* in Venice is perhaps the greatest bronze equestrian monument in the world. Other sculptors of the period were Ghiberti, Jacopo della Quercia, A. Pollaiuolo, Ant. Rossellino, Amadeo, Bregno, and Laurana.

In the sixteenth century the classic ideas, as in architecture, became stronger, with the not infrequent result of cold and lifeless production. The greatest genius, however, of the period is not at all of this character. In the very first rank as poet, architect, and painter, Michelangelo accounted himself primarily a sculptor. His mind could conceive only such gigantic projects as the tombs of Julius II. which from the size of the original project was doomed never to be completed. The *Moses* and the *Bound Slaves* are parts of the scheme. The Medici Tombs in the sacristy of San Lorenzo in Florence interpret the soul of an almost medieval Christian and an ardent patriot, struggling with a pagan love of physical beauty, and weighed down by the corruption of the times, the subjugation of Florence, and the invasions of Italy. The colossal, sorrow laden, brooding forms of the *Day and Night, Twilight and Dawn* express his restlessness and his contempt for the times. Other works by him include the *Bound Slaves* of the Louvre, the *Pieta* in St. Peter's at Rome, and the *David* in the Academy in Florence. Among other men of the period may be mentioned Giovanni da Bologna, Jacopo Sansovino, and the goldsmith sculptor Cellini whose autobiography has long been a classic. As in architecture the greatest figure of the Italian baroque was Gian Lorenzo Bernini whose extravagant displays of religious ecstacy, whose pictorial sweeps of drapery, and whose theatricality can never disguise their technical merit or their splendid vitality.

In France the sculpture followed the same movements as the architecture, swinging back and forth from freedom to classicism. At the beginning, the extremely delicate and graceful work of Jean Goujon as in the *Fountain of the Innocents* at Paris suggests comparison with certain products of the height of Greek sculpture. The heavy classic work of Coysevox and the academic correctness of Puget reflect the period of Louis XIV. in sculpture as J. H. Mansart does in architecture. Pigalle, Falconet, Pajou, and Clodion reproduce the license, the sprightly gaiety, the boudoir character of the time of Louis XV. In Houdon, we find a portraitist of the very first rank, in that combination of the individual and general which results in a reproduction not merely of the subject's features, nor even the greater portrayal of the spirit, but of a type transcending the subject and even the time. Among his portraits were heads of Washington, John Paul Jones, and other Revolutionary characters.

Chihuahua Parish Church.—This, the most important building in the city, was erected between the years 1717 and 1789 by revenues derived from a tax on the silver output of the mine of St. Eulalia, amounting, it is believed, to $800,000. The most noticeable characteristics of the building are the sense of lightness and grace. This effect is secured largely by the unusual height in proportion to the width, not only of the main building but of the towers. The façade is richly adorned by statues of San Francisco and the twelve apostles.

Florence, San Lorenzo Church.—Begun in 1425 by Filippo Brunelleschi for the Medici family. The interior of the church, which is one of the earliest Renaissance examples, has an arrangement similar to that in the Early Christian basilicas. The new sacristy started in 1520 is the work of Michelangelo built for the second Medici pope, Clement VII. It contains the celebrated Medici Tombs of Giuliano de Medici and Lorenzo de Medici, with the figures of *Day and Night*, and of *Dawn and Twilight*. Parts of these figures were never completely finished which may enhance rather than detract from their restless power. The façade of the church has never been completed, though designs for it have been submitted by many architects including Michelangelo himself.

Florence, Santa Maria Del Fiore Cathedral.—Begun in 1296 by the Florentine architect Arnolfo di Cambio. The bulk of the church is Gothic in style. The tower beside the church is also Gothic, designed by Giotto, and decorated with sculptures in relief by Giotto and Andrea Pisano. The great dome over the crossing has a span of 138½ feet, almost as great as those of the Pantheon and the church of St. Peter's in Rome, and is by Brunelleschi, who was the first great Italian architect of the Renaissance. The dome is octagonal, built of two shells, the structure being inspired as in so much work of the early Renaissance by the medieval baptistry in front of the Cathedral. The building is 500 feet long and 128 feet across the nave and sides.

Florence, Palazzo Pitti.—A palace in Florence said to have been designed by Brunelleschi, though his connection with the building is doubtful, begun in 1435. The rear portion of the building was done over about 1560 by Ammanati to receive the Ducal family. It is now the repository of a world famous collection of paintings, and is connected by a very long passageway, which crosses the river Arno, with the Uffizi Gallery by Vasari which also houses a splendid collection of paintings. The Pitti Palace is built of quarry faced ashlar, and has a series of columns composed of blocks of stone alternately large and small.

Heidelberg Castle.—The most noteworthy example of the German Renaissance. It was founded in the thirteenth century by the elector palatine, Rudolph I. Two large wings, the Ottoheinrichsbau (1556–63) and the Friederichsbau (1601–07) are the parts coming from the Renaissance. The detail, inspired by the profusion of North Italy, is unrestrained, and lacks the beauty of its model because of its crude and coarse handling. The building has suffered much and was among the most impressive ruins in Germany. It is now being used for a museum and consequently is in better condition.

London, St. Paul's.—This great monument of the English Renaissance was begun by the architect Sir Christopher Wren in 1675 to re-

place the fine Gothic Cathedral which had been destroyed by the great fire of London in 1666. The church is in the form of a Latin Cross 514 feet long and 287 feet wide. The dome which covers the crossing is 102 feet in diameter, and rises 365 feet in the air, becoming a landmark for miles around. On the façade, we find a two-storied classic portico of Corinthian columns crowned by a pediment, and flanked by spires using classic detail. Much of the fine carving on the interior is by Grinling Gibbons. Wren is buried in the building with a single motto on his tombstone, "If you desire a monument, look around you." The cost of the whole building, which is of Portland stone, was nearly $4,000,000, being the proceeds of the tax on coal brought into the port of London during its erection. The great bell of this cathedral is tolled only on the occasion of a death in the royal family.

London, Whitehall Palace.—Originally built by Hubert de Burgh in the reign of Henry III., James I. undertook to rebuild it after its destruction by fire in 1615. Inigo Jones laid out a colossal plan for a new palace in 1619 of which one room only, the Banqueting Hall, was erected. This is 111 feet long, 55½ feet wide, and 55½ feet high. Its ceiling is covered with paintings by Rubens, representing the apotheosis of James I., events in the life of Charles I., and numerous allegories. Whitehall was the scene of Wolsey's disgrace and the deaths of Henry VIII., Cromwell, and Charles II., while on a scaffold erected in the shadow of its walls, Charles I. met his doom. The Banqueting Hall was transformed into a chapel by George I., and is known now as the Chapel Royal of Whitehall.

Madrid, Escorial.—A celebrated monastery and palace, about 27 miles from Madrid. It was built by the architect Juan de Herrera in fulfillment of a vow made by Philip II. of Spain to St. Lawrence, upon whose day (August 10th, 1557) the victory of St. Quentin was won. It was erected in the fanciful form of a huge gridiron to commemorate the martyrdom of St. Lawrence. The great interior courts form the intervals between the bars, and a group of buildings on the east forms the handle. The mass of the buildings is 786 feet by 623 feet and tall towers on the angles form the legs of the gridiron. The palace includes a church of the Greek cross plan with a dome over the center. Part of the building now houses a distinguished collection of paintings including works by Titian, Van der Weyden, and Velasquez.

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Mino da Fiesole, is sometimes over-refined and too subtle. Verrocchio sums up the fifteenth century, trying his hand at many of the subjects which Donatello had attempted and generally improving them slightly. His *Colleoni* in Venice is perhaps the greatest bronze equestrian monument in the world. Other sculptors of the period were Ghiberti, Jacopo della Quercia, A. Pollaiuolo, Ant. Rossellino, Amadeo, Bregno, and Laurana.

In the sixteenth century the classic ideas, as in architecture, became stronger, with the not infrequent result of cold and lifeless production. The greatest genius, however, of the period is not at all of this character. In the very first rank as poet, architect, and painter, Michelangelo accounted himself primarily a sculptor. His mind could conceive only such gigantic projects as the tombs of Julius II. which from the size of the original project was doomed never to be completed. The *Moses* and the *Bound Slaves* are parts of the scheme. The Medici Tombs in the sacristy of San Lorenzo in Florence interpret the soul of an almost medieval Christian and an ardent patriot, struggling with a pagan love of physical beauty, and weighed down by the corruption of the times, the subjugation of Florence, and the invasions of Italy. The colossal, sorrow laden, brooding forms of the *Day and Night, Twilight and Dawn* express his restlessness and his contempt for the times. Other works by him include the *Bound Slaves* of the Louvre, the *Pieta* in St. Peter's at Rome, and the *David* in the Academy in Florence. Among other men of the period may be mentioned Giovanni da Bologna, Jacopo Sansovino, and the goldsmith sculptor Cellini whose autobiography has long been a classic. As in architecture the greatest figure of the Italian baroque was Gian Lorenzo Bernini whose extravagant displays of religious ecstacy, whose pictorial sweeps of drapery, and whose theatricality can never disguise their technical merit or their splendid vitality.

In France the sculpture followed the same movements as the architecture, swinging back and forth from freedom to classicism. At the beginning, the extremely delicate and graceful work of Jean Goujon as in the *Fountain of the Innocents* at Paris suggests comparison with certain products of the height of Greek sculpture. The heavy classic work of Coysevox and the academic correctness of Puget reflect the period of Louis XIV. in sculpture as J. H. Mansart does in architecture. Pigalle, Falconet, Pajou, and Clodion reproduce the license, the sprightly gaiety, the boudoir character of the time of Louis XV. In Houdon, we find a portraitist of the very first rank, in that combination of the individual and general which results in a reproduction not merely of the subject's features, nor even the greater portrayal of the spirit, but of a type transcending the subject and even the time. Among his portraits were heads of Washington, John Paul Jones, and other Revolutionary characters.

Chihuahua Parish Church.—This, the most important building in the city, was erected between the years 1717 and 1789 by revenues derived from a tax on the silver output of the mine of St. Eulalia, amounting, it is believed, to $800,000. The most noticeable characteristics of the building are the sense of lightness and grace. This effect is secured largely by the unusual height in proportion to the width, not only of the main building but of the towers. The façade is richly adorned by statues of San Francisco and the twelve apostles.

Florence, San Lorenzo Church.—Begun in 1425 by Filippo Brunelleschi for the Medici family. The interior of the church, which is one of the earliest Renaissance examples, has an arrangement similar to that in the Early Christian basilicas. The new sacristy started in 1520 is the work of Michelangelo built for the second Medici pope, Clement VII. It contains the celebrated Medici Tombs of Giuliano de Medici and Lorenzo de Medici, with the figures of *Day and Night,* and of *Dawn and Twilight.* Parts of these figures were never completely finished which may enhance rather than detract from their restless power. The façade of the church has never been completed, though designs for it have been submitted by many architects including Michelangelo himself.

Florence, Santa Maria Del Fiore Cathedral.—Begun in 1296 by the Florentine architect Arnolfo di Cambio. The bulk of the church is Gothic in style. The tower beside the church is also Gothic, designed by Giotto, and decorated with sculptures in relief by Giotto and Andrea Pisano. The great dome over the crossing has a span of 138½ feet, almost as great as those of the Pantheon and the church of St. Peter's in Rome, and is by Brunelleschi, who was the first great Italian architect of the Renaissance. The dome is octagonal, built of two shells, the structure being inspired as in so much work of the early Renaissance by the medieval baptistry in front of the Cathedral. The building is 500 feet long and 128 feet across the nave and sides.

Florence, Palazzo Pitti.—A palace in Florence said to have been designed by Brunelleschi, though his connection with the building is doubtful, begun in 1435. The rear portion of the building was done over about 1560 by Ammanati to receive the Ducal family. It is now the repository of a world famous collection of paintings, and is connected by a very long passageway, which crosses the river Arno, with the Uffizi Gallery by Vasari which also houses a splendid collection of paintings. The Pitti Palace is built of quarry faced ashlar, and has a series of columns composed of blocks of stone alternately large and small.

Heidelberg Castle.—The most noteworthy example of the German Renaissance. It was founded in the thirteenth century by the elector palatine, Rudolph I. Two large wings, the Ottoheinrichsbau (1556–63) and the Friederichsbau (1601–07) are the parts coming from the Renaissance. The detail, inspired by the profusion of North Italy, is unrestrained, and lacks the beauty of its model because of its crude and coarse handling. The building has suffered much and was among the most impressive ruins in Germany. It is now being used for a museum and consequently is in better condition.

London, St. Paul's.—This great monument of the English Renaissance was begun by the architect Sir Christopher Wren in 1675 to re-

place the fine Gothic Cathedral which had been destroyed by the great fire of London in 1666. The church is in the form of a Latin Cross 514 feet long and 287 feet wide. The dome which covers the crossing is 102 feet in diameter, and rises 365 feet in the air, becoming a landmark for miles around. On the façade, we find a two-storied classic portico of Corinthian columns crowned by a pediment, and flanked by spires using classic detail. Much of the fine carving on the interior is by Grinling Gibbons. Wren is buried in the building with a single motto on his tombstone, "If you desire a monument, look around you." The cost of the whole building, which is of Portland stone, was nearly $4,000,000, being the proceeds of the tax on coal brought into the port of London during its erection. The great bell of this cathedral is tolled only on the occasion of a death in the royal family.

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devouring a hare, did not prevent broad rendering of forms toward the end of his life. The human types, and the joy of life in Carpeaux, may be traced to his Flemish ancestry. In him we find certain baroque elements: The sensuality, complex composition, and an almost pictorial love of accessories in his groups on the Opera House at Paris. He often chose romantic subjects like the *Ugolino Devouring His Sons,* which was inspired by Dante. Fremiet preferred the Romantic in both subject and costume, producing a series of fine works such as the *Jean d'Arc* or the *du Guesclin,* both of which employ the garb appropriate to their subjects. The Flemish influence of Rubens appears even more strongly in Dalou than in Carpeaux with an almost pictorial effect, while Falguière and his pupil Mercié introduces us to the frankly feminine nude. Of the conservatives, Pradier, Chapu, and Dubois are perhaps most worthy of mention. In general the conservative academy took up the innovations of the progressives when they had become well established.

Rodin was perhaps the greatest French sculptor of the century, bringing to a culmination the realistic, pictorial, and impressionistic movements exemplified by the preceding men. He has sometimes been called the Michelangelo of France. At first, Rodin reproduced nature as exactly as possible, at times even taking casts from parts of the living model. The *Bronze Age* was refused by the jury on that ground. Later he began more and more to leave parts of the work in the rough, omitting details and employing masses in order to intensify and dramatize the effect, as in the *Six Burghers of Calais,* which he planned to place on the ground instead of on a pedestal. Such a broad impressionistic handling heightens the effect and gives a feeling of mystery. In his greater works at the end of his life, the *Balzac,* for example, he tried to represent the spirit, the vitality, and the eternal aspect of his subjects by forms more or less personal to himself rather than by external appearance. His extreme movement might be condemned as too pictorial were it not that the action is arranged so as to produce tension within a compact group, as in the *Gates of Hell.* His impressionism produced by a series of bosses and hollows which create a stirring play of light and shade over the surface of the stone or bronze aided him to become perhaps the greatest master of color in sculpture in modern times. Bartolomé, who also stressed the pictorial qualities of sculpture, surpassed himself in the depth of conception, skill of composition and execution, in the *Monument to the Dead* in the Père Lachaise Cemetery in Paris.

Although France indisputably led the way in artistic matters in the nineteenth century, and the other countries of Europe merely reproduced what she had started, some men outside of France must at least be mentioned. The extremely personal style of the German Klinger shows pictorial and decorative qualities, original arrangement, and polychromatic effects. In Belgium, the realistic ideal is best exemplified in Meunier's treatment of themes taken from the laboring classes which are handled in much the same way that Millet treats his peasants, showing a heroic beauty in these types. The Spaniard Miguel Blay treats much the same sort of themes with less success. Victor Rousseau in Belgium is essentially academic, giving us technically excellent studies of feminine nudes, which are valuable as studies rather than embodiments of ideas. Rodin's realistic phase has found a follower in Spain in his pupil José Clará. In Italy, an extreme of realism sometimes called "verism" is reached in Vela and more especially in Gemito. Bistolfi, on the other hand, introduces a greater degree of symbolism which is happily combined with technical excellence, and a taste for delicate line. Impressionism has found advocates in the Norwegian Vigeland, and in Troubetzkoi, the Russian.

Certainly the greatest English sculptor of the last century and perhaps of all time was Alfred Stevens. Though self-trained, he was a good sculptor, whose work showed more of the spirit of the Renaissance than that of the antique. His composition is compact; in a feeling for bigness of form a comparison with Michelangelo is not amiss; nor can he be accused of lacking either originality or a keen sense of beauty. The growing realism of the time in France leaves its trace on Brock, Leighton, Wood, and Thornycroft. The impressionism of Rodin finds its echo in the sculpture of Watts, the painter, whose *Physical Energy* is a noble embodiment of that quality. Drury and Ford must also be mentioned. In the Arts and Crafts Movement, Frampton and Gilbert are perhaps the most prominent names, the former being best known for his design and his use of polychromy, and the latter for his bronzes.

The movement commonly called "stylization" attempts to increase the artistic qualities of a work by a distortion of the forms sometimes in the direction of archaic or eastern linear emphasis, sometimes by emaciated figures and again by making bodies heavier for greater sculptural solidity. Though not a member of the group himself, the German, Adolf Hildebrand, may almost be regarded as a forerunner. His simplified, Polyclitan forms are closely akin to the modern ideal of form for form's sake. Maillol in France returns to the glyptic forms of archaic art in the *Seated Woman,* putting his emphasis on the massive and compact, rather than on line. He abandons the impressionism of Rodin in favor of extremely simple modeling of powerful feminine types. Bourdelle has become even more primitive than Maillol, and Landowski may be placed in the same group. The emaciated forms of Minne, the Belgian, are again employed by the German Lehmbruck to express the *Weltschmerz,* or World's Sorrow, but in both we find the figures crushed by their burden instead of being capable of supporting it, as could the miners of Meunier, or the peasants of Millet the painter. The simplification of figures into sharply defined planes distinguishes the work of Frans Metzner, the Austrian, whose figures on the *Battle Monument* at Leipzig have as much architectural character as can be found in any modern work. With the possible exception of Maillol, the greatest figure is that of the Jugoslav, Ivan Mestrovic. Intensely patriotic, he has glorified the history of his country in a series of works which seem to emphasize the elemental power of the race, and

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FAMOUS BUILDINGS

1 Leeds Castle, Kent, England. 2 Hôtel de Ville (City Hall), Bruges, Belgium. 3 City Hall, Munich, Germany. 4 Guild Houses, St. Nicholas Church and City Clock Tower, Ghent, Belgium.

Photos 1, 2, and 3 copyright by Ewing Galloway.

FAMOUS TOWERS

1 Harkness Memorial Tower, Yale University, New Haven, Conn. 2 Bok's Singing Tower, Lake Wales, Florida. 3 Leaning Tower of Pisa, Italy.

its semi-barbaric background. He successfully combines the sculptural feeling and the decorative quality of the primitives, a fine feeling for beauty of material and the architectonic quality of his master, Metzner. Many of his best works are in wood. It is difficult to select any works for individual mention, but the relief of the *Maiden of Kossovo*, representing an incident of that famous struggle, and the projected temple to commemorate the same battle are among the best known.

Contemporary with some of the men cited above, and still more recently, other sculptors have followed the current ideas in painting. Abstractions to the *n*th degree find their chief exponent in Brancusi whose works have in them the essence of apparent simplicity. The greatest beauty of his work is not revealed to the eye, but to the touch. Cubism and futurism may be said also to emphasize the abstract form. The former has enlisted the support of the Russian, Alexander Archipenko, whose compact groups like *Family Life* are resolved into the geometric shapes of which they are compounded. In Umberto Boccioni, the Italian futurist, all sorts of materials are employed to enrich the effect by suggesting new lines of thought. If while on a walk or viewing a street, for example, the sculptor sees a church spire, a lady on a wrought-iron balcony, and the prow of a ship, forms suggesting these diverse elements would be incorporated in the work. Among the many sculptors who have tried their hands at one or more of these modes, Lipschitz, Milles, and Barlach stand out, the latter for the same elemental force that Mestrovic shows, but with less decorative effect, and less architectural feeling.

Leningrad, Cathedral of St. Isaac.—Finished about 1850. It is built in the form of a Greek cross, surmounted by a dome 336 feet high, upon which is a lantern. Each of its four grand entrances has a Corinthian portico supported by monolithic columns of polished granite, 60 feet high, surmounted by bronze capitals. The dome, supported by 30 granite columns, is of gilded copper. The interior is rich in fine marbles and columns of lapis lazuli and malachite.

Leningrad, Winter Palace.—The former imperial palace at Leningrad is one of the largest in the world: 455 feet long, 350 feet wide, and providing accommodations for the complete household of over 6,000 persons. It is of the Renaissance style with three stories. Magnificent tables, vases, and doors of malachite; the richest statuary, pictures, and gems; and a magnificent series of Russian historical paintings and portraits are among its wonders. It is connected with the Hermitage, the famous art gallery which contains many of the world's masterpieces. It was burned in 1837 and rebuilt in 1839.

Liverpool, Cathedral.—When completed, this church will be one of the largest of the English cathedrals. The competition for the design was won by Gilbert Scott at the age of twenty-one. The building must be classed as Gothic, though the architect has employed the spirit rather than the forms of that style. It is built of reddish sandstone. Fine scale and proportion give vitality to the huge mass which is but half completed (1929). The important entrances to the building will be in the centers of the long sides, with a tower between them. The choir on the east of this tower will balance the nave on the west. The rich and satisfying Lady Chapel at the southeast corner has been completed.

London, Albert Memorial.—A monument on the south side of Kensington Gardens, erected (1862–3) to the memory of Albert, Prince Consort of Queen Victoria. A colossal bronze-gilt statue of Prince Albert, seated, is supported under a Gothic canopy upon a basement raised on a spacious platform ascended by granite steps. There are 169 marble reliefs adorning the basement; projecting pedestals support the angles and are adorned by marble groups representing *Agriculture, Manufacturing, Commerce,* and *Engineering;* and at the lower angles are groups representing *Europe, Asia, Africa,* and *America.* Sir George Gilbert Scott was the architect.

London, British Museum.—While the interest in this building centers in the magnificent collections which it contains, it must not be forgotten that in its present aspect it is one of the best examples to be found in England of the Classic Revival and a protest against the Baroque. Designed by Sir Robert Smirke, it reached its present stage in 1847, and is the result of many additions made to the original Montague House, which was acquired early in 1700. It is now a hollow square of Ionic architectural design, with an imposing façade of 370 feet fronting on Great Russell Street and flanked by the residences of the highest officials. The reading room is circular and surmounted by a dome 106 feet high and 140 feet in diameter. Several acres of land have been recently acquired to provide for the unceasing extension necessary to keep pace with the frequent additions and steady growth of the collections.

London, Houses of Parliament.—The rebuilding of this edifice, which began in 1836 according to plans by Sir Charles Barry, was a result of the efforts of Scott and Ruskin to influence the popular mind in the revival of the Gothic. The buildings cover eight acres and contain upward of 500 apartments clustered around 11 open quadrangles or courts. They are of gray limestone, of a rich, but not ornate Gothic style, with square towers of support at certain points. This is one of the noblest structures of the last century, and a most successful attempt to apply the truly northern style of architecture to secular buildings. The architect, who was a classical student, was compelled to work out his design in the Gothic style, which he did most loyally, helped by W. Pugin, to whom he intrusted the whole of the decorative features. Neither would have produced such a perfect work single-handed.

London, Westminster Cathedral.—An enormous edifice begun in 1894 by the architect, J. F. Bentley. Although in area the building ranks only tenth among the English cathedrals, in cubic contents it is second only to St. Paul's in London. The nave is 60 feet wide with a vault which rises 112 feet from the pavement. The tower is 280 feet high. In style, a modernized version of Byzantine has been employed with low, saucer-shaped domes covering the nave. These are most impressive from the interior but

fail to create any marked accents on the exterior. The structure of the building is concrete, faced with brick which is arranged in many patterns. Green slate has been used for the roofs. Colored marbles and mosaics will cover the brick surfaces of the interior; no doubt the resulting polychromatic effect will be splendid, but it is probable that the impression of power now imparted to the visitor will be lessened. It is important to distinguish between this, the Roman Catholic Cathedral of London, and Westminster Abbey which belongs to the Church of England.

Paris, Arc de Triomphe de l'Etoile.—The largest existing triumphal arch, at the head of the Champs Élysées in Paris was designed by Chalgrin, and erected by Napoleon in commemoration of his victories, but not completed until 1836. It is 146 feet wide, 160 feet high, and 72 feet deep. One of the many noteworthy sculptures upon it, is the vigorous group *The Marseillaise*, by Rude, which has in it a touch of the sublime. The name means "the triumphal arch of the star." It is so named because it is located at the point whence 12 avenues radiate in the form of a star.

Paris, Church of the Madeleine.—Begun in Paris under Louis XV., but received its present form from the architect Vignon between 1807–42. Work upon it was delayed by the Revolution, but was resumed with increased vigor under the Empire. It is a huge Roman-Corinthian temple, 141 by 354 feet and 100 feet high. The building is without windows and is lighted wholly from above. Reinach says: "Parisians and visitors to Paris, having seen the Madeleine, have some general idea of the form of a Greek temple."

Paris, Column of Vendôme.—A Roman-Doric column of stone, covered with bronze plates in relief, to commemorate Napoleon's victories over the Austrians and Russians in 1805. It is in the Place Vendôme, Paris. During the Commune (1871) Courbet, in an effort to distract the raging mob from the Louvre, directed them against this column. Courbet restored it at his own expense in 1875.

Paris, Opera House.—A splendid building built from 1861–1874 by the architect Charles Garnier. In area, it is one of the largest theaters in the world, covering 13,596 square yards. The magnificent site facing the Avenue de l'Opéra, cost almost $3,000,000 and the building cost $7,300,000. The seating capacity is over 2,000. The exterior is essentially classic, but is modified and enriched according to the ideals of the École des Beaux Arts at that time. The Grand Staircase on the interior of the building is of sumptuous design, incorporating various colored marbles. The exterior is adorned with sculpture, and the interior with sculpture and paintings.

Paris, Bibliothèque Sainte Geneviève.—This building, the architectural predecessor of the Boston Public Library, was inspired probably by the Church of San Francisco at Rimini in Italy. It was built by Labrouste from 1843–50. The effect is severe in the extreme, arch after arch succeeding each other as in the Roman aqueducts.

AMERICAN ARCHITECTURE

When this country was first settled in the seventeenth century, it was but natural that the architecture of the individual colonies should reflect that of their respective countries. Such was actually the case, but modifications were introduced to adapt the native styles to different climatic conditions. In New England, the houses were a development of the English yeoman's cottage translated into forms of wooden construction, since that material was available. A rectangular plan centering around a huge chimney was the rule, and the kitchen was the center of the family life. One of the oldest is the Fairbanks House at Dedham, built before 1650, which is only one from a host of excellent examples. To the south, a more open type of building appeared, to defend the occupants rather from excessive heat than cold. Nor were churches neglected. Among the earliest and most interesting is St. Lukes, Smithfield, Virginia, which belongs to the late Gothic tradition rather than to the Gothic revival of the nineteenth century. In the Old Ship Church, Hingham, Massachusetts, the Puritanical meeting house form was used, in contrast to the Episcopal type of the Virginia example. Work at this time was as direct and simple a solution of a given problem, as could well be devised. It was so of necessity, for the gracious side of art cannot appear until some material security or comfort is assured.

The same racial characteristics continue in the eighteenth century, which however, reflects accurately the more developed life. Since men could now do more than simply provide for their own needs, they naturally adopted the current style of the mother country. So in Virginia and New England, one finds a provincial version of the English Georgian which rather gains than loses by its native flavor. The chimneys were moved to the ends of the house; larger windows suggested the more ample living conditions; and the whole was finished with columns, pilasters, and Palladian details. The latter were frequently taken bodily from architectural copy books imported from England, but such was the skill of the woodworker that one finds his products free hand in effect and superbly executed. The John Vassall House, Cambridge, Massachusetts or the Royall House, Medford, Massachusetts, and still more the wings devoted by the Metropolitan Museum in New York, and the Museum of Fine Arts, Boston, to American decorative arts provide splendid opportunities to study this style.

Nevertheless, it must not be imagined for a moment that all the glorious colonial of this country was English in inspiration, in spite of the common identification of the terms with the more prominent English style. In New York the Dutch left a mark which has fortunately had its influence on the work of the present day. The verandah, the curving roof line, the wide clapboards, and a general expansive spirit pervade the Dyckman House in New York, and many others up the valley of the Hudson River. Or in Philadelphia, one finds the Pennsylvania Dutch leaving their trace in a sober, highly dignified series of works in brick or stone—

Cliveden in Germantown to cite but a single instance. Again in the district around New Orleans very high narrow windows and delicate wrought iron balconies or grills betray the French origin of the district. Last, but by no means the least important, must be mentioned the colonial work of the south west which in spite of the late date of some of the buildings has as just a claim to the term as any New England mansion or church. Here the source was Spanish, but simplified to a considerable degree by a lack of resources and possibly by contact with the adobe work of the Indians. The blazing sunlight suggested small windows and the almost bare effect was produced by large unbroken wall surfaces, sometimes slashed by the black shadows of beams protruding from the wall, and sometimes being constructed with spots of decoration whose richness only a Spaniard could conceive. Dozens of mission churches, such as the Alamo in Texas, bear witness to the present day to the power of the monks. This style has inspired many fine modern works such as Goodhue's buildings in the Panama California Exposition of 1914 in San Diego.

As the eighteenth century drew to a close, this country had the distinction of leading the world in an architectural movement. The State Capitol at Richmond, Virginia, by Thomas Jefferson, may be regarded as the foundation of the Early Republican style in this country which corresponds to and precedes Neo-classicism in Europe. Fortunately for us, the vast majority of buildings of this time do not show the cold and lifeless character which mars so much of the European work. Jefferson was a noteworthy student of antiquity, and of architecture also. His own home at Monticello and the University of Virginia at Charlottesville attest the fact. The Boston State House, the church at Lancaster, Massachusetts, and a host of houses illustrate the classic quality in the work of Bulfinch, while the City of Washington was started on its way to its present beauty through the excellent plan of l'Enfant.

The Romantic revival started in this country with the work of Richard Upjohn whose Trinity Church, New York, uses English Gothic for its inspiration. A more pretentious attempt was St. Patrick's Cathedral, New York, in which James Renwick turned to French Gothic instead of English for his inspiration. Later on we find H. H. Richardson attempting to revive the Romanesque. He believed that its straightforward sturdiness was adapted to American needs, and that it could be made into a national style. In his own work like the Allegheny County Court House or Trinity Church, Boston, he was most successful, but no one had the genius to continue his work. R. M. Hunt must be classed with these other men as an eclectic. In his designs for skyscrapers, he was no more successful than the other men of his time, but some of his classic designs may be termed great.

The series of expositions in the last quarter of the nineteenth century served as a barometer of attainment, but their importance as an educating factor in American taste cannot be overemphasized. The Philadelphia Exposition of 1876 was pretty poor on the whole. The best one can say is that some of the buildings were impressive by their size. But it was the World's Fair in Chicago, 1893, housed in the White City, which was most significant. The great architects and sculptors of the country gathered and, in collaboration, produced an ensemble which was fine, judged by any standards, but to the untraveled American was supremely beautiful. The buildings were almost uniformly classic in design, and were distinguished by purity of detail and fine proportions. They bid fair to establish a modernized classic as the standard style for the country.

Since that date, American Architecture has improved rapidly and steadily until, at the present day, though not as modernistic as some European work, it shows a purity and a sense of proportion that need bow to none. Even to mention the leaders of the profession is difficult. In domestic work, architects have been most fortunately inspired by the several branches of our own colonial, generally modifying the older work to suit present day demands. Such men as Dwight Baum, W. T. Aldrich, Aymar Embury, C. A. Platt, and Mellor, Meigs, and Howe, are among the most popular, though it is difficult and almost unfair to choose from such a large field. Colleges and educational buildings have tended to be colonial where they follow the type of the earliest buildings of the college, or Gothic where they are modelled after the great English universities of Oxford and Cambridge. The former may be illustrated by the recent Harvard buildings of Coolidge, Shepley, Bulfinch, and Abbott, and the latter in the Harkness dormitories at Yale by J. G. Rogers or in the recent work of Day and Klauder at Princeton and elsewhere. In churches, one finds works inspired by all periods and nations, though the colonial and the Gothic are again the favorites, but the Roman Catholics have put up a number of splendid Romanesque and Byzantine examples in recent years. The most gifted genius here was the late B. G. Goodhue, who tried his hand at many different problems and as many different styles, and never failed to produce works that are original, interesting, and in good taste. Cram and Ferguson, Maginnis and Walsh, H. B. Upjohn, H. Vaughan, and Allen and Collens are perhaps the leading names in this field. For public buildings, especially of the larger sort, classic has been almost universal, though the Nebraska State Capitol by Goodhue is more strikingly original. McKim, Mead, and White have probably done more first class buildings of this type than anyone else, but Guy Lowell, Cass Gilbert, Carrere and Hastings, Bakewell and Brown, and J. R. Pope must also be mentioned.

The most original work that America has yet produced in architecture has been in the field of commercial architecture. Although some types of buildings have held strictly to known styles, banks, and railroad stations for example, —others like the skyscrapers have been new problems which enforced original solutions. The need for a building of this sort is primarily the desire of business men to be at the center of a city, and as close together as possible. It was made possible by the new materials, structural steel and reinforced concrete, and also by the high speed elevator. Among the early examples of the skyscraper, some of the worst results in

the whole field of architecture are to be found. Even when good architects attempted the problem, the classic types failed to provide a satisfactory result, since they naturally emphasized the horizontal line in opposition to the vertical demands of the new problem. In the Woolworth Tower, Cass Gilbert uses Gothic to produce one of the best designs executed at that time. The main vertical lines were strongly emphasized, but the detail was of too small a scale for the size of the building. Furthermore, the city streets had become mere canyons with but little sunlight owing to the high buildings on either side. To remedy this situation the New York Zoning Law was passed in 1916. This provided that above a certain height, the upper parts of the building must recede in a series of steps or set-backs, with the exception of a central tower. The results have been extremely encouraging for it was soon realized that, far from being a limitation in design, the law suggested a fine solution in itself. Practically no city of the first magnitude in the country lacks some example of this inspiring type. The general scheme is to use a few lower stories as a base member with big monumental elements. Above this, the mass of the building rises, often with extreme simplicity. The upper stories are set back for a greater or less degree and are generally decorated in a modern style. The effect depends rather on the masses, the relation of the upper parts, and the silhouette of the whole. To select individual examples is difficult where there are so many to choose from, but one may mention the Chicago Tribune Tower by Howells and Hood, Eliel Saarinen's design of the same building (placed second); the American Radiator Building in New York by Hood; the Southwestern Bell Telephone Company Building in East St. Louis by Mauran, Russell and Crowell; the Pacific Telephone and Telegraph Building in San Francisco by Miller and Pflueger; McKenzie, Voorhees, and Gmelin's masterpiece, the Barclay-Vesey Building in New York; and the Shelton Hotel by A. L. Harmon, which has been awarded a gold medal.

Taking a comprehensive view of American architecture as a whole, one finds much of which to be very proud. Except for a short period in the nineteenth century, one may claim that America has always demanded refinement from its architects, and that they have been able to meet the demand. Then, proportions rather than lavish ornament, simplicity rather than the ornate have been dominating characteristics, while in the skyscraper, one has a type which has been developed by us from an eyesore, or a packing box on end as they were scornfully termed at first, to a monument of unquestioned beauty, the admiration of the world.

SCULPTURE IN AMERICA

The beginning of sculpture in this country came at a time when English architecture was in a flourishing period, and English painting was probably at its height. But unfortunately, the English development has not been at all in the direction of sculpture. The result was that the primarily British origins of the country left sculpture more or less without foundation. It must be admitted that this branch of the fine arts developed after its sister arts. At first we find, in the colonial period, occasional foreign artists. Some of them like Houdon were among the very best, but our first real sculpture belongs to the neo-classic period, and betrays the faults of that revival, aggravated by inferior technical accomplishments and only too often by a lack of taste. Greenough, Powers, and Crawford were perhaps the best of the group, but with a few exceptions, their productions are weak and dull.

Better days were at hand. With H. K. Brown, and T. Ball, more dignified results are obtained. One finds in general a simplicity and sincerity, admirable qualities we like to think of as American, coupled often with a dash of sentiment. Both of these men have done first rate equestrian portraits of Washington in which there is a just relation between rider and horse, technical skill adequate to the task, and a fine impression of power and dominance in the portrait itself. J. Q. A. Ward, with his sturdy manliness, is a worthy successor to this line. Although one fails to find many of the qualities which would be required at present, such as sculptural color and beauty of surface, one is impressed because of its simplicity and quietness. Other sculptors of the time were E. D. Palmer, W. W. Story, W. H. Rhinehart, R. Rogers, J. Rogers, W. Rimmer, and Harriet Hosmer, the first notable sculptress.

About the time that architecture was being stimulated by the World's Fair, a change came over sculpture. Paris, rather than Italy, became the training ground, and a desire for truth no less accurate than the best previous work, but more expressive and picturesque was manifested. More attention was paid to beauty of surface, the technique was more facile, and in every way, the primness of the nineteenth century gives way to greater sophistication. The work of Augustus Saint Gaudens illustrates these characteristics. He was a sculptor worthy to take his place among the great. Study in Paris was aided by a phenomenal skill with his hands and technique became, as it should be, a thing of beauty in itself, but withal only a means to an end. The real reason for St. Gaudens' high place is his sculptural imagination, expressed in the dignified structure, and the fine composition of his works. He seems to have thought and visualized in terms of bronze. The *Lincoln* of Lincoln Park, Chicago, set a new standard in portraiture. It proved that with sufficient genius even the refractory modern costume may be made distinguished. It is hardly necessary to point out the beauty of surface with its play of light and shade; the necessity of the chair to provide additional quiet mass and background; the easy pose, or above all, the magnificent characterization combining benevolence and charity with the firmness of high idealism. Another work is the *Deacon Chapin* in Springfield, Massachusetts, which transcends the individual and becomes an embodiment of our ideas of Puritan manhood. The *Adams Memorial* in the Rock Creek Cemetery in Washington creates an atmosphere of awe, and almost of reverence in every spectator. To cite but one more example, we find him equally a master of composition in relief in the *Shaw Memorial* in Boston. Its marching negro troops have the effect of an accompani-

ment in a minor key by suggesting resistless movement or perhaps fate; a fitting treatment for the noble subject of the relief. He had the ability to harmonize his work perfectly with the surrounding architecture.

But if St. Gaudens were the greatest American sculptor of his time, he was by no means the only one. D. C. French had quite a different spirit. Where St. Gaudens was vivacious, French was serene and genial in spirit. With less striking technique, he yet succeeded in the *Minute Man at Concord* in producing a dignified youth not unworthy of guarding the historic bridge, while in the Milmore Memorial representing *Death Stopping the Hand of the Sculptor*, at Forest Hills Cemetery in Boston, we find a deservedly popular work of excellent technical and imaginative qualities. He sometimes leans toward the pictorial side of sculpture where St. Gaudens had more architectonic feeling. In MacMonnies one finds extreme dexterity coupled with audacious invention. *The Bacchante*, full of realism and sunburnt mirth, produced a storm of criticism when it was completed, probably because of those very qualities. The *Nathan Hale*, New York, was an artistically fine interpretation of the personification of patriotism. Of still a further type is G. G. Barnard. One looks in vain for the charming or the pretty in his works, but to replace these, the nobler realms of thought and of composition, unconventional, but extremely sculpturesque are evident. Like Rodin, he sometimes leaves parts of the work in the unhewn stone. The *Two Natures* leaves the outcome uncertain, even leaves undetermined which is the good, and which the bad. Or in the groups flanking the entrance of the State Capitol at Harrisburg, Pennsylvania, the same essentially sculpturesque, extremely compact composition is apparent. Realism, sculptural color, and invention are displayed in P. W. Bartlett, whose equestrian *Lafayette* in Paris is a happy combination of fact and symbol, while the feminine busts of H. Adams will be perpetually charming. C. E. Dallin is best known for his restrained Indian subjects in which field he is a leader. Unlike many works of this type, he shuns the sentimental and melodramatic which are only too easy to achieve. K. Bitter has been most prolific in the realm of decorative sculpture and many fine bronzes attest his ability. Lorado Taft has earned the title of the American Vasari, but his *Blackhawk* shows a bigness of conception which gives him a place in his own right in American sculpture. The sinuous grace, subtlety, and refinement of I. Konti; the fine modelling, the imaginative characterization of his portraits and the thoughtful symbolism of Grafly; the pictorial qualities of H. A. MacNeil in his Indian subjects are also noteworthy. G. Borglum at his best approaches the impetuous power of Rodin as in the *Apostles* of the Cathedral of St. John the Divine in New York. His ability to conceive gigantic undertakings may be seen at Stone Mountain, Georgia and at Black Hills, South Dakota.

In the younger generation the figure of Manship contrasts strikingly to that of Borglum. Where the latter's work has bigness, Manship tends to essentially smaller interpretations. Where Borglum has some of the ruggedness of Rodin, Manship is delicate and refined, subtle in modelling. Although he accepts suggestions freely from Indian, Chinese, and archaic Greek sculpture, he succeeds in infusing into his works vitality enough to make them living originals. His amazing technique and his fine sense for decorative design may be exemplified by almost any of his works—the *Dancer and Gazelles*, or the *Diana*, to cite but two instances. J. Epstein attempts to embody in abstract forms the spiritual qualities possessed by the subject. The representation of *Sleep* and *Dawn* is a further development of the same line of thought. J. Davidson works along the same lines with less keen penetration. A. S. Calder is best known for his fine group of Washington on the Washington Arch, New York, and his supervision of the sculpture in the San Francisco Exposition of 1914. The vigorous figures of R. I. Aitken, who has also experimented with stylization, the exquisite grace of E. McCartan's feminine figures which embody the contemporary ideal of the American girl; the splendid architectonic decorations of the chapel in St. George's school, Newport, R. I., by J. Coletti; and among the women sculptors, the charming grace and sprightliness of the bronzes of H. Frishmuth; the strong and impressionistic work of M. Hoffman; the delicate characterization of *Jean d'Arc* by A. Hyatt; the delightful children represented in her garden fountain of J. Scudder; and the simple and powerful conceptions of G. V. Whitney embodied in the monument to Columbus are also noteworthy.

Albuquerque, N. M. Hotel Franciscan.—Adopting the native pueblo style of the region as a basis, the architects, Trost and Trost, have here produced a pile that is modern in spirit. Mass and simplicity of details are emphasized, the latter showing in a much modified form its origin in the adobe pueblos of the southwestern Indians. Moreover, the thick walls are well suited to the hot climate. For the same reason, all the 143 suites have outside exposure to procure ventilation as well, of course, as natural light.

Boston, Mass. The Old State House.—An interesting monument of colonial times, this venerable structure built in 1713, still bears the lion and the unicorn of the British Coat of Arms. The simplicity of the whole is typical of the period of colonial architecture as are also the materials—red brick with white trim. It is now a museum.

Boston, Mass. State House.—The capitol of the State of Massachusetts stands at the top of Beacon Hill looking over the Boston Common. Designed by Bulfinch in 1795, the work has received many additions since, but the central portion of red brick surmounted by a gilded dome remains to testify to the taste and fine sense of proportion possessed by the architect. The refined woodwork of the interior may be seen to advantage in the executive offices. The original portion of the structure measured 172'x65' and the dome rises to a height of 155'. The cost of the building was about $160,000.

Boston, Mass. Old North Church.—The church was supported by one of the most historic congregations of the city of Boston, rather than

by the Royalist government. It was known as a hotbed of radical ideas, notably fostering the spirit leading to the American Revolution. The present church, built in 1723 by William Price, was inspired by the work of Sir Christopher Wren. Contrary to the prevailing opinion, it was from the windows of a still earlier church of 1673 in which the congregation of the North Church was worshiping, that the famous signal was sent to Paul Revere—"one if by land and two if by sea." That older building was destroyed by the British for firewood during the siege of Boston in the winter of 1775–6, being chosen for that purpose because of its rebellious reputation. The tower of the present church may have been restored by Bulfinch.

Boston, Mass. Trinity Church.—In using the lantern of the Spanish Romanesque Cathedral of Salamanca and the Romanesque style of Provence in the south of France as the basis of his inspiration, H. H. Richardson in 1877 succeeded in creating one of the masterpieces of American architecture. Although the work smacks of archaeology, its fine composition, its monumentality, its texture, and its massive strength made it widely known abroad, and in the United States, and bid fair to establish Romanesque as the American National Style. The quarry faced blocks give to the exterior a strong rugged appearance which, it was felt, was becoming to the American spirit. It is 211' high. The interior is perhaps less successful than the exterior, but is somewhat redeemed by La Farge's frescoes.

Boston, Mass. Museum of Fine Arts.—It faces Huntington Avenue with its back on the Fenway. Guy Lowell has well utilized this splendid site. Using Maine granite, he created a front of over 500', divided by a court 232'x110' in the center, and with three pavilions using the Ionic order. The fine Ionic portico of the rear elevation is very imposing. The plan has not been carried out in its entirety as yet, though the large wing dealing with the decorative arts was opened in 1929, and contains fine examples of American colonial furniture and architectural details, including many whole rooms. These interiors have been sympathetically treated throughout. Of the other collections, the department of Oriental Art and that of Ancient Art are among the best in the country. In the Rotunda on the second floor, and over the staircase leading to it are mural decorations by Sargent.

Boston, Mass. Public Library.—Facing Trinity Church across Copley Square, McKim, Mead, and White have designed another masterpiece. Completed in 1895, the exterior was inspired by the Bibliothèque St. Geneviève in Paris, but the proportions of that work have been improved. Dignity and refinement are the keynotes of the work. The façade is 225' long. The exterior is of Milford Granite of a delicate pink tint, while the roof is of brown Spanish tiles. The walls of the vestibule are of Tennessee Marble, while in the stair well, Siena and Echaillon marble have been employed. Around the stairway are the murals of Puvis de Chavannes which fit in perfectly with the architecture. On the third floor, Sargent paintings create an equally satisfactory effect. Abbey's series, representing the story of the Holy Grail, in the Catalogue Room attract a great deal of attention for their pictorial and narrative qualities. The building cost about two and one-half million dollars.

Cambridge, Mass. Vassall-Craigie House.—A fine example of 18th century colonial architecture is the house built by Colonel John Vassall in 1759 on Brattle Street, called "Tory Row" by the patriots of 1775, since so many of the wealthy merchants living there were Royalist sympathizers. The house uses four Ionic pilasters along the front with the usual balcony on the roof, and colonial detail inspired by the English Georgian style, which was in turn inspired by Palladio. After the Revolution, the house passed into the hands of Andrew Craigie who made some additions to it. Longfellow occupied the house at one time, but there is little basis for calling the building by his name, though the Park it faces has been dedicated to him with a monument by French.

Charlottesville, Va. Monticello.—Begun in 1796, this home of Thomas Jefferson was designed and frequently remodeled by him. He seems to have delighted in architecture for its own sake, and his private means enabled him to build on a small scale. The plan is carefully studied. It is laid out on two crossed axes, each terminated by a porch. The exterior uses the Roman Doric order with an exactness which places it in the neo-classic period, though the work fortunately lacks the dry correctness of most works of that time, and is distinguished by its fine proportions.

Charlottesville, Va. University of Virginia.—This group of buildings was designed by Thomas Jefferson in 1817 though the project had been discussed for some years. He wrote to Thornton and Latrobe and took suggestions from both of them. The central building was inspired directly by the Pantheon, while the rest of the work may have been suggested by the layout of Marly. The relative importance of the professors' houses and the student quarters provides the rhythm of the design. Throughout we find evidence of Jefferson's keen interest in architectural problems of all sorts. The buildings were judiciously restored in 1896 by McKim, Mead, and White.

Chicago, Ill. Art Institute.—Located on Michigan Avenue this building by Charles A. Coolidge has a splendid location. Like most museums, the style of architecture is modernized classic, retaining the use of the orders and other elements of Greek and Roman architecture, but not with the cold rigidity of the neo-classic period. It was built in 1892–93, and in addition to its valuable collections of painting and sculpture, it includes a number of large casts from medieval architectural and sculptural fragments. It supports a theater and one of the largest and most comprehensive art schools in the country, numbering over 2,000 students annually.

Chicago, Ill. Field Museum.—On a magnificent location at the east end of the park along the lake front, Graham, Anderson, Probst, and White in 1924 erected one of the largest Natural History Museums of the country. The building measures 706' across the front, 337' in

depth, and the general mass of the building is 80′ high. Using the classic vocabulary, the building shows fine proportions and detail and has a most impressive hall in the center. Its only defect is the tremendous size which at the first glance discourages a visitor.

Chicago, Ill. Lincoln Memorial.—Augustus St. Gaudens created one of his greatest bronze masterpieces in this work of 1887. The difficult problem of dress has been exceptionally well handled, and the chair behind the figure gives an artistic support to the whole composition without itself being obtrusive. It faces the main entrance of Lincoln Park, and was the gift of Eli Bates, costing $50,000. The work is considered to embody the spirit and appearance of Lincoln more perfectly than any other of his many portraits. The head of this statue was used on the two-cent stamps issued (1909) to commemorate his birth.

Chicago, Ill., Pennsylvania Freight Terminal.—Although a purely utilitarian building, McLanahan and Bencker have succeeded in giving to this work a massive strength and power which raise it above the commonplace. Brick masses are stripped bare of ornament, and depend on their proportion and silhouette for their cumulative effect.

Chicago, Ill., Tribune Tower.—The competition for this building held in 1923, drew forth one of the most brilliant groups of architects and designs this country had ever seen. The Chicago *Tribune* aroused a great deal of public interest in the work by illustrating famous buildings of the past in its daily sheets. The winning design by Howells and Hood adapts the Flamboyant Gothic of the Tour de Beurre which is beside the Cathedral of Rouen in France, and produced a work so lovely that it wins praise for its own sake. More modern in spirit were the drawings by Eliel Saarinen which were awarded second prize for a logical and extremely beautiful expression of the steel construction of the building. Its vertical mass is emphasized by long architectural lines, exemplifying the setback principle which afforded an interesting silhouette. Third prize was given to Holabird and Roche. Of the many honorable mentions, only that of B. G. Goodhue can be cited here. His design was distinguished by its sturdy strength and its simple masses with plain wall surfaces.

Chicago, Ill. Union Station.—Two large blocks on the Chicago River bounded by Jackson Boulevard, Adams, and Clinton Streets were chosen as the site of this terminal. Graham, Anderson, Probst, and White were inspired by the vast halls of the Roman Baths, but the result is certainly monumental and well adapted to its purpose. The station serves the Chicago, Milwaukee, and St. Paul; the Pennsylvania, the Chicago, Burlington, and Quincy; and the Chicago and Alton Railroads. It is of the double "stub end" type, in which trains leave in opposite directions from two sides of the hall. No attempt has been made to disguise the steel supports of the roof. The waiting room is built of Roman travertine with a vault 112′ high. The sculpture here is by Henry Hering, and Jules Guerin was consulted on the color scheme. Over the main waiting room is the Head House building which measures 320′ x 373′.

Chicago, Ill. World's Columbian Exposition.—The World's Fair, held in 1893 to commemorate the four hundredth anniversary of the discovery of America, created a revolution in achitecture in this country. But few of the thousands who saw the "White City" had been abroad, and to them the pure classic architecture of the Court of Honor, with its uniform cornice line 60′ from the ground, its harmony, and its taste, was a revelation of beauty which bid fair to establish classic architecture as the American style. Burnham and Root, the latter of whom died in 1891 and was replaced by Atwood, supervised the architectural scheme. The landscape design was controlled by Olmsted. A number of architects were consulted and given charge of the individual buildings. Sculpture was under the direction of Augustus St. Gaudens. The whole site in Jackson Park included 686 acres, but the actual buildings occupied only 188 acres. The color scheme was in charge of F. D. Millet. The individual buildings were classical, even for the most part, archaeological, but they were well composed, and in good taste. One, the Transportation Building by Adler and Sullivan, was purely modernistic, a radical departure from precedent, but successful one. Its architects, feeling that they had a new problem on their hands, discarded all details suggested in any way by historical styles, preferring to invent new forms to express the new purpose. The result was a direct ancestor of the more modernistic work of the present day.

East St. Louis, Mo. Cahokia Power Station.—One is apt not to think of beauty in connection with a power plant, but this building proves that it can be attained without losing sight of the purpose of this work. Mauran, Russell, and Crowell as consulting architects, and McClellan and Junkersfield, the engineers, have stripped their work of all ornament in the common sense of the word. The mass of concrete relieved by tall windows and narrow buttresses is left as unadorned as possible, and the four pairs of colossal chimneys leave one with a feeling of immense strength. The whole seems to embody the spirit of the machine.

Hartford, Conn. The State Capitol.—An exception among buildings of this purpose in that it uses the Gothic style. Designed by R. M. Upjohn, the façade is divided by pavilions at the center and the wings. Two low towers flank the central portion which is dominated by a cupola on a high drum. While the details exhibit the dry quality so common in Gothic buildings of the last century, the general mass shows a fine sense of composition.

Havana, Cuba. Trinity Cathedral.—In the Episcopal Cathedral of La Santissima Trinidad, B. G. Goodhue has shown himself a complete master of Spanish architecture. Feeling that style to be appropriate, he has used the richest ornament in the central part of the composition, set off by other surfaces which are left absolutely plain and unadorned. Though not large, the cathedral is impressive by its monumentality of proportions.

Hingham, Mass. The Old Ship Meeting House.—The first church built in 1681 has been

very much expanded. It cost about $2,150 originally. The building was set up by ships' carpenters and some of the massive beams may still be seen in the attic of the present church, hewn by hand. Their size shows that each of them must have required a single tree from which to cut them. The church is rectangular in plan, and is simple in the extreme, both inside and outside. Surmounting the roof is a small belfry and "lookout" from which the church took its name.

Indianapolis, Ind. Soldiers' and Sailors' Monument.—This is one of the most remarkable structures in the city, and was erected from the design of Bruno Schmitz of Berlin to commemorate the part borne by Indiana in the Civil War. About the base are to be seen allegorical figures representing peace and war, and near the monument are smaller bronze statues of Gen. George Rogers Clark, Gen. William Henry Harrison, Oliver Perry Morton, and Governor James Whitcomb. The corner stone was laid on August 22, 1889, in the presence of President Harrison. The monument is about 265′ high and cost over $222,000.

Kansas City, Mo. Memorial.—H. van Buren Magonigle won the competition for this memorial, held in 1921. His design at that time consisted of a large bowl set on a high shaft with lower buildings flanking it, the whole set on a wide base. From within the bowl or censer issues the "Flame of Inspiration, guarded by the Spirits of Courage, Honor, Patriotism, and Service burning forever upon an altar high erected in the skies." The four virtues, the tips of whose wings support the censer, are embodied in figures of an architectural character. The shaft itself is emphasized by marked vertical shadows, but bears no trace of historical precedent. By the time of the dedication in 1926, the base motive had been simplified, and made more striking than it had been originally. It now consists of a huge wall, 500′ long and 50′ high, decorated with a colossal frieze 400′ by 13′. This sculptural adornment, designed by Edith Magonigle, the architect's wife, shows the Spirit of America gathering under her wings the children of the centuries. In very flat relief the great figures of the world's history from the earliest times may be seen in stately procession—the Pharaohs of Egypt, the monarchs of Assyria and Persia, Buddha, the Nativity of Christ, rulers of the Han dynasty in China, and a host of others. Almost Assyrian in spirit, the frieze has the greatest architectural value. The composition of the whole is further enhanced by mural paintings by Jules Guerin.

Lancaster, Mass. Church.—Although he was never personally in the town, the church was designed by Charles Bulfinch whose drawings seem to have been sent to Lancaster from which the church was built by local workmen with local materials—the native brick being employed. It is one of Bulfinch's best churches with a simple arched portico adorned with a pilaster order, and with a small cupola in exquisite proportions and taste. The interior of the church has a gallery on three sides and a pulpit on the fourth whose delicate carving is among the best of that period.

Lincoln, Neb. State Capitol.—B. G. Goodhue has departed far from the beaten track in designing a building for this purpose in the modern spirit instead of using the well-tried classic form. The result has been wholly successful. The competition was held in 1920, and the tower in the center was finished late in 1930. It is 400′ high, and is surmounted by a statue of the *Sower*. The building is 437′ square with four interior courts. The plan is extremely practical in addition to the originality. On the exterior, massiveness strikes the keynote, but is most happily combined with the American tradition of refinement. The sculptural decoration by Lee Lawrie combines harmony with architectural lines, and symbolism recalling the background of the state; its pioneers, its dependence upon agriculture, its buffalo, and so on.

Los Angeles, Cal. City Hall.—A noble, impressive municipal building. The base of the building is 250′ x 430′; its average height is 400′, and contains 28 stories. Its first four floors are faced with California granite, and all of the exposed wall surfaces above that point are faced with terra cotta of a color harmonizing with the granite. The associated architects were: John C. Austin, Albert C. Martin, and John Parkinson.

Medford, Mass. Isaac Royall House.—One of the best examples of 18th century colonial architecture, the building seems to have been erected during the 18th century. The present east front dates from 1733–37, but the bulk of the house including the interior is to be dated from 1750. Its woodwork was carved by William More. Royall was caught in the siege of Boston and later went over to England, but the house was used by Colonel Stark during the siege of Boston. The interior, which is now kept open to visitors, is appropriately furnished in the character of the period.

Mountain Lake, Fla.—Bok Singing Tower, The.—A beautiful tower, fifty feet wide at the base, approximately two hundred feet high, built in a single, simple unit, to sing of music, sculpture, color, architecture, landscape design and the arts of the workers in brass and iron, ceramics and marble, and stone, each a part of a chorus, each adding beauty to the other. The architect was Milton B. Medary, and the sculptor, Lee Lawrie.

New Haven, Conn. Harkness Memorial.—James Gamble Rogers was given almost unlimited funds to produce this work, and it must be admitted that the result justified the expense. It was the gift of Mrs. Stephen V. Harkness in memory of a son, and as a memorial to the famous sons of Yale. The corner stone was laid on October 8, 1917, and the work was completed in 1921. It is a dormitory, accommodating 630 students, on a plot 354′ x 415′. The style is collegiate Gothic inspired by the English universities of Oxford and Cambridge. A series of courts of different sizes creates a feeling of informality and gives charm to the whole. The larger courts are named from previous locations of Yale college; Branford court in the center, and Saybrook and Killingworth to the north. The northern wings of the building are higher than the southern in order to make the best possible use of the sunlight. Over 3700 windows

are included, but in spite of this, the rooms and hallways are none too light. The entry system is used throughout. Everything has been done to give a free hand feeling to the design; and to create a feeling of age, old bricks are used, tiles chipped and battered to stimulate moss growth, and thresholds hollowed as if worn by many feet. Much more important is the carefully studied dissymmetry of the work in every part, but each is well composed and balanced none the less. Beside the main entrance stands the Harkness tower, a fairy-like Gothic creation 216′ high, while diagonally across the court is the Wrexham Tower inspired by the church of St. Giles, Wrexham, Wales, where Eli Yale is buried. In its walls is incorporated a stone from St. Giles Church. The Wrexham Tower uses a gray stone with Indiana limestone trim, but elsewhere, in Linonia court, bricks have been used with stone. However, the bulk of the building is of seam-faced Plymouth granite with Briar Hill rust veined sandstone trim. The color has been skillfully varied, growing lighter as it rises from the ground till the upper part of the Harkness tower is quite creamy in tone. In addition to the material, the style has been cleverly varied, no single entrance duplicating another and one of them, Mason entry, even using Jacobean (Early Renaissance) ideas. These subtle informalities give a living quality to the whole work, and make it one of the most charming buildings in the country. Lee Lawrie and the other sculptors employed have caught the same spirit in the sculptures on the Harkness tower and the innumerable brackets and such incidental works. In its sculpture high and noble ideals, portraits of famous Yale graduates, which, one is glad to note, include heads of the architect and of his assistants, secular and athletic themes and even humor have been treated with real Gothic abandon.

New York, N. Y. American Radiator Building.—In this building, designed by Raymond Hood in 1924, the architect has shown great daring by making the mass of the building black with details picked out in red and pure gold. Believing correctly that the mass of the building would be more telling if the windows did not seem like black spots, he deliberately chose this method of overcoming the contrast of windows and wall as far as possible. The lower stories use polished black marble, while black brick forms the wall surface for most of the building. The form of a tower was deliberately chosen for the more successful architectural effect in spite of a certain sacrifice of floor area. Some details of the bronze entrance are inspired by Gothic, but the rest of the work is affected directly by the New York Zoning Law, the result being a series of setbacks, affording contrasting masses of diminishing size at the top of the building. The interior contains iron work of great beauty. The structure was designed with extreme rapidity, the steel work being begun before the upper part of the building had been completely worked out.

New York, N. Y. Barclay Vesey Telephone Building.—Completed in 1926 by McKenzie, Voorhees, and Gemelin. Few buildings have had a greater influence on contemporary work than this massive pile which is built on a rhomboidal lot. The architects have considered that whereas in previous times buildings were constructed and decoration worked out by hand, modern life is far more dependent on the machine. They have therefore used a different technique to express this fundamental change. The vertical lines of steel columns rising from the basement to the roof have been emphasized, more for the sake of unity of design than for expression of structure. The cornice has been omitted since it would interrupt this harmony of vertical lines, and its place taken by decorated stories with setbacks. This was not the first time that the cornice had been omitted in a modern skyscraper. All ornament is kept flat, and simplified, again suggesting the machine origin. Nevertheless Ricci and De Cesare, the sculptors, have been able too retain a basic naturalism in this ornament without losing the guiding principle of the building as a whole, and the same is true of the color decorations within by Mack, Jenney, and Tyler. All details down to the lighting fixtures and the furniture show the same feeling. N. C. Wyeth has provided a fine series of mural paintings. Much of interest was discovered during the excavations for the foundation. A hull of an old whaling boat and a hollow wooden water main of Dutch origin were the most unusual objects, but hundreds of coins and small things of that sort also came to light. The building, 212′ x 255′, houses 6500 persons. This creates a serious transportation problem during rush hours when an elevator must leave the ground story every five seconds and 180 people a minute must be taken to their offices. The building provides 850,000 square feet of usable floor space with one telephone for every 60 square feet.

New York, N. Y. Bowery Bank.—That suggestion may be taken from the historical styles and used successfully in a modern building has been proved by this splendid work on 42nd Street. Here in the great arched portal, dignified by colonnettes whose surfaces are enriched by spiral flutings and network, the architectural student will have no difficulty in recognizing the Lombard Romanesque origin of the design. A comparison with the Cathedral of Verona will prove the point, but at the same time, the work has greater refinement than most of the old examples, and is used in such a way as to produce a modern effect. The lower portion, serving as a base to the superstructure, expresses its function well in the broad, solid wall surfaces left largely undecorated. On the interior the marble shafts support capitals which hark back to Byzantine prototypes, as do the grills and the mosaic floor, but again it must be admitted that the total effect is modern and that the banking hall is one of the finest in the city, a work which redounds to the credit of York and Sawyer, the architects.

New York, N. Y. City Hall.—Built in the early Republican or Federal period, this venerable building by Joseph Mangin and John McComb is one of the finest to be found in this city. A two storied building, it is surrounded by the towering bulks of the Woolworth Building, the Municipal Building, and so on, but retains its dignity none the less. Strongly influenced by the French as we may see in the tall win-

dows and the formal rustication, it is divided by a projecting pavilion in the center with superimposed orders of columns, and with salient wings at the ends in which a pilaster order is employed. The axis is further dignified by a small cupola.

New York, N. Y. Grand Central Terminal.—One of the high points of American architecture of today is the design of our railroad stations. The difficulty of the problem is enormous and its success is the more striking in consequence. The terminal station of the New York Central Railroad, which also houses the New York, New Haven, and Hartford Railroad, covers an area of thirty blocks in the heart of the city, facing on 42nd Street. The station is used daily by literally millions of people who must catch trains in a hurry, but in spite of this, there is no confusion, no excitement, and as little noise as possible. The great hall is simple architecturally, covered by an elliptical plaster vault, painted blue and decorated by the signs of the Zodiac. The exterior, employing the Doric order modified by French ideas, is less successful than some other stations, especially in the sculptured group on the façade facing down Park Avenue, which represents Progress, Mental Force, and Physical Force. These figures are certainly disturbing in scale, but as a whole, the building acts as a fitting gateway to the city. The building supports an overhead street. It was designed by Warren and Wetmore in 1913 and cost $180,000,000.

New York, N. Y. Statue of Liberty.—One of the largest statues in existence is the figure of Liberty Enlightening the World given to the people of the United States by the people of France. The colossal bronze is the work of the French sculptor Frederick August Bartholdi. It was erected in 1886 on Bedloe's Island in New York harbor, where it is passed by all the boats entering or leaving New York. It is the figure of a woman, clad in a Greek tunic, and mantle, bearing aloft a torch in her right hand. From the top of the statue, which is 151′ high and stands upon a pedestal 155′ high, a fine view may be obtained.

New York, N. Y. Metropolitan Life Insurance Tower.—For a while this building held the honor of being the highest in the world intended for shelter. (The Eiffel Tower in Paris is higher, but is merely for observation.) The tower is 46 stories high, rising 700′ above the sidewalk. The floor area available for use amounts to about 25 acres, a whole village in itself, though far surpassed by some of the larger modern buildings. A lookout balcony, 660′ above the sidewalk may be reached either by elevator or by ascending 1,057 steps. Just below this platform on all four sides of the shaft is a colossal clock, 25½′ in diameter. During the night, colored lights mark the quarter hours, and in the daytime, the "Cambridge" chimes are rung on the four colossal bells cast by the McNeely Bell Company, in Troy, New York. The walls are of marble. The design seems old fashioned at the present day, being obviously based on the bell towers of North Italy. Le Brun and Sons, by grouping the tower windows in threes with heavier shafts between each group, attained far more emphasis on the vertical line than was to be found in most buildings of its time. Nevertheless, this good beginning was somewhat neutralized by the strong horizontal line of the lookout balcony with its arcade.

New York, N. Y. Metropolitan Museum.—This, the largest museum in the country, has been developed since 1879. It is placed in Central Park, facing 5th Avenue opposite 82nd Street. The original building by Vaux and Mould was Victorian Gothic, and has been almost entirely concealed by later construction. Even part of the first additions to it, made by Tuckerman, with a granite basement and brick superstructure are almost invisible today. Here, though the rapidly expanding collections have always demanded more space, it has been impossible to sacrifice at any time the old work, so that no architect can be credited with the design as a whole, but only with the part which he designed. The façade on 5th Avenue, built in 1902 of gray Indiana limestone by R. M. Hunt, uses the Beaux Arts version of classic architecture, with large arches and columns employed to good effect. Among the most recent additions to the building, we may mention the fine wing designed by McKim, Mead, and White for the exhibition of classic sculpture, an ideal hall for the purpose, employing color in a most satisfactory way and using a Roman Doric order around the lighted court. The same architects designed the library. Still more recent is the American wing, in which original colonial interiors have been appropriately furnished to produce a surprisingly fine effect. The tendency to preserve our own delightful colonial work, as shown especially in this wing and the corresponding one in Boston, proves the high esteem in which we hold our past. It is difficult to find more satisfactory places in which to study American colonial interiors.

New York, N. Y. J. P. Morgan Library.—Although not at all a large building, McKim, Mead, and White have succeeded in producing a gem of American architecture in this little building on East 36th Street. Unlimited means were at the disposal of the architects who had the masonry cut with Greek precision, and joined together in the Greek fashion without mortar. As in many small museums, the entrance is treated with a motif Palladio, its dark shadows contrasting with the plain wall surfaces on either side. All proportions are worked out with a refinement, dignity, and beauty worthy of the treasures the building contains. In addition to a few very choice pictures, the marvelous collection of illuminated manuscripts is probably the finest in the country.

New York, N. Y. Pennsylvania Station.—Completed in 1910, this terminal houses the Pennsylvania Railroad and the Long Island Railroad. The plan is less successful than that of the Grand Central. It is decidedly difficult to meet trains because of the several exits, and the long promenade between the street and the main hall is a waste of time and space. On the other hand, the hall itself, and the façade are magnificent creations in the classic style. An inspiration from the Baths of Caracalla in Rome is obvious, and the work has been unfavorably criticized from that standpoint. Whether or not

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IMPRESSIVE AMERICAN BUILDINGS

1 Congressional Library, Washington, D. C. 2 Lincoln Memorial, Washington, D. C. 3 City Hall, Los Angeles, Calif. 4 Metropolitan Museum of Art, New York City.

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AMERICAN UNIVERSITIES

1 University of Minnesota, Minneapolis, Minn. (Administration Building). 2 Harvard University, Cambridge, Mass. (Widener Memorial Library). 3 University of Chicago, Chicago, Ill. 4 Princeton University, Princeton N. J. (Dormitories with Blair Hall Tower in distance). 5 Stanford University, Palo Alto, Calif. (Memorial Chapel). 6 Washington University, St. Louis, Mo. (Main Entrance). 7 University of California, Berkeley, Calif. (Sather Gate). 8 Columbia University, New York City (Aerial View). 9 Yale University, New Haven, Conn. (Sterling Memorial Library).

that monumental form would be suited to a bath seems questionable, but there is little doubt of its satisfactory nature as a railroad terminal. The lofty groined vaults, decorated with coffers, serve to swallow the noisy confusion of hurrying masses. The building has an area of 300,000 square feet with a front 430′ long. McKim, Mead, and White were the architects.

New York, N. Y. Public Library.—This institution, formed by the union of the Astor, Tilden, and Lenox libraries, is the second in size in the country, and one of the largest collections in the world. The building by Carrère and Hastings was completed in 1910 facing 5th Avenue between 40th and 43rd Streets. Bryant Park at the rear affords ample space for expansion in the future. The building is of white marble in the classic style. Accented central and end portions are connected by links having engaged Corinthian columns. The central portion is a trifle heavy, and it is interesting to observe that Mr. Hastings is planning to improve this condition at his own expense. The dimensions are 366′ by 246′ with the cornice raised 68′ from the ground in front and on the sides, and 98′ at the back. Two courts 80′ square provide excellent light in the interior. The main reading room is placed on the third floor at the rear of the building, which makes it too difficult to reach from the entrance. It is placed directly over the stacks with a delivery desk cutting across the center, thereby marring the effect, and preventing the true size of the room from being appreciated. Its dimensions are 395′ by 75′ and 50′ high, a truly magnificent hall. The New York Public Library contains over two million volumes.

New York, N. Y. Cathedral of St. John, the Divine.—The church, like most of the great churches of the past, has already taken many years to build, and will take many more to complete. The corner stone was laid in 1892 on a site at 112th Street and Morningside Drive, a dominating location on a hill. The original designs by Hines and La Farge showed elements of many styles. The great granite columns of the choir, more than 50′ high, recall certain examples of Romanesque in Burgundy, such as the great abbey at Cluny. The low brick dome of the crossing is perhaps more nearly Byzantine than anything else. Nevertheless, the interior was undeniably impressive, perhaps simply because of its size. Many people disliked the work, however, and the building has been turned over to Cram and Ferguson who are erecting the nave, and plan to change the style of the choir to Gothic with a magnificent Gothic lantern over the crossing. The nave will be five aisled, taking suggestions from the cathedrals of Bourges and Le Mans, but in no sense imitating either. The sexpartite system of vaulting is used on the interior, and is expressed by paired buttresses on the exterior. The façade will reveal the five aisled plan of the church with flanking towers again inspired by French Gothic. The baptistry has a vault carried on a star-shaped arrangement of ribs such as we may see in some Spanish buildings. In the chapels flanking the apse, various styles of architecture from Romanesque to Renaissance have been completed, and create an element of variety.

New York, N. Y. St. Patrick's Cathedral.—The Roman Catholic Cathedral was built between 1858 and 1879 by James Renwick at a cost of over two million dollars. Renwick adopted French rather than English models of the fourteenth century for this cathedral on 5th Avenue. The two spires of marble flanking the façade suggest the origin. Within are 70 stained glass windows remotely derived from Chartres, and also several altars resplendent with marble and gems. Though not entirely lacking the frigidity of much work of the period, the church is the largest and one of the best examples of the Gothic revival in this country.

New York, N. Y. St. Thomas Church.—The last work of the combined firm of Cram, Goodhue, and Ferguson, this church is surely one of their best. When the old church burned, August 8, 1905, the rector felt the need of continuing services as soon as his parishioners should return from their summer places. A temporary church was erected by October first. The problem of the new church was to provide room for 1700 people in addition to a chapel and other subsidiary rooms, and all on a lot of 235′ x 100′. The exterior is of white to gray violet limestone, while the interior is yellowish. The nave is wide, with narrow aisles to the side, and a gallery is used to increase the seating capacity. The inspiration has been most fortunately derived from Flamboyant Gothic. The sculpture on the church is symbolic, taking in themes of recent American church history, and the stained glass will complete the scheme.

New York, N. Y. Shelton Hotel.—This splendid structure by Arthur Loomis Harmon was designed to combine the functions of a club and a hotel. Its design won the gold medals of the American Institute of Architects and the Architectural League of New York, and its influence has been rapid, widespread, and beneficial. The building accommodates 1,200 guests. It is luxuriously appointed inside with a swimming pool, squash courts, bowling alleys, roof gardens, and so on. Those stories which accommodate these larger elements are suitably characterized, whereas the bulk of the building naturally is composed of suites of rooms with small windows so that the building must be effective chiefly by its mass which is splendidly proportioned. The vertical is further emphasized by a slight, but noticeable batter in the lower walls. The building above the two lowest stories is brick and magnificent in its simplicity. A base is formed in stone in the lower stories with an arcade and details which suggest Lombard Romanesque precedents.

New York, N. Y. Trinity Church.—The first important church of the Gothic revival in this country was designed by Richard Upjohn, the founder of the American Institute of Architects. The work was finished in 1846 and, standing in lower Broadway at the head of Wall Street, its 284′ spire was for long a landmark of lower New York. Today, instead of being the highest point in the vicinity, it is lost among the great buildings, but retains its dignity none the less. The inspiration has been derived from

Perpendicular Gothic. The reredos and bronze doors are noteworthy.

New York, N. Y. Woolworth Building.—For a long time, this tower, built by Cass Gilbert in 1913, was the tallest structure in the world intended for occupation. 57 stories rise above the pavement and dominate the City Hall and its surrounding park; (on clear days, a view of 50 miles radius may be had from the top). The detail is unmistakably Gothic and was deliberately adopted because of its emphasis on the vertical. The tall steel shafts supporting the floor and the wall were cased in terra cotta which is fireproof and easily molded. Although built before the Zoning Law was passed, the mass has somewhat the setback effect, and has a tower, which is small in comparison with the ground area. In the vestibule may be seen brackets adorned with portraits of the architect, the owner, and others, by Donnelly and Rice.

Philadelphia, Penn. Independence Hall.—This fine old colonial building was designed by Andrew Hamilton, 1731–35. The fine proportion of the building and the relation of its parts are typical of the eighteenth century in this country. It was the seat of the Provincial Government. Within its walls, assembled the Second Continental Congress of 1776 which adopted the Declaration of Independence. Upon the walls are portraits of many of the signers, and the building contains many interesting relics, including the Liberty Bell.

Philadelphia, Penn. Athletic Club.—Mass is emphasized by Zantzinger, Borie, and Medary in this powerful and thoroughly modern design. The color, too, shows a daring freedom from precedent by employing salmon pink as a ground tone. Although not controlled by the Zoning Law, the building breaks back in large blocks and gives a setback effect. Decoration in the old meaning of the word is almost completely lacking. The building, of course, houses many different functions all of which are adequately provided for.

Philadelphia, Penn. Art Museum.—This recently completed structure must be counted among the triumphs of American art. Trumbauer, Borie, and Zantzinger have boldly used colors with full intensities, with great success. Like most museums, the classical style has been employed, but with more than usual exactness. The central motive, with its prostyle temple front of eight columns, is repeated on a smaller scale as terminal motives for the projecting wings. Moreover, an attempt has also been made to avoid the lifelessness of many modern classic buildings, by adopting the extremely subtle curves in every line which the Greeks employed in the Parthenon and elsewhere.

Philadelphia, Penn. Girard College.—One of the best examples of the classical revival in this country, corresponding in historical importance to the Madeleine in France. As usual in the neo-classic period, the imitation of the past was so servile as to result in cold productions, generally ill adapted to their purposes, and as different as possible from modern standards. The work is in white marble, using the Corinthian order on a peristylar plan. It is set on a stylobate after the Greek custom rather than on the high platform or podium of the Romans which was employed in the Madeleine.

Santa Barbara, Cal. Mission.—One of the best examples of our colonial work in the southwest. The mission was established in 1785, though the present building dates from 1815–1820. Simple wall surfaces with small windows, towers of simple form flanking the façade show the Spanish origin modified by local conditions. The building is further adorned by six engaged Ionic columns supporting an entablature and pediment. The work is in sandstone and measures 175′ x 40′. Among the interesting tombs the church contains, may be mentioned that of Fr. Francisco Garcia Diego y Moreno, first bishop of California.

San Diego, Cal. Panama-California Exposition.—Although a local affair, this exposition of 1914 attracted a great deal of attention and partially eclipsed the more ambitious attempt of the same year in San Francisco. The choice of B. G. Goodhue as consulting architect was ideal in every way, and to him was entrusted the design of the permanent buildings. He desired to express the historical background and possibilities of the region. For that purpose, the Hispano-Mexican style of architecture was adopted with its brilliant tile domes, and its plain wall surfaces contrasting in the sharpest possible manner with sparkling exuberant decoration. The chosen site of 1,400 acres was separated from the city by a deep ravine, which was spanned by the Cabrillo bridge 135′ high. Absolutely devoid of decoration, the bridge depends upon its repeated arches and upon the richness of the California State building for its effect. These two are by Goodhue himself. Of the other works from this exposition, we may mention the New Mexico building by Rapp and Rapp as an example of the possible variety within the scheme. Here the inspiration was taken from the old Franciscan missions of Acoma and San Felipe, which had in turn taken hints from the adobe constructions of the Indians, notably the beams projecting from the walls which cast sharp shadows.

Santa Fe, N. M. Museum of Art.—Rapp and Rapp adopted the historical architecture of the region for the design of this building in 1917. The old Franciscan Missions at Acoma, San Felipe, Cia, Santo Domingo, Santa Ana, and others, provided the basis. They are themselves influenced by Indian pueblos in the direction of very heavy walls, massiveness, and the clearly cast shadows of beams protruding from the wall. These elements may seem crude at first, but they have a basic simple vigor that is both refreshing and appropriate. The color, which was pinkish brown on the exterior, was a little raw at first, but has toned down satisfactorily. Within, the color is still stronger, but effective. The ornamentation throughout is inspired by Indian motives.

San Francisco, Cal. Panama-Pacific Exposition.—Here the exposition was planned in celebration of the completion of the Panama Canal, and while more lavish, more extravagant than the smaller one at San Diego, its architecture was on the whole somewhat less distinguished. The site chosen enriched the city by increasing the area of the improved land. Extravagance

and ornateness were obvious. The lighting was concealed and well handled, especially in the Tower of Jewels by Carrère and Hastings which sparkled at night with 125,000 cut glass prisms. It rose 435′ in the air. By day it was less successful because the horizontal motives were overemphasized for so tall a building. The Triumphal Arch of the Rising Sun by McKim, Mead, and White was larger than the Arc de l'Etoile in Paris. The Auditorium seating 120,000 people was built at a cost of $1,000,000. Low domes almost Byzantine in effect were extensively used for the exhibition buildings. Perhaps the best part of the exposition because of its refinement, was the Court of Four Seasons, with its enormous niche, 100′ high, designed by Henry Bacon.

San Francisco, Cal. Telephone Building.—In the Pacific Telephone and Telegraph Building, the architects Miller and Pflueger have used full intensity colors on the interior with a happy result. The building rises 26 stories to a height of 436′. It demonstrates the setback principle. Originally Gothic detail had been designed, but considerations of expense enforced the adoption of a more modern treatment. Hence all detail expresses the machine origin.

St. Louis, Mo. Southwestern Bell Telephone Company.—In this huge structure, the light wells and setbacks form the basis of the design. The latter are skillfully varied in height and depth to produce an interesting silhouette to the pile without losing the basic harmony of shape. The vertical lines are emphasized throughout, a heavy pier alternating with a light one, and nowhere broken by horizontals. Mauran, Russell, and Crowell were the architects.

Salem, Mass. The House of the Seven Gables.—This, one of the most venerable of American houses, was probably built in 1669. The clapboarded exterior, the lack of decoration, the large open fireplaces bring to mind at once life in the Puritan days. One of its doors, too, shows the old form of solid planks still further strengthened by hob nails arranged in a diamond pattern. The building has been made memorable by Hawthorne's famous novel. He knew the house well, having passed many nights under its roof, but several elements mentioned in his book were taken from other contemporary dwellings. In addition to the "House of the Seven Gables," Hawthorne's "Grandfather's Chair" had its origin here.

Smithfield, Va. St. Luke's Church.—Few people realize that the early architecture of this country is essentially medieval, or that we have a Gothic church belonging to the original tradition. However, when St. Lukes, Smithfield, was begun in 1632, the Renaissance movement had not yet penetrated beyond the upper classes in England. In the country and among rural populations, Gothic of a sort was still the rule. This brick building by Joseph Bridger is the oldest existing building of the English settlements in America. Pointed arches appear with tracery. The church was in continuous use till 1836, and has been restored since 1884.

Washington, D. C. The Capitol.—The inception of this building belongs to the 18th century. On it, several of our most distinguished early architects were employed. Thornton, Latrobe, Bulfinch, and Hallet, for example. The original building was to have been far less extensive than the present structure, and the dome lower. The style is classic, and the general type, with a large dome rising high upon a drum, created a standard form which has been followed by the great majority of state capitols. Walters was the architect of the dome. The cornerstone of the capitol was laid in 1793. The structure consists of two stories rising from an appropriate base. The ground plan is a central pavilion with north and south wings. The principal façade to the east is dignified by a Corinthian portico, 30′ high, while the same order is continued in pilaster form along the wings. Over the eight projecting central columns, the pediment, said to have been designed by John Quincy Adams, represents Liberty attended by Hope and Justice. The Rotunda, under the dome, measures 96′ in diameter, and is 180′ in height. It is decorated with paintings and has reliefs with subjects pertaining to our national history. Gilded pilasters dividing the paintings serve to support the dome.

Washington, D. C. The Lincoln Memorial.—A distinguished architect has termed this monument "the finest thing in America for pure beauty." It is a fitting monument for Lincoln, and more need not be said. The architect, Henry Bacon, was awarded the gold medal of the American Institute of Architects in 1923, the year after the building had been completed. Adopting a Greek temple form in plan, he has modified it in elevation by the substitution of a simple and solid mass above the entablature, instead of the gable roof ending in pediments. The severest of the classic orders, the Greek Doric, has been employed, and the frieze has been modified by the introduction of the coats of arms of the states. All the proportions are most subtly worked out with a refinement worthy of the master who designed it. Within, the calm statue of Lincoln by Daniel Chester French looks from his chair, set upon a pedestal, down the thousand foot lagoon to the Washington Monument and the Capitol. At either end in the interior are the Gettysburg Address and the Second Inaugural in letters of bronze, while above them some well designed murals by Jules Guerin add a note of color to the whole.

Washington, D. C. Washington Monument.—A white marble obelisk 555′ high and 55′ square at the base is placed in the mall at Washington. The corner stone was laid in 1848, but work was not completed till 1884. The states of the Union, and many foreign governments contributed blocks of stone with inscriptions on them, which have been placed on the walls of the staircase on the interior. An elevator also makes the ascent to the top from which a fine view may be had from the paired windows on each face of the shaft. Aside from these windows, the shaft is absolutely plain.

Washington, D. C. The White House.—The competition for the Presidential mansion was won by James Hoban in 1792. It is a two storied mansion with a portico of eight Ionic columns in front, and at the rear, a colonnade of six Ionic columns. The house was first oc-

cupied by John Adams in 1800. After its destruction by the British in the war of 1812, it was rebuilt, and again ready for occupancy in 1818. The grounds include 75 acres.

Westover, Va. House.—A splendid example of the southern colonial style of the eighteenth century. A product of just the same racial conditions which produced the colonial of New England, the climate has suggested certain changes. The chimneys are placed at the sides of the house. The out-buildings are separated from the main structure, and the whole effect is expansive. A desire to get rid of heat rather than to retain it stands at the bottom of such work. The present building was built in 1749, the earlier houses having suffered by fire.

PAINTING

EGYPTIAN PAINTING

In Egypt, painting was, when possible, kept subordinate to sculpture, though where the scale suggested it, or the patron could not afford the latter art, he might accept painting as a cheaper substitute. Its chief function was to enliven the sculpture, and make more legible the reliefs in the tombs representing the innumerable actions of daily life and of the life hereafter. The colors were very simple, the most important being a brick red for the men and a light yellow for the flesh tones of the women. In addition to these, we find black used for the hair, and blue, green, and a few rarer colors for details. However, even when painting is attempted independently, there is no mixing of colors and the pigment is applied in flat washes without any attempt at modelling. Probably the most satisfactory work of the Egyptians is to be found in representations of natural life, some fine specimens of which may be seen in the rock cut tombs at Beni-Hassan and perhaps even more in the decorative patterns which appear as parts of architecture.

CRETAN PAINTING

A considerable number of frescoes of a high degree of artistic merit have been discovered in the island of Crete, and wherever the Minoan civilization penetrated. Although the inscriptions have not yet been deciphered, it is possible to deduce something about this age from the works of art which are superior to the productions of Mesopotamia and Egypt in freedom and naturalism. The artist deals largely with natural subjects—plants and vines—with religious rites and with acrobats leaping over the backs of bulls, which may possibly also have some religious significance. Extraordinary skill in drawing is to be seen, which, coupled with a fine decorative sense and a lack of modelling, produces an effect not unlike the Japanese. Much of the work suggests an interest in marine life both in the frescoes and in the painted vases. Among the best examples may be cited the *Bull Leapers* and the *Blue Boy* at Knossos, the *Cat Stalking a Pheasant* from Hagia Triada, the *Flying Fish* from the island of Melos and the *Octopus Vase* at Gournia. When this art became transplanted to the mainland of Greece in what was probably Homeric times, it fell into a decadence, and the old sureness of touch was lost.

GREEK PAINTING

Few specimens of ancient painting exist, though from the Greek vases we can follow the progress of drawing. The earliest efforts were in monochrome; then, as in Egypt, came the employment of varied palette, but with no pretensions to perspective or to light and shade. The first creative genius who advanced the art was Polygnotus of Thasos, whose works adorned the walls of public buildings, such as the Painted Portico at Athens. His contemporaries, Micon and Panaenus, brother of Phidias, were also famous, and lent their art to architectural decoration. Polygnotus is reputed to have produced in his works a variety of shades from a simple palette containing only black, white, red, and yellow. He won great fame by his figure compositions and correctness of line. The scene painter, Agatharchus of Samos (about 480 B. C.) added to the scope of painting when he discovered the methods of shading and perspective; and soon afterwards there arose what is known as the Asiatic or Ionic school, whose leading exponents were the rivals Zeuxis of Heraclea and Parrhausius of Ephesus, whom tradition credits with most realistic skill. With such meager remains it is difficult to appraise the work of the ancient artists. The Etruscans were undoubtedly inspired by Greek models, and examples of work, such as the tempera painting on the Corneto sarcophagus now in Florence, give us some indication of the beauty and power of the original. Many specimens have come down to us from the later period of Hellenistic art; the greatest number of these are from the buried cities of Pompeii and Herculaneum.

ROMAN PAINTING

Roman painting developed on similar lines to sculpture; it was chiefly decorative and characterized by little originality. Greek models were slavishly copied both in method and technique. Mural decorations are the only extant examples of Roman painting; but we know from literature that frescoes adorned the temples, and the pictures of Roman victories were carried in triumphal processions. The general tendency toward realism is shown in the surviving mural paintings; in such, for instance, as the celebrated *Aldobrandini Marriage*, in the Vatican Library, Rome, and the garden scenes in Livia's Villa ad Gallinas, in Rome.

EARLY CHRISTIAN AND BYZANTINE PAINTING

The two media of pictorial art in use in these periods were mosaic and fresco. The latter was regarded largely as a cheap substitute for the former in which small cubes of marble or glass provided the color. Naturally this medium prevented detailed drawing, but its color effects were remarkably fine. A hieratic quality pervaded the work which enabled a suggestion of religious mystery and dignity to be attained. As in architecture, some of the best work is to be found in the fourth, fifth, and sixth centuries.

In the west a stronger classicism is apparent; in the east a greater hieratic quality. Among the best examples may be cited the apses of the Early Christian basilicas of Sta. Pudenziana, Ss. Cosmo and Damiano, and Sta. Maria in Trastevere in Rome, and the two panels flanking the chancel of the church of San Vitale at Ravenna, which depict Justinian and Theodora with their respective courts in a more or less natural but hieratic fashion. Centuries later, when Byzantine art revived after the iconoclastic controversy, a still greater dignity was attained, though now with figures elongated far beyond their natural proportions. Nevertheless, great decorative beauty was attained in line and color in the mosaics of St. Mark's at Venice, and those at Daphni, to cite only two instances. It is important to realize the great influence this style had on later art in western Europe, many of its conventions and indeed its point of view being at first adopted. The influence of the style was spread by means of illuminated manuscripts and carved ivories.

SIENESE PAINTING

In a very real sense Sienese painting may be considered as the culmination of Byzantine art rather than the foundation of anything new. Its living religion expresses itself in hieratic qualities. The city of Siena considered itself under the direct protection of the Virgin. To the Sienese the Mother of God was the Queen of Heaven adorned with the splendor of royalty. One finds the same conventions here, the same unreal quality, the same distant grandeur, and the raised surface of such parts of the work as haloes, which are found in Byzantine art, but more warmth. In addition to these qualities due to the influence of miniature painting, a calligraphic line is typical of Sienese art. The color is rich and pure with a lavish use of gold for the background, and details, and the total effect, is decorative in the extreme.

The man who stands at the head of the school is Duccio di Buoninsegna. While he is not the greatest draftsman of the school, he stands very high in that quality. His *Majestas*, an altar of many panels on both its front and rear, represents on the front the Madonna enthroned with saints and angels. A rich glow of bronze green and warm gold strikes one immediately. The many heads have an ethereal quality and an air of inborn aristocracy; the former effect is due to the subtle drawing and to the green underpainting showing through the warmer flesh tones, while long delicate noses, narrow eyes, and small mouths contribute to produce the latter characteristics. But perhaps the element which lends most distinction to his style is a superb sense of composition, best exemplified in the rear of the altarpiece. One of his favorite expedients is to balance a single figure against a group, thereby subtly suggesting the importance of the individual. Countless devices serve to accentuate the figure of Christ—a narrow band of dark seen through a half-open door leading to the head of Christ, or slender colonnette, serving the same purpose. Again, the compact group in the *Corruption of Judas* suggests a sense of treachery and shame, even before the subject is recognized. Although the architectural elements of all these panels are out of proportion, their lack of reality is seldom disturbing.

Greater than Duccio in one respect is Simone Martini. There has perhaps never been a greater master of line in Europe, and but few can be counted as his equals. The edge of a drapery may be outlined with the greatest sureness, and with a touch reminiscent of the calligraphic whirls of an illuminator of manuscripts. The linear quality and its possibilities are illustrated in the *Sant' Ansano Annunciation*. The suggestion of motion imparted to the fluttering robe of the *Gabriel* is the result of its lines alone, and how magnificently this is opposed to the startled *Madonna*. Although he is not always above reproach in color, this painting is fine enough to satisfy even the most exacting critic. Simone's influence on later art is greater than Duccio's because, where the latter remained in Siena most of his life time, Simone went out of his native city, notably to Avignon, France, during the papal sojourn in that city, thereby spreading a knowledge of his style far and wide.

The Lorenzetti Brothers, under the influence of the Florentines, became more human and less supremely aristocratic than Duccio or Simone. Ambrogio, the better of these two brothers, like most of the Sienese, was a good draftsman, and a more careful worker than Pietro, but was inclined to be didactic. His feeling is more tender and gentle, and less violent than Pietro's, who sometimes falls into extravagances. If he did not invent, Ambrogio certainly popularized the type of the Madonna embracing the Child, and also that of the Madonna giving the breast; both, one should observe, emphasized the human side, and gained interest thereby, but lost dignity and aristocratic quality at the same time. Of the other Sienese painters, Guido da Siena, Ugolino da Siena, Segna di Bonaventura, Lippo Memmi, Barna Senese, Bartolo di Fredi, Sassetta, and Taddeo di Bartolo are perhaps best worthy of mention. Fortunately the days of popularity of the Sienese school have fallen within the period of American connoisseurship and collecting, and as a result, the country is fortunate in possessing a number of Sienese works. Siena could never accept the new spirit of the Renaissance, nor recover her fourteenth century glories. Matteo de Giovanni, Neroccio de Landi, Peruzzi, Sodoma, and Francesco di Giorgio are well known but vastly inferior to the earlier Sienese painters.

FLORENTINE PAINTING

But if Sienese painting is the culmination of the Middle Ages, Florentine is birth of the new. In matters of feeling, these two schools show almost a complete contrast. Where Siena was aristocratic, Florence was bourgeois; where Siena was hieratic and mystic in her religion, Florence was human; where Siena was content with unreality, Florence strove for naturalism; and to make the contrast complete, they were bitter political rivals. St. Francis of Assisi had lived to stimulate a more passionate, more personal devotion which could not well be expressed by Byzantine formulae. Nevertheless, the first master of the Florentine school,

Cimabue, attempted to do this, and it is astonishing to find that the results are not as futile as might have been anticipated. Although his existing works are largely in mosaic, his few frescoes and panels show a vehemence which shakes the old forms as a powerful new motor will an old automobile. His shortcoming is in the forms which the greater Giotto di Bondone was to discard completely, realizing their inadequacy. The new figures introduce the third dimension, put an air of solidity into the whole, in short create tactile values as Mr. Berenson has termed that impression of relief imparted to the spectator. The frescoes of the Arena Chapel mark an epoch in art. Monumental figures, with a magnificent regard for the main masses, fill the scenes. The individual characters are treated with dramatic vigor, and if they have not the unparalleled linear quality of the Sienese, the breadth of treatment in the massive figures makes amends. The composition is again superb as among all great masters, and each separate figure has a strong personality. Details, like landscape and architectural backgrounds, are merely indicated, and though they have no relation to the human figures, they may be regarded in the same light as the stage settings of Elizabethan drama, or as a script suggesting the setting of the scene. In his later work at Santa Croce in Florence, Giotto polishes and refines the figures of the Arena Chapel. His great contribution of three dimensional form became the watchword of the later school, although for the few generations before the beginning of the Renaissance, except for Andrea Orcagna, that ideal was submerged by the influence of the Sienese school.

Masaccio marks the reversion to the aims set by Giotto. His series of frescoes in the Brancacci Chapel in the church S. Maria della Carmine was little less than a school for many painters of the Renaissance. Although other men like Masaccio's master, Masolino, worked here, and the parts to be ascribed to each have never been exactly determined, the more monumental and vital works are surely by the hand of Masaccio. Such scenes as the *Expulsion of Adam and Eve*, the *Tribute Money*, and *St. Peter Baptising*, show a feeling for the essentials of form and a dramatic power which indicate a great master. Details do not interest this artist, yet no important matter has been overlooked. The figures live; their forms seem to be modelled in relief; the resistless movement of superior bodies is felt everywhere; and throughout, a sober, not to say severe spirit, free from anything trivial or attractive by mere prettiness, imparts a majestic dignity to the whole.

The painters of fifteenth century Florence may be divided into two groups. The first of these we can call the scientists, since they were interested primarily in increasing the painter's ability on the technical side of his art. In this they were eminently successful, and their contributions became the foundation of both contemporary and later work, but it must be admitted that their individual productions tend to be more important historically than aesthetically. So Paolo Uccello is responsible for working out the laws of perspective. He was so devoted to this study that his battle scenes seem deliberately filled with intricate problems of perspective by which to exhibit his skill. We find spears with spiral decorations lying aslant on the ground, horses greatly foreshortened, or hedges following the contours of fields into the distance. Though good from a decorative point of view, perhaps in spite of the accurate perspective, the individual figures are somewhat lifeless. Andrea del Castagno stands for stern truthfulness in the single figure. His physically strong figures are convincing because of their powerful draftsmanship. Their anatomy is accurate. Truculence and boldness stand out from such a figure as Pippo Spano in *Sant' Apollonia* in Florence. Baldovinetti's contribution was in experimentation with media, but the unfortunate result has been the destruction and disappearance of many of his works. Antonio Pollaiuolo, sculptor and painter, studied anatomy, and was empowered to render movement in a more convincing fashion than had been possible before. In his work, each muscle is given its just place. In his panel of *Hercules ana Antaeus*, a careful inspection of the legs of Hercules betrays their carrying the weight of two bodies All these discoveries were epitomized by Verrocchio who is better known as a sculptor, in which field he also summed up the attainment of the century.

The second type of Florentine painters may be termed sentimentalists for want of a better name. They were interested in narrative, in spiritual matters, in monumentality of effect rather than special scientific problems. As a result, their work, though more conservative than that of the scientists, is also more attractive. Fra Angelico has been deservedly popular from his day to the present. What could be more charming than his gaily colored panels with figures of unearthly purity? They seem not to have the virility of the scientific works or to have been exposed to the temptations of the world. Rather a sweet ingenuousness is the basis of their charm. But we should not form our opinion of this painter on the musical angels which decorate the frame of the *Madonna del Linaiuoli*, however attractive they may be. His more serious work was the frescoes in his own convent of San Marco in Florence, and in the Chapel of Nicholas V. at the Vatican in Rome. Here he shows himself to be fully abreast of the times. He is able to conceive figures solidly, naturally; to surround them with details studied from nature; to adopt the Renaissance forms of architecture which were being worked out at the same time. His devout nature shows itself more fervently in the *Crucifixion* in the chapter house of San Marco, or in the little pictures decorating the cells of the monks, than in the ecstatic joy of his gay panels. It is upon these frescoes that his fame must rest, and on them, it will be secure. The garrulous Benozzo Gozzoli in his decoration of the chapel of the Riccardi palace is always amusing, and provides a fine picture of the pageantry of Florentine life. He is the forerunner of the present day illustrators of children's books. In Fra Filippo Lippi, we find again a devout artist. Occasionally his types are tinged with melancholy, but most of his figures, who might readily be seen in the streets of Florence, are more amiable, introducing a youthful

element which gave charm to the whole century. His pupil, Sandro Botticelli, is a far greater artist. The greatest linearist of the Florentine school, he must take his place among the draftsmen of all time. The poetry of his type is lyric, wistful and delicate. It will repel many, since the type seems unnatural. At certain times, as in the *St. Augustine*, he could be powerfully realistic. In his mythological subjects, we find a treatment which, though highly personal, gives something of the fifteenth century conception of antiquity. The spirit is entirely different, and the interpretation quite inaccurate, but nevertheless for its own sake is a jewel without price. As a composer, too, Botticelli must rank with the best. Toward the end of his life, under the influence of Savonarolla, he eschewed mythological subjects and became profoundly religious. His pupil, Filippino Lippi, was strongly influenced by Masaccio. He completed the Brancacci Chapel, and it is high praise to say that he was not unequal to the task. At his best, he deserves a high rank, but toward the end of his life, he fell into extravagances of contortion and cheap sensationalism, which is beneath contempt. Domenico Ghirlandaio has a mind which is not unlike that of Benozzo Gozzoli. His taste for pageantry, for high social life, for display, is no less strong, but a sense of monumentality redeems his work. Though not great, he was a good painter, and we are fortunate to find in his work, paintings of Florence and portraits of most contemporary Florentines. He recorded accurately the Florentine life of his day.

Perhaps Verrocchio's greatest claim to fame as a painter is that the youthful Leonardo da Vinci studied in his shop. In his long life, Leonardo showed himself to be one of the most versatile geniuses the world has produced. He wrote and theorized on the art of painting, in addition to practising it. As a military engineer, civil engineer, musician, poet, astronomer, natural scientist, and mathematician, he was memorable. His point of view was surprisingly modern in its desire to test everything before accepting it. He experimented in aviation. He foresaw the correct theory of the planetary system, and of the transmission of sound and light by waves. His theory in painting he expressed in an emphasis on tactile values, composition having a geometric basis, and the beauty of shadow which tended to subordinate color to tone, and expressed in his figures "the emotions of the soul." The refectory of Santa Maria delle Grazie at Milan has been made famous by the *Last Supper* which adorns the wall. The character of each of the apostles has been studied with scholarly care. The moment chosen for the scene is the most dramatic possible, when Christ says "One of you shall betray me." The reactions of the apostles have been worked out with analytical care. Arranged symmetrically about Christ in four groups, they emphasize Him by gesture and glance. So, too, do all the subsidiary lines of the composition. His head is the center of the perspective lines of the ceiling, and is relieved against a light background. In such other works as the *Madonna with St. Anne*, we find Leonardo using the pyramid as a basis of design as indeed he does also in the *Christ of the Last Supper*. His subtlety may be seen in the *Mona Lisa*. His paintings were approached from a scientific or psychological standpoint. Leonardo was perhaps at his best when he was least conscious of his scientific ability. Leonardo stands just at the beginning of the sixteenth century with its maturity, as compared to the youthful character of the earlier period.

Michelangelo, the restless giant of the Renaissance, though less scientific than Leonardo, and of an irascible disposition, was also versatile. Although his color is not remarkable, his drawing is magnificent. Into the statuesque forms on the ceiling of the Sistine chapel in the Vatican, he impresses his epic poetry, compounded of the disgust and disappointment of a religious and patriotic soul living in a time of which he disapproved. Doing the work almost without assistance, Michelangelo in four years crippled himself and produced one of the wonders of the ages. Its decorative value composed of closely knit figures, nude youths of heroic build, serving as links between the biblical scenes above and the prophets and sibyls below, is a colossal achievement. He drew and painted the figure in any position with great force and accuracy. The big forms have something of the classic strength of their period, but the power within them is Michelangelo's own. His pagan love of physical beauty and his fervent Christianity struggled within him, thereby producing a sense of tension and of burdensome thought. Of the other Florentines of the first part of the sixteenth century, Andrea del Sarto's large, mature forms are typical. Known as the "perfect painter," his technique was splendid, putting his works on a uniformly high plane, but without the stroke of genius to raise them into the realm of masterpieces. For the rest, it is enough to mention by name Fra Bartolommeo, Bronzino (whose strong undercurrent of sensuality does not mar his magnificent portraiture), Pontormo, and Vasari, the great biographer to whom we are indebted for much gossip and more criticism of the artists of his day.

UMBRIAN PAINTING

While the Florentines were devoting themselves to scientific problems, the Umbrians were creating in the realm of space composition, which may be thought of as introducing the third dimension into composition, as expressed in their delicate Umbrian landscapes. The tendency to charm, to sweetness was fortunately tempered by a series of contacts with the more virile painters of Florence. Gentile da Fabriano is still primarily mediaeval, but even in him is to be found the delicacy, the interest in landscape of his school, and the experimental feeling of the Renaissance. Piero della Francesca is geographically Umbrian, but in point of view he properly belongs to the Florentine scientific group. Perspective, science, anatomy, and a scorn for anything soft or pretty make up the foundation of his style on which he builds starkly impressive pictures. The figures are unemotional but the effect of the whole attains high tragedy at times. Melozzo da Forli developed still further the knowledge of perspective and foreshortening which he had learned from his master, Piero della Francesca, as we

may see in his musical angels. Luca Signorelli, another pupil of Piero, seized upon the nude as a vehicle for the expression of movement, and his knowledge of anatomy displayed in the chapel of S. Brixio at Orvieto was a direct forerunner of Michelangelo's work in the Sistine Chapel. Pinturricchio dealt with the cool and spacious landscapes of Umbria, giving his figures the sweet and lovely character which is associated with that school. Perugino emphasizes space composition in his panel of the *Delivery of the Keys to St. Peter* in the Sistine Chapel. Here we find the figures arranged in three definite planes which gives a sense of order and monumentality to the whole. Although his figures are sometimes tainted with sentimentality, their simplicity endows them with dignity and in spite of his atheism, strong religious feeling is maintained.

The culmination of the school comes in Raphael, one of the most genial temperaments who has ever lived. Raphael's contact with Florence saved his art from the excessive softness toward which Umbria tended. A good draftsman and generally, though not always, a good colorist, Raphael's Madonnas have long stood high in popular favor for that charming combination of Florentine strength and Umbrian sensibility which expressed itself in simplicity. He has the distinction of fixing the type of the Madonna just as Phidias established once and for all the character of Zeus and Athena. But Raphael's most solid claim to fame lies in his composition, in which the just and careful relation of the parts is not too obvious, and in which his sense of bigness, of breadth, and classic quality is most clearly to be seen. His frescoes in the Camera della Segnatura in the Vatican must always rank with the world's masterpieces.

NORTH ITALIAN PAINTING

The various schools of North Italy, on the whole, tend to betray strong influence from Florence or Venice. Though Milan, Ferrara, Bergamo, Verona, and a host of other cities could boast individual schools, it is nevertheless proper to group them all under a single head. The University of Padua radiated knowledge of classic antiquity through the vicinity, and even to more distant points. This group of schools, in addition to a host of less important though still interesting painters—Vittore Pisanello, Cosimo Tura, Cossa, Costa, Francia, and Luini, to cite but a few—produced two figures of great genius in Andrea Mantegna and Correggio. The former of these has the accurate drawing and style inculcated by his master, Squarcione, who enforced careful drawing of the antique with a hard quality as though his figures were carved in stone. Nevertheless, with the same means, he attains a feeling for the third dimension hardly paralleled in art. His skill in foreshortening is the equal of Melozzo or Uccello. The archaeologist in him was always killing the artist. In other words, his Renaissance interest in the past became so archaeological that his works tended to be dryly imitative, though at his best he kept this quality well subordinated.

Correggio towered over the sixteenth century in the North of Italy as Mantegna dominated the fifteenth. One looks in vain for Christian feeling even in his well known altarpieces. Rather is his spirit purely pagan. By means of a subtle softening of the outlines by a gradation of tones and color, he attains atmospheric quality expressing femininity. Essentially a baroque painter in many respects, he does not shun the sensual, but rather expresses it with the joy of life, a veiled vitality, and also with the technical facility which marked that much maligned period. The floating figures, those perched precariously on painted cornices or clinging to fleecy clouds astonish us by their baroque character. It is not to be supposed that this man could be at his best in a religious subject, nor did he reach his pinnacle in fresco. But in pagan themes, such as the series of the Amours of Jupiter, he has seldom been surpassed.

VENETIAN PAINTING

Venice, with its contacts in the Orient, inclined to luxury and splendid color. Inasmuch as the school developed late, we find the pagan character strongly marked with its concomitant sensuosity. Add to this a tendency to think in terms of paint rather than drawing, and an oil technique where the earlier Italian schools had used fresco or tempera, and one has by far the most modern painting of the peninsula. The fifteenth century shows, to be sure, more Christian feeling than the sixteenth, but the other qualities may be discerned in the work of Jacopo and Gentile Bellini or in the Vivarini family. Antonello da Messina brings to Venice one of the strongest contacts with the realism and the oil technique of Flanders. Giovanni Bellini sums up this century of Venetian painting as did Verrocchio that of Italian sculpture. At first strongly influenced by Mantegna, he soon passes on to adopt each successive innovation as it was introduced, and to make it an integral part of his style. He is perhaps best known for his many half length Madonnas. His delightful color, his quiet religious types, and a gentle but not effeminate spirit entitle him to the highest rank among fifteenth century Venetians.

Of the four great geniuses in the Venetian High Renaissance, Giorgione was first in date. His paintings are lyric like those of Botticelli, but the religious feeling is displaced by a pastoral note. The landscape background takes a more important position; the figures correspondingly less. Technically, the work emphasizes the painter's qualities more than the draftsman's and by the softening of the outlines, atmospheric effects are obtained. His figures meditate quietly, preferring the world of dreams to that of reality.

During his long life, Titian tried a great variety of subjects, and an almost equal number of methods. He was successful in all. At first he was strongly influenced by Giorgione, whom he probably met during his student days under Giovanni Bellini, but his robust and lucid mentality was quite foreign to dreams. Without any lack of imagination, he is practical where Giorgione was dreamy. In pagan subjects, he may equal Correggio. Titian's paintings are clothed in warm golden light. His prolonged study of each picture, while los-

ing nothing of the freshness, resulted in perfect completion. His truth to nature may be seen in the *Venus* which lacks Giorgione's poetry, but which for pure painting is superb. His religious painting is honest and robust as in the *Assumption of the Virgin* in the Academy at Venice. In portraiture the character is magnificently handled as may be seen in the group of Paul III. and his nephews. Even among Venetians, Titian's color is remarkable. From the pearly flesh tone to the richest reds and greens no sign of timidity is to be found nor a trace of inharmonious work. During his later life, he became interested in cool, silvery tones, and emphasized them rather than warm color.

Tintoretto avowed a desire to combine the drawing of Michelangelo and the color of Titian. To a large extent, he attained this exalted aim. Highly temperamental, and at times unrealistic, he incurred his master, Titian's, disfavor and was expelled from the workshop. But perhaps his most striking success is in the field of composition. The subject is frequently, though not always, placed back of the immediate foreground, as though each spectator were at some distance from the action. In spite of this, so remarkable is the relation of the parts, and so clever the devices which serve to accentuate the action, that, however small the amount of the canvas it may occupy, it first attracts the attention of the spectator. Of such a nature are many of the frescoes in the Scuola di San Rocco. Tintoretto could also compose beautifully in a single plane, as may be seen in the supremely beautiful decorations of the Antecollegio in the Ducal Palace at Venice.

The least important of the four great Venetian painters of this century is Paolo Veronese who, as his name implies, is a native of the town of Verona. Less thoughtful than any of the other three, the splendid pageantry of Venice appealed to him, and he became its recorder. Without any religious feeling, his huge canvases are composed with absolute clarity; hosts of figures are placed in an elaborate architectural setting; the subject is almost forgotten, but a splendid decorative effect is obtained in spite of that. The *Marriage at Cana* in the Louvre is typical.

LATE ITALIAN PAINTING

After the period of the High Renaissance, painting underwent certain changes like sculpture and architecture. At first, no men of genius were found who could carry on the work of a Michelangelo and a Raphael, a Leonardo or a Titian. Many attempted to do so, but on the whole, succeeded only in burlesquing the previous men. So Giulio Romano and Daniele da Volterra repeated the powerful forms of Michelangelo without his force, and used the delicate figures of Raphael to express religious sentimentality. The school of the Caracci brothers at Bologna attempted to combine the most prominent virtues of the greatest men preceding them,—the drawing of Michelangelo and his power, the composition of Raphael, the color of Titian, the sweetness of Correggio and so on. If the combination is possible at all, the task required greater genius than these eclectics could command, but they were successful in passing on the torch of classic quality to Poussin and through him to the modern academies. In decorative compositions, they show the influence of Michelangelo. Their pupils, like Guido Reni and Domenichino, show the ecstatic religious feeling that we fail to understand today, and so, quite unjustly, call insincere. Again the same vigor approaching vulgarity, that is found also in the architecture and sculpture of the time, may be seen in this baroque painting. Another type of baroque painting threw over the ideals of the classic school, turning from the grand manner to the romantic and naturalist point of view, which found its expression in figures from humble life. Caravaggio, the leader of this group, abandoned diffused lighting for the concentrated illumination of the studio with its intense high lights and black shadows. In landscape such a man as Salvator Rosa preferred the wild Abruzzi region for his inspiration. This natural and romantic point of view passed to Ribera, and through Velasquez influenced the impressionistic artists of the last century. Add to these two currents, the portraiture of Titian as the foundation of the portrait style of Van Dyck, and later of the English school, and the strong color of the Venetian school through the same channels, and one may justly claim for the Italians an inestimable part in the foundation of modern painting.

SPANISH PAINTING

Although the Iberian peninsula underwent periods of strong influence from outside sources, its artistic production has almost never been without the Spanish flavor. The Spaniards were by nature perhaps the most aristocratic of peoples. Their figures bear expressions of haughty distinction, a consciousness of superiority which they take as a matter of course. They are, moreover, highly religious or perhaps mystic, extravagantly fervid, intensely ascetic. It is no accident that the militant supporter of the Catholic Reaction was Spain, or that the Inquisition was identified with Spain, or that Loyola, a Spaniard, should have founded the Society of Jesus.

Upon the earlier work of the school, we need not dwell. Fine though the Spanish primitives were, the glory of the seventeenth century completely eclipsed them. Men like Dalmau or Borrassà were pretty strongly influenced by the Flemish School, and indeed a multitude of paintings were imported from the Low Countries. During the Renaissance, the country fell strongly under Italian influence. El Greco, perhaps the first great Spanish painter, was a Cretan by birth, but trained in Venice where his style was markedly influenced by Tintoretto. With perfect deliberation, he chose unnaturalistic figures, the better to embody his mystic and supernatural ideas. He displays the somber distinction, the fanaticism of Spain, but with the Spaniard's love of contrast. So we find him ascetic to the limit, and at the same time alive to feminine beauty of the aristocratic Castilian type. His masterpiece, the *Burial of Count Orgaz*, in the remarkable row of portraits which form the picture's lower half, shows that he can be true to nature. In the upper,

the elongation of the forms are created in order to suggest the miraculous. El Greco's color scheme consists of vivid whites melting into reds and blues. His intensified spiritualizations through color and the attenuated forms have been of inestimable influence on the art of today.

Ribera, trained in the sphere of Caravaggio's influence, adopted the naturalism and black shadows, and combined them with his Spanish intensity. Though at times he may attain greatness, those times are scarce, and he is generally disagreeable.

Velasquez is admittedly the genius of the school. As a painter, he is as nearly perfect as any before or since. His greatness lies in his ability to blend artistic qualities by his subtle technique. No one was ever a greater manipulator of the brush. He is able to suggest all requisite detail, to indicate texture and form with perfect surety. His color, though generally quiet and harmonious, is in excellent taste. Whatever the eye can behold, Velasquez can paint. This influenced the later impressionistic movement. His defect is a lack of imaginative quality which shows itself in his religious paintings. Interior scenes display his phenomenal sense of scale of composition, and of aerial perspective. One feels not only differences in the atmosphere between the foreground and distance of the out of doors, but even within the short dimensions of a room. *Las Meniñas,* and *Las Hilanderas* may illustrate this. His composition is of the finest and yet is never obvious nor academic. Although a single line may not be disturbed, the result seems accidental and effortless. The disposition of the spears in the *Surrender of Breda* is as cleverly varied as one could wish. Nor is he less fine in portraiture. The members of the gloomy Spanish court of Philip IV, probably the most aristocratic in Europe, bear themselves with a dignity which needs no gaudy colors to emphasize its distinction. Therefore, the figures are clothed in blacks and greys with a minimum of display.

Murillo's fame rests on his ability to envelop his figures in soft color. Although he is occasionally inspired to paint the urchins of his native Seville in a naturalistic vein, his more typcal Madonnas and Immaculate Conceptions are distressingly weak in draftsmanship, and the sickly sentimentality soon becomes tiresome.

The eighteenth century produced Goya, an intensely dramatic satirist who can never be condemned for lacking imagination. His court portraits are biting with barely concealed ridicule. Technically, he is far inferior to Velasquez. His color is often hot, but expresses the brilliant Spanish sunlight. He sometimes betrays a note of provinciality by the stiffness of his figures or other defects. Nevertheless, his weird imagination and great technical skill found their fullest expression in his aquatints, many of which are wonderfully horrible and sinister to an extreme. Toward the end of his life, he began to suppress outline in favor of masses, stating his belief in words which might be expected from a nineteenth century Romantic. His influence on that group has been marked.

GERMAN SCHOOL

Generally the Germans employed graphic rather than pictorial means for representation Their greatest period in the Renaissance continued to use a medieval technique. To the results, only the hardest adjectives may be applied. Prettiness, grace, elegance are not to be found. On the other hand, strength and originality are abundantly present. An honest realism gives a note of sincerity, but not infrequently of provinciality. Dürer's power and his thoughtful art won him high praise among the Italians. Solidity of figures and grave reverence find their way into most of his paintings, but he is perhaps even more imaginative in the wealth of engravings coming from his hand. Cranach, the founder of the Saxon School, is a weaker figure than Dürer in every way. He is more of a rustic, but when he attempts subjects from classic mythology, the results are more amusing than satisfactory. Better are the simple portraits in which the sitter is recorded faithfully with great beauty of drawing and color. Holbein has less religious conviction than Dürer. He is, indeed, a cosmopolitan character of the type of Erasmus. He lacks, too, certain traces of Gothic which may be discerned in Dürer's work. Consequently, his religious paintings are quite inferior, but his fame and interest for us rest on the incomparable portraits we have from his hand. These are finished with minute care after the manner handed down by the Van Eycks in Flanders. Extremely sensitive in drawing and color, with the surface polished till it shines like lacquer, the element which raises them to the highest pinnacle of portraiture is the study of character. His exquisite sense of balance in composition is well nigh perfect as in the portrait of *Maria Christina, Princess of Denmark,* and *Duchess of Milan* in the National Gallery of London. With a quite impersonal touch he has made his age live again, and we feel a closer knowledge of Erasmus or Henry VIII because he painted them.

FLEMISH SCHOOL

To discuss the Flemish School, one must begin in the Middle Ages. By far the most important painting north of the Alps before 1500 came from Flanders whose influence spread far and wide and which was indeed the only rival of Italy. Totally different from Italy in almost every way, the divergences may be explained by the patronage to a large extent. The middle class burghers of the low countries were no less religious than the Italians, but their ideal was quite different. The figures of the Virgin and the Child are hardly more naturalistic than the Italian, but the subsidiary figures show an interest in realism which had not been attained so early south of the Alps. Physical ugliness, even deformities, seem to be welcomed to enable the artist to show his ability. A great deal of detail is added, giving a start to genre painting, and creating an interest in landscape. The incidental objects which find their way into pictures have perhaps never received more loving care. The technique was developed to suit this demand. Oils were used, and brush

work was so fine that the strokes cannot be detected by the naked eye. The whole is covered by a series of glazes which keep the surface highly polished. The colors are intense and the figures modelled carefully by light and shade.

The founders of the school were the brothers Van Eyck, of whom Hubert seems to have been the older. Their combined masterpiece, a large polyptych representing the *Adoration of the Lamb*, holds a similar place to the Arena Chapel or Duccio's *Majestas*. The panel representing Christ comes as a shock to most people whose conception of Him is based on Italian models. But in spite of the black beard, we find no less dignity, no less divine character than in the more familiar treatments of the subject. Such a panel as the *Singing Angels* illustrates the realism of the school in its treatment of the different expressions of the singers. Or again, the panels representing *Adam and Eve* have the same realism accompanied by a physical ugliness which was not to be found in the previous example. In the lower half a series of panels show various classes of men approaching to worship the Lamb. Although a direct descendant of the older Paradise pictures of the Cologne school, the treatment of landscape shows an observation of nature and a desire to reproduce it, which had not been manifest in the earlier middle ages. To disentangle the respective share of the work done by the two brothers is a point too controversial to be discussed, but their combined work will stand forever as a landmark in the history of art.

John, the younger of the two brothers, has left a number of other works creating new compositions and details, which were later to become part of the vocabulary of the school. So the arrangement of the *Madonna of the Chancellor Rolin* was repeated frequently from that time on. Or in the portrait of Jan Arnolfini and his wife, we find some of the genre devices again passing into the common knowledge of the school. John Van Eyck was an excellent portraitist, recording the features of a sitter to the last detail, but forcing them to embody or betray the personality behind. He appealed to the mind rather than to the emotions by the dignity and the incisive characterizations of the sitter.

Great as the Van Eycks were, their influence even on Flemish art proper was less marked than that of Roger Van der Weyden, perhaps because they were court painters with but few pupils. Van der Weyden was far less impersonal than the Van Eycks, but if he lacks some of the incisive characterization, he makes up for this by greater emotional spirit. Perhaps also an element of grace, almost of elegance discernible in his style can be traced to his birthplace close to the French border. Certainly these qualities go far to make up his *Deposition* in the Escorial near Madrid with its mourning figures, its sense of restrained tragedy, and the delicacy of some of its figures. His tender Madonnas have more of softness than one would find in a Van Eyck. Fortunately for us quite a few of the latter have been preserved.

Dirk Bouts, though really Dutch, not Flemish, may have preferred to spend his own time on the landscape backgrounds which formed the setting for his works wherever possible. If this is indeed true, he becomes the first man to devote himself primarily to landscape. His figures are inclined to be awkward, betraying a provinciality totally foreign to either Van der Weyden or Van Eyck. Hugo Van der Goes was the temperamental type of painter. He preferred large canvases, in contrast to the taste of most Flemish artists for small ones, and handled them in a big way. They do not look like enlarged miniatures as do so many of the other works of this school. The huge panel done for Tommaso Portinari and frequently called after his name, represents the *Adoration of the Shepherds*. The composition which, though not obvious, is carefully worked out, has been conceived for its large scale and could not suitably be reduced to miniature size. Its monumentality made it peculiarly fortunate that it should be sent to Italy where it stimulated Italian painting at just the right time. Ghirlandaio shows its influence strongly, and its depth of color and shadow soon affected Italian painting. Nevertheless this painting was not the only means of disseminating knowledge of Flemish art in Italy. Justus Van Ghent, having been born and trained in Flanders, moved to Italy and there practised his trade with some success. Though not one of the greatest painters of the school, his historical importance must not be underestimated for his work at the court of Urbino, that center of Italian humanism, inevitably gave new ideas and methods to many native painters.

Hans Memling, though hardly in the category with the Van Eycks, must be mentioned briefly. His shrine of *St. Ursula* is a veritable jewel casket. His work is just as pretty and attractive as it can be with its charming air of make believe in the tragic scenes of the legend. While not powerful, his better portraits have honesty and sincerity which can only be obtained by sympathy with the sitter. Of the innumerable other painters of the time, mention can be made of only a few. Patinir chose to represent landscapes in which the religious subject he had to retain becomes the merest incident in the whole. The landscape, delightful with blues and greens, is the real theme which interested the artist and holds our attention. Brueghel gives us landscapes and also excerpts from peasant life, for which he had a marked taste, foreshadowing some of the later work in the Dutch School. The eccentricity of Bosch reveals his disordered mind but is hardly to be called defective from the standpoint of painting.

The Renaissance came in slowly to the Low Countries, and its advent was not wholly successful at first. Van Orley, to be sure, went to Italy and absorbed enough of the southern manner to seem reasonably at home, but the classicism of a Quentin Metsys is almost confined to insignificant details. Although Mabuse has much more correct notions of the Renaissance, he misunderstood its spirit. His mythological scenes reach the limit of the ri-

diculous when compared with so great an Italian as Correggio. Even his other themes are not very inspiring although the fleshiness of the figures looks forward a century to Rubens. Finally Antonis Mor stands as a transition to the seventeenth century with his stern characterizations of such famous figures as Queen Mary of England and the Duke of Alva.

Peter Paul Rubens is the glory of seventeenth century Flemish Art. The southern half of the Low Countries had remained Catholic, and Rubens was the baroque painter of the Catholic Reformation north of the Alps. The virtues of this movement are to be found in him and also its defects. He is primarily a decorator, thinking out his canvases in the most effective manner. His small works seem to be sketches for larger compositions. This means that a geometric basis for the painting may generally be found beneath the exuberant welter of arms and legs. Vigor is never lacking to him whether he attempts a Deposition or a Bacchanalian Revel. The actors move violently but are hearty and robust. Rubens got his rich color from the Venetians, but the sensuality verging on vulgarity is pure baroque. His heroes are beefy. The same types translated into feminine figures are so foreign to our own ideas that it is difficult for us to realize that this was the ideal of the time. While his *Graces* seem to us far too abundant to be graceful, another generation may well discover their beauty.

Jordaens took up the exuberant vitality of Rubens, but having less contact with Italy, he tended to be more coarse. The warmer color scheme he uses goes very well with the boisterous good humor expressed in many of his works, though he can be both restrained and earnest in religious subjects. Van Dyck, who was actually the pupil of Rubens, had been to Italy. His technical ability is not inferior to his master, but in almost every other way he is a complete contrast. This becomes painfully evident in a Bacchanalian scene or even to some extent in his religious work. The conviction of the latter is missing, while all the vulgar exuberance has been removed from the former, leaving rather a dead result. However, he is redeemed by his portraits. He probably flattered his sitters, at least his royal sitters of the Court of Charles I. The effeminate but accurate drawing, the delicate gradations of light and shade, the splendid color derived from Titian, the superb texture of silks and satins create a beautiful though not a powerful portrait. Nevertheless, these qualities combine with a most refined taste to give that sparkling brilliance and aristocratic cast which was passed on to the later English school. Finally, we may just mention Teniers, the Flemish counterpart of the Dutch "little masters," and a direct descendant of the genre painting of Brueghel. His tavern or village scenes may sometimes retain the religious subject, but if so, this is a mere incident. It is the howling peasants, the village festival, the genre subject in short, which is the real theme of the painting.

DUTCH SCHOOL

The basic difference between Flemish and Dutch painting is to be sought in the history of the two countries. The southern portion mained Catholic under the rule of Spain. northern region, Holland, turned Protest and was successful in establishing its i pendence of the great Catholic power. The sult is the suppression of religious art. T meant that domestic genre should be couraged. In turn the taste of the burg patrons for accurate work coincided with subject in producing great technical skill. S life, textures, effects of light and shade h never been more accurately rendered. Such aim does not lead to thoughtful painting, rather to the idea of art for art's sake—a thing well done is good. It is, nevertheles filled with vigor, often chooses subjects fr humble life, and holds a high place as the mo prominent domestic art.

In earlier times, Dutch painting was close intertwined with Flemish, and hardly di tinguished from it before the seventeenth ce tury. Hals starts us in the middle of thing Like his associates in the school, his techniqu was superb, but unlike them, he attains a broa effect suggesting rather than defining; indica ing rather than drawing. His jovial dispos tion left its trace in the joyful aspect o his art. A glossary of the smile could be con piled from his works. In group portraits too, he was able to prevent an obviously pose appearance only too often found in suc works. His portraits belong in the very firs rank.

Rembrandt stands out from the rest of th school as Rubens does in the Flemish, or Ve lasquez in the Spanish. He transcends the school in reality, and so is not quite typical o it. For example, he is more thoughtful and imaginative. He is able to conceive on a higher plane than any other Dutchman. Moreover, he is rather less vulgar and more distinguished. His greatest contribution is his use of light. Here he is indirectly influenced by Caravaggio. Although his shadows are dark and the effect suggestive of studio lighting at times, he does not use black, and so avoids the unpleasantly dirty color of the Italian. The black is replaced by a golden light which softens and unites even the shadows. The darkest portions seem illuminated by reflected light. Had he not become so interested in light, he would probably have been among the world's greatest colorists. His delight in illumination, his success in representing textures and his superb technical skill led him to fame as an etcher. In the Dutch school he has no equal in the interpretation and treatment of biblical subjects and his etchings appealed to the poorer classes as well as to the rich.

More typical of Dutch art are the so-called "little masters" whose chosen field was genre painting, and who between them covered the social scale. Ostade is the lowest in the scale, painting with a coarse technique peasants in a tavern, brawling and dicing. Steen strikes a little higher, reaching the lower middle class. He is perfectly honest and straightforward with almost as jovial a temper as Hals, and with a willingness to take ideas wherever he can from the other "little masters." Terborch represents

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FAMOUS PAINTINGS—I

1 Virgin and Infant Jesus, by Murillo (Florence, Italy). 2 Sistine Madonna, by Rafael (Dresden Gallery). 3 Madonna and Child, by Andrea del Sarto (Uffizi Palace Gallery, Florence, Italy). 4 The Adoring Virgin, by Sassoferrato (Uffizi Palace Gallery, Florence, Italy). 5 Madonna and Child, by Rafael (Louvre, Paris).

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FAMOUS PAINTINGS—II

1 Mrs. Siddons as "The Tragic Muse," by Reynolds. 2 The Forge of Vulcan, by Velasquez. 3 Lady Hamilton as "Daphne," by Romney. 4 Portrait of a Man, by Franz Hals. 5 The Light of the World, by Holman Hunt. 6 A Woman Reading, by Peter de Hoeck. 7 The Descent from the Cross, by Rubens. 8 Blue Boy, by Gainsborough. 9 Mona Lisa, by Leonardo da Vinci.

the aristocracy of Holland—that is, the well-to-do merchant class. These he paints at their music lessons or their social meetings, dressed in elegant silks, satins, and velvets whose textures delight us only a little less than they pleased the original patrons. The interior of Dutch houses was the chosen métier of de Hoogh, and in that small field, he is remarkably fine. The checkered pavements barred by alternate patches of light and shadow, the reflections, the maps on the walls, all are familiar to us, thanks to his paintings. Generally classed as one of the "little masters," but far superior to the rest, is Jan Vermeer of Delft. Perhaps no one ever carried the study of value and intensity relations quite so far. Each object retains its color as it blends with shadow. This leads in the direction of extreme realism, and had he nothing else to offer, he would hardly deserve as high a place. It is a sense of beauty far superior to the other men of this group that gives him his high position. Most of his figures are young women whom he treats with a reverence quite foreign to the spirit of the day. Ordinarily, women were regarded as conveniences, but Vermeer's point of view is more delicate and flattering. Added to this, his fine sense of composition by a series of rectangles, carefully balanced, and varied by just enough curved or oblique lines displayed a skill the other "little masters" never attained.

The last type of Dutch Art includes the various parts of landscape painting and its allied fields. This kind of subject was perhaps for the first time cultivated solely for its own sake. We find smiling views of Holland, dotted with windmills and striped with canals. Ruysdael touches on the more romantic, wilder forms of nature which he had seen in his trip to Scandinavia. Hobbema gives the more formal type, his *Middleharnais Avenue* having quite exact symmetry. With so much of their interest lying on the water, it was but natural that the Dutch should not forget views of the sea. Such a man as Willem van de Velde makes a specialty of this work. Moreover, landscapes with cattle were splendidly painted by Cuyp. Still life of flowers, fruit, game and so forth gave the painters an opportunity to display their technique. Many of these Dutch still lifes are among the finest in execution though not the most interesting of paintings.

FRENCH SCHOOL

French art is peculiar in having no single man to correspond with Rubens or Rembrandt. Genius is not at all lacking, but no one or two figures seem to dominate the school. Its development follows the same lines that may be seen in sculpture or architecture. So in the sixteenth century, the painting is largely medieval. It is in part an offshoot of the Flemish School, but the native elements are easily distinguishable. Indeed, French art has always a persistent national flavor. This is evident in a tendency to soften the extreme realism of the north, which had frequently led to ugly types being employed. The French sense of beauty could not permit this. A sprightliness and gaiety are also apparent. The portraiture of the Clouet brothers is distinctly court painting with a delicacy of drawing hardly to be surpassed. While not lacking in strong characterization, the delicacy, even the politeness, is never lost.

Contemporary, and slightly later than the subtle portraiture of the Clouets with its semi-Flemish character, Italian influence begins to creep in. This branch centered at Fontainbleau where a number of second rate Italians like Primaticcio and Il Rosso settled and established a decorative school of more merit than might have been expected. In spite of coming from the Michelangelesque traditions, the French influence helped them to leave works of some decorative merit, though inclined to be heavy in effect.

In the seventeenth century, two most celebrated French artists stood aside from the general tendency. Poussin spent much of his life in Italy where he was admired and felt at home. There he evolved his typical style, elaborate classic allegories or mythologies, shepherds in Arcadian landscapes and so on. The figures might have been inspired by Roman bas-reliefs. In proportions, they are correct; in feeling, cold; in subject, classic; but, as a whole, the effect is epic. His classical studies led him to subordinate color to form. His tones are frequently clashing, but the construction and solidity of the fabric of the painting is impeccable. Claude Lorrain also spent most of his life in Italy and became there a master of landscape. In accordance with his time, the scene is not realistic but classical, and is carefully arranged. Each fallen branch has been removed. The basis of the color is brown rather than green; brown shadows, brownish leaves, brown trunks and so on. Nevertheless, he is not without a romantic touch. For the first time the sun itself is introduced. Unreal the paintings may be, but they are filled with poetic sentiment for all that. Moreover, in his quick sketches, Claude shows himself a consummate draftsman. Unlabored and rapid is the technique, and the works are brimming over with suggestive beauty.

Official painting of the time seems less satisfactory to us today. The centralization of the government brought about regulation in the arts. Artists were expected to devote themselves to the glory of Louis XIV and to emphasize the dignity of the state. The king's deputy in painting was Le Brun who knew his duty perfectly. Enough of a courtier to get on well with Louis XIV, he worked huge canvases to decorate Versailles or the Louvre. His pompous style is not without good drawing, but the colors seem unpleasant to us. Sooty browns cover the bulk of the canvas, but these were admired at the time as testified by Molière. It is possible that the pigments have been transformed by time. His influence cannot be exaggerated as the founder of the Academy and also the French Academy of Rome, becoming indeed, the source of academic painting.

In portraiture, the seventeenth century starts with Philippe de Champaigne, whose northern blood, tempered by France, produced a direct and simple portrait style, sober with subdued colors, but dignified. Under Louis XIV, por-

traiture became pompous with the rest of the arts. It was not badly composed, but tended to flatter its subjects by rich robes and little character. Mignard, for example, the fashionable and aristocratic portrait painter, has become synonymous with over-delicate faces, tiresome insincerity, and pedantic handling. Largilliere and Rigaud belong to the same group.

The classicism, the heaviness, and the repression of the reign of Louis XIV provoked a reaction on the old monarch's death. This came with the greater vigor because Louis XIV lived so long. On his death, France broke into an orgy of gaiety. The Italian comedy which had been expelled, returned to renewed popularity. After the stilted life of the court of Louis XIV, society reverted to naturalism, at least in theory. The outdoor life was admired; picnics were frequent, and shepherds and shepherdesses were generally supposed to lead the ideal life. Actually the return to rural simplicity was hardly less affected than its predecessor. Courtiers could only play at being rustic, and their bucolic fetes were as sophisticated as the court functions of the preceding reign. Love, or at least flirtations, became the rule, mingling with the affected simplicity.

The interpreter of this movement par excellence, was Watteau. As painter of the Fetes Galantes, he gives us courtly parties held in the open. At such times, gaiety and frivolity were the rule. A playful, frolicsome spirit prevails with a touch of the risqué. One sees fine ladies playing at love. The whole is thoroughly affected, but none the less charming. As a draftsman, Watteau stands in the first rank. He knows instinctively where to place his emphasis, and his touch is as delicate as possible. Moreover, in contrast to the murky browns of Le Brun, Watteau's color is clear as crystal. For decorative art, we may mention Boucher whose panels are adapted to the ladies boudoirs where they were to be placed. Pinks and light blues predominate giving an effeminate note to the whole. The undulating lines, the reverse curves form the essence of the rococo style. The composition is good, and from a decorative point of view, the whole work is most successful. Sensuality there is, but never vulgarity. One may point out that such delicate sensuality is infinitely more appealing than the type we find in Ruben's and is, perhaps for that reason, more seductive. Fragonard lived beyond his time, and came to be looked down upon as a corrupter of public morals, but was a first rate painter for all that. His color is spread lightly with a broad brush stroke, and a swift, sure handling. He speaks the language of the flesh as do Correggio and Goya. Frequently Fragonard is indelicate and naughty, but never coarse. Painting of this sort may not have lofty aims, but it is more attractive to the taste of the present day than the more monumental art which preceded it.

Nevertheless, its very inconsequential character again provoked a revolt just as had the extravagant delicacy of rococo architecture. Such a man as Greuze condemns Fragonard and Boucher but is vastly inferior to either in every respect. He indulges in long morals in paint of the tritest, and least inspired variety. His sentiment in such works does not ring true any more than does the propriety of his pretty girls whose features are badly drawn and whose clothes frequently are so disarranged as to reveal their charms. The figure of Chardin stands apart from the current of the eighteenth century work. His quiet domestic scenes are akin to the Dutch genre painters. Without dramatic force, he renders still life as could none of his contemporaries. He painted domestic scenes with a purity and simplicity never equalled for refinement.

ENGLISH PAINTING

Painting in England before the eighteenth century is largely due to imported foreigners. Holbein, Mor, Rubens, and particularly Van Dyck were active there, and it is probably due to their influence that one finds the splendid aristocratic school of portrait painting being developed. Through Van Dyck, the fine color of the Venetians entered England and probably through him also the magnificent treatment of rich costumes. Along with his interest in portraiture, runs a strain akin in its aims to literature. Narrative painting, dealing with the clear and vivid rendering of a story, may be moral, sentimental, or satirical. The third branch of English art is landscape, but this field is barely started before the nineteenth century.

Hogarth is a good portraitist, doing solid straightforward work with little glamor, and few striking, sparkling points. His fame rests rather on the bitter series of paintings he produced which satirize the times. A biting satirist of contemporary life, one wonders how conditions could have been allowed to remain unchanged after *Marriage à la Mode*, or the *Rake's Progress*. His treatment is unlike that of Greuze in that where the latter is sentimental, Hogarth is caustic. His strength lies in his power of ridicule. Moreover, Hogarth's drawing, his composition, his technique, were of the very best.

Landscape, as we have said, barely started in the eighteenth century. Wilson, though not successful as a portraitist, turned to landscape, studying in Italy and being strongly influenced by Lorrain. His best Italian landscapes reach the plane of real distinction, but still more important was the vogue of water color fostered by keen amateur interest. At first, drawings were tinted very simply, but the palette was slowly expanded successfully. The subjects were naturally landscapes, perhaps enlivened by a ruin. The school of Norwich continued the movement. Of the many artists practising this landscape painting, Old Chrome is perhaps the best known, but Cotman, Girtin, and Prout continue the field in the nineteenth century.

Portraiture, however, remained the English strong point. Lely, though himself a Hollander, continues the traditions of Van Dyck as regards English art, but the great names were to come at the close of the eighteenth century. Reynolds shows us the distinguished work of the school. His subjects are aristocratic to the last degree, and keenly conscious of their ancestry. The technique, color, and placing on the canvas

suit the sitters. Although Reynolds is perhaps the most thoughtful of the school, even he does not burden our wits, but surely delights our eyes. Gainsborough is even more magnificent. Probably all these men flattered their sitters, but that innate consciousness of social superiority belongs to the subjects. For sheer beauty of color and handling, derived from the great Venetian painters of the Renaissance, one must look far to surpass such work. A galaxy of other portraitists of the same time such as Raeburn, Romney, and Lawrence were only less celebrated than the two mentioned.

NINETEENTH CENTURY EUROPEAN PAINTING

France has been the leader of Europe in artistic matters since the reign of Louis XIV. That position of eminence has been maintained to the present day, and since that is so, a knowledge of French painting is essential to the understanding of art elsewhere in Europe at this time. Two main threads may be discerned in the complex historical web of the time. The first to appear is the academic movement, starting with the classical revival, but gradually changing as one innovation after another was proved practicable by the opponents of the academy. This branch, backed by its official standing with the government, was the reactionary force opposing progress. The various revolts of the progressive factions may be grouped loosely under the term "romanticism." Strictly speaking, the Romantic revival in painting corresponds to that in architecture, and was at first primarily a change of subject, a desire to paint other than classic themes. Such a movement was stimulated by the stirring historic events of the period. Men's eyes were opened to the color of the Mediterranean lands by Napoleon's eastern campaign of 1798, the revolt of Greece, 1821–29, and the French acquisition of North Africa beginning about 1830, to mention only a few events. But the revolt in subject matter soon extended to include protests against affectation and lack of naturalism, making itself felt in the Barbizon school or in plein-airisme. This in turn led to discussion of technique, and the formulations of the theories of impressionism.

David is the unquestioned leader of the classic movement. The general lines of its theories had been propounded as far back as the reign of Louis XIV. Among its most important doctrines is the choice of subject matter which, they believed, must be noble, elevating to the mind and spirit. As generally interpreted, this meant subjects taken from classic history or mythology. Art must be public in character and avoid all things merely intimate or trivial. Dutch genre painting or the work of the Fetes Galantes were unsuited to representation. Most important was the idea that only "belle nature," the approved and codified aspects of nature could be satisfactory. The best instructors in what "belle nature" was, were the reliefs, statues, and so on of antiquity. Consequently drawing with a suppression of color became the keynote. It is hardly necessary to point out the fallacies in this doctrine, that color is essential to painting or that imitation of antiquity could hardly lead to originality or progress. Nevertheless, the dogma reigned supreme during the French Revolution and Empire. Men felt themselves inspired by the Romans of the Republic and David was the ideal man for his time. His works are well drawn, and carefully composed in an academic fashion, but with insignificant color, unconvincing poses, no atmosphere, and no warmth of feeling. Throughout they are correct but cold. Prud'hon was very different. He had almost the sensuality of a Correggio. His spirit is more of the Renaissance than of the classic revival where he is placed only by courtesy. Gros, as the successor of David in the academy, felt it necessary to attempt the classic subjects, but his best work was done in other lines.

Gericault, in the *Raft of the Medusa,* asserted his right to choose subjects which interested him wherever he might find them. The terrible and moving story is told with conviction, but, nevertheless, drew upon itself the anathemas of the academy. Delacroix is the real leader of the Romantics. He expressed his contempt for academic doctrine by asking what the Greeks did without antiques. His subjects were contemporary, exotic, or from the middle ages, and painted with a feeling, a vitality which was convincing. So, in *Liberty Leading the People,* the very spirit of revolution is embodied, and patriotism is heard through the din of the barricades. Moreover, he rebels against the technique of the academy, laying his emphasis on color rather than drawing. To him all nineteenth century painting reverts.

David and Delacroix were the leaders and founders of their respective schools. Ingres was one of the most subtle draftsmen of all time. Cold he is, but in spite of a suggestion of the colored drawing too often obvious in his work, the sheer beauty of the line and its harmonious use make ample compensation. His pencil sketches are among the subtlest portraits ever put on paper. Couture emphasizes manual dexterity and though fundamentally academic, shows how that organization adopted suggestions from its opponents. Bouguereau and Cabanel produced a series of nudes, always female, which won awards from the juries. Although faithfully drawn and painted, they have little claim to lasting fame. Gérôme carried his modification of academic notions to the point of representing genre and exotic subjects with photographic accuracy. The military painters like Detaille, Raffet, and above all, Meissonier do the same infinitesimal sort of work. It almost approaches miniature painting. Later members of the academy like Bonnat and Carolus-Duran resorted to portraiture in which field they achieved considerable success. The brutality of the former is the antithesis of the delicate and sensitive style of the latter who was the master of Sargent. They had some ability at characterization, and were not lacking in technical facility.

Honoré Daumier has more or less recently come to his own, though he was for a long time neglected. His art is like that of Hogarth in that it is satirical, carrying a bitter sting with it, but fundamentally is quite serious. He created the vocabulary of modern art by keeping to the barest essentials, finding his planes and blocking out his masses with simplicity and

bigness. His dramatic intensity is the result of an ability to extract the pith of a given scene. The decorative massing of the surface in the drawing, and on occasion the color, are superb.

The Barbizon school scorned all the awards of the academy, returning to nature and striving for modest, unobtrusive, unaffected simplicity. They did not shock nor attempt to force their way, and recognition came slowly. The greatest figure generally associated with the group is Millet, whose sympathy with the sturdy peasants allowed him to ennoble the type. Such a work as the *Sower* is a glorification of toil, and the figure is endowed with a powerful physique for the purpose. The grandeur of epic poetry is found in this type of the struggle of humanity for existence. Although he had the disregard of details and the creative power that most of the academy lacked, he was criticised by that group for careless work. Another figure in the school is Corot whose pearly landscapes again won but tardy recognition. His spirit is lyric as Millet's is epic. The delicate filmy trees half cloaked in mist are in fact surprisingly true to nature. He has avoided many of the earlier conventions—the dark enframing foreground, the brown shadows. He cultivates tone rather than color, and if his modesty and independence prevented pupils, his influence has been none the less. Rousseau, Daubigny, Diaz, and Troyon paint quiet landscapes or cattle pictures in which Dutch influence is prominent.

Courbet was not content without recognition, and proclaimed his realistic aims in no uncertain tones. His point of view is essentially matter of fact—a desire to paint what he sees and nothing else. Actually he modified nature or he would not be worth mentioning. His militant spirit provoked a battle royal with the academy. *The Burial at Ornans* drew a tirade of abuse as being unworthy in subject, though its strength is striking. In his landscapes of marine and forest scenes he is again noteworthy. Bastien-Lepage propounded the theory of plein-airisme, of painting out-of-doors which had been practised long before. Instead of more or less concentrated studio light, he preferred that diffused light of nature without marked shadows.

Impressionism rebelled against the minute treatment of a Meissonier, so Manet models solidly with color rather than light and shade. The emphasis is placed on the artistic sensation of momentary vision. Only so much as the eye can take in at a glance is painted. Details are left out or merely indicated as in Velasquez. He chooses any subject, and composition, drawing, and color occupy the attention of the artist. Manet shocked the public by powerful representations of well-known courtesans with marked characterizations, and his treatment of Renaissance subjects in modern dress. Manet realized that greater vibration of light and color could be obtained by placing unmixed pigments next to each other on the canvas and allowing the eye to complete the fusion. The greatest emphasis is placed on atmospheric effects. Renoir in the same way treats peculiarly French subjects with a French spirit full of sparkle and life. Also belonging to this group were Pissarro, Sisley, and Raffaeli. Degas deals with composition in a manner akin to the Japanese, creating the subtlest balance with lines of ballet girls or arrangements of race horses. His love of natural lighting links him with the impressionists as do the solid forms, and the interest is always rather in the treatment than the subject. Moreover his color is magnificently clear.

The mural painting of Puvis de Chavannes stands apart from the movements of his time. Realizing that most of the recent attempts in this field had failed because they attempted to be too naturalistic and violated the flatness of the wall, he deliberately kept his quiet scenes unnaturalistic by using light color of low intensity and but little modelling. The broad symbolism was enough to stimulate thought, but at the same time was easily comprehensible. Archaisms are purposely introduced so that the result is one of great decorative value.

England continues her branches of narrative and portrait painting, but to these adds a third, landscape, which had started in the latter half of the eighteenth century, in the water-colorists. Constable combines truth of representation and the finest selective quality. He throws over the brown classic shadows, the conventional dark foreground, turning instead to the greens of nature, and this before the beginning of the Barbizon School in France. Indeed he influenced them, especially through the English exhibition in Paris in 1824. Furthermore, by composing his greens of several values, he foretells the advances of the broken color impressionism of Monet. Turner too, is a naturalist at heart, though toward the end of his life, he leans toward atmospheric effects in which interest in brilliant color is predominant. Moreover, Turner was more than merely a good draftsman, he was a splendid composer as may be seen in many of the plates of the Liber Studiorum series in which he tried to rival the works of Claude Lorrain.

The literary strain in English painting is illustrated by the Pre-Raphaelite group. Led by Rossetti, these men attempted to return to the ideals and the unaffected spirit of the fifteenth century Italians whose mannerisms they got, but whose truly beautiful and ingenuous quality escaped them. Burne Jones' attenuated forms do not lack rhythm or decorative value, but have an effeminacy which weakens them. His figures look like aesthetes. Hunt at Keble College, Oxford, exhibits the depths of overstrained sentimentality. Although his ideas were decided, he was strongly influenced by literary motives, and his work is distressingly affected. Other members of groups like Brown or Millais turned from it to straight narrative painting with no pretense or apology. While not a member of the Pre-Raphaelite brotherhood, Watts had a similar spirit. He is stronger, with far more sense of bigness, frequently employing symbolism, with at times a good sense of form and color, but a technique which did not always respond to the opportunity.

The barest mention of other European painting must suffice. Germany continues to exhibit strength and truth without grace or lightness, nor has she lost originality, though Overbeck and the Nazarenes attempted much the same thing as the Pre-Raphaelites in England. The extreme of realism with hard modelling but fine

lines comes in Leibl. Böcklin shows a fantastic imagination in his weird lyric pictures. Or Liebermann gives us the stirring energy expressing itself in creative joy, but always kept in hand by his admiration for Degas' refined taste. The Russian, Vereshchagin, himself with a martial education, produced a series of much discussed works whose didactic purpose was the propaganda against war by representing the horrors of war. In Scandinavia, Zorn deals with the crystal clear, but cold, northern sunlight. His etchings glow with sparkling contrasts and technique, and are filled with spontaneity. The Spanish counterpart of Zorn is Sorolla in whom the glaring brilliant light of his country found an exponent. At times, as in the Hispanic Society in New York, he attains considerable decorative value. However, Zuloaga is one of the strongest of the painters of today. His attennuated maidens, decked with mantillas and lace, with combs in their hair, stand out from backgrounds of rich rolling smoke, which, though natural to Spain, have some of the weird and mystic suggestion of El Greco, while the characterization of these seductively rouged and powdered beauties has some of the acidity of Goya.

MODERN PAINTING

Paul Cezanne (1839–1906) was the point of departure for the whole modern movement, and also its chief cornerstone. He was contemporary with the Impressionists (Monet, Sisley, Pissarro, etc.) but with an aim quite different from theirs. While they insisted on the importance of rendering atmospheric effects, he aimed to make impressionism over into classical mould—(post-impressionism). He concentrated on the representation of solid form and the interpretation of the forces which created the forms, and tried to express them by the use of the many-hued palette of the Impressionists. Painting was to Cezanne a painful process, but his color perceptions were unusually keen, and his feeling for the interrelation of form revolutionary. Without exaggeration he may be said to have influenced contemporary art more deeply than any modern painter. Paul Gauguin (1851–1903) began as an imitator of Cezanne but eventually carved out a personal and highly decorative style after living the life of a native in Tahiti and the Marquesas Islands. His deep rich vibrant color brings to one's mind the qualities of the thirteenth century stained glass. Van Gogh (1853–1890), a Dutchman, painted crude but extremely powerful portraits, landscapes, and still-lifes in brilliant color. He died insane at the age of 37. Paul Signac (1883–) attempted to reduce the Impressionist theory to a science, and applied pure pigment in regularly placed patches, using only the primary and secondary colors. His close follower and pupil was Henri Edmund Cros. Georges Seurat (1859–1891) also employed the principle of the division of tones, but applied the color in minute points. His method came to be known as "Pointillisme." Seurat's talent was of a high order and his unusual compositions are much sought after today.

The year 1904 is the most important date in the story of modern art. A group of young painters, later called "les fauves" (the wild beasts) rallied around Cezanne's standard and declared an artistic revolution. To illustrate his theories Cezanne had remarked that all Nature could be reduced to the cylinder, the cone and the cube. Younger artists took this figure of speech literally, and reduced Nature's forms to geometrical abstractions. In 1907–08 Georges Braque and Pablo Picasso exhibited experimental pictures in this manner, which were dubbed Cubism. Henri Matisse, a great colorist, began to exhibit about this time. He is an individualist, with a fine feeling for decorative color. He and Picasso are today ranked as the leading modernists.

From this time on, modern art split into three fairly distinct branches: (1) Abstraction (Cubists); (2) pure emotion (Expressionists, largely German); (3) Primitivism (Henri Rousseau and others who have returned to the Italian primitives, Negro sculpture, and the drawings of children, etc., for their inspiration). There are many emanations from these tendencies. Futurism was a short-lived attempt to overcome the static qualities of Cubism by trying to add the time element and represent movement or successive phases of an event (Gino Severini, Manuel Manolo, Carlo Carra, Giacomo Balla, etc.) Synchronism was an effort to reduce to a science Cezanne's evocation of form with color (Macdonald Wright, Morgan Russell). A kind of Futurism sprang up in England called Vorticism (Wyndham Lewis). Dadaism, with Tristan Tzara as its interpretor, was the reductio ad absurdum of the modern movements. There are many individuals whose names have not been mentioned here, but who have exerted considerable influence and achieved a certain amount of success. (Amadeo Modigliani, Oskar Kokoschka, Pierre Bonnard, Marie Laurencin, Jean Marchand, Karl Hofer, Maurice de Vlaminck). Andre Derain, Marc Chagall, Duncan Grant, Othon Friesz, Albert Gleizes, Andre L'hote and others have gone through the school of Cezanne and Cubism but have now developed individual styles. Fernand Leger, Jean Metzinger and, occasionally, Picasso still practice cubism in various forms.

In general the tendency has been to break with the traditions of the past, and try through experimentation, to make the art of painting more flexible and expressive; this is often done at the sacrifice of subject matter and the illustrative appeal. At the present time modern art is at the cross-roads. Simplification and distortion have had a salutary effect on painting, but no one can tell in what direction it will develop. In the final analysis it will be individual genius, not theory, that will develop something sound and enduring out of the lessons the "isms" have taught.

AMERICAN PAINTING

Even more than the other arts, this country has been inspired by Europe in painting. At first toward the close of the eighteenth century, a branch of the English portrait school arose. The men got their training by experimenting with portraits of their kin and then going out to paint coaches, signs, and likenesses. The latter were naturally pretty crude, and the effect as

wooden as the signs. Some of the better men managed to get abroad, but even their style shows a marked provinciality. Smibert, one of the earliest, is represented by the portrait group of Bishop Berkeley's family. Although in bad condition, with dirty color and stiff figures, the drawing is passable. Copley was a far better artist in every way. He is not lacking in the attributes of the English portrait school, but his figures have a certain unpolished character which betrays them as colonial. The gentlemen and ladies belong to the aristocracy of New England, a class which is dressed in fine clothes, but has not entirely lost their homely square-toed nature or become at home in such raiment. They are honest and dignified, not in the least lacking in the nobler attributes of mankind, but unaccustomed to the elegance and refinement produced in the English aristocracy by many generations of social prestige. His truthful work indicates the dignity and self-reliance of the sitters. Just before the outbreak of the revolution, he left this country to settle in London where he continued to prosper. West was an exact contemporary of Copley, but spent almost his entire life in England where he became President of the Royal Academy in 1792. His color is none too good, and the figures, although well placed, have but little character or life. His series of huge religious canvases were greatly admired, but quite unsaleable. They seem to most people at present to have few virtues, and many faults, to lack style, beauty of workmanship, sincerity, and conviction, and to be brimming with obvious moralizing. In battle scenes, he made the innovation of using contemporary costume with much success. His success depended on his genial, gentlemanly temper, his appreciation of patronage, and consequently his ability to retain it—notably the royal favor of George III until that monarch lost his mind. It was fortunate for Americans that West was of this type, for he was ever a friend and assistant of struggling American painters in London, and for generations hardly a man was without his influence.

Peale is the best known of the portraitists from 1774, the year in which Copley left this country to Stuart's return in 1793, but although he improved toward the end of his life, his figures were stiff and the tones raw. Stuart in many respects must be awarded the palm in colonial painting. He was a pupil of West, but very different in character, and ability. He had far more of what is known as the artistic temperament, lacked much of the geniality of West, and had more violent likes and dislikes. Almost all his works are heads which are placed only slightly above the center of the canvas with enough body below to satisfy the laymen, but it is the head alone about which he thinks. This is treated with splendid characterization, fine drawing, and pearly, bright color which, thanks to being put on thinly with a very sure hand, and not worked over at all, retains its pristine freshness and clarity. Many portraits of Washington are attributed to him, but of these only the Gibbs-Channing and the Athenaeum portraits seem to have been done from life. Several copies of the former by Stuart himself are known. Trumbull has some of Stuart's brilliance, but as a rule is not his equal. However, his historical subjects of early American events are filled with valuable portraits. Allston admired West extravagantly, imitating him in the large moral or religious canvases which were readily understood, and even praised at the time, but seem extremely tiresome at present. Other men of the period of English training include Malbone, Vanderlyn, Morse, Leslie, and finally Sully who has some fine works, but tends to mere prettiness, occupying much the same relation to Stuart that Lawrence did to Reynolds.

As the English school itself waned in ability, its influence on America decreased. Instead painters went to schools on the continent such as that at Düsseldorf in Germany. This school gave a firm foundation of accurate drawing and the composition was not bad, but the color was none too good, and the spirit generally affected. Leutze's *Washington Crossing the Delaware* illustrates the virtues and the ridiculous aspect of its shortcomings. Nevertheless, the painting is an often reproduced symbol of American patriotism and may be seen in thousands of public schools about the country.

Landscape painting had been practised from the first, but the native strain first makes its appearance in this genre. Durand and Cole were the important precursors, the latter producing some fairly accurate landscapes in his smaller and better works. Durand was a good craftsman, and showed perfect sincerity in his silver gray landscapes, with the color of the shadows truthfully rendered. He probably painted in the open. His weakest point is composition. From these men sprang the Hudson River school. Kensett followed the realistic aims of Durand with greater facility. Church also is facile, composing his work fairly well, but emphasizing the importance of nobility of subject. Bierstadt, trained at Düsseldorf, like several others of the group, attained a standardized level of uninspired excellence, working without conviction. The culmination of early landscape painting is to be found in Innes who wished to produce the "impression a scene has made upon him." At first, he continued the minute technique of the early members of the school, but he gradually attained richer tones and broader handling. His later works hold together harmoniously. Although he was less popular than other men of the time, his fame has increased recently. Wyant is less varied, preferring sunny rolling country seen between tree trunks and rendered with a sure handling and harmonious style. Martin started like Kensett but under the influence of the Barbizon school, he simplified his drawing, and loosened his style while still retaining a melancholy feeling.

Just as in architecture, the new names of the generation after the civil war had been trained in Paris. The heavy correctness of Düsseldorf seemed dull before the brilliance of Paris. All along some, perhaps even most, of the men had studied in France, but now the influence becomes more pronounced. Vedder has perhaps rather more of the classical Italian, but Hunt shows a broad technique, good color and form in large masses. La Farge was at his best in mural painting where his desire for large size could be

satisfied. Whistler was an American spending his life in England. Eccentric in his manners, his work aroused a storm of criticism which probably delighted him. Especially in his later work, he loves extremely subtle harmonies of color which he designated by musical terms. Influences from France, Spain, and Japan combine in his work, but are not always properly fused. From the latter, he takes the extremely subtle compositions whose balance is carefully adjusted by the relation of details as in the portrait of his Mother. Indeed, this subtlety is apparent in whatever he does. Taste, in him, predominates over strength. In etching, he must rank with Rembrandt and Seymour Haden.

Homer proudly boasted that he had never studied abroad. This fact accounts in large measure both for his strength and his weakness. His work has a strong native flavor due to the direct vision which makes his works more telling than reality. He has an elemental vigor which compensates for a lack of quality. He feels weight and force exactly; his brush work is firm and crisp, producing fine values, but occasionally harsh color. Another painter, similar in a lack of foreign training and an intensely realistic point of view, though of much later date, is Bellows, whose lithographs are the strongest American work in this medium.

Among the more recent painters, we find the foreign training at an earlier age. The older masters had at least partially formed their styles before they went abroad, and maintained some trace of this early training. The more recent men get their foreign training first and then overlay on that foundation whatever of national characteristics they acquire. Duveneck's work is facile and brilliant. His sculptured tomb of his wife is one of his most inspired productions. Painter, sculptor, and etcher, he is one of the most versatile artists America has produced. Chase stands halfway between Whistler and Sargent, in his subtlety, and his purely painter's delight in technique. Others show the influence of French impressionism, proving that the younger Americans were awake to the new developments in France, and were sympathetic to them. Weir is one of the most vigorous of the group. Twachtman has a sensitive eye for delicate nuances of color. Hassam is a typical advocate of broken color impressionism with its fine color effects. Broader than Hassam, and stronger than Harrison, Frank Benson has done fine, direct work in paint and etching.

Sargent, trained by Carolus-Duran, attained a brilliance of technique which at first carried all before it. His extreme facility with the brush sometimes produced a feeling of brittleness, but was most fortunately combined with an analytical and clear perception of character, as in the vivid portraits of the Wertheimer family. His decorations of the Boston Public Library were finely conceived, and executed with a monumental effect to produce a decorative whole of great originality. His early work promised much, but his later painting in general failed to live up to this high standard. His rapid, direct technique in watercolor produced some of his best work. Abbey also is represented in the Boston Public Library by a series of murals with much less successful results because the plane of the wall is not sufficiently regarded, and the pictorial element is overstressed. Mary Cassatt of the same generation, deliberately shunned the prettiness of popular art, preferring spots of local color without much light and shade. Thayer prefers to idealize and to ennoble his subjects. Brush sought fine craftsmanship and sympathetic character which he found especially in his wife and child. Cox shows his Parisian training frequently by an overemphasis of technique in a use of the nude, being primarily an academic painter. For the rest, the fine landscapes of Tryon, the portraits of Cecilia Beaux, and F. W. Alexander; Remington's interpretations of frontier life; the dash of Lie; the drawings of Bridgman; the illustrations of Gibson, Pyle, Parrish, and Sterner may be mentioned in passing.

Still more recently, the expressionist movements in Europe have found faint echoes on this side of the ocean. Luks, like the rest, pours contempt on all academic training. His own work is characterized by heaviness in color. Gauguin's profound color is reflected in the work of Blumenschein who is associated with the School of Taos. Artistic elemental force characterizes Kent at his best, although unforgiveable weaknesses creep in due to his being too prolific. Decidedly less modernistic in tendency was Davies who was very much influenced by the spirit of different styles. Among the most promising members of the younger school, we may mention Kroll and Halpert, the latter a follower of Cezanne and Derain. Robert Henri was a painter of ability whose influence on American art will be felt for many years. For sound craftsmanship, Hawthorne is difficult to surpass. In subtle qualities of light and color Carlsen is noteworthy. Waugh leads in the understanding of structure of the ocean in his marine subjects.

It is perhaps inevitable that this country should be strongly influenced by the older culture of Europe. At any rate, from the early Colonial times to the present, foreign affiliations, more or less modified, have been the rule and the native elements, while generally present, are kept somewhat subordinate. Nevertheless, this fact does not necessarily mean that American work is inferior to European. Some painters and some paintings have been produced which may properly rank with the corresponding European work. This country will produce a great native development sometime in the future, but not until the general level of taste, among the laymen especially, has been elevated to proper appreciation and until sufficient interest develops in the Fine Arts to support such work.

SCHOOLS OF PAINTING

Painters who are controlled by the same ideals, methods, or principles in their work are classed together into a school or group, without regard to the times in which they worked. There is one use of the word wherein it signifies all the painters of one country, distinguished from all painters of other countries. Also one master may influence several painters, and his followers are grouped into a school. Sometimes a nar-

rower sense is implied by the application of the term to the painters of a city. So we may speak of the "Italian School," the "School of Raphael," or the "Florentine School."

BRITISH SCHOOL. In Great Britain in the eighteenth and nineteenth centuries. Leaders were Hogarth, Sir Joshua Reynolds, Gainsborough, Raeburn, Romney, Lawrence, Wilson, Chrome, Constable, Turner, Millais, Burne-Jones, and Watts.

AMERICAN SCHOOL. In the United States in the late eighteenth and nineteenth centuries. Leaders were Copley, Stuart, Trumbull, West, Church, Bierstadt, Wyant, Martin, Inness, Whistler, Winslow Homer, Duveneck, Chase, Hassam, Abbey, Sargent, Kent, Henri, and Hawthorne.

BOLOGNESE SCHOOL. At Bologna, in Italy, in the sixteenth and seventeenth centuries. Leaders were the three Caracci—Lodovico, Agostino, and Annibale—Domenichino, Guido Reni, and Guercino.

DUTCH SCHOOL. In Holland, in the seventeenth century. Leaders were Hals, Rembrandt, Vermeer, de Hoogh, Ruysdael, Hobbema, Van de Velde, and Cuyp.

FLEMISH SCHOOL. In Flanders, in the fifteenth, sixteenth and seventeenth centuries. Leaders were the Van Eycks, Van der Weyden, Van der Goes, Memling, Patinir, Brueghel, the Metsys, Rubens, Jordaens, and Van Dyck.

FLORENTINE SCHOOL. At Florence, Italy, from the thirteenth to the sixteenth centuries. Leaders were Cimabue, Giotto, Orcagna, Masaccio, Fra Angelico, Botticelli, Fra Filippo Lippi, Ghirlandaio, the Pollaiuoli, Leonardo da Vinci, Andrea del Sarto, Fra Bartolommeo, and Michelangelo.

FRENCH SCHOOL. In France after the fifteenth century. Leaders were the Clouets, Poussin, Claude Lorrain, Philippe de Champaigne, Mignard, Le Brun, Largillière, Rigaud, Watteau, Lancret, Pater, Nattier, Chardin, Boucher, Fragonard, David, Prud'hon, Ingres, Géricault, Delacroix, Corot, Rousseau, Millet, Daumier, Courbet, Puvis de Chavannes, Manet, Degas, Monet, Cézanne, Renoir, Gauguin, Seurat, Matisse, and Derain.

GERMAN SCHOOL. In Germany after the fourteenth century. Leaders were Wilhelm of Cologne (1358–1372, active), Schongauer, Dürer, the Cranachs, the Holbeins, Cornelius, Overbeck, Leibl, Boeklin, and Liebermann.

NEAPOLITAN SCHOOL. At Naples, Italy, in the sixteenth and seventeenth centuries. Leaders were Caravaggio, Salvator Rosa, and Giordano.

NORTH ITALIAN SCHOOLS. A group of schools with more or less similar characteristics in the north of Italy at Parma, Milan, Padua, and so on. Leaders were Altichiero, Pisanello Squarcione, Mantegna, Cossa, Costa, Cosimo Tura, Francia, Foppa, Luini, Solario, Ambrogio da Predis, Moretto da Breseia, Moroni, and Correggio.

SIENESE SCHOOL. In Siena, Italy, in the fourteenth and fifteenth centuries. Leaders were Ducco, Simone Martini, Lippo Memmi, the Lorenzetti, Bartolo di Fredi, Matteo and Benevenuto di Giovanni, Taddeo di Bartolo, Vanni, Vecchietta, Sassetta, and Francesco di Giorgio.

SPANISH SCHOOL. In Spain after the fourteenth century. Leaders were Vermejo, Jaume Huguet, Dalmau, Ribera, Zurbaran, El Greco, Velasquez, Murillo, Goya, Zuloaga, and Sorolla.

UMBRIAN SCHOOL. In the province of Umbria in Italy, in the fourteenth, fifteenth, and sixteenth centuries. Leaders were Gentile da Fabriano, Piero della Francesco, Melozzo da Forli, Signorelli, Fiorenzo di Lorenzo, Antoniazzo Romano, Perugino, Pinturicchio, Raphael, Lo Spagna, and Pierino del Vaga.

VENETIAN SCHOOL. In Venice, Italy, in the fifteenth to the eighteenth centuries. Leaders were the Vivarini, the Bellini, Antonello da Messina, Crivelli, Carpaccio, Giorgione, Titian, Lorenzo Lotto, Palma Vecchio, Tintoretto, Veronese, Sebastiano del Piombo, Canaletto, Longhi, and Tiepolo.

FAMOUS WORKS OF ART

ABRAHAM, SACRIFICE OF. The event described in *Genesis XXII* was the subject of the competition panel for the bronze North doors of the Baptistry of Florence, won by Lorenzo Ghiberti in 1401, now in the Bargello in Florence. His panel shows more elegance and subtler composition than that of Brunelleschi which is also preserved. In paint, the most famous example is by Rembrandt, now in the Hermitage Gallery at Leningrad. Murillo, Raphael, Andrea del Sarto, and Teniers have also treated the subject.

ADAM AND EVE. A relief on the façade or S. Petronio at Bologna by Jacopo della Quercia. The powerful nude figures later had a profound influence on Michelangelo. The theme has been handled by Bandinelli in marble and by many artists, such as Masolino and Jan Van Eyck in paint.

ADAMS MEMORIAL. By Saint-Gaudens, in Rock Creek Cemetery at Washington. It is frequently called *Grief, Death,* or *The Peace of God.* A mysterious bronze figure of a woman leaning against a slab of polished granite.

ADORATION OF THE LAMB. Painted by Hubert and Jan Van Eyck for Jodoc Vyt in 1432. Its many panels include treatments of Christ, the Virgin, St. John the Baptist, Singing Angels, Musical Angels and Adam and Eve, while the central theme shows the Lamb of God on an altar in a beautiful countryside approached by all classes of men. From the altar flows the crystal clear stream of life. This central panel was probably inspired by the Paradise pictures of the school of Cologne.

ADORATION OF THE MAGI. Worship and the presentation by the wise men of the east of mystic gifts of gold, frankincense and myrrh to the child Jesus. A favorite subject of painters. The most famous are by Botticelli, in the Uffizi, Florence; Albrecht Dürer, in the Uffizi, Florence; Gentile da Fabriano, in the Florence Academy; Raphael, in the Berlin Museum; Rembrandt, at Buckingham Palace; Rubens, in the Antwerp Museum, Brussels Museum, the Hermitage, and the Louvre; Titian, in the Madrid Museum; Velasquez, at Madrid; Veronese, at the Brera of Milan, Dresden Museum, National Gallery of London, and Vienna Museum; and Leonardo da Vinci, at the Uffizi, Florence.

AEGINETAN MARBLES. The remains of the two pediments of the temple of Aphaia at Aegina were found by Cockerell in 1811, restored by Thorvaldsen; and are now in the Glyptothek at Munich. The subjects represent scenes from the Persian Wars. In all probability, they were influenced by Onatas, the head of the school of Aegina, and were sculptured about 480 B. C. They are the best examples of Doric sculpture up to that time, showing an interest in the nude male figure. The bodies are well expressed, but the heads for the most part show marked traces of archaism. They were bought by Crown Prince, later King, Ludwig of Bavaria for $30,000.

AESOP. The famous writer of fables appears in a canvas by Velasquez now in the Prado at Madrid. His physical ugliness according to the tradition has not prevented the painter from creating a masterpiece. The head especially illustrates Velasquez' dexterity with the brush, and sympathy with the subject.

AGE OF INNOCENCE. Painted by Sir Joshua Reynolds; now in the National Gallery at London. It representes a little girl seated under trees upon the grass.

AGIAS. Although the evidence is involved, it seems quite clear that this marble in the museum at Delphi is a very close reflection, at least, of the style of Lysippus. It may be an earlier work than the Apoxymenos, but it certainly is better, lacking the dryness of that figure. It is light and graceful, and may have been influenced by Scopas. Too, it shows more naturalism, which Lysippus is known to have sought for, than does the Apoxyomenos.

ALBIZZI, GIOVANNA DEGLI, and THE GRACES. Fresco, once in the Villa at Careggi, and now in the Louvre. This and its companion piece, representing Lorenzo Tornabuoni received by the Liberal Arts, were painted about 1487 by Sandro Botticelli to celebrate the marriage of these two scions of the Florentine nobility. In the former, a delicate compliment is paid the lady by placing her alone in one half of the picture, balancing the grouped Graces in the other half, and indicating her equality with and her possession of them all.

ALEXANDER AND THE FAMILY OF DARIUS. The great conqueror being presented to that royal family was the subject chosen by Paolo Veronese for one of his greatest masterpieces of composition. His monumental architecture and the subtle variation of interest on the part of the characters are well balanced. It is in the National Gallery in London.

ALEXANDER, HISTORY OF. A series of five paintings by Charles Le Brun; now in the Louvre. The subjects are *The Passage of the Granicus, Battle of Arbela, Tent of Darius, Alexander and Porus,* and *Alexander Entering Babylon.*

ALEXANDER SARCOPHAGUS. One of the richest of the sculptured sarcophagi found at Sidon, and now in the Ottoman Museum at Constantinople, belonged to a friend of the great general. Friezes of a battle and a lion hunt appear on either side of this sarcaphagus. One of the figures represents Alexander himself. The action of the reliefs is violent and the composition compact, but somewhat crowded. Most remarkable is the fine color which is preserved and which proves that paint, when properly used, can augment the effect of sculpture.

ALMA MATER. A statue by French; in the approach to the Library of Columbia University in New York. A colossal figure seated in a curule chair, with elbows resting upon the arms, her head crowned by a wreath, and bearing a mace upright in her right hand.

AMAZONS, BATTLE OF THE GREEKS AND. A favorite theme for representation on the friezes of Greek temples. It occurs at the temple of Apollo Epicurius at Bassae and in the Mausoleum at Halicarnassus. The painting by Rubens, now in the Munich Gallery, represents the conquest of the Amazons by Theseus, who is shown upon a prancing horse, and about to hurl his javelin at the Amazons, many of whom are falling from the bridge or struggling in the water.

AMAZONS. At least three distinct types may be recognized—the Berlin, Capitoline, and Mattei types. The first of these may be derived from Polyclitus. According to tradition, Phidias, Polyclitus, Cresilas, and Phradmon held a competition in this subject, thereby starting four types, but if the legend is indeed true, it is difficult to attribute the two non-Plyclitan types to any of the other three sculptors with any degree of likelihood.

AMOR CARITAS. By Saint-Gaudens; in the Luxembourg Gallery in Paris. One of the most admirable angel forms known to modern art.

ANATOMY LESSON. A masterly composition by Rembrandt, now in the Royal Museum, The Hague. This painting shows the marvelous handling of light and shadow and the clear portrayal of character on every face, the whole being bathed in the luminous atmosphere so characteristic of Rembrandt's genius.

ANGELUS. A celebrated painting by the French genre and landscape painter Millet (Paris, 1859). A peasant youth and maid pause from their outdoor work at the sound of the angelus, and stand in an attitude of silent prayer. This picture was purchased by the American Art Association in 1889 for 580,650 francs and resold in 1890 to M. Chauchard for $150,000.

ANNUNCIATION, THE. The announcement by the angel Gabriel to the Virgin Mary of the coming birth of Christ. A favorite subject of painters. Among the most famous are those by Fra Angelico, in San Marco, Florence; Fra Bartolommeo, in the Louvre; Murillo, in the Madrid and the Seville Museums; Ludovico Carracci, in the Louvre; Simone Martini in the Uffizi Gallery in Florence; Andrea del Sarto, in the Pitti Palace, Florence; and Titian in the Scuola di San Rocco at Venice. One of a series of paintings from the life of Christ by Tintoretto (1518–1594), and now in the Berlin Gallery. It was painted for the Guild of San Rocco, Venice, which commissioned him to paint three pictures a year at the salary of 100 ducats.

ANTINOUS. The illustration shows the marble bust of Antinous in the Vatican Museum, Rome. This is only one of several busts and statues of Hadrian's

dramatic effect. They are in the Jardin Richelieu at Calais.

BURIAL AT ORNANS. A large canvas by Courbet representing a peasant funeral. The mourners stand in a row beside the open grave. Although well composed and painted, the subject was condemned unmercifully at the time as being unworthy of representation by an artist.

BURIAL OF COUNT ORGAZ. Perhaps El Greco's masterpiece in Santo Tome at Toledo. S. Stephen and S. Augustine miraculously appeared from Heaven to honor the funeral of this just man. In the lower part of the painting, a series of fine portraits of the Spanish aristocracy provides at once a setting for the scene, and a contrast with the supernatural upper part of the painting showing the Heavens opened and filled with celestial beings.

CALFBEARER. Marble figure of a man carrying a bull calf over his shoulders, in the Acropolis Museum in Athens. The animal is more natural than the man. It is a work of the early archaic school of Athens in the first half of the sixth century B. C. A thin garment clings to the figure, and, since it is hardly more than engraved on the surface of the stone, it seems probable that it was emphasized by paint originally. The short beard is indicated by a number of spiral curls. It was the prototype of the Good Shepherd in Christian art.

CARITAS. In the Boston Museum of Fine Arts by Abbott Thayer. It shows an allegorical female figure standing erect with arms outstretched as though protecting two nude infants at her feet.

CARLYLE, PORTRAIT OF. The arrangement of this picture is very similar to the Artist's Mother, with the seated figure as a silhouette in profile, and with a subtle balance created by incidental pictures on the wall behind. Its subdued harmony and the exquisite nature of the composition are typical of Whistler. It is now in the art gallery in Glasgow.

CARMENCITA. Painted by Sargent, and now in the Luxembourg. The piquant attractiveness of the famous Spanish dancer has been rendered with the utmost skill. The artist was noted for his facility in handling paint, seldom better illustrated than in this canvas.

CARNATION, LILY, LILY, ROSE. In the National Gallery in London by Sargent. One of his most famous works, the flowers from which the painting takes its name are seen together with a child. The finely suggestive brush strokes typical of the master are most effective.

CASTOR AND POLLUX. Painted by Rubens; now in the Munich Gallery. The twins are carrying off Hilaira and Phoebe, daughters of Leucippus and priestesses of Athena and Artemis. The maidens were betrothed to Idas and Lynceus. This led to the war in which Castor was slain by Idas.

CAVALIER OF THE TIME OF LOUIS XIII. The minute accuracy of Meissonier's work is evident in this painting in the Wallace Collection in London. Not only is the costume correct from an archaeological standpoint even to the smallest detail, but all the minutiae have been microscopically drawn and rendered. The texture of the cloth is not suggested, but each thread composing it is painted.

CECILIA, ST. Painted by Raphael; now in the Bologna Gallery. The saint is standing between Saints Paul and John on one side and Saint Augustine and Mary Magdalen on the other. Domenichino, Rubens, and Reynolds have also treated this subject.

CHANCELLOR JOHN WATTS. Statue by Bissell; in Trinity churchyard in New York. The best work by this sculptor.

CHAPEAU DE PAILLIE. Painted by Rubens; now in the National Gallery in London. A half-length portrait of a young lady in a black velvet bodice with crimson sleeves and wearing a black hat with black and white feathers.

CHAPIN, STATUE OF DEACON. By Saint-Gaudens; in Springfield, Mass. The old Puritan, on his way to, or from, the meeting house, "grasping," as Kenyon Cox says, "his Bible as Moses clasped the the tables of the law and holding his peaceful walking stick with as firm a grip as the handle of a sword."

CHARIOTEER. This finely preserved Greek bronze from Delphi must have formed part of a chariot group originally. The figure is standing quietly, holding the reins in his outstretched hand. A realistic aim is apparent in the rendering of the folds of the light garment, and in the enamelled eyes which give a startlingly lifelike expression to the statue. Although its author is not definitely known, it may perhaps be by the Athenian sculptor Calamis, between 480 and 450 B. C.

CHARLES I. Painted by Van Dyck about 1635; now in the Louvre. The king is dressed in a white satin jacket, red hose, buff boots, and has just dismounted from his horse.

CHARLES V. AT MUHLBERG. Painted by Titian in 1548; now in the Madrid Museum. The emperor is mounted and carries a spear upon the field of Muhlberg, where he defeated the elector of Saxony in 1547.

CHILDREN OF CHARLES I. Painted by Van Dyck in 1638; now in Windsor Castle. Prince Charles is standing with his hand upon the head of a very large dog; Princess Elizabeth and Princess Mary are on his right; while Princess Anne holds James, Duke of York, upon her knee. A later picture by Van Dyck is also at Windsor, and an earlier one is in the Turin Gallery.

CHILDREN OF THE SHELL, THE. Christ and the Infant St. John are represented with a lamb and a shell by Murillo in a painting in the Prado at Madrid. The softness and sentimentality are irritating to the taste of the present day.

CHRIST CROWNED WITH THORNS. Painted by Titian in 1553; now in the Louvre. Another by Caravaggio is in the Hermitage; one by Ludovico Carracci is in Bologna; one by Van Dyck is in the Berlin Museum; one by Guercino is at Munich, and a second by Titian is also in Munich.

CHRIST DELIVERING THE KEYS TO ST. PETER. Painted by Perugino about 1481 in the Sistine Chapel at the Vatican. In the center, flanked by the apostles, Christ presents the Keys of Heaven to the kneeling St. Peter. The scene is a fine example of the space composition of the Umbrian School.

CHRIST ENTHRONED. A common subject of mosaics in Early Christian churches. The semidome of the apse was generally the place for this subject. Christ is flanked by the seated Apostles with the cities of Bethlehem and Jerusalem in the background. Around the base one frequently finds twelve lambs flanking the Lamb of God who stands on a small mound in the center bearing a cross. A famous example is the apse of S. Pudenziana in Rome which shows a composition similar to Raphael's *Disputa*.

CLEOPATRA. A marble statue by Story (1862); in the Metropolitan Museum at New York. An impressive work. Hawthorne took an interest in the conception and execution of the statue.

CLYTIE. A life-size nude marble statue by Rinehart (1872); in a special gallery in the Peabody Institute. A plaster cast is in the Corcoran Art Gallery. The modest grace and tenderness of the figure are delightful.

COCK FIGHT, THE. By Gérome and now in the Luxembourg Gallery in Paris. The fine drawing of the figures, both male and female, is due to the academic ideal of the time, which owes its origin to the doctrine of Ingres.

COLLEONI, STATUE OF BARTOLOMMEO. In the Piazza di San Giovanni e Paolo in Venice, by Verrocchio. He had the model of Donatello's *Gattamelata* on which to base his work, but has improved on that example. The general sits more firmly in his seat, and is more the center of interest than was the case in the *Gattamelata*. Dressed in contemporary armour, his personality and eagle glance are sufficient to control the troops in the field. The horse, too, is more secure on its pedestal. Probably it is the best equestrian statue of all time.

COLOSSUS OF RHODES. The statue of Apollo at Rhodes, standing at the entrance of the harbor, though not bestriding it as is frequently said, was over 100 feet high, and was one of the seven wonders of the ancient world. It was made of bronze, cast in sections, and occupied the artist twelve years. Erected about 380 B. C., it was overthrown by an earthquake in 224 B. C. It remained lying till Moawyia, general of the caliph Othman IV. sold it to a Jew who loaded its material on nine hundred camels.

COMMUNION OF ST. JEROME. Painted by Domenichino in 1614; now in the Vatican. One of the

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ANCIENT SCULPTURE

1 Diana, The Louvre, Paris. 2 Laocoon, The Vatican, Rome. 3 Apollo Belvedere, Rome. 4 Venus de Milo, The Louvre, Paris. 5 Winged Victory, The Louvre, Paris.

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AMERICAN SCULPTURE

1 Stone Mountain Memorial, Atlanta, Georgia, by Gutzon Borglum and Augustus Lukeman. 2 Pioneer Mother, Memorial Park, Kansas City, Missouri, by Proctor. 3 Lincoln Monument. 4 George Washington, State Capitol, Richmond, Virginia, by Houdon.

world's most celebrated paintings. St. Jerome is near unto death and is lying before the altar. He attempts to receive the Host from St. Ephraim of Syria. His faithful lion is near him; and, above, is a group of angels.

CORONATION OF NAPOLEON AND JOSEPHINE. Painted by David in 1808. It shows Napoleon in the act of placing the crown on his wife's head, having already crowned himself in the Cathedral of Notre Dame in Paris on December 6, 1804. Oddly enough, David did not consider this an historical canvas at all, since its subject was not classic. The canvas, measuring 33 feet by 20 feet, is in the Versailles Museum.

CORONATION OF THE VIRGIN. In the Uffizi Gallery in Florence. It was painted by Fra Filippo Lippi in 1441, for the nuns of S. Ambrogio. God the Father places a crown on the Virgin's head while to either side, a host of angels may be seen, and a group of nuns and monks fill the foreground, including the painter himself. Also painted by Velasquez in the Prado at Madrid; by Raphael in the Vatican in Rome; Fra Angelico in the Louvre, and the Uffizi in Florence; and Rubens, in Brussels.

COURTYARD OF A DUTCH HOUSE. Painted by Pieter de Hoogh, and now in the National Gallery in London. The immaculately clean house and its inmates have been rendered with fidelity and much domestic feeling. An interest in light effects is evident in the alternate passages of light and shadow; a lighted court, a passageway, and again an illuminated open space. This is emphasized by contrasting a matron in the sunlit foreground against a dark background with a silhouette of a second woman in the dark passage against a light background.

CRUCHE CASSEE or THE BROKEN PITCHER. Painted by Greuze; now in the Louvre. A young girl bears a broken or cracked pitcher on her arm. She stands beside a fountain. She is dressed in white, wears a violet ribbon, and carries flowers in her apron.

CRUCIFIXION. Treated by many famous painters. Fra Angelico in the Chapter House of San Marco in Florence portrays the scene from the standpoint of a religious mystery, the cross flanked by the patron saints of Florence and of the Medici family on the one hand and by the founders of monastic orders on the other. Tintoretto in the School of St. Roch in Venice takes a more historical attitude toward the subject, introducing the soldiers, the faithful few at the foot of the cross, the curious spectators and so on. Both are supremely fine compositions. Among other well known representations of this theme mention may be made of those by Lucas Cranach in the Stadtkirche at Weimar; Cellini in the Escurial at Madrid, in sculpture; the Byzantine mosaic at Daphni in Greece; Van Dyck, in Mechlin Cathedral; El Greco, in the Prado at Madrid; Andrea Mantegna, in the Louvre; Murillo, in the Hermitage of Leningrad; Perugino, in the Church of the Santa Maria Maddalena dei Pazzi in Florence; Rubens, in the Antwerp Museum; Titian in Ancona; and last, but not least, Velasquez, in the Prado.

CUPID AND PSYCHE. The classic myth represented by Canova in the Louvre, a work which was probably based on a painting of a nymph and satyr from Herculaneum. It shows the over-elimination of the neo-classic period, an exaggeration of the true classic ideal.

DANAE. The mother of the hero Perseus, wooed by Jupiter in the form of a golden shower. Frequently treated by artists. Among the best is that by Correggio in the Borghese gallery in Rome notable for its composition and its color.

DANCE, THE. A group forming part of the decoration of the Opera House in Paris by Carpeaux. The vivacity, the delicate sensuosity, and the almost pictorial light and shade are typical. The artist may have been influenced by Rubens.

DANCE OF THE ANGELS, THE. A portion of a panel showing the *Last Judgment*, by Fra Angelico in the Museum of San Marco in Florence. With gay Gothic coloring, a ring of figures frolic in a blooming celestial meadow or give way to ecstatic joy at reunion with loved ones.

DAVID. The slayer of Goliath, the Philistine (*I Samuel, 17*), has frequently been a theme for sculptors. Michelangelo's version in the Bargello shows a youth of powerful body and mind, imbued with the Christian vigor of the sculptor. The anatomy is perfect. Bernini gives the figure the agitated pose and emotional expression preferred by the seventeenth century. Donatello has modeled a slender nude youth, inspired by a pagan love of physical beauty. Verrocchio conceived the subject as a youth not entirely beyond the awkwardness of puberty nor quite able to conceal his boyish pride in his achievement.

DEATH OF THE VIRGIN. In the Louvre, painted by Caravaggio. It illustrates the concentrated, rather theatrical lighting of the studio and the types chosen from low life which the artist loved. There is little religious feeling. It was criticised at the time as being too natural and now for not being natural enough. This sort of work had a marked influence on the Spanish school through Ribera.

DEATH ON THE PALE HORSE. Painted by West in 1817; now in the Pennsylvania Academy. It is 25 feet long and 15 feet high. It is an interpretation of the sixth chapter of *Revelation*.

DEATH STAYING THE SCULPTOR'S HAND. Monument to Martin Milmore in the Forest Hills Cemetery in Boston by D. C. French. The Angel of Death, her cloak shading her face, restrains the young sculptor who is carving an Egyptian Sphinx in low relief.

DEJEUNER SUR L'HERBE. Painted by Manet and now in the Luxembourg. The subject is a picnic party in a wooded park, composed of two gentlemen in contemporary dress, and two nude women. The work is obviously a translation into modern terms of Giorgione's *Fête Champêtre* in the Louvre, but it shocked contemporary taste profoundly.

DELAWARE VALLEY, THE. A masterpiece of landscape painting by Innes. The placid valley with its hay carts is a typical theme of the Hudson River School of painters. It is in the Metropolitan Museum in New York.

DELFT FROM ACROSS THE RIVER. A landscape seen from the artist's studio by Vermeer in the Museum at The Hague. The light effects are varied, as cloud shadows play on the red tile roofs of the city.

DEMETER OF CNIDOS. A fourth century work of unknown authorship in the British Museum. Resignation is expressed in the head which is of marble, while the body is limestone. The nobility of the head and its deep set eyes have led some critics to connect the work with Scopas, assuming local workmanship to the body.

DESCENT FROM THE CROSS. A favorite subject with the great masters. Among the most famous are the paintings by Rubens, in the Antwerp Cathedral; Rembrandt, in the Munich Gallery; Andrea del Sarto, in the Pitti Palace at Florence; Titian, in the Venice Academy; and Van der Weyden in the Prado at Madrid.

DIADUMENUS. A statue by Polyclitus. A Roman copy of this is in the British Museum. It represents an athlete binding his brow with a fillet.

DIANA AND ACTAEON. Painted by Titian in 1559; now in Bridgewater House, London, owned by the earl of Ellesmere. With *Diana and Callisto* it forms the pair painted for Philip II. of Spain.

DIANA AND THE STAG. By the sculptor Jean Goujon. It represents the goddess seated and supported by a stag. The figure shows the elegance of proportion innate in the French temperament.

DIANA OF VERSAILLES. A Greek statue found in the ruins of Hadrian's villa at Tivoli; now in the Louvre. It is the most famous statue of the goddess. The goddess is advancing with one hand upon the head of a stag and the other drawing an arrow from a quiver.

DIGNITY AND IMPUDENCE. Painted by Landseer; now in the National Gallery at London. A sedate old bloodhound and a saucy Scotch terrier are side by side looking from the door of a kennel.

DISCOBOLUS. A Greek statue by Myron preserved in a number of copies, the two most famous in the Vatican and the British Museum, having the heads wrongly restored. The head should face back to the hand holding the discus. The pose is typical of the artist in that it represents a moment of repose between periods of violent action.

DISPUTA. A fresco in the Camera della Segnatura in the Vatican by Raphael. It introduces a host of witnesses culled from church history as a proof of the truth of the Holy Trinity and its earthly symbol, the Eucharistic Wafer. The design is finely decora-

tive, with three semicircles of figures, one above another, receding into the picture. One of the greatest decorations in the world.

DORYPHOROS. A statue by Polyclitus; now in the Naples Museum. It was long the standard of human proportion and was known as *The Canon.* It represents a young man holding a spear in the left hand.

DUCHESS OF DEVONSHIRE. Painted by Gainsborough in 1783 and by Reynolds.

DYING GAUL, THE. This famous statue in the Capitoline Museum, Rome, represents the passing away of a vanquished barbarian, at once a realistic and pathetic figure. This is a marble copy of a bronze statue executed in the time of King Attalus of Pergamus, about 240 B. C., and is sometimes erroneously called the *Dying Gladiator.*

EAST DOORS OF THE BAPTISTRY OF FLORENCE. Bronze doors, by Ghiberti. Ten scenes of biblical subjects give an impression of depth by the careful varying of the height of the relief. They are remarkable for the delicacy of execution and the grace of the figures. Michelangelo said they were "worthy to be the Gates of Paradise."

ECCE HOMO (BEHOLD THE MAN). The presentation in art of the passion and capacity for suffering of Christ; a favorite theme of painters. The most notable examples are by Correggio, in the National Gallery at London; Guido, in Dresden Gallery; Murillo, in Madrid and Cadiz galleries; and Titian, in Madrid and Vienna museums.

EGYPT AWAKENING. A statue by Elwell; in Paris. A typical Egyptian female figure, seated, with arms uplifted and stretching as one who has just awakened.

ELEVATION OF THE CROSS. Raising the cross after Christ had been fastened upon it; a favorite subject. The best are by Rubens, in the Antwerp Cathedral, and by Van Dyck, in Notre Dame at Courtrai, Belgium.

ELGIN MARBLES. Taken from Athens in 1803 by Lord Elgin and sold for £35,000 ($170,000) to the British government; now in the British Museum. Among them are parts of a frieze from the Parthenon. Considered the finest examples of ancient art. Probably the work of Phidias about 440 B. C.

EMBARKATION FOR CYTHERA. In the Louvre in Paris. The departure of a group of courtiers and ladies on a picnic, by Watteau, and embodying the spirit of the *Fêtes Galantes.* Although ostensibly a return to nature, the scene is in reality highly affected. Its crystal clear color and delicate execution typify the artist's work.

EMBARKATION OF THE QUEEN OF SHEBA. Painted by Claude Lorrain in the National Gallery of London. The fragments of classical architecture, the brown shadows, and the choice of subject are to be found in many of these "Italian Landscapes" but the lyric quality is peculiar to the artist. He was the first to introduce the sun into his paintings.

ENTOMBMENT. Bearing the body of Christ to the tomb. Among the most celebrated is that by Titian, in the Louvre, painted in 1523; owned by Charles I., and on his execution, passed on to Louis XIV. It is one of the most famous pictures in the world. Among the best known are those by Caravaggio, in the Vatican at Rome; Giotto in the Arena Chapel at Padua; Raphael, in the Borghese Palace at Rome; and Titian, in the Madrid Museum.

ERASMUS. This great cosmopolitan character is represented in a famous portrait by Holbein in the Louvre. Seated in profile, the character of the man has been most sympathetically rendered with fidelity and great beauty of technique.

ET IN ARCADIA EGO. Painted by Poussin. Figures of shepherds and shepherdesses in a classic landscape deciphering an inscription on an antique fragment. The figures are sculpturesque in effect, and well drawn, but the color contrasts of blue and red are not very pleasant.

EXECUTION OF MADRILENOS. An incident of the Napoleonic occupation of Spain showing a military execution at Murat's command. Goya first sketched the subject in the blood of the victims on a plaster wall. This bitter work suggests the horror of war. It is in the Prado at Madrid.

EXPULSION FROM EDEN. The scene is related in *Genesis 3* and has been frequently depicted by artists. In the Brancacci Chapel, Masaccio has represented the figures driven forth by the Angel of the Lord, Eve crying aloud with anguish, and Adam even more tragic, though his sorrow is silent. The scene also occurs on the ceiling of the Sistine Chapel painted by Michelangelo.

FARNESE BULL. A marble group credited to Apollonius and Tauriscus of the third century B. C.; found in the ruins of the Baths of Caracalla in 1546 and placed in the Farnese Palace at Rome; now in Naples Museum. Zethus and Amphion, sons of Antiope, are tying Dirce to the horns of a bull to punish her for ill-treating their mother.

FARNESE HERCULES. Credited to Glycon of Athens in the first century B. C.; perhaps a copy of the Hercules of Lysippus. Hercules stands leaning upon his club with his right hand behind him; found in the Baths of Caracalla in 1540; placed in the Farnese Palace; now in the Naples Museum.

FEDERIGO DA MONTEFELTRO. The duke of Urbino made his small state a center of learning and humanism in the fifteenth century. He is distinguished from the rest of the Italian princes of the time by his honesty. A pair of profile portraits in the Uffizi Gallery in Florence painted by Piero della Francesca about 1472 represent the duke and duchess. The outright realism of the painting is instanced by the break in the duke's nose caused by having its bridge carried away by a spear thrust in a battle.

FETE D'AMOUR. A typical painting of the School of the Fêtes Galantes reflecting the frivolous, but delicate spirit of the time of Louis XV. The clear colors and the refined suggestiveness, drawn with the most subtle touch are typical of Watteau. It is in the Gallery at Dresden.

FETE CHAMPETRE. Painted by Giorgione and now in the Louvre. A courtly youth strikes a chord on a lute while looking at a shepherd. A nude nymph or shepherdess listens while the courtier's aristocratic lover turns away to pour water into a fountain.

FLAYING OF S. BARTHOLOMEW. Painted by "Lo Spagnoletto" (Jusepe de Ribera). The coarse realism derives from Caravaggio. A strong but unpleasant painting in the Kaiser Friedrich's Museum in Berlin.

FOREST, IN THE. Painted by Diaz in the Louvre. The Barbizon school preferred modest landscapes treated with greater fidelity to nature than had those in the old "Italian manner." Here the warm sunlight filtering through the trees of a wooded glade is most effective.

FOUR EVANGELISTS, THE. Painted by Jacob Jordaens in the Louvre. A deep feeling of religious belief is apparent, such faith as was stimulated by the Catholic Counter Reformation. The massive figures are monumental in effect in spite of the vigorous naturalism of the types taken from humble life.

FOUR HORSEMEN, THE. The riders of the Apocalypse coming to destroy the world, a woodcut by Albrecht Dürer, and one of his greatest.

FRANCIS I., PORTRAIT OF. Painted by Jean Clouet, and now in the Louvre. Realism tempered by the French passion for beauty, extremely fine draftsmanship, and subtle characterization of the Renaissance ruler of France, a great and discriminating patron of the arts.

FRANCIS, ST., LIFE OF. Painted by Giotto in S. Francesco at Assisi, and in the Bardi Chapel of S. Croce in Florence. The massive figures are conceived with dignified solidity, and the composition of such scenes as the *Saint before the Sultan* and the *Death of the Saint* in the Bardi Chapel are masterfully handled.

FRIEDLAND. Painted by Meissonier in 1878; now in the Metropolitan Art Museum in New York. A review of the victorious French army after the battle of Friedland (1807), which made Napoleon dictator of Europe. The Twelfth Cuirassiers gallop through the trampled grain and salute Napoleon.

GANYMEDE AND THE EAGLE. A marble group in the Vatican, supposed to be a copy of the bronze statue by Leochares in Athens, representing Ganymede being carried to heaven by Zeus in the form of an eagle. Painted by Correggio, and now in the Belvedere at Vienna. The vertical panel is composed and held together by a single grand reversed curve passing through Ganymede and his dog.

GATTAMELATA. This first large equestrian statue since antiquity is by Donatello, and is at Padua. Garbed like a Roman emperor, the rider sits firmly on his horse, and has not only been characterized personally, but embodies the type of military captain for all time.

GAUL AND HIS WIFE, THE. A famous group from Asia Minor, in the third century B. C. of the Pergamene School, now in the Villa Ludovisi at Rome. The Gaul is killing himself after having killed his wife; one of the most pathetic studies of antiquity.

GENEVIEVE, ST. Scenes from the life of this patron saint of Paris by Puvis de Chavannes painted on the walls of the Pantheon in Paris. The deliberately chosen light colors of low intensity and the lack of realism make of these perhaps the best mural decorations of the nineteenth century.

GENTLEMAN AND LADY DRINKING WINE. In the Kaiser Friedrich's Museum in Berlin by Vermeer. The masterly composition of rectangular forms skillfully varied by just enough curves, the perfect relation of colors and values in light and shadow and the refined domesticity are noteworthy.

GEORGE, ST. A marble statue by Donatello originally on the Or San Michele, and now in the Bargello in Florence; a lifelike image of the warrior saint embodying the Christian ideal and revealing vivid naturalism, for which Donatello is famous.

GIORNO, IL:—THE DAY. Painted by Correggio in 1523; now in the Parma Gallery. The Virgin, holding Jesus, is seated with Magdalene on her right and St. Jerome, with lion, on the left.

GIRL WITH PARROT. By Manet in the Metropolitan Museum in New York. Color and texture are most successful and form has been suggested with very little shading.

GISZE, GEORGE, PORTRAIT OF. Painted by Holbein, in the Kaiser Friedrich's Museum in Berlin. A successful merchant of the Steelyard, whose character has been analyzed for all time by the painter's brush. The incidental details are most carefully depicted.

GUIDECCA, THE. A Venetian landscape in the Gallery at Leicester by Turner. Like many of this artist's works, rich atmospheric effects provide the opportunity for resplendent color.

GLEANERS, THE. Painted by Jean François Millet, and now in the Louvre. Large, almost burly peasant women are shown stooping to gather the remnants of the reaping. Such figures embody humanity's eternal struggle for existence, but by their strength are able to bear the burden. They might illustrate a sermon on the nobility of labor.

GRACES, THE THREE. Three nude female figures by Rubens in the Prado at Madrid. The bodies are heavy, rolling in exuberant flesh, and not at all the present day ideal, but are magnificently painted for all that. A sensual but vigorous work.

GRAHAM, THE HONORABLE MRS. Painted by Gainsborough, and a superb piece of painting. The aristocratic life of England, highly conscious of its distinction found its best interpreter in Gainsborough. It is in the National Gallery of Edinburgh.

GREEK SLAVE, THE. A marble statue by Hiram Powers in 1847. Now in the Corcoran Art Gallery at Washington. A nude figure of a woman, chained and exposed for sale in the slave market. Many copies were carved by Powers. It is one of the first nude statues produced by an American.

GUIDORICCIO DA FOGLIANO. A portrait of the Sienese general who was victorious in the Battle of Sassoforte. It is in the Palazzo Pubblico at Siena and was painted by Simone Martini in 1328. Although unrealistic in almost all details, it gives a surprisingly martial effect, and, probably because of the repeated curves, suggests movement far more than many naturalistic works.

HALE, NATHAN. A statue by MacMonnies; in City Hall Park, New York City. It represents the last moments of the patriot's life as he stands, bound, and utters his defiant words, "I only regret that I have but one life to lose for my country."

HAMILTON, LADY, AS A BACCHANTE. Painted by Romney. The famous character, mistress of Lord Nelson, depicted as a votary of Bacchus.

HAMPSTEAD HEATH. A beautifully composed landscape in the National Gallery in London, by John Constable. He introduced the newer realistic attitude toward landscape, later followed by the French Barbizon school. It is partially derived from Dutch landscape of the seventeenth century.

HAND OF GOD, THE. Sculpture by Rodin, representing a hand emerging from the uncut rock, and holding a man and woman in its grasp. The mystery is enforced by having portions of the stone left entirely uncut. It is in the Metropolitan Museum in New York.

HANGING GARDENS OF BABYLON, THE. One of the seven wonders of the ancient world created by Nebuchadnezzar for his queen Amytis. Great terraces bearing earth rose one above the other. Each was large enough to support great trees and the whole formed a huge garden.

HARVARD, JOHN, STATUE OF. By French (1882); at Cambridge. A very effective and artistic work.

HASTINGS, WARREN. Portrait painted by Lawrence in the National Portrait Gallery in London. The great ruler of India at whose trial for high crimes and misdemeanors many great orators spoke, including Fox and Burke.

HAYMAKERS, THE. Painted by Bastien Lepage and now in the Luxembourg. During the lunch hour two peasants are resting from their labors. The work shows the indistinct shadows of outdoors.

HAY WAIN, THE. One of the finest paintings by Constable, now in the National Gallery, London. It is a simple English landscape painted in the realistic style of this great innovator.

HEGESO, GRAVE STELE OF. One of the best of a long series of reliefs serving as tombstones and some in all probability, by the sculptors who worked on the Parthenon. As usual, there is a scene suggestive of parting and a vague melancholy, but no reference to death or even to old age.

HENRY IV. RECEIVING THE PORTRAIT OF MARIE DE MEDICI. One of a series of large allegorical works by Rubens and now in the Louvre. They were painted to celebrate the marriage of the French king and Marie de Medici, and are designed from a decorative point of view.

HERA OF SAMOS. An archaic Greek statue dedicated by Cheramyes, and now in the Louvre. The cylindrical form and certain details suggest that its ancestors were probably carved from the trunks of trees. Nevertheless, the fine lines are superior in design and decorative quality to those of many more realistic works.

HERMES OF PRAXITELES. Statue by Praxiteles; found in 1877 in the excavation of the Temple of Hera at Olympia. The god is holding the infant Dionysus on his arm; now in the Olympia Museum.

HESI, RELIEFS OF. Three wooden panels carved in low relief from the fourth dynasty in Egypt are in the Cairo Museum. They show a delicate feeling for material, and an exquisite skill of workmanship. The central panel is well composed, but the two side panels have allowed hieroglyphics to encroach too near the figure.

HILANDERAS, LAS, or THE TAPESTRY WEAVERS. Painted by Velasquez about 1656; now in the Madrid Museum. This masterpiece represents women at work in the royal tapestry factory of Santa Isabel at Madrid. The tapestry in the background reproduces Titian's *Europa and the Bull.*

HILLE BOBBE. Painted by Frans Hals about 1650; now in the Berlin Museum. The witch of Haarlem is seated at a table, an open beer stein before her, and an owl perched on her left shoulder. There is a similar picture in the Metropolitan Art Museum in New York.

HOLY FAMILY, THE. A favorite subject with the great painters. The most famous are by Fra Bartolommeo, at Panshanger House, England, and in the Pitti Palace at Florence; Michelangelo, in the Uffizi Gallery at Florence; Domenichino, in the Louvre; Bernardino Luini, in the Louvre; Murillo, in Madrid, at the Hermitage, in the Louvre, in the Metropolitan Art Museum at New York, and in the National Gallery in London; Sebastiano del Piombo, in the Baring Collection in London; Raphael, in the Louvre and at Munich; Rembrandt, in the Hermitage; Rubens, in the Hermitage, the Pitti Palace, Vienna Museum, and Windsor Castle; Andrea del Sarto, the Pitti

Palace, Louvre, and National Gallery; Titian, in the Louvre; and Paolo Veronese, in the Uffizi in Florence.

HOLY NIGHT. One of the great altarpieces painted by Correggio in 1529, and now in the Royal Gallery, Dresden. It is the birth of Christ, with the surrounding darkness made more intense by contrast with the light which radiates from the new-born babe and which illumines the Madonna and the faces of those around.

HOPE. Painted by Watts, and in the Tate Gallery in London. Represents a woman with bowed head, seated on the world listening to a strain of music from a single string of a lyre.

HORSE FAIR, THE. Painted by Rosa Bonheur in 1853; now in the Metropolitan Art Museum in New York. It is 8 feet high and 15 feet long.

HUGO, VICTOR, PORTRAIT OF. A fine statue of the great French novelist by Auguste Rodin in the Garden of the Palais Royale in Paris. The characterization is superb, and the head thoughtful.

HYMN OF DEPARTURE FOR WAR, THE. A sculptured group by Rude on the Arc de Triomphe de l'Etoile, in Paris. The figure of the War Goddess with drawn sword hovers above a group of young and old soldiers. It is filled with the thrilling patriotism of the *Marseillaise*.

ILARIA DEL CARETTO, TOMB OF. By Jacopo della Quercia in the Cathedral at Lucca. The calmly beautiful figure of the lady lying quietly asleep is one of the most restful in all art. On the sides of the sarcophagus classic babies carry heavy garlands of fruit and flowers.

IMMACULATE CONCEPTION, THE. Painted by Murillo in 1678; now in the Louvre; carried from Spain by Marshal Soult; sold in Paris, in 1852, to the French government for 615,000 francs, the largest sum paid up to that time for any picture.

INDUSTRY. A symbolic figure on one of the ceilings of the Ducal palace at Venice by Veronese. The figure fits well in the difficult T-shaped frame.

INNOCENT X. Painted by Velasquez, and in the Doria Gallery in Rome. A powerful characterization of that pope. A sketch or replica of this work is to be seen in Fenway Court in Boston.

INNOCENTS, FOUNTAIN OF THE. An architectural fountain with low relief panels of nymphs pouring water from jars resting on their shoulders. This Parisian fountain by Jean Goujon was not entirely completed according to the original design. The nymphs with their graceful figures and clinging drapery suggest comparison with the balustrade of the temple of Wingless Victory on the Acropolis at Athens. The reliefs are now in the Louvre.

IO. Painted by Correggio in 1530 for the Duke of Mantua who presented it to the emperor Charles V. It is now in the Belvedere at Vienna. Jupiter shrouded by mist can barely be discerned embracing the nude nymph.

IZARD, MR. AND MRS. RALPH, PORTRAIT OF. One of John Singleton Copley's best portraits, now in the Museum of Fine Arts at Boston. The figures have been freed from some of the awkwardnesses, but still retain a touch of provincialism. The most advanced taste at that time is indicated by the ruins of the Colosseum in the background and by antique statues.

JALEO, EL. A representation of a Spanish dancer, the yellow footlights shining up at her. In the background are musicians. The painting gives the twang of the instruments, the click of castanets, and the tapping of feet in a most suggestive way. It was painted by Sargent, and is beautifully placed with the light coming from below and enhancing the effect. It is in Fenway Court in Boston.

JAGUAR, DEVOURING A HARE. Bronze group by Barye in the Louvre, showing the result of his long and careful study of animals. The observation of wild beasts is most apparent in the cruel twist of the feline tail.

JAMES, ST., LED TO EXECUTION. Painted by Mantegna in the Eremitani at Padua. Interest in antique architecture, costume, and perspective is typically expressed. To obtain the desired illusion, the painting is placed above the eye of the spectator, and the scene takes place as though on a raised stage with no ground visible.

JEROME, ST., IN HIS CELL. An engraving by Albrecht Dürer showing the saint at work in his cell. The room is such a one as the artist must often have seen himself rather than the sort which the saint would have known. The lion of the saint lies quietly in one corner.

JOAN OF ARC. 1. In the Metropolitan Museum in New York, a painting by Bastien Lepage, done in 1880 shows the peasant girl looking at the visions of angels and knights which suggests her career. 2. In sculpture, she has frequently been represented on horseback at the head of her troops leading them to higher ideals like some spiritual angel, as in the statues by Fremiet and Dubois, or the saint praying devoutly as in Anne Hyatt's treatment in the Cathedral of St. John the Divine in New York.

JOHN THE BAPTIST, ST., BIRTH OF. In the church of Santa Maria Novella in Florence, a fresco by Domenico Ghirlandaio. The work is filled with the portraits of noble Florentines, but attains dignity and monumentality.

JOHNSON, SAMUEL, PORTRAIT OF. The dictator of English letters of the eighteenth century was painted by Reynolds and the work is now in the National Gallery.

JULIUS II. The portrait of the pope in the Pitti Palace in Florence by Raphael is one of the latter's masterpieces of portraiture.

JULIUS CAESAR. There are, of course, many portrait busts of the great Roman, some of which suggest his strength of character in a noble manner. For the most part, these busts are highly realistic.

JUPITER OF OTRICOLI. The bust of Jupiter found at the Umbrian village of Otricoli, and now in the Vatican Museum at Rome, is believed to have been copied from the historic Olympian statue, the famous masterpiece of Phidias, which was reckoned among the seven wonders of the ancient world.

JUSTINIAN, EMPEROR, AND EMPRESS THEODORA. Two fine mosaic panels in the choir of the church of S. Vitale at Ravenna. The royal pair, attended by ecclesiastics and courtiers, bring gifts to the church. Fine in its decorative effect, the color and unusual amount of individuality in the heads make these mosaics especially noteworthy.

KHAFRA, PORTRAIT OF. A colossal diorite portrait of this pharaoh of the fourth dynasty, in the Museum at Cairo is one of the best of Egyptian statues. His head is protected by the hawk with wings outstretched, and the face has a fine mixture of idealization and characterization. The monarch is almost divine in that impression of strength and justice tempered by mercy. It is in the museum at Cairo.

KNEELING MONK. In the National Gallery in London, painted by Zurbaran. Very simple, but most effective in its suggestion of piety. It imposes its unquestioning faith on the spectator.

LAOCOON. A celebrated group in the Vatican, the work of Agesander, Polydoros, Athenodorus of Rhodes, about 50 B. C. A Trojan priest, gripped in the deadly coils of the serpents, sees the life of his two sons being crushed out beside him, while he, tortured alike by his pain and powerlessness, utters a last cry of anguish. The pathetic group inspired the Laokoon of Lessing.

LAST SUPPER, THE. Painted by Leonardo da Vinci in 1498 on the wall of the refectory in the convent of Santa Maria Delle Grazie, at Milan. It is in oil and measures 15 feet high and 28 feet long. The refectory was used as a stable for dragoons in 1796. This, with dampness and repainting, has nearly destroyed it. Fra Angelico, Ghirlandaio, Murillo, Raphael, Holbein, Tintoretto, Titian, and Rubens have treated the same theme.

LAUGHING CAVALIER, THE. Painted by Frans Hals and now in the Wallace Collection in London. An encyclopedia of the smile might be compiled from Frans Hals's works. The color and technique are powerful.

LEO X., POPE, PORTRAIT OF. A famous portrait by Raphael in the Pitti Palace in Florence, Italy. Dressed in a loose white robe, with fur trimmed sleeves, red velvet collar and cap, the Pope sits at a table with a book before him, holding an eyeglass in one hand. Behind him stand his two nephews, Cardinal Giulio de' Medici (Clement VII.) at the right, and Cardinal Luigi de' Rossi, his secretary, at the left. One of the most celebrated portraits in the

world. It was carried to Paris in 1797, returned in 1815.

LIBERTY LEADING THE PEOPLE. An allegorical figure of Liberty flanked by a youth and a man of the middle class, leading a motley group over the barricades of July 28, 1830. A fine mixture of realism and symbolism, of determination to be forever rid of the Bourbon Dynasty. Painted by Delacroix and now in the Louvre.

LIGHT OF THE WORLD. Painted by William Holman Hunt in 1854; now in Keble College at Oxford. Christ stands before a closed door, bearing a lantern in his hand.

LION OF LUCERNE. Carved by Thorwaldsen on the face of a cliff at Lucerne, in Switzerland. It is of colossal dimensions and represents a crouching lion pierced by a spear and dying; to commemorate those of the Swiss Guards who died defending Louis XVI. in the Tuileries during the Revolution (August 10, 1792).

LOREDANO, DOGE, PORTRAIT OF. A distinguished portrait by Giovanni Bellini in the National Gallery in London remarkable for its rich color harmonies.

"LUDOVISI THRONE." In the Museo delle Terme at Rome. A U-shaped block carved on the three outer sides. The front shows the birth of Aphrodite. Veiled in dripping garments the goddness rises from the waves with two attendants on either side. The ends of the throne depict a nude woman and a draped female figure respectively; generally interpreted as two aspects of the worship of love. Although its use has not been absolutely established, it seems likely that, with the "Boston Throne," it served as a decoration on one end of an altar.

LUKE, ST., DRAWING THE VIRGIN. Painted by Roger van der Weyden. There are replicas of it in the Hermitage at Leningrad, in Vienna, in Munich, and in the Museum of Fine Arts in Boston. The composition shows St. Luke on one side, the Virgin and Child on the other, while between is a landscape seen through three openings which was derived from Van Eyck's *Madonna of the Chancellor Rolin.*

MADONNA. The Virgin, generally with the Infant Christ, and frequently with subsidiary figures, was a favorite theme of painters. The following examples are noteworthy:

Madonna of the Burgomaster Meyer. Painted by Hans Holbein the Younger in 1525–6. It is now in the Museum at Darmstadt. Probably the best of Holbein's religious works. The pious but worldly donor and his wife appear at the sides.

Madonna of the Canon van der Paele. A matter of fact work in Bruges painted by John van Eyck with great beauty of finish and detail. On the left stands St. Donatien, the Bishop of Bruges, and to the right, a slightly awkward St. George presents the heavy donor. Though the individual figures, especially the donor, are not handsome, the work is powerful and satisfying from a technical standpoint.

Madonna del Cardellino or Madonna of the Goldfinch. By Raphael in 1506; now in the Uffizi at Florence. St. John offers a goldfinch to the Child.

Madonna of the Chancellor Rolin. Painted by Jan van Eyck in 1426 and now in the Louvre. The donor kneels at one side with the Madonna and Child at the other. An angel crowns the Virgin. Beyond, through a triple arch is a fine landscape background. The composition was inherited by the Flemish school and was frequently used by van der Weyden.

Madonna and Child. In the Uffizi Gallery in Florence by Cimabue. Influenced by Cavallini, a new life and spirit are evident, an attempt to give vitality to old forms inherited from Byzantium.

Madonna and Child. In the Palazzo Pubblico at Siena by Guido da Siena. One of the most disputed paintings in the world. It is signed and apparently dated 1221, though some authorities have questioned the date.

Madonna and Child. In the Pitti Palace in Florence by Fra Filippo Lippi. The model for the Madonna was probably Lucrezia Buti, the mistress and later the wife of the painter. A masterly composition in a circular frame.

Madonna and Child. In the lower church of S. Francesco at Assisi by Pietro Lorenzetti. On either side of the Virgin are SS. Francis and John. The beginning of tender affection between the Mother and Child.

Madonna del Coniglio, or Madonna of the Rabbit. By Titian in 1530; now in the Louvre. St. Catherine, with Jesus in her arms, stoops to look at a rabbit which the Virgin holds in her hand.

Madonna di Foligno. By Raphael in 1511; now in the Vatican at Rome. The Mother and Child look down from the clouds upon St. Jerome, St. Francis, and St. John the Baptist. Formerly in the Convent of St. Anna at Foligno.

Madonna del Granduca. An early example of Raphael's Madonna in the Pitti Palace at Florence. The half length figure of Mary is standing holding the Child in her arms. Its winning simplicity is reenforced by beautiful color.

Madonna of the Magnificat. This Madonna by Botticelli in a circular frame is a magnificent example of composition within that difficult space. The Virgin's face bears an expression of delicate melancholy. It is in the Uffizi Gallery in Florence.

Madonna del Pesce or Madonna of the Fish. By Raphael about 1514; now in the Madrid Museum. On the left of the enthroned Mother and Child the archangel Raphael presents Tobias holding the miraculous fish.

Madonna of the Rocks. By Leonardo da Vinci; now in the National Gallery in London. The Child is seated upon the ground blessing the infant St. John. In the background there is a grotto and high rocks. This is a replica, with some modifications, of the one in the Louvre.

Madonna Rucellai. Hanging in the church of Santa Maria Novella in Florence. This great painting is erroneously ascribed by Vasari to Cimabue. The work is certainly Sienese, and is probably by Duccio in 1285.

Madonna del Sacco or Madonna of the Sack. By Andrea del Sarto in 1525; now in SS. Annunziata de' Servi at Florence. At the left of the Mother and Child St. Joseph leans upon a sack reading.

Madonna della Sedia or Madonna of the Chair. By Raphael in 1516 and 1517; now in the Pitti Palace at Florence. The Virgin, seated in a chair, clasps the infant Jesus in her arms, with the infant St. John on the right in adoration.

Madonna di San Sisto, or *the Sistine Madonna,* or *the Madonna of St. Sixtus,* by Raphael in 1518; now in the Dresden Gallery. The Virgin, holding Jesus in her arms, stands upon clouds, surrounded by a glory of cherubim, between green curtains. On the left St. Sixtus (Pope Sixtus II.) kneels; St. Barbara on the right; and two angels lean upon a balustrade below.

Madonna with St. Anna. By Leonardo da Vinci; now in the Louvre. The Virgin, seated upon the knee of Santa Anna, leans forward to take the Child, who caresses a lamb.

Madonna of the Trees. In the Academy at Venice by Giovanni Bellini. Typical of his half length Madonnas. Behind the Virgin is a curtain with a tree on each side. The unobtrusive but heartfelt religious feeling, the solid qualities without a trace of ostentation make of this work a masterpiece.

MAIDS OF HONOR, THE:—LAS MENINAS. A masterpiece of Velasquez in the Prado at Madrid. It has been called a "Theology of Painting" by Luca Giordano. Velasquez himself is seen at work on a large canvas, while the Infanta with her ladies-in-waiting have come to look on. Four different sources of light are included, atmospheric effects are accurately rendered, and the composition, while not in the least obvious, is so carefully adjusted that not a line may be changed.

MAJA DESNUDA. Panel of a nude woman reclining on a couch, painted by Goya, in the Prado at Madrid. A more passionately sensual work would be difficult to find.

MAJA VESTITA. The model of the Maja Desnuda has been clothed, but the pose and expression are, if anything, more seductive than before. The composition has been improved by a more pronounced emphasis on the diagonal. Like the last, it is by Goya in the Prado. It is erroneously supposed that the Duchess of Alba was the model.

MAJESTAS. The Madonna enthroned in majesty and surrounded with a gálaxy of saints and angels. The altarpiece of the high altar of the cathedral of Siena, now in the Opera del Duomo at Siena was painted by Duccio in 1308–11. The rich green and gold of this painting is splendid in effect, and its drawing has seldom been surpassed. The work also included panels as a predella (base) and fifty-two panels of scenes from the life of Christ on the back giving us our basis for a knowledge of the master's style. The subject was also treated in fresco by

Simone Martini in 1315 in the Palazzo Pubblico at Siena.

MAN OF SORROWS. Albrecht Dürer in 1500 represented himself as the Man of Sorrows. The painting is in the Pinakothek at Munich. It is a very serious work. The hair is represented in stringy locks after the fashion of this artist.

MAN WITH THE GLOVE:—L'HOMME AU GANT. A noted portrait painted by Tiziano Vecelli, or Titian, as he is more popularly called. It is in the Louvre, Paris. It is an interesting specimen of the work of the greatest painter of the Venetian school.

MAN WITH THE HOE. Painted by Jean François Millet in 1862. It represents a weary peasant leaning upon a clumsy hoe. It suggested Edwin Markham's well-known poem written in 1899.

MAN WITH PINK. In the Kaiser Friederich's Museum at Berlin by Jan van Eyck. The subject has sometimes been identified as Count Wilhelm IV. of Bavaria. It is very realistic, and the contrast of the stern character of the sitter and the delicate pink is most effective.

MARAT, DEATH OF. The revolutionary hero murdered while in his bath by Charlotte Corday. Painted by Jacques Louis David is in the Museum at Brussels. Contemporary scenes and stark tragedies are unusual in his work.

MARBLE FAUN. A young satyr, leaning against a tree trunk, by Praxiteles in the Capitoline Museum at Rome. A better but more fragmentary copy exists in the Louvre. The semi-bestial character has been almost entirely suppressed physically, but is betrayed by the lighthearted, carefree impression of the work. It was made the subject of a book by Hawthorne.

MARIA LOUISA DE TASSIS, PORTRAIT OF. By Anthony Van Dyck in the Liechtenstein Gallery at Vienna. The distinction, the innate aristocracy, and the beauty of color and technique were passed on to the later English portrait school through such works as this.

MARKET GIRL, THE. A simple domestic genre scene of a housemaid with a market basket, and other small genre subjects brilliantly depicted by Chardin are now in the Louvre.

MARLY, HORSES OF. Sculptured figures in the Champs Elysées in Paris by Guillaume Coustou. They were probably inspired by the antique horse trainers on the Quirinal in Rome. The lively action, and the technical facility foretell the rococo style.

MARRIAGE A LA MODE. A series of six well-known pictures by Hogarth, painted about 1750; now in the National Gallery in London.

MARRIAGE OF S. CATHERINE. Painted by Correggio and now in the Louvre. The charming feminine types have but little religious feeling in spite of their attractiveness. Outlines have been somewhat eliminated by shading producing a soft effect.

MARRIAGE FEAST AT CANA. Painted by Paolo Veronese in 1563; in the Louvre. Based upon *John II;* 1–12. One of the largest easel canvases ever painted—21 feet wide and 31 feet high. There are in it over 130 figures, portraits of contemporaries, in Venetian costume. Although the figure of Christ is placed well back in the picture, the eye is skillfully focused upon Him by many devices of composition. Another famous version is by Tintoretto in S. Maria della Salute in Venice.

MARRIAGE OF THE VIRGIN. Painted by Raphael, and is now in the Brera Gallery in Milan. The work has been influenced by Perugino's fresco of Christ delivering the keys to St. Peter. A group of disappointed suitors break their rods.

MARTYRDOM OF ST. DENIS. Painted by Bonnat. This brutal work depicts the moment when S. Denis reaches out for his head which has just been cut off. The executioner starts back in amazement.

MARY, QUEEN, PORTRAIT OF. Painted by Antonis Mor and in the Prado at Madrid. Her stern character is faithfully expressed.

MASSACRE OF SCIO. Painted by Delacroix in 1824; now in the Louvre. The canvas—13 feet 10 inches by 11 feet 6 inches—depicts many Greek families upon the shore, after the massacre, awaiting their fate. A Turk is dragging a young girl fastened to his horse, while the city is burning in the distance.

MAXIMIANUS, ARCHBISHOP, THRONE OF. A magnificent chair of ivory with rich carving on it in the Museum at Ravenna. Probably dates from the sixth century. Several of the panels tell of the story of Joseph, while others show isolated, elongated figures of saints.

McNAB, THE. A portrait by Raeburn in a private collection. The subject, head of a Scotch clan, is dressed in kilts. It is painted with great distinction.

MEDICI TOMBS. In the new sacristy of the Church of San Lorenzo in Florence. These tombs by Michelangelo are of Lorenzo, the Duke of Urbino, and Giuliano, the Duke of Nemours. In each case, the portrait is seated in a niche above a sarcophagus on which rests figures of *Dawn* and *Twilight* and *Day* and *Night,* respectively. The powerful forms are expressive of Michelangelo's dismay at the subversion of Florentine liberty, and express ineffable woe.

MEDUSA, RAFT OF THE. Painted by Jean Louis Géricault (1791–1824) in 1819. The *Méduse* was wrecked (July 2, 1816) on her way to Senegal. The passengers sought safety on a raft. Of 149, only 15 survived the privations of 12 days. The canvas measures 23½ feet by 16 feet. It is in the Louvre.

MELEAGER. The Greek hero who lost his life hunting the boar was modelled by Scopas. The most complete copies are in the Old Museum, Berlin, and in the Vatican, but the Fogg Museum, Cambridge, Massachusetts, has a figure which, though missing its limbs, has greater life.

MELANCHOLY. An allegorical figure, resting her chin moodily on her hand was engraved by Albrecht Dürer.

MERCURY. A flying bronze figure of the messenger of the gods by Giovanni Bologna in the Bargello in Florence. One foot rests on a jet of air blown from the mouth of the wind god. The effect is graceful, and the technique masterly.

MIDDLEHARNIS AVENUE. An early work by Hobbema, noted for its truth of atmospheric effect and for tone and brilliance of color. The symmetrical design is good. It is in the National Gallery at London.

MILAN, DUCHESS OF, PORTRAIT. The princess of Denmark, Maria Christina, painted by Holbein, and now in the National Gallery in London. Dressed in simple black robe, the portrait owes its effect to the perfect composition and drawing and the sensitive characterization.

MILO OF CROTON. A statue of a nude man, being devoured by a lion, while his fingers are caught in a tree trunk. It is the work of Puget, and is in the Louvre.

MINUTE MAN, THE. Statue by French (1873); in Concord. This was the great sculptor's first work, with almost no tuition. A wonderfully clever first effort.

MIRACLE OF ST. MARK. Painted by Tintoretto about 1548; in the Venice Academy. St. Mark flies down from heaven and prevents some Turks from torturing a Christian prisoner stretched upon the ground and surrounded by executioners and others. Regarded as the artist's greatest work.

MOENIPPUS. Painted by Velasquez, and now in the Prado. The old beggar is dressed in a rusty robe of black which is enriched by a play of greenish light.

MONA LISA. Painted by Leonardo da Vinci in 1500–1504; now in the Louvre. It is the portrait of Mona or Madonna or Madame Lisa Gherardini, third wife of Francesco del Giocondo; hence she is known as La Gioconda. Her face bears a remarkable, mysterious smile. Stolen Aug. 1911; recovered in Florence, Dec. 1912.

MORNING. A typical filmy landscape by Corot in the Louvre with its soft colors which nevertheless create solid tree forms. It is also the title of a landscape with cattle by Troyon, also in the Louvre.

MOSES. A statue by Michelangelo, originally sculptured for the tomb of Pope Julius II., but now in the Church of San Pietro in Vincoli in Rome. It is a marvelous creation, full of repressed wrath and passion. The massive figure of Moses on a Calvary over a well in the Monastery of Champmol near Dijon by Claus Sluter is a majestic figure lacking the passion of Michelangelo's work, but with power and immense dignity of its own.

NAPOLEON IN THE PEST HOUSE AT JAFFA. Painted by Baron Gros and now in the Louvre. An

incident of Napoleon's eastern campaign, portrayed without concealing the unpleasant.

NAPOLEON IN THE RETREAT FROM RUSSIA. Painted by Meissonier in 1865; now in the Wallace Collection in London. Napoleon and his staff retreat along an icy road, while the army crowds along in a parallel line. It is sometimes called the *Retreat from Moscow*.

NATIVITY, THE. A favorite subject with painters. Among the best are pictures by Annibale and Ludovico Carracci, in the Louvre; Correggio (Holy Night), in Dresden Museum; Domenico Ghirlandajo, in Dresden Museum; Giulio Romano in the Louvre; Filippo Lippi, in Florence Academy; and Rembrandt, in Munich Gallery.

NIGHT WATCH, THE. In the Ryks Museum at Amsterdam by Rembrandt in 1642. It shows the march out of Frans Banning Cocq's Company of the Civic guard, and strangely enough, is painted in broad daylight.

NIKE:—VICTORY. Statue of the goddess of victory by Paeonius about 436 B. C.; found in the German excavation at Olympia of 1875. The head and arms are missing. The goddess has just alighted with her garments floating behind. The *Nike of Samothrace* in the Louvre was probably erected to celebrate the victory of Demetrius Poliorcetes over Ptolemy in 306 B. C. The colossal figure flutters down on the prow of a vessel, her loose drapery swirled by the wind, and giving the desired impression of motion. The statue was reconstructed from over 575 fragments found in 1863 by the French consul at Adrianople and a few more added by the Austrian expedition of 1875.

NIOBE GROUP. A series of figures representing Niobe and her children being slain by the arrows of Apollo and Artemis. Quite a few figures of the group, rather dry in execution, are in the Uffizi Gallery in Florence. The *Chiaramonti Niobid* in the Vatican in Rome, of a fleeing daughter of Niobe, is one of the finest of ancient statues with a feeling of motion and of agitation combined with a decorative effect worthy of the greatest artist. Ancient writers said the group was either by Praxiteles or by Scopas, a ridiculous statement. It certainly is not by Praxiteles, and its connection with Scopas is by no means assured.

NORTH DOORS OF THE BAPTISTRY OF FLORENCE. By Lorenzo Ghiberti. The arrangement is similar to the medieval doors by Andrea Pisano with 28 quatrefoil panels, mostly of scenes from the life of Christ. A little more grace and refinement obtained at the expense of architectonic feeling indicates the new spirit as do the naturalistic floral borders.

OAKS. By Theodore Rousseau and now in the Louvre. The strength of this tree appealed to this artist of the Barbizon school who at times treated it with great success.

OATH OF THE HORATII. Painted by Jacques Louis David in 1785; now in the Louvre. The Horatii receive the swords from their father and swear to conquer the Curiatii or die.

OBSERVATORY, FOUNTAIN OF THE. In the gardens of the Luxembourg by Carpeaux and Fremiet, in 1874. The central motive is composed of bronze figures supporting a globe, in the basin, at its base are bronze horses and dolphins.

OLYMPIA. A portrait of a nude female figure by Manet now in the Louvre. The realism, illustrated by the fact that a celebrated courtesan was used for a model; and the introduction of the black cat profoundly shocked the taste of the period. The dark values in the composition afforded a fine contrast to the lighter flesh tones.

OLYMPIAN ZEUS. A gold and ivory statue of the Father of gods and men in the temple of Zeus at Olympia, created by Phidias, was one of the seven wonders of the ancient world. It was a seated figure about 40 feet high and all possible surfaces of the throne and footstool were covered with reliefs. The work embodied for all time the power and majesty of the god, tempered by kindliness, but the only copy which seems closely to reflect the original is a fourth century head in the Museum of Fine Arts in Boston.

PARLIAMENT, HOUSE OF. A series of paintings by Claude Monet showing Barry's masterpiece in many different effects of light and atmosphere, most of them having fine broken color.

PARNASSUS. Painted by Raphael in 1511; a fresco in the Camera della Segnatura of the Vatican at Rome. Apollo, with the Muses about him, sits playing a lyre on the summit of a mountain. Many illustrious poets are grouped in the foreground.

PAUL III. AND HIS NEPHEWS, PORTRAIT OF. Painted by Titian, in the National Museum at Naples. Color is here subordinated to tone. The crafty old pope sits crouched in his chair with his nephews behind and beside him—Ottaviano and Alessandro Farnese,—their smooth appearance rather emphasizing their treacherous character.

PEACE AND PLENTY. In the Metropolitan Museum in New York, painted by Inness. The warm tones, the luxuriant countryside, and a general air of contentment are evident.

PERGAMUM ALTAR. An Ionic colonnade surrounding an altar on three sides, the whole resting on a base decorated with a colossal frieze 7½ feet high, showing the struggle of the Gods and Giants. Great ingenuity, detailed knowledge of minor mythological characters, each with his appropriate attributes, and a skillful composition are apparent. The figures themselves are overmuscular and restless in effect. The groups of Athena, and Zeus are perhaps the best. It is now set up in Berlin. The altar was built under Eumenes II., 197–156 B. C.

PHILOSOPHER IN MEDITATION, THE. A painting by Rembrandt in the Louvre. The light of the single window falls on the old man, his head bowed in thought. Through the shadows of the rest of the canvas enough light filters to make visible the room with its staircase.

PIAZZA SAN MARCO, VENICE. Painted in 1492 for the School of S. Marks by Gentile Bellini, and now in the Academy at Venice. The famous square and its still greater church is represented on a feast day with fidelity and the splendor of pageantry dear to Venetian artists.

PIETA. The lamentations of the Virgin and others over the body of Christ. Among the most famous are those by Correggio in the Parma Gallery; Van Dyck, in Munich; Quentin Massys, in Antwerp; Michelangelo in St. Peters, Rome, Perugino, in Florence Academy; Rubens in Brussels; Andrea del Sarto in Vienna; and Titian in the Venice Academy.

POLLICE VERSO. A gladiatorial combat, painted by Gérôme, shows the victor looking to the Vestal Virgins for the signal granting life or death to the conquered. With one accord, the Virgins turn their thumbs down thereby condemning the loser to death.

POMPADOUR, MME. DU, PORTRAIT OF. Painted by François Boucher, in the National Gallery at Edinburgh. The famous mistress of Louis XV. who did so much for the arts of the time, is seen dressed in the height of fashion, and reclining on a couch.

PORTINARI ALTARPIECE. A huge painting made for Tommaso Portinari, agent of the Medici in Ghent, by Hugo van der Goes, and sent to Florence where it was set up in the church of S. Maria Novella in 1478. The subject is the *Adoration of the Shepherds*, who are represented by ungainly peasants coming from the fields and painted with true Flemish realism. This is one of the most important paintings in the world from an historical standpoint, in that it showed the Italians the Flemish oil technique with its dark shadows and realistic details. The work is now in the Uffizi Gallery in Florence.

PRESENTATION OF THE VIRGIN, THE. Tintoretto painted this subject about 1548 in the church of S. Maria dell' Orto in Venice, placing the little figure of the Virgin, outlined against the sky and set back within the picture. A better known version is by Titian in the Academy at Venice.

PROPHETS, THE. By Sargeant in the Boston Public Library. The biblical characters are skillfully grouped about Moses and beautifully characterized. The figure of Hosea clothed and hooded in heavy white drapery is perhaps the best.

PSAMTIK NEITH, HEAD OF. A priest's head of the Saite period of Egyptian art remarkable for its careful observation of nature in the contours of the skull and the winkles of the face.

PULPIT OF THE BAPTISTRY AT PISA. By Nicola d' Apulia about 1260. The work inspired by the antique is hexagonal in plan with reliefs from the life of Christ on each face. The compositions are

dignified and massive especially the one representing the nativity.

PULPIT IN THE CATHEDRAL OF SIENA. Somewhat later than the previous pulpit, but also by Nicola d'Apulia aided by his son, Giovanni Pisano. Here we find more humanism and more realism, but rather less dignity.

RAIN, STEAM, SPEED. In the Tate Gallery in London by Turner. A railroad train crossing a viaduct. Remarkable for the atmospheric effects of smoke, mist, and color.

RAKE'S PROGRESS, THE. Eight pictures painted by Hogarth in 1735; now in the Soane Museum. They represent the life of a profligate young man who ends his days in madness and poverty.

RAMESES II. Four colossal statues of the great Pharaoh, over 60 feet high, carved from the cliff before his rock cut temple at Abu-Simbel. In spite of the size, great kindliness and dignity has been impressed on the features of the ruler. He was probably the Pharaoh who oppressed the Israelites as told in the *Book of Exodus*. A fine portrait statue of the Monarch may be seen in the Museum at Turin.

RAPE OF PSYCHE. By Prud'hon in the Louvre. Psyche, while asleep, is borne away by Zephyr, the west wind, to her lover Cupid. The softness and feminine quality echo Correggio.

RAPE OF THE SABINES. Romans seizing Sabine women for wives on the founding of Rome. The most notable examples are paintings by Luca Giordano, in Dresden Museum; Nicolas Poussin, in the Louvre; Rubens, in the National Gallery at London; and Jacques Louis David, in the Louvre.

RECAMIER, MME., PORTRAIT OF. In the Louvre by Jacques Louis David. Dressed in the short-waisted, white gown of the period, and reclining on a day bed of the "Empire" style. The drawing is perfect, the color is restful, and the work does not lack elegance.

RESURRECTION, THE. The most noted examples are by Annibale Carracci, in the Louvre; Filippino Lippi, Munich Gallery; Piero della Francesca, Borgo San Sepulchro; Signorelli Chapel of S. Brixio, Orvieto; Perugino, the Vatican; Raphael, the Vatican; Rembrandt, Munich Gallery; and Tintoretto, Pitti Palace.

RICCARDI PALACE CHAPEL. Decorated with frescoes representing the *Adoration of the Kings* by Benozzo Gozzoli, painted about 1469 in the private chapel of the palace of the Medici in Florence, gay and delightful pageantry, expressive of a fertile imagination.

ROMAN, EMPEROR AND EMPRESS EUDOXIA. These eleventh century rulers of the Eastern or Byzantine empire are being crowned by Christ in a fine ivory in the Bibliothèque, Nationale in Paris. The scene is exactly balanced, but designed with splendid simplicity and great feeling for the material.

ROMANS OF THE DECADENCE. A group of luxurious Romans of the later empire, when the stern standards of the Roman Republic had been relaxed, are portrayed at a feast, reclining on couches. The work by Couture, hangs in the Louvre.

SACRED AND PROFANE LOVE. Painted by Titian about 1503; in the Borghese Palace at Rome. Two women, seated at a fountain in a garden.

SALISBURY CATHEDRAL. Painted by Constable, in the South Kensington Museum in London. The fine old thirteenth century Gothic building is enframed by trees.

SCHOOL OF ATHENS. Painted by Raphael in 1511; in the Vatican. It shows a vast portico, having the niches filled with statues of Plato, Aristotle, Diogenes, Alcibiades, Xenophon, Pythagoras. Democritus, Epicurus, Pyrrho, Arcesilaus, Archimedes, Ptolemy, Zoroaster, Raphael, and Perugino.

SCRIBE, SEATED. Two well-known versions of this subject. The better is in the Louvre. It is a fine example of the observation of nature by Egyptian artists of the fifth dynasty, the alert head and the flabby flesh of the breast suggesting a sedentary life. Another example from the same period is in the Museum at Cairo.

SEBASTIAN, ST. Painted by Annibale Carracci, in the Louvre; Anthony van Dyck, in the Louvre and at Munich; Guercino, in the Pitti Palace; Guido, in the Pitti Palace, the Louvre, and Bologna Gallery; Mantegna in Vienna; Rubens, in Berlin; Titian, in the Hermitage, Harrach Gallery at Vienna and the Vatican; Eugéné Delacroix, in the church of Nantua in France, and Camille Corot, in the Walters Collection at Baltimore. The saint, commander of a company of praetorian guards, was bound to a stake and shot to death with arrows, by order of the emperor Diocletian, for becoming a Christian.

SEINE AT GIVERNY. A landscape by Claude Monet of which innumerable versions were produced by the artist. Each interpreted a different atmospheric effect.

SELF PORTRAIT. Many painters like to reproduce their own features as seen in a mirror. One of the best is that by Hogarth in the Tate Gallery, London, a half length showing the artist and his dog.

SETI I. OFFERING TO OSIRIS. A low relief from the rock cut temple of Seti at Abydos from the nineteenth dynasty. Though none of the conventions common in figure sculpture of the Egyptians are omitted, the extreme delicacy of the work, its elegance, and composition are masterly.

SETI MEMPTAH. The great monarch of the nineteenth dynasty carved in sunken relief with a fine feeling for rhythmic line.

SHAW MEMORIAL. By Saint-Gaudens; in Boston. A large relief in bronze in commemoration of Colonel Robert Gould Shaw, who led the first regiment of colored troops organized in Massachusetts. A wonderfully great work.

SHEIKH-EL-BELED. A fourth dynasty statue in wood of Kaaper, a minor official of the Pharaoh, possibly an overseer of some of the workmen employed on the pyramids. The desire for a lifelike impression is evident at first glance. It is in the Museum at Cairo.

SHEPHERDS, ADORATION OF THE. Among the most notable of the many pictures on this subject are those by Raphael Mengs in Madrid; Murillo, in Madrid, Seville, and the Hermitage; Rembrandt, in the National Gallery at London; Velasquez, in the National Gallery at London; Nicolas Poussin, in the Munich Gallery; and Titian, at Milan.

SHEPHERDS IN ARCADIA. An epic landscape by Nicolas Poussin in the Louvre. Figure of shepherds, obviously inspired by Roman reliefs, stooping to read an inscription on a classic altar. The painting is in the Louvre.

SHERMAN, STATUTE OF. By Saint-Gaudens; in Central Park, New York. Remarkable for the artistic conception of the attendant figure of *Victory*.

SHRIMP GIRL, THE. A girl bearing on her head a basket of shrimps. The vivacity and the skillful building up of the surfaces make of this painting by Hogarth in the Tate Gallery one of the masterpieces of English art.

SIDDONS, MRS., AS THE TRAGIC MUSE. Painted by Sir Joshua Reynolds in 1784; in Grosvenor House in London. Sarah Siddons sits enthroned upon the clouds and is attended by two tragic figures.

SINGING GALLERY. The carved balconies by Donatello and Luca della Robbia in the Cathedral Museum in Florence. Both are fine examples of the sculpture of the fifteenth century in Italy. The latter, divided into square panels, has scenes of children and young people singing, dancing, and playing musical instruments. It is a translation into marble of the *150th Psalm*.

SISTINE CHAPEL. In the Vatican built by Pope Sixtus IV. Its walls received 16 panels of scriptural subjects, about 1481, including work by Botticelli, Signorelli, Ghirlandaio, Pinturicchio, and the best scene of all, *Christ Delivering the Keys to St. Peter*, by Pietro Perugino. The Ceiling, the greatest decorative undertaking of all time was completed by Michelangelo in 1512. Scenes from the creation and other episodes related in *Genesis* form the nucleus. Below are figures of prophets and sibyls and the whole is united by hundreds of superb nude figures illustrating Michelangelo's perfect control over the human figure. The end wall is covered with a huge fresco of the *Last Judgment*, executed by Michelangelo between 1534 and 1541. It is more vehement, but less successful than the ceiling.

SLAVE SHIP, THE. Painted by Turner; owned privately in Boston, Mass. A slave ship, storm-driven, goes ashore; many of the slaves are thrown

overboard and are seen manacled and struggling in the waves. Ruskin owned it for a long time; John Taylor Johnston of New York bought it from him; and at Johnston's sale in 1876 it brought $10,000.

SLEEPING VENUS. Painted about 1505 by Giorgione and now in the Museum at Dresden. A nude goddess lies asleep on the ground. It is the first of a long series of works dealing with the reclining nude female figures, but none have attained a purity and indefinable poetry expressed in this work by Giorgione.

SONG OF THE LARK. In the Institute of Fine Arts at Chicago, by Jules Breton. A young girl reaper with a sickle in her hand stops working, to listen attentively to the bird's song.

SOWER, THE. Painted by Jean François Millet in 1850; in the Vanderbilt Collection in New York. A peasant, with a bag of grain, is sowing seed on a hillside. A driver with oxen is seen at the end of the furrow.

SPHINX, THE. A colossal piece of carving at Gizeh of the head of the Pharaoh Khafra with the body of a lion. The work is 172 feet long and 66 feet high. It seems to guard the graveyard of the ancient Memphis, and to be connected with the Pyramid of Khafra, and the Valley Temple connected with it.

SPINARIO, THE. A statue of a boy seated and engaged in pulling a thorn from his foot. The work probably comes from the transitional period of Greek art between 480 and 450 B. C. It is in the Palazzo dei Conservatori in Rome.

SPRING, ALLEGORY OF. Painted by Botticelli, and now in the Uffizi gallery at Florence. The theme is suggested by the classic poets Horace and Lucretius. The figure of *Spring* herself is at the right, blown along by the *West Wind*, and preceded by *Flora*, the Goddess of Flowers. *Venus* stands in the center typifying the fruitfulness of nature in the springtime. To the left are the *Three Graces* and *Mercury*. The spirit is not truly classic in spite of the subject, but has the yearning, melancholy, and mystic quality of Botticelli.

STAGS THICKET. Painted by Courbet, in the Louvre. A delightful forest scene with deer, rendered with great fidelity to nature.

STROGANOFF MADONNA. An ivory Byzantine Madonna and Child from the twelfth century, now in the Cleveland Art Museum. Dignity and feeling for the material are remarkable, and one gets the impression at once that the Madonna is the Queen of Heaven.

STUDIO, THE. Painted by Courbet and now in the Louvre. It is a scene of the painter in his studio surrounded by a group of friends and artists.

STUDY. A most attractive young lady with an open book before her. Painted by Fragonard with great dash and spirit and now in the Louvre in Paris.

SURRENDER OF BREDA:—LAS LANZAS. Painted by Velasquez in 1647 and now in the Prado at Madrid. It represents the surrender of Breda in 1625. Justin of Nassau surrenders the keys of the city to the courteous marquis of Spinola, the Spanish commander in the presence of the Spanish and Flemish armies. A fine composition is aided by the skillful variation of the lances.

SWING, THE. In the Wallace collection in London by Fragonard. A young lady is swinging and loses her slipper while a young man in the bushes in front of her looks on delightedly.

SYNDICS OF THE CLOTHMAKERS' GUILD. Painted by Rembrandt in 1661; in the Amsterdam Museum. Five syndics or managers of the Cloth Hall (Staalhof) are gathered around a table; one of the number is standing; all are dressed in black.

TAILOR, THE. Painted by Moroni, in the National Gallery in London. The work is a fine example of the silvery tonality of North Italian painting of the sixteenth century.

TEMERAIRE, THE FIGHTING. Painted by Turner in 1839; in the National Gallery in London. This ship was captured in 1798 from the French; she took part in the battle of Trafalgar in 1805, and was condemned in 1838. The picture shows her being towed to Rotherhithe to be broken up.

TEN NUDES, THE. An engraving by Antonio Pollaiuolo representing men fighting in various positions. Scientific knowledge of anatomy is evident.

THINKER, THE. A statue of a nude man, seated, resting his chin on his hand. By Rodin, in front of the Pantheon in Paris. The compact composition gives an impression of suppressed power.

TRANSFIGURATION, THE. Christ's appearance in glory to the disciples. The most famous is by Raphael in the Vatican. Begun in 1519, Raphael completed only the upper part before his death in 1520. Giulio Romano finished it from Raphael's designs. The picture was hung over Raphael's body at his funeral and carried in the procession to the Pantheon.

TRIBUTE MONEY, THE. The scene in *Matthew xxii, 19* and *Luke xx, 24*. Painted by Titian; in Dresden Gallery. The inquiring Pharisee holds the coin in his hand while Christ is speaking to him. Another distinguished version is the fresco in the Brancacci Chapel by Masaccio. His powerful, solid forms, aerial perspective, compact composition, and monumentality made the chapel a school for the later painters of the Renaissance.

TRIUMPH OF CAESAR. Painted by Andrea Mantegna in 1485–1492; in Hampton Court Palace, England. Nine pictures, each nine feet square, depict a grand triumphal procession of Roman soldiers, captives, and slaves preceding Caesar drawn in a chariot.

TRIUMPH OF DEATH. Painted in 1377 by a follower of the Lorenzetti brothers of the Sienese school. It is in the Campo Santo at Pisa. Three kings on horseback halt before three coffins containing the bodies of dead kings, while the Angel of Death descends with his scythe upon happy groups. Death and his victims are in the center. In the clouds are represented the souls of the blessed and the damned.

TWO NATURES OF MAN. A group by Barnard in 1894 illustrating the text, "I feel two natures struggling within me." It is in the Metropolitan Museum in New York. A victor bends over a prostrate vanquished foe, two figures being identical. Remarkable for its vigor and impressiveness.

UNKNOWN ROMAN. A terra cotta head of a Roman citizen of the last years of the Roman Republic in the first century B. C. The crows feet about the eyes, the wrinkles, the shape of the skull are all intensely interesting and realistic. It is in the Boston Museum of Fine Arts, and is one of the best classical works in this country.

URSULA, HISTORY OF ST. (1) Painted by Carpaccio in 1490–1495; in the Venice Academy. There are nine pictures. (2) Hans Memling, about 1486, painted the history on the shrine of St. Ursula in the Hospital of St. John at Bruges.

VAPHIO, GOLD CUPS FROM. A pair of gold cups found at Vaphio near Sparta, and now in the National Museum at Athens, are decorated with reliefs showing the favorite Cretan subjects of bulls. Their realism is remarkable as is the feeling for design and material.

VENUS. Painted by Velasquez, the nude goddess reclines on a couch, her back toward the spectator, looking at herself in a mirror held by Cupid. The graceful figure is beautifully constructed, and the texture of the flesh is perfectly suggested. It is in the National Gallery, London.

VENUS ANADYOMENE. Painted by Titian in 1523; in Bridgewater House in London. The goddess is standing knee-deep in the sea and is combing her tresses. A shell floats beside her upon the water.

VENUS OF MEDICI. A marble statue found in the ruins of the Portico of Octavia in Rome; placed in the Villa Medici at Rome; removed to the Tribune of the Uffizi in Florence. It is an undraped figure, the hands in front and the head turned to the left. A dolphin is beside her to indicate that she has just risen from the sea.

VOLTAIRE, SEATED. A portrait statue of the sage by Houdon in the Théâtre Français in Paris. The figure is robed like a classic character. A light smile playing over his lips indicates the witty syniciam of the man.

VULCAN, FORGE OF. Painted by Velasquez in 1629–1631; in the Madrid Museum. Vulcan and four Cyclops stop work to listen to Apollo, who stands at the left; an illuminated wreath crowns his head.

WASHINGTON, PORTRAIT OF. The features of the Father of his Country have naturally been per-

petuated by many artists. Two fine equestrian portraits by Brown in Union Square New York, and by Ball in the Public Gardens in Boston show him as a General at the head of an army. Of the others, the fine bust by Houdon and the seated, half nude, colossal figure by Greenough are the most famous, though the latter is dull and somewhat ridiculous. In paint there are two fine portraits by Stuart, the Boston Athenaeum and the Bibb-Channing heads, both painted from life. He has also been painted by a number of other artists of the period.

WASHINGTON, APOTHEOSIS OF. Painted by Brumidi on the canopy of the rotunda of the Capitol at Washington. The first frescoes done in the United States. Washington sits in the center; the goddess of Liberty on his right and Victory on his left. The 13 original states are represented by female figures encircling the group. The *Fall of Tyranny, Agriculture, Mechanics, Commerce, Marine,* and *Arts and Sciences* are grouped in the border.

WASHINGTON CROSSING THE DELAWARE. A much reproduced painting in the Metropolitan Museum in New York by Emmanuel Leutze. Typical of the work of artists trained in the German school of Dusseldorf. Washington stands in a boat, which is slowly being rowed between the cakes of floating ice.

WASHINGTON, RESIGNATION OF. Painted by John Trumbull in 1827; in the rotunda of the Capitol at Washington. Washington is resigning his position as commander in chief of the Continental army at Annapolis (December 23, 1783). Yale University has the original study of this work.

WHITE CAPTIVE, THE. A marble statue by Erastus D. Palmer in 1858; now in the Metropolitan Art Museum at New York. In refinement, delicacy, and grace it is by far the best American work up to that time.

WINGED BULLS. Figures with human heads, a bull's body, wings, and lion's feet, regularly were used to flank the entrances of Assyrian palaces. Since these works would be seen from the front as well as from the sides two legs were represented in front view as though the animal were standing, and four in side view as though walking, making five legs in all. A fine example may be seen in the British Museum from the palace of Ashur-Nazir-Pal. (885–860 B. C.)

WOUNDED LIONESS. The slab from the palace of Ashur-Bani-Pal (668–626 B. C.) now in the British Museum, depicts a lioness, transfixed by three arrows, her hind legs paralyzed, dragging herself along as though supported simply by courage. The spirited rendering makes this one of the best of Assyrian reliefs.

YOUNG WOMAN AT HER TOILET. A young woman standing before a mirror adjusts a string of pearls around her neck. Painted by Vermeer, in the Kaiser Friederick's Museum at Berlin. The domestic incident with its refined appreciation of womanhood is typical of Vermeer.

ZENOBIA. A statue by Harriet Hosmer; in the Metropolitan Museum of Art, New York City. It represents Zenobia, queen of Palmyra, led captive in chains through the streets of Rome. Her haughty mein and native pride are well portrayed.

ZUCCONE, LO. A nickname for a statue of some biblical character with a bald head. The name means pumpkin-head. The work, carved by Donatello, on the campanile of the Cathedral of Florence, illustrates the artist's interest in realism.

DICTIONARY OF ART TERMS

ABACUS (*ăb'ȧ-kus*). The uppermost member of a capital affording support to the architrave.

ABBEY. A building annexed to or adjacent to a convent or monastery, and the whole combining a series of buildings for the accommodation of a fraternity under ecclesiastical government.

ABSIDIOLE (*ăb-sĭd'i-ōle*). A small, apse-like structure frequently used as a chapel.

ABUTMENT (*ȧ-bŭt'mĕnt*). Solid masonry set against a structure to resist a tendency to spread, generally caused by an arch. The supports which connect the bridge with the bank of a river are called abutments.

ACADEMY. In antiquity, a building in one of the suburbs of Athens, where Plato and other philosophers assembled.

ACANTHUS (*ȧ-kăn'thŭs*). An ornament of Greek origin representing in conventional form the leaf of the Acanthus Spinosus was used in the lower portions of the Corinthian capital. The Romans preferred the Acanthus Mollis.

ACCESSORIES (*ăk-sĕs'ŏ-rĭz*). In painting, secondary objects to the principal one in a picture, introduced as explanatory or illustrative of the scene; sometimes they are considered as solely contributory to the general effect and harmony of the work.

ACROPOLIS (*ȧ-krŏp'ŏ-lĭs*). The upper town or citadel of a Greek city, usually erected upon some natural elevation. The most famous is at Athens, on which stood the Parthenon, the Erechtheum, the Propylae, and the Temple of Nike Apteros.

ACROTERIA [pl.], **ACROTERIUM** [sing.] (*ăk-rŏ-tē'rĭ-ŭm*). Decorations on the angles of the pediments.

ACTION. In painting or sculpture, the posture or attitude which is expressive of passion or muscular energy.

ADOBE (*ȧ-dō'bē*). Bricks made of clay and straw, and dried in the sun. They were used in Egypt and other hot countries. The Moors from Africa, introduced them into Spain. In Mexico and the southwestern United States, the name applies equally to the bricks, clay, and the structures made of these materials.

AERIAL PERSPECTIVE. The relative apparent recession of objects from the foreground, owing to the quantity of air interposed between them and the spectator.

AESTHETICS. The power of perception by means of the senses; the word implies the perception and the study of those qualities which constitute the beautiful and artistic.

AGORA (*ăg'ŏ-rȧ*). A Greek public square or market place.

AISLES. Lateral divisions parellel with the nave in a basilica or church.

ALCOVE. A recess in a chamber, or a recess separated from other parts of the room by columns, antae, or balusters.

ALTAR. An elevated table of stone, marble or wood, dedicated to the ceremonies of religious worship.

ALTAR-PIECE. The ornamental sculpture or painting behind the altar in a Christian church.

ALTO-RELIEVO. High-relief.

AMBO (*ăm'bo*). A pulpit, especially that found in basilican churches.

AMBULATORY (*ăm'bû-lȧ-tŏ-rĭ*). A passageway in a building, especially the passageway around the apse.

AMPHIPROSTYLE. A temple with a freestanding portico at both ends.

AMPITHEATER. A building for gladiatorial and other shows, generally elliptical in form.

AMPHORA (*ăm'fŏ-rȧ*). A two-handled Greek vase.

ANCON (*ăn'kŏn*). A console or ornament cut on the keystone of an arch.

ANNULAR VAULT. A vaulted roof supported on circular walls.

ANNULATED COLUMNS. Those clustered together or joined by rings or bands.

ANNULET (*ăn'û-lĕt*). A small flat fillet encircling a column. It is repeated several times under the ovolo or echinus of a Doric Capital.

ANTA. A pilaster terminating the side wall of a Greek temple, with base and capital differing from those of adjacent columns.

ANTEFIXAE. Decorated blocks, fixed vertically at regular intervals along the lower edge of a roof, to cover the ends of tiles.

ANTHEMION (*ăn-thē'mĭ-ŏn*). A term given to honeysuckle or palmette ornament of several varieties.

ANTIQUE. Originally used in the Renaissance to mean Greek and Roman works of Art, but at present it includes all objects of aesthetic value having been made at least one hundred years ago.

APPLIQUE. A general term for ornaments which are let into or fixed on to the surface of an object.

APSE. The circular or multiangular termination of a church sanctuary.

AQUA FORTIS (*ā'kwȧ fôr-tĭs*). Literally, strong water—nitric acid.

AQUATINT (*ā'kwȧ-tĭnt*). A mode of etching by which an effect similar to an Indian-ink drawing is produced.

AQUEDUCT. A conduit for water; a construction of stone or timber, built on uneven ground to preserve the level of water, and convey it by a canal from one place to another.

ARABESQUE. Generally applied to a style of ornament for pilasters, friezes, consisting generally of scrolls of flowers, foliage, and fruits. The ornaments painted by Raphael in the Vatican are among the finest examples of arabesque painting.

ARCADE. A series of recesses with arched ceilings or soffits; a covered passage; a vaulted avenue affording shade from the sun and shelter from the rain.

ARCH. A structure of wedge-shaped blocks over an opening, so disposed as to hold together when supported only from the sides.

ARCHAIC (*ăr-kā'ĭc*). Pertaining to or having the character of extremely early and primitive work.

ARCHITECTURE. The art and process of building skillfully.

ARCHITRAVE. The portion of the entablature resting on the columns and immediately below the frieze. The moldings round a door are termed the architrave moldings.

ARCHIVOLT. A molded band carried around a curved opening.

ARMATURE. Metal bars used for strengthening and sustaining.

ARRAS (*ăr'ăs*). Tapestry hanging for rooms, first made at Arras in France in the fourteenth century.

ARRIS. The sharp edge formed by the meeting of two surfaces.

ASHLAR. Squared and finished building stone.

ASTRAGAL. A small semicircular molding, often ornamented with a bead or reel.

ATELIER. An artist's workshop.

ATLANTES (*ăt-lăn'tēz*). Figures of men used as supports or apparent supports.

ATRIUM (*ā'trĭ-ŭm*). In Roman architecture, the outer or entrance court surrounded by a roof but open to the sky in the center. In Early Christian and later architecture, the open space before the entrance.

ATTIC. A pedestal-like feature or story above the cornice of a building.

ATTIC BASE. A molded column base consisting of two convex moldings or toruses, with a hollow or scotia between.

AZURE. A fine blue tint suggesting the color of the sky.

BACCHANTES (*bă-kăn'tēz*). The female followers of Bacchus, the wine god.

BACKGROUND. In painting it is the space behind the subject.

BALANCE. Balance consists of the nice adjustment of line, form, tone, color, and plane.

BALCONY. A projection in the front of a building supported by consoles or columns. Sometimes applied to the overhanging section of the interior of a theater.

BALDACCHINO (*bȧl-dȧ-kē'nō*). The Italian word for canopy.

BAMBINO (*bäm-bē'nō*). In Italian, a child or baby.

BAPTISTRY. A place where the holy rite of baptism is performed. In ancient times it was a circular or polygonal building apart from the church.

BARBICAN. A fort at the entrance of a bridge or the outlet of a city.

BAROQUE (*bȧ-rōk'*). Florid and free ornamentation used in the seventeenth century.

BAR TRACERY. Tracery composed of thin bars of stone, joined together.

BARREL VAULT. A vault of semi-cylindrical form.

BASE. The lower portion of any structure or architectural feature.

BASILICA (*bȧ-sĭl'ĭ-kȧ*). A hall or church emphasizing the long axis.

BAS-RELIEF (*bä-rē-lēf'*). Sculpture in low relief.

BASTION (*băs'chŭn*). A projecting polygonal buttress on a fortification.

BATTER. A term applied to a wall with an inclined face.

BATTLEMENT. An indented parapet behind which archers could shelter themselves.

BAYS. Compartments into which the nave or roof of a building is divided. The term is also used for projecting windows.

BEAD. A small cylindrical molding often carved with an ornament resembling a string of beads.

BEAM. A horizontal piece of iron or timber, used to resist a force or weight, as a tie-beam where it acts as a string or chain, by its tension; as a collar-beam where it acts by compression.

BEAUTY. Is the effect produced by the proper relationship of magnitude and strength, order and harmony, richness and simplicity.

BELFRY. A term generally applied to the upper room in a tower in which the bells are hung, and often to the tower itself.

BEMA (*bē'mȧ*). The sanctuary, presbytery or chancel of a church reserved for the clergy. In Greek the raised platform from which the orators spoke.

BILLET. A Norman molding of short cylinders or square pieces at regular intervals.

BITING IN. The action of acid upon metal in etching and engraving.

BLIND ARCADE. An arcade applied to the face of the wall so that no actual openings appear.

BODY COLOR. Opaque water color.

BOSS. A projecting ornament at the intersection of the ribs of ceilings, whether vaulted or flat.

BOULLE. A marquetry consisting of a design sawed out of a thin plate of brass or other metal and inlaid into a veneer of tortoise shell, ivory, wood, etc. When the tortoise-shell predominates and forms the groundwork, it is called "première partie"; when the brass predominates, it is known as "contre partie."

BOURSE (*bōōrs*). A public edifice for the assembly of merchants to transact business, an exchange.

BRACKET. A projecting member to support a weight.

BREADTH. A quality of grandeur or largeness not limited by the size of the work.

BROACH SPIRE. An octagonal spire rising without a parapet above a tower, with pyramidal forms at the angles of tower, as in Early English churches.

BROKEN PEDIMENT. A pediment in which the raking cornice is broken through.

BURIN. An instrument for engraving on metal.

BURNISHER. A tool used for polishing a rough surface.

BUST. In sculpture, the head, neck and breast of a human figure.

BUTTRESS. A mass of masonry built against a wall to resist the pressure of an arch or vault.

BYZANTINE ARCHITECTURE (*bĭ-zăn'tĭn*). The style evolved at Constantinople (Byzantium) in the fifth century A. D., which is still the style of the Greek church.

CADUCEUS (*kȧ-dū'sē-ŭs*). A wand of laurel or olive on which two snakes are intertwined; the emblem of Hermes.

CALDARIUM (*kăl-dâ'rĭ-ŭm*). The hot chamber in a Roman bath.

CAMEO. Gems cut in relief are called cameos, while those hollowed out or depressed are called intaglios.

CAMPANILE (*kăm-pä-nē'lā*). In Italian, a bell tower, engaged or free-standing.

CANON (*kăn'ŭn*). Signifies an artistic rule or law.

CANOPY. A covering over a niche or tomb.

CAPITAL. The crowning feature of a column or pilaster.

CARICATURE. A representation in which the peculiarities of a person or of an object are so far exaggerated as to produce a grotesque effect.

CARRARA MARBLE (*kä-rä'rä*). A species of white marble which takes its name from Carrara in Italy and is distinguished from the Parian or statuary marble by being harder and duller.

CARTOON. A drawing made on paper of the exact pattern of a composition intended to be executed either in tapestry, mosaic, glass, or paint, i.e. Raphael's drawing in South Kensington Museum.

CARTOUCH OR CARTOUCHE (*kär-tōōsh'*). A carved ornament in the form of a scroll unrolled, forming a field for an inscription or design.

CARYATID (*kăr-ĭ-ăt'ĭd*). Examples: The most noble in the ruins of the Erechtheum, Athens, and in a hall of the Louvre, Paris, 16th century.

CATACOMBS. Underground burial places. The most famous are those at Rome in which the Early Christians held services and buried their dead, and where Early Christian art was born.

CATHEDRA (*kăth'ē-drȧ*). The bishop's chair in the Early Christian church.

CAVETTO (*kä-vĕt'tō*). Concave molding.

CAVO-RELIEVO (*kä-vō-rē-lyā'vō*). An Egyptian style of sculpture in which the highest relief is on a level with the surface of the stone, the rounded sides of the figures being cut into the material.

CELLA. The principal chamber of a temple.

CENOTAPH (*sĕn'ô-tȧf*). A sepulchral monument to a person buried elsewhere.

CENTAUR (*sĕn'tôr*). In ancient mythology, a being represented as half man, half horse.

CENTERING. Temporary supports, principally of timber, placed and affixed under vaults and arches to sustain them while they are in course of building.

CERAMIC. The ceramic art is one of making objects in different clays, and of decorating them by means of painting or modelling, or both.

CHAMFER (*chăm'fĕr*). An edge or arris, taken off equally on the two sides which form it, leaves what is called a chamfer, or a chamfered edge. If the arris be taken off more on one side than the other, it is said to be splayed or bevelled.

CHANCEL. The portion of a church in the east end, railed, and set apart for the use of the clergy.

CHAPEL. A small building attached to various parts of large churches or cathedrals. Sometimes a small church.

CHARACTER. In art—the expression means a faithful adherence to the essential peculiarities of objects represented.

CHASING. The art of cutting or chasing metal with a graver.

CHEVET (*shĕ-vĕ'*). A term applied to the complicated east end of the French cathedral.

CHEVRON (*shev'rŭn*). A zigzag ornamental molding frequently used in Norman architecture.

CHIAROSCURO (*kyä-rô-skōō'rō*). The effect produced by light and shade. Its chief exponent was Corregio (School of Parma, 1494–1534).

CHOIR. The arm of the cross between the transept and the apse.

CHORAGIC MONUMENTS (*kō-răj'ĭk*). Small pedestals or shrines erected by the winner of a choral contest to display the tripod which was his prize.

CHROMA (*krō'mȧ*). Chroma is the strength of a color.

CHRYSELEPHANTINE (*krĭs-ĕl-ē-făn'tĭn*). A term applied to works of sculpture executed in ivory, gold, and other precious metals.

CIBORIUM (*sĭ-bō'rĭ-ŭm*). A canopy over an altar supported by columns.

CINQUECENTO (*chĕn-kwȧ-chăn'tō*). The Italian word for the Sixteenth century.

CINQUEFOIL (*sĭnk'foil*). In tracery an arrangement of five foils terminating in cusps.

CLASSIC ORDERS OF ARCHITECTURE: The *Grecian:* Doric, Ionic, and Corinthian; and the *Roman:* Tuscan, Doric, Ionic, Corinthian, and Composite orders.

CLEAR-STORY. A part of a building which rises above the adjacent roofs, permitting it to be pierced with window openings.

CLOISONNE (*klwä-zô-nā'*). Cloisonné is obtained by dividing a metal surface by means of wire welded on to the metal plate. In the hollows formed, enamel in colored powder is deposited, then fired.

CLOISTER. A court surrounded by an ambulatory, usually arcaded.

CLOISTER VAULT. A square or polygonal dome.

CLUSTERED COLUMN. A pier formed by a number of shafts clustered together, either united or separate.

COFFER. A sunken panel or compartment in a ceiling, vault, or soffit.

COLONNADE. A series or range of columns, usually connected by lintels.

COLONNETTE. A diminutive column.

COLOR, COMPLEMENTARY. Those pairs of colors which when mixed produce white or grey light; red and green-blue; yellow and indigo blue; green-yellow and violet.

COLOR, LOCAL. Is the real fundamental color of an object, considered apart from all accidental variations of light and reflection.

COLOR, PRIMARY. Primary colors are colored pigment which cannot be compounded by mixture of other colors; red, yellow, and blue.

COLOR, RELATIVE. Colors which blend easily and produce harmonious tones.

COLORS, SECONDARY. Three colors, each produced by mixing two others in equal proportions.

Orange, a mixture of red and yellow; green, of blue and yellow; purple, of red and blue.

COLOR, SYMBOLIC. In the works of Early Christian painters, certain colors symbolized or were exclusively associated with certain persons or subjects. For instance, *white* was the symbol of light, purity, and faith, while *black* suggested mourning, wickedness, and death.

COLORS, TERTIARY (*tûr'shĭ-ā-rĭ*). Colors are called tertiary when they are produced by the mixture of a primary and secondary color, as olive, citrine, and russet.

COLORS, TRANSPARENT, OPAQUE. Are terms applied to such colors as will transmit and such as will only reflect light.

COLOR, WARM. Is produced when tones of red or yellow predominate. Blues and low toned violets are, on the other hand, cool colors.

COLOSSUS (*kŏ-lŏs'ŭs*). A statue of gigantic dimensions, such as the Colossus at Rhodes.

COLUMN. A circular supporting member, usually with a base and capital.

COMPOSITE. An order employed by the Romans, with a capital composed of the upper part of the Ionic, and the lower part of the Corinthian.

COMPOSITION. Is the proper distribution of the different elements in a work of art which results in unity.

CONSOLE. A projecting ornament in wood or stone, used as a bracket.

CONTINUOUS IMPOSTS. Are the moldings of an arch which are continued without interruption down to the ground or base.

CONTOUR. Is the term applied to the outline of an object.

CONTRAST. Contrast, both in line, form, and color is the effect produced by the juxtaposition of two opposing elements.

CORBEL. A projecting bracket supporting a pier, cornice, or column.

CORBEL TABLE. A projecting course of masonry carried on corbels, often connected by arches.

CORBELED ARCH. An arch built up of horizontal courses, each projecting over the one below.

CORINTHIAN. The third Order of Greek Architecture.

CORNICE. The upper portion of the entablature or any crowning projection.

CORONA. A molding forming part of a cornice with lower part grooved to form a dripstone.

COUNTER-PROOF. An impression of an engraving printed from a wet proof.

COURSE. One range, or stratum, of bricks, stones, or other material in the construction of a wall.

CREST. A running ornament, more or less incised and perforated, which is placed on the ridge of roofs.

CROCKET. A projecting piece of carving, usually foliate, commonly used to decorate the edge of a gable or the sloping ridges of a spire in Gothic Architecture.

CROMLECH (*krŏm'lĕk*). A type of prehistoric monument composed of a circle of stones.

CROSS-HATCH. To draw lines crossing other lines.

CROSSING. The space in a cruciform church at the intersection of nave and transepts.

CRYPT. A subterranean chapel beneath a church.

CUPOLA. A dome or lantern.

CUSP. Pointed foliations in architectural tracery.

CYCLOPEAN (*sī-klō-pē'ăn*). A term applied to early masonry of very large blocks, unhewn or irregular.

CYMA (*sī'mâ*). A molding having a reverse curve. In the cyma recta the concave portion is uppermost; in the cyma reversa, the convex is uppermost.

CYMATIUM (*sĭ-mā'shĭ-ŭm*). The crowning member of a cornice.

DABBER. An instrument made of a solid mass of wool encased in leather, fastened to a wooden handle. It is used in the process of etching to distribute the ground over the plate of metal.

DADO. A continuous pedestal or wainscoting around the base of a wall.

DAMASCENING. Metal ornamented by inlaying another metal.

DECASTYLE. A temple with a portico consisting of ten columns in front.

DECORATED. The second of the pointed or Gothic styles of architecture in England.

DENTILS. Small projecting blocks which support the cornice.

DIAPER. A term applied to any small pattern, such as lozenges or squares, repeated continuously over a surface.

DIE. A metal block cut in intaglio.

DIPTERAL (*dĭp'tĕr-ăl*). A temple having a double range of columns on each of its sides.

DISTEMPER. The preparation of colors mixed with glutinous substances rather than oil, used exclusively by artists before 1410.

DODECASTYLE (*dō'dĕc-a-style*). A building having twelve columns in front.

DOG-TOOTH. An ornament resembling a row of teeth, especially occurring in Early English Buildings.

DOLMEN. A pair of stone blocks with a covering slab, used for prehistoric monuments.

DOME. A hemispheral vault.

DOMED BASILICA. The term applied to the form of basilica, especially in the East, when one or more bays are covered with a dome.

DONJON (*dŭn'jŭn*). A tower-like structure usually free-standing, the strongest part of the European medieval castle.

DORIC. The first and simplest order of Greek Architecture.

DORMER. A vertical window projecting from the slant of a roof.

DOSSERET. A deep block sometimes placed above a Byzantine capital.

DRIP. Any projection used to throw off water and thereby protect a surface.

DRY-POINT. A drawing made in the metal by varied pressure of a steel needle.

EARLY ENGLISH. The first of three divisions of English Gothic architecture.

ECHINUS (*ĕ-kī'nŭs*). The convex member of the capital, supporting the abacus.

EGG AND DART. An ovolo decorated by oval projections, each one surrounded by a groove and a raised rim; between each pair of rims is inserted a sharp pointed member called a dart.

ELEVATION. The vertical plan of a building.

ELIZABETHAN. The style developed during the reign of the Tudors in England.

ENAMEL. A semi-opaque, vitrified material, which is melted and applied to various metals, such as gold, silver, and copper; also applied to the opaque glaze on pottery.

ENAMEL, TRANSLUCENT. Are small enamels on gold or silver. Only six colors are found in translucent enamels; blue, green, grey, tan, purple, and black.

ENCAUSTIC. A method of painting with colors mixed in melted wax which is kept hot during the whole process. The term also applies to a preparation laid on marble or plaster to protect it from moisture.

ENGAGED COLUMN. A column-like member projecting from a wall and frequently actually a part of the wall masonry.

ENGRAVING. A process in which the lines of the design are incised on a plate of metal, and these being filled with ink, a sheet of paper laid on the plate, and the whole submitted to the press, the result is called a proof.

ENTABLATURE. The upper part of an Order of architecture, comprising architrave, frieze, and cornice.

ENTASIS (*ĕn'tà-sĭs*). The swelling of the shaft of a column.

ESCUTCHEON (*ĕs-kŭch'ŭn*). A shield charged with armorial bearings.

ETCHING. Engraving by the action of acid on a metal plate covered with a wax ground, through which lines have been scratched by the etching needle.

EUSTYLE (*ū'stīl*). Intercolumination of two diameters and a quarter of the column considered by the Greeks to be the most perfect.

EXEDRA (*ĕk'sē-drà*). In classical architecture a recess or alcove with raised seats; in Christian architecture an apse or niche.

EXPRESSION. Is the result of good interpretation of the essential character in the subject or objects.

EXTRADOS (*ĕks-trā'dŏs*). The outer curve of an arch.

FACADE (*fà-säd'*). The face or front of a building.

FAN TRACERY. The decorative tracery on the surface of fan vaulting.

FAN VAULT. A system of vaulting peculiar to the Perpendicular period, in which all ribs diverge, and resemble the framework of a fan.

FASCIA (*făsh'ĭ-à*). A long flat band or belt.

FENESTRATION (*fĕn-ĕs-trā'shŭn*). The disposition of windows in a building.

FILIGREE. Goldsmith's work consisting of threads of metal intertwined and soldered.

FILLET. A small flat band between moldings.

FINIAL (*fĭn'ĭ-ăl*). An ornament of carved work representing foliages.

FITNESS. Fitness is the perfect adaptation both to function and to means of expression.

FLAMBOYANT. A florid style of French pointed architecture peculiar to the Fifteenth century.

FLECHE (*flĕsh*). A term applied to a slender spire rising from a roof.

FLUTING (*flōōt'ĭng*). The vertical channelling on the shaft of a column or pilaster.

FLYING BUTTRESS. An arch starting from a detached pier and abutting against a wall to take the thrust of the vaulting.

FOIL. Each of the small arc openings in Gothic tracery separated by cusps.

FONT. A basin in which the water for the administration of baptism is contained.

FORESHORTENING. The art of representing objects on a flat surface as they appear to the eye in perspective.

FORM. Form is the ensemble of appearing surfaces which define objects.

FORUM. The market place of a Roman city.

FOYER. A lobby or saloon for promenade.

FRESCO-PAINTING. Painting on freshly applied wet plaster.

FRET. An angular, interlaced architectural ornament.

FRIEZE. (1) The middle division of an entablature which lies between the architecture and cornice. (2) Any horizontal sculptured band.

FRONTALITY. The placing of a figure so that a plumb-line dropped from the center of the forehead would divide it into two equal parts.

GABLE. The triangular portion of a wall, between the enclosing lines of a sloping roof.

GARGOYLE (*gär'goil*). A water spout, usually grotesquely carved, to throw water from the roof.

GENRE (*zhän'r'*). Scenes from domestic life.

GESSO (*jĕs'ō*). In Italian art, hard plaster used for casts from works of art, and also as a ground for mural painting.

GIGANTOMACHY (*jī-găn-tŏm'ă-kĭ*). A group or composition representing the mythical combat between the gods and the giants.

GLAZING. In oil painting, the application of a thin layer of transparent pigment used to modify color tone. vitreous covering over the surface.

GOTHIC. The name generally given to the pointed style prevalent in Western Europe from the Thirteenth to the Fifteenth century.

GOUACHE (*gwăsh*). Opaque watercolor pigment.

GRAPHIC ART. Is drawing, painting, engraving, or other forms of representation on a flat surface.

GRAVER. A steel instrument with a sharp point at one end. The graver is used to cut furrows into metal.

GREEK CROSS. A cross of four equal arms meeting at right angles.

GRISAILLE (*grĭ-zāl'*). A painting in which only black, white, and greys are used.

GROIN. The curved arris formed by the intersection of vaulting surfaces.

GROTESQUES. Figures of a monstrous, comic, or obscene character.

GROUP. Two or more figures or objects so placed and related as to form a unit. The groups in painting or sculpture should present well-balanced masses.

GROUPING. The arrangement of subject matter.

GUILLOCHE (*gĭ-lōsh'*). A circular interlaced ornament like network, frequently used to ornament the "Torus" molding.

GUTTAE (*gŭt'ē*). Small cones under the triglyphs and mutules of the Doric entablature.

GYMNASIUM. A large building used by the Greeks in which gymnastics were taught and practised.

HALF-TIMBER. A type of construction consisting of a framework of timber with a filling of other material.

HALF-TONE. A tone intermediate between two sharply-marked tones of different value.

HARMONY. Harmony is the quality in a work of art which blends into one force its different parts.

HARPIES. Winged monsters, daughters of Neptune and Earth.

HATCHING. Shading by crossed lines.

HELIX (*hē'lĭks*). A small volute like the tendril of a vine placed under the Corinthian Order.

HERM. A head or bust supported on a quadrangular base corresponding roughly in mass to the absent body.

HEXASTYLE. Having six columns across the front.

HIPPODROME. In Greek architecture, a place in which horses and chariot races were run.

HUE. A compound color in which one of the primaries predominates.

HYPOSTYLE (*hĭp'ō-stīl*). A hall having its ceiling supported by columns.

IDEAL. Any work of art which represents a high mental concept of the concrete.

ILLUSIONISM. The attempt in Art to suggest depth.

IMPASTO (*ĭm-pās'tō*). The thickness of the body of pigment laid on a painting.

IMPOST. A horizontal member at the springing of an arch or vault.

IMPRESSION. A print struck off from an engraved or etched plate.

IN ANTIS. A term applied to columns embraced between the ends of two walls or ante.

INLAY. A term applied to the piece of wood, metal, or ivory inserted to produce a design.

INTAGLIO (*ĭn-tāl'yō*). A material in which the engraved subject is sunk beneath the surface, and thus distinguished from a cameo.

INTERCOLUMNIATION. The space or distance between two columns of a colonnade.

INTRADOS (*ĭn-trā'dŏs*). The inner face of an arch or vault.

IONIC. The second order of Greek Architecture.

JAMBS. The sides of doors and windows.

KEYSTONE. The central wedge-shaped stone of an arch.

KLAFT. A royal Egyptian headdress forming a kind of hood and terminating in two flaps, which fall over the breast.

LANCET. An acutely pointed arch.

LANTERN. A tower above the roof of a building having windows all around it.

LECTERN. The desk or stand in a church on which the larger books are placed. Lecterns are made of stone, marble, wood, and brass.

LIGHTS. The open space between the stone mullions of a window. Thus a group of three narrow windows would be termed a lancet window of three *lights*.

LINE. A mark drawn by a pen, pencil, chalk, graving tool, etc. to indicate direction or form.

LINE OF BEAUTY. A curve like an elongated S.

LINTEL. A horizontal beam spanning an opening.

LITHOGRAPH. A drawing made or transferred on stone or treated zinc with an oily ink or crayon.

LOGGIA (*lŏj'ă*). A shelter behind an open arcade or colonnade.

LOMBARD ARCHITECTURE. A style invented by the Lombards in the Northern part of Italy in the 7th century.

LOTUS. A water lily. In Egypt and India held sacred.

LOUIS QUATORZE. A style developed towards the close of the 17th century in France.

LUNETTE. The space bounded by the soffit of the arch and its springing.

MANSARD ROOF. A roof having on all sides two slopes, the lower one being steeper than the upper one.

MARQUETRY (*mär'kĕt-rĭ*). Checquered or inlaid work, a sort of veneering, representing flowers, birds, and other figures.

MATT. Dull, lustreless, applying to a surface or color having neither brilliancy nor polish.

MAUSOLEUM (*mŏ'so-lē'um*). A large and elaborate tomb.

MEDALLION (*mĕ-dăl'yŭn*). (1) A medal of a larger size than the ordinary coinage. (2) In architecture, a circular or oval tablet on the face of a building.

MENHIR (*mĕn'hēr*). A single standing pillar of stone, used for prehistoric monument.

METOPE (*mĕt'ō-pē*). A square slab, sculptured or plain, between the triglyphs in the Doric frieze.

MEZZANINE. A low story between two lofty ones.

MEZZO-RELIEVO. Sculpture in half-relief.

MEZZOTINT. A kind of engraving nearly resembling painting, effected by scraping and burnishing copper whose surface has been prepared with innumerable perforations.

MIDDLE DISTANCE. In a landscape: Between the foreground and the background.

MIDDLE TINT. A color intermediate in value between the brightly lighted part of a picture and the part placed in shadow.

MISERICORD (*mĭz-ĕr-ĭ-kôrd'*). "A shelving projection on the under side of a hinged seat in a choir-stall, so arranged that when turned up, it gives support to one standing in the stall."

MODULE (*mŏd'ūl*). A unit or common divisor of the dimensions of a building.
MONOCHROME (*mŏn'ō-krōm*). A painting executed in tints of one color only.
MONOLITH (*mŏn'ō-lĭth*). An object formed of a single block of stone.
MOORISH ARCHITECTURE. Arose at the beginning of the 7th century in the East, and in Spain, Sicily, and Byzantium in Europe.
MOSAIC. Decoration composed of tesserae or cubes of glass or marble, set in mortar, in geometric or pictorial designs.
MOSQUE (*mŏsk*). A Mohammedan place of worship.
MOLD. An imprint of an object in relief, by means of which a reproduction of the object may be obtained.
MULLION (*mŭl'yŭn*). Vertical members dividing windows.
MURAL DECORATION. The decoration on wall surfaces.
MUTULE (*mū'tūl*). A projecting block on the soffit of a Doric cornice.

NAOS (*nā'ŏs*). The essential or principal chamber of a Greek temple; the cella.
NARTHEX. A long arcaded porch forming an entrance into a Christian basilican church.
NAVE (*nāv*). The middle part or body of a church from the choir to principal entrance between the aisles.
NECK-MOLDINGS. The moldings at the bottom of the capital.
NEUTRAL. A vague color which does not present any predominant tone.
NEWEL. The central shaft, round which wind the steps of a circular staircase. Also applied to a post into which the handrail is framed.
NICHE. A recess in a wall.
NIMBUS. A circular halo.
NORMAN. The Romanesque style of England and Normandy.

OBELISK. A tapering shaft of rectangular plan, generally with a pyramidal apex.
ODEON (*ō-dē'ŏn*). In Greek Architecture, a building for musical and oratorical contests.
OGEE (*ō-jē'*). A molding made up of a convex and concave curve. Also applied to an arch of similar shape.
OPISTHODOMOS (*ŏp-ĭs-thŏd'ō-mŏs*). An open vestibule at the rear of a temple cella.
OPUS ALEXANDRINUM. An elaborate geometrical mosaic of marble slabs and tesserae.
ORDER. In classical architecture, a recognized system of forms for the column and entablature.
ORIEL. A window corbelled out from the face of a wall.
OUTLINE. The representation of an imaginary line bounding the visible surfaces of objects.
OVOLO. A quarter-round, convex molding much used in classical architecture.

PAGODA. A sacred tower in the countries of the far east.
PALMATE (*păl'māt*). Having fanlike lobes or leaves, such as characterized the Greek anthemion or honeysuckle, and its derivations in architectural decoration.
PARALLELISM. Lines of like direction.
PARAPET. A breast wall placed at the edge of a platform, terrace, balcony, etc.
PASTEL. A process of painting, in which variously colored crayons are used.
PATINA (*păt'ĭ-nā*). The rust of antiquity found on bronzes and coins.
PEDIMENT. A low, triangular gable, bounded by a horizontal cornice and raking cornices.
PENDANT. A suspended ornament. The hanging pendants of the vaulted ceiling in King Henry VII's chapel at Westminster Abbey are remarkable.
PENDENTIVE. An inverted triangular portion of a concave vault placed upon a pier to support a section of the dome.
PENT-ROOF. A roof sloping only from one side.
PERIPTERAL (*pĕ-rĭp'tĕr-ăl*). A term applied to an edifice surrounded by a range of columns.
PERISTYLE (*pĕr'ĭ-stīl*). A range of columns surrounding a court or temple.
PERPENDICULAR. A phase of English Gothic evolved from the Decorated style and prevalent during the fifteenth and sixteenth centuries.
PERSPECTIVE. The art of representing on a flat surface the appearance of objects from one given point of view.
PIAZZA. A square or open place surrounded by buildings.
PIER. A support, distinguished from a column by greater massiveness, and by shape other than circular.
PIETA (*pē-ā-tä'*). The Italian term for the supported dead Christ. Examples: Sculpture, Michaelangelo, Saint Peters' Rome; Paintings, Titian, in the Academy, Venice. Fra Angelico in Museum, San Marco, Florence. Carlo Crivelli, Metropolitan Museum, New York.
PIGMENTS. The colors used in painting.
PILASTER (*pĭ-lăs'tĕr*). A flat rectangular member, projecting slightly from the face of a wall, and having the members of a column.
PINNACLE. A small spire.
PITCH OF ROOF. The inclination of its surface to the horizon.
PLAN. The representation of the shape of a building showing the general distribution of its parts.
PLASTIC ART. Includes works produced by modelling or carving.
PLINTH. A rectangular block usually serving as a base.
POLYCHROME. That which is of several colors.
PORTICO. An open porch or vestibule having its roof supported by columns or piers.
PROFILE. The outline of a form or its section.
PRONAOS (*prō-nā'ŏs*). The portico situated in front of a temple.
PROPORTION. Proportion is the harmonious relation of the different parts of a composition.
PROPYLAEA (*prŏp-ĭ-lē'ä*). Gateway or entrance
PROSYTLE (*prō'stīl*). A term applied to a temple or pavilion having columns across the front only.
PURITY. A term which denotes correctness and precision in a work of Art.
PUTTO (*pŭ-tō'*). The Italian term for a nude child as an artistic motif.
PYLON. A monumental gateway to an Egyptian temple.

QUADRIGA (*kwŏd-rī'gä*). A four-horsed chariot.
QUATREFOIL. In tracery, a panel divided by cusps into four leaf-shaped openings.
QUATTROCENTO (*kwät"tro-chen'to*). The Italian word for the Fifteenth Century.
QUOINS (*kwoin*). The corners of brick or stone walls; when they stand out beyond the brickwork, they are called "rustic quoins."

RADIATION. Movement growing out of a central point.
REFECTORY. The dining-hall in a monastery, convent, or college.
REFLECTED LIGHTS. Are such lights as an object receives on the shadow side from its opposition to an illuminated object.
RELIEF. In painting, is the apparent projection of objects obtained by a gradation of tonal or color values.
RENAISSANCE. The term applied to the re-introduction of the Classic all over Europe in the Fifteenth and Sixteenth centuries.
RENDER. To render is to represent, express, or interpret by the means proper to any particular art.
REPLICA. Similar copies of art made from an original work.
REPOSE. A term applied to a work of art containing balance, harmony, and dignity.
REPOUSSE (*rē-pōō-sā'*). Metal work hammered out from behind into ornaments in *relief*.
REREDOS (*rēr'dŏs*). The screen, or ornamental work, rising behind the altar.
RETICULATED. Latticed like the meshes of a net.
RHYTHM. Rhythm is measured movement.
RIB. A projecting band on a ceiling vault, or elsewhere.
RIDGE. The upper angle of a roof; tiles called ridge-tiles are sometimes made very ornamental.
ROCOCO (*rō-kō'kō*). The style of Louis Quinze in which fantastic forms and objects are put together in rich profusion.
ROMANESQUE. Prevalent in Western Europe from the Ninth to the Twelfth Century.
ROOD. In medieval churches, a large crucifix at the entrance of the chancel, often supported on a beam or screen.
ROOD-LOFT. A loft or gallery, in a medieval church on which the rood was supported. It was commonly placed over the rood-screen, and from it the Gospel was read.
ROOD-SCREEN. A screen, open or partly closed, of wood, stone, or wrought iron erected in medieval churches between the nave and the choir or chancel supporting the rood in the centre.

ROSE WINDOW. A large circular window divided by mullions.

ROTUNDA. A name given to any building that is round both within and without. The Pantheon, Rome, and the Chapel of the Escurial are of this type.

RUSTICATED STONE. Stone masonry with roughened surfaces, and recessed joints.

SACRISTY. A room attached to a church where the sacred vestments and the utensils belonging to the altars were placed: Termed also the sextry or vestry.

SARACENIC (*săr-â-sĕn'ĭk*). The Moorish style of architecture.

SARCOPHAGUS (*sär-kŏf'â-gŭs*). A stone coffin.

SATYRS. Greek deities of the wooded plains, as the Roman *fauns* were of the fields. They are usually represented with goat's legs and horns, and human bodies covered with short hair.

SCALE. The effect of size produced by the just relationship of the different elements in a work of art.

SCONCE (*skŏns*). Bracket projecting from the wall, supporting candlesticks, originated in the 15th century.

SCOTIA (*skō'shĭ-â*). A concave molding of circular section.

SCRAPER. An etcher's and engraver's tool for removing the rough edge produced on the metal by an incised line.

SCULPTURE. Is the art of carving wood or stone into images. To make a distinction between carving and sculpture, the former belongs exclusively to wood, and the latter to stone.

SECTION. A term used to express the representation of a building or solid cut by a vertical plane.

SEQUENCE. Orderly progression repeated.

SFUMATO (*sfōō-mä'tō*). A soft and vaporous quality in paintings.

SGRAFFIATO (*sgräf-fĭ'tō*). A method of painting on stucco, in which a ground of dark stucco is covered with a coat of a lighter color, and the design is formed by scraping this away for the darks.

SHADE. That part of a picture, drawing, or engraving representing objects which, not being struck with luminous rays, are relatively obscure.

SHADOW CAST. A shadow projected upon a surface by a lighted body.

SHAFT. The portion of a column between base and capital.

SIMPLICITY. A term dealing with the effect produced by the proper subordination of detail.

SOFFIT (*sŏf'ĭt*). The under side of an architectural member such as a lintel or arch.

SPAN. The distance between the supports of an arch, roof, or beam.

SPANDREL. The triangular space partly enclosed by the curves of an arch.

SPHINX. A figure with a human head on a lion's body.

SPIRE. A lofty, slender, generally octagonal member, used to crown a medieval tower.

SPLAY. A sloped surface, which makes an oblique angle with another.

STALLS. Divisions with fixed seats for the clergy and choir.

STATE. The condition of an engraved or etched plate before it is entirely finished.

STATUE EQUESTRIAN. A statue representing a person mounted on horseback.

STELA (*stē'lâ*). The Greek name for a slab of stone set on end to form a monument.

STENCILLING. A method of executing decorative paintings by putting color through the perforations of a firm material and onto the surface to be decorated.

STEREOBATE (*stĕr'ē-ō-bāt'*). The substructure of a Greek temple below the columns.

STILL LIFE. Representation of inanimate objects.

STILT. To raise the point of springing of an arch above the level of a capital or impost.

STOPPING OUT. When an etcher desires one portion of his plate to be more deeply bitten than another, he covers the finished parts with varnish to protect them from the acid before biting the deeper parts. This is called "stopping out."

STRING COURSE. A horizontal course of masonry, usually molded, marking an architectural subdivision of a building.

STUCCO. Plaster or cement used as a coating for walls.

STYLOBATE. The uppermost step of the stereobate or foundation on which the building immediately rests.

SYMBOL. A conventional representation of figures or objects which are the sign of an idea.

SYMMETRY. Symmetry is the harmony produced by the repetition of any form, line and color on its axis.

TAENIA (*tē'nĭ-â*). A band which separates the Doric frieze from the architrave.

TANAGRA (*tăn'â-grâ*) **FIGURES.** Terra-cotta figures made in ancient times at Tanagra in Basotia. The finest date from the fifth century B. C.

TASTE. The artistic faculty which selects materials and treatment best fitted for artistic expression.

TECHNIQUE. All those qualities of hand and eye which contribute to the executive excellence of a work of art.

TEMPERA. Tempera is a method of painting, in which dry colors are diluted in glue or size.

TERRA COTTA. All kinds of burned or baked clay.

TESSERAE (*tĕs'sĕ-rē*). Small cubes of marble or glass, used in the composition of designs in mosaic.

TETRA-STYLE. Having four columns.

TEXTURE. Denotes the quality of a surface.

THOLOS (*thō'los*). In Greek architecture, a circular structure or temple.

THRUST. The outward horizontal force exerted by an arch or vault.

TONALITY. A collection of tones subordinated to one dominant tone.

TONE. The variations produced by the introduction of white or black to color.

TORSO. The human trunk, not including extremities.

TORUS. A large convex molding used principally in the bases of columns.

TOUCH. The method in which the colors are laid on the surface of the canvas by the painter. We speak of a firm touch, a light touch, a square touch, or a want of touch.

TRABEATED ARCHITECTURE (*trā'bē-āt-ĕd*). A post and lintel architectural system.

TRACERY. The ornamental pattern-work in stone filling the upper part of a Gothic window.

TRANSEPT. A large division of a church lying at right angles to the long axis of the building.

TRANSOM. The horizontal cross bar in a window.

TRECENTO. (*trā-chĕn'tō*). The Italian word for the Fourteenth Century.

TREFOIL. An ornament of three foils.

TRIFORIUM. The second or middle story of a church.

TRIGLYPH (*trī'glĭf*). A projecting block in a Doric frieze marked by vertical grooves.

TRIPOD. Any utensil or article of furniture supported upon three feet.

TRIPTYCH (*trĭp'tĭk*). A form of pictures in three panels.

TRIUMPHAL ARCH. A monumental structure, with one or more arches, erected across a public road for a triumphal procession to pass under.

TROPHIES. Designs, often seen in the decorative work of interiors and in furniture in marquetry, representing groups of military arms and weapons, flags, etc. By extension the word is sometimes used in connection with other objects; thus groups of musical instruments are spoken of as musical trophies.

TUDOR ARCH. A four-centered, pointed arch, common in English Tudor Architecture.

TURRET. A small tower attached to and forming part of another tower, or placed at the angles of a church or public building, especially in the style of Tudor architecture.

TYMPANUM. The triangular space between the horizontal and sloping cornices. The name is also given to the space included between the lintel of a door and the arch over it.

TYPICAL. That which has the distinguishing characteristics of a type.

UNITY. The harmonious effect produced by the proper arrangement of parts.

VAULT. An arched ceiling or roof of stone.

VIBRATINUG. A term applied to a strongly marked nervous living effect of lines, forms, and colors obtained by the use of skillful contrasts.

VOLUTE. The characteristic ornaments and spiral marks of the Ionic capital formed by circumvolving spiral moldings are termed volutes. The small circle in which the spiral terminates is called the eye of the volute.

VOUSSOIR. (*vōō-swär'*). The wedge-shaped stones forming an arch or vault.

ZOOPHORUS or ZOPHORUS (*zō-ŏf'ō-rŭs*). (lit. bearing animals). A continous frieze decorated with figures of animals, conventional and real.

MUSIC

INTRODUCTION

Music lovers, everywhere, are awakening to the fact that, today, music has a greater mission in the world than merely to give sensuous pleasure. That it has great power to soothe and stimulate is being appreciated as never before.

Inasmuch as art music alone is considered in our references to music, it may be well to draw some line of demarcation between good music and sounds mislabeled music. Good music, called classic by many, is nothing more than permanent music. That is, it is of that quality which gives it long life. Popular music, to use a term generally applied to it, does not live long for the simple reason that it is not fit to. Usually cheap and trivial, it makes only a superficial appeal. In other words, even those who care for it are interested only a short time.

As for jazz, it may be well to catalogue it clearly for there is confusion regarding it and popular music generally. Jazz consists of unmusical, vulgar, even licentious sounds, played upon a few wind, string, and percussion instruments. It is based upon exaggerated rhythms, and the entire effect is that of raucousness and suggestiveness carried to a point of indecency. Many people include everything of that sort in their conception of popular music. That is why we hear jazz mentioned as being not all bad. What is really meant is that the best of popular music—the kind which has a catchy melody, clever rhythmic figuration, and a pleasing harmonic background, and very often taken from our better comic operas,—has its place. But such music should never be taken for jazz, which is said to have originated in the dives of the far south and west.

Most people who are interested in popular music respond to what is best in music, when given a chance. They are susceptible to the influence of good music, and require only opportunities to hear it frequently enough and with the proper interpretation. In short, these recruits from the ranks of popular music lovers are the potential devotees of tomorrow, for in due time, the deeper appeal of chamber music, symphony and miscellaneous concerts, and especially opera, will win them over to a higher aesthetic taste.

An influence upon the growth of appreciation for better music, which is very powerful, and should not be overlooked, is the influence our young folks are exercising on their parents and elders, because of their own increasing ability in public school music, school orchestras, bands, and choruses. Nor should we ignore the betterment being brought about by various music organizations of different character, which reach out in many directions.

In one sense it is perhaps true that, fundamentally, it is the business of music to give pleasure and enjoyment. It may also express the deepest feelings of heart and mind, however, through the proper use of its component factors, rhythm, melody, and harmony.

Rhythm is the division of time into groups of metrical units. A succession of tones, which express thought is called *melody*. Tones sounded together so as to make a combination pleasing to the ear constitute *harmony*. When two or more melodies are heard simultaneously, the effect produced is called *polyphony* or *counterpoint*. Although one element may at times be the preponderant expressional factor, it is practically impossible for rhythm, melody, and harmony to be dissociated in the making of music. An understanding of these fundamental facts is desirable in order that the following pages may be more clearly grasped.

Music may be characterized in four ways—As to:

1. **Nationality.**—By means of rhythms, melodies, folk-songs or dances, certain characteristics of countries or localities may be made manifest.

2. **Poetic Thought.**—When the composer expresses great ideals, states of emotions, (moods) aesthetic conceptions, poetic atmosphere, the type of music is said to be *pure* or *absolute music*. Since this type is made to conform strictly to the symmetrical ideas of form, it is also, at times, referred to as *formal music*.

3. **Descriptive Music.**—When music imitates the sounds or things of nature, relates a story, or, in general, follows a given program of thoughts, incidents or events, (sometimes because of the employments of a national idiom) it is usually called *program music*.

4. **Form.**—Music cannot meander on in meaningless disorder, but conforms to a definite pattern, created by the use of contrasted sections or parts. Simple forms are logical in songs, dances and shorter compositions (waltz, polka, minuet, songs without words, etc.), more complex forms are found in larger structures (sonatas, overtures, symphonies, etc.).

At least one of these characteristics is noticeable in all music. Form is always present in a musical composition; nationality is often reflected, poetic thought is easily distinguished when present. A definite title for an instrumental composition generally suggests a program. This use of superscriptures is most common in music written since the middle of the 19th century.

General History.

As an art music was an important factor in the world's civilization. It is an interesting fact that, although the oldest of the arts, it was the last to be developed culturally. This is perhaps due to the fact that a nation first becomes great through conquest and growth, then it gains influence politically and commercially. In due time the arts are developed. First, the visible arts, painting, architecture and sculpture, and lastly, music find their place in the intellectual scheme of things.

The growth of music may be divided into three periods of development:

1. **Music of Antiquity.**—A history of the scale and one part music (Assyrians, Hebrews, Egyptians, Chinese, Hindus, Greeks).

2. **Medieval Music.**—The music of the *Early Church*, the growth of *Secular Music, The Schools of Counterpoint, The Rise of the Opera, The Rise of the Oratorio.*

3. **Modern Music.**—*The Classical School*, development of pure or absolute music. *Romantic*

School, Romance, having made its influence felt in the other arts, also impregnates music.

Extreme Program Music.—Realism, impressionism, a general defiance of traditions, including atonality and polytonality. (To be explained later.)

Music of Antiquity.

Assyrians, a warlike race, used instruments like military trumpets, and instruments of percussion, also some stringed instruments like the dulcimer.

Egyptians used lutes and lyres, and the popular flutes, single and double, but the national instrument was the harp, which was used in all sizes, up to the large temple harps of twenty-three strings. The Egyptians employed music in a social way as well as in their religious ceremonies.

Hebrews obtained both their musical knowledge and their instruments from Egypt and Babylon. Their music was prominent in their temple rites, for which they used large choirs of as many as 4,000 instruments and voices. It was antiphonal in character, that is, chanted by the leaders and choirs responsively. In 70 A.D. Jerusalem was destroyed by Titus, and all records of Hebrew music were lost. However, the old melodies were handed down from generation to generation, and have been preserved to this day, so that the Synagogal services, on high holidays, such as "Rosh Hashanah" (New Year's Day) and "Yom Kippur" (Day of Atonement) are conducted practically as they were thousands of years ago. The Shofar, one of the earliest instruments of the Hebrews, is still used in orthodox temples to assemble the congregation.

Chinese.—According to Chinese history, music was invented by the Emperor-philosopher, Fuhsi, about 3000 B.C. Emperor Huangti (2700 B.C.) ordered definite laws of music to be established. Sounds were fixed and given definite names. Tsin Shih Huangti ordered the destruction of all books, including those on music (221 B.C.). The monarchs who followed made efforts to revive the art. Chinese songs deal with different forms of nature, such as the trees, and blossoms, the clouds, meadows and hills. Their melodies are formed on the pentatonic or five-toned scale, and range from drinking songs to melancholy moods. Many of their melodies have been mistaken for Scotch for this reason.

The Chinese used flutes, stringed instruments, similar to our modern zither, many kinds of drums, including the famous tam-tam, as well as organs formed of stone plates or bells. These were struck with a sort of mallet.

Hindus.—The *vina,* a stringed instrument of seven strings, stretched across a cylindrical body, is considered the national instrument of India. It should be noted, in considering the music of this ancient land, how the Eastern viewpoint differs from the Western. Where the occidental musician uses the determinate degrees of pitch, called scale-steps, striding from note to note, the Oriental glides along the pitch values lying *between* these notes. There are seven primary notes in the music of the Hindus. From this basis the six "Raags" or male tones are formed. Each "Raag" has five "Raagnia," or female tones. A combination of these produces numberless minor tunes.

Greeks.—There is but little doubt that the Greeks adopted their music from the Egyptians. They considered it an important part of their culture, for the education of the youth was restricted to two subjects, music and athletics. Of their stringed instruments the *lyra* and *kithara* (lyre and cithera) were the most popular. The flute was an important instrument in their music, while trumpets and horns were used occasionally. Their musical system, established by Pythagorus, was the basis from which, later, the 14 *ecclesiastical modes* were evolved. (See Medieval Music, Music of the Early Church.)

Medieval Music.

Music of the Early Church.—Under Ambrose, bishop of Milan (333–397 A.D.) the music of the Church received a great impetus. He collected for use in divine service the chants then in use, based upon the tones D, E, F and G respectively. Pope Gregory (540–604) added four more. These so-called *Ecclesiastical modes* are also known as the *Gregorian modes,* or *Plain Song,* now in use in the Roman Catholic Church. The Monk, Guido of Arezzo (995–1050) noticed that each line of the hymn to St. John began a note higher than the preceding and established the system of sight reading known as solfeggio. He took the first syllable of each line as the name of the corresponding note.

Ut queant laxis
*Re*sonare fibris
*Mi*ra gestorum
*Fa*muli tuorum
*Sol*ve polluti
*La*bii reatum
*Sa*ncte Johannes

Later the *Ut* was changed to *Do* and *Si* or *Ti* added. This system, founded in the 11th century, is still in use.

Secular Music.—Not only was the theory and practice of music being advanced by the Church. A free spirit of untrammeled expression was being cultivated at the same time by the common people. As a result of the Crusades a new species of poetry arose, rich in feeling and expression, and inspired the singing of songs depicting chivalry and love service. These early singers, called *minstrels* or *bards,* recounted deeds of chivalry, also appearing as actors (*strolling players*) in the *Passion Plays* of Germany and the *Mystery Plays* of France. In France they were known as *Jongleurs,* thus distinguishing them from the knightly *Troubadours* who sang their lays to the court ladies.

Of the *Troubadours* (France, Italy and Spain), called *Trouveres* in Northern France, the most distinguished was Adam de la Hale, (1240–80) writer of the pastoral operetta, *Robin and Marion.* Others of importance were Count William of Poitiers (1087–1127), Richard the Lion Hearted of England (1157–99), Chatelaine de Coucy (1157–92), King Thibaut of Navarre (1201–54).

The *Minnesingers* were Germany's bards (love singers). They were not only singers, but epic poets, singers of poetic versions of medieval legends. The more important were

Heinrich von Veldecke, Spervogel, Herman, Landgrave of Thuringia, Wolfram von Eschenbach, Gottfried von Strassburg, Heinrich Tannhäuser, Walther von der Vogelweide, Heinrich von Meissen. Like the troubadours of France, the Minnesingers were of noble birth and met in the Wartburg castle at Eisenach. Wagner immortalized their annual contest in his *Tannhäuser*.

The *Meistersingers* were musically inclined tradespeople. With the decline of feudal power they took upon themselves the advancement of music, after it passed away from the knightly singers. They formed guilds in many large cities. The most renowned order met at Nuremburg and had for its leader the cobbler-genius, Hans Sachs (1494–1576). In his music drama, *The Meistersingers of Nuremburg*, Wagner gives a graphic picture of these amateur musicians and their aspirations.

Folk Song.—The largest class of music lovers was composed of the people themselves. Unfettered by rules and conventions, following their own feelings and instincts, the people's song or folk song attained a high degree of significance about the end of the 14th century.

The Schools of Counterpoint.

The idea of associating two melodies with one another interested the musicians of the Middle Ages, and led to much experimentation. Beginning in France, the movement spread to the Netherlands, later into Italy, giving rise to the opera.

The Old French School was the first to flourish, and exerted its influence from the 12th century until the middle of the 14th. It produced Phillipe de Vitry and Johannes de Muris, who were responsible for the first rules of contrapuntal procedure. From the term *punctus contra punctum* (point against point, or note against note) they called their system *contrapunctus* or counterpoint.

Old English School (1220–1600).—Supposed to have been founded even earlier than the school at Paris. It is credited with the celebrated old canon, in six parts, *Sumer is icumin in* (early 13th century) but the name of the composer is forever lost. The names of Walter Odington, John Dunstable, Redford, Tye and, later, Byrd, Farrant, Gibbons, Tallis are associated with many fine songs, madrigals and choral works.

The Gallo-Belgian School.—Based upon the strictest patterns of contrapuntal development, music was not much more than a display of technical knowledge and cleverness. The canon was the form most used for this purpose. William Dufay (1400–74) was the greatest representative of this school, and eventually became the founder of the great school which succeeded it.

The Netherland School (1460–1560).—At first famous merely because of the exaggerated technical facility of its masters in canonic writing, this school finally brought about a reaction toward a more natural style of composition, and the expression of thoughts and feelings. It produced Johannes Okeghem (1425–1512) and Josquin des Pres (1450–1521) his pupil. The latter, a friend of Martin Luther, was one of the outstanding figures in all musical history. Johannes Tinctoris (1446–1511) and Adrian Willaert (1480–1562) migrated southward, the former to Naples, to found the Neapolitan School of bel canto, the latter to northern Italy, where he founded the instrumental School of Venice. As chapel master of St. Marks (1527) he made use of the two organs of this cathedral for the invention of the double chorus. Willaert also perfected the madrigal. His pupil, Cyprian de Rore (1516–65) was the first to use chromatic harmony, and Andrea Gabrieli (1510–86) employed instruments in the antiphonal manner, both making rich and original contributions to the growth of music.

Claude Goudimel (1502–72), pupil of des Pres and teacher of Palestrina, carried the Netherland teaching into Italy and founded the *Roman Choral School* (1535–1674), to which must be credited the honor of having originated the *oratorio*. Greatest masters were Ferrabosco, Festa, Animuccia, Palestrina, Nanini, Anerio, Allegri, Frescobaldi and Carissimi.

Orlando di Lasso (c 1532–94), greatest master of counterpoint and one of the titanic figures of the entire contrapuntal period, was the first to show that counterpoint could be made to subserve deep religious expression. His style was dignified and his works reflected feelings ranging from penitence to gayest humor.

Pierluigi Sante, called Palestrina, from his birthplace (1526–94), brought polyphonic religious music to its culmination. Although written in a simple, direct style his music is characterized by striking beauty and originality and stamps him one of the most significant figures in the history of music.

The Rise of the Opera.

In the presentation of *Miracle Plays* and *Mystery Plays*, also, later, *Pastoral Plays* with musical accompaniment by the troubadours and jongleurs, we have the first association of stage action with music. The operetta, *Robin and Marion* by Adam de la Hale is, perhaps, the most famous example of the pastoral opera, probably because it has the distinction of being the first.

Florence.—But the real opera, combining drama with music, arose through the efforts of a group of wealthy Florentine nobles, known as the "Camerata." Believing that the Greeks had recited the lines of their dramas to musical accompaniment, they made numerous efforts to revive an interest in this ancient form. The first opera, by Jacob Peri and Rinuccini, named *Dafne*, was performed in 1597, but was later lost. *Euridice*, written in 1600 by the same composers, is therefore the first opera of written record. This opera was written to be performed at the wedding of Maria de Medici to Henry IV of France. Copies were sent to all parts of Europe, and, in this manner, the movement rapidly spread to other schools of Italy, Austria and France.

Venice Monteverdi (1567–1643) used violins in his orchestra. Cavalli (1600–76) first presented the comedy element in Naples.

The Neapolitan Schools (1675–1747) introduced arias, also choruses, duets, trios, etc., and emphasized the vocal display above the dramatic

element. They cultivated the concert overture. Stradella (1645–81) and Allesandro Scarlatti (1659–1725) stand out as the most important composers. Others were Durante, Logroscino, Leo, and Domenico Scarlatti.

France.—The French School of Opera (1645–1764). When introduced into Paris in 1645, opera, in the Florentine style, was very popular. Lully and Perrin, court composers of Louis XIV, founded a distinctive school of French opera. It emphasized the dramatic element, added the brass instruments and kettle-drums to the orchestra, and gave the chorus a part in the dramatic development. Other names associated with this fine work were Cambert, Marais and Rameau.

Germany.—The National German opera arose from the Singspiele (Song Plays) about 1630, in the form of mythological dramatic representations preceded by musical dialogue. Hiller based it upon the folk-song, thus giving it a national flavor. Strungk, Kusser, Keiser, Mattheson, Handel, Teleman, Hiller, Dittersdorf, Schenck, Weigl and Winter further developed the form which was popular with the people. The nobility favored Italian Opera and were catered to in this style by Graun, Doles, and Naumann.

The Rise of the Oratorio.

In 1551 Saint Philip Neri (1515–95) established the custom of inviting the young folks to his chapel or *oratory* of the monastery of San Girolamo, and in Santa Maria, to enact scenes from the Scriptures. The interest was great, and he asked Animuccia, Palestrina, Nanini and others to write music for these Biblical scenes. The first complete work of this oratorio style was Cavalieri's *Representation of Spirit and Body* in 1600.

In Germany the dramatic presentation of Christ's sufferings given during Holy Week was called *Passion Music.* Sacred subjects with musical accompaniment were an important part of the church services and were known as *Church Cantatas.* Famous in this work was Heinrich Schütz (1585–1672). Both opera and oratorio developed vocally and instrumentally until, at the time of Handel, they were looked upon as the greatest medium for the exploitation of vocal expression and display.

MODERN MUSIC

The Great Classicists.

Germany; Classic Period.—Since the earliest times Germany has held a commanding position in the world of music. During the classical period a distinguished group of composers flourished.

Johann Sebastian Bach (1685–1750).—Modern music, as we understand it, may be said to have begun with Johann Sebastian Bach. He represented the culmination of the entire development of all the contrapuntal schools, and although his works may be considered the sum total of the *science of music,* they are distinguished by profound emotional conception and lively imagination. His cantatas, oratorios and Passion Music were imbued with the deepest religious feeling. The basis of modern piano playing is indicated in his great work *The Well-Tempered Clavichord.* Violin music was greatly enriched by him, while his organ compositions are the forever models in this branch of music. His influence upon the progress of music was immeasurable.

George Frederick Handel (1685–1759).—Born the same year as Bach, Handel is alike identified with the German Classic School, the Italian and English Schools. Being attracted by Italian Opera he went to Italy to study. Later he returned to Germany for a time, but was called to direct Italian Opera in England. Upon the accession of the Hanoverian line of Kings to the throne, he received a Royal appointment, which he retained until his death.

His 40 or more operas are now obsolete. His greatest works are the oratorios *The Messiah, Saul,* and *Sampson.* Unlike Bach, however, his works had but little influence upon the development of the art of music.

Christoph Willibald Gluck (1714–87).—While Italian, German and French composers were writing meaningless operas, there appeared in Paris a German-Austrian named Gluck who was concerned in establishing dramatic sincerity and artistic truth. His reform efforts having met but little success in his home town, Vienna, he was attracted to Paris because the French School had been less influenced by the prevailing mode of opera than the others.

He believed that the music of opera should conform to the plot and express the dramatic meaning of the text. Gluck's greatness is revealed in the fact that his influence was felt upon the dramatic works of Mozart, Beethoven, von Weber and Wagner. Of his 54 operas *Orpheus and Euridice, Alceste, Armide, Iphigenie en Aulide, Iphigenie en Tauride,* are the greatest, and are still performed.

Joseph Haydn (1732–1809).—Born in Austria, he was long the director of music at the court of Count Esterhazy. He established the *sonata form,* so important in absolute music, developed the arrangement of the *symphony orchestra* into four divisions—strings, wood winds, brasses and percussion instruments. Haydn's music is notable for its cheerfulness and sincerity.

Quite late in life he visited England, and became enthusiastic over Handel's oratorios. He returned to his home and wrote several oratorios, of which *The Creation* (1799) and *The Seasons* (1801) are the most famous.

Wolfgang Amadeus Mozart (1756–91).—Beginning his musical life as an infant prodigy, famous at the courts of Austria, France and Italy, Mozart developed into the towering musical genius of all time. He was the most lovable and human of the great musicians. He wrote in all forms and was equally great in all. He composed 49 symphonies, of which three are still favored repertoire pieces of our great symphony orchestras—the *E flat, G minor* and *C major* (Jupitor). In his operas Mozart shows great dramatic power, and truthful expression of human nature, yet his music, even in the most complicated polyphonic passages, is alive with exquisite charm, spontaneity and naïve simplicity. His greatest operas *The Marriage*

of Figaro, Don Giovanni, and *The Magic Flute* are as popular as ever.

Ludwig van Beethoven (1770–1827).—The supreme musical genius, and most inspired of all musicians, who represented the culmination of the Classical School, and also ushered in the period of the Romanticists. He carried the art of free thematic development to a point never since surpassed, and imbued his works with profound thought, intense dramatic spirit, emotional and expressional truth, as well as beauty and perfection of form. Beethoven wrote in all styles of composition, overtures, sonatas, chamber music, oratorios, one opera, *Fidelio* and nine symphonies, which constitute a musical monument for all time.

Franz Peter Schubert (1797–1828).—Possessed of the most remarkable gift of melody, Schubert brought the *German art song* to perfection. Liszt called him the most poetic musician who ever lived. Schubert combined melodic simplicity with intensity of expression and poetic charm. His greatest instrumental compositions are his *Symphony in C major* and the *Unfinished Symphony,* perennial favorites in the orchestral repertoire.

Romanticism.

The romantic movement which spread over Europe in the middle of the nineteenth century manifested itself in all the arts. Its influence on the art of music was strongly felt. Freedom of thought and individuality of expression were encouraged.

Karl Maria von Weber (1786–1826).—In Germany the opera was first affected by the wave of romanticism. Karl Maria von Weber chose for his operas, subjects which were highly romantic, but his great service to German musical art lies in the fact that he gave to the German nation its first truly *German opera.* In *Der Freischutz* he presented for the first time a great dramatic work on a German folk-tale, expressed by means of German folk-music, and performed by German singers in the German language. His greatest works are *Der Freischutz, Oberon, Euryanthe,* and *Preçiosa.*

Felix Mendelssohn-Bartholdy (1809–47).—One of the most beloved of composers, whose name is a synonym for *Songs without Words.* By reason of his poetic temperament he was eminently fitted to express the romantic spirit of the times. His overture to *A Midsummer Night's Dream* of Shakespeare, composed when he was but 17, proved that he was a master of tone painting. His greatest contributions in larger forms were his oratorios, *St. Paul* (1836) and *Elijah* (1846) and his *Scotch* and *Italian Symphonies.* His overtures *The Hebrides, Calm Sea and Prosperous Voyage* and his famous *Violin Concerto* are almost as popular as his *Songs without Words.* All of his works are characterized by elegance, poetry, religious fervor, melodic charm and mastery of technical expession.

Robert Schumann (1810–56).—The greatest and most significant exponent of romanticism was Robert Schumann. Possessed of a powerful imagination, poetic insight, humor and extravagant emotionalism, his music was, perhaps, deeper and more impassioned than that of Mendelssohn. Like the latter he was understood best through his smaller compositions, but his *Symphony in B flat,* the *Quartet in E flat,* the *Quintet,* the great *Piano Concerto* and his *Sonata in G minor* and *Variations for piano* are powerful pieces of music. In his songs he revealed a gift of emotional expression that was well nigh perfect.

Frédéric François Chopin (1810–49).—"The poet of the piano," a refined genius, opened a new era in piano playing. His compositions breathed a depth of thought and feeling, power and poetic import which verged toward program music. His independent virtuosity represented the liberation of the piano style from the traditional orchestral and choral influence. He made use of the national Polish characteristics in much of his music—mazurkas, polonaises and waltzes. The scherzos, concertos, ballades and etudes are works of titanic power, originality, imagination and charm.

CONTRIBUTIONS TO MUSIC BY COUNTRIES

Italy.

Italy, the land of beauty and romance, gave us the first musical notation. The *Neumes,* first written musical signs, were invented by Italian monks. In the 11th century the monk, Guido of Arezzo (995–1050) introduced a four-lined *staff,* and established the method of *sight singing* that is in use today.

Italy made further contribution to the art of music when Petrucci invented *music printing* from movable types in 1502.

Modern violin playing received its foundation in the work of Arcangelo Corelli (1653–1713). A composer, whose works still hold an important place in the repertoire, was Giuseppe Tartini (1692–1770). Violin playing was revolutionized by his improvements. Italy's greatest violin virtuoso was Nicolo Paganini (1782–1840), whose musical life reads like a romance.

Euridice, the first opera, was performed in Florence in 1600. Rapid improvements in the vocal drama followed, but the vocal display was emphasized to such an extent, at the expense of the dramatic element, that in time, Italian Opera became merely a singing concert. Instead of the music expressing the dramatic meaning of the text, all sorts of florid and meaningless arias, trills and roulades were used in order to exploit the singer. As the people demanded no better, the composers wrote no better.

A famous opera writer, to whom the world is indebted for many beautiful lines, was Gioacchino Rossini (1792–1868). His masterpieces were *The Barber of Seville* and *William Tell.* The former work remains to this day a perennial favorite in the operatic repertoire.

The grand old man of Italian Opera was Giuseppe Verdi (1813–1901), unquestionably the greatest master the Italian Opera has ever known. *Rigoletto, Il Trovatore* and *La Traviata* were triumphs of his early period. His later operas, *Aïda, Otello* and *Falstaff* have been rightly placed in the front rank of operas.

Aside from Pietro Mascagni (1863), whose *Cavalleria Rusticana* has been very successful, Ruggiero Leoncavallo (1858) earned rec-

ognition with his *I Pagliacci.* But the logical successor of Verdi was no doubt Giacomo Puccini (1858), who has won great renown with his *La Bohème* and *Madame Butterfly,* the sensational success of which has eclipsed the equally fine operas *Manon Lescaut, La Tosca* and *Edgar.*

Since the birth of opera in 1600, the Italian folk song has been largely employed in that form. Thus, most of the "folk" music sung throughout Italy is really popular music from the best known operas.

France.

After the decline of the wandering minstrels, France lost some of her musical prestige, but the development of the opera in the 17th century enabled her to regain the lead. The pioneer in opera, Babtiste Lully, wrote many operas and court ballets. The ballets contained many dances, among them the stately minuet, the dignified saraband and the lively gigue, all in triple rhythm. In duple rhythm were the refined gavotte and the rollicking bouree. These dances and others were favorites of the nobility.

The first great master of the orchestra was Hector Berlioz (1803–69). To him belongs the honor of being the founder of the modern *Program Music.* He was a composer of powerful individuality. His best known compositions are *The Fantastic Symphony,* the music drama, *The Damnation of Faust,* the dramatic symphony *Romeo and Juliet,* the overture *Carnaval Romaine* and the opera *Benvenuto Cellini.*

Although of Italian birth Luigi Cherubini (1760–1842) was for many years associated with the French School, and held the position of Director of the Paris Conservatory. His best known works are *Medée* and *Les Deux Journées.*

Gasparo Spontini (1774–1851), another gifted Italian, director of the Italian Opera in Paris, was very fond of pompous, heroic subjects. *La Vestale* is his greatest effort.

Jacques Halevy (1799–1862) has achieved lasting fame with his great opera, *The Jewess.*

Charles François Gounod (1818–93) is best known for his masterpiece, the opera *Faust.* A genius, who met with an untimely death was Georges Bizet (1838–75) whose opera *Carmen* and the *L'Arlesienne* music give us a never-ending delight. Among more recent opera composers of France was Jules Massenet (1842–1912). Among his many fine creations are *Manon, Thaïs, Herodiade, Le Cid, La Navarraise* and others.

César Franck (1822–90), the first to take up the modern trend of composition, a master of rare genius, with a style of great fascination and beauty. His most imposing works are the oratorio, *The Beatitudes* and the noble and very lovely *Symphony in D minor.*

Vincent d'Indy, a pupil and follower of Franck, but whose admiration of Wagner resulted in strong influence of *Tristan and Isolde* and *Parsifal* being noticeable in his works. His outstanding work is the *Mountain Symphony,* which is quite a favorite with orchestral conductors. He was born in 1851.

Claude Achille Debussy (1862–1918), famous for his radical tendencies, which have received the name elusive sonorities because of the vagueness of effect he has produced. His best works are full of the most delicate poesy, and ethereal charm. His much discussed innovations have since been accepted. The orchestral prelude *L'Après-midi d'un Faune* and the opera *Pelléas and Mélisande* are great favorites with the public.

Gustav Charpentier (1860–), is well known through the great success of his opera *Louise.* He is a follower of César Franck and Massenet.

Maurice Ravel (1875–1937), a composer of fearless, independent expression, leaning somewhat on Debussy and also on Richard Strauss.

The death of Camille Saint-Saëns (1862–1921) deprived France of one of her greatest tone poets. His powerful opera *Samson and Dalila* has had very great success. His symphonic poems indicate that he is to be classed as a program composer. Some of his best are *La Danse Macabre, Le Rouet d'Omphale, Phaëton. The brilliant Piano Concerto in G minor* is a favorite with concert pianists.

Giacomo Meyerbeer (1791–1864) was the leader of the opera and dominated its rather doubtful ideals until the advent of Wagner. He was brilliantly gifted, but sought imposing stage effects of a melodramatic order rather than artistic ideals. Many of his operas are still very popular with the class of people who desire the melodramatic style in opera. His greatest repertoire pieces are *Robert Le Diable, Les Huguenots, Le Prophète, L'Africaine.*

Germany.

Richard Wagner (1813–83).—Although formerly attacked as being mere noise and without meaning, Wagner's dramas are now considered as being without parallel. Wagner's ideals were to bring about entire unity of expression between music, drama and interpretation. For this purpose he used highly individualized musical fragments for reminiscent effects, called *leading motives,* in the choice of which he was exceedingly fortunate because of the exactness with which they fit the person, feeling or situation which they are meant to represent.

His finest works are the colossal *The Ring of the Nibelung,* consisting of the four parts, *Rheingold, The Valkyrie, Siegfried,* and *The Dusk of the Gods, The Meistersingers of Nüremburg, Tannhäuser, Parsifal.* No doubt Wagner's conception of the mutual relations of music, poetry and action will remain the basis of opera for a long time to come.

Johannes Brahms (1833–97), the man of whom Hans von Bülow remarked, "The three great 'B's' in music are Bach, Beethoven and Brahms." At the time when composers, generally, were seeking new and sensational means of expressions, Brahms upheld the traditions of the old classical forms as used and perfected by Haydn, Mozart and Beethoven. Although full of warm feeling, intensity and great exaltation, Brahms' works are not easily grasped at one hearing. Real enjoyment of his works, especially his monumental symphonies, is gained only through great familiarity with his peculiar idiom.

Richard Strauss (1864–) was the outstanding figure in musical Germany in recent years, writer of most astonishing program music.

Aiming to make music the means of expressing every conceivable emotional or mental experience, his symphonic poems depict the gruesome and ugly as well as the sublime and beautiful. His most popular poems are *Don Juan, Death and Transfiguration, Till Eulenspiegel's Merry Pranks, Heldenleben,* and *Sinfonia Domestica.* His weird operas *Salome* and *Elektra* created a sensation, but are seldom heard now, perhaps because of their gruesome plots.

Karl Goldmark (1830–1915), a follower of Wagner, who has had considerable success with his operas, *The Queen of Sheba* and *Merlin.*

Arnold Schönberg (1874–), exponent of "linear counterpoint," the latest type of "eye music" but cacophonous to the verge of insanity. His most acceptable composition, so far as the public is concerned, is *Guerre-lieder.*

Russia.

Out of Russia, that dark land of sorrow and oppression, has come a veritable treasure-store of music. For generations the downtrodden peasants sought to lighten their heavy burdens with songs and dance. Consequently, many of their songs are quite melancholy, others full of fiery exultation. The alternation of these extreme moods may be said to be the outstanding characteristic of Russian music.

The Russian expresses in music every event in his life, from birth to death. He has songs of marriage, harvest, the seasons, death, labor, and play. The sacred music of the Greek Church has also left its mark on Russian songs. Russian choral singing is world famous, for no instruments are permitted in the Church, therefore, the choruses are unsurpassed.

Native composers are greatly indebted to the folk songs of their country for the beauty, strength and national character of their music.

Michael Ivanovitch Glinka (1804–57).—That this wealth of folklore was a gold mine for composers was first realized by Glinka, called "the father of Russian music." His *A Life for the Czar* was considered the first real Russian opera.

Modest Mussorgsky (1839–81), talented, but unschooled composer of the neo-Russian style, found great success for his opera *Boris Godounov.*

Peter Ilyitch Tschaikovsky (1840–93), the greatest composer Russia has given the world. He has found and logically applied the most sombre and also the most brilliant orchestral colors for the expression of the characteristic Slavonic temperament. Of flamboyant nationalism, his music always gives the impression of spontaneous originality. His greatest works are his *6 symphonies,* of which the 4th, 5th and 6th are great favorites of the concert public, the fantasies for orchestra, *Francesca da Rimini* and *Romeo and Juliet,* also the powerful *March Slav* and the *Overture 1812.* His great *Piano Concerto in B flat minor* is one of the display pieces of the modern pianist. Tschaikovsky's operas are unknown outside of Russia.

The Invincibles. A newer and very distinctive school was formed by Mili Balakirev with the aid of César Cui, Alexander Borodin, Modest Mussorgsky, and Nicholas Rimsky-Korsakoff. Their aim was to cast out all foreign influences from Russian music, in which endeavor they were quite successful.

Borodin, a physician by profession, wrote music in his spare moments, and produced the very fine opera *Prince Igor.* He was born in 1834 and died in 1887.

The member of this national group who is best known outside of Russia is Rimsky-Korsakoff (1844–1908). His symphonic poem *Scheherazade* based upon the *Arabian Nights* is a favorite concert number with orchestras. Of his operas *The Snow Maiden* and *The Golden Cock* have been given performances at the Metropolitan Opera House at New York.

Recent Russian composers who have become famous are Alexander Glazunov (1865–1921) and Sergei Rachmaninov (1873–), the latter being considered not only one of the greatest pianists of the day, but also one of the outstanding composers. The extremely interesting rhythms, but bizarre and extravagant use of the orchestra have made the works of Igor Stravinsky (1882–) and Sergei Prokofief (1891–) a source of discussion rather than of pleasure. The future will decide how much the world wants their extreme sort of music.

Czecho-Slovakia.

Of all the Slavic nations Bohemia has the liveliest folk songs and folk dances. The polka is the favorite Bohemian dance, and receives its name from "pulka" meaning "the half" and referring to the halfstep which occurs in the dance. Another popular dance is the furiant. The famous composer, Dvořák, introduced it into his *First Symphony,* using it in place of the usual scherzo.

A real Bohemian School of Music was established by Friedrich Smetana (1812–84). While visiting the great pianist, Liszt, he heard Herbeck say that the Czechs were not original, but were merely imitators. He decided to disprove this and succeeded most brilliantly. His operas include bright comedy, among which *The Bartered Bride* is justly popular. Its overture is an international favorite. Being a pupil of Liszt, it is but natural to find that, in his instrumental compositions, Smetana used the form of the symphonic poem, of which Liszt was the inventor. He invariably used folk music and folklore in carrying out his program.

Antonin Dvořák (1841–1904) carried on the work begun by Smetana. Born of the peasant class, he had a thorough acquaintance with the folk material of his country. In his compositions he used the native melodies with rare skill. He is quite as eminent in the history of Bohemia as Tschaikovsky is in that of Russia. His chamber music and the last symphony, *From the New World* are the compositions best known in this country.

Zdenko Fibich (1850–1900), another leader in nationalism in Bohemian music, perfected the modern melodrama, or recitations with music. His best work in this form is a trilogy called *Hippodamia.*

Joseph Suk (1874–), a son-in-law of Dvořák, has become famous as a modernist.

Poland.

The reconstruction of Poland since the war reminds us of her past sorrows and glories. Her musicians have woven her glorious but pathetic history into their compositions. Polish folk songs have the inevitable melancholy which is characteristic of a people that has been oppressed for centuries. The lively airs are full of fire, as the Poles are a very passionate race.

Songs and dances are a part of the life of the people. Nearly all the occupations of the peasants are accompanied by songs. A popular dance of the people is the Krakowiak (named after the district of Cracow). It is performed by many couples, each of which stops in turn before the musicians and sings a little song to the dance tune, which is being played. In this manner songs are associated with dances.

It takes a real Pole to feel the elusive spirit of the vivacious mazurka. Chopin immortalized this form in his wonderful *Mazurkas*. He was as patriotic as he was musical. All his lovely piano pieces reflect the spirit of his native land. He felt the downfall of his country very keenly, and portrayed his feelings of melancholy and patriotic fervor in many of his works, such as the *Military Polonaise, The Revolutionary Etude* and the famous *Funeral March*.

Another Polish Dance of which Chopin has given us splendid examples, is the polonaise. It is the dance of the aristocracy. It is in triple time, although of a march-like character. It was invented in 1574 when Henry, Duke of Anjou, became king of Poland. The polonaise was invariably played on state occasions, when the nobles marched before the king.

Henry Wieniawski (1835–80) was famous both as a violinist and as composer. His excellent pieces are based upon Polish melodies and rhythms.

Many of the world's greatest pianists have been of Polish birth. Ignace Jan Paderewski (1860–), whose artistry aroused the wonder of the world, when in his prime, is the outstanding example. He is also a composer of very great ability. His delightful *Minuet in G* is, no doubt, known in every home where there is a piano. His opera *Manru*, the *Piano Concerto* and the *Polish Fantasy* as well as the two fine *Legends* are his more pretentious works.

Josef Hofmann (1877–), perhaps the greatest of the concert pianists now before the public, was also born in Poland but is now a citizen of the United States. He has written many fine songs and piano pieces.

Other distinguished Polish musicians now residing in the United States are Leopold Stokowski, famous conductor of the Philadelphia Symphony Orchestra, Felix Borowski, composer, conductor, critic and President of the Chicago Musical College, Sigismund Stojowski, eminent pianist, teacher and composer.

Of all the Polish singers who have made great reputations, none were greater than Marcella Sembrich, marvelous soprano, and the brothers Jean and Edouard De Reszki, unexcelled as dramatic opera singers.

England.

England reflected some of the romance and gay life of France after being conquered by the Normans. All the musical instruments were then imported from France and Italy.

The Elizabethan era, which was remarkable for the revival of literature, was also renowned for considerable progress of music. Wherever Queen Elizabeth went it was made a special feature of all functions. Shakespeare, in his plays, refers repeatedly to music and the important part it held in court life. A beautiful song of that period is *Drink to Me Only with Thine Eyes*, words by Ben Jonson, but composer unknown. Although about 200 years old, this song is very popular today.

The pioneer of modern English music was Henry Purcell (1658–95), considered by many England's greatest musician. He wrote operas and sacred works that still retain their freshness.

At the time of Handel the *ballad-opera*, a sort of English *Singspiel*, became popular. The first of these, produced in 1727, was John Gay's *Beggar's Opera*. Others associated with this inferior form of opera were Henry Carey (1685–1743), supposedly the composer of *God save the King*, and Thomas Arne (1710–78), who also wrote many operas, oratorios, and songs. These ballad-operas were based upon popular airs, and satirized the customs of the day. They really interfered with the growth and production of more serious operatic works.

The greatest composer in England in the early 19th century was Michael Balfe (1808–70), an Irishman, who wrote some fine operas, the most famous being *The Bohemian Girl*.

The late 19th century produced a number of fine musicians who sought to raise the standards of musical production. Prominent among these were Sir Arthur Sullivan (1842–1900), whose fame rests upon his satiristic operas, written in collaboration with Sir W. S. Gilbert; Arthur Goring Thomas (1850–92), Charles Hubert Parry, born 1848, Alexander Mackenzie, born 1847, Frederick Cowan, born 1852, Charles Villiers Stanford, born 1852, and Granville Bantock, born 1868.

The two outstanding composers of fame are Samuel Coleridge Taylor (1875–1912) and Edward Elgar, born 1857. Taylor was an English Negro, whose treatment and development of Negro melodies have given him a fine standing among composers. His setting of *Hiawatha* is his most pretentious work. Sir Edward Elgar may be called the composer-laureate of England, and has taken a stand in the front rank of the world's composers. Among his many fine works are several remarkable symphonies, concertos, and the great choral works, *The Dream of Gerontius* and *Caractacus* are considered by many the finest oratorios since Mendelssohn.

Frederick Delius (1863–1934), Percy Aldridge Grainger, born at Melbourne, Australia (1882–) and Cyril Scott (1879–) are making an enviable record for themselves, each in his own way. Grainger, recently made an American citizen, has devoted himself to the development of early English folk-music. Delius has created some excellent compositions along original lines of counterpoint, while Scott is looking to national sources for his inspiration, being, however, somewhat inclined toward the impressionism of modern France.

Japan.

During the Helan period of Japanese history (from the eighth to the twelfth century), music was cultivated by all people of social standing. It was an age of luxury, and dancing, singing and playing were among the chief occupations of the nobles.

The *kotow* is the oldest and most important of their instruments. The *biwa,* like our mandolin, and the *gekhin,* which resembles our banjo, are used to accompany the songs of a light style. Both are played with a plectrum.

Many of the Japanese melodies are constructed upon the pentatonic, or five-toned scale. The songs of Nippon are noted for their strong political feeling. Although it is less than 50 years since occidental music was introduced into Japan, appreciation of it has been astonishingly rapid. Luther Whiting Mason was called as superintendent of music in the schools of Japan in 1880, and in three years had built up a course of instruction according to modern standards.

Foreign artists from Europe and America, giving concerts in Japan, report a remarkable appreciation for the most complicated compositions. Japan's most prominent native composer is Foscak Yamada.

Hungary.

Hungary, the land of the Magyar, possesses music which is deeper, wider and more distinctive in its expression and feeling than any other European nation. In no other country are there as many musicians who play without being able to read musical notation.

It is to the gypsies that the world owes its appreciation of the true Magyar music. In every village there is a gypsy band. The violin and the czimbalom are the instruments most used. The czimbalom was created by the Hungarians for the proper rendition of their music. What the banjo is to the American Negro the czimbalom is to the Magyar. Notes are not used.

The Magyars, who are the real Hungarians, are of Oriental origin, hence their music has a semi-barbaric quality, largely based upon a syncopated rhythm.

It is the combination of the Gypsy and Magyar elements which has produced the distinctive national melodies. The Hungarian has provided the rhythms, while the Gypsy has added the trills, turns and other characteristic ornaments.

Hungary's struggle for independence is reflected in her folk songs, which are melancholy and passionate. The brooding spirit has impregnated even their dance music. The national dance is the Czardas, containing two parts, one slow and mournful, called Lassen, the other wild and impassioned, called Friska. These alternate at the will of the dancer.

Franz Erkel, who composed the national hymn, also wrote the first real Hungarian opera, *Maria Bathori,* produced in 1840.

Hungary's greatest musician was Franz Liszt (1811–86). He was undoubtedly the greatest piano virtuoso that ever lived. As a composer he leaned toward the new German school and programism. He invented the *symphonic poem* and wrote many of his best works in that form. His best known are the *Faust Symphony, Les Preludes, Tasso, Lament e Trionfo.* In his *Hungarian Rhapsodies,* he depicts the human emotions from tragic sorrow to the intoxication of the dance. They are tonal pictures of the Hungarian and Gypsy peasant life, a little more "flashy" perhaps, than his other works, but having an appeal of their own. His music is being received with greater appreciation than ever before.

Finland.

Finland's national progress, politically and culturally, has been a thorn in the side of Russia. The Finns are an independent people and have retained their customs in spite of Swedish and Russian domination. They are of Mongolian descent, which accounts for the Oriental strain found in their music.

As early as the seventeenth century efforts were made to collect the wealth of Finnish folk songs. Dr. Elias Leonnrot finally succeeded in making a collection of the old tunes or ballads, which he called *Kalevala.* It is the national epic of the Finns, an enormous work, and was published in 1835. It was declared, on the authority of Max Müller, the famous scholar, to be equal to the Greek *Iliad,* and "the fifth great epic of the world."

Finnish music has always been of a somber character. The history and climate of Finland are both, in a measure, responsible for this. In the northern part the sun disappears entirely during the middle of the very bitter winter. And the persecution by the Russians has also had its effect on the temperament of the people. Thus, it seems that the Finn is happiest when singing some weird, melancholy song.

Music, as a fine art, received no recognition in Finland until 1835 when the University of Helsingfors was founded. Frederic Pacius (1809–91), a German musician, born in Hamburg, was called to the chair of music and did much to encourage better music in his adopted country. He composed the music for the national hymn, *Fatherland,* the poem of which was written by Johan Ludvig Runeberg, Finland's greatest poet.

The *Musical Institute of Helsingfors* has done much to stimulate the love of music in Finland since it was founded 20 years ago.

Among present-day composers, Armas Jaernfelt (1869–) is known for the beauty and originality of his orchestral works. The music of Selim Palmgren (1878–) is rapidly gaining in popularity.

The most distinguished and celebrated composer of Finland, however, is Jean Sibelius (1865–), who has been granted an income by the government so that he may devote himself entirely to composition. American concert-goers are most familiar with his two beautiful tone poems, *Finlandia* and *The Swan of Tuonela.* The patriotic meaning of *Finlandia* so aroused the Finns that the Russian government forbade the further performances of the work.

The later Sibelius, represented by his last symphonies, has conceived works that are not for sweetness and light. His music is darkly, somberly passionate, the utterance of a tragic poet, full of the power of a heroic epic poem. There are the same virile traits of strength and

grim dignity which have made the *Kalevala*, Finland's national poem, one of the greatest epics of the world.

Norway.

In Halfdan Kjerulf (1815–68), the nationalistic element in Norwegian music first became apparent. Feeling strongly the folk songs of his native land, he wrote melodies for the lyrics of Björnson, which became the songs of the people.

Equally patriotic was Ole Bull, the famous violinist (1810–80), who founded the National Theater at Bergen, and induced Henrik Ibsen to become a director. He, too, discovered the musical genius of Grieg, and persuaded the latter's parents to make a musician of him.

Edvard Hagerup Grieg (1843–1907) imbued his compositions with the distinctive atmosphere of his country, to which is due much of their charm. Harmonies which owe their weird and delightful effect to the Norwegian folk songs upon which they are based, characterize Grieg's works, and, together with his clever, musicianly treatment of his motives, are responsible for the delightful appeal which his compositions have. His songs are especially full of poetic feeling, although the two *Violin Sonatas* and the splendid *Piano Concerto* are wonderfully popular with the concert public. Best known of all his compositions, no doubt, is the *Peer Gynt* music written for the drama by Ibsen.

Johann Svendsen (1840–1911) has a more cosmopolitan style, and his four masterly *Norwegian Rhapsodies*, although most excellent music, are not nearly as intensely nationalistic as the music of Grieg. His *Romance* for violin is a favorite with violinists.

Norway's best living composer is Christian Sinding (1856–) upon whose shoulders the mantle of Grieg seems to have fallen. Having spent much of his time in Germany, the influence of the German School is shown in some of his songs and shorter compositions, but his larger orchestral works are strongly Norwegian in character.

United States.

Very marked progress has been made in American music since the Civil War. We have in our ranks composers who have written music of undying quality. Although we still are very far from possessing an American style or school, there is little doubt but that we are establishing a *representative* type of music.

Everyone knows how truly representative the much beloved songs of Stephen Collins Foster (1826–64) are. Full of pathos and original expressiveness, they are truly undying examples of American musical art. *The Old Folks at Home, Old Black Joe, My Old Kentucky Home* are some of the favorites of the people.

The most distinguished composer America has produced is Edward MacDowell (1861–1908), a composer of strong individuality, whose music is of a very poetic nature. His best loved compositions are the *Witches' Dance, To a Wild Rose*, the lovely *Indian Suite*, for orchestra, and his four powerful Sonatas for piano, *Tragica, Eroica, Keltic*, and *Norse*. His death was a great loss to American music.

Horatio Parker (1863–1919), most scholarly of composers, whose *Hora Novissima* is undoubtedly the finest oratorio written by an American, and his opera *Mona* won the $10,000 prize offered by the Metropolitan Opera House.

Henry K. Hadley (1871–), conductor and composer of fine songs and virile orchestral works.

America has not lacked its opera composers, both of the serious and lighter kinds. Frederick Converse is known through *The Sacrifice* and *The Pipe of Desire*, Parker for the prize opera, *Mona*, Walter Damrosch for *Cyrano*, Charles Wakfield Cadman for his Indian opera *Shanewis*, Henry Hadley for his *Cleopatra's Night* and *Azora*, Victor Herbert for the serious opera *Natomu*, and numerous light operas, Reginald De Koven for *Rip Van Winkle*, and the fine comic operas, *Robin Hood, Rob Roy*.

Other prominent American composers are Henry F. Gilbert, Manna Zucca, Henry Holden Huss, Arthur Whiting, Mrs. H. H. Beach, John Powell, Henry T. Burleigh, C. M. T. Loeffler, Felix Borowski, John Alden Carpenter, Joseph Breil, John Philip Sousa, Ethelbert Nevin, Harry Rowe Shelley, William Berwald, Bruno Huhn.

The American public has gratefully appreciated the fine artists which it has had the privilege of enjoying, and is proud of such names as Farrar, Neilson, Schumann-Heink, Nordica, Homer, Eames, Mary Garden, Alma Gluck, Whitehill, Witherspoon, Bonelli, Arthur Hartmann, Bispham, Galli-Curci, John McCormack, Elisabeth Rethberg, Ossip Gabrilowitsch, Rudolph Ganz, Gigli, Heifetz, Ernest Hutcheson, Joseph Lhevinne, Mischa Levitzki, Elly Ney, Sigrid Onegin, Rosa Ponselle, Rosa Raisa, Samaroff, Ernest Schelling, Joseph Schwartz, Zimbalist, Harold Bauer, Martinelli, Giannini, Elman, Chaliapin, Sophie Braslau, Lucrezia Bori, Frances Alda.

OTHER DISTINGUISHED COMPOSERS

ARENSKY (*ä-rĕn'skĭ*), **ANTON** (1861–1906). Associated with younger Russian School.

BALAKIREV (*bä-lä-kē'rĕf*), **MILLI** (1837–1910) of the neo-Russian School, through whose leadership a national school of musical composition was developed.

BARNBY, SIR JOSEPH (1838–1896). Composer of *Sweet and Low*, numerous hymns, anthems, secular and religious choruses.

BEACH, MRS. H. H. A. (1867–). American woman composer, choral works, *Gaelic Symphony, Jubiltte*, a *Mass in E flat*.

BENNET, SIR WILLIAM STERNDALE (1816–1875). Foremost among the English musicians of his time, a fine pianist and a composer of much graceful music.

BOSSI, ENRICO (1861–). Italian composer of intensely modern style. Ranks high among his contemporaries.

BRUCKNER (*brŏŏk'nĕr*), **ANTON** (1824–1896). Austrian composer who ranks high among the serious artists. He adapted Wagner's principles to the orchestral works, producing compositions of brilliancy and power.

BUCK, DUDLEY (1839–1909). Famous as organist and composer in American musical circles for many years.

BULOW (*bü'lō*), **HANS VON** (1830–94). Great German pianist, and remarkable orchestral conductor.

DUKAS (*dü'kas*), **PAUL** (1865–1935). Composer of very brilliant orchestral works, best known of which is *The Sorcerer's Apprentice.*

FRANZ (*fränts*), **ROBERT** (1815–92). German composer, whose songs compare with those of Schubert, Schumann, and Brahms.

GADE (*gä'dĕ*), **NIELS** (1817–90). Danish composer of originality, though leaning toward Mendelssohn's style.

GERMAN, EDWARD (1862–1936). English orchestral composer, best known by the incidental music he has written to various Shakespearean plays.

GODARD (*gō'dăr'd*), **BENJAMIN** (1840–95). French composer of marked talent.

HENSELT, ADOLPH (1814–89). Composer of many excellent piano pieces in the "salon" style.

HELLER, STEPHEN (1815–88). Hungarian pianist and composer, friend of Chopin and Liszt. His works are characterized by lovely melody, fresh and vigorous treatment of theme. His style somewhat resembles Mendelssohn.

HOLMES, AUGUSTA (1847–93). Successful woman writer of operas and other works in larger forms.

HUBER, (*hōō'bĕr*), **HANS** (1852–1921). Swiss dramatic composer who ranks as the best composer in Switzerland. His best works are the operas *Gudrun* and *Der Simplicissimus,* and the beautiful orchestral works, *Pandora, Nordseebilder,* and three fine symphonies.

KJERULF (*kyā'rōōlf*), **HALFDAN** (1815–68), Norwegian composer of songs from whom Grieg received much of his inspiration. Many of his songs were specially written for Sontag, Jenny Lind, Christine Nilssom and others, who made them popular throughout the world.

KORNGOLD, ERICH (1897–), Austrian composer who showed precocious talents and who has since proved his ability as a writer in orchestral and piano works of remarkable fertility, originalty, and workmanship.

KREISLER, FRITZ (1875–), Austrian violinist and composer, whose compositions have an atmosphere of "Old Vienna."

LESCHETIZSKY (*lĕs-chĕ-tĭts'kĭ*), **THEODOR** (1831–1915), eminent pianist, composer and teacher of the art of piano playing. He gained a world-wide reputation as an instructor, because of the great success of his pupils, Paderewski, Bloomfield-Zeisler, Mark Hambourg, and Gabrilowitch. He published an opera, *Die erste Falte,* the piano compositions *Souvenirs d'Italie, Suite à la campagne* and numerous others.

MAHLER (*mä'lĕr*), **GUSTAV** (1860–1911), great opera conductor and successful composer. His second symphony is an excellent composition.

NICODE (*nĭk'ō-dā*), **JEAN** (1853–), composer of many fine works in larger forms.

RAFF, JOACHIM (1822–82). His *Forest Symphony* has had great success, but is not heard very often now.

RHEINBERGER, JOSEPH (1839–1901), well known composer of organ and chamber music, who also had a great reputation as a teacher of harmony, counterpoint, and composition.

SCHUTT (*shüt*), **EDWARD** (1856–), fine pianist and composer of many popular piano pieces.

SGAMBATI (*sgäm-bä'tē*), **GIOVANNI** (1843–1914), Italian composer and teacher. His reputation, however, is chiefly confined to his native country.

WOLF, HUGO (1860–1903), writer of rather intense songs and ballads. His opera, *Corregidor,* has been well received.

THE MODERNISTS.

The present era is one of musical extravagance which has deliberately severed itself from tradition and shows a more violent divergence than ever before witnessed in a transition from one period to another. Composers repudiate the hitherto acknowledged laws, make daring experiments in dissonances, and in the treatment of the orchestra.

Atonality and Polytonality.

During the Classic period, the great masters established, as a firm basis of understanding, the principle of *tonality,* or *key sense,* in which all the tones of a given key were related to one fundamental tone, as point of attention. This tone, or "keynote," was the center of the system of tones, and a sort of musical law of gravitation attracted all tones toward it.

Later, an increasingly intimate relationship between chords of different keys was discovered, and, beginning with Franck, we find that some composers considered this intimacy of relationship of greater moment than the underlying sense of key or tonality. Gradually, greater and greater liberties were taken with (and within) keys. One restriction after another was removed and all the materials of all keys were promiscuously intermingled, much as individual words from various languages might be arranged in order. Thus the sense of tonality was definitely suspended. This constitutes, in its broadest sense, what is known as *atonality.* Such groupings are often very vivid and powerful, and, no doubt, are the logical result of the desire to express the increased exhilarations of the present day.

The compounding of the materials found in all keys naturally led next to the compounding of the keys themselves, and the music maker found himself reveling in newly revealed prospects, finding and experimenting with entirely novel effects, sometimes pleasing, sometimes bitterly strident. The music of moderns, in short is a veritable *marriage of keys,* so that we find two totally different keys going in double harness.

It is the logical outgrowth of the idea of polyphony, in which two or more melodies moved along simultaneously. This employment of two different factors has now been extended to include the simultaneous sounding of *two different chordal columns,* each in its own key; *different color timbres* of the orchestra opposed to each other; *different complex rhythms* used at the same time. These new applications of the idea of counterpoint are still in the experimental stage with many composers, and, although it may be said that, what is called *polytonality* (many keys) is the characteristic technical procedure of the ultra-modern in music, the result, generally, is a continual tissue of dissonance. This stridently inharmonious effect is deliberate, persistent, and cheerfully remorseless with modern composers.

The Glamour of Modernism.

Much of our ultra-modern music is silly, puerile, senselessly ugly, abortively experimental, artificial rather than artistic, deliberately distorted and unmusical. It is true, that, as an antidote for extreme reactionary stupor, we require the other extreme of radical expression, and perhaps this stage of experimentation is not unlike that experienced in the early attempts at polyphony, during the history of the contrapuntal schools.

Knowing that they are dealing with something quite new (and queer) composers have become fanatical in their worship of the grotesque. In what may well be called the *barbaric style* they resort to all the tricks and arbitrary asperities of mere noise-makers. *Atonality, poly-*

tonality, the *whole-tone scale,* new methods of *chromaticism,* novel *counterpoints of rhythm,* and *timbre* are all intermingled and exploited in in a veritable worship of queerness.

Musical Barbarism may draw upon the music of primitive or warlike peoples, the Indians, Cossacks, Bedouins, Negroes, for local color, or it may dress itself in semi-civilized garb, and portray battle-scenes, tell stories of so-called chivalry (extreme programism) and fairly revel in the presentation of the cruel, the lustful, gruesome or brutal.

Such backgrounds provide the composer with ample opportunity (and excuse) for the display of his sensational devices. A story or program, essentially Oriental or primitive, is used to kindle, and, for a time, sustain the listener's interest. It will thread its way through intricate tonal windings, physically disagreeable passages, and even dynamic horrors. Alien chords of polytonal discovery march in double harness with ever-increasing noisiness. The composer's aim is to dazzle, bewilder, stun, and, finally, overwhelm with a titanic outburst of sound.

The School of Elusive Sonorities.

In contrast with the above strenuous style we have the *School of Elusive Sonorities,* employing amorphous passages, in which the melody, harmony and rhythm disappear in a strange, opaque mist of tones, and all sharp outlines dissolve into vague, fantastic shapes. Composers belonging to this school are found portraying cloudlets, wall-paper patterns, swirling waters, foggy shapes, colored gardens in the glare of the sunshine and quivering waves of heat on glinting or vibrating surfaces.

Others conjure up an impalpable world of fancy, and envelop it in an atmosphere of filmy mysticism. They seek effective expression in shimmering, high tones, conspicuous discords, and progressions in which every chord is a surprise. All they achieve is sensation, occasionally very pleasing, it must be admitted, but, as a rule both mentally and emotionally meaningless.

Igor Stravinsky (1882–), the Russian modernistic composer, is perhaps the leader of the school which exploits the *counterpoint of rhythms,* timbres and keys, while Alfredo Casella (1883), Italian musician, is an outstanding exponent of the Barbaric School. Arnold Schönberg (1874), Austrian musical intellectualist, is the founder of the new School of Linear Counterpoint. Alois Haba is the champion of the Quartertone Scale, dividing the octave into 24 equal quarters, and has written music from their basis. Franz Shreker thinks he has something new in the form of Folk-Opera. Alexander Scriabin (1872–1915) discovered a new basis for the construction of harmony, and, in his later works, brought forth something differing from the much frayed whole-tone scale. He expressed rather fanciful ideas of religious mysticism. Claude Debussy found in the impressionistic school of elusive sonorities, largely atonal, the liquid style suited to his delicate, ethereal poesy.

Other representatives of modern trends are Ottorino Respighi (1879–), an Italian Master, who has achieved novel effects through the modern use of old Ecclesiastical Modes, Manuel de Falla, clearly accepted leader of the new Spanish generation, Arthur Honegger, son of Swiss-German parents, who is quite Teuton in the solidity of his forms and workmanship, Milhaud, one of the French "Six."

The situation with respect to composers, therefore, seems somewhat confused. We know only that groups of composers, of all nationalities and in all countries, appear to be "feeling their way." It is to be hoped that, out of their experimentation there may be born something which will give the world a fresh idiom. It is indeed difficult to say in just what manner all these streams may be merged into a logical composite, yet, when we remember how the various developments of the contrapuntal age found their ultimate culmination in a Bach, it is plausible to assume that in due time a Bach, Beethoven or Wagner will appear to gather up the various threads, in order to weave them into a firm and acceptable fabric.

How widespread these trends are, is attested by the fact that everyone of these schools of innovation has its several representatives in every country. Germany has its Paul Hindemith, Ernest Krenek (a born Czech) atonalists, Walter Braunfels, and Heinrich Kaminski, France its Auric, Poulenc, Roussel, Italy its Malipiero, Candonai, Rieti, Castelnuovo, Tedesco, Russia its Roslavetz, Miaskovsky, Medtner and Feinberg, Hungary its Bartok and Kodaly, England its Bax, Berners, Holbrooke, Harty, America, its Gershwin, who, although working in jazz style, has avoided the customary tawdriness and lack of originality of the jazz school, Leo Sowerby, John Powell, Howard Hanson, Aaron Copland, Rubin Goldmark, Czecho-Slovakia its Joseph Suk and Leos Janacek. The attempts to follow Strauss-ism, Debussy-ism, Stravinsky-ism and Schönberg-ism, and applying one or more of them to the task of remaining nationalistic in his own country is the problem facing each composer. In other words the strict nationalists blinded by the glamours of modernistic possibilities, have not hesitated to adopt the ideas of "Internationalists."

It is generally conceded that Stravinsky and Schönberg are the two most striking composers of the times. The contemporary atonalists and polytonalists are speculative composers, whose efforts are constructed upon mechanical principles. Schönberg and Stravinsky still evade the general, still whet our curiosity, still await final appraisal. However the world may ultimatey rate them, it is by no means done with them and their music.

Music in the Public Schools.

"Music is the art of expression in tones." "To make America musical" is the slogan adopted by educators. Its importance as a curricular and extra-curricular subject in our public schools is being appreciated.

The aims and purposes of present day courses of music in the grades and high schools should be stated definitely because:

1. The various states of the Union are at present revising their respective curricula, and, to the end that there may be some uniformity of general objectives, the subject should be brought to the attention of the people.

2. Parents are expected to assist their children to some degree in their home study, and in order that this may be done intelligently, they, too, should be informed of the objectives and methods of procedure used in the school.
3. Knowing the importance of the subject, parents will insist that music be no longer considered a frill, an extra, or a luxury to be dropped by the student upon the slightest provocation.

There are two preliminary steps in musical training of children in the schools. The first is the *singing of songs by imitation* without any thought of technical elements or efforts to apply them consciously; the second is the *introduction and application of technical elements*, for the purpose of reënforcing and strengthening the imitative and memory processes.

While no hard and fast rule can be given as to the exact materials that should be used in a given grade, general lines of objectives may readily present themselves. Classes will differ as to the degree of mental background and hereditary ability possessed by their members, the amount of music there is to be heard in their homes, etc. To bring the objectives into some semblance of logically sequenced groups is the first important step.

The teachers of grades one, two, and three may be considered as having as their constant aim the task of:

1. Providing *musical experience* for the students, through *active participation*, which shall develop a love and appreciation for the art.
2. Providing a repertoire of *rote songs* suitable for the children, and a knowledge of a reasonable number of standard *community songs*.
3. Establishing and maintaining *right attitudes* toward good music.
4. Suggesting, and assisting in ways and means of stimulating *creative tendencies* in children.

During the gradual progress of the student the teacher should attend, with great care, the matters of:

1. Voice production and placing, training the child's ear to distinguish between *good and bad tone quality*, maintaining the beautiful quality peculiar to children.
2. Developing a *rhythmic feeling*, or sense of time, through rote songs, singing games, folk dances, suggested rhythms, toy bands, etc.
3. To prepare the students to *read and interpret* simple music material.
4. Studying such elementary facts of *music notation* as are necessary to the student's progress in reading and interpreting simple music materials, whether songs or exercises. This includes a knowledge of clefs, signatures, major scales, rhythms, ear training, dictation.
5. Drilling the students in *pitch*, including special work with monotones, to master the syllable-names.
6. Drilling students in *rhythm*.
7. *Sight reading*, giving the student the facility of recognizing and producing instantaneously the tone represented by a printed note. This implies good preparation in syllable reading.
8. *Musical appreciation*, which should be an integral part of every lesson.
9. Beginning *creative work*, writing simple, *original melodies*.

Continuing into the Intermediate Grades, four, five, and six, the work adapts itself somewhat as follows:

1. A study of the child's singing voice and the adaptation of materials to early changes (adolescent voices).
2. Selecting and studying rote and art songs adaptable to the intermediate grades.
3. Methods of:
   (*a*) Formal technical drills for *rhythm* and *ear training*.
   (*b*) Systematic practice in *sight-reading* to develop power and facility. The use of the *Minor mode* (*La* scale).
   (*c*) Preparation for and presentation of *part-singing*, including the development of *harmonic sense*.
   (*d*) Presenting directed and undirected *listening lessons*, to further the higher sense of musical appreciation.
   (*e*) Simple *conducting*, showing the student the advantages of being able to conduct community singing, church choirs, choral work, or the orchestra or band.
4. Stimulating *creative tendencies*, writing *original melodies, making of simple musical instruments*.

The *problems of time* should be introduced according to a definite plan of gradation, single-beat tones first, then two tones to a beat, the unequally divided beat, dotted note, etc.

The *problems of pitch*, also, may be introduced in their logical order, beginning with scale and chord progressions, and gradually bringing in the different interval relations.

The *changing voices* of boys should have ample provision. Most unison songs are within medium range, also, many part songs provide an alto part of very small range, not too high for the so-called tenor-alto voice. Bass melodies, generally speaking, may be sung by the boys, with changed voices.

The fundamentals of *Music Appreciation* in the *Primary Grades* may be summed up in the understanding of:

1. Rote Songs
   (*a*) Nature
   (*b*) Animal
   (*c*) Holiday
   (*d*) Lullabies
2. Singing Games
3. Tonal Work
   (*a*) Imitative exercises for curing so-called monotones
   (*b*) Building the tonal vocabulary.
4. Rhythm Work.
   (*a*) Through Rote Songs
   (*b*) Singing Games
   (*c*) Folk Dances
   (*d*) Suggested Rhythms
   (*e*) Toy bands.

Music Appreciation in the *Intermediate Grades* can be attained through:

1. Rote Songs
2. Observation Songs
3. Use and Understanding of the musical tools

(*a*) Symbols; sharps, flats, slurs, ties, loud, soft, etc.
(*b*) Knowledge of Key Signatures.
(*c*) Knowledge of Meter Signatures.
(*d*) Knowledge of Pitch names.
(*e*) Rhythmic expression; Andante, Allegro, Moderato, etc.
(*f*) Sight-reading.
(*g*) Sight-singing.

4. Music should be correlated with other subjects of the curriculum and the life of the child through:
(*a*) Folk songs
(*b*) Folk games
(*c*) Art songs
(*d*) Classics in instrumental music, with the aid of mechanical agencies, player-pianos, talking machines, etc.

Music in the High School.

The work of the teacher, beginning with the seventh grade, or thereabouts, is to make the sight reading processes, begun in the preceding years, so definite and accurate, that they of themselves lead to *expressiveness* and *spontaneity* in the singing.

The same program of problem study and application as followed in the lower grades, must be repeated in the seventh grade and up, the work being readjusted to cover the greater mental maturity of older pupils. This means greater technical difficulty of the songs and a broader musical content.

Along with the active participation of the students in the manner above indicated, more comprehensive courses in History and Appreciation should be included, covering

1. The *history* and development of music with reference to the *instruments* used in its production.
2. The *great contributors* to modern music.
3. The chief *forms* in music.
4. The parts of an *Orchestra and Band.*
5. An *appreciation* of some of the typical musical productions now current.

Suggestions:

1. Bring about individual and group expression by class. Simple *illustration of music* (both operatic and incidental) after having previously developed a *mood.*
2. A study of *instruments,* their developments, and their *modes of expression.*
3. Other forms of expression, that is, *solo, duets, trios, quartet, ensemble.*
4. Use of story, pictures, drama, and poetry to help establish a mood. *Programism.*
5. History and *biography,* used as enriching supplementary material.
6. Arouse a desire in the student to *express himself* in music.
7. Help students to a knowledge of what may interpret or *express a mood.*
8. Make clear the following:
(*a*) What music is.
(*b*) Examples of early music.
(*c*) Early American types, Afro-American, Indian.
(*d*) Study of instruments, precussion, brass, reed, string.
(*e*) Orchestras, how developed, the great orchestras, located.
(*f*) Symphony, overture, program music.
(*g*) Bands, and their music.
(*h*) The human voices, sopranos, altos, tenors, baritones, and basses.
(*i*) Oratorio, what it is. Difference between oratorio and opera.
(*j*) Opera, grand (serious), comic.
(*k*) Schools of music and their representative composers.
(*l*) Folk and national music. Italy, France, Germany, Russia, Czecho-Slovakia (Bohemia), Poland, England, Japan, Hungary, Finland, Norway, America.
(*m*) Modern tendencies in music.
(*n*) Benefit of music in the schools.

There is much to be grateful for in the good arising from the teaching of music in the public schools, in the stimulation of interest through community music, music week, in the fine work of reproducing instruments and the radio. Boards of education everywher are of one opinion concerning the place music merits in the public schools. The number of authoritative courses for the training of music supervisors indicates the importance of this branch of work. The experience of the public, too, in listening to public school choruses and orchestras and bands has been illuminating.

INSTRUMENTAL MUSIC (ORCHESTRA AND BAND) IN THE PUBLIC SCHOOLS.

The question which naturally suggests itself to parents when asked to allow their children to play in the school orchestra or band is, "How may our children and our school be benefited if the pupils are encouraged in learning to play instruments?"

Music lifts one to a higher level of living, aesthetically, and morally, gives pleasure and profit. It is economically valuable. The number of people in each community who earn money through music is surprising.

Music has a definite influence upon the intellectual life. It is one of the most valuable all-around subjects at our disposal for training children in quickness of perception, in acuteness of visual and auditory analysis, in rapidity of coördination, and in the keener observation of symmetry and unity.

The director of music in the schools of one of our largest cities says, "The value of public instruction in music would be tripled by a manifestation of interest upon the part of parents in the music, which the child is trying to learn to appreciate at school." Every Parent-Teacher Association can further the coöperation between home and school by asking each member to fill out a questionnaire, something like the following:

1. Have you a musical instrument in your home? What is it?
2. What kind of music is played?
3. What do you know about the musical selections your child is studying in school, or playing in the school orchestra?
4. Would you like your child to play in the school orchestra?
5. Will you give your child an opportunity to learn to play some instrument, and give him time to practice?

The orchestra or band of the school makes it possible to interest many children, especially

boys, in music, at that crucial stage, where upon reaching the voice-changing age, they find that their interest in singing is not so keen as formerly, and, because they do not now care for singing, they care very little about music in general. At such a point, the appeal of an instrument turns the tide.

However, parents should see to it that the child takes the band or orchestra work seriously. The regular discipline which a pupil undergoes in orchestral practice, of yielding in obedience to the dictates of the conductor, is a very valuable training for the child. It makes *obedience a habit.* If this were all that the child received from its association with the school orchestra it would be worth a great deal.

Orchestral Instruments.

The symphony orchestra is divided into four sections, according to the character of the instruments which compose it. These various "families" of instruments are balanced as to members so as to make the best blending of "colors" or timbres. The modern orchestra contains from 60 to 110 performers. The groups are as follows:

- **String**
  - First Violins
  - Second Violins
  - Violas
  - Violoncellos
  - Contra-basses
- **Wood-wind**
  - Flutes
    - Piccolo
    - Flutes
  - Single Reeds
    - Oboes
    - English Horn
    - Bassoons
    - Contra-Bassoon
  - Double Reeds
    - Clarinets
    - Bass Clarinet
- **Brasses**
  - French Horns
  - Trumpets
  - Trombones
  - Tuba
- **Percussion**
  - Tympani or Kettle Drums
  - Snare-drum
  - Bass Drum
  - Triangle
  - Bells
  - Cymbals
  - Tam-tam

Aside from these most orchestral scores now contain parts for one or two harps, which belong to none of the above choirs of instruments.

The String Choir.

The strings are the most important group, and, when played together are capable of expressing almost any thought or feeling.

The Violin.

The **Violin** was introduced into the orchestra by Monteverde, seventeenth century. The violins of the orchestra are divided into two groups, first and second violins, the former being comparable to the soprano, the latter to the second soprano or alto parts. A great many especial effects may be produced upon the violin according to the manner in which the bow is drawn across the strings. Bowing near the bridges produces a rough, harsh quality, while bowing nearer the finger-board results in a soft, mysterious quality.

Pizzicato, the plucking of the strings with the finger suggests harp effects, which are always very popular. *Sordinos* or *mutes,* applied to the violin, produce a veiled, mysterious quality often used for reveries, lullabies, mournful effects.

The Viola.

The **Viola** was used by the Venetians in the early seventeenth century, under the name *viola da braccio* or *arm fiddle.* It has a soft, noble quality, rich and penetrating, of wonderful pathos. It possesses a deeper compass than the violin, being tuned a fifth lower than the latter.

The Violoncello.

The **Violoncello** has a quality more nearly like the human voice than any of the orchestral instruments. It was developed out of the *knee fiddle* or *viol di gamba* of the seventeenth century. It is tuned an octave lower than the viola, and its deep, full voice may reflect almost any sort of condition. Because of its great compass, the 'cello may be used as the bass of the string group, as a solo instrument of power and virile expression, or as the melody-carrier with the accompaniment of other instruments.

The Contrabass.

The **Contrabass** was little known, and its possibilities little realized, until the time of Beethoven. It is the fundamental bass part of the string group, and sounds an octave lower than written. The "tremolo" or trembling of the bow on the strings, which is used upon all the string instruments, is effective upon the bass, in representing storm, or sentimental effects. The *pizzicato* is often used, and is an intensely dramatic effect when combined with other menacing colors.

The Harp.

The **Harp,** although one of the oldest of instruments, is a recent addition to the orchestra. Aside from its history in connection with the ancient Egyptians and Hebrews, it may be noted as one of the popular instruments of the people generally, standing out in its importance in Ireland, Scotland and Wales.

In the orchestra, the harp is treated either in broad effects or in arpeggios. It adapts itself readily to serenades, prayers, religious or march scenes.

The Wood-wind Instruments

The combined wood-wind instruments approximate the effect of an organ, and suggest the atmosphere of festivity, religion, pomp, etc. It has been said that the flute may be called the coloratura soprano of the wood-winds, the oboe the lyric soprano, and the clarinet the dramatic soprano.

The Flute.

The **Flute** is one of the oldest instruments in the orchestra. It is possessed of marvelous agility, although capable of expressing sadness as well as joyousness. It is very popular as an

obligato instrument, because it blends so perfectly with the color of the human voice. In the orchestra three flutes are used.

The **Piccolo**, or octave flute, covers the very highest pitch levels. It is seldom used alone, but is very effective for piercing, shrieking, agonizing effects. It is most useful in combination with the flutes and other wood-winds.

The Oboe and English Horn.

The **Oboe**, developed from the pipes of the Greeks, is a double reed instrument. The tones are produced by the vibration of reeds attached to the mouthpiece. These reeds are thin pieces of cane, two of which are fitted close together, in the oboe, English horn, bassoon and contrabassoon, all of which are double reed instruments.

The quality of the oboe is soft and tender, but of great penetration. It suggests rural scenes, and is especially fitted for melodies of a romantic nature. It is capable of expressing sadness, grief, agitation.

The **English Horn** is the alto oboe. It stands in the same relation to the oboe that the viola does to the violin. It is tuned a fifth lower than the oboe. It has been used in the orchestra only since the time of Berlioz, who first recognized its great expressive qualities. Its veiled, dreamy tone is full of emotional color.

The Clarinet.

The **Clarinet** is one of the most useful instruments in the orchestra. A single flat reed is the tone producing agency. The Clarinet has a very large range, its lowest register being earnest and religious in quality, its highest shrill and rough. Rameau first used it in opera, but it was Mozart who understood it as a leading voice of the orchestra.

The **Bass Clarinet**, pitched an octave lower than the clarinet, has a deep, noble, impressive tone, and, in its lower registers, sinister, dramatic colors. Meyerbeer was the first to use it in the opera. It was a favorite instrument of Wagner and Liszt.

The Bassoon.

The **Bassoon**, the bass of the double reed group has a great compass, the upper range being very similar to the human voice, and effective in pastoral scenes. Depression and fear are well portrayed by the upper registers. The deepest register is very comical.

The **Contra-Bassoon**, is occasionally required for the grandiose effects of the deepest harmonies. It also is capable of grotesque effects.

The Brass Choir.

The **Brasses, combined** as a choir, have a solemn, noble, devotional character, and are capable of very beautiful, rich tone effects, resembling the organ.

The Trumpet.

The **Trumpet** is the highest of the brass instruments. Its soft tones are very beautiful, but it is only called upon to carry the melody where the brass section plays alone, or in moments of brilliant, forcible climax. It suggests boldness, chivalry, victory, etc.

French Horns.

The **French Horn**, developed from the old hunting horn, is a most genial instrument, possessed of a noble, poetic quality. Its tones are full of passion, pathos, and solemnity. Echo effects are produced by means of the mute. The stopped tones produced by placing the hand in the bell of the instrument result in a nasal, discordant, shudder-arousing quality, often used to reflect danger, strife, discord, revenge, etc.

Trombone-Tuba.

The **Trombone** possesses a grave, majestic, heroic quality, and in most of the solemn, dignified music, requiring grandeur, power, religious feeling, it plays an important part. Three trombones are generally used in the orchestra, using the tuba for the bass of the quartet. Most composers are careful in the use of the trombones, and employ them only at moments of overwhelming expressiveness.

The **Tuba** is the bass of the brass section. Its tone is gruff, but noble and dignified. It is combined with the trombones in the expression of grandeur, power, nobility, majesty, sublimity.

The Percussion Instruments.

This group of instruments is often called *the battery*. The various instruments are used for characteristic effects. The most important of these are the Tympani.

The **Tympani**, or **Kettle Drums** are instruments of copper, in the form of large kettles, covered with vellum heads, and are tuned by the use of screw-keys. The player is often called upon to change the drums into another key, while the rest of the orchestra remains in the original key.

Two or more tympani are generally employed in the orchestra and are capable of suggesting storm-scenes, dramatic effects, dirges, requiems, etc.

The **Drums.**—The **Snare drum**, or **military drum**, has snares or catgut strings which produce a rattling, incisive tone. It is used in music of a military character.

The **Bass Drum**, the large drum, is generally used in symphonic music to mark the rhythm, at an approaching climax or to imitate thunder. It is usually associated with the cymbals.

The **Bells.**—The most familiar form of bells used in the symphony orchestra is the Glockenspiel or carillon, played with a keyboard.

The **Triangle**—a triangular bar of steel, which is struck with a metal rod. Its tone is sharp and incisive, but of indefinite pitch, so that it may be used in all keys.

The **Cymbals** are circular disks of metal which are struck together, or with a wooden hammer. The metallic clang thus produced has an almost shrieking quality and is effective in dramatic climaxes. Used very softly, they are also of fine effect.

The **Tam-Tam** or Chinese Gong, a huge metal disk, of Chinese origin, produces a terrifying tone, of use where conditions of horror, wildness and dramatic power are carried to their height.

The **Celesta**, a piano-like keyboard used to sound tuned plates of steel, producing the tin-

kling bell-like tones of the bells. Later composers, since Tschaikovsky, employ the celesta in place of the other forms of bells.

THE INSTRUMENTAL GROUPS IN THE MILITARY BAND.

The instruments of the military band may be visualized readily in their respective qualities and methods of employment in the following tabulations.

Instruments, which produce a sharp, bright, penetrating tone, in the:

High register	The Piccolo Flute
High and Middle register	The Clarinet
Middle register	Cornet, Trumpet
Middle and lower register	Trombone
Lowest register	Tuba

Instruments which produce a soft, sonorous tone:

High register	Flute
Middle register	Horns, Alto Horn, Tenor horns, Baritone, Saxophone.

Instruments producing a whining tone:

High register	Oboe
Lower register	Bassoon.

In the military band the clarinets take the part represented by the violins; first clarinets being used just as the first violins would be, the second clarinets like the second violins. The part of the violas is taken by the alto and tenor horns, the 'cellos by the baritones, the bass violins by the tubas. The flutes, horns, trumpets, trombones, and percussion groups are used in the same manner as in the orchestra. The above general rule holds good in arranging orchestral music for military band.

FAMOUS ORCHESTRAS

Austria:
Vienna—
Philharmonie Orchester. Conductors, Felix Weingartner, Franz Schalk.
Symphonie Orchester. Conductors, Clemens Krauss, Leopold Reichwein, Hans Knappertsbusch, Anton Kourath.
Volks Orchester. Conductor, Karl Berger.
Ladies Symphonie Orchester. Conductor, Julius Lehnert.
Innsbruck—
Musikverein Orchester. Conductor, Emil Schennich.
Stadtisches Orchester. Conductor, Dr. Kohler.
Salzburg—
Mozarteums Orchester. Conductor, Bernhard Paumgartner.

Czecho-Slovakia:
Prague—
Czech Philharmonic Orchestra. Conductor, Vaclav Talich.

Denmark:
Copenhagen—
Royal Opera House Orchestra. Conductors, Georg Hoeberg, Johan Hye-Knudsen.

France:
Paris—
Societé des Concerts. Conductor, Philippe Gaubert.
Colonne Orchestra. Conductor, Gabriel Pierne.
Lamoureux Orchestra. Conductor, Paul Paray. The Colonne and Lamoureux Orchestras have at times been combined since the war, as one organization. Conductors, Gabriel Pierne, Camille Chevilard.

Germany:
Berlin—
Philharmonic Orchestra. Conductor, Wilhelm Furtwangler.
Cologne—
Gurzenich Konzerte. Conductor, Herman Abendroth.
Cologne Symphony Orchestra. Conductor, A. Kuntzmann.
Dresden—
Orchestra of the State Theater. Conductor, Fritz Busch.
Dresden Philharmonic. Conductor, Ed Moericke.
Frankfort—
Frankfort Symphony Orchestra. Conductor, Ernst Wedel.
Museum Concerts by the Opera Orchestra. Conductor, Ludwig Rottenburg.
Hamburg—
Philharmonic Orchestra. Conductor, Siegmund von Haussegger.
Leipsic—
Gewandhaus Orchestra. Conductor, Wilhelm Furtwängler.
Munich—
National Opera House Orchestra. Conductor, Hans Knappertsbusch.
Stuttgart—
Landestheater Orchester. Conductor, Prof. Leonhardt.

England:
London—
Queen's Hall Orchestra. Conductor, Sir Henry Wood.
London Symphony Orchestra, Landon Ronald.
Manchester—
Halle Orchestra. Conductor, Sir Hamilton Harty.

Italy:
Rome—
Augusteum. Conductor, Bernardino Molinari.
Milan—
Orchestra of the Scala Theater. Conductor, Arturo Toscanini.

Norway:
Oslo—
Philharmonic Orchestra. Conductor, Jose Eibenschutz.

Russia:
Leningrad—
State Philharmony Orchestra. Conductor, Nicholas Berdiaiev.
Moscow—
Russian Philharmony Concerts. No permanent conductors. Chief of Orchestra, Prof. Leo Zeitlin.

Sweden:
Stockholm—
Royal Court Orchestra. Conductors, George Schneevoigt, Conrad Nordquist, Armas Jarnfeldt.

United States:
Boston—
Symphony Orchestra. Conductor, Sergei Kussevitzky.
Chicago—
Symphony Orchestra. Conductor, Frederick Stock.
Cincinnati—
Symphony Orchestra. Conductor, Fritz Reiner.
Cleveland—
Symphony Orchestra. Conductor, Nickolai Sokoloff.
Detroit—
Symphony Orchestra. Conductor, Ossip Gabrilowitsch.
Los Angeles—
Symphony Orchestra. Conductor, Walter Henry Rothwell.
Symphony Orchestra. Conductor, Henri Verbrugghen.
New Haven—
Symphony Orchestra. Conductor, David Stanley Smith.
New York—
Philharmonic Orchestra. Willem Mengelberg.
Symphony Orchestra. Guest conductors pending the election of regular conductor to replace Walter Damrosch.
Philadelphia—
Symphony Orchestra. Conductor, Leopold Stokowski.
San Francisco—
Symphony Orchestra. Conductor, Alfred Hertz.
Syracuse—
Symphony Orchestra. Conductor, Vladimir Shavitch.

GREAT OPERAS

AIDA. Giuseppi Verdi. Cairo, 1872.
At Memphis and Thebes, in the reign of the Pharaohs.

Act. I.—Aïda, taken captive by the Egyptians, is given to Amneris as a slave. Radames, her lover, also loved by Amneris, is chosen to lead the Egyptians against the Ethiopians under Amonasro, Aïda's father. Act II.—Amneris discovers Aïda's secret by pretending that Radames has been killed. He returns triumphant with many captives, including Amonasro, disguised as a soldier. Offered whatever boon he desires, Radames asks for the freedom of his captives, which was granted to all but Amonasro. The king bestows upon Radames, his daughter, Amneris. Act III.—Accompanied by Ramphis, the high priest, Amneris goes to the Temple of Isis to pray for Radames's love, and there overhears Aïda, her father, and Radames plan to flee from the court. She denounces Radames. Act IV.—Before his trial, Amneris pleads with Radames to explain, but he refuses, is tried and condemned to be buried alive in the stone vaults beneath the altar of the God of War. While Radames awaits his fate in the vault, and as the great stone which seals his tomb is swung into place, Aïda is discovered within and the lovers are united in death; Amneris dies of grief above the altar stone.

BARBER OF SEVILLE. Gioacchino Rossini. Rome, 1816. *Seville, Spain.*

Act I.—In love with Rosina, who is so jealously watched by her guardian, Dr. Bartolo, that his attempts to see her are fruitless, Count Almaviva, having made the acquaintance of Figaro, the barber, is advised by him to enter the doctor's house in the guise of a soldier. Rosina recognizes him and sends him a note, which is found by the doctor, who has Almaviva arrested. Act II.—Again the Count gains admission in the guise of a music master, and all is going well when Basilio, the real music master, appears, but is bribed to depart. Bartolo discovers the trick and sends at once for the notary to draw up the marriage contract between Rosina and himself. Basilio returns with the notary, is again bribed and with Figaro witnesses the signing of the marriage contract between the lovers. Bartolo is pacified with Rosina's dowry.

CARMEN. Georges Bizet. Paris, 1875.
Seville, Spain, beginning of nineteenth century.

Act I.—The Spanish gypsy, Carmen, lives only for sensuality. After she has loved many, she it attracted by the sergeant, Don Jose, who is in command of a troop of soldiers assembled in the village where is located the cigarette factory in which she has wounded one of her mates. She is imprisoned and placed under the guardianship of Don Jose, whom she bewitches, and secures release, for which he is put under guard. Act II.—Carmen returns to her tribe, who appear before the inn of Lillias Pastia to dance. Among them is Escamillo, the toreador, who fascinates her. Don Jose, released from prison, deserts his company for her and is persuaded to join the smugglers, who capture Zuniga, the captain, and carry him off. Act III.—Weary of Don Jose, Carmen entices Escamillo to the smugglers' cave, where the rivals combat. Michaela appears with a message for Don Jose from his mother, who is dying; he tries to prevent Carmen from accepting Escamillo's invitation to the bull fight. Act IV.—On returning, he finds her in the arena with Escamillo, to whom she has promised her love if he is the victor. Don Jose tries to reawaken her love but she repulses him and flings his ring at his feet. As the trumpets announce Escamillo's victory, Don Jose stabs her through the heart.

CAVALLERIA RUSTICANA. Pietro Mascagni. Rome, 1890. *A Sicilian village.*

Act I.—Turiddu, a peasant, before entering military service, had wooed Lola, whom he finds married to Alfio when he returns to the village; he tries to console himself with Santuzza, who loves him ardently, and they are engaged. Lola, who cannot endure to have him marry Santuzza, flirts with him until he has forgotten his betrothed, who in turn becomes very jealous and sad. Santuzza pleads with his mother, who tries to help her. On Easter morning, when people are on their way to church, Santuzza meets Turiddu and reproaches him; he flings her from him. Angered by his treatment, she tells Alfio that his wife is false to him. The two men meet at Lucia's inn and challenge each other. Turiddu repents, but meets Alfio in combat and is killed; Santuzza dies in a swoon.

DER FREISCHUTZ. Karl Maria von Weber. Berlin, 1821. *Bohemia, about* 1750.

Act I.—Max, a young ranger in the service of Prince Ottokar of Bohemia, loves Agatha, daughter of Kuno, chief ranger, and has been promised her hand if he wins the contest in marksmanship. He fails, the prize being awarded to Kilian, a peasant. While in a desperate mood, he is approached by Caspar, a dissolute fellow-ranger, who has sold himself to Zamiel, the Demon Hunter of Bohemian tradition, a sort of Mephistopheles. Caspar also loves Agatha, but knowing that his soul will be forfeit unless he brings another victim in his place, he sees his chance to appease Zamiel, and at the same time remove Max as a rival. Act II.—Agatha awaits, with alarm, her absent lover. After her prayer, Max arrives, much agitated. He declares he must go to the Wolf's Glen to bring in a stag he has shot. In reality he has been induced by Caspar to meet him in the Wolf's Glen to receive the charmed bullets which Zamiel alone can make. Agatha, knowing the reputation of the place, begs him not to go, but he insists. Act III.—Amid scenes of picturesque terrors and supernatural horror the bullets are cast in the presence of the dread Zamiel himself. Six bullets are for Max to use as he wishes, the seventh Zamiel may direct as he likes. The scene changes to the contest, and Max having already spent his six bullets, is directed to shoot a passing dove. He does so, but the bullet just misses Agatha. But a magic garland of roses given her by a pious hermit protects her. When the smoke has cleared away it is found that Caspar has been wounded by the bullet which was directed by Zamiel. The latter drags Caspar away. Max confesses his guilt, but upon intercession of the hermit, he is forgiven by the prince.

DON GIOVANNI. Wolfgang Amadeus Mozart. Prague, 1787. *Seville, Spain.*

Act I.—Don Giovanni, Spanish libertine, is attracted by Donna Anna, the daughter of the commandant of Seville. He breaks into the palace at night to force his love upon her. She calls for help. The commandant comes to her aid, but is killed in the struggle which ensues. Don Giovanni escapes unrecognized. Act II.—Donna Elvira, his deserted wife, follows him to Seville. He makes love to Zerlina, a peasant girl, the betrothed of Masseto, an honest workman, while his servant, Leporello, distracts the attention of Elvira. Donna Anna enters with her lover, Don Ottavio, and, recognizing Don Giovanni as her father's assassin, joins with Elvira and Ottavio in a vow of vengeance against him. Act III.—Don Giovanni gives a ball to celebrate Zerlina's marriage, during which he tries to seduce her. He is prevented by the entrance of Anna, Elvira, and Ottavio, who have made their way into this palace in masks and dominoes. Act IV.—Don Giovanni, still untouched by the vengeance of the three conspirators, is free to continue his amorous activities. After various experience, he finds himself before the statue of the murdered commandant. In a spirit of bravado, he jokingly invites the statue to sup with him. To his surprise the invitation is accepted. Later, when the merriment is at its height, the marble man, with heavy step, enters, and offers Don Giovanni a choice between repentance and eternal damnation. When Don Giovanni, proud and insolent, refuses, the statue grasps him and drags him, amid earthquakes and flames, to eternal torment.

ELEKTRA. Richard Strauss. Dresden, 1909.
King's palace of Mycene, shortly after Trojan War.

Act I.—Clytemnestra, with the aid of her lover, Aegisthus, murdered her husband, Agamemnon, and now fears discovery by her children, Elektra, Chrysothmes, and Orestes. Elektra, who is filled with a desire for vengeance, tries to get her sister's aid in killing the guilty pair. Orestes, her brother, who was said to be dead, had been banished, and appears to Elektra, who tells him the truth about their father, and together they plan revenge. He goes within the palace and accomplishes his purpose. Elektra, overjoyed at his success, dies in a delirious dance.

FAUST. Charles Gounod. Paris, 1859. *German village.*

Act I.—Faust, a student, dissatisfied with his success in scientific research, and his advancing age, calls upon Mephistopheles, who shows him a vision of Marguerite, whereupon he sells his soul to Satan and is transformed into a handsome youth. Act II.—Marguerite, a pure-minded girl, is left in the care of Siebel by her brother Valentine when he goes to war. At a festival before the city gates, she refuses to dance with Faust. Act III.—Siebel binds a bouquet for Marguerite in her garden, the flowers fade, but are revived after being dipped in holy water. Faust and Mephistopheles witness this and the latter leaves a casket of jewels at her door, which she discovers, and adorns herself with; when Faust appears she surrenders herself to him. Act IV.—Valentine, returning from the wars and learning of his sister's misfortune, challenges Faust, but through the aid of Mephistopheles is overcome and dies cursing Marguerite. Act V.—Marguerite, in want and misery, remorseful of her wrong, kills her child, for which she is imprisoned. Faust, desiring to save her, gains access to her prison and begs her to flee; she refuses and, praying for forgiveness, dies; the angels bear her to heaven.

FLYING DUTCHMAN, THE. Richard Wagner. Dresden, 1843. *Coast of Norway.*

Act I.—A Norwegian sea captain, Daland, was driven ashore by a storm. While he and all his crew are asleep, a ghostly ship dashes against his vessel, and is held fast. A pale man with black beard, dressed in black, steps ashore. He tells his story; that having broken his troth, he is compelled to roam the seas without rest; at the end of every seven years he is cast ashore to find a wife who will be true to him forever, which will end his voyaging. When he hears that Daland has a daughter, he asks for her as his wife. Tempted by gold, Daland consents and both ships set sail. Act II.—Senta, the daughter, is much impressed by the picture of the Flying Dutchman, and declares she would save him by her fidelity. Erik, the huntsman, in love with Senta, hears her declaration and tells her his dream of her father's return with a stranger, who carried her off to sea. She listens with delight and Erik leaves in despair. Daland returns with the stranger, who is introduced as her betrothed. Act III.—Later in the evening Erik returns and reproaches Senta for her broken vows to him, which the stranger overhears. Overwhelmed with despair, he calls his crew, tells Senta of the curse, and reveals that he is the Flying Dutchman. Hardly has he departed when Senta flings herself into the sea. Her faithfulness to him is his salvation. The spectral ship disappears and Senta and the Flying Dutchman are seen ascending into heaven.

FRA DIAVOLO. Daniel F. E. Auber. Paris, 1830. *Village of Terracina, Italy, nineteenth century.*

Act I.—The Roman governor has offered a reward and sent dragoons to capture Fra Diavolo, a celebrated bandit chief. Lorenzo, the officer in command, is in love with Zerlina, daughter of Matteo, the innkeeper. While the dragoons are at the inn, Lord Cockburn, an Englishman, and his wife, Pamela, arrive, and declare that they have been robbed. Lorenzo and his men set out to capture the thief. Cockburn is jealous of the attentions paid his wife by their traveling companion, Marquis of San Marco (Fra Diavolo), who listens to Zerlina's story of the famous brigand. He pays court to Pamela, and secures from her a costly medallion set with jewels. Lorenzo returns with the stolen property, wins his reward, and hopes to win Zerlina. Act II.—The English couple are conducted to their rooms next to Zerlina's chamber. Fra Diavolo plans further robbery and conceals himself in Zerlina's closet. He gives a prearranged signal to his comrades in the courtyard below and they enter her room and again rob the English couple. A noise outside awakens them, Zerlina appears, and the robbers escape, aided by Fra Diavolo, whose presence arouses the jealousy of Cockburn and Lorenzo, the latter challenges him to a duel. Act III.—Diavolo, in bandit dress, awaits Lorenzo in the forest, as Zerlina and the rich farmer, Francisco, approach with their wedding procession, in which are Diavolo's accomplices, who are arrested and compelled to aid in capturing Diavolo, who is shot.

GIRL OF THE GOLDEN WEST. Giacomo Puccini. New York, 1910.

Gold Fever Era, 1849–1850. *California, near Cloudy Mountains.*

Act I.—It is dusk in "The Polka," a miners' saloon and dance hall, where Jack Rance, the sheriff, sits smoking, and Nick, the bartender, lights the lamps. Miners troop in, calling for food and drink; they sing, dance, and play cards. Excitement runs high, when Minnie, the only girl in camp, enters, takes down a Bible and the miners gather about her, questioning and answering in turn. Minnie rejects Rance's attentions and presently he becomes jealous of Dick Johnson, who dances with her. Left alone with Dick, they avow their mutual love and she confides to him that she keeps the miners' gold. Act II.—Minnie returns to her lonely cabin, orders her table set for two, and arrays herself in all the finery in her possession. Johnson arrives shortly, amid a heavy snowstorm, which so increases in fury that he is obliged to remain. Soon a call is heard from the miners, who have come to warn her of Ramerrez, and she hides Johnson behind the bed curtains. They tell her Johnson is Ramerrez, and she affirms that he is not there and they depart. Contemptuously she orders Dick to come out and he confesses, but implores her pity. She sends him away, and immediately a pistol shot is heard. Opening the door, she finds Dick wounded; she puts him into the loft just as Rance appears to arrest him; again she denies his presence, but a drop of blood falling upon Rance's hand reveals the culprit. Rance proposes a game of poker, but Dick is unable to play and Minnie takes his place, the stakes to be her freedom and Johnson's against marriage with Rance and Johnson's surrender, from the two best games out of three. She pretends to faint and while Rance hunts for whiskey she stacks the cards from her stocking and wins. Act III.—Seated by a fire in a clearing in the forest, Rance awaits the return of the troops with Johnson, while preparations are made for the hanging. Soon they appear, and Johnson is bound and stood in the center of his accusers, who charge him with the intention of stealing their gold, but taking Minnie instead. The noose is ready, when Minnie rides into camp, dismounts and throws herself before Johnson, protecting him. Rance demands her removal and Johnson's life, but Minnie pleads so effectively, reminding them of her care of them and their gold, that they forgive her and release Johnson.

HANSEL AND GRETEL. Engelbert Humperdinck. Munich, 1893. *A German forest.*

Act I.—At home in a poverty-stricken room we find Hansel and Gretel making brooms and knitting stockings, while their parents are away seeking food. The children tease each other and play. Their mother, returning, finds little work done, and, in her rage, upsets a pitcher of milk, their supper. Further enraged, she sends them into the forest to pick strawberries, bidding them stay until they have filled the basket. Their father soon returns with food, and is greatly disturbed because they have been sent into the forest, where lives a witch who lures children with magic cakes, puts them into her oven, and when they are baked into German cakes devours them. Both parents hastily leave the house to find the children. Act II.—While Hansel hunts for berries, Gretel makes wreaths. They are afraid, they see specters and hear the echo as they call in vain for their parents. The Sandman appears, sprinkles sand in their eyes and they fall asleep praying, while angels surround them in accordance with their prayer. Act III.—When they awaken they discover the crunch witch's hut with a bake oven at one side and a cage connected with the house by a hedge of gingerbread men. Attracted by the smell, they begin to break off pieces of the hut and eat. Hansel is captured by the witch and thrust into the cage, while Gretel is sent into the house. On her return, Hansel warns her to be careful; when the witch asks Gretel to look into the oven, she asks how it is done. As the witch bends over, the children shove her into it and she is consumed. All the gingerbread figures become children and are released. Their parents find them and the witch is taken out of the oven as a huge piece of gingerbread.

THE HUGUENOTS. Giacomo Meyerbeer. Paris, 1836.

Paris and Touraine. The night of St. Bartholomew, 1572.

Act I.—Marguerite de Valois, betrothed to Henry IV., anxious to reconcile the Catholics and Huguenots of France by a marriage between Raoul de Nangis, a Protestant nobleman, and Valentine, daughter of Count St. Bris, a Catholic noble, invites Raoul to visit her in her palace. He is found with Count de Nevers, who is entertaining a party of Catholic friends. Each guest is requested to name his adored one, Raoul first. He declares that he loves an unknown one whom he

once rescued. A veiled lady appears just at this moment and Raoul recognizes his unknown heroine. She has come to ask De Nevers to release her from her promise to him and he does so. The note to Raoul is brought. Act II.—Marguerite receives Raoul and unfolds her plan of union with Valentine, as a sign of peace. When St. Bris introduces his daughter, Raoul refuses the alliance, believing that Valentine is the mistress of De Nevers. Act III.—Commanded by St. Bris, the troth is renewed between Valentine and De Nevers, who is plotting vengeance against Raoul, when he receives a challenge from him. Valentine, who has been in the chapel near by, overhears the scheme, and plans to save Raoul. Act IV.—The marriage has taken place but Valentine loves only Raoul, who, coming to say farewell, overhears that all the Huguenots are to be murdered that night; De Nevers refuses to take part in the plot, and is removed by St. Bris. Raoul tries to warn his friends, but is detained by Valentine, until he hears the signal for attack. Act V.—The leaders of the Huguenots are assembled when Raoul enters to tell them of the terrors of St. Bartholomew's night, and report the death of the leader; they arm themselves. De Nevers is dead; Valentine accepts Raoul's faith and they are married. Then the Huguenot women concealed in the church are murdered; a terrible scene of carnage follows in which Raoul becomes separated from Valentine, and they are not united until she finds him mortally wounded on the quay of Paris.

JEWELS OF THE MADONNA. Ermanno Wolf-Ferrari. *Modern Naples, the present.*

Act I.—Maliella, a beautiful and willful girl, was a parentless waif adopted by Carmela (in accordance with a vow made to the Virgin) when her son, Gennaro, lay at the point of death. Maliella was reared to think of Gennaro as her brother, but she chafes under the many restrictions placed upon her conduct by her foster mother and Gennaro. It is the festival of the Madonna, and Gennaro has made a wonderful wrought-iron candelabrum to be his votive offering to her. His prayers are interrupted by Maliella, who rushes into the garden followed by his mother, angry at some new phase of her willfulness. He chides the girl, who accuses him of jealousy, and to add to his discomfort pins on a paper hat, bursts into song, and invites the assembled youth, who join in her dance, to kiss her; they pursue her, pelting her with flowers. Soon they return, led by Biaso, who has been roughly treated by one of the Camorrists. Rafaele, a member of the band, follows Maliella, attempts to kiss her, and is jabbed with a long pin; he offers her a flower, which she spurns. In the fervor of his love-making, he even offers to procure the jewels which adorn the statue of the Madonna, and makes a movement towards the procession. She screams, and Gennaro asks the fellow's name, but she resents his interference. Rafaele drops the rejected flower and she picks it up. Act II.—That evening in the garden Gennaro tries to reason with her, but she grows defiant and tells him of Rafaele's daring offer. She threatens to leave and finally goes to her room, gathers her belongings, and returns to say farewell to Gennaro, who asks for a kiss and she offers her cheek. He reveals his love for her, which she repels. A frightful temptation overcomes Gennaro in his love, and, gathering up his keys and files, he sneaks out. Rafaele and his companions serenade Maliella, and, while Carmela tries to drive them away, Gennaro returns, looking like a ghost, to find Maliella standing by his empty tool box. Horror-stricken at his deed, he shows the jewels taken from the Madonna, and all run away except Maliella, who finally puts them on. Act III.—The Camorrists are asleep in their lair when Rafaele enters and sings of Maliella. She comes to show him the jewels and he spurns her; she hears Gennaro's voice outside and flings the jewels at him Terrified, they all flee but Gennaro, who, seeing a statue of the Madonna, crawls to it and stabs himself. The crowd return to seek him, but, finding him at the feet of the image, are awed into silence.

JONGLEUR DE NOTRE DAME (The Juggler of Our Lady). Jules Massenet. Paris, 1903.

Cluny, the fourteenth century

Act I.—In the market place Jean, the juggler, wanders hungry and miserable, but happy in his freedom, although unsuccessful in gaining audiences. He resorts to a parody upon the mass; a prior appears and he is about to be excommunicated, when he confesses his guilt and is received among the monks, relinquishing his freedom, tempted by the rich food of the abbey. Act II.—All the inmates of the abbey work for the feast of the Holy Mother, but Jean has no part, for he knows no Latin; he resolves to serve her in his own way. Act III.—Jean goes to the chapel, puts off his monastic garb, and, donning the juggler's dress, offers his songs and dances, his only gift, to the statue. So enrapt was he that the approach of the monks was unnoticed. The prior is about to stop him when a miracle occurs, the image raises its hands and places them in benediction upon Jean's head. The monks acclaim a saint: Jean, overcome with joy, dies.

KOENIGSKINDER (Children of the King). Engelbert Humperdinck. New York, 1910.

Legendary days, Hellabrun forest.

Act I.—It is summer in the forest near Hellabrun, where lives a famous Witch and her granddaughter, a Goose-Girl, who is sitting outside weaving a wreath, when the Witch calls her into the house to make bread, into which the Witch puts a poisonous powder. Left alone, the Goose-Girl tries to be happy, and, while looking into the water at her reflection, is surprised by a youth, who, impressed with her beauty, confesses he is the King's Son, and would take her with him. He offers a golden crown, but she refuses to wear it; he puts her wreath inside his tunic, they attempt to run into the woods, but are prevented by the magic all about. Then he goes alone, leaving the crown, which the Girl puts on the neck of the old gray goose. She is so excited when the Witch returns that she is suspected of neglect and finally confesses she has seen a man, which angers the Witch, who sends her into the house as the Fiddler and two friends appear. They have been sent by the councilors to find a real king. She tells them that the first person who enters the town gate after the clock has struck noon will be the king. The Fiddler, who has seen the Goose-Girl at the window, drags her out and she relates the story of her visit from the King's Son. Taking the crown from the goose's neck, she puts it on, declares she is free, and runs off with the Fiddler, followed by the geese. Act II.—The King's Son comes to the town gate, and is about to leave, when he sees a crowd of people approaching to see the King. The Senior Councilor begins a long speech, but is rudely interrupted by the Woodcutter, who relates his adventures in the magic wood. Speculations are rife as to the King's looks and his manner. At the eleventh stroke of the hour, the gates are opened and the Goose-Girl enters, followed by the Fiddler and her geese. She sees the King's Son and he calls her his Queen. The people crowd around and, mocking, drive them through the gates. Act III.—It is winter in the forest and the Fiddler is weary with hunting for the King's Children. The Woodcutter and his children, who live in the Witch's hut, are surprised to see the King's Son come, bearing the Goose-Girl in his arms, exhausted in their search for food. He wants to sell the crown, but she objects, and he exchanges it with the Woodcutter for a cake, which proves to be one of the poisoned ones belonging to the Witch. They wander off again, and when the Fiddler recognizes the crown, guided by the little gray dove, he hurries into the woods and finds the children dead. The Woodcutter's children construct a rude bier and place the King's Children upon it, covering them with a cloak, on which the Fiddler lays the golden crown.

LA BOHEME. Giacomo Puccini. Turin, 1896.

Paris, about 1830.

Act I.—Marcel, a painter, and Rudolf, a dramatist, are in dire straits, when their Bohemian friends come, bringing food, wine, and cigars. While they are feasting, the landlord asks for the rent, but they make him drunk, and put him out of the room; then they take the rent money for a carousal in the Quartier Latin, leaving Rudolf to his work. Mimi seeks him and they finally go out to supper. Act II.—While in a cafe, Musette, who formerly loved Rudolf, arrives with her rich admirer, Alcindor. Under pretense of suffering from a tight shoe, Musette sends Alcindor to the shoemaker's and joins her Bohemian friends at supper, for which they have no funds; she charges it to Alcindor, who returns with the shoe and is presented the bill. Act III.—Mimi, whom Rudolf has abandoned, seeks Marcel to tell him of her ill treatment, when Rudolf appears, and Mimi conceals herself; her coughing reveals her presence to the men, who have been discussing her health. Act IV.—Marcel and Rudolf are again at work in their garret when the Bohemians come for dinner, among them Musette, assisting the dying Mimi, whom they presently leave with Rudolf. The lovers are reconciled, and Mimi dies.

LA GIOCONDA. Amilcare Ponchielli. Milan, 1876.
Venice, seventeenth century.

Act I.—A festival is being held in the grand court of the ducal palace in Venice. Barnaba, a spy of the Inquisition, is scheming the ruin of Gioconda, a ballad singer. She appears with her blind mother as Barnaba declares that Zuane, the defeated boatman, is a victim of the witchcraft of the blind woman, and the people rush to kill her. Laura, wife of the inquisitor, enters, masked, and saves the blind woman, who gives her a rosary in gratitude. Laura discovers that Enzo, her former lover, is betrothed to Gioconda; Barnaba detects Enzo's love for Laura and proposes a meeting of the lovers on board his ship while Alvise, her husband, is away. Barnaba then sends a letter to Alvise telling of the elopement. Gioconda overhears and is heartbroken. Act II.—Gioconda hides herself on the ship and witnesses the meeting of the lovers. As Laura prays before retiring, Gioconda tells her of her husband's pursuit, and tries to stab her, but Laura holds up the rosary, which Gioconda recognizes, and, resolving to save Laura, places her in her own boat. Enzo, finding Laura has fled, sets fire to the ship. Act III.—Alvise determines Laura shall die by poison and, when she appears dressed for a ball, denounces her, shows her a funeral bier, and presents a bottle of poison. Gioconda substitutes a narcotic for the poison and Laura drinks it. Alvise's guests arrive, he greets them ceremoniously, but La Cieca tells them of Laura's death. Act IV.—Gioconda, alone in a deserted house on the canal, where two men have brought the lifeless Laura, asks their aid in finding her mother. Enzo arrives and is about to kill her when Laura calls to him. Gioconda helps them to escape, and returns to kill herself, as Barnaba comes to claim her. Barnaba in his rage tells of having strangled her mother, but Gioconda is dead.

LAKME. Leon Delibes. Paris, 1883.
An English possession in India, the present.

Act I.—Two young English officers, Gerald and Frederick, accompanied by the daughters of the Viceroy, enter a Hindu temple, and, while the others wander about in the sacred grove, Gerald remains to sketch. Lakme, who with her slave has been gathering flowers, returns to decorate the altar and there finds Gerald, with whom she falls in love. They are interrupted by Nilakantha, a Brahmin, who has a fanatical hatred for foreigners, and Gerald is driven away. Act II.—At the command of her father, who is in the crowd assembled in the market place, disguised as a beggar, Lakme sings accompanied by bells. Gerald approaches, and is stabbed by a priest and left for dead, but Lakme, finding signs of life, has him cared for by her servant, Hadji. Act III.—Lakme nurses Gerald in a hut in the jungle, and one day while she is searching for water he hears the voices of the soldiers and the music of the band; Frederick comes and reminds him of his duty as a soldier. Lakme discerns his wishes, and as they leave, poisons herself.

LA TOSCA. Giacomo Puccini. Rome, 1900.
Rome, about 1808.

Act I.—Angellotti, an escaped political offender, seeks refuge in the church of Sant' Andrea, where his sister, while praying, has unconsciously served as a model to the painter, Mario Cavaradossi, for his picture of the Magdalen. He secretes himself until the painter is alone, then they converse until interrupted by Tosca, a singer whom Mario loves. She jealously imagines that it is an intrigue with a woman when she sees the picture. Angellotti plans his escape in woman's dress, and flees, warned by a cannon shot. Scarpia, the chief of police, in search of the prisoner, finds Marchesa's fan and the empty basket as Tosca returns; he arouses her jealousy with them. Act II.—Scarpia awaits Tosca in the Farnese palace, whence his agent brings the artist, whom he questions and sends to the torture chamber. When Tosca arrives, her lover's sufferings are described and, harrowed by his groans, she reveals Angellotti's hiding place. Mario is released but denounces Tosca for her treachery. Drums announce Scarpia's defeat and Mario rejoices, for which he is imprisoned. Tosca attempts to follow, but is held back by Scarpia, who demands her virtue as the price of her lover's freedom. She struggles with him and finally, pretending to love him, secures a promise of Mario's release and safe conduct out of the country. After Scarpia has written the order, Tosca stabs him. Act III.—Mario in prison, awaiting execution, writes Tosca a farewell letter; she enters to tell him the news and the need of a mock execution, to which he agrees. The execution is real, however, and, as the soldiers denounce her as a murderess, realizing the truth, she leaps from the parapet of the castle and is dashed to pieces.

LA TRAVIATA. Giuseppe Verdi. Venice, 1853.
Paris and Nantes, about 1700.

Act I.—Violetta Valery forms the acquaintance of Alfred Germont and they live an idyllic life in the country until his father tells her that Alfred's and his sisters' futures have been ruined by her. Act II.—Deeply affected by this, Violetta leaves Alfred and plunges into wildest dissipation. Act III.—Alfred follows her and insults her, for which he is challenged, which makes Violetta ill. Act IV.—Alfred's father realizes that her love is sincere; Alfred, learning what she has sacrificed for him, begs her forgiveness and she dies in his arms.

LES CONTES D'HOFFMANN (Tales of Hoffmann). Jacques Offenbach. Paris, 1880.

The rich Lindorf loves the singer, Stella, who formerly had a love affair with the poet Hoffmann at Milan. Lindorff plans to make Hoffmann drunk and then show him to Stella to disgust her. Hoffmann is with his friends at the inn of Luther, which is in the same building with the theater where Stella is singing. Between the acts of the opera, Lindorf succeeds in his scheme and Hoffmann relates to his friends the story of his three love adventures with Olympia, Giuletta, and Antonie, each adventure requiring one act. The final scene shows the inn to which Lindorf has taken Stella to witness Hoffmann's degradation and so win her for himself. Act I.—Hoffmann falls in love with Olympia. Spalanzani, a mechanical genius, with the help of Coppelius, Olympia's lover, has constructed an automaton, which he exhibits to an astounded public as his daughter. Hoffmann becomes enraptured with the statue, writes an impassioned letter, appointing a meeting, which Olympia attends, but seems unrepsonsive to his love-making. Coppelius, having discovered the trick, revenges himself by telling Hoffmann the truth. Act II.—Giuletta entertains her many admirers, among them Schlemihl, who casts no shadow, and Hoffmann, who is madly in love with her. His enemy, Dapertutto, who owns Schlemihl's shadow, with the help of Giuletta acquires Hoffmann's. She beguiles the poet, and he barters his shadow for her love, but she breaks her word and leaves him to his enemies. Act III.—Antonie, daughter of Krespiel, inherited from her mother talent for singing, but her father forbids her to sing. When Hoffmann becomes her lover, the father disapproves because of his fondness for music. Dr. Mirakel, who had caused the death of Antonie's mother, obtains entrance to Krespiel's house, and a quarrel ensues. The doctor by some black art causes an apparition of the mother to appear and ask Antonie to sing. She does so and falls dead. Hoffmann lost his bride and Dr. Mirakel triumphed. Coppelius, Dapertutto, and Dr. Mirakel each represents Hoffmann's enemy, who takes away from him in turn his love. They are represented by one male and the maidens by one female singer, Hoffmann's character being the same throughout.

LOHENGRIN. Richard Wagner. Weimar, 1850.
On the Scheld, the tenth century.

Act I.—King Henry I. of Germany, living in Brabant, assembles the German tribes to expel the Hungarians from his dominions. Elsa has been accused of the murder of her brother, Gottfried, who has mysteriously disappeared. Elsa appears with her attendants and declares her innocence, willing to submit to the judgment of God and the ordeal of combat, choosing as her champion a knight of her dreams. Telramund, who made the accusation, incited by his wife, Ortrud, accepts the challenge for the king. At first the unknown knight is called in vain, but at the second attempt he appears on the river in a boat drawn by a swan, and clad in shining armor, lands, greets the king, and offers himself to Elsa as her champion on one condition, never to ask his name or origin. She agrees and in the combat following the knight is victorious. He declares her innocence and asks her hand in marriage. Act II.—Telramund and Ortrud were banished, but return in rags on the night before the wedding. Ortrud, who has magical power, schemes to induce Elsa to ask the forbidden questions. In the morning Lohengrin has been proclaimed "Guardian of Brabant." As the bridal party is about to enter the church, Ortrud accuses Lohengrin of being a magician, while Telramund claims that he was beaten by fraud, being ignorant of the name of his opponent. Lohengrin refuses to reveal his identity to any but Elsa, who assures him of her confidence. Act III.—In their bridal chamber Elsa, despite Lohengrin's warning, asks the

fatal question. Telramund rushes in to kill, but is killed by Lohengrin, who sorrowfully turns to Elsa and asks her to follow him to the king, to whom he will reveal the mystery. He does so as the troops appear and Telramund's corpse is brought in. Lohengrin is the knight of the Holy Grail. The time for his return has arrived, the swan reappears, and he says farewell; the swan dives into the river, coming up in the form of Gottfried. A dove descends from heaven, and leads Lohengrin back to the castle of the Holy Grail.

LOUISE. Gustave Charpentier. Paris, 1900.
Paris, the present.

Act I.—Louise, a sewing girl, is in love with Julian, an artist, but her mother objects to the match; they plan to get her father's consent, for which Julian writes a letter. Louise presents the letter at supper, her parents quarrel, and Louise finally promises to forget him. Act II.—It is early morning; men and women are on their way to labor, when Julian and some Bohemian companions arrive to run away with Louise when she comes to work escorted by her mother. Julian seeks Louise, and tells her his plans, but she will not consent. Later, in the workroom, Louise is jeered by the other girls for being so silent; Julian is heard singing in the street, begging Louise to come to him, and she cannot resist. Act III.—They go to a tiny house outside the city; at night the other Bohemians join them and dancing follows, Louise being crowned queen of them all. In the midst of this gayety, Louise's mother appears, full of sorrow, and the Bohemians depart. Louise is much frightened, for her mother announces the severe illness of the father, whom only the return of his daughter can cure. Julian relinquishes her on condition of her return. Act IV.—Her father's health is broken, and he reminds her constantly of her ingratitude. Growing defiant, Louise is ordered to bed. As she kisses her father good night, he takes her upon his knee and pleads with her to give up her life with Julian, and finally threatens her. She screams for Julian and her father bids her to go; he calls for her, but listens in vain.

LUCIA DI LAMMERMOOR. Gaetano Donizetti. Naples, 1835. *Scotland,* 1700.

Act I.—Lord Henry Ashton of Lammermoor has discovered that his sister Lucia is in love with Edgar of Ravenswood, his enemy. To prevent their marriage, he sends to Lucia a forged letter to prove Edgar's unfaithfulness, and informs her that only by a marriage with Lord Arthur Bucklaw can their ruin be averted. Act II.—Lucia's teacher, Raymond, persuades her to give up Edgar and the marriage preparations go on. Edgar tries to stop them and curses Lucia for her faithlessness. Act III.—Ashton and Edgar arrange a duel. The marriage takes place, but Lucia, frenzied by Edgar's charges and her own grief, slays Arthur in their chamber. Edgar awaits his enemy in the graveyard. He has heard of the murder and Lucia's insanity. Dying, she asks only for him. The bell tolls for the dead, and Edgar stabs himself.

MADAME BUTTERFLY. Giacomo Puccini. Milan, 1904. *Nagasaki, Japan, the present.*

Act I.—Cho-Cho-San (Madame Butterfly) and Lieut. Pinkerton, U.S.N., are about to enter into a Japanese marriage, which has been arranged by a marriage broker, Goro. Sharpless, the American consul, has begged Pinkerton to give up the plan, as the girl believes the marriage is binding, and has renounced her ancestral faith, which forbids her return to her people. An uncle, a religious fanatic, induces her relatives to abandon her and curses her, but Pinkerton consoles her and they are married. Act II.—Three years have passed, in which time Pinkerton returned to America, promising to return, but Susuki, the servant, suspects his perfidy. Sharpless has been commissioned to tell of Pinkerton's American marriage, a difficult task, because of the wife's faith. To settle all doubt she shows her fair-haired child, whom her husband cannot forget. As the consul departs, the guns announce the arrival of Pinkerton's ship, and preparations are made for his reception, Butterfly passing a sleepless night in watching. At dawn, still watching, she falls asleep. The men come later and tell Susuki the truth, who, violently angry at first, finally listens to the plan to give up the child. Butterfly appears, is confronted by the wife of Pinkerton, whom she calmly congratulates, when she learns the truth, and promises the child in a half hour's time. At the appointed time they find Cho-Cho-San dead by her own hand.

THE MAGIC FLUTE. Wolfgang Amadeus Mozart, Vienna, 1791.

Act I.—Sarastro, the wise priest of Isis, has taken Pamina to the temple to release her from the influence of her mother, the Queen of the Night, who induces the young Prince Tamino to search for her daughter and free her from the power of Sarastro. Tamino is pursued by a serpent in the forest and rescued by the attendants of the queen, although Papageno, a strange creature arrayed in the plumage of birds, claims the honor. Tamino is given a magic flute and Papageno a chime of bells with which to overcome all danger. Pamina is being persecuted by the Moor, Monastatos, in the palace of Sarastro, when Tamino arrives to rescue her, and the Moor takes to flight. The prince goes on to the temple, where he is refused entrance twice. Papageno, Pamina, and Tamino are about to escape, but the Moor prevents them as Sarastro appears. Pamina explains that she was trying to escape from the Moor, who is severely punished. Act II.—Tamino is led to the Temple of Ordeal, where, in order to possess Pamina, he must undergo the ordeal. The first test requires that the men shall remain silent under temptation. Three ladies tempt them to speak, but they are silent. While Pamina is asleep the Moor approaches and the Queen of Night gives him a dagger with which to kill Sarastro. Again they are tempted and Papageno speaks, but Tamino remains silent, making Pamina believe that he no longer loves her. Papageno wishes for a wife. Finally Tamino and Pamina pass through the ordeal of fire and water unscathed, with the help of the magic flute, and are united by Sarastro.

MANON LESCAUT. Giacomo Puccini. Milan, 1893. *Amiens, Paris, Havre, New Orleans, eighteenth century.*

Act I.—A crowd of men are gathered before an inn, while groups of students await the girls as they come from their work. Des Grieux does not join the others, for which he is teased. As Manon and Lescaut descend from the coach, all the students are enchanted, among them Des Grieux, who approaches her when her brother goes into the inn. On his return Geronte accompanies him and falls in love with Manon and plans to carry her off while her brother plays cards, but Edmund, a student, overhears the scheme and suggests that Des Grieux carry her off himself, which he does. Act II.—Manon deserts Des Grieux when his money is gone and goes to Geronte, whom she despises. Des Grieux appears suddenly and they renew their vows, but Geronte locks the doors, preventing their escape, and Manon is dragged off without Des Grieux. Act III.—Manon is cast into prison, and is to be deported to America; Lescaut and Des Grieux try to help her escape, but she is led to the ship followed by Des Grieux, who persuades the captain to take him aboard. Act IV.—Arriving in New Orleans, Manon is ill, and he leaves her to find some water. Fearing he has deserted her, when he returns she is beyond aid and dies in his arms.

MIGNON. Charles Louis Ambroise Thomas. Paris, 1866. *A small city; a castle in Italy; eighteenth century.*

Act I.—Just as the gypsy, Jarno, is about to force Mignon to dance by means of a whip in the courtyard of an inn, Wilhelm Meister appears and protects the girl, after having purchased her from the gypsies; she accompanies him dressed as a boy. They meet Laertes, the actor, with the coquettish Philine, and he warns Meister of her inconstancy, but he follows her nevertheless. Act II.—Accompanied by Mignon, Meister visits Philine in the castle of her uncle, and is compelled to bear her ridicule of the "boy." Mignon, when alone, dons Philine's clothes, but is discovered by Meister, who leaves her in distress. She continues in the park until she meets Lothario, the insane old singer, who calls down wrath upon the house, sets fire to the castle, from which Mignon is rescued by Meister. Act III.—Lothario is found to be Mignon's father, who, as a strolling singer, has been looking for his daughter stolen long before by the gypsies. Mignon finds love and happiness in her father and Meister.

OBERON. Karl Maria von Weber. London, 1826. *Fairyland.*

The elves are seen dancing about the sleeping Oberon, their King. Oberon has quarreled with Titania, his queen, who vows not to be reconciled with him until he shall find two lovers, constant to each other through trials and temptations. Puck believes he has found such a pair of lovers in Sir Huon of Bordeaux and Rezia, daughter of Haroun of Bagdad.

Sir Huon has killed the son of Charlemagne, and has been condemned to travel, and not return until he has slain Haroun's wicked councilor, Babekan, and won Rezia as his bride. He is presented with a magic horn, which, when sounded, will bring the forces of Fairyland to his aid. Thus armed he sets out upon his mission, accomplishes his purpose, carries off Rezia. Then Rezia and Huon are successively imprisoned, shipwrecked, sold as slaves, and condemned to be burned at the stake. In this desperate situation Huon sounds his horn, and Oberon and Titania come to his rescue. The King of the Fairies transports them to the court of Charlemagne. Huon is pardoned. Recognizing the constancy of Rezia and Huon, Titania and Oberon are reconciled.

PAGLIACCI (The Clowns). Ruggiero Leoncavallo, Milan, 1892.

Near Montalto in Calabria, August 15, 1865.

Act I.—The primitive theater of the village comedians has been erected and the actors parade in fantastic costumes, amid the good-natured raillery of the villagers. Canio declares that as a clown he will take part in any joke, but will resent any insult to his honor as a husband. Nedda, his wife, who is untrue to him, fears his threat. Tonio, having offended her, receives a blow from her whip, which angers him. Silvio and Nedda plan to elope, and Tonio, overhearing them, calls Canio, who pursues Silvio, but he escapes. Returning, Canio demands of Nedda her lover's name. Tonio whispers that the lover will attend the performance and can be detected. Act II.—The comedy begins and Nedda, collecting the money, warns Silvio. Canio, still jealous, demands the name of her lover, but she replies lightly and tries to escape; he seizes a knife and stabs her as Silvio comes to her aid and is recognized by Canio, who stabs him also.

PARSIFAL. Richard Wagner. Bayreuth, 1882.

Country and castle of Montsalvat and Klingsor's magic palace.

Act I.—Kept in ignorance of the world by his mother, Parsifal grows up "a guileless fool." His love of adventure is aroused by seeing a company of knights, and his mother finally allows him to go into the world. Amfortas, keeper of the Holy Grail, has succumbed to the arts of Kundry, contrary to his vow to refrain from the love of woman, and has been wounded by the enchanter Klingsor with his own lance, which fell from his hand and was grasped by Klingsor. It is the one which pierced the side of Christ on the cross, and was saved by Joseph together with the Grail, the vessel which caught the Redeemer's blood. Amfortas suffers agony but cannot be healed or die, until a "guileless fool, by compassion wise," brings back the lance and touches the wound. Kundry, the woman who scorned Christ on the cross, is condemned by Klingsor to wander the earth forever; she brings a healing potion to Gurnemanz, who tells of the magic garden created by Klingsor and peopled with beautiful maidens to seduce the knights. Parsifal, brought before Gurnemanz for wounding a swan within the precincts of the castle, is recognized as the "guileless fool" who can heal Amfortas. The miracle of the Grail is displayed, but Parsifal is so astounded that he forgets to ask the question which would release Amfortas, so is ejected from the castle. Act II.—Parsifal, confined in a dungeon beneath the turret, where Klingsor keeps his magic implements, is fully aroused by the combats in which he has conquered, when Klingsor causes the turret to vanish and a wonderful garden to appear, peopled with beautiful girls who surround him. He resists all but Kundry, who touches him by mentioning the death of his mother, and he kisses her; this excites the "guileless fool," and he understands what can be done for Amfortas. Horrified by Kundry's tale of her sin, he spurns her, and Klingsor tries to kill him with the holy lance, which remains suspended above his head; it is seized by Parsifal, who makes the sign of the cross, and Klingsor and his magic forces disappear. Act III.—After wandering for many years, Parsifal has gained wisdom and journeys once again to the castle of the Grail. Kundry has become the servant of Gurnemanz, who sees Parsifal's lance, and recognizes him. It is Good Friday. Amfortas, about to die, has assembled the knights and is ready to exhibit again the Holy Grail, when Parsifal enters and touches the wound with his lance, healing the king. Reverently holding aloft the Grail he proclaims himself the king, to whom all bow in loud homage.

PELLEAS AND MELISANDE. Claude Debussy. Paris, 1902.

Act I.—Golaud, a mighty hunter, is lost in a forest. He hears a sound of weeping and discovers Mélisande, for whom he seeks shelter. Act II.—A letter from Golaud, announces his marriage to Mélisande and asks for her acceptance at the castle, a light in the window to be the sign of their favor. The old king, Arkel, sanctions the marriage and the couple come to the castle, where Mélisande meets Pelléas, Golaud's brother. Seated near the fountain with Pelléas, Mélisande takes off her wedding ring and accidentally drops it into the water, where it is lost. She is terribly frightened about what to say to Goland, but Pelléas advises her to tell the truth. Golaud is injured by a fall from his horse; taking Mélisande's hand as she ministers to him, he discovers the loss, and she tells him that she dropped it in a cave by the sea trying to escape the tide. He bids her go at once and find it, taking Pelléas with her. Act III.—Pelléas is going away and seeks Mélisande to say farewell; overcome by emotion he kisses her passionately, Golaud finds them, and upbraids them for their folly. Act IV.—Pelléas is advised by his grandfather to leave the castle at once. Golaud, whose jealousy has been aroused by Mélisande's sorrowful mood, seizes and almost chokes her with her hair. Arkel interferes and Golaud departs angrily. Breathless from her encounter, Mélisande seeks Pelléas to say good-bye, and they declare their love for each other. Golaud witnesses their embraces and kills Pelléas. Act V.—Mélisande, dying, grants forgiveness to the penitent Golaud, and avows her love for Pelléas.

PRINCE IGOR. Alexander Borodin.

St. Petersburg, 1690.

Prologue. Square in Poutivelo. Prince Igor and his expedition are about to depart for battle with an Oriental tribe. An eclipse occurs, which overawes the people, but Igor does not heed the warnings of his wife, and departs with his son Vladimir, after entrusting his wife to his brother, Prince Galitzky. Act I shows feasting and carousing in the courtyard of Prince Galitzky's house. The Princess broods over the absence of her husband. A delegation of Boyars appear to tell that Igor has been wounded and is a prisoner, with his son, in the enemy's camp. Prince Galitzky betrays his trust, and stirs up rebellion. Distant flames are seen and the people cry that the enemy is advancing. Act II reveals an evening scene in the enemy's camp, where Igor and Vladimir are prisoners. A chorus of girls is singing, among them the daughter of Kontchak, the Oriental chief. Prince Vladimir has fallen in love with her. Igor appears and Kontchak offers him his freedom if he will agree never to fight again. The act ends with a dance of the slaves. Act III shows another part of the enemy camp where the Orientals' triumph over the Russians is being celebrated. Kontchak lets Igor escape, and orders his soldiers not to shoot or pursue. Act IV.—The public square at Poutivelo. Prince Igor returns, embraces his wife and restores order. The townspeople are assembled by the ringing of the town bell, and greet their king with great rejoicing.

RIGOLETTO. Giuseppe Verdi. Venice, 1851.

Mantua and vicinity, the sixteenth century.

Act I.—The prince of Mantua has seen an unknown beauty in church and desires to possess her, although paying court to the Countess Ceprano. His jester, Rigoletto, mocks the ladies of the court and suggests their removal. The noblemen vow vengeance upon Rigoletto, and Count Monterone curses both the prince and jester. Act II.—Thinking of the curse, Rigoletto returns home to his daughter, Gilda, who is forbidden to appear except at church. She does not know her father's occupation. In the guise of a student the prince appears after Rigoletto departs, and is seen there by the noblemen, who finally abduct Gilda. They tell Rigoletto that they have abducted the Countess Ceprano and secure his assistance; he realizes his deception and remembers the curse. Act III.—The prince hears of the abduction from the noblemen, who say Gilda is Rigoletto's mistress and that she is in the castle. Rigoletto, taunted by the noblemen, finally acknowledges that she is his daughter, and is taken to her. She admits her love for the prince, and Rigoletto vows vengeance against his master. Act IV.—Gilda and Rigoletto go to the house of the bandit, and find the prince amusing himself with Maddalena, his daughter, and the jester bargains with the bandit to kill the prince. Gilda is forced by her father to don male attire and go to Verona, but fearing an attack on the prince returns to overhear the bandit promise his daughter, who begs for the life of the prince, that if by midnight another can be found to take the prince's place, he will spare his life. The

prince is kept in the house by a severe storm. When Rigoletto arrives with the money, he receives a bag containing a corpse; he is about to cast the bag into the river when he hears the prince's voice. On opening the wrappings he finds the body of his daughter. The curse had been fulfilled.

THE RING OF THE NIBELUNG. Richard Wagner. Munich, 1869.

Introduction—**THE RHEINGOLD.** Three Rhine daughters, Woglinde, Wellgunde, and Flosshilde, are swimming about at the bottom of the river when the dwarf, Alberich, tries to catch them. The brilliant sun reveals the Rheingold, guarded by the daughters, and despite their father's warning they tell Alberich that "he who can fashion a ring from it and possess it will own the world and all its mighty power," but that the person must care nothing for love, else he cannot fashion the ring. Alberich laughingly snatches the Rheingold and disappears. He makes a ring, whose fame reaches the home of the gods, Walhalla and Wotan. The giants have built Walhalla and their reward is to be the goddess of youth, Freya, the sister of Fricka, Wotan's wife. Wotan plans to kill the dwarf and secure the ring, which he will give the giants instead of Freya. Alberich, with the aid of the ring, has brought all Nibelungs under his power and drives them to slavish tasks. His brother Mime has made him a magic helmet, which renders him invisible besides changing his form to anything he desires. Wotan and Loge, god of fire, visit the dwarf and obtain the secret of the helmet, whose power they doubt. Alberich, to show proof of it, changes himself into a dragon and then into a toad, which Wotan crushes under foot as Loge grasps the helmet, and they carry Alberich to the upper world, where they compel him to give up the treasure also; he curses them and declares it will bring death to whosoever wears the ring. The giants return and receive the gold and helmet, but Wotan refuses to surrender the ring until frightened by the warnings of Erda, goddess of the earth. Then Freya is freed. The giants quarrel over the ring and one is killed. Wotan leads the gods to Walhalla upon the rainbow and resolves to obtain the secret of the Götterdämmerung. The first day—**THE WALKURE.** Wotan has learned from Erda that the gods will perish if Alberich again obtains the ring. The Walküre are the offspring of the love of Wotan and Erda; they are the shield maidens who lead the heroes to Walhalla to battle for the future of the world. To secure the ring Wotan, as he cannot take it from the giants, descends to earth and founds the Walsungs, from whom the hero will be produced. Siegmund, son of Wotan, weaponless rushes into the hut of Hunding, and is there tended by the latter's wife, Sieglinde. On her husband's return he recognizes his enemy but cannot touch him in his own house. When Hunding retires, Sieglinde gives him a sleeping potion, and shows Siegmund the sword sticking in the tree, which was left there by Wotan at her wedding feast, and tells him it will belong to the man who succeeds in withdrawing it. Siegmund draws the sword and she recognizes him as her twin brother. They flee into the forest. Brunhilde, Wotan's favorite shield maiden, is commanded to protect the Walsung in the fight between Siegmund and Hunding, but Fricka commands that the victory shall be Hunding's to punish Siegmund for taking his sister away. Brunhilde does not obey, but Wotan aids Hunding and the sword is broken in two; Siegmund is slain, but Brunhilde is pursued by Wotan, who kills Hunding. Brunhilde joins the other Walküre, and awaits Wotan, who causes her to fall into a magic sleep, and decrees that she shall belong to him who shall awake her with a kiss. He causes flames to surround the peak so only the most fearless knight could penetrate. Second day—**SIEGFRIED.** The son of Sieglinde, born in the forest. At her death she gave him and the two pieces of his father's sword into the keeping of Mime, the smith. He tried in vain to join the pieces of the sword, hoping that Siegfried, who has great strength, may slay the fierce dragon, Fafner, guarding the treasure received from Wotan. Siegfried questions about his origin and Mime refuses to answer until almost strangled, then tells him of his parentage and shows him the broken sword. Wotan appears in disguise and wagers with Mime that he can answer three questions satisfactorily, the stake to be Mime's head, and also requires an answer to three questions or forfeit his own head. Mime answers two, but cannot tell who will mend the sword. Wotan says that one who has never known fear can accomplish it. Siegfried returns, joins the parts, and produces a powerful sword; then Mime sends him to kill Fafner. Alberich is waiting near the cave to kill the slayer of Fafner, when Siegfried appears with Mime and kills the dragon, whose blood upon his fingers gives him magic power, and he takes the magic helmet and ring. He is enabled to read Mime's mind and slays him. A bird sings to him of the maiden on Valkyr's rock, and, led by it, he proceeds to rescue Brunhilde. He is met by Wotan, whose spear he splinters with his sword, and springs through flames to the rock, where he awakens Brunhilde with a kiss. Third day—**GOTTERDAMMERUNG.** Wotan seated in Walhalla, waiting the end he has predicted, orders a spear to be constructed to displace the one Siegfried destroyed. Loge is to set fire to Walhalla when God and the world have been freed from the curse of the ring and the Rheingold has been returned to the Rhine maidens. Siegfried comes from the forest with Brunhilde, who has instructed him in the wisdom of the gods; he gives her the ring as a love token, and she presents him with her steed, Grane, that he may go forth into the world to perform deeds of valor. Hagen, son of Alberich, is the avenger who is to slay Siegfried and obtain the ring. When Siegfried arrives at Hagen's home he is hospitably entertained and given a potion which causes him to forget Brunhilde; he wooes Gutrune and, drinking blood brotherhood, joins Gunther, her brother, in the adventure to win Brunhilde. Siegfried, in the guise of Gunther, approaches Brunhilde, takes the ring from her hand, and leads her away to Gunther, where she sees Siegfried united to Gutrune and the ring upon his finger. She has been united to Gunther, and filled with a frenzy of jealousy, joins Hagen to murder Siegfried. The latter is besieged by the Rhine maidens for the ring, and they predict his death. He drinks wine at Hagen's banquet, his memory immediately returns, and he relates his rescue of Brunhilde, and their love. Hagen stabs him in the back and he dies, his body is carried to Gutrune. Hagen demands the ring from Gunther, who refuses to give it up. Siegfried's body is placed upon the funeral pyre and Brunhilde applies the torch, after taking the ring from his finger, when she mounts her horse and ascends the flames which the Rhine rises above; the maidens grasp the ring, and Hagen is dragged to the depths. A great light appearing in the distance denotes the destruction of Walhalla, "the twilight of the gods."

SALOME. Richard Strauss. Dresden, 1905.
Palace of Herod, A.D. 30.

Salome lives at the sensual and cruel court of Herod, her stepfather. Still a maiden, she has conceived a strong passion for the Prophet Yochanaan, who has been thrown into a cistern near the palace by Herod. Salome orders the prophet to be brought to her by the young Syrian commander, Narraboth, who is so insanely infatuated with her that he obeys her commands against the orders of the king. When he discovers Salome's ardor for the prophet, he kills himself before her, which she scarcely notices. Yochanaan repulses her and returns to prison; she becomes half crazed with passion. Herod wishes to see her dance and she takes advantage of this to extort from him the promise of reward, which he gives without any conditions. Scantily clad, she dances alluringly before him and then demands the head of the prophet. Herod, afraid to slay this prophet of God lest the people revolt, offers half his kingdom if she will withdraw. She refuses, and demands the head of the Baptist, until Herod orders his execution. His head is brought to her in proof of his death, and as she kisses the pallid lips again and again, Herod in disgust orders her death, the infuriated soldiers crushing her with their shields.

SAMSON AND DELILAH. Camille Saint-Saens. Weimar, 1877. *Gaza in Palestine,* 1150 *B. C.*

Act I.—The Israelites are in revolt against the oppression of the Philistines and pray for relief. Samson, their leader, is filled with the hope of victory although scoffed at by Abimelech, the satrap, who in attempting to repress them is killed by Samson, whom the Philistines fear to arrest. The Israelites, taking courage, drive the Philistines away. Delilah and her maids greet Samson, the leader, and he is unable to withstand her charms. Act II.—The high priest has commanded Delilah to deliver the hero to the Philistines and she awaits Samson in her home, with vengeance in her heart, as he has deserted her once. When he appears she so bewitches him that he tells her his secret of strength is in his hair. She lulls him to sleep, cuts off his hair, and calls in the Philistines, who over-

power him, as his strength has gone. Act III.—Weak, blind, and imprisoned, he is filled with remorse as he hears the reproaches of his people. He is dragged out to be shown as a captive in the triumphal procession, taken to the temple, and ordered to sing in praise of Delilah, but he prays to the Lord to give him strength and vision, as the enemy mock him and the tumult increases. He continues praying and, grasping the two marble pillars of the temple, bends them and with his enemies finds death among the ruins.

THE SECRET OF SUZANNE. Ermanno Wolf-Ferrari. Munich, 1909. *The present.*

Count Gil and Countess Suzanne have recently been married, but the youthful bride has not dared to tell her husband that she smokes cigarettes, lest he disapprove and scold her, so she is obliged to smoke whenever a good opportunity is offered He observes the odor of smoke about the house and his jealousy is aroused. Not dreaming that she is the culprit, he fears that she has a lover whom she is hiding. His accusations drive her to all sorts of absurd excuses, which seem to confirm his suspicions. At last Count Gil feels that he must know the truth. He follows the supposed lover from room to room, sniffing the tobacco smoke as he goes. When he finally believes he has trapped the lover, he finds his pretty little wife smoking. She looks so charming when engaged in her pet vice, he is so relieved to find he is the only lover, that he forgives her and peace is restored.

TANNHAUSER. Richard Wagner. Dresden, 1845. *Thuringia and the Wartburg, the thirteenth century.*

Act I.—The goddess Venus has won the dreaming Tannhäuser by her fascinations, but he soon longs for freedom, though she tries to hold him. At the mention of Mary, the Mother of God, the spell is broken, Venus and her attendants disappear, and he finds himself in the Wartburg just below, where a young shepherd sits playing. As the pilgrims pass, Tannhäuser, sobbing, sinks to his knees. The landgrave and his companions Wolfram, Walter, Biterolf, Reimar, and Heinrich find him and are rejoiced, for they have missed him. He had fled because unsuccessful in the prize singing. When the huntsmen tell him that he has gained Elizabeth's heart with his singing, he joins them. Act II.—Another contest is to be held in the hall of the Wartburg. Elizabeth has been in retirement since Tannhäuser's disappearance, but promises to be present if he returns; she is there to greet him when he comes. The subject of the day is "Love's Awakening." Elizabeth is to grant a wish to the victor, whatever it may be. Wolfram begins, declaring love is a pure stream which should never be troubled. Tannhäuser replies to all in turn and finally sings a song of love to Venus, shocks the ladies and the knights draw their swords upon him. Elizabeth protects him and he is allowed to join a band of pilgrims to Rome to seek forgiveness. Act III.—The pilgrims return with no news of Tannhäuser for Elizabeth, who returns broken-hearted to the Wartburg. Wolfram has a vision, in which a tottering pilgrim is seeking the path to Venus; it is Tannhäuser who is unforgiven by the pope. Calling for Venus, who appears and beckons him to her cavern, his attention is drawn to a procession chanting and carrying a bier, on which is Elizabeth's body. He kneels beside it and prays. The withered stick put forth young leaves, a sign of the forgiveness of God.

THAIS. Jules Massenet. Paris, 1894. *Thebes and the Theban desert, Egypt, during Greek occupation.*

Act I.—Athanael, a monk of the Cenobite Order, has been in Alexandria to denounce the luxury and license of the Greeks, but returns to report that the city is under the rule of Thaïs, a beautiful courtesan. In his dreams that night he sees her half clad posing before the people as Aphrodite, and he awakens, condemning her aloud. Again he departs upon his mission and on reaching the city goes to see Nicias, whom he finds infatuated with Thaïs, though she has ruined him. The monk is invited to remain for a banquet, at which Thaïs will be present. Slaves array the monk in gorgeous apparel. Thaïs soon appears, surrounded by an adoring crowd, and presently discovers Athanael and asks his name and business. He tries to explain his mission, but she only exerts her charms the more; he denounces her and finally goes away horror-stricken. Act II.—Accompanied by her friends, Thaïs returns home dispirited and tired. Athanael watches her as she gazes into her mirror with delight, and prepares some incense as she sings to Venus. He tells her that he loves her with the love of the spirit, and commands her to follow him but she hears the voice of Nicias, and turns from the monk, who tells her he will wait until day and lies down outside on the pavement. Alone she falls into a reverie then slowly appears, bearing a lamp, and tells Athanael that she is ready to go with him. Nicias and friends appear and call for dances, but Thaïs, clad in a simple robe of white, follows the monk, bearing the flaming torch. Her slaves follow, as flames devour the house behind them. Act III.—Thaïs and Athanael have almost reached the convent in the desert when her strength gives out and he helps her to the abbess, when they say farewell. Athanael returns to his dwelling, where he confides to Palemon his love for the beautiful woman. A vision of Thaïs dying so overcomes him that he rushes into the desert, where a storm is fiercely raging. Act IV.—In the garden of the convent Thaïs lies dying as the nuns kneel about her, when Athanael enters and asks for her. Left alone, he tells her of his love, but, rising, she points to the sky, where she sees angels approaching to bear her away. She calls on God and falls dead at his feet. Overcome with anguish, he sinks to the ground beside her.

TRISTAN AND ISOLDE. Richard Wagner. Munich, 1865. *On board ship, in Cornwall and in Brittany.*

Act I.—Tristan has been sent by King Mark to bring his intended bride, Isolde, from Ireland to Cornwall. She has recognized in him the wounded knight she once nursed but who slew her betrothed in combat. She resolves to kill him and orders her servant to prepare a poisoned potion for him. By mistake she is given a love potion, which they both drink and finally sink into each other's arms in an ecstasy of love. Act II.—When they reach King Mark's castle, they plan to meet in secret, but she is warned by her servant against the jealous Melot. Tristan is also warned, but it is too late, for he is closely watched by Melot, the king, and attendants. The king, however, despises Melot for his treachery; Tristan is injured in the combat which follows. Act III.—Taken to his own home, Tristan grows rapidly worse and his servant sends for Isolde to heal him. When she comes, Tristan rushes to her and dies in her arms. The king has also come to unite the lovers, but Kurwenal thinks he has evil intent and kills Melot. Isolde dies of grief beside Tristan and the king remains in prayer beside them.

LANDMARKS IN THE HISTORY OF MUSIC

333 St. Ambrose born.

384 Ambrosian chant arranged for Milan Cathedral.

590 Accession of Pope Gregory, who assembled and arranged the Gregorian chant.

814 Chant of Metz, Germany, began to be introduced into all Catholic churches at matins.

895–900 Two distinct melodies, in parallel fourths, called *Organum*, first recorded. Hucbald, a monk, was long considered the inventor. This is now disputed.

1025? The use of neumes and the introduction of the solfeggio by Guido of Arezzo. The 4-line staff first used.

1100 Beginning of the earliest French school of contrapuntalists. Perotin introduces "imitations."

1200 Franco of Cologne introduced his book on "measured music" called *Ars Cantus Mensurabilis.*

1217 Walter Odington, an English disciple of the French school, wrote a treatise on music.

1380 Introduction of secular tunes in masses.

1425 Birth of Johannes Okeghem, first master of the great Netherland school. Called the "patriarch of counterpoint." He brought the canon to a high degree of perfection.

1480 Adrian Willaert, inventor of the madrigal, born. Also introduced the double chorus in antiphonal form.

1502 Ottavio Petrucci invented music printing.

1526 Palestrina born.

1532? Orlando di Lasso born. Last of the Netherland school.

1544 Cyprian de Rore's *Chromatic Madrigals* published.

1555 Palestrina's first masses published.
1563–70 Lasso's celebrated penitential psalms composed.
1597 Performance of the first opera, *Dafne* at the Palazzo Corsi. Jacob Peri was the composer.
1600 Peri's second opera *Euridice* performed at the marriage of Henry IV and Maria de Medici in Florence.
1600 Cavalieri's oratorio *Rappresentazione di Anima e di Corpore* produced.
1607 Monteverde's *Orfeo* produced at Mantua.
1608 Performance of Monteverde's *Ariadne.*
1627 Opera introduced in Germany by Schütz.
1637 The Teatro San Cassiano in Venice, the first opera house, opened with the opera *Andromeda* by Manelli.
1659 Alessandro Scarlatti, founder of the Neapolitan school, born.
1685 Johann Sebastian Bach and Frederick Handel born.
1710 The pianoforte invented by Cristofori
1714 Gluck born.
1718 Handel makes England his home.
1724 Bach's St. John's Passion produced.
1732 Haydn born. Became the father of the symphony.
1742 April 18, at Dublin, *The Messiah* first performed.
1749 March 23, *The Messiah* performed in London.
1756 Wolfgang Amadeus Mozart born.
1770 Beethoven born. Mozart's *Mithridate* produced.
1786 Von Weber born.
1791 Meyerbeer born.
1792 Rossini born.
1795 Beethoven's Opus I published.
1797 Schubert born.
1798 Donizetti born.
1799 Haydn's *Creation* produced at Vienna.
1801 Haydn's *The Seasons* produced.
1802 Bellini born.
1803 Berlioz born.
1809 Mendelssohn born.
1810 Chopin and Schumann born.
1811 Liszt born.
1813 Richard Wagner born.
1813 Verdi born.
1818 Gounod born.
1821 Schubert's *Erl-King* first sung in public.
1829 Rossini's *William Tell* produced.
Bellini's *La Sonnambula* produced.
1842 Wagner's *Rienzi* produced.
1843 Ole Bull, famous Norwegian violinist toured America.
1845 Wagner's *Tannhäauser* produced.
1846 Mendelssohn's *Elijah* produced at the Birmingham Festival.
1850 Wagner's *Lohengrin* produced.
1851 Verdi's *Rigoletto* produced.
1859 Gounod's *Faust* produced.
1862 Debussy born.
1864 Richard Strauss born.
1868 Wagner's *Die Meistersinger* produced.
1876 Wagner's *Der Ring der Nibelungen* produced.
1887 Verdi's *Otello* produced.
1882 Igor Stravinsky born.
1883 Wagner's *Parsifal* produced.
1890 Mascagni's *Cavalleria Rusticana* produced.
1891 Tschaikovski visited America to conduct his own works.
1892 Leoncavallo's *I Pagliacci* received its premiere.
1892 Dvorák came to America, and composed his *From the New World* Symphony.
1893 *The New World Symphony* of Dvorák first performed.
1896 Puccini's *La Bohème* was produced.
1897 Erich Korngold born.
1900 Gustav Charpentier's great opera *Louise* produced.
1902 Debussy's *Pelléas et Mélisande* was produced at the Opera Comique, Paris.
1902 Pietro Mascagni toured America.
1903 Enrico Caruso, famous Italian tenor (1873–1921), came to the Metropolitan Opera House, New York, as leading Italian singer.
1904 Puccini's *Madame Butterfly* first produced.
1905 Strauss's *Salome* was produced.
1905 The famous *Mountain Symphony* of d'Indy first performed.
1906 Edward Elgar, greatest English composer, visited America.
1906 Leoncavallo visited America.
1907 Gustav Mahler, famous conductor, came to the United States. Became conductor of N. Y. Philharmonic in 1909.
1908 Mahler's 7th and greatest symphony produced at Prague.
1910 Alfredo Casella's rhapsody *Italia* a fore-runner of the later barbaric style first performed.
1910 Puccini came to the United States.
1912 Arthur Nikisch, famous Hungarian conductor, toured the United States with the London Symphony Orchestra.
1912 Wolf-Ferrari's *The Jewels of the Madonna*, one of the greatest operas since Wagner, first performed. He visited America.
1913 Stravinsky's *Le Sacre du Printemps* (Rite of Spring) first performed.
1913 Italo Montemezzi's opera *L'Amore Dei Tre Re* produced.
1915 Saint-Saëns visited America.
1919 Montemezzi's *La Nave* produced. He visited America.
1920 Vaughn-Williams' *London Symphony* produced.
1921 Richard Strauss visited America.
1921 Stravinsky's *Rite of Spring* given its first American hearing.
1924 Respighi's great symphonic poem *The Pines of Rome* produced.
1924 Zandonai's opera *I Cavalieri di Ekebu* produced.

DICTIONARY OF MUSICAL TERMS

A CAPPELLA (*ä käp-pĕl'lä*). Unaccompanied choral singing.
A CAPRICCIO (*ä kä-prĕt'chō*). In a capricious manner.
ACCELERANDO (*ät-shel-er-an'dō*). Increasing in speed.
ACCENT. Emphasis upon a given note.
ACCESSORY NOTES. Embellishing notes, usually printed very small and placed one degree above or below their principal note.
ACCIDENTALS. Sharps, flats, double sharps, double flats and naturals, not found in the signature.
ACCOMPANIMENT. A subordinate instrumental or vocal part, added to the principal part to enhance and enrich the combined effect.
ADAGIO (*ä-dä'jō*). Slow, leisurely.
AD LIBITUM (*äd lĭb'ĭ-tŭm*). At pleasure, according to your own conception.
AEOLIAN. One of the Greek scales.
AGITATO (*ä-jē-tä'tō*). In an agitated, restless manner.
AIR. The melody, or tune.
ALLARGANDO (*äl-lär-gän'dō*). In a dragging manner, broader.
ALLEGRETTO (*äl-lā-grĕt'tō*). Fairly fast, a diminutive form of allegro.
ALLEGRO (*äl-lā'grō*). Lively, brightly.
ALTO. High, used formerly to refer to the highest male voice; now the lowest female voice.
ANDANTE (*än-dän'tā*). Moderately, flowing along.
ANIMATO (*ä-nē-mä'tō*). In an animated manner, full of spirit.
ANTHEM. A vocal composition, the words of which are taken from the Scriptures. May be accompanied or unaccompanied.
A POCO (*ä pō'kō*). Little at a time, gradually.
APPASSIONATO (*äp-päs-syō-nä'tō*). With deep feeling, intense, passionately.
ARIA. A melody, usually taken from an opera, intended as a display piece, for a single voice.
ARPEGGIO (*är-pĕd'jō*). In harp style, referring to the playing of chord tones in succession, instead of simultaneously.
ASSAI (*äs-sī'*). Very.
A TEMPO. In time, resuming the tempo after deviation from it.
ATTACK. The precision with which a beginning note is sounded.
AUTHENTIC CADENCE. The closing group of chords, called dominant and tonic, expressing complete finality.

BALLAD. A song in dance rhythm, a simple romantic song, descriptive or narrative in style. An instrumental composition in ballad style.
BAND. Any group of players performing together, as string band, brass band, military band.

BARITONE. The male voice lying between the bass and tenor. It refers also to an instrument between bass and tenor.
BASS. The lowest part of a composition, the lowest male voice, lowest instrument of a family of instruments.
BATON. The stick used by a conductor in beating time.
BEAT. Each unit of time in a given measure, each movement of the conductor's arm when beating time.
BEN (*bĕn*). Well, as *ben marcato*, well marked.
BERCEUSE (*bĕr-sûz'*). A cradle song.
BOLERO. A Spanish dance accompanied by castenets. It is in triple time.
BRILLIANTE (*brĕl-län'tā*). In a brilliant manner.
BUFFA. In a comic style.

CADENCE. A group of closing chords. Cadences are said to be Perfect when they express complete finality. They are imperfect if the effect is of less force and completeness.
CADENZA (*kȧ-dĕnt sȧ*). An elaborate ornamental passage.
CALMATO (*käl-mä'tō*). Tranquilly.
CANON. Actually means, rule or regulation. A composition in the contrapuntal style, using the idea of imitation. That is, the melody, after being enunciated by the first voice is imitated after a given number of beats by a second, third, and fourth voice.
CANTABILE (*kän-tä'bĕl-lā*). In a singing style, lyrical.
CANTATA. A large choral work, resembling oratorio. May be religious or secular in character.
CAPO (*kä'pō*). Head, beginning.
CAPRICE. A short composition, free and unconventional in style.
CARILLON. A set of bells upon which a melody can be played.
CHAMBER MUSIC. Instrumental music in the sonata form, for a small group of string or woodwind players with, or without, piano.
CHANT. A sacred song.
CHOIR. A group of singers. A group of instruments of the same character, as for instance, the string choir.
CHROMATIC. Progression by semi-tone. Containing tones not in the diatonic scale.
CODA (*kō'dȧ*). The closing section. The general summing up of the movement or composition. The final episode of a fugue.
COLORATURE. Florid, ornamental type of music, vocally brilliant.
CONCERTMEISTER. Concert master, the leader of the first violins, next in rank to the conductor.
CONSONANCE. Sounds in agreement, the opposite of discord.
CON (*kŏn*). With.
CONTRA (*kŏn'trȧ*). Meaning an octave below.
COUNTERPOINT. The art of adding two or more melodies together.
CRESCENDO (*krĕ-shĕn'dō*). Getting louder.
CZARDAS (*chär'dȧsh*). Hungarian national dance.

DA (*dȧ*). From, as Da capo, from the beginning.
DECRESCENDO (*dā-krĕ-shĭn'dō*). Decreasing in loudness.
DEVELOPMENT. The working out of a motive or melody, harmonically, rhythmically.
DIATONIC. Refers to the major and minor scales of eight tones.
DIMINUENDO. Gradually getting softer.
DISCORD. A combination of tones which is unpleasant to the ear.
DOLCE (*dōl'chā*). Sweet.
DOMINANT. Theoretical name for the fifth scale-step.
DORIAN. One of the Greek scales.
DYNAMICS. Treats of the elements of force, loudness and softness, and their different degrees.

ELEGY. A mournful composition.
ENHARMONIC. Writing the same sound two different ways, as, for instance *b flat* and *a sharp*.
ENSEMBLE. The manner in which voices or instruments blend into "Oneness" in the performance.
EROICA (*ĕ-rō'ĕ-kä*). Heroic.
ESPRESSIVO (*ĕs-prĕs-sĕ'vō*). In an expressive manner.
ETUDE. A study, a composition written for the advancement of some technical growth.

FANDANGO (*fȧn-dȧng'gō*). A very old Spanish dance, in lively triple time.
FORM. The design of a musical composition.
FORTE (*fôr'tā*). Loud.
FORZANDO (*fôr-tsän'dō*). Literally, forced. Sudden emphasis upon a given note or chord.
FUGUE (*fūg*). A contrapuntal form of composition, in which the theme, or subject, is artfully imitated by successive voices, and interwoven and developed with the other parts.

GALOP. A lively dance in 2–4 time.
GAVOTTE (*gȧ-vŏt'*). A rustic dance of the court of France in the 16th century. Duple time, rather quick.
GIGUE (*zhēg*). A jig, a lively dance.
GIOCOSO (*jō-kō'sō*). In a joking manner, sportive.
GIUSTO (*jōōs'tō*). Exact.
GRANDIOSO (*grän-dē-ō'sō*). Noble, in a grand manner.
GREGORIAN CHANT. A style of church music without definite rhythm, written in one of the Ecclesiastical Modes, attributed to Pope Gregory.

HARMONY. A combination of tones, which will sound well together when sounded simultaneously. In a larger sense it refers to the entire succession of such combinations, (chords) as found in a composition.
HYMN. A song composed for congregational singing in church services.

IMPROMPTU. A short composition written in the free style of extemporaneous improvisation.
INTERVAL. The difference in pitch between two tones.
IONIAN. One of the Greek scales.

KEYNOTE. The initial tone of a scale, the fundamental basis of the key.
LARGO (*lär'gō*). Slow, broad. Very deliberate.
LEGATO (*lā-gä'tō*). Connected, not in the slightest degree detached.
LEITMOTIF (*līt'mō-tēf*). German for leading motive. A musical motive or fragment, which labels a given person, situation or condition, recurring each time the person, situation or condition is presented or even hinted at, in the music dramas of Wagner and his followers.
LENTO (*lĕn'tō*). Slow.
LIED (*lēt*). German for song.
LULLABY. A cradle song.

MADRIGAL. A song for three to eight voices, unaccompanied, in the style of imitative counterpoint, perfected in the middle of the 15th century, in the Netherland School.
MAESTOSO (*mä-ĕs-tō'sō*). Majestic.
MARCATO (*mär-kä'tō*). Marked, accented.
MAZURKA (*mȧ-zōōr'kȧ*). A Polish national dance in triple time, with a strong emphasis upon the third beat of each measure.
MEZZO (*mĕd'zō*). Medium, half.
MINUET. A slow graceful dance in triple time.
MODULATION. The theoretical term for a change of key.
MOLTO (*mōl'tō*). Much.
MONODY. One part music.
MOTIVE. A musical figure or fragment, which serves as the germ for the development of a complete musical idea, or even an entire composition.
MUTE. A small clamp, attached to the bridge of a stringed instrument to muffle its tone. A pear-shaped pad inserted into the bell of a wind instrument for the same purpose. The sign is *Con sordino*.

NOCTURNE. An evening song.

OBBLIGATO (*ŏb-blē-gä'tō*). An obligatory accompaniment or part. One which cannot be dispensed with.
OPERA. A drama set to music, performed with the aid of costumes, scenery, and action.
OPERETTA. An opera in a light vein, usually comic.
ORATORIO. A drama, with a text taken from the Bible, performed without scenery, costumes or action.
OVERTURE. An introductory piece of music, used in connection with an opera, oratorio or other large composition.

PASSIONATO (*päs-syō-nä'tō*). Passionate.
PASSION MUSIC. A cantata, or oratorio, the text of which treats of the suffering and death of Christ.
PENTATONIC SCALE. A scale of five tones, comparable to our major scale with the 4th and 7th steps omitted.
PERCUSSION INSTRUMENTS. Those which are sounded by striking; drums, cymbals, bells, etc.
PHRASE. A musical statement, comparable to a line of poetry.

PHRYGIAN. One of the Greek scales.

PIANO. Soft, its symbol is *p.*

PITCH. That quality of a tone which is governed by the number of vibrations, and which we speak of as high or low.

PIU (*pyōō*). More.

PIZZICATO (*pĕt-sĕ-kä'tō*). The strings of any of the violin family of instruments to be plucked with the finger instead of bowed.

PLAIN SONG. A chant, without rhythm, in one of the ecclesiastical modes.

POCO (*pō'cō*). A little.

POLKA. A dance which originated in Bohemia about 1830, quite lively, in duple rhythm. (2–4 time.)

POLONAISE. A dignified, stately Polish dance in triple rhythm.

POLYPHONY. A style of composition in which several independent melodies move along simultaneously, but in harmony with each other.

PRESTO (*prĕs'tō*). Very rapid.

PROGRAM MUSIC. Music of a narrative or descriptive character, first applied to Beethoven's *Pastoral Symphony.*

QUARTET. A composition for four parts, either voices or instruments.

QUINTET. A composition for five parts.

RALLENTANDO (*räl-lĕn-tän'dō*). Gradually slower.

RECITATIVE (*rĕs-ĭ-tä-tēv'*). In a reciting style, declamatory.

REQUIEM. A mass for the dead.

RHAPSODY. A rhapsodical composition, irregular in form.

RHYTHM. As an element in music the term means pulsations or beats grouped by means of accent.

RITARDANDO (*rē-tär-dän'dō*). Gradually slower.

RITENUTO (*rē-tē-nōō'tō*). Immediately slower.

RONDO. A composition, either vocal or instrumental, in which the principal melody recurs after each of the other themes.

SCALE. The ladder of tones, in which the tones ascend by regular intervals, also usually descending in the same manner.

SCHERZO (*skĕr'tsō*). A composition in a joking, humorous style.

SECULAR MUSIC. Music intended for concert or theater, as opposed to sacred music intended for the church.

SENZA (*sĕn'tsä*). Without, as *senza pedale,* without pedal.

SFORZANDO (*sfôr-tsän'dō*). A sudden accent upon a given note or chord, the symbol being *sf.*

SLUR. The curved line drawn over a group of notes to indicate that they are to be connected smoothly.

SMORZANDO (*smôr-tsän'dō*). Dying away.

SOLFEGGIO. That singing manner in which the syllables, *do, re, mi, fa, sol, la, ti* are applied to the tones of the scale. The term is now used to include the singing of exercises upon a single vowel.

SONATA (*sō-nä'tä*). The most important musical form, composed of three or four movements, in different keys and moods, each also being in a different form, although this depends somewhat upon the content of the composition.

SOPRANO. The highest female, or boy's voice.

SORDINO (*sôr-dē'nō*). See mute.

SOSTENUTO (*sōs-tĕ-nōō'tō*). Sustained.

STACCATO (*stäk-kä'tō*). Detached, separated.

STREPITOSO (*strĕp-ĭ-tō'sō*). Impetuously.

STRINGENDO (*strĭn-jĕn'dō*). Running together, sudden acceleration.

SYMPHONIC POEM. A large instrumental form, invented by Liszt, having a program as its basis, and being all in one continuous movement.

SYMPHONY. A large composition for orchestra in the sonata form. It contains three or four movements. See *Sonata.*

TEMPO (*tĕm'pō*). The rate of speed at which a composition is to be performed.

TENOR. The high male voice. The term also refers to instruments in the range of the tenor voice.

TENUTO (*tā-nōō'tō*). To hold, sustain.

THEME. The melodic subject from which a composition is developed.

TIE. Curved line connecting two or more notes to indicate that they are to be added together, that is, to be performed as one note of their combined values.

TOCCATA (*tŏk-kä'tä*). A composition for organ, free in style, usually designed for the display of technical skill.

TRANQUILLO (*träŋ-kwĕl'lō*). Calm.

TREMOLO. A trembling or quivering effect, produced by a very rapid reiteration of a note.

TRIAD. The name of a chord of three tones.

TRIO. A composition for three voices or instruments. The second part of a march or minuet.

TRIPLET. A group of three tones played in the time of two of like value.

TUTTI (*tōō'tē*). All.

VARIATIONS. Elaborations of a given musical theme, produced by varying time, melody, harmony and key.

VELOCE (*vā-lō'chā*). With great velocity, swiftly.

VIGOROSO (*vē-gō-rō'sō*). Vigorous.

VIRTUOSO. A master of an instrument or of vocal technic. A very skillful performer.

VIVACE (*vē-vä'chā*). Vivaciously, lively.

VOLUME. The degree of tone strength, loudness, fullness.

WALTZ. A dance in triple time, performed by couples whirling around in rhythm with the music.

ZINGARESCA (*tsĭn-gä-räs'kä*). In the style of gypsy music.

SOME FAMOUS HYMNS AND THEIR TUNES

ABIDE WITH ME. Written by Rev. Henry Francis Lyte (1793–1847) and handed in manuscript with the music to his congregation at Lower Brixham, Devonshire, on the occasion of his last service there. Henry Ward Beecher introduced it to American Congregationalists in 1855. The tune now most used was written by Dr. William Henry Monk in 1861.

ALL GLORY, LAUD, AND HONOR. Composed in 820 by Theodulph, Bishop of Orleans, while imprisoned in the cloister of Anjou by Louis le Debonnaire, son of Charlemagne. Used as a processional in both Catholic and Protestant churches. Translated by Rev. J. M. Neale (1818–1866). The most popular tune was composed by Melchior Teschner, a Prussian composer who lived about 1613.

ALL HAIL THE POWER OF JESUS' NAME. Written by Rev. Edward Perronet (1721–1792), a close friend of John Wesley. Dr. Rippon added the last stanza. The tune "Old Coronation" was composed by Oliver Holden, a carpenter of Shirley, Mass. (1765–1844). The little pipe organ upon which he struck the first notes is in the historical rooms of the Old State House in Boston.

ALL PRAISE TO THEE, ETERNAL LORD. Variously credited to Gregory the Great (sixth century) and to an unknown writer of the ninth century. The German form—Gelobet seist du Jesu Christ—has been credited in part to Luther. The tune "Weimar" is by Karl Philip Emanuel Bach, son of Sebastian (1714–1788).

A MIGHTY FORTRESS IS OUR GOD or **EIN FESTE BURG IST UNSER GOTT.** Written in German by Luther (1483–1546); translated into English by Rev. Frederick Henry Hedge (1805–1890), formerly of the Unitarian Church of Bangor, Me. The tune was composed by Luther; that of the English version is by Sebastian Bach.

DOXOLOGIES. (1) "Be Thou, O God, Exalted High" is attributed to Nahum Tate (1652–1715), who collaborated with Rev. Nicholas Brady (1659–1726) in the preparation of a psalter in which it appeared. (2) "Praise God from Whom All Blessings Flow," by Rev. Thomas Ken (1637–1711). (3) "To God the Father, God the Son" was composed probably by Dr. Edwin F. Hatfield (1807–1883). The tune of these is "Old Hundred," said to have been composed by Luther; others say Louis Bourgeois; but the weight of evidence favors Guillaume le Franc, William Franck, or William the Frenchman of Geneva (1541), who died in 1570.

ETERNAL FATHER, STRONG TO SAVE. Written in 1860 by William Whiting; a translation of a Latin hymn. Whiting (1825–1878) was master of Winchester College choir. The tune "Melita" was composed in 1861 by Rev. John B. Dykes. A favorite hymn "for those at sea."

FOREVER WITH THE LORD. Written by James Montgomery (1771–1854). The tunes "Mornington," by Garrett Colley Wellesley, Earl of Mornington (1735–1781), and "Forever with the Lord," by I. B. Woodbury, are the best known of the many to which this hymn has been sung.

FROM GREENLAND'S ICY MOUNTAINS. Written in 1819 by Reginald Heber for a missionary meeting. The tune is by Lowell Mason.

GLORY TO THEE, MY GOD, THIS NIGHT, or **TALLIS' EVENING HYMN.** Bishop Ken's evening hymn prayer, from a *Prayer Manual* published for the use of students in Winchester College. The tune was composed by Thomas Tallis, organist to Queen Elizabeth (1520–1585).

HARK! HARK! MY SOUL. Written by Frederick William Faber. The tunes were composed by John B. Dykes and Henry Smart.

HOLY, HOLY, HOLY, LORD GOD ALMIGHTY. Written by the Right Reverend Reginald Heber, Bishop of Calcutta (1783–1826). The tune was composed by Rev. John Bacchus Dykes (1823–1876).

JERUSALEM THE GOLDEN. A translation by Dr. John Mason Neale of a part of Bernard of Cluny's "De Contemptu Mundi," which was written about 1100. The music was written by Alexander Ewing, a paymaster in the English army (1830–1895).

JESUS, LOVER OF MY SOUL. The best known and best loved of Charles Wesley's hymns. The tune "Refuge" was composed by Joseph P. Holbrook, and "Whitman" by Lowell Mason.

LEAD, KINDLY LIGHT. Written by John Henry Newman (1801–1890), afterwards Cardinal Newman. The tune "Lux Benigna" was composed by Rev. Dr. John B. Dykes in 1865.

MAGNIFICAT. Appears in ritual form in the liturgies of the fourth and fifth centuries. A favorite subject with composers of all nations and ages; but the "Magnificat" of Handel is the greatest (1685–1759); though that by Smart is highly esteemed.

MAJESTIC SWEETNESS SITS ENTHRONED. Written by Rev. Samuel Bennett, an English Baptist minister (1727–1795). The tune "Ortonville" was composed by Thomas Hastings (in 1830), author of "Toplady."

NEARER, MY GOD, TO THEE. Written by Mrs. Sarah Flower Adams (1805–1848) in 1840. The author was a Unitarian and the hymn is regarded as an Old Testament psalm. The tune "Horbury" was composed by Rev. John B. Dykes, "St. Edmund" by Sir Arthur Sullivan, and "Bethany" by Lowell Mason.

O COME, ALL YE FAITHFUL, or **ADESTE FIDELES.** By some believed to have been written by St. Bonaventure, Bishop of Albano, born (1221). The English version is by Rev. Frederick Oakely (1808–1880), and another by Rev. Edward Caswall (1814–1878). The tune is the "Portuguese Hymn," by Simao Portogallo of Lisbon (1763–1830).

O LITTLE TOWN OF BETHLEHEM. Written by Phillips Brooks, Bishop of Massachusetts (1835–1893), in 1868. The tune "Bethlehem" was composed by J. Barnby; the first tune, "St. Louis," was by Mr. Redner, organist of Holy Trinity in Philadelphia.

ONWARD, CHRISTIAN SOLDIERS. Written by Rev. Sabine Baring-Gould (1834–1906). The tune was composed by Sir Arthur Seymour Sullivan (1842–1900).

O WORSHIP THE KING ALL GLORIOUS ABOVE. Written by Sir Robert Grant (1785–1838), afterward governor of Bombay. The tune to which the hymn is most frequently sung is Haydn's "Lyons."

ROCK OF AGES, CLEFT FOR ME. Written by Augustus Montagu Toplady (1740–1778); an almost universal hymn. The tune was composed by Dr. Thomas Hastings (1784–1872) in 1830.

SUN OF MY SOUL, MY SAVIOUR DEAR. Written by Rev. John Keble (1792–1866). The tune "Hursley" was arranged by William Henry Monk (born 1823) from a German choral by Peter Ritter (1760–1846).

TE DEUM LAUDAMUS. Composed by Ambrose, Bishop of Milan, in 387. First sung in English by Bishop Ridley at Hearne Church. The standard anthem of Christian praise. One of the best modern choral renderings of the anthem is the tune by the English composer, Henry Smart (1813–1879).

THE GOD OF ABRAHAM PRAISE. Written by Thomas Olivers (1725–1799), a Welshman converted by Whitefield at Bristol. The tune "Leoni" was heard, it is said, by Olivers as it was sung by Meyer Lyon, the noted Jewish musician, and he adapted the hymn to the tune.

THE LORD DESCENDED FROM ABOVE. Composed by Thomas Sterhold, Groom of the Robes to Henry VIII. and Edward VI., author of a psalter published in 1562, 13 years after his death (1549). The tune "Nottingham," or "St. Magnus," was composed by Jeremiah Clark of London (1670–1707).

LIST OF FAMOUS OPERAS AND ORATORIOS

	Operas.
Adam (1803-56)	Chalet (1834), Postillon von Lonjumeau (1836) Cagliostro (1844).
Auber (*ō'bâr'*) (1782-1871)	Fra Diavolo, Massaniello (1828), Manon Lescaut (1856).
Balfe (*băl'f*) (1808-1870)	The Bohemian Girl (1843), Falstaff (1838)
Beethoven, (*bā'tō-vĕn*) (1770-1827)	Fidelio (1805).
Bellini (*bĕl-lē'nē*) (1801-35)	La Sonnambula (1831), Norma (1831), I Puritani (1834).
Berlioz (*bĕr'lē-ôz'*) (1803-69)	Benvenuto Cellini (1837), Béatrice and Bénédic (1862), The Trojans (1858, 1863).
Bizet (*bē-zĕ'*) (1838-1875)	Carmen (1875).
Boïto (*bō'ē-tō*) (1842-1919)	Mefistofele (1868).
Borodin (*bô-rô-dĭn'*) (1837-87)	Prince Igor (1891).
Charpentier (*shà-pän-tyā'*) (1860-)	Louise (1900), Julien (1914).
Cherubini (*kā-rōō-bē'nē*) (1760-1842)	Anacreon (1803), Médée (1797), Les Deux Journées (1800).
Cornelius (*kôr-nā'lē-ōōs*) (1824-74)	Barber of Bagdad (1858).
Dargomijsky (*dăr-gō-mēzh'skĭ*) (1813-1869)	The Stone Guest (1872), Esmeralda (1847).
d'Albert (*dal'bâr*) (1864-1932)	Tiefland (1903).
Debussy (*dē-bü-sē'*) (1862-1918)	Pelléas et Mélisande (1902).
Delibes (*dē-lēb'*) (1836-91)	Lakmé (1883).
d'Indy (*dăn-dē'*) (1851-1931)	Fervaal (1897).
Donizetti (*dō-nē-dzĕt'-tē*) (1798-1848)	Lucrezia Borgia (1833), Lucia di Lammermoor (1835), Elisire d'Amore (1837), Don Pasquale (1843), Daughter of the Regiment (1840).
Flotow (*flō'tō*) (1812-83)	Martha (1847).
Giordano (*jôr-dä'nō*) (1867-)	Andrea Chenier (1896), Fedora (1898).
Glinka (*glĭng'kä*) (1803-57)	A Life for the Czar (1836).
Gluck (*glŏŏk*) (1714-1787)	Alceste (1767), Orpheus and Euredice (1764), Armida (1777), Iphigénie en Aulide (1774), Iphigénie en Tauride (1779).
Goetz (*gŏts*) (1840-76)	Taming of the Shrew (1874).
Goldmark (*gôlt'märk*) (1832–1915)	The Queen of Sheba (1875), Merlin (1888), The Cricket on the Hearth (1896).
Gounod (*gōō-nō'*) (1818-93)	Faust (1859), The Queen of Sheba (1862), Romeo and Juliette (1869).
Granados (*grä-nä-dōz'*) (1867-1916)	Coyescas (1916).
Halévy (*hà-lā-vē'*) (1799-1862)	The Jewess (1835), L'Eclair (1835).
Humperdinck (*hŏŏm'pĕr-dĭngk*) (1854-1921)	Hänsel and Gretel (1893), Die Königskinder (1910).
Kienzl (*kēnts'l*) (1857-)	Der Evangelimann (1894), Der Kuhreigen (1911).
Lalo (*lä'lō*) (1823-92)	Le Roi d'Ys (1888).
Leoncavallo (*lā-ôn-kä-väl'lō*) (1858-1919)	I Pagliacci (1892), Edipo Re (1921), Zaza (1900).
Lortzing (*lôrt'sing*) (1801-51)	Czar and Zimmermann (1837), Undine (1845).
Lully (*lü-lē'*) (1639-87)	Bellérophon (1679), Prosperine (1680).
Marschner (*märsh'-nĕr*) (1795-1861)	The Vampire (1828), Hans Heiling (1833).
Mascagni (*mäs-kän'-yē*) (1863-)	Cavalleria Rusticana (1890), Iris (1898).
Massenet (*mà-s'nĕ'*) (1842-1912)	Manon (1884), Hérodiade (1881), Le Roi de Lahore (1877), Werther (1892), Thaïs (1894), La Navarraise (1894), Le Jongleur de Notre Dame (1902).
Méhul (*mā-ül'*) (1763-1817)	Joseph (1807).
Meyerbeer, (*mī'ĕr-bār*) (1791-1863)	Robert the Devil (1831), The Huguenots (1836), The Prophet (1849), L'Africaine (1865).
Montemezzi, (*môn-tĕ-mĕt'sō*) (1875-)	L'Amore dei Tre (1913), Le Nave (1919).
Moszkowski (*môsh-kôf'skĭ*) (1854-1925)	Boabdil (1892).
Mozart (*mō'zärt*) (1756-91)	Marriage of Figaro (1786), Don Giovanni (1787), The Magic Flute (1791).
Mussorgsky (*mōōs-sôrg'skĭ*) (1835-81)	Boris Godounov (1874).
Nessler (*nĕs'lĕr*) (1841–1901)	The Trompeter of Säkkingen (1884).
Nicolai (*nē'kō-lī*) (1810-49)	The Merry Wives of Windsor (1849).
Offenbach (*of'ĕn-bäk*) (1819-80)	The Tales of Hoffman (1881).
Parker, Horatio (1863-1919)	Mona (1911).
Pergolesi (*pâr-gō-lä'zē*) (1710-36)	The Maid as Mistress (1731).
Peri (*pā'rĭ*) (1561-1633)	Dafne (1597), Euridice (1600).
Planquette (*plän-kĕt'*) (1848-1903)	The Chimes of Normandy (1877).
Ponchielli (*pōn-tshē-ĕl'lĭ*) (1834-86)	La Gioconda (1876).
Puccini (*pōōt-shē'-nē*) (1858-1924)	Manon Lescaut (1893), La Bohème (1896), Madame Butterfly (1904), The Girl of the Golden West (1910).
Rameau (*rà-mō'*) (1683-1764)	Castor et Pollux (1737).
Ravel (*rà-vĕl'*) (1875-)	L'Heure Espagnole (1911).
Rimski-Korsakov (*rĭm'skĭ-kôr'sà-kôf*) (1844-1908)	Snow Maiden (1880), The Golden Cock (1910).
Rossini (*kôs-sē'nē*) (1792-1868)	The Barber of Seville (1815), Otello (1816), Semiramide (1823), William Tell (1829).
Rubinstein (*rōō'bĭn-stīn*) (1829-94)	Nero (1879), The Demon (1875).
Saint-Saëns (*săn-säns'*) (1835-1921)	Samson and Dalila (1876), Etienne Marcel (1879).
Scarlatti, A. (*skär-lät'tĭ*) (1659-1725)	La Principessa fedele (1712).
Schubert (*shōō'bĕrt*) (1797-1828)	Rosamunde (1823).
Smetana (*smā'tà'nà*) (1824-84)	The Bartered Bride (1866).
Spohr (*shpōr*) (1784-1859)	Faust (1818), Jessonda (1823), Der Berggeist (1825).
Spontini (*spôn-tē'nē*) (1774-1851)	La Vestale (1807), Ferdinand Cortez (1809).
Stanford (1852-1924)	The Veiled Prophet (1881), Shamus O'brien (1896).
Stradella (*strä-dĕl'-lä*) (1645?-82)	La Forza dell' Amor paterno (1678).
Strauss, Richard (1864-)	Elektra (1909), Salome (1905), Feuersnoth (1901), The Rose Cavalier (1911), Ariadne auf Naxos (1912).
Strauss, Johann (1804-49)	The Bat (1872), The Merry War (1887), The Gypsy Baron (1883).
Sullivan (1842-1900)	Pinafore (1878), Pirates of Penzance (1879), Patience, (1881), Iolanthe (1882), Ruddigore (1887), Ivanhoe (1891), The Mikado (1885).
Suppé (*süp-pā'*) (1820-95)	Fatinitza (1876), Boccaccio (1879).
Thomas, Ambrose (*tô-mà'*) (1811-95)	Mignon (1866), Francesca da Rimini (1882).
Tschaikowsky (*chī-kôf'skē*) (1840-93)	Eugene Onegin (1879), Pique Dame (1890), Iolanthe (1893).
Verdi (*vâr'dē*) (1813-1901)	Ernani (1844), Rigoletto (1851), Il Trovatore (1853), La Traviata (1853), The Masked Ball (1859), Aïda (1871), Otello (1887), Falstaff (1893).

Operas—*Cont.*

Wagner, Richard (*väg'nĕr*) (1813-83)	Rienzi (1842), The Flying Dutchman (1844), Tannhäuser (1845). Lohengrin (1850), The Ring of the Nibelungs (1876), Meistersinger von Nürnberg (1868), Parsifal (1882).
Wagner, Siegfried (1869-)	Der Bärenhäuter (1899).
Weber (*vā'bĕr*) (1786-1826)	Der Freischütz (1821), Euryanthe (1823), Oberon (1826).
Wolf-Ferrari (*vôlf-fĕr-rä'rē*) (1876-)	The Secret of Susanne (1909), Jewels of the Madonna (1911).

Oratorios.

Bach (*bäk*) (1685-1750)	Christmas Oratorio (1764), St. Matthew Passion (1729), St. John Passion (1720).
Barnett (1836-1916)	The Raising of Lazarus (1876).
Beethoven (1770-1827)	The Mount of Olives (1799).
Berlioz (1803-69)	L'Enfance du Christ (1854).
Brahms (*bräms*) (1833-97)	The German Requiem (1868).
Bruch (*brŏŏk*) (1838-1920)	Odysseus, Lied von der Glocke, Normannenzug.
Carissimi (*kä-rĭs'sĭ-mē*) (1604?-74)	Jephte, Baltazar.
Cavalieri (*vä-vä-lyâ'-rē*) (1550?-99?)	The Representation of the Spirit and the Body (the first oratorio, 1600).
Cimarosa (*chē-mä-rō'zä*) (1749-1801)	Il Sacrificio d'Abramo (1786).
Cowen (1852-)	The Deluge (1878), Ruth (1887).
David, F. C. (*dȧ-vēd'*) (1810-76)	Moïse au Sinai (1846).
Dubois (*dŭ-bwä'*) F. C. T. (1837-1924)	The Seven Last Words of Christ (1867).
Dvořák (*dvôr'zhäk*) (1841-1904)	Stabat Mater (1883), St. Ludmila (1886), Requiem Mass (1890).
Elgar (1857-1934)	The Light of Life (1896), Caractacus (1898), The Dream of Gerontius (1900).
Franck (*fränk*) (1822-90)	The Beatitudes, Ruth (1846), The Rédemption (1873).
Goldschmidt, O. (*gôlt'shmĭt*)	Ruth (1867).
Gounod (1818-93)	The Redemption (1882), Mors et Vita (1885), Messe Solonelle (1850).
Graun (*groun*) (1701-59)	The Death of Jesus (1755).

Oratorios—*Cont.*

Handel (*hăn'dĕl*) (1685-1759)	Israel in Egypt (1738), Esther (1720), Saul (1738), The Messiah (1742), Samson (1744), Joseph (1743), Judas Maccabaeus (1747).
Haydn (*hā'd'n*) (1732-1809)	The Creation (1799), The Seasons (1801).
Hiller, F. (1811-85)	Die Zerstörung Jerusalems (1840), Saul (1858).
Kiel, F. (*kēl*) (1821-85)	Christus (1874).
Liszt (*lĭst*) (1811-86)	Die Legende von der Heiligen Elisabeth (1864), Christus (1866).
Loewe (*lō-vĕ'*) (1796-1869)	Die Zerstörung Jerusalems (1829).
Macferren (1813-87)	St. John the Baptist (1873).
Mackenzie (1847-)	The Rose of Sharon (1884).
Mendelssohn (1809-47)	St. Paul (1836), Hymn of Praise (1840), Elijah (1838-46).
Parker (1863-1919)	Hora Novissima (1893).
Parry, C. H. (1848-1918)	Judith (1888), Job (1892), King Saul (1894).
Pergolesi (1710-36)	San Guglielmo d'Aquitania (1731).
Pierné (*pĭ-ĕr'nā*) (1863-)	The Children's Crusade (1905).
Porpora (*pôr'pō-rȧ*) (1686-1767)	La Martiria di Sante Eugenia.
Rossini (1792-1868)	Stabat Mater (1832–41).
Rubinstein (1829-94)	The Tower of Babel (1870), The Lost Paradise (1858), Moses (1887), Christus (1895).
Saint-Saëns (1835-1921)	Noël (1858).
Scarlatti, A. (1659-1725)	Dolori di Maria, Sacrificio d'Abramo.
Schubert (1797-1828)	Lazarus (1828).
Schumann (*shōō'-män*) (1810-56)	Paradise and the Peri (1843). Resurrection, Passion, The Seven Last Words of Christ.
Schütz (*shütz*)	
Spohr (1784-1859)	Last Judgment (1812), Calvary (1833), Fall of Babylon (1842).
Stainer (1840-1901)	St. Mary Magdalen (1883), The Crucifixion (1887).
Stanford (1852-1924)	The Resurrection (1875), The Three Holy Children (1885).
Sullivan (1842-1900)	The Prodigal Son (1869), The Light of the World (1873).
Verdi (1813-1901)	Manzoni Requiem (1874).
Zingarelli (*tsĭn-gȧ-rĕ'lĭ*) (1752-1837)	The Flight into Egypt (1837).

SPECIAL INDEX

The following special indexes of the *New Century Book of Facts* have been compiled with the single idea of making this work the most used single-volume reference book obtainable. It is a feature which is found in but few books. The four distinct divisions are: Dictionaries, Illustrations, Outlines, and Tables or Tabulations.

Dictionaries—An index dealing with the 129 special dictionaries in the work. These range in length from 95 pages as found in the Dictionary of History, down to a single page as in the Dictionary of Journalistic Terms.

Illustrations—The *New Century Book of Facts* is so well illustrated that we have had hundreds of suggestions from satisfied purchasers that we could make the illustrations more vital to the home, to the child, more practical to the user if they were listed. Hence, you will find all of the major illustrations listed in that part of the special index. While most of the illustrations are inserts without page numbers, still the page mentioned in the index after the item represents the page opposite which will be found the particular illustration.

Outline—Teachers find that one of the best tests of a child's knowledge of a subject is to have him outline that subject. The business man or the average reader does not in these times care to take hours to ascertain a few facts. To illustrate: If one desires the salient facts about any president (1150 et seq.), instead of reading through numerous pages these facts are given in outline form and by reason of elimination of all padding, ascertained in a few moments. Further, it is only by such outlines that *comparative* study of history and literature, as found on pages 174 and 866 respectively, can be made. Only single volumes such as this permit of such outlines, hence their especial value.

Tables or Tabulations—These are of value to the individual desirous of getting quick, concise information. There are over 350 tables or tabulations throughout the work. It is worth noting that these tables are largely all hand set matter. The student or parent, for example, desiring information on the *bean* not only finds all the different kinds of beans grouped together, but in a few moments' reading across the page, gains all the necessary facts relative to it, saving hours of reading and, what is more important, by its very accessibility, unconsciously fostering the vital habit of research.

Considering the size of the *New Century Book of Facts*, there is no other work on the market today so thoroughly indexed. Due to the number of books that are being placed on the market each successive year and in the case of large sets where special index volumes are used, making it necessary to use *two volumes* to get one fact, the single volume is the most practical reference obtainable. These special indexes are here used for the first time as a result of insistent demand from users of the *New Century Book of Facts*. Their worth-whileness has already been proved by this demand.

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